Government of Malawi

Public Sector Investment Programme (PSIP)

PSIP Database Framework Design Document Symfony Manual for Administrator

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Table of Contents

1. How to start Symfony

1.1. How to install

1.1.1. System versions

The system versions referred in this manual are as follows

System	Version	Remark
OS	CentOS7.1	
Programming Language	PHP 5.6	
DB	MySQL 5.6	
Framework	Symfony 2.6, 2.8	

1.1.2. Installing Symfony to Windows

[PreRequisite]

The system is supposed to have Web server (e.g Apache), MySQL, and PHP higher than above system versions.You can get information on how to get Symfony installer in different ways in different version from;

```
http://symfony.com/doc/2.8/setup.html
```

The following installation is an example of installation in Windows, but you may check the installation of recent version. The installer is a PHP 5.4 compatible executable that needs to be installed on your system only once:

```
c:\> php -r "readfile('http://symfony.com/installer');" > symfony
```

Then, move the downloaded symfony.phar file to your projects directory and execute it as follows:

```
c:\> move symfony c:\projects
c:\projects\> php symfony
```

1.1.3. Certificate err

If the SSL certificates are not properly installed in your system, you may get this error:

```
cURL error 60: SSL certificate problem: unable to get local issuer
certificate.
```

You can solve this issue as follows:
Download a file with the updated list of certificates from;

```
https://curl.haxx.se/ca/cacert.pem
```

Update your php.ini file and configure the path where you downloaded the cacert.pem:

```
curl.cainfo = "C:\path\to\cacert.pem"
```

1.1.4. Install Home Project for Symfony

Go to htdocs of your XAMPP. (For example, D:\ProgramFiles\xampp\htdocs\)

```
symfony new project_name
```

[for example]

```
symfony new psips
```

1.1.5. Installing Symfony to CentOS

http://symfony.com/doc/current/book/installation.html

1) Open your command console and execute the following commands:

```
sudo curl -LsS http://symfony.com/installer -o
/usr/local/bin/symfony
```

```
sudo chmod a+x /usr/local/bin/symfony
```

This will create a global **symfony** command in your system.

2) Create Application with the new command

```
symfony new my_project_name
```

1.1.6. Check the installation

1) Go to your project and check the system requirements.

```
cd my_project_name
php app/check.php
```

2) If it checks with no error, the message will be displayed;

```
 [OK]
 Your system is ready to run Symfony projects
```

[note] some settings in php.ini will be required, for example, date.timezone should be set in php.ini.

```
date.timezone =Africa/Johannesburg
```

3) Check the configuration from the browser.

```
/server_path/web/config.php
```

4) Check if running the symphony

```
cd my_project_name/
```

```
php app/console server:run
```

5) Check the timezone in your php.ini if you get error as ;

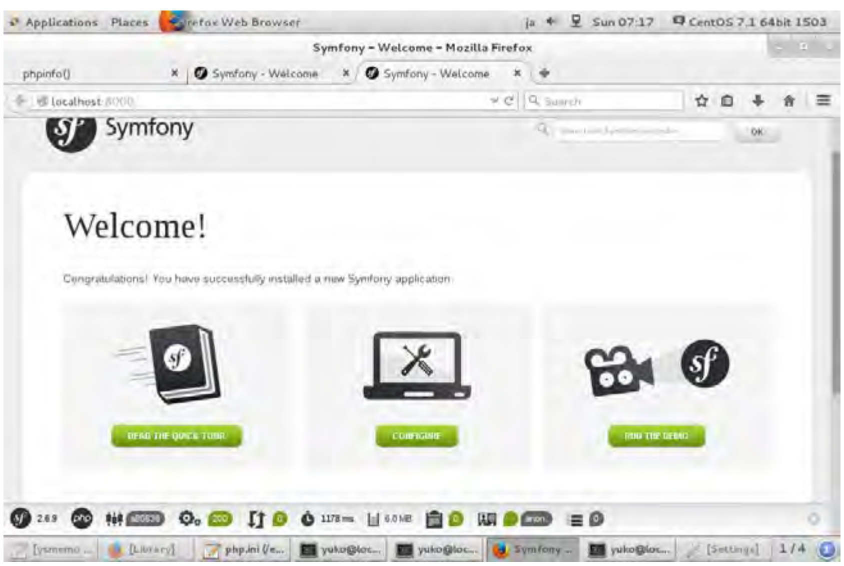
```
[Symfony\Component\Debug\Exception\ContextErrorException]
  Warning: date_default_timezone_get(): It is not safe to rely on
the system's timezone settings. You are *required* to use the
date.timezone setting or
   the date_default_timezone_set() function. In case you used any of
those methods and you are still getting this warning, you most
likely misspelled the timezone identifier. We selected the timezone
'UTC' for now, but please set date.timezone to select your timezone.
```

6) If everything ok, then the message will be shown;

```
[OK] Server running on http://127.0.0.1:8000
```

7) Then, open your browser and access the

http://localhost:8000/



8) Checking Symfony Application Configuration and Setup

```
http://localhost:8000/config.php
```

[note] It seems that Symfony2.6 does not require anymore ICU (International Components for Unicode).

9) Setting up Permissions for Apache server
https://symfony.com/doc/current/setup/file_permissions.html

Provide the access permissions to Symfony app/cache and app/logs with the user/password defined in Apache server.

```
HTTPDUSER=`ps axo user,comm | grep -E
'[a]pache|[h]ttpd|[_]www|[w]ww-data|[n]ginx' | grep -v root | head -
1 | cut -d\  -f1`
```

Execute the following three commands as "psip" user.

```
cd /home/psip/public_html/psips/
```

```
setfacl -R -m u:"$HTTPDUSER":rwX -m u:`whoami`:rwX app/cache
app/logs
```

```
setfacl -dR -m u:"$HTTPDUSER":rwX -m u:`whoami`:rwX app/cache
app/logs
```

[note] User and password that the Apache server runs with are defined in ;
[/etc/httpd/conf/httpd.conf]

```
User apache
Group apache
```

10) Configure apache directory

[/etc/httpd/conf/httpd.conf]

```
<Directory /home/*/public_html>
     AllowOverride FileInfo AuthConfig Limit Indexes
     Options MultiViews SymLinksIfOwnerMatch IncludesNoExec
     <Limit GET POST OPTIONS>
         Order allow,deny
         Allow from all
     </Limit>
```

```
    <LimitExcept GET POST OPTIONS>
        Order deny,allow
        Deny from all
    </LimitExcept>
    Allow from all
    Require all granted
</Directory>
Alias /psip "/home/psip/public_html/"
```

[note] Since Symfony defines “DirectoryIndex” for the file “app.php” in the “.htacces, you need to permit override directory with “Indexes” in the httpd.conf. The .htaccess is found in;
[/psips/web/.htaccess]

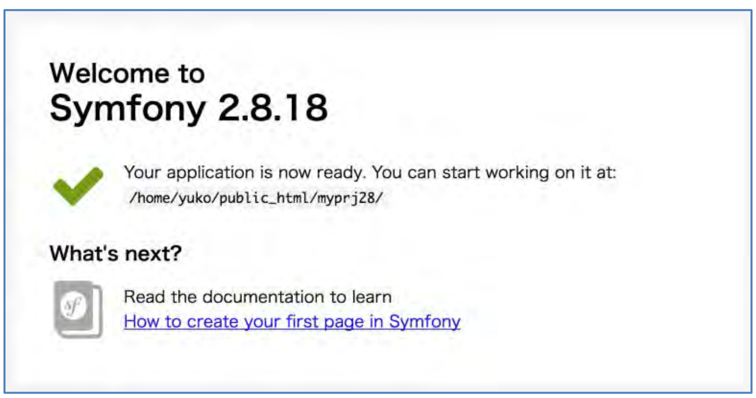
```
DirectoryIndex app.php
```

Otherwise, you get “Internal Server Error” when you access to the top page of symphony

11) Check if the symphony is running with Apache showing the top page.

```
/localhost/psip/psips/web/app_dev.php
```

The following figure is shown in ver.2.8.



1.1.7. Two environments

Symfony provides two environments; Development and Production. You can call it by different URL.

- **Development**

  You will use the following URL to go to development environment.

```
/web/app_dev.php/your_application_path
```

  Usually cache is updated, it means, each time you change your source code, the new cache will be created and the change is reflected.

- **Production**

  You will use the following URL to go to development environment.

```
/web/your_application_path
```

  In this environment cache is NOT updated. If you change source code, you have to clear cache.

1.2. Trouble shooting

1.2.1. .htaccess error

In Symfony 2.8, .htaccess file error may happen with "options not allowed here" in Apache log. Change AllowOverride All in Apache config file.

[conf.d/userdir.conf]

```
<Directory "/home/*/public_html">
# change AllowOverride to All (Symfony2.8 uses .htaccess)
#   AllowOverride FileInfo AuthConfig Limit Indexes
    AllowOverride All
    Options MultiViews SymLinksIfOwnerMatch IncludesNoExec
    Require method GET POST OPTIONS
</Directory>
```

1.2.2. app_dev.php access error

You may get the following error when executing in development mode with app_dev.php.

```
You are not allowed to access this file. Check app_dev.php for more
information.
```

This is because as a default, the symphony application in development mode is only accessible from "localhost". Comment out the following code.

[app/web/app_dev.php]

```
/*
if (isset($_SERVER['HTTP_CLIENT_IP'])
```

```
    || isset($_SERVER['HTTP_X_FORWARDED_FOR'])
    || !(in_array(@$_SERVER['REMOTE_ADDR'], array('127.0.0.1',
'fe80::1', '::1')) || php_sapi_name() === 'cli-server')
) {
    header('HTTP/1.0 403 Forbidden');
    exit('You are not allowed to access this file. Check
'.basename(__FILE__).' for more information.');
}
*/
```

1.2.3. cache access error

```
RuntimeException in ClassCollectionLoader.php line 280:
```

This error is caused by permission error in the following folders when Symfony wants to write cache and logs;

- app/cache
- app/logs

You can clear the cache and give certain right to apache user explained at 9)Setting up Permissions for Apache server.

```
# clear cache development
php app/console cache:clear --no-debug --no-warmup

# clear cache productioon
php app/console cache:clear --env=prod --no-debug --no-warmup

# set ACL for app/cache and app/log
#su psip

HTTPDUSER=`ps axo user,comm | grep -E
'[a]pache|[h]ttpd|[_]www|[w]ww-data|[n]ginx' | grep -v root | head -
1 | cut -d\  -f1`

setfacl -R -m u:"$HTTPDUSER":rwX -m u:`whoami`:rwX app/cache
app/logs

setfacl -dR -m u:"$HTTPDUSER":rwX -m u:`whoami`:rwX app/cache
app/logs
```

[note] The symphony production will call the top file “web/app.php” which will be redirected by “.access” apache file.

[note] If the system shows you the error not to be able to delete some cache files, it may be because the owner of the file is other than “psip”.

[example of the exception]

```
 [RuntimeException]
  Unable to write in the
"/home/psip/public_html/psips/app/cache/prod" directory
```

You can change the owner of cache files under “prod” folder by root user ;

```
su
cd /home/psip/public_html/psips/app/cache/
chown -R psip:psip prod
```

[note] it is recommended to clear all cache by the command. However, in case any error you can manually delete all files by “rm -rf” command.

1.3. Symfony versions roadmap

http://symfony.com/doc/master/contributing/community/releases.html

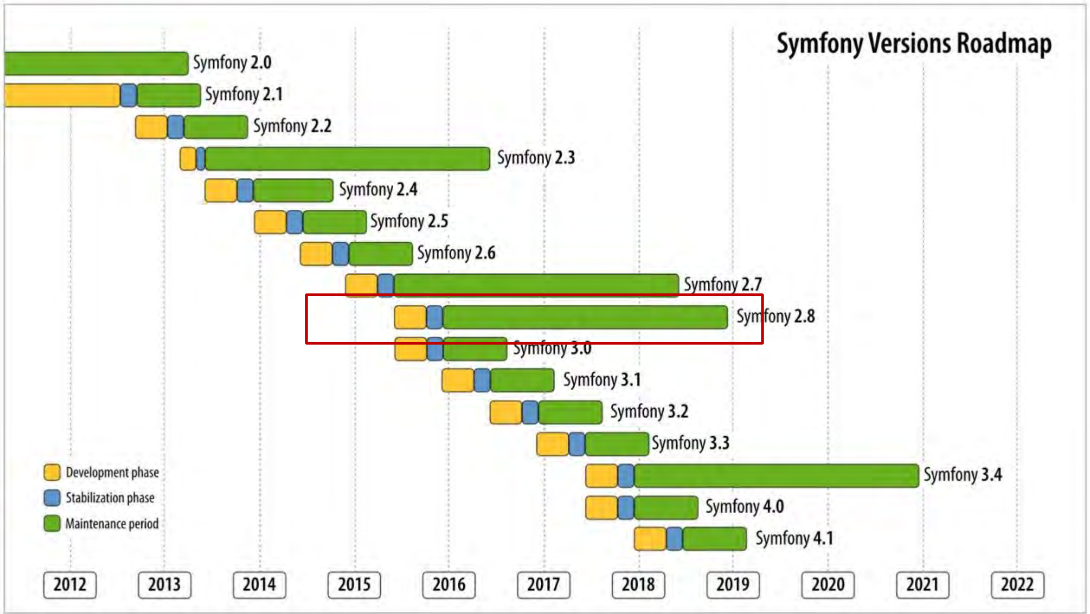
Symfony has two type of version support; Standard Versions and Long Term Support Versions.

- **Standard Versions**

A Standard Minor Version is maintained for an **eight month** period for bug fixes, and for a fourteen month period for security issue fixes.
In Symfony 2.x branch, the number of minor versions wasn't constrained, so that branch ended up with nine minor versions (from 2.0 to 2.8). Starting from 3.x branch, the number of minor versions is limited to five (from X.0 to X.4).

- **Long Term Support Versions**

Every two years, a new Long Term Support Version (usually abbreviated as "LTS") is published. Each LTS version is supported for **a three year** period for bug fixes, and for a four year period for security issue fixes.



[note]This manual explains based on Ver.2.6 initially. (Some parts are updated to Ver.2.8.)

1.4. Create Bundle for psip project

https://www.digitalocean.com/community/tutorials/how-to-use-symfony2-to-perform-crud-operations-on-a-vps-part-1

1.4.1. What is bundle

A bundle in Symfony is a directory where you keep all the files necessary for a specific functionality in your application. This includes PHP files, stylesheets, javascript files, etc.

1.4.2. How to create

Let's create a bundle with the following configuration;

[Bundle specification]

```
BundleNameSpace; Jica/PsipBundle
BundleName;JicaPsipBundle
TargetDir; [D:\programfiles\xampp\htdocs\psips/src]
Configuration format;annotation
```

(1) First create bundle from your Symfony project directory (for example, psips/)

```
$ php app/console generate:bundle --namespace=Jica/PsipBundle
```

[note] If you want to use "yml" for configuration file, enter the folloing;

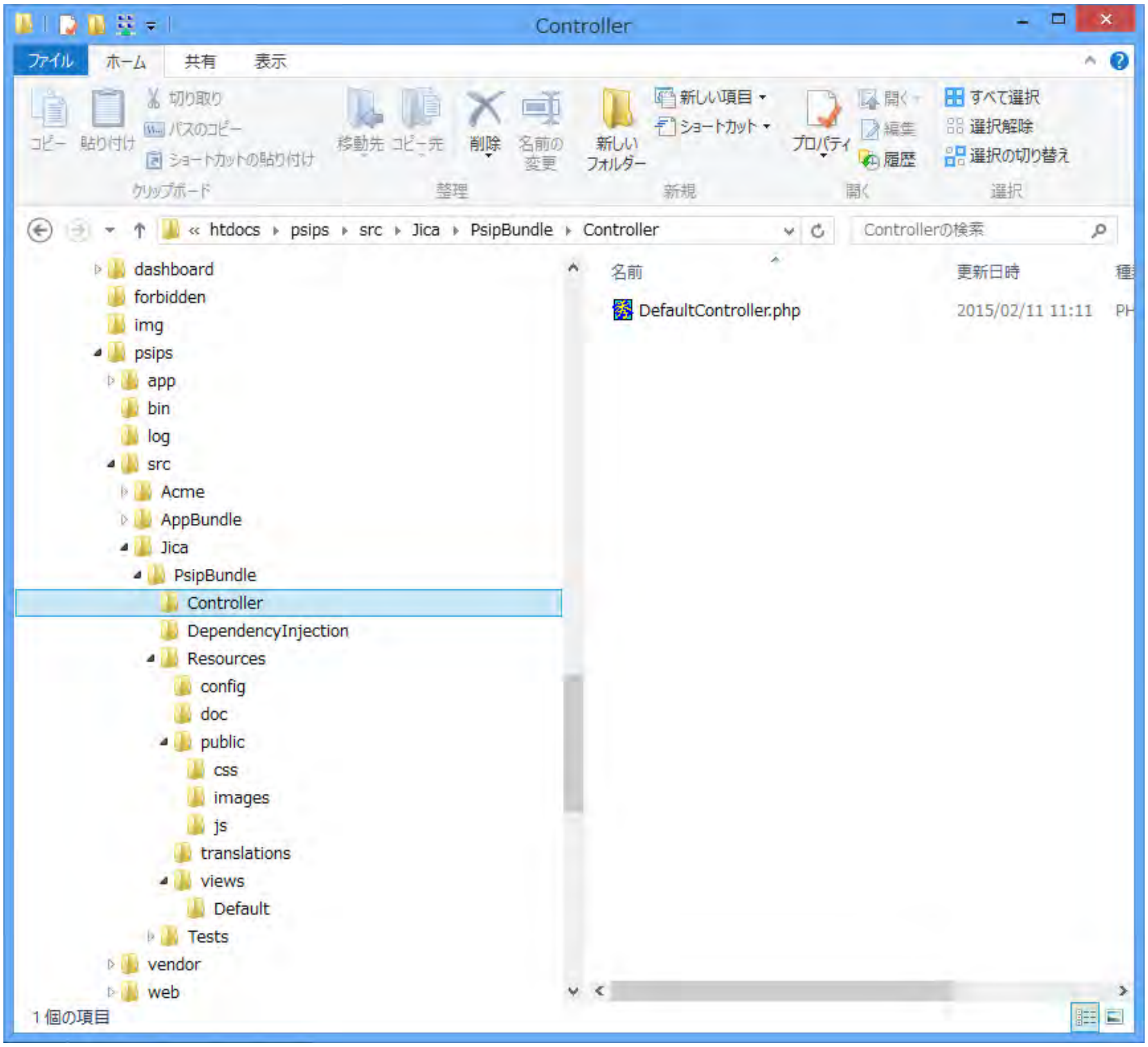
```
php app/console generate:bundle --namespace=Jica/PsipBundle --
format=yml
```

[Create bundle Jica/PsipBundle]

```
php app/console generate:bundle

  Welcome to the Symfony2 bundle generator

Your application code must be written in bundles. This command helps
you generate them easily.

Each bundle is hosted under a namespace (like
Acme/Bundle/BlogBundle).
The namespace should begin with a "vendor" name like your company
name, your
project name, or your client name, followed by one or more optional
category
sub-namespaces, and it should end with the bundle name itself
(which must have Bundle as a suffix).

See
http://symfony.com/doc/current/cookbook/bundles/best_practices.html#
index-1
for more
details on bundle naming conventions.

Use / instead of \  for the namespace delimiter to avoid any
problem.

Bundle namespace: Jica/PsipBundle

In your code, a bundle is often referenced by its name. It can be
the
concatenation of all namespace parts but it's really up to you to
come
up with a unique name (a good practice is to start with the vendor
name).
Based on the namespace, we suggest JicaPsipBundle.

Bundle name [JicaPsipBundle]:

The bundle can be generated anywhere. The suggested default
directory uses
the standard conventions.
```

```
Target directory [D:\programfiles\xampp\htdocs\psips/src]:

Determine the format to use for the generated configuration.

Configuration format (yml, xml, php, or annotation): annotation

To help you get started faster, the command can generate some
code snippets for you.

Do you want to generate the whole directory structure [no]? yes


  Summary before generation


You are going to generate a "Jica\PsipBundle\JicaPsipBundle" bundle
in "D:\programfiles\xampp\htdocs\psips/src/" using the "annotation"
format.

Do you confirm generation [yes]? yes

  Bundle generation

Generating the bundle code: OK
Checking that the bundle is autoloaded: OK
Confirm automatic update of your Kernel [yes]? yes
```

(2) Jica Directory has been created under psips/src/



(3) Check

- Check if Jica/PsipBundle already is registered in **psips/app/AppKernel.php**

```
new Jica\PsipBundle\JicaPsipBundle(),
```

- Check if Jica/PsipBundle already is registered in **psips/app/config/routing.yml**

```
    resource: "@JicaPsipBundle/Controller/"
    type:     annotation
    prefix:   /
```

(4) Start Apache

(5) Check if Symfony is working from your browser

[Show Top]

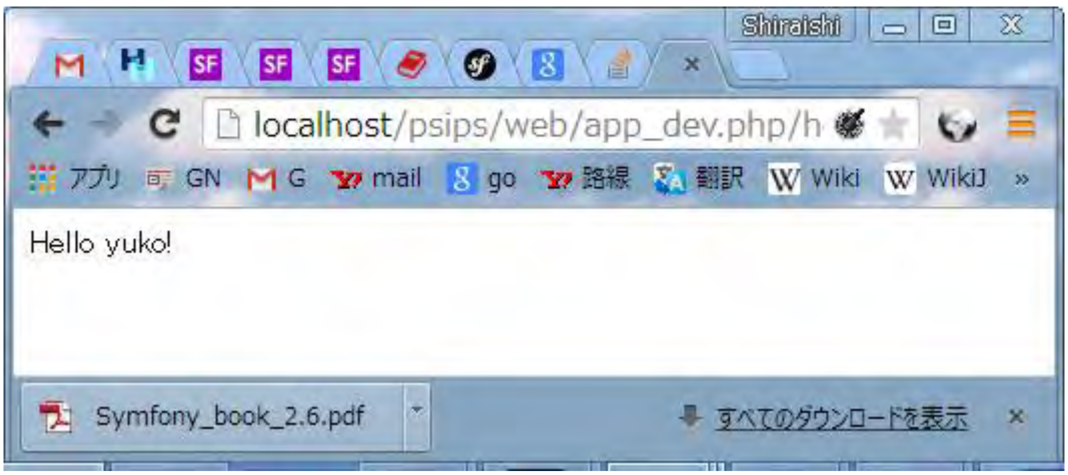
```
http://localhost/psips/web/app_dev.php
```

[show Demo]

```
http://localhost/psips/web/app_dev.php/demo/
```

[show psip bundle]

```
http://localhost/psips/web/app_dev.php/hello/yuko
```



(6) Change the template and change if the template is working \psips\src\Jica\PsipBundle\Resources\views\Default\index.html.twig as follows;

```
Hello from symfony {{ name }}!
```

1.5. Connect with Database

1.5.1. Set password with MySQL

First confirm that the MySQL database has the password for the "psip" user. To set the password, you can execute the following command from the shell.

```
mysqladmin -u psip -p password xxxxxx
```

1.5.2. Set DB configuration

The DB configuration is specified in parameters.yml file. Set Database configuration such as database name, user, password to parameters.yml file
[psips/app/config/parameters.yml]

```
# This file is auto-generated during the composer install
parameters:
    database_driver: pdo_mysql
    database_host: 127.0.0.1
    database_port: 3306
    database_name: psip2
    database_user: psip
    database_password: xxxxxxx
    mailer_transport: smtp
    mailer_host: 127.0.0.1
    mailer_user: null
    mailer_password: null
    locale: en
    secret: c3ac88d72aaf4e324e882a84f1db2fe9908f654b
```

1.5.3. Generate entities for all classes from existing DB

http://symfony.com/doc/current/cookbook/doctrine/reverse_engineering.htm

You can create Symfony entities all at once from existing tables.
[note] Be careful, if you have already entities and create/modify your own source code, since after generating entities, all entities will be replaced to new classes. Back up your entities to some secure places before this process.

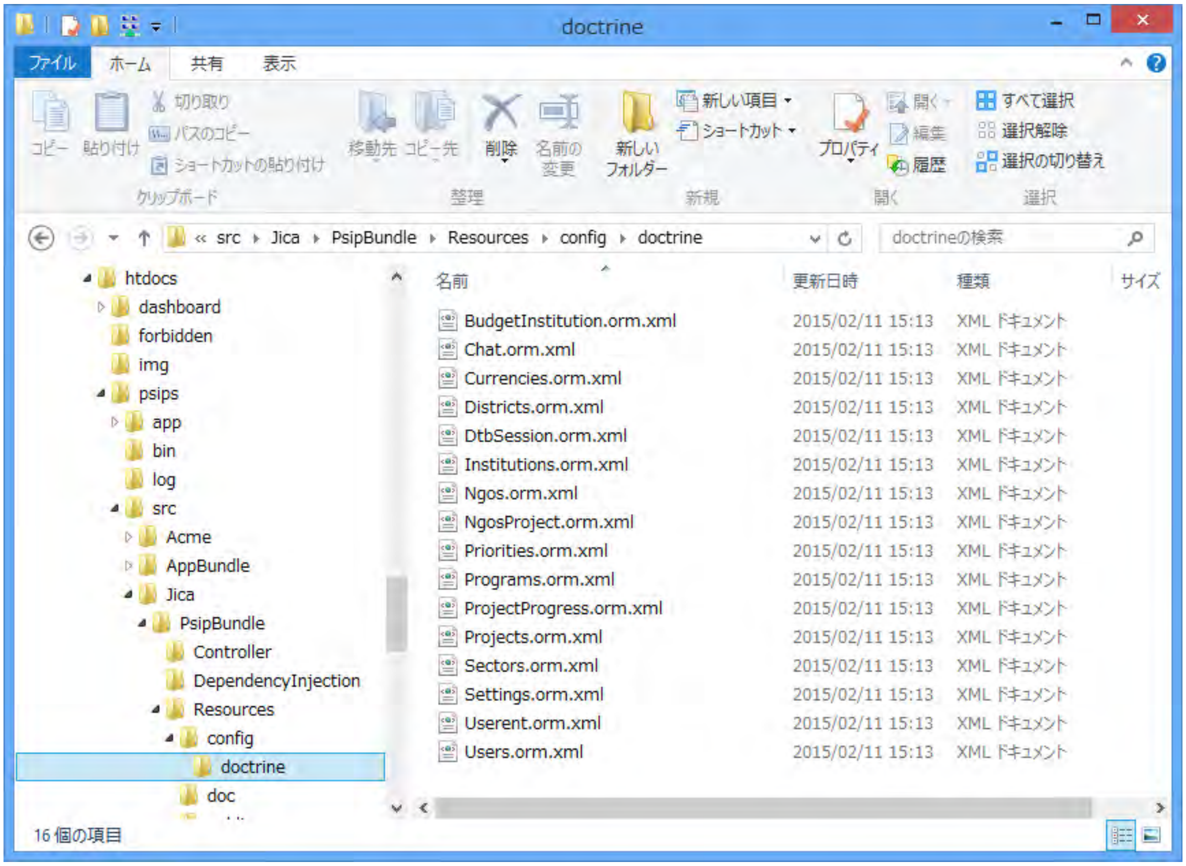
1) First generate the corresponding metadata files with Doctrine in XML from project ("psips") folder. Execute;

```
php app/console doctrine:mapping:import --force JicaPsipBundle xml
```

[note] php.exe should be executable which path route is set if you work in the Windows environment.

All table XML Metadata are created under;

```
psips\src\Jica\PsipBundle\Resources\config\doctrine
```



2) Create Entity Class with Doctrine

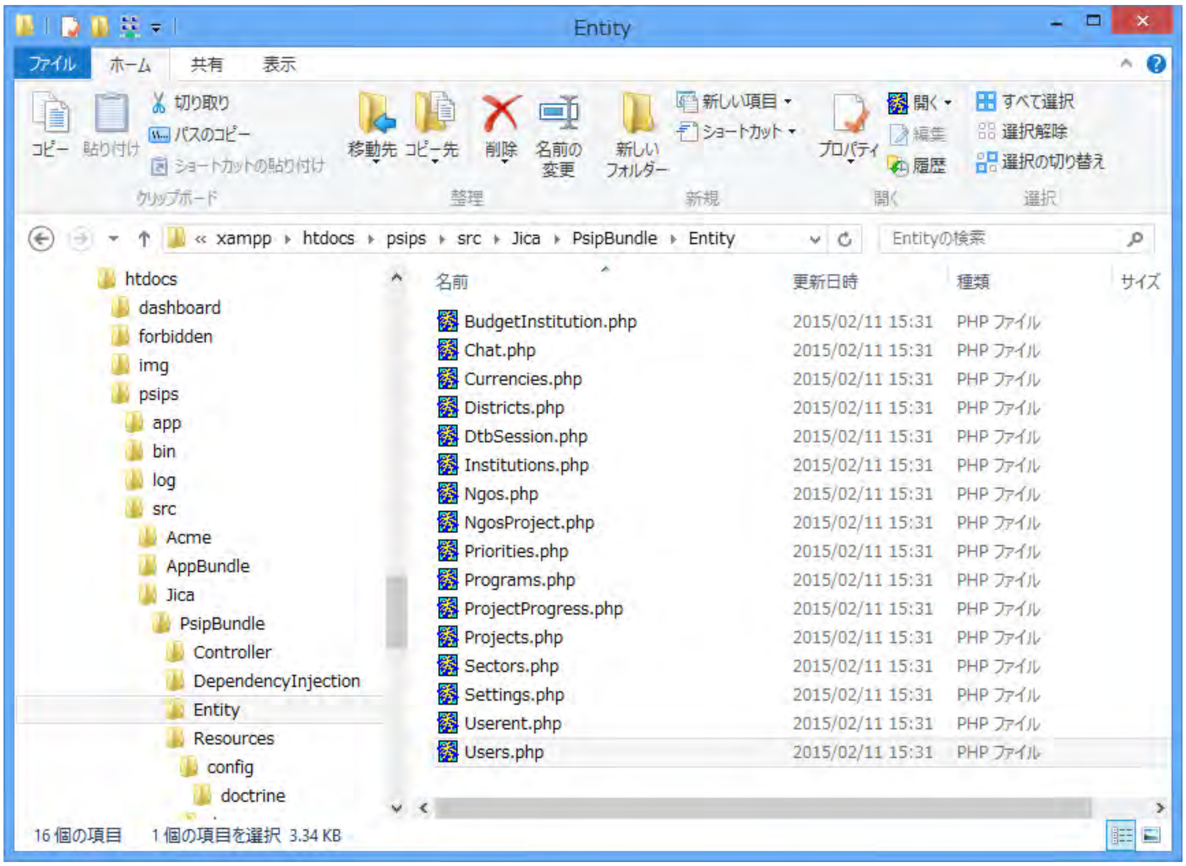
```
php app/console doctrine:mapping:convert annotation ./src
```

```
Processing entity "Jica\PsipBundle\Entity\BudgetInstitution"
Processing entity "Jica\PsipBundle\Entity\Chat"
Processing entity "Jica\PsipBundle\Entity\Currencies"
Processing entity "Jica\PsipBundle\Entity\Districts"
Processing entity "Jica\PsipBundle\Entity\DtbSession"
Processing entity "Jica\PsipBundle\Entity\Institutions"
Processing entity "Jica\PsipBundle\Entity\Ngos"
Processing entity "Jica\PsipBundle\Entity\NgosProject"
Processing entity "Jica\PsipBundle\Entity\Priorities"
Processing entity "Jica\PsipBundle\Entity\Programs"
Processing entity "Jica\PsipBundle\Entity\ProjectProgress"
Processing entity "Jica\PsipBundle\Entity\Projects"
Processing entity "Jica\PsipBundle\Entity\Sectors"
```

```
Processing entity "Jica\PsipBundle\Entity\Settings"
Processing entity "Jica\PsipBundle\Entity\Userent"
Processing entity "Jica\PsipBundle\Entity\Users"
```

3) The Entity classes are created under

```
D:\programfiles\xampp\htdocs\psips\src\Jica\PsipBundle\Entity
```



[User.php]

```
class Users
{
    /**
     * @var string
     *
     * @ORM\Column(name="user_id", type="string", length=20,
nullable=false)
     */
    private $userId;
```

```
    /**
     * @var string
     *
     * @ORM\Column(name="first_name", type="text", length=65535,
nullable=true)
     */
    private $firstName;

    /**
     * @var string
     *
     * @ORM\Column(name="last_name", type="text", length=65535,
nullable=true)
     */
    private $lastName;
…
```

4) You can set the annotation for custom repository

```
php modEntitySrcWithTild.php
```

The modEntitySrcWithTild.php file is found under tools folder of the project.

This will set the following annotation in the entity class. See 4.7 Isolate DB model from Controller more detail.

```
// src/AppBundle/Entity/Product.php
namespace AppBundle\Entity;
use Doctrine\ORM\Mapping as ORM;
/**
*
@ORM\Entity(repositoryClass="Jica\PsipBundle\Entity\MyRepo\ProductRe
pository")
*/
class Product
{
//...
}
```

5) Set getter/setter

You can execute the following command to have your Entity class getter/setter.

```
php app/console doctrine:generate:entities JicaPsipBundle:Currencies
```

The above example creates getter/setter methods for Currencies entity only.

If you want to create methods for all entities;

```
php app/console doctrine:generate:entities JicaPsipBundle
```

1.5.4. Generate single entity class from existing DB (reverse engeneering)

http://stackoverflow.com/questions/10371600/generating-a-single-entity-from-existing-database-using-symfony2-and-doctrine

Please change the following Entity name (using AppDecision as an example) to your own entity that you want to create.

(1) If the entity already exists, backup the file. All the properties and methods manually inserted to the entity will be removed and replaced with new entity.

(2) If you want to generate single entity, execute the following command under your project.

```
php app/console doctrine:mapping:convert
annotation ./src/Jica/PsipBundle/Resources/config/doctrine --from-
database --filter="AppDecision"
```

change the entity Name

[note] If you have already the mapping under the same directory (./src/Jica/PsipBundle/Resources/config/doctrine), delete the old file. If the file exists, you will have the error message, although it does not make any problem.

```
[Doctrine\ORM\Tools\Export\ExportException]
  Attempting to overwrite an existing file
'/home/psip/public_html/psips/src/
  Jica/PsipBundle/Resources/config/doctrine/AppDecision.php'.
```

This will create mapped AppDecision.php class.

[note]Be careful that the filter name is **with quotation** and the master name should follow the Symfony **camel naming**.

Then you get the message;

```
Exporting "annotation" mapping information to
"/home/psip/public_html/myprj28/src/Jica/PsipBundle/Resources/config
/doctrine"
```

This means that the mapped file is created under specified directory (src\Jica\PsipBundle\Resources\config\doctrine).

If you have the following error, check the table name.

```
No Metadata Classes to process.
```

(3) Import the above converted file to your entity folder;

```
php app/console doctrine:mapping:import JicaPsipBundle annotation --
filter="AppDecision"
```

You get the message;

```
Importing mapping information from "default" entity manager
  > writing
D:\ProgramFiles\xampp\htdocs\psips\src\Jica\PsipBundle/Entity/AppDec
ision.php
```

The Entity class is created and stored under Entity directory.

[note] If you get "too many arguments" error, please type directly the command from the console instead of copying and pasting from the manual. It may be due to "--" or "" characters.

(4) Open the entity file. Delete the following annotation.

```
* @ORM\Entity
```

(5) Change annotation to be able to use the custome repository.

```
*
@ORM\Entity(repositoryClass="Jica\PsipBundle\Entity\MyRepo\AppDecisi
onRepository")
```

[note] Do not insert enter between "*" and "@ORM". It is in one line.

(6) Create getter/setter.

```
php app/console doctrine:generate:entities
JicaPsipBundle:AppDecision --no-backup
```

If the method is correctly created, you get the following message.

```
Generating entity "Jica\PsipBundle\Entity\AppDecision"
  > generating Jica\PsipBundle\Entity\AppDecision
```

Check that the entity class has getter/setter and under MyRepo folder the repository class is created.

1.5.5. Generate new Entity by Wizard

http://symfony.com/doc/2.8/doctrine.html

Doctrine can create simple entity classes for you. This will ask you interactive questions to help you build any entity. Type the following php command from the Symfony directory (psips/);

```
php app/console doctrine:generate:entity
```

You will get the message.

```
Welcome to the Doctrine2 entity generator
```

For example, you can create new Entity with name and pass as follows;

```
The Entity shortcut name: YourBundleName:User
Configuration format (yml, xml, php, or annotation) [annotation]:
Enter  (o select what you want)
New field name (press <return> to stop adding fields): name
Field type [string]: Enter (o select what you want)
Field length [255]:50
Is nullable [false]: true
Unique [false]:Enter
```

Continue answering for other property.

```
New field name (press <return> to stop adding fields):Enter
```

Finally, you get the message if successful.

```
created ./src/AppBundle/Entity/
  created ./src/AppBundle/Entity/User.php
> Generating entity class src/AppBundle/Entity/User.php: OK!
> Generating repository class
src/AppBundle/Repository/UserRepository.php: OK!
```

```
  Everything is OK! Now get to work :).
```

Your entity classes are created as indicated place above.

1.6. How to create Login function with Symfony2

1.6.1. You need the following 4 files and one method in the controller:

(1) Create Controller (psips\src\Jica\PsipBundle\Controller\LoginController.php
(2) Create user.php (psips\src\Jica\PsipBundle\Entity\Users.php
(3) Create form type (under psips\src\Jica\PsipBundle\Form\LoginType.php
(4) Create Login template
  ① (under psips\src\Jica\PsipBundle\Resources\views\Login\ login.html.twig
(5) Create loginAction method in the LoginController.php

1.7. Symfony Login Authentication

The previous sample shows how to create Login Form manually. Symfony provides authentication with Login users who access to the secured pages transfers to the Login form in case they are not yet logged in. The security system is configured in ;

```
app/config/security.yml.
```

1) Set encode of password to MD5

[app/config/security.yml]

```
encoders:
   Jica\PsipBundle\Entity\User:
     algorithm: md5
     encode_as_base64: false
     iterations: 0
```

[note] The existing passwords in CEPSIP1 were all set by MD5, although MD5 is an encryption not recommended due to its vulnerability.

2) Create "/login" path in the LoginController

[LoginController.php]

```
namespace Jica\PsipBundle\Controller;

use Symfony\Bundle\FrameworkBundle\Controller\Controller;
use Sensio\Bundle\FrameworkExtraBundle\Configuration\Route;
use Sensio\Bundle\FrameworkExtraBundle\Configuration\Template;
use Symfony\Component\Form\FormInterface;
use Symfony\Component\OptionsResolver\OptionsResolverInterface;
```

```
use Jica\PsipBundle\Entity\User;
use Jica\PsipBundle\Form\UserType;
use Symfony\Component\HttpFoundation\Request;
use Jica\PsipBundle\Entity\Projects;

class LoginController extends Controller
{
 /**
  * @Route("/login", name="v_login")
  * @Template()
  * The output
template;xampp\htdocs\psips\src\Jica\PsipBundle\Resources\views\Logi
n\login.html.twig"
  */
 public function loginAction(Request $request)
{
 $authenticationUtils = $this->get('security.authentication_utils');
// get the login error if there is one
   $error = $authenticationUtils->getLastAuthenticationError();
// last username entered by the user
   $lastUsername = $authenticationUtils->getLastUsername();
      return $this->render(
      'JicaPsipBundle:Login:login.html.twig',
      array(
          // last username entered by the user
          'last_username' => $lastUsername,
          'error'         => $error,
      )
  );
}
```

3) Create “/loginChek” path in the LoginController without any logic, since this is called by the system when the login form is sent to the server.

```
/**
* @Route("/login_check", name="login_check")
*/
public function loginCheckAction()
```

```
{
}
```

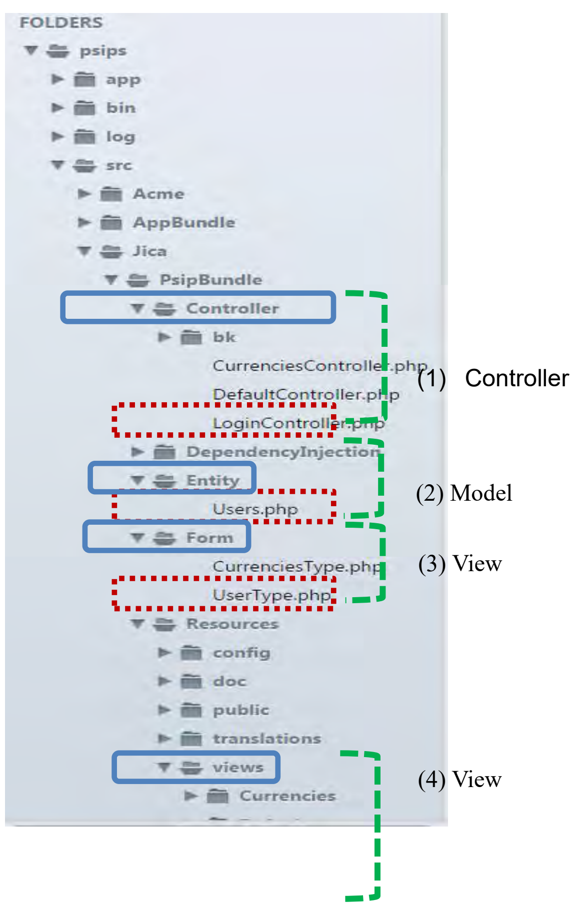
4) Implement UserInterface in your User Entity.

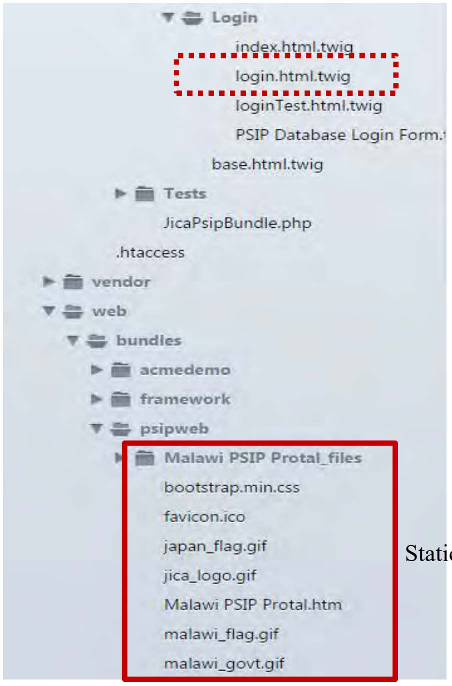
```
class User implements UserInterface, \Serializable
{…
```

5) This forces the class to have the five following methods:

```
getRoles()
getPassword()
getSalt()
getUsername()
eraseCredentials()
```

1.8. Directory Structure





Static resources (css, gif, static html, etc)

1.9. Create FormType

The controls for the form such as textbox, checkbox are defined in the Form type file (LoginType.php) .

[psips\src\Jica\PsipBundle\Form**LoginType**.php]

```
<?php

namespace Jica\PsipBundle\Form;
use Symfony\Component\Form\AbstractType;
use Symfony\Component\Form\FormBuilderInterface;
use Symfony\Component\OptionsResolver\OptionsResolverInterface;

class UserType extends AbstractType
{
      public function buildForm(FormBuilderInterface $builder, array
$options)
      {

          $builder
              ->add('userId','text',array(
```

Textbox for userId is defined with the style class “t”.

```
                'label' => false,
                'attr'=>array( 'class'=> 't')))
                ->add('pass', 'password', array(
                             'label' => false,
                             'attr'=>array( 'class'=> 't')))
                ->add('save', 'submit', array(
                        'label' => 'Login',
                        'attr' => array('class' => 'btn btn-default
pull-right')
                  ))
                ;
      }
```

1.10. Create Login template

[psips\src\Jica\PsipBundle\Resources\views\Login\ login.html.twig]

```
{# Jica/PsipBundle/Resources/views/Login/Login.html.twig #}
{% extends "base.html.twig" %}

{% block title %}PSIP Database Login Form
<link rel="shortcut icon"
href="{{asset('bundles/psipweb/favicon.ico')}}" />
{% endblock %}

{% block body %}
<style type="text/css">
 .a { border: 1px solid #000000;background-color: #ccccff}
 .b { border: 1px solid #000000;background-color: #ffffff}
 .c { border: 1px solid #000000;background-color: #6495ED}
 .t { width:150px;border: solid 1px #7F9DB9;ime-mode:disabled}
</style>
<body style="font-family: verdana,helvetica;"
onload="document.login_form.user_id.focus()" alink="#DD0000"
bgcolor="#F0F0F0" link="#0000FF" text="#000000" vlink="#0000FF">

<center>
<span style="font-size:large;color:blue;font-weight: bold;">PSIP
```

```
Database System</span><br>

<img src="{{asset('bundles/psipweb/malawi_govt.gif')}}" alt="Malawi
Govt" height="100" width="100"><br>
<span style="font-size:xx-small;color:green;line-height:100%;">
Government of Malawi<br>
Ministry of Finance, Economic Planning and Development<br>
</span>

<br><span style="font-size:medium;background-
color:red;color:white;font-weight: bold;"></span><p>

{{ form_start(form) }}
{{ form_errors(form) }}

<table style="font-size: 75%;border-collapse: collapse"
cellpadding="7">
  <tbody><tr>
   <td class="c" colspan="2" align="center">
    <span style="font-weight: bold;">Login Form</span>
   </td>
  </tr>
  <tr>
   <td class="a"> User ID:</td>
   <td class="b">
     <!--input name="user_id" style="width:150px;border: solid 1px
#7F9DB9;ime-mode:disabled;" type="text" -->
         {{ form_row(form.userId) }}
   </td>
  </tr>
  <tr>
   <td class="a">Password: </td>
   <td class="b">
     <!--input name="pass" style="width:150px;border: solid 1px
#7F9DB9;" type="password"-->
         {{ form_row(form.pass) }}
   </td>
  </tr>
  <tr>
```

UserId is set here, which data coming from Controller

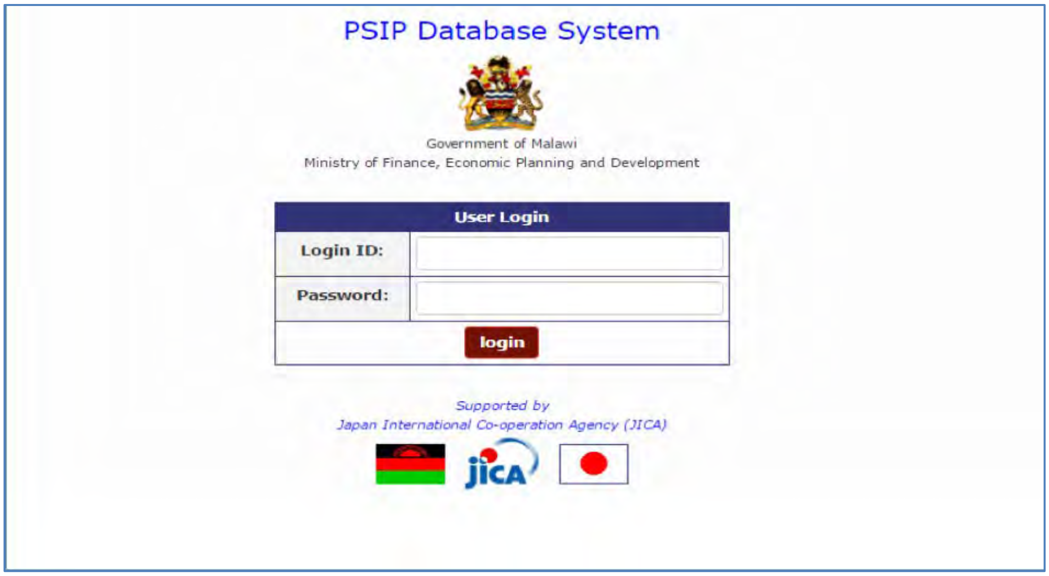
```
   <td class="b" colspan="2" align="center">
    <!--input name="submit" value="Login" type="submit" -->
     {{ form_row(form.save) }}
   </td>
  </tr>
</tbody></table>

<span style="color:red;">{{c_message}} </style>

{{ form_end(form) }}

<p></p>

<span style="font-size:xx-small;color:blue;">
Supported by<br>
Japan International Co-operation Agency (JICA)<br>
</span>

<img src="{{asset('bundles/psipweb/malawi_flag.gif')}}" alt="Malawi"
height="60" width="90">
<img src="{{asset('bundles/psipweb/jica_logo.gif')}}" alt="JICA"
height="60" width="90">
<img src="{{asset('bundles/psipweb/japan_flag.gif')}}" alt="Japan"
border="1" height="60" width="90">

</center>
{% endblock %}
```

1.11. How to execute Login page

(1) Execute Apache and MySQL. Suppose that the DB connection information is already configured in the “parameters.yml”.

(2) Call Top page

```
http://localhost/psips/web/app_dev.php/login
```


PSIP Database System
Government of Malawi
Ministry of Finance, Economic Planning and Development
User Login
Login ID:
Password:
login
Supported by
Japan International Co-operation Agency (JICA)

2. Symfony application with CRUD

http://georgehk.blogspot.com/2014/04/crud-operation-in-symfony-with-mysql.html
http://symfony.com/doc/current/bundles/SensioGeneratorBundle/commands/generate_doctrine_crud.html

The generate:doctrine:crud command generates a basic controller for a given entity located in a given bundle. This controller allows to perform the five basic operations on a model.

- Listing all records,
- Showing one given record identified by its primary key,
- Creating a new record,
- Editing an existing record,
- Deleting an existing record.

1) Create Currencies entity with getter/setter.

Create entities

```
php app/console doctrine:mapping:convert annotation ./src
```

2) create getter/setter

```
php app/console doctrine:generate:entities JicaPsipBundle:Currencies
```

3) Generating a CRUD controller Based on a Doctrine Entity

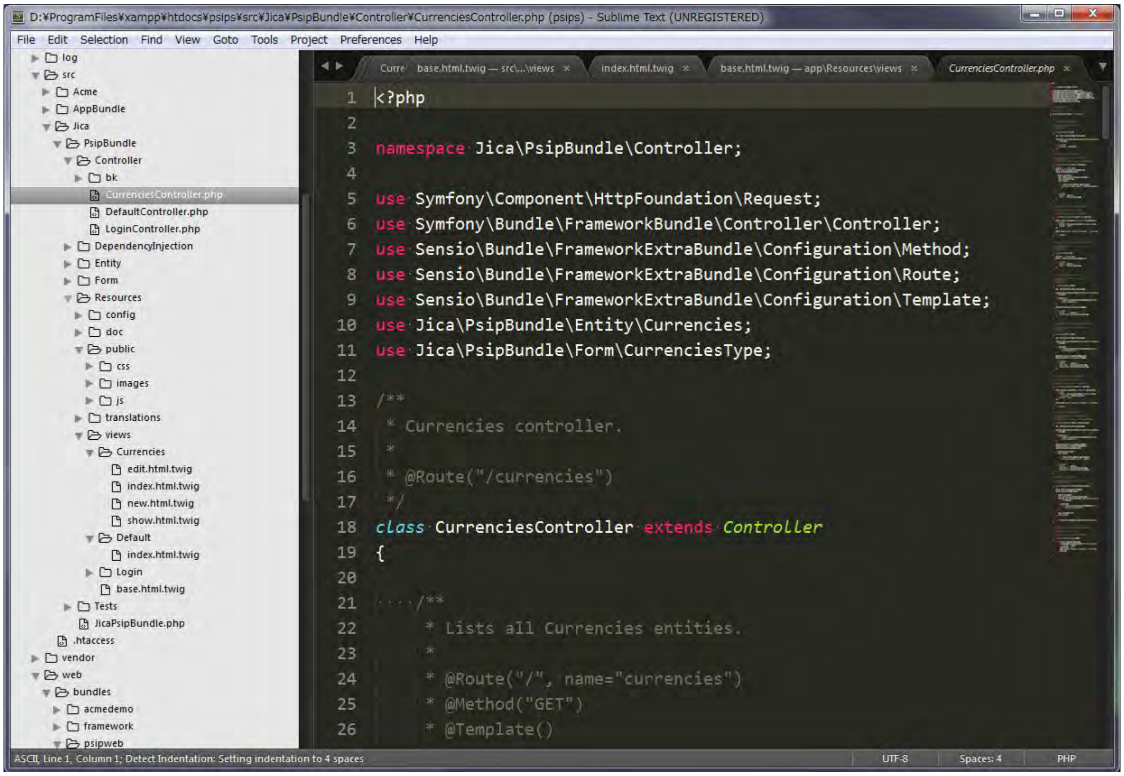
The following is the example of CRUD creation with Currencies entity.

```
cd psips
php app/console generate:doctrine:crud --entity=JicaPsipBundle:User
--route-prefix=/admin/ --with-write --format=annotation --no-
interaction
```

The following files will be created;

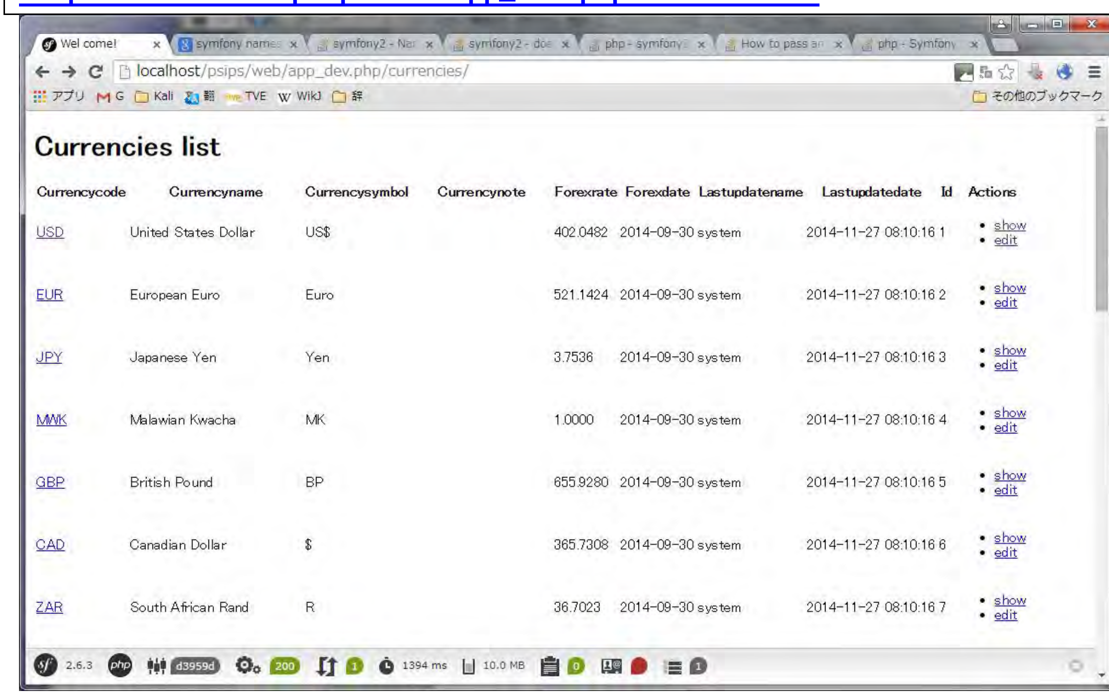
- Controller/CurrenciesController.php,
- view/Currencies/index.html.twig
- view/Currencies/new.html.twig
- view/Currencies/edit.html.twig
- view/Currencies/show.html.twig

-



4) You can open your browser and enter and you can see that the Create/Edit/Delete functions are generated to maintain the data.

http://localhost/psips/web/app_dev.php/currencies/



3. Symfony with form

3.1. Create controller

There are two ways to create controller.

- You can copy the existing controller and change the name.
- You can generate controller from command line.

3.1.1. Generate new controller from command line.

(1) Go to under your project directory. Execute the following command.

```
php app/console generate:controller
```

[example of the interaction with the generator]

```
Welcome to the Symfony2 controller generator
Every page, and even sections of a page, are rendered by a
controller.
This command helps you generate them easily.

First, you need to give the controller name you want to generate.
You must use the shortcut notation like AcmeBlogBundle:Post

Controller name: JicaPsipBundle:Psip330qtExtension

Determine the format to use for the routing.

Routing format (php, xml, yml, annotation) [annotation]:-> just enter

Determine the format to use for templating.

Template format (twig, php) [twig]: -> just enter

Instead of starting with a blank controller, you can add some
actions now. An action
is a PHP function or method that executes, for example, when a given
route is matched.
Actions should be suffixed by Action.
New action name (press <return> to stop adding actions):
qtExtensionTopAction
```

```
Action route [/qtExtensionTop]: psipuser/330qtextension
Templatename (optional)
[JicaPsipBundle:Psip330qtExtension:qtExtensionTop.html.twig]: -> just
enter



New action name (press <return> to stop adding actions): -> just enter
  Summary before generation

You are going to generate a "JicaPsipBundle:Psip330qtExtension"
controller
using the "annotation" format for the routing and the "twig" format
for templating
Do you confirm generation [yes]? y
Controller generation
Generating the bundle code: OK
You can now start using the generated code!
```

The new controller is created under controller folder of your bundle with action name, route or template name. You can change the content without problem.

[src/Jica/PsipBundle/Controller/Psip330qtExtensionController.php]

```
<?php

namespace Jica\PsipBundle\Controller;

use Symfony\Bundle\FrameworkBundle\Controller\Controller;
use Sensio\Bundle\FrameworkExtraBundle\Configuration\Route;
use Sensio\Bundle\FrameworkExtraBundle\Configuration\Template;

class Psip330qtExtensionController extends Controller
{
    /**
     * @Route("330qtextension")
     * @Template()
     */
    public function qtExtensionTopAction()
```

```
    {
        return array(
        // ...
            );    }
}
```

[note] The template twig file is also created as default under the view folder.

From the browser call the route you specified and confirm if the controller and view are working to show the following message.

[Example call from browser]

```
psips/web/330qtextension
```

[Default view created by the system]

Welcome to the Psip330qtExtension:qtExtensionTop page

3.2. Tips for Form and controller

3.2.1. How to get submitted data in the controller

```
$form = $this->createForm(new ProjectType($em));
$form->handleRequest($request);
….
if ($form->isSubmitted()) {
  $vote=$form->get('voteCode')->getData();
}

return array('form' => $form->createView(),
             'c_message' => $c_message);
```

- The form should be related to the entity in the createForm() method.
- Its view should be sent to in the return array of the response,.

In the HTML, it is generated as;

```
<div class="form-group"><select id="ProjectType_voteCode"
name="ProjectType[voteCode]" class="form-control">
```

You can get the “voteCode” by get method of the form object.

If you want to get the entity object related to the form;

```
$project = $form->getData();
```

3.2.2. How to redirect response in the controller

(1) Redirect to static direction

```
return $this->redirect
('http://localhost/psips/web/bundles/psipweb/psipver2/psipAnnounceme
nt.html');
```

(2) Redirect to URL name with parameter

```
/* redirect internal URL */
return $this->redirect($this->generateUrl('loginTest',
array("name"=>'successfull!')));
```

(3) Redirect to different bundle

```
/* redirect internal different bundle URL */
return $this->redirect
('JicaPsipBundle:Login:loginSuccess.html.twig'));
```

3.2.3. How to show collection of form to the View

```
<ul class="tags">
{# iterate over each existing tag and render its only field: name #}
{% for tag in form.tags %}
   <li>{{ form_row(tag.name) }}</li>
{% endfor %}
</ul>
```

3.2.4. Template twig

(1) Location

The template file is usually located under bundle/resouces/views/controller_name/

[example]

```
/src/Jica/PsipBundle/Resources/views/Psip020Proposal/projectdetails.
html.twig
```

(2) Naming

Symfony uses a bundle:directory:filename string syntax for templates.

```
JicaPsipBundle:Psip020Proposal:index.html.twig:
```

The three parts of the string, each separated by a colon (:), mean the following:

- **JicaPsipBundle**: (bundle) the template lives inside the JicaPsipBundle (e.g. src/Jica/PsipBundle);
- **Psip020Proposal**: (directory) indicates that the template lives inside the subdirectory of Resources/views;
- **projectdetails.html.twig**: (filename) the actual name of the file is index.html.twig.

```
AcmeBlogBundle::layout.html.twig:
```

This syntax refers to a base template that's specific to the AcmeBlogBundle. Since the middle, "directory", portion is missing (e.g. Blog), the template lives at Resources/views/layout.html.twig inside AcmeBlogBundle. There are 2 colons in the middle of the string when the "controller" subdirectory part is missing.

(3) Specify template name in the controller

```
// src/AppBundle/Controller/ArticleController.php
namespace AppBundle\Controller;
// ...
class ArticleController extends Controller
{
public function recentArticlesAction($max = 3)
{
// make a database call or other logic
// to get the "$max" most recent articles
$articles = ...;
return $this->render(
'Article/recentList.html.twig',array('articles' => $articles)

);
}
}
```

The above example shows that 'articles' represents the name that will be used in the twig file, which contains the data of variable $articles used in the Controller.

The 'articles' specified in the controller can be used in the twig. If it is a collection, you can loop to get each element:

```
{# app/Resources/views/Article/recentList.html.twig #}
{% for article in articles %}
<a href="/article/{{ article.slug }}">
{{ article.title }}
</a>
```

```
{% endfor %}
```

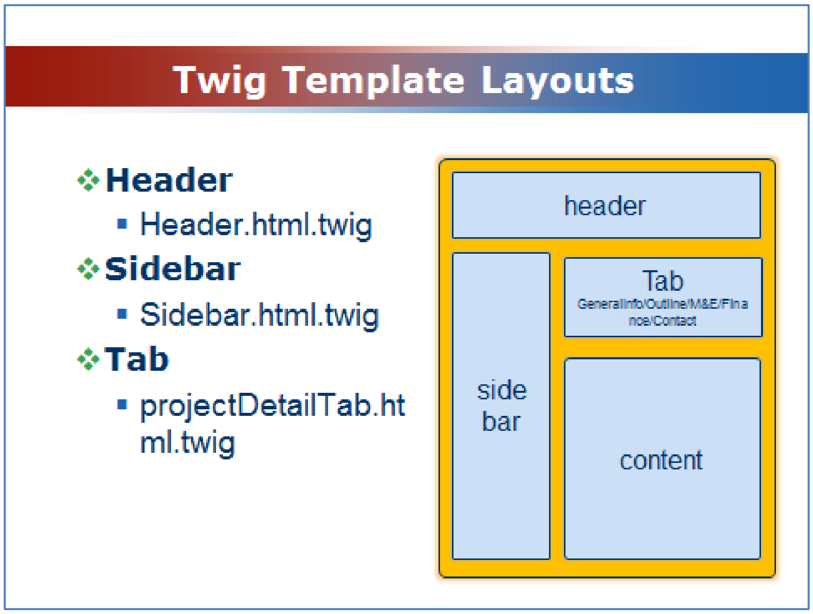
3.2.5. PSIP twig template

1) The top basic structure of the PSIP2 twig is as follows configured in the "basepsipmenu.html.twig" ;

[/src/Jica/PsipBundle/Resources/views/basepsipmenu.html.twig]

```
<!DOCTYPE html>
<html>
<head>
<meta charset="UTF-8" />
</head>
<body>
{{form_start(form) }}
{# include header 1 and 2 #}
{{include
('JicaPsipBundle::Menu00Base/header.html.twig')}}        Include Header
{# include sidemenu #}

{{include
('JicaPsipBundle::Menu00Base/sidebar.html.twig')}}       Include SideMenu
{# set content in each twig #}
{% block content %}
                                                         Include your Content here
{% endblock %}


{{ form_end(form) }
</body>
```

2) The following figure shows the the twig files inside the above top twig.



The “projectDetailTab.html.twig” has the tab panel used for project proposal details such as ”General Info”, “Outline”. It has basic design for the tabs such as “Save” or “Print” button. You can insert each content inside the <ul> content. For example, if you created “Outline” content, you can link it as follows;

```
<li {{ (app.request.attributes.get('_route') starts with
'040projectOutline') ? ' class="active"' }}>
    <a href="{{path('040projectOutline_Code',
{'year':c_project.year, 'projectCode':c_project.projectCode}) }}"
      ="tab"><strong>Outline</strong>
      </a>
</li>
```

3) The content html.twig file will extend the projectDetailTab.html.twig, so that it will be included in the parent file.

```
{#
/src/Jica/PsipBundle/Resources/views/Psip040Outline/projectOutline.h
tml.twig #}
{% extends 'JicaPsipBundle:Menu00Base:projectDetailTab.html.twig' %}

{% block tabcontent %}
      <!-- Tab content -->
      <div class="tab-content" id="printableArea">
          <div class="tab-panel fade active in" id="home-pills">
```

3.3. Create Form with input area

If the data is input type such as Text, TextArea, Dropdown list, checkbox where user interface is required, you can create Form that generates those input areas and transfer the data between View and Controller.There are several ways to create a form from Controller.

3.3.1. createFormBuilder() method

The createFormBuilder() method is used when the form is created directly from inside a controller using the service.

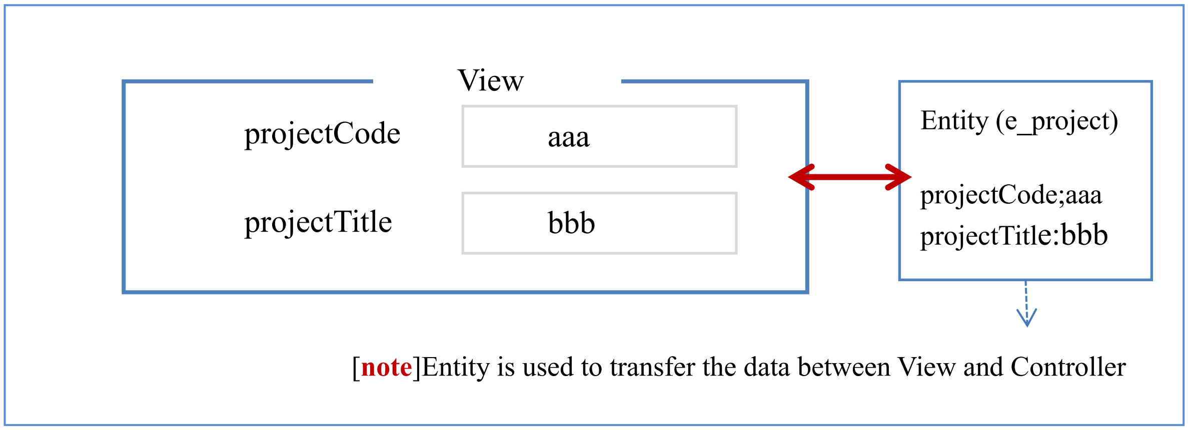
[Syntax]

```
public FormBuilder createFormBuilder(mixed $data = null, array
$options = array())

Creates and returns a form builder instance.
Parameters;
mixed $data   The initial data for the form
array options Options for the form
Return Value;FormBuilder
```

[Example of Controller]

```
$em = $this->getDoctrine ()->getManager ();
$repository=$em->getRepository(‘JicaPsipBundle:Project’);
$e_project=$repository ->findProjectById($projectId);
$form = $this->createFormBuilder(e_project)
->add(‘projectCode’, ’text’)
->add(‘projectTitle’,’text’)
->getForm();
```

You can set the **entity** as first parameter to the createFormBuilder method.This will create two text input area in the View;



Since the input data by a user is set to the entity, you can save it directly to the DB (not necessary to obtain input data from request object.).

```
$form->handleRequest ( $request );

// check if the form is submitted by the user (and not the first
page just to show)
if ($form->isValid ()) {
     $em->flush();
…
```

We can use the same template file for rendering the form in this simple example. Another small difference is that we get the entity manager early on and we won't have to use its'**persist()'** method in the form processing because the $e_project object is already being managed by it. So using '**flush()**' is enough to save it into the database.

You can also get the entity object from the form.

```
$e_entity = $form->getData();
```

3.3.2. createForm() method

As you've seen in the previous example, a form can be created and used directly in a controller. However, a better practice is to build the form in a separate, standalone PHP class, which **can then be reused** anywhere in your application. Create a new class that will house the logic for building the task form by createForm() method:

[Syntax]

```
public Form createForm(string|FormTypeInterface $type, mixed $data =
null, array $options = array())
```

```
Creates and returns a Form instance from the type of the form.
Parameters
string|FormTypeInterface $type  The built type of the form
mixed $data;  The initial data for the form
array $options;   Options for the form
Return Value;Form
```

You can create your own FormType class where you define all the input area that you like to show to avoid defining in the controller and for the reuse of the form.

[example of form type]

```
class Psip210ProjectType extends AbstractType {
  public function buildForm(FormBuilderInterface $builder, array
$options) {
$builder
 /* project status for dropdown list */
    ->add ( 'projectStatus', 'choice', array (
             'choices'    => $arrStatus,
             'multiple'   => false,
             'mapped'     => true,
             'expanded'   => false,
             'label'      => false,
             'empty_data' => null,
             'placeholder'=> 'Please select the option.',
             'required'   => false,
```

Form the controller you can call your form type with createForm() method.
[Controller in Symfony 2.6]

```
$em = $this->getDoctrine ()->getManager ();
$repository=$em->getRepository(‘JicaPsipBundle:Project’);
$e_project=$repository ->findProjectById($projectId);
$form = $this->createForm (
         new Psip210ProjectType (),
         $e_project,
         array(
//       'read_only' => $c_readOnly
```

```
         ) );
```

[Controller in Symfony 2.8]

```
$em = $this->getDoctrine ()->getManager ();
$repository=$em->getRepository(‘JicaPsipBundle:Project’);
$e_project=$repository ->findProjectById($projectId);
$form = $this->createForm (
         Psip210ProjectType::class,
         $e_project,
         array(
//       'read_only' => $c_readOnly
         ) );
```

4. How to work with Doctrine

You can refer Symfony book regarding the Database and Doctrine in Symfony.
https://symfony.com/doc/current/doctrine.html
.

4.1. Fetching objects

[Example]

```
// src/AppBundle/Controller/DefaultController.php
// ...
use AppBundle\Entity\Product;
use Symfony\Component\HttpFoundation\Response;

public function showAction($id)
{
      $em = $this->getDoctrine();
      $productRepository = $em->getRepository('AppBundle:Product');
      // query by the primary key (usually "id")
      $product = $productRepository ->find($id);

      if (!$product) {
          throw $this->createNotFoundException(
          'No product found for id '.$id
      );
}
```

When you query for a particular type of object, you always use what's known as its "repository".

```
$repository = $this->getDoctrine()
      ->getRepository('AppBundle:Product');
```

[note]In PSIP database, the repository name is JicaPsipBundle

The AppBundle:Product string is a shortcut you can use anywhere in Doctrine instead of the full class name of the entity (i.e. AppBundle\Entity\Product).
Once you have your repository, you have access to all sorts of helpful methods:

```
// query by the primary key (usually "id"). Returns only one entity
$product = $repository->find($id);

// dynamic method names to find based on a column value
$product = $repository->findOneById($id);
```

```
$product = $repository->findOneByName('foo');

// find *all* products
$products = $repository->findAll();

// find a group of products based on an arbitrary column value
$products = $repository->findByPrice(19.99);

// query for one product matching by name and price
$product = $repository->findOneBy(
array('name' => 'foo', 'price' => 19.99)
);

// query for all products matching the name, ordered by price
$products = $repository->findBy(
     array('name' => 'foo'),
     array('price' => 'ASC')
);

// fetch Projects table with userId and pass submitted by the user
$e_Projects = $repository->findOneBy(array(
     'userId'  => $f_projects->getUserId(),
     'pass'      => md5($f_projects->getPass())
         );
```

4.2. Persisting Objects (Inserting)

The following method show an example of the persisting objects to the database.

```
// src/AppBundle/Controller/DefaultController.php

// ...
use AppBundle\Entity\Product;
use Symfony\Component\HttpFoundation\Response;

// ...
public function createAction()
{
    $product = new Product();
    $product->setName('Keyboard');
    $product->setPrice(19.99);
    $product->setDescription('Ergonomic and stylish!');

    $em = $this->getDoctrine()->getManager();

    // tells Doctrine you want to (eventually) save the Product (no queries yet)
    $em->persist($product);

    // actually executes the queries (i.e. the INSERT query)
    $em->flush();

    return new Response('Saved new product with id '.$product->getId());
}
```

lines 10-13 you instantiate and work with the $product object like any other normal PHP object.

line 15 This line fetches Doctrine's entity manager object, which is responsible for the process of persisting objects to, and fetching objects from, the database.

line 18 The persist($product) call tells Doctrine to "manage" the $product object. This does not cause a query to be made to the database.

line 21 When the flush() method is called, Doctrine looks through all of the objects that it's managing to see if they need to be persisted to the database. In this example, the $product object's data doesn't exist in the database, so the entity manager executes an INSERT query, creating a new row in the product table.

4.3. Updating an Object

```
public function updateAction($id)
{
$em = $this->getDoctrine()->getManager();
$product = $em->getRepository('AppBundle:Product')->find($id);
if (!$product) {
      throw $this->createNotFoundException(
      'No product found for id '.$id
      );
}
$product->setName('New product name!');
$em->flush();
return $this->redirect($this->generateUrl('homepage'));
}
```

Updating an object involves just three steps:
1. fetching the object from Doctrine;
2. modifying the object;
3. calling flush() on the entity manager

Notice that calling $em->persist($product) isn't necessary. Recall that this method simply tells Doctrine to manage or "watch" the $product object. In this case, since you fetched the $product object from Doctrine, it's already managed.

4.4. Deleting an Object

```
$em = $this->getDoctrine()->getManager();
$em->remove($product);
$em->flush();
```

4.5. Querying for Objects Using Doctrine's Query Builder

For more complex query, you can use Doctrine's QueryBuilder

```
$repository = $this->getDoctrine()
  ->getRepository('AppBundle:Product');

$query = $repository->createQueryBuilder('p')
  ->where('p.price > :price')
  ->setParameter('price', '19.99')
  ->orderBy('p.price', 'ASC')
  ->getQuery();

$products = $query->getResult();
```

By calling the getQuery() method, the query builder returns a normal Query object, which can be used to get the result of the query.

[note]Take note of the setParameter() method. When working with Doctrine, it's always a good idea to set any external values as "placeholders" (:price in the example above) as it prevents SQL injection attacks.

4.6. Querying for Objects with DQL

Instead of using the QueryBuilder, you can alternatively write the queries directly using DQL:

```
$em = $this->getDoctrine()->getManager();

$query = $em->createQuery(
  'SELECT p
  FROM AppBundle:Product p
  WHERE p.price > :price
  ORDER BY p.price ASC'
)->setParameter('price', '19.99');

$products = $query->getResult();
```

If you're comfortable with SQL, then DQL should feel very natural. The biggest difference is that you need to think in terms of "objects" instead of rows in a database. For this reason, you select from the AppBundle:Product object and then alias it as p (as you see, this is equal to what you already did in the previous section).

[note] With DQL, the repository is not required. You can manage data access with Entity Manager.

[note] PSIP database uses DQL for mysql access.

4.7. Isolate DB model from Controller (Custom Repository Classes)

In order to isolate DB complex queries from in side a controller and test and reuse these queries, it's a good practice to create a custom repository class for your entity and add methods with your query logic there.

[note] Backup all the Entity classes and myrepo classes before creating custom repositories. The custom repository classes will be replaced.

(1) To do this, add the name of the repository class to your Entity:

```
// src/AppBundle/Entity/Product.php
namespace AppBundle\Entity;
use Doctrine\ORM\Mapping as ORM;
/**
*
@ORM\Entity(repositoryClass="Jica\PsipBundle\Entity\MyRepo\ProductRepository")
*/
class Product
{
//...
}
```

(2) Doctrine can generate the repository class for you by running the same command used earlier to generate the missing getter and setter methods from your project base directory:

```
php app/console doctrine:generate:entities JicaPsipBundle
```

[note] it seems this is not working.(2015/06/30).

If the (2) is not working, Open de Entity xml and insert the following tag. (/src/Jica/PsipBundle/Resources/config/doctrine/MstVote.orm.xml) and change the entity tag.

```
<entity name="Jica\PsipBundle\Entity\MstVote" table="mst_vote"
repository-class="Jica\PsipBundle\Entity\MyRepo\MstVoteRepository">
```

It seems that the custom repository class should be under Entity.

Run again the following command.

```
php app/console doctrine:generate:entities JicaPsipBundle:MstVote --
no-backup
```

Check if the repository class is created under Entity\MyRepo.

```
<?php
// src/Jica/PsipBundle/Entity/MyRepo/MstVoteRepository.php
namespace Jica\PsipBundle\Entity\MyRepo;

/**
 * MstVoteRepository
 *
 * This class was generated by the Doctrine ORM. Add your own custom
 * repository methods below.
 */
class MstVoteRepository extends \Doctrine\ORM\EntityRepository
{
}
```

(3) Create SQL function in the custom repository

```
use Doctrine\ORM\EntityRepository;
use Doctrine\ORM\Query;
class MstVoteRepository extends \Doctrine\ORM\EntityRepository
{
  /**
   * Get vote code, name and set to array
   * @return type array vote_code;vote_name
   */
  public function getVoteCodeNameOrderedByName()
  {
    $votes =  $this->getEntityManager()
    ->createQuery(
      'SELECT p FROM JicaPsipBundle:MstVote p ORDER BY p.name ASC'
      )
```

```
    ->getResult();

   // create array key vote_code, value;name
    $arrVote = array();
    foreach ($votes as $vote) {
      $arrVote[$vote->getVoteCode()] = $vote->getName();
    }
    return $arrVote;
  }
```

(4) You can use this new method just like the default finder methods of the repository:
[ProjectType.php]

```
use Jica\PsipBundle\Entity\MyRepo\MstVoteRepository;

class ProjectType extends AbstractType
{
  protected $em;

  public function __construct(EntityManager $em)
  {
     $this->em = $em;
  }

     public function buildForm(FormBuilderInterface $builder, array
$options)
     {
     $repository=$this->em->getRepository('JicaPsipBundle:MstVote');
     $arrVoteCodeName= $repository->getVoteCodeNameOrderedByName();
```

you can call it from the Controller, as well;

```
$em = $this->getDoctrine()->getManager();
$products = $em->getRepository('JicaPsipBundle:MstVote')
-> getVoteCodeNameOrderedByName();
```

4.8. How to generate Entity from existing tables (reverse engineering of all tables)

Regarding the reverse engineering, you can refer;
http://symfony.com/doc/current/cookbook/doctrine/reverse_engineering.html

[note] All the tables should have primary key, otherwise will issue the error like"Table psip_operation has no primary key. Doctrine does not support reverseengineering from tables that don't have a primary key."

(1) Backup Entity related files
- \psips\src\Jica\PsipBundle\Resources\config\doctrine
- psips\src\Jica\PsipBundle\Entity
- psips\src\Jica\PsipBundle\Entity\MyRepo

(2) Delete files under the following directory;
- \psips\src\Jica\PsipBundle\Resources\config\doctrine
- psips\src\Jica\PsipBundle\Entity

[note] Do not delete custom repository under;
- psips\src\Jica\PsipBundle\Entity\MyRepo

(3) generate the corresponding metadata files with XML from project base directory

```
php app/console doctrine:mapping:import  --force JicaPsipBundle xml
```

All table XML Metadata are created under;

```
Psips/src/Jica/PsipBundle/Resources/config/doctrine
```

[note] If you want to create specified table

```
php app/console doctrine:mapping:import JicaPsipBundle annotation --
filter="table_name"
```

(4) Once the metadata files are generated, you can ask Doctrine to build related entity classes with annotation by executing the following two commands.

```
php app/console doctrine:mapping:convert annotation ./src
```

If you want to use annotations, you can safely delete the XML (or YAML) files after running these two commands. This command generates entity file for all bundles (not only JicaPsipBundle).

(5) Delete all XML meta files, since the entity classes are generated with annotation. The location is ;

```
psips\src\Jica\PsipBundle\Resources\config\doctrine
```

(6) Set annotation to indicate the location of custom repository in the Entity class. For example if the custome repository for MstBudgetProgram entity is MstBudgetProgramRepository,

```
/**
```

```
 * MstBudgetProgram
 *
@ORM\Entity(repositoryClass="Jica\PsipBundle\Entity\MyRepo\MstBudgetProgramRepository")
 * @ORM\Table(name="mst_budget_program",
uniqueConstraints={@ORM\UniqueConstraint(name="mst_ver_num",
columns={"mst_ver_num", "bp_code"})})
 */
```

[!] Delete the annotation "* @ORM\Entity" generated by the Doctrine.

(7) Generate getter/setter (without backup)

```
php app/console doctrine:generate:entities JicaPsipBundle --no-backup
```

4.9. Association (One to Many/Many to Many)

The Doctrine supports only primary key to realize association of One to Many or Many to Many. This means that it does not support any unique key to associate each other. Since the PSIP ver 2 database does not have the foreign key, you cannot apply the association such as One to Many or Many to Many.

http://doctrine-orm.readthedocs.org/en/latest/reference/limitations-and-known-issues.html#join-columns-with-non-primary-keys

http://stackoverflow.com/questions/24059666/doctrine-2-mapping-referencing-unique-key

You can anyway fetch data joining the tables using DQL with "Join with".

[example of FundOutlayRepository.php]

```
$query = $em->createQuery(
'SELECT o FROM JicaPsipBundle:FundOutlay o
     JOIN JicaPsipBundle:FundSource f
     WITH    o.projectId = f.projectId AND
             o.donorCode = f.donorCode
    WHERE
     o.projectId = :x_projectId AND
     o.year  between :x_startYear and :x_endYear
     ORDER by  f.dispOdr, o.donorCode,o.year
```

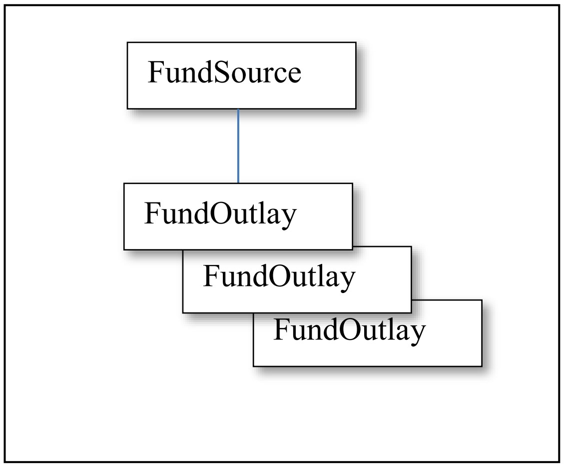
```
        ')
      ->setParameter('x_projectId',$arg_projectId)
      ->setParameter('x_startYear',$arg_startYear)
      ->setParameter('x_endYear',$arg_startYear + 9)
       ;
```

If you want to work the entity with one to many array (without association of the Doctrine), you can insert the ArrayCollection of Doctrine and the array field into the entity **manually**.

```
use Doctrine\Common\Collections\ArrayCollection;
class FundSource
{
    protected $fundOutlays;
    public function __construct() {
        $this->fundOutlays = new ArrayCollection ();
    }
    public function getFundOutlays() {
        return $this->fundOutlays;
    }
    public function setFundOutlays($fundOutlays) {
      $this->fundOutlays = $fundOutlays;
      return $this;
    }
```

The ArrayCollection is specific to Doctrine and is basically the same as using an array (but it must be an ArrayCollection if you're using Doctrine).

The relation between FundSource and FundOutlay entities is as follows;



If you use the form type, you can configure the collection in the Parent form type as FundSource.

```
Class FundSourceType extends AbstractType
public function buildForm(FormBuilderInterface $builder, array
$options)
{
  $builder->add('tags', 'collection', array('type' => new
FundOutlay()));
}
```

You can refer more detail at;
http://symfony.com/doc/current/cookbook/form/form_collections.html

5. BootStrap

Bootstrap is the most popular HTML, CSS, and JavaScript framework for developing responsive, mobile first projects on the web. Bootstrap is so widely used that it has become the de facto standard for frontend development. That's why Symfony 2.6 will include a new form theme designed for Bootstrap 3.
https://symfony.com/blog/new-in-symfony-2-6-bootstrap-form-theme

5.1. CDN (Content Delivery Network)

http://www.bootstrapcdn.com/
Bootstrap provides CDN support for Bootstrap's CSS and JavaScript. Just use these Bootstrap CDN links.

```
<link
href="//maxcdn.bootstrapcdn.com/bootstrap/3.3.2/css/bootstrap.min.cs
s" rel="stylesheet">
```

```
<script
src="//maxcdn.bootstrapcdn.com/bootstrap/3.3.2/js/bootstrap.min.js">
</script>
```

5.2. References

http://www.tutorialspoint.com/bootstrap/bootstrap_quick_guide.htm

5.3. How to customize BootStrap CSS

It is better not to modify directly the CSS files, instead you can go to the customize site;

```
http://getbootstrap.com/customize/
```

1) If you have already any modified version, upload the “config.json” file to the site.
2) Select or modify the settings according to your need.
3) At the bottom of the page, click on "Compile and Download". You will get a bootstrap.zip file containing all the customized files and a `config.json` file.
4) Insert the files you need in your project
5) If you need to regenerate the customized files, go to https://gist.github.com/ and create a new gist containing the content of the `config.json` file

[note] the “config.json” will be found under;

```
/web/bundles/psipweb/css/config.json
```

6. DataTables with jQuery

DataTables is a plug-in for the jQuery Javascript library. It is a flexible tool that will add advanced interaction controls to any HTML table.
The plugin add powerful functions to the table;

- Sort columns
- Paging
- Search box
- Horizontal and vertical scrolling
- Hidden column
- State saving

You can control the featurs by configuring the javascript declaration.
[Example of configuration of default featurs]

```
$(document).ready(function() {
    $('#example').DataTable( {
        "paging":   false,
        "ordering": false,
        "info":     false
    } );
} );
```

6.1. Basic use of Table

6.1.1. CSS

The following CSS library files are loaded for use to provide the styling of the table:

```
<link rel="stylesheet"
href="{{ asset('bundles/psipweb/js/dataTables/jquery.dataTables-
1.10.9.min.css') }}" />
```

6.1.2. JavaScript

The Javascript DataTables library files are loaded.

```
<script
src="{{ asset('bundles/psipweb/js/dataTables/jquery.dataTables-
1.10.9.min.js') }}">
</script>
```

6.1.3. Initialise table

```
$(document).ready(function(){
    $('#myTable').DataTable();
```

```
});
```

[note] To use DataTables, the table must have id that is refered by DataTables. In above case, the table id is 'myTable' which is defined in the table tag as;

```
<table id='myTable'>
```

6.1.4. HTML

For DataTables to be able to enhance an HTML table, the table must be valid, well formatted HTML, with a header (thead) and a single body (tbody). An optional footer (tfoot) can also be used.

```html
<table id="table_id" class="display">
    <thead>
        <tr>
            <th>Column 1</th>
            <th>Column 2</th>
        </tr>
    </thead>
    <tbody>
        <tr>
            <td>Row 1 Data 1</td>
            <td>Row 1 Data 2</td>
        </tr>
        <tr>
            <td>Row 2 Data 1</td>
            <td>Row 2 Data 2</td>
        </tr>
    </tbody>
</table>
```

6.2. Table horizontal/vertical scroll

http://DataTabless.net/extensions/fixedcolumns/examples/initialisation/two_columns.html
http://DataTables.net/examples/basic_init/scroll_xy.html

DataTables enables both horizontal and vertical scrolling at the same time. The Javascript shown below is used to initialise the table with horizontal and vertical scrolling.

```
$(document).ready(function() {
    $('#table_id).DataTable( {
        "scrollY": 200,
        "scrollX": true
    } );
} );
```

The following figure is displayed in Project Performance page using horizonral and vertical scrolling with DataTables.

			NOT APPLICABLE	FY2017/18 (Project Last FY)			
No.	Outputs *	Monitoring Indicators of Outputs *	Cumulative Achievements *	Endline targets *	Initial Annual Targets *	Revised Annual Targets (Adjusted after Approval/ Revised Provision)	Quarter 1 Achievements
1	Output 1	No. of state houses rehabilitated	2 but partial as a routine	2	1 comprehensive		0
2	Output 2	No. of state lodges rehabilitated	2 partial as a routine (Mzuzu and Chikokobay)	3	1 comprehensive		0
3	Output 3	No. of staff houses rehabilitated	0	445	30		0
4							
5							

6.2.1. Tips with DataTables

- To use DataTables, <thead> and <body>tags are required.
- For horizontal and vertical scrolling, it is better avoiding use of colspan or rowspan.

7. Useful information

7.1. Useful commands and information

Useful commands can be mostly provided by Symfony and you can find them under **app/console** folder. To execute those commands, **always go to the project base directory (psips in PSIP Database)**. At the same time, the 'php' are supposed to be declared in your PATH.
The detail of the commands may be explained in each chapter. You can find here as summarized.

(1) Clear cache command for development

```
php app/console cache:clear --no-debug --no-warmup
```

Clear cache command of production

```
php app/console cache:clear --env=prod --no-debug --no-warmup
```

[note] In Linux, you have to be root or apache user to be able to clear the cache, since files in the cache and log folder may be created by "apache" user.

(2) Default template place

```
/app/Resources/views/base.html.twig
```

(3) Location of Views

```
/src/Jica/PsipBundle/Resources/views
```

(4) Location of Logs

```
/app/logs/prod.log
/app/logs/dev.log
```

(5) Routing.yml (top)
[/app/config/routing.yml]

```
jica_psip:
    resource: "@JicaPsipBundle/Controller/"
    type:     annotation
    prefix:   /


app:
    resource: @AppBundle/Controller/
```

```
    type:     annotation
```

(6) List route command

```
php app/console router:debug
```

```
php app/console router:debug v_login
```

You can show detail route information about one route.
[example]

```
php app/console router:debug v_login
[router] Route "v_login"
Name         v_login
Path         /login
Host         ANY
Scheme       ANY
Method       ANY
Class        Symfony\Component\Routing\Route
Defaults     _controller: JicaPsipBundle:Login:login
Requirements
Options      compiler_class: Symfony\Component\Routing\RouteCompiler
Path-Regex   #^/login$#s
```

(7) Bundle update

- Include bundle in composer.json:

```
"require": {
     "apy/datagrid-bundle": "dev-master‶
```

- Invoke composer:

```
php composer.phar update apy/datagrid-bundle
```

(8) Create getter/setter for Entity
[example of command to create getter/setter for Projects entity]

```
php app/console doctrine:generate:entities JicaPsipBundle:Projects
Generating entity "Jica\PsipBundle\Entity\Projects"
  > backing up Projects.php to Projects.php~
  > generating Jica\PsipBundle\Entity\Projects
```

If you do not specify the entity name, all the entities will be targeted. You can use the --no-backup option to prevent generating these backup files.

```
php app/console doctrine:generate:entities JicaPsipBundle --no-
```

```
backup
```

(9) Generate the repository

```
php app/console doctrine:generate:entities JicaPsipBundle
```

(10) Version check

```
php console –version
Symfony version 2.6.9 - app/dev/debug
```

(11) Version up of Symfony

```
php composer.phar update
Loading composer repositories with package information
Updating dependencies (including require-dev)
```

(12) Debugging Symfony

When using PHP, you can use the dump() function from the VarDumper component if you need to quickly find the value of a variable passed. This is useful, for example, inside your controller:

```
// src/AppBundle/Controller/ArticleController.php
namespace AppBundle\Controller;
// ...
class ArticleController extends Controller
{
public function recentListAction()
{
$articles = ...;
dump($articles);
// ...
}
}
```

[note] This dump() method is very useful to debug your code.

The same mechanism can be used in Twig templates thanks to dump function:

```
{# app/Resources/views/Article/recentList.html.twig #}
{{ dump(articles) }}
{% for article in articles %}
<a href="/article/{{ article.slug }}">
{{ article.title }}
</a>
{% endfor %}
```

(13) Doctrine mapping info

```
php app/console doctrine:mapping:info
```

If the mappings are correct, the following message will be shown.

```
Found 47 mapped entities:
[OK]   Jica\PsipBundle\Entity\Achievement
[OK]   Jica\PsipBundle\Entity\Activity
[OK]   Jica\PsipBundle\Entity\AdHoc
[OK]   Jica\PsipBundle\Entity\AppDecision
[OK]   Jica\PsipBundle\Entity\AppResult
[OK]   Jica\PsipBundle\Entity\Const1
[OK]   Jica\PsipBundle\Entity\Contact
[OK]   Jica\PsipBundle\Entity\CostMatrix
[OK]   Jica\PsipBundle\Entity\CostMatrixData
[OK]   Jica\PsipBundle\Entity\CostOutlay
[OK]   Jica\PsipBundle\Entity\FundOutlay
[OK]   Jica\PsipBundle\Entity\FundSource
[OK]   Jica\PsipBundle\Entity\Log
[OK]   Jica\PsipBundle\Entity\MailGroup
[OK]   Jica\PsipBundle\Entity\MailList
[OK]   Jica\PsipBundle\Entity\MeFramework
[OK]   Jica\PsipBundle\Entity\MstAppCategory
[OK]   Jica\PsipBundle\Entity\MstAppItem
[OK]   Jica\PsipBundle\Entity\MstBudgetItem
[OK]   Jica\PsipBundle\Entity\MstBudgetProgram
[OK]   Jica\PsipBundle\Entity\MstBudgetSubItem
[OK]   Jica\PsipBundle\Entity\MstCurrency
[OK]   Jica\PsipBundle\Entity\MstDistrict
[OK]   Jica\PsipBundle\Entity\MstDonor
[OK]   Jica\PsipBundle\Entity\MstExchangeRate
[OK]   Jica\PsipBundle\Entity\MstLineItem
[OK]   Jica\PsipBundle\Entity\MstMda
[OK]   Jica\PsipBundle\Entity\MstMgdsPriority
[OK]   Jica\PsipBundle\Entity\MstMgdsTheme
[OK]   Jica\PsipBundle\Entity\MstSector
[OK]   Jica\PsipBundle\Entity\MstSubItem
[OK]   Jica\PsipBundle\Entity\MstVersion
[OK]   Jica\PsipBundle\Entity\MstVote
[OK]   Jica\PsipBundle\Entity\Outcome
[OK]   Jica\PsipBundle\Entity\OutcomeIndicator
[OK]   Jica\PsipBundle\Entity\OutcomeTarget
[OK]   Jica\PsipBundle\Entity\Outline
[OK]   Jica\PsipBundle\Entity\Output
[OK]   Jica\PsipBundle\Entity\OutputIndicator
```

```
[OK]   Jica\PsipBundle\Entity\OutputTarget
[OK]   Jica\PsipBundle\Entity\Project
[OK]   Jica\PsipBundle\Entity\ProjectCode
[OK]   Jica\PsipBundle\Entity\PsipOperation
[OK]   Jica\PsipBundle\Entity\QtReport
[OK]   Jica\PsipBundle\Entity\RelOutcomeOutput
[OK]   Jica\PsipBundle\Entity\User
[OK]   Acme\DemoBundle\Entity\UserEnt
```

(14) Doctrine list command

```
app/console list doctrine
```

The following table shows the available commands of Doctrine

```
Available commands for the "doctrine" namespace:
 doctrine:cache:clear-collection-region   Clear a second-level cache
collection
region.
 doctrine:cache:clear-entity-region       Clear a second-level cache
entity regi
on.
 doctrine:cache:clear-metadata            Clears all metadata cache
for an entit
y manager
 doctrine:cache:clear-query               Clears all query cache for
an entity m
anager
 doctrine:cache:clear-query-region        Clear a second-level cache
query regio
n.
 doctrine:cache:clear-result              Clears result cache for an
entity mana
ger
 doctrine:database:create                 Creates the configured
database
 doctrine:database:drop                   Drops the configured
database
 doctrine:ensure-production-settings      Verify that Doctrine is
properly confi
gured for a production environment.
 doctrine:generate:crud                   Generates a CRUD based on
a Doctrine e
ntity
 doctrine:generate:entities               Generates entity classes
and method st
ubs from your mapping information
```

```
 doctrine:generate:entity                    Generates a new Doctrine
entity inside
 a bundle
 doctrine:generate:form                      Generates a form type
class based on a
 Doctrine entity
 doctrine:mapping:convert                    Convert mapping
information between su
pported formats.
 doctrine:mapping:import                     Imports mapping
information from an ex
isting database
 doctrine:mapping:info
 doctrine:query:dql                          Executes arbitrary DQL
directly from t
he command line.
 doctrine:query:sql                          Executes arbitrary SQL
directly from t
he command line.
 doctrine:schema:create                      Executes (or dumps) the
SQL needed to
generate the database schema
 doctrine:schema:drop                        Executes (or dumps) the
SQL needed to
drop the current database schema
 doctrine:schema:update                      Executes (or dumps) the
SQL needed to
update the database schema to match the current mapping metadata.
 doctrine:schema:validate                    Validate the mapping
files.
```

(15) Symfony list command

```
app/console
```

(16) Clear cache of doctrine

http://doctrine-orm.readthedocs.org/en/latest/reference/caching.html#clearing-the-cache

```
php app/console doctrine:cache:clear-metadata
php app/console doctrine:cache:clear-query
php app/console doctrine:cache:clear-result
```

(17) Create form type

```
php app/console generate:doctrine:form JicaPsipBundle:FundSource
```

```
The new FundSourceType.php class file has been created under
\psips\src\Jica\PsipBundle/Form/FundSourceType.php.
```

7.2. Procedures to copy sources to another environment (Windows)

According to the environment, execute the following steps to install and copy Symfony project from another environment .

1) Set MySQL path
2) Create Database
3) Import dump data to the database if exists
4) Set php path
5) Copy all the sources (folder of “psips” for example)
6) Clear cache of Symfony

```
php app/console cache:clear
```

if you do not need any debug of cache

```
php app/console cache:clear --no-debug
```

[note] It is important to clear the cache since Symfony and Doctrine set cache information dependent to your configuration.

7) Logs

There are several logs issued by Symfony. They are not necessary to be copied.

- /app/logs/dev.log
- /log/dev.log
- /log/prod.log

8) Production environment

If the page is not found, clear the cache

```
php app/console cache:clear --env=prod --no-debug --no-warmup
```

[note] –no-warmup parameter will not copy the cache to the directory “prod_old”.

7.3. Other Considerations

7.3.1. Validation and constraints in Symfony

Validation is a very common task in web applications. Data entered in forms needs to be validated. Data also needs to be validated before it is written into a database or passed to a web service. Validation can be defined while building the form via the constraints option of the form field.

[Example]

```
public function buildForm(FormBuilderInterface $builder, array
$options)
{
    $builder
        ->add('myField', TextType::class, array(
            'required' => true,
            'constraints' => array(new Length(array('min' => 3)))
        ))
}
```

[note]

The most common option is the required option in the field type (xxxType.php), which can be applied to any field. By default, the required option is set to true, meaning that HTML5-ready browsers will apply client-side validation if the field is left blank. If you don't want this behavior, either **set the required option on your field to false** or disable HTML5 validation.

[note]

Also note that setting **the required option to true will not result in server-side** validation to be applied. In other words, if a user submits a blank value for the field (either with an old browser or web service, for example), it will be accepted as a valid value unless you use Symfony's NotBlank or NotNull validation constraint.

7.4. Session Management

http://stackoverflow.com/questions/18872721/symfony2-security-automatic-logout-after-an-inactive-period

The session is managed programmatically registering the service from the Symfony.

1) First implement the handler with a kernel listener in the SessionIdleHandler.

[/src/Jica/PsipBundle/Handler/SessionIdleHandler.php]

```
<?php
namespace Jica\PsipBundle\Handler;

use Symfony\Component\HttpKernel\HttpKernelInterface;
```

```
use Symfony\Component\HttpKernel\Event\GetResponseEvent;
use Symfony\Component\HttpFoundation\Session\SessionInterface;
use Symfony\Component\Routing\RouterInterface;
use Symfony\Component\HttpFoundation\RedirectResponse;
use Symfony\Component\Security\Core\SecurityContextInterface;

class SessionIdleHandler
{
     protected $session;
     protected $securityContext;
     protected $router;
     protected $maxIdleTime;

     public function __construct(SessionInterface $session,
SecurityContextInterface $securityContext, RouterInterface $router,
$maxIdleTime = 0)
     {
         $this->session = $session;
         $this->securityContext = $securityContext;
         $this->router = $router;
         $this->maxIdleTime = $maxIdleTime;
     }

public function onKernelRequest(GetResponseEvent $event)
{
     if (HttpKernelInterface::MASTER_REQUEST != $event-
>getRequestType()) {

         return;
     }

     if ($this->maxIdleTime > 0) {
         $this->session->start();
         $lapse = time() - $this->session->getMetadataBag()-
>getLastUsed();

         if ($lapse > $this->maxIdleTime) {
```

```
            $this->securityContext->setToken(null);
            $this->session->getFlashBag()->set('info', 'You have
been logged out due to inactivity.');

            // Change the route if you are not using FOSUserBundle.
            $event->setResponse(new RedirectResponse($this->router-
>generate('v_login')));
            }
        }
    }
}
```

The above code redirects the route to login screen if a user is not yet login and wants to use another page directly.

2) Set the configuration to load your bundle service in the extention of your DependencyInjection.

[/src/Jica/PsipBundle/DependencyInjection/JicaPsipExtension.php]

```
$loader = new Loader\YamlFileLoader($container, new
FileLocator(__DIR__.'/../Resources/config'));
        $loader->load('services.yml');}
```

3) Register the service in the services.yml.
[/src/Jica/PsipBundle/Resources/config/services.yml]

```
services:
  my.handler.session_idle:
  class: Comakai\MyBundle\Handler\SessionIdleHandler
  arguments: ["@session", "@security.context", "@router",
‘%session_max_idle_time%’]
 tags:
   - { name: kernel.event_listener, event: kernel.request, method:
onKernelRequest }
```

4) Set the initial parameter to the parameters.yml.dist (or parameters.yml)
[/app/config/parameters.yml.dist]

```
parameters:
    ...
```

```
    session_max_idle_time: 1800
```

In this example, the application will be logged out controlling from the system within 30 minutes. When the session finishes, the login session is required again.

7.5. Performance

http://symfony.com/doc/current/book/performance.html
http://ameblo.jp/amebrokuro/entry-11850665732.html

7.5.1. Check your Symfony configuration

Call web/config.php.The system checks the missing configuration for your environment.

[example]

```
http://localhost/psips/web/config.php
```

7.5.2. Byte Code Cache

The idea of a byte code cache is to remove the need to constantly recompile the PHP source code.As of PHP 5.5, PHP comes with OPcache built-in. For older versions, the most widely used byte code cache is probably APC.

7.5.3. Enable PHP accelerator

http://stackoverflow.com/questions/17224798/how-to-use-php-opcache
From PHP 5.5+, OPcache comes in the library. Just add the following line to your php.ini:

```
zend_extension=/full/path/to/opcache.so (nix)
zend_extension=C:\xamp\php\ext\php_opcache.dll (win)
```

7.5.4. Enable PHP Intl

1) Windows, php 5.5+ in the php.ini

Uncomment the following extension;

```
extension=php_intl.dll
```

8. Programming PSIP Database Application

8.1. How to start programming

8.1.1. Create Controller

1) You can copy another controller or you can copy Psip999BlankController.php which resides;

```
src/Jica/PsipBundle/Controller/Psip999BlankController.php
```

Change the file name.

2) Change the class name to the same file name you have changed above. For example;

```
class Psip450DocAllocationByRespController extends
A0PsipBaseController
```

[note] You can extend the PSIP original Controller "A0PsipBaseController" to make use some functions.

3) Set route annotation for your acction.

```
/**
* @Route("/psipuser/your_path/{projectId}", name="your_URLName")
* @Template()
*/
public function indexAction(Request $request, $projectId)
    {
```

[note] The route can have parameter like /{projectId} if you need. You can omit if not necessary.

4) Set Template twig as annotation.

```
/**
* @Route("/psipuser/your_path/{projectId}", name="your_URLName")
* @Template()
*/
```

The above annotation means that the corresponding twig will be located using naming convention.

```
\psips\src\Jica\PsipBundle\Resources\views\Psip450DocAllocationByRes
p\index.html.twig
```

Same as Action name

Same as Controller

The @Template() annotation uses the name convention, which looks for the corresponding twig template under the bundle\view directory. You create the directory with the same Controller name without "Controller" postfix and the twig file name with action name without "Action" postfix.

8.2. User Role

Role name	Role	Authorization
ROLE_GUEST	Any guest who is registered in the PSIP database.	View only. Some limited use of functions.
ROLE_USER	MDA user registered in the PSIP database.	They can view their own information.
ROLE_PSIP	Desk officers of PSIP section.	They can edit information of any ministry.
ROLE_ADMIN	System Administrator	They can edit information of any ministry. They can access to the system maintenance.

The role hierarchy is declared in the security.yml
[app/config/security.yml]

```
    role_hierarchy:
        ROLE_GUEST:
        ROLE_USER:       ROLE_GUEST
        ROLE_PSIP:       ROLE_USER
        ROLE_ADMIN:      ROLE_PSIP
```

When the user login, this role is retrieved from User table by the system. The role is stored in the session memory and can be refered from both Controller or Twig. You can control the page view by this role. For example, you can show/hide some functions from the menu for specific users.
[src/Jica/PsipBundle/src/Resources/views/Menu00Base/sidebar.html.twig]

```
{#- SubMenu;Show SSubmission Status -#}
{% if is_granted('ROLE_ADMIN') or is_granted('ROLE_PSIP') or
is_granted('ROLE_USER') %}
<li>
<a href="/tload2/submission_status.php">
<i class="glyphicon glyphicon-th-list"></i>Submission Status
</a>
</li>
{% endif %}
```

The above example shows the Submission Status menu visible only for;

- ROLE_USER
- ROLE_PSIP
- ROLE_ADMIN

8.3. Login with Symfony authentication

http://symfony.com/doc/current/security/form_login_setup.html
http://symfony.com/doc/current/security/form_login.html

1) First, enable form login under your firewall:

[app/config/security.yml]

```
    firewalls:
        psipfw:
          pattern:    ^/
          provider:   psip_provider
          form_login:

             check_path: /login_check
             login_path: /login
             default_target_path: /psipuser/announcement
          logout:
            path:     /logout
            target:   /login
          anonymous: ~
```

2) Create a new LoginController inside a bundle:
3) Next, configure the route that you earlier used under your form_login configuration (login):
4) Next, add the logic to loginAction that will display the login form:

```
     $authenticationUtils = $this-
>get('security.authentication_utils');

     // get the login error if there is one
     $error = $authenticationUtils->getLastAuthenticationError();

     // last username entered by the user
     $lastUsername = $authenticationUtils->getLastUsername();
```

```
     // send the control to the HTML view
     return $this->render(
             'JicaPsipBundle:Login:login.html.twig',
             array(
                     // last username entered by the user
                     'last_username' => $lastUsername,
                     'error'         => $error,
             )
     );
```

When the user submits the form, the security system automatically handles the form submission for you. If the user submits an invalid username or password, this controller reads the form submission error from the security system, so that it can be displayed back to the user.

5) Create loginCheckAction

```
public function loginCheckAction()
     {

     }
```

6) Finally, create the template:

```
{# app/Resources/views/security/login.html.twig #}
{# ... you will probably extends your base template, like
base.html.twig #}

{% if error %}
    <div>{{ error.messageKey|trans(error.messageData,
'security') }}</div>
{% endif %}

<form action="{{ path('login') }}" method="post">
    <label for="username">Username:</label>
    <input type="text" id="username" name="_username"
value="{{ last_username }}" />

    <label for="password">Password:</label>
    <input type="password" id="password" name="_password" />
```

```
    {#
        If you want to control the URL the user
        is redirected to on success (more details below)
        <input type="hidden" name="_target_path" value="/account" />
    #}

    <button type="submit">login</button>
</form>
```

The form can look like anything, but has a few requirements:

- The form must POST to the login route, since that's what you configured under the form_login key in security.yml.
- The username must have the name _username and the password must have the name _password.

To review the whole process:

1) The user tries to access a resource that is protected;
2) The firewall initiates the authentication process by redirecting the user to the login form (/login);
3) The /login page renders login form via the route and controller created in this example;
    ① The user submits the login form to /login;
    ② The security system intercepts the request, checks the user's submitted credentials, authenticates the user if they are correct, and sends the user back to the login form if they are not.

8.4. Collection of Form Type

If you want to create multiple entity data, you can use collection type.

1) Create **parent** form type where you can define the collection of entity class.

```
class Psip230FinalAppType extends AbstractType {
…
public function buildForm(FormBuilderInterface $builder, array
$options) {
```

2) Create the **child** form type for one entity.

```
class Psip232AppDecisionTransitionType extends AbstractType {

public function buildForm(FormBuilderInterface $builder, array
```

```
$options) {
$builder
/* Allocation Proposal Status dropdown list */
->add ( 'projectStatus', 'choice', array (
'choices'     => $arrStatusNorO,
'multiple'    => false,
'mapped'      => true,
'expanded'    => false,
'label'       => false,
'empty_data' => null,
status and contributing factors for that decision>.',
'required'    => false,
'read_only'  => false,
'disabled'   => false,
)
)
```

3) Prepare the data to link with the collection in the parent form.

```
// get appDecisionTransition entities with pattern A, B,C,D
$repository = $this->em->getRepository
( 'JicaPsipBundle:AppDecisionTransition' );
$e_appDecisionTransitions=$repository->getFinalPatterns(
  $e_project->getYear(), $e_project->getProjectCode());

// create array with four AppDecisionTransition entities.
$arrAppDecisionTransition=PsipUtil::createRowsObjectBlank (
  4, 'Jica\PsipBundle\Entity\AppDecisionTransition'
);

$arrABCD =array ('A','B','C','D');
if ($e_appDecisionTransitions) {
  foreach ($e_appDecisionTransitions as $e_appDecisionTransition){

  $key=array_search (
    $e_appDecisionTransition->getDecisionStage (),
    $arrABCD
  );
  $arrAppDecisionTransition[$key]=$e_appDecisionTransition;
```

```
  }
}
```

The data that you want to show as default is defined in the array of $arrAppDecisionTransition

4) Add to the builder the collection in the parent form.

```
// create collection of appScoreResult
$builder
 ->add ( 'appDecisionTransitions', 'collection', array (
'type'        => new Psip232AppDecisionTransitionType($this->em),
'data'        => $arrAppDecisionTransition,
'mapped'      => false,
'options'     => array('project'=>$e_project,)
) )
;
```

Child form type

Notice that the data you retrieved from the database is set to the property 'data'. If there are any registered data, they will be displayed.

5) In the html.twig, you can call the child item of the collection with the collection name.

```
{% for appDecisionTransition in form.appDecisionTransitions%}

     <div>
     {{form_widget(appDecisionTransition.projectStatus)}}
     </div>
```

8.5. Example of Form type with Two dimensions

As described before in 4.9Association (One to Many/Many to Many), Symfony requires primary key to have association of ONE to Many relations. Since the DB has no primary key for the association (Foreign key), you can not apply the Doctrine One to Many Association.

If you want to use the collection type of the form with two dimensions, you can configure your entity class as if One to Many relation.

8.5.1. Entity class with array of child objects

1) Create the following fields in the primary entity (parent or association of ONE).
[/src/Jica/PsipBundle/Entity/**OutputIndicator.php**]

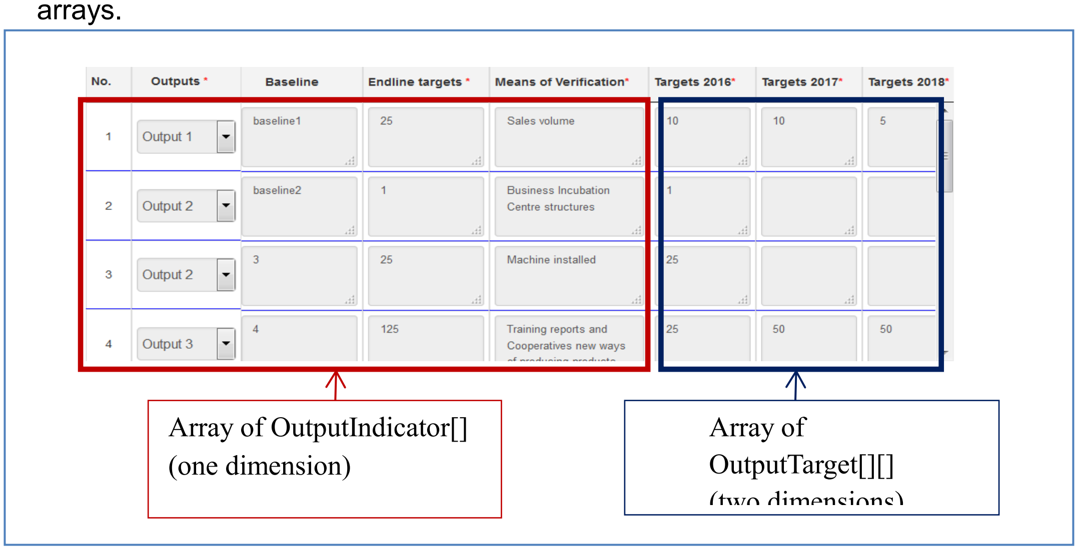
```
use Doctrine\Common\Collections\ArrayCollection;
```

```
class OutputIndicator
/* the fields inserted manually for one to many relation  */
/* ----------------start -------------------*/
{
     protected $outputTargets;
         public function __construct() {
             $this->outputTargets = new ArrayCollection ();
         }
         public function getOutputTargets() {
             return $this->outputTargets;
         }
         public function setOutputTargets($outputTargets) {
             $this->outputTargets = $outputTargets;
             return $this;$outputTargets;
         }
     /* ----------------end -------------------*/
     /* the fields inserted manually for one to many relation   */
```

In the above example, one InputIndicator object may have several OutputTarget objects.

8.5.2. Create form type for collections

1) If you need to create collection fields of two dimensions, try to create the following arrays.



The following table shows the image of arrays in the program.

Output Indicator	Targets 2016	Targets 2017	Targets 2018
OutputInicator[0]	OutputTarget[0]	OutputTarget[0]	OutputTarget[0]
OutputInicator[1]	OutputTarget[1]	OutputTarget[1]	OutputTarget[1]
OutputInicator[2]	OutputTarget[2]	OutputTarget[2]	OutputTarget[2]
OutputInicator[3]	OutputTarget[3]	OutputTarget[3]	OutputTarget[3]

2) To create the above objects array and pass it to the View, first you can create blank OutputIndicator objects with max rows. For example, if the max rows of the OuputIndicator is 10, following code shows an example.

[/src/Jica/PsipBundle/Form/**ProjectMandEType.php**]

```
for($row = 0; $row < 10; $row ++) {
 $outputIndicator = new OutputIndicator();
}
```

The following table is the image of blank table

OutputInicator[0]
OutputInicator[1]
OutputInicator[2]
…
OutputInicator[9]

3) Get the OutputIndicator project data from the OutputIndicator table with the corresponding project ID.

[/src/Jica/PsipBundle/Form/**ProjectMandEType.php**]

```
/*OutputIndicator[]: get output indicators[] from DB  ;  */
$e_outputIndicators = $this->em->getRepository
( 'JicaPsipBundle:OutputIndicator' )
->findOutputIndicatorByIdUsed4Order ( $projectId,”T”);
```

4) Set users output indicator data to the blank array OutputIndicators[]

[/src/Jica/PsipBundle/Form/**ProjectMandEType.php**]

```
// set users output indicator data to the blank array
OutputIndicators[]
foreach ($e_outputIndicators as $e_outputIndicator){
      $odr=$e_outputIndicator->getOdr();
      $arrOutputIndicators[$odr-1]=$e_outputIndicator;
}
```

You can use “odr” as the key of the array.

The following table is the image supposing that the project id “001” has two OutputIndicator data.

OutputInicator[0]<-set outputIndicator of project id “001”
OutputInicator[1]<-set outputIndicator of project id “001”
OutputInicator[2]
…
OutputInicator[9]

5) Create the the blank OutputTarget objects same way but with two dimensions with the number of rows and columns (or number of targets, which is usually project periods).

```
For ($i=0;$i<10;$i++){
      for($row = 0; $row < $projectPeriod; $row ++) {
          $outputTarget = new OutputIndicator();
      }
}
```

What you have created is;

Targets 2016	Targets 2017	Targets 2018
OutputTarget[0]	OutputTarget[0]	OutputTarget[0]
OutputTarget[1]	OutputTarget[1]	OutputTarget[1]
OutputTarget[2]	OutputTarget[2]	OutputTarget[2]
…	…	…
OutputTarget[9]	OutputTarget[9]	OutputTarget[9]

6) Get the OutputTarget data corresponding to the projectID.
[example]

```
$e_outputTargets = $this->em->getRepository
( 'JicaPsipBundle:OutputTarget' )
              ->findOutputTargetsByIdUsed4TypeByOdrTermat(
                  $projectId,
                  Const1Repository::USED4_TOTAL,   //”T”
                  Const1Repository::TERMTYPE_YEAR, //”Y”
                  $project->getYear());            //”start year”
```

7) Set OutputTarget User data to OutputTarget blank array.

```
foreach ($e_outputTargets as $e_outputTarget){
      $odr=$e_outputTarget->getOdr();
      $col = $e_outputTarget->getTermAt() - $project->getYear();
```

```
    $arrOutputTargets[$odr-1][$col]=$e_outputTarget;
}
```

You can use "odr" field for the key of the row, and project period as key for column. For example, what you have created is ;

OutputTarget[0]<-set outputIndicator of project id "001"	OutputTarget[0] (no target)	OutputTarget[0] (no target)
OutputTarget[1]<-set outputIndicator of project id "001"	OutputTarget[1]<-set outputIndicator of project id "001"	OutputTarget[1] (no target)
OutputTarget[2]	OutputTarget[2]	OutputTarget[2]
…	…	…
OutputTarget[9]	OutputTarget[9]	OutputTarget[9]

8) set OutputTargets[][] of two dimensions to OutputIndicator array[].

```
for ($i=0;$i<10;$i++){
$arrOutputIndicators[$i]->setOutputTargets($arrOutputTargets[$i]);
}
```

Finally you have created two dimensions array with project data.

OutputInicator[0]<- set	OutputTarget[0]]<- set	OutputTarget[0] (no target)	OutputTarget[0] (no target)
OutputInicator[1]]<- set	OutputTarget[1]]<- set	OutputTarget[1]]<- set	OutputTarget[1] (no target)
OutputInicator[2]	OutputTarget[2]	OutputTarget[2]	OutputTarget[2]
…	…	…	…
OutputInicator[9]	OutputTarget[9]	OutputTarget[9]	OutputTarget[9]

9) Create the form field to show in the View and pass the above array. [/src/Jica/PsipBundle/Form/ProjectMandEType.php]

```
$builder
->add ( 'outputIndicators', 'collection', array (
      'type'       => new ProjectOutputIndicatorType ($this->em,
$this->project),
      'data'       => $arrOutputIndicators,
      'options'    => array('psip_choices'=> $arrOutputs,
              'psip_projectstatus'=>'N'),
```

```
      'mapped'    => false
      ) );
```

The **'outputIndicators'** is the field name that you can use in the twig View. This is the collection of ProjectOutputIndicatorType where the fields of OutputIndicator are defined.

10) You will add the collection of OutputTargetType inside the OutputIndicatorType class.
[/src/Jica/PsipBundle/Form/**ProjectOutputIndicatorType.php**]

```
$build
      ->add('outputTargets','collection',array(
      'label' => false
      ,'type' => new ProjectOutputTargetType($this->em,
                       $this->project)
      ,'empty_data' => null
      ));
```

This defines that 'outputTargets' field is the collection of ProjectOutputTargetType where each field is defined such as “target”.

[/src/Jica/PsipBundle/Form/**ProjectOutputTargetType.php**]

```
$build
->add('target','textarea',array(
      'label' => false
 ));
```

11) Finally in the Twig of View, you can access with the field names to show the textarea for the “target”.

```
<td>
{{ form_widget(form.outputIndicators[t_row].outputTargets[t_col].target }}
</td>
```

8.6. Set default value to Form Type (with checkbox)

You can set the initial default value to the form type in ‘data’ tag. The following code is the example of psips\src\Jica\PsipBundle\Form\ProjectDetailsType.php.

```
public function buildForm(FormBuilderInterface $builder, array
$options){
// get project status for radio button
```

```
$statusSection=Const1Repository::PROJECTSTATUS;
$repository=$this->em->getRepository('JicaPsipBundle:Const1');
$arrStatus=$repository->getNameValueBySection($statusSection,"id");

$builder
     /* status for search project  */
     ->add('searchStatus', 'choice', array(
     'choices'   => $arrStatus
     ,'multiple' => true
     ,'mapped'   => false
     ,'expanded' => true
     ,'label'    => true
     ,'label_attr' => array('class'=>"checkbox-inline")
     ,'attr'      => array('class'=>"chkstatus psipmarginleft_15")
     ,'empty_data' => null
     ,'data'     =>  isset($this->iArrStatus) ? $this->iArrStatus :
array_keys($arrStatus)
))
;
```

It creates the checkbox with the initial value. If the iArrStatus is set before, then the content of iArrStatus is selected, else all keys retrieved from Const1 table will be selected.

8.7. How to get input data

8.7.1. If you have configured entity in form type

You can get input data by entity object if you have pass the entity to the form.

```
 /*create form to select data*/
$form = $this->createForm (
 new Psip210ProjectType ( $em ),
 $e_projectApp,
 array(
) );
```

After you call HandleRequest who takes care of setting request information to the entity, the passed entity contains already the user input data.

```
 /* HandleRequest writes the submitted request data to the Projects
form entity*/
```

```
$form->handleRequest ( $request );
```

The above variable $e_projectApp contains the input data defined in the form type.

8.8. Session

8.8.1. Information stored in the Session

The following session values are used. Most of the session keys and values are declared in the A0PsipBaseController. Please refer the A0PsipBaseController to see all the session key names.

key	value	obtained	set
s_project	Project object	Selected by user	General Info if the previous route is projectdetail
s_projectStatus	Project status value	Project selected by user	General Info if the previous route is projectdetail
s_currentYear	System current year	Psip Operation table	AuthenticationSuccessHandler: onAuthenticationSuccess()
s_currentYearSelected	Selected year by user	Project detail	A0PsipBaseController
s_objPsipOperation	PsipOperation object	Psip Operation table	AuthenticationSuccessHandler: onAuthenticationSuccess()
s_currentRoute	Current route	Request object in LastRouteListener.php	A0PsipBaseController
s_previousRoute	Previous route	Request object in LastRouteListener.php	A0PsipBaseController

8.8.2. Read_only status

The fields in the Proposal details will be determined if read_only or not through the following procedure.

1) User Login
2) If login is successful, "AuthenticationSuccessHandler" is called as event, where the PsipOperation object is obtained from DB and set to the session.
3) In the projectGeneralInfoAction of Psip030GeneralInfoController, PsipStatus from PsipOperation is obtained from the session object or DB. If "L"(locked), return true as read only.
4) Pass the read_only boolean to the form type where the read_only status is set to each field.

8.8.3. Login timeout

The login timeout is configured in the following file.
[/home/psip/public_html/psips/app/config/config.yml]

```
session:
 # handler_id set to null will use default session handler from
php.ini
  handler_id:  ~
  cookie_lifetime: 7200
  gc_maxlifetime:  1800
  gc_probability: 1
  gc_divisor    : 10000
```

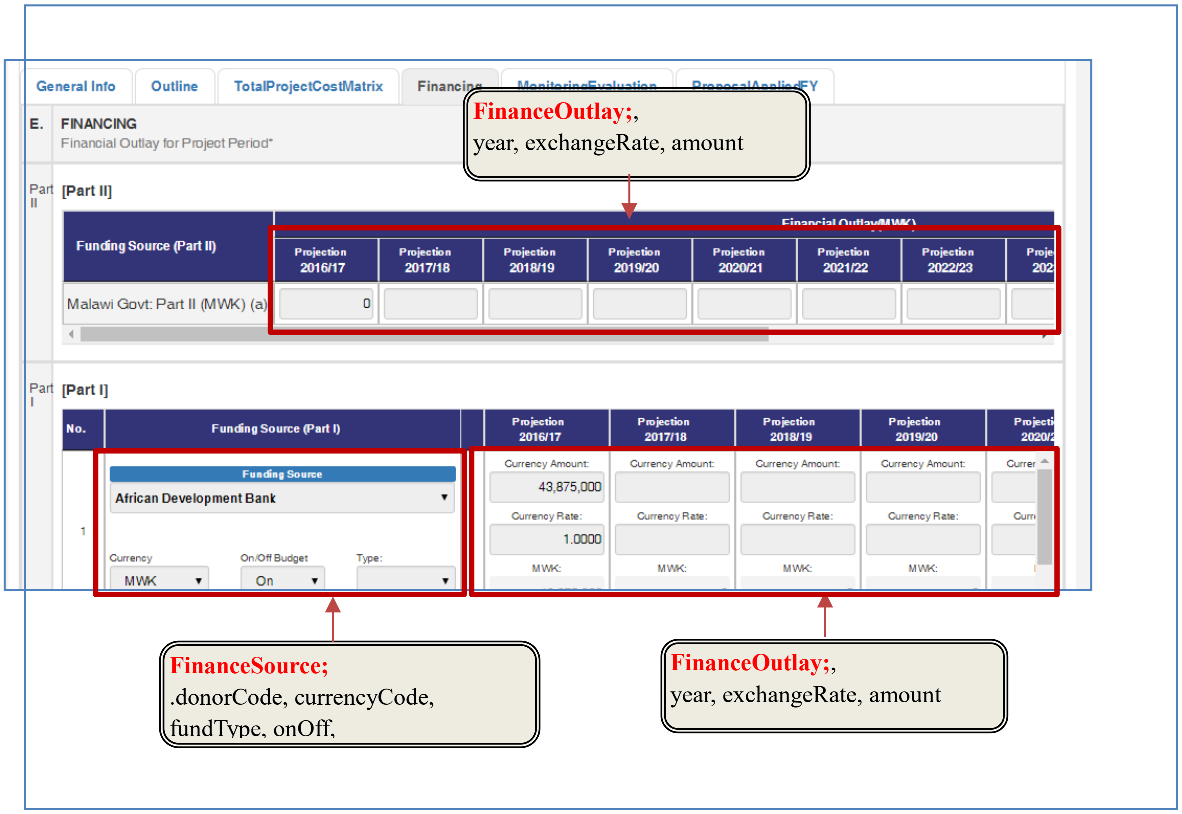
session.gc_maxlifetime; This value (default 1440 seconds) defines how long an unused PHP session will be kept alive.

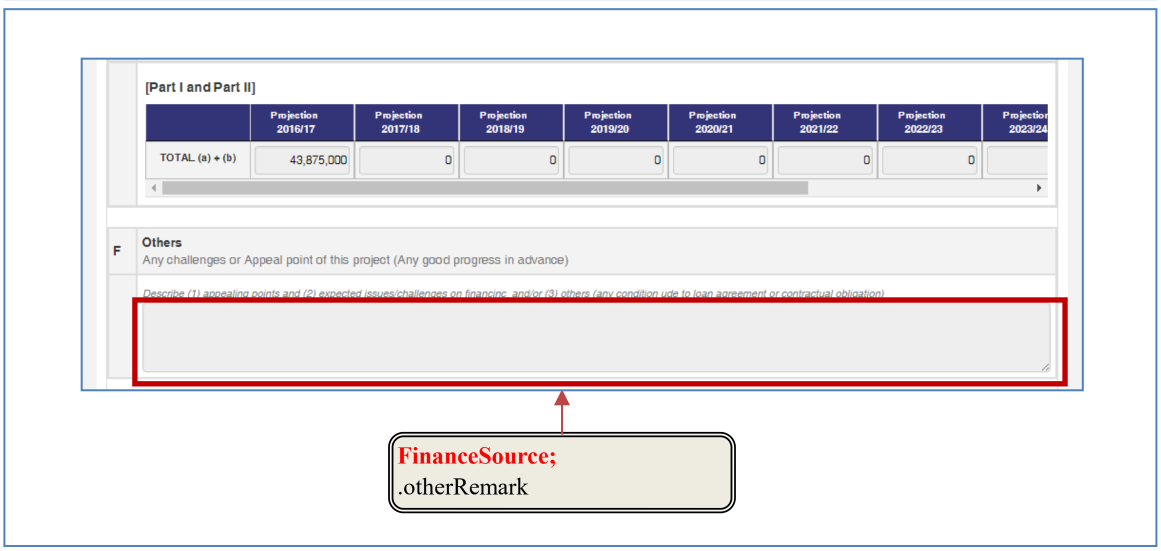
session.cookie_lifetime; This value (default 0, which means until the browser's next restart) defines how long (in seconds) a session cookie will live. This value indirectly defines the "absolute" maximum lifetime of a session, whether the user is active or not. If this value is set to 60, every session ends after an hour.
https://blogs.oracle.com/oswald/entry/php_session_gc_maxlifetime_vs

8.9. Financing

The figures show the screen shot of the Financing page, The related table and colomn names are indicated in the textbox.

8.9.1. New



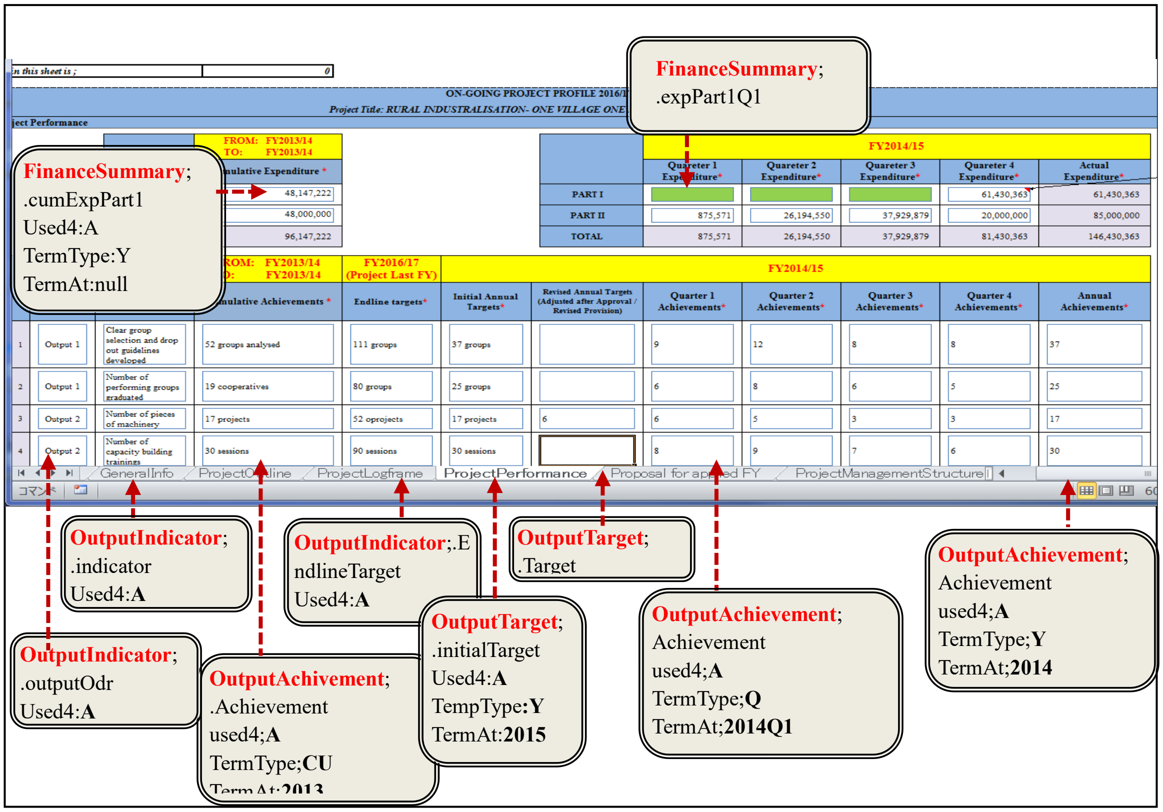


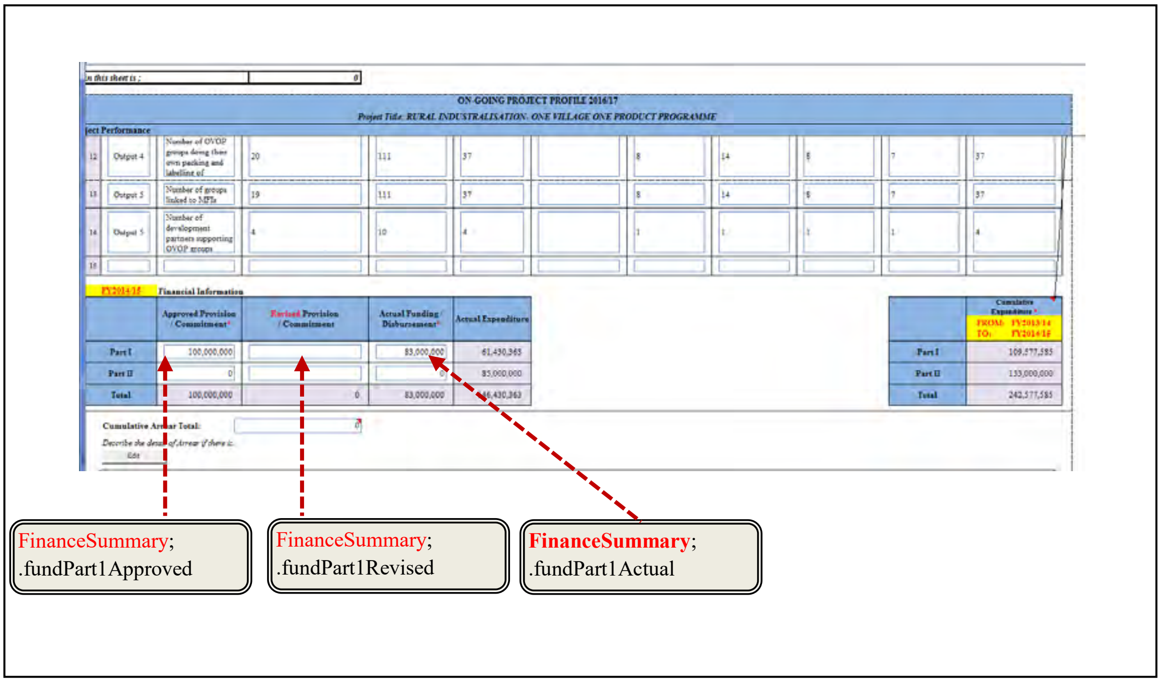
8.10. Project Performance

8.10.1. Annual Performance

The project annual performance tab is shown **only for OnGoing template**. The following figure shows the fields corresponding items of Project Performance in the database tables with the base project year 2016 annual performance that is supposed to be attached with the proposal.

The fields are obtained in the PHP program;
[psips\src\Jica\PsipBundle\Form\ProjectPerformanceType.php]





[note]

The used4 parameter is always ‘A’, since the performance data is Annual. (No performance for New template)

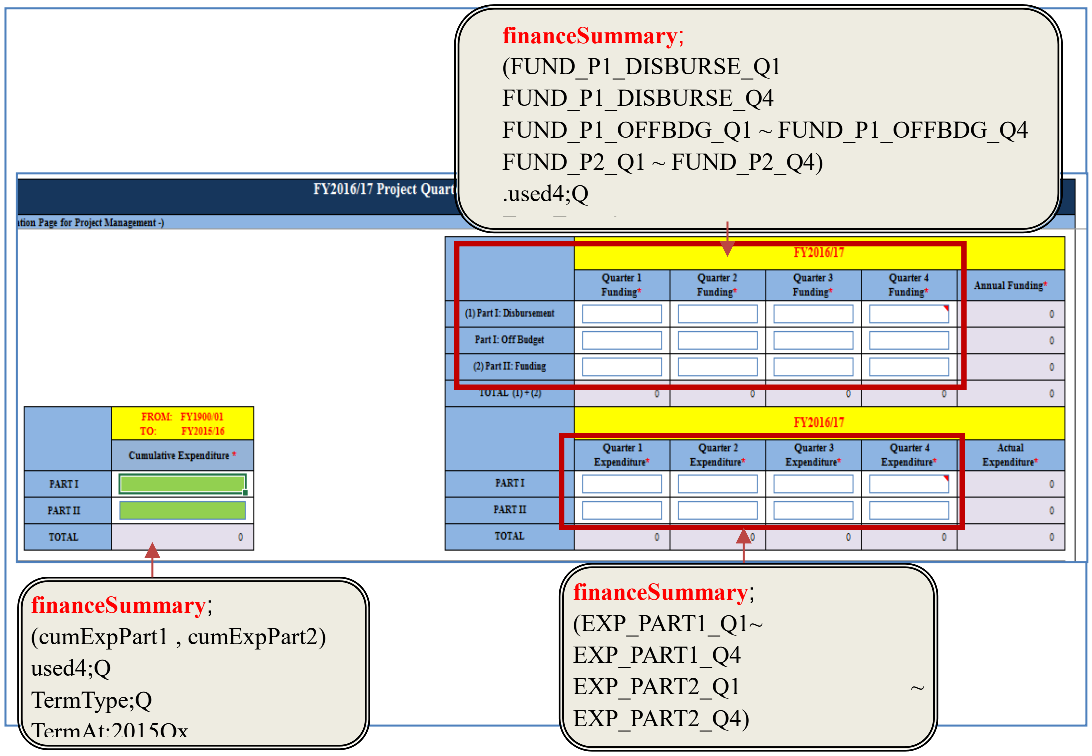
8.10.2. Quarterly Performance

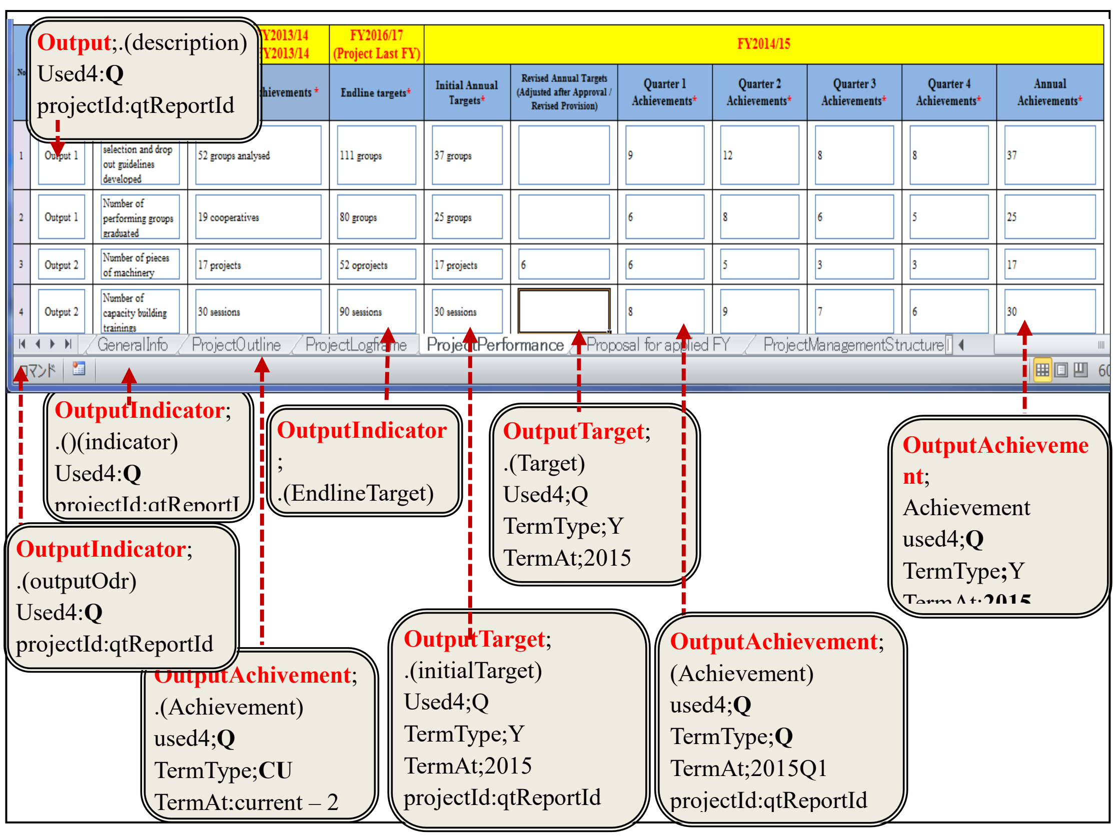
The following figure ilustrates the fields corresponding in the database tables with the quarterly base that is supposed to be submitted with **QTReport**, supposing that the current FY is 2016.

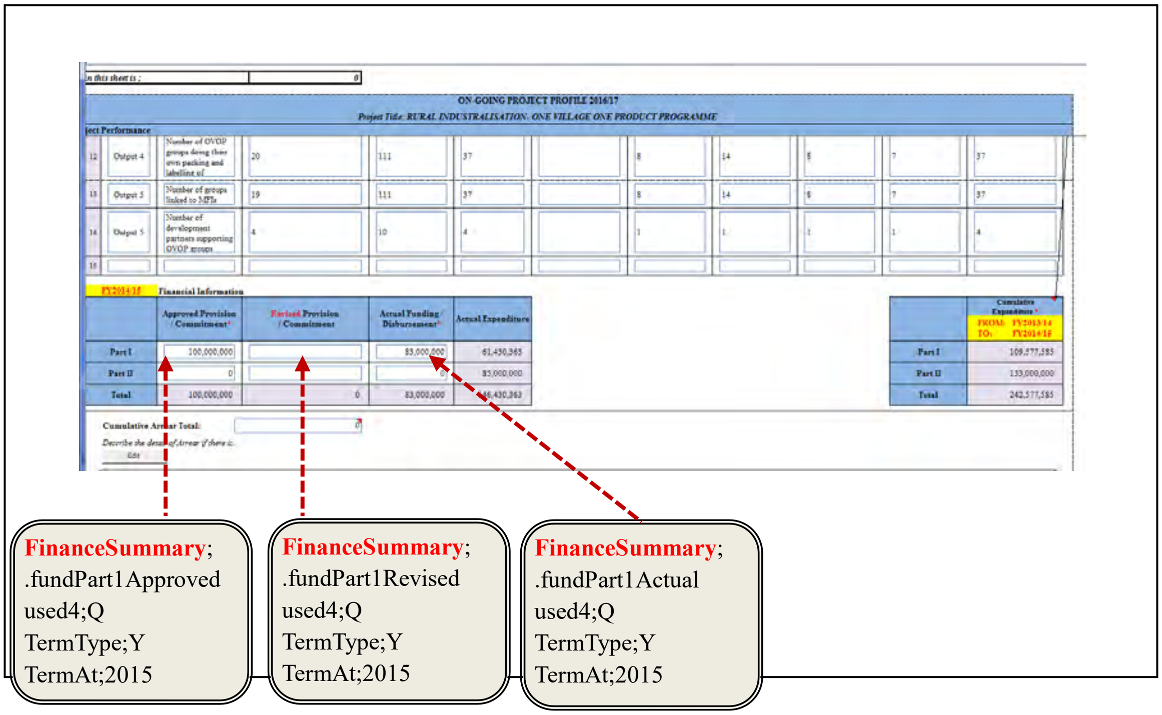
The fields are obtained in the PHP program;

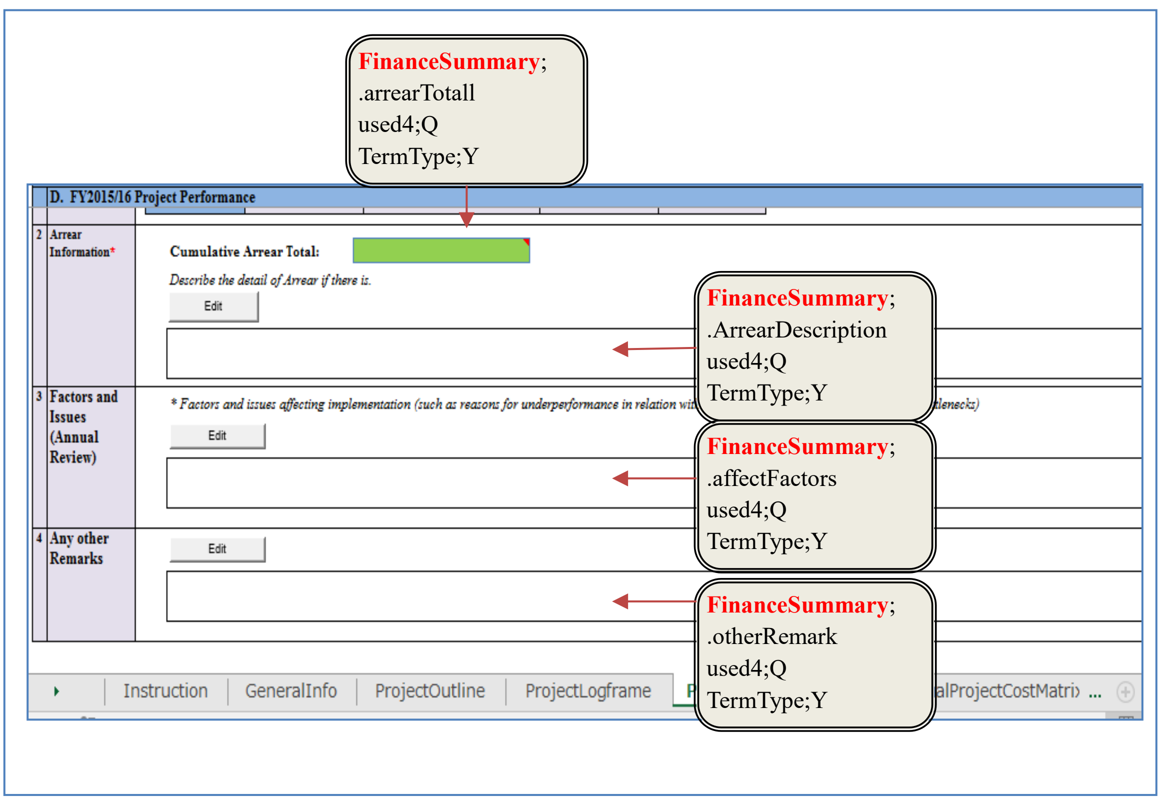
```
psips\src\Jica\PsipBundle\Form\ProjectPerformanceType.php
```

This function is shared with the annual performance.The following conditions are supposed in the figure;


financeSummary;
(FUND_P1_DISBURSE_Q1
FUND_P1_DISBURSE_Q4
FUND_P1_OFFBDG_Q1 ~ FUND_P1_OFFBDG_Q4
FUND_P2_Q1 ~ FUND_P2_Q4)
.used4;Q
FY2016/17 Project Quart
FY2016/17
Quarter 1 Funding*
Quarter 2 Funding*
Quarter 3 Funding*
Quarter 4 Funding*
Annual Funding*
(1) Part I: Disbursement
Part I: Off Budget
(2) Part II: Funding
TOTAL (1)+(2)
FROM: FY1900/01
TO: FY2015/16
Cumulative Expenditure *
PART I
PART II
TOTAL
Quarter 1 Expenditure*
Quarter 2 Expenditure*
Quarter 3 Expenditure*
Quarter 4 Expenditure*
Actual Expenditure*
financeSummary;
(cumExpPart1 , cumExpPart2)
used4;Q
TermType;Q
TermAt:2015Qx
financeSummary;
(EXP_PART1_Q1~
EXP_PART1_Q4
EXP_PART2_Q1 ~
EXP_PART2_Q4)


Output;.(description)
Used4:Q
projectId:qtReportId
FY2016/17 (Project Last FY)
FY2014/15
Endline targets*
Initial Annual Targets*
Revised Annual Targets (Adjusted after Approval / Revised Provision)
Quarter 1 Achievements*
Quarter 2 Achievements*
Quarter 3 Achievements*
Quarter 4 Achievements*
Annual Achievements*
GeneralInfo
ProjectOutline
ProjectLogframe
ProjectPerformance
Proposal for applied FY
ProjectManagementStructure
OutputIndicator;
.()(indicator)
Used4:Q
projectId:qtReportI
OutputIndicator
;
.(EndlineTarget)
OutputTarget;
.(Target)
Used4;Q
TermType;Y
TermAt;2015
OutputAchieveme
nt;
Achievement
used4;Q
TermType;Y
TermAt:2015
OutputIndicator;
.(outputOdr)
Used4:Q
projectId:qtReportId
OutputAchivement;
.(Achievement)
used4;Q
TermType;CU
TermAt:current – 2
OutputTarget;
.(initialTarget)
Used4;Q
TermType;Y
TermAt;2015
projectId:qtReportId
OutputAchievement;
(Achievement)
used4;Q
TermType;Q
TermAt;2015Q1
projectId:qtReportId

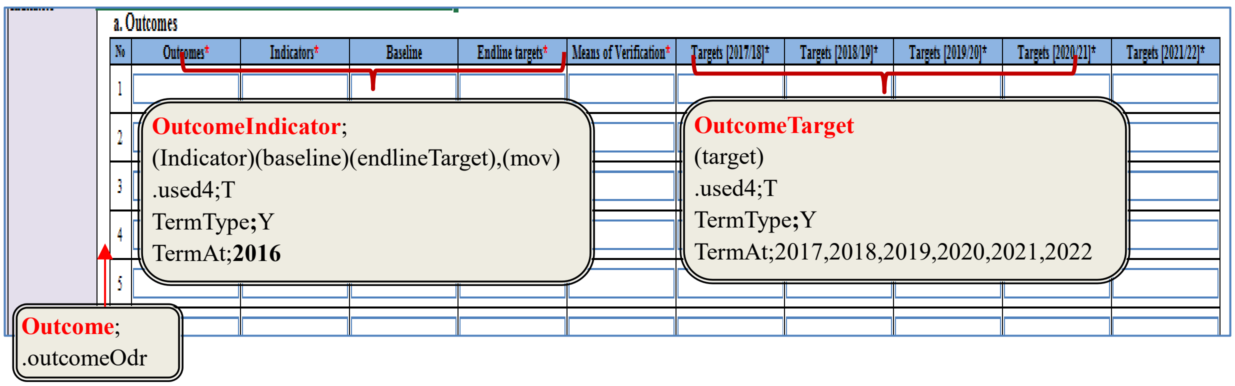

FinanceSummary;
.fundPart1Approved
used4;Q
TermType;Y
TermAt;2015
FinanceSummary;
.fundPart1Revised
used4;Q
TermType;Y
TermAt;2015
FinanceSummary;
.fundPart1Actual
used4;Q
TermType;Y
TermAt;2015


FinanceSummary;
.arrearTotall
used4;Q
TermType;Y
D. FY2015/16 Project Performance
Arrear Information*
Cumulative Arrear Total:
Describe the detail of Arrear if there is.
Edit
FinanceSummary;
.ArrearDescription
used4;Q
TermType;Y
Factors and Issues (Annual Review)
Edit
FinanceSummary;
.affectFactors
used4;Q
TermType;Y
Any other Remarks
Edit
FinanceSummary;
.otherRemark
used4;Q
TermType;Y
Instruction
GeneralInfo
ProjectOutline
ProjectLogframe

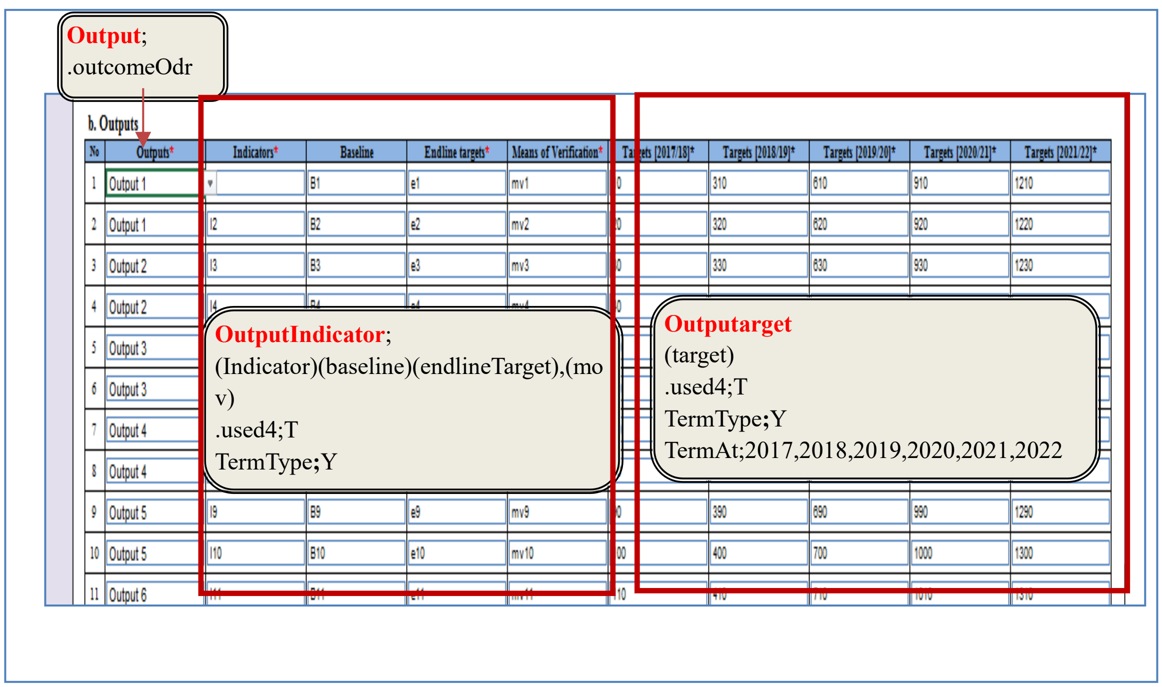
8.11. Monitoring & Evaluation

8.11.1. Outcomes for New (case FY 2016)

There are different New and Ongoing format which will be refered to the "templateType" field of the Project.



8.11.2. Outputs for New



[example of retrieve outputs]

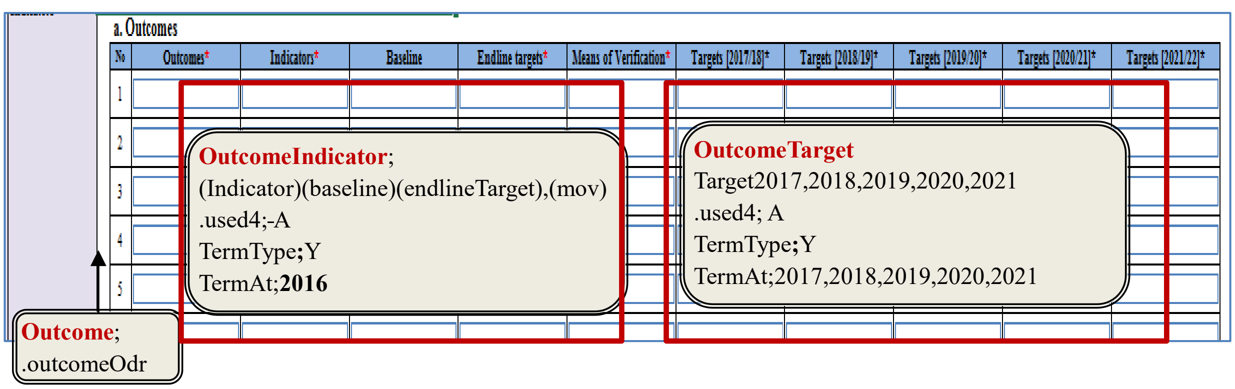
```
select  p.project_id, p.project_code, p.year, p.vote_code,
p.project_status,
o.output_odr,i.indicator,i.baseline,i.endline_target,
i.mov, t.used4, t.odr, term_at, target
from project p
LEFT JOIN output o
on p.project_id = o.project_id

LEFT JOIN output_target t
on o.project_id = t.project_id
and
o.output_odr = t.odr

LEFT JOIN outcome_indicator i
on p.project_id = i.project_id
and
o.output_odr = i.odr

where p.year > 2015
and
t.term_at > '2015'

order by project_id, odr
```

[Result of Outputs SQL all data]

	projec	project	year	vote_c	proje	output_odr	indicator	baseline	endline_target	mov	used4	odr	term_at	target
1	650	1699	2016	070	P	1	Modern judicial	[NULL]	Lecturer	Officers, staff	T	1	2016	Model adopted
2	650	1699	2016	070	P	1	Modern judicial	[NULL]	Lecturer	Officers, staff	T	1	2017	0
3	650	1699	2016	070	P	1	Modern judicial	[NULL]	Lecturer	Officers, staff	T	1	2018	0
4	650	1699	2016	070	P	2	[NULL]	[NULL]	[NULL]	[NULL]	T	2	2016	Design ready
5	650	1699	2016	070	P	2	[NULL]	[NULL]	[NULL]	[NULL]	T	2	2017	0
6	650	1699	2016	070	P	2	[NULL]	[NULL]	[NULL]	[NULL]	T	2	2018	0
7	666	1824	2016	460	P	1	Architechtural	[NULL]	Office complex	Reports from	T	1	2016	Land acqusition,
8	666	1824	2016	460	P	1	Architechtural	[NULL]	Office complex	Reports from	T	1	2017	Completion of
9	666	1824	2016	460	P	2	Works plan,	[NULL]	Tarmac/Bitumen	Reports	T	2	2017	SOWs,
10	666	1824	2016	460	P	2	Works plan,	[NULL]	Tarmac/Bitumen	Reports	T	2	2018	Completion of
11	666	1824	2016	460	P	3	Works plan,	[NULL]	Office complex	Reports from	T	3	2016	Land acqusition,
12	666	1824	2016	460	P	3	Works plan,	[NULL]	Office complex	Reports from	T	3	2017	Completion of
13	666	1824	2016	460	P	4	Architechtural	[NULL]	Office complex	Reports from	T	4	2016	Land acqusition,
14	666	1824	2016	460	P	4	Architechtural	[NULL]	Office complex	Reports from	T	4	2017	Completion of
15	666	1824	2016	460	P	5	Architechtural	[NULL]	Office complex	Reports from	T	5	2016	Architechural
16	666	1824	2016	460	P	5	Architechtural	[NULL]	Office complex	Reports from	T	5	2017	Completion of
17	667	1681	2016	420	P	1	No. of reports	[NULL]	3	reports	T	1	2016	3
18	668	1679	2016	420	P	1	Reports	[NULL]	3 reports	Reports	T	1	2016	3
19	669	1462	2016	080	P	1	Number of	15	60	Committee	T	1	2016	1
20	669	1462	2016	080	P	1	Number of	15	60	Committee	T	1	2017	0
21	669	1462	2016	080	P	1	Number of	15	60	Committee	T	1	2018	0
22	669	1462	2016	080	P	1	Number of	15	60	Committee	T	1	2019	0
23	669	1462	2016	080	P	1	Number of	15	60	Committee	T	1	2020	0
24	684	1703	2016	090	N	1	Methodologies	[NULL]	4	Reports	T	1	2016	4
25	684	1703	2016	090	N	1	Methodologies	[NULL]	4	Reports	T	1	2017	4
26	684	1703	2016	090	N	1	Methodologies	[NULL]	4	Reports	T	1	2018	4

Result 1 Result 2

8.11.3. Outcomes/Outputs for OnGoing



[Example of Outputs SQL statement for Ongoing only]

```
select  p.project_id, p.project_code, p.year, p.hist_num,
p.vote_code, p.project_status,
o.output_odr,i.indicator,i.baseline,i.endline_target,
i.mov,
 t.used4, t.odr, term_at, target
from project p
LEFT JOIN output o
on p.project_id = o.project_id
```

```
LEFT JOIN output_target t
on o.project_id = t.project_id
and
o.output_odr = t.odr

LEFT JOIN outcome_indicator i
on p.project_id = i.project_id
and
o.output_odr = i.odr

where p.year > 2015
and
t.term_at > '2015'
and project_status = 'O'

order by project_id, odr
;
```

[Result of Execution]

	project_	projec	year	hist_num	vote_c	project	output_	indicator	baseline	endline_target	mov	used4	odr	term_at	target
13	873	1717	2016	0	190	O	7	[NULL]	[NULL]	[NULL]	[NULL]	T	7	2017	100
14	873	1717	2016	0	190	O	7	[NULL]	[NULL]	[NULL]	[NULL]	T	7	2016	25
15	873	1717	2016	0	190	O	8	[NULL]	[NULL]	[NULL]	[NULL]	T	8	2017	5
16	873	1717	2016	0	190	O	8	[NULL]	[NULL]	[NULL]	[NULL]	T	8	2016	10
17	2074	1707	2016	3	130	O	1	Percentage of	55%	100%	Performance	T	1	2020	3
18	2074	1707	2016	3	130	O	1	Percentage of	55%	100%	Performance	T	1	2018	3
19	2074	1707	2016	3	130	O	1	Percentage of	55%	100%	Performance	T	1	2017	2
20	2074	1707	2016	3	130	O	1	Percentage of	55%	100%	Performance	T	1	2019	8
21	2074	1707	2016	3	130	O	1	Percentage of	55%	100%	Performance	T	1	2016	7
22	2083	1731	2016	0	190	O	1	% of people	[NULL]	85% of basin	Household	T	1	2017	Detailed designs
23	2083	1731	2016	0	190	O	1	% of people	[NULL]	85% of basin	Household	T	1	2018	Contractor
24	2083	1731	2016	0	190	O	8	[NULL]	[NULL]	[NULL]	[NULL]	T	8	2016	MoU
25	2083	1731	2016	0	190	O	9	[NULL]	[NULL]	[NULL]	[NULL]	T	9	2017	Contract signed
26	2112	1772	2016	2	275	O	1	Improved	Graduation	95% graduation	Reports of	T	1	2016	Completion of a
27	2112	1772	2016	2	275	O	2	Increased staff	Graduation	95% graudaton	Financial	T	2	2016	Completion of a
28	2112	1772	2016	2	275	O	3	Improved	Currently at	Raise in ranking	World rankng	T	3	2016	Completed
29	2112	1772	2016	2	275	O	4	Improved	Fuel	Fuel	Yearly	T	4	2016	Electrified and
30	2112	1772	2016	2	275	O	5	Increased	Admissions	Admission to	Reports of	T	5	2016	Fully electrified,
31	2220	1590	2016	0	342	O	1	[NULL]	[NULL]	[NULL]	[NULL]	T	1	2017	1
32	2220	1590	2016	0	342	O	1	[NULL]	[NULL]	[NULL]	[NULL]	T	1	2016	2
33	2245	1804	2016	0	400	O	1	Improved port	[NULL]	100%	Feasibility Study	T	1	2017	N/A
34	2245	1804	2016	0	400	O	1	Improved port	[NULL]	100%	Feasibility Study	T	1	2018	N/A
35	2245	1804	2016	0	400	O	1	Improved port	[NULL]	100%	Feasibility Study	T	1	2016	Feasibility study
36	2437	1772	2016	0	275	O	1	Improved	Graduation	95% graduation	Reports of	T	1	2016	Completion of a
37	2437	1772	2016	0	275	O	2	Increased staff	Graduation	95% graudaton	Financial	T	2	2016	Completion of a
38	2437	1772	2016	0	275	O	3	Improved	Currently at	Raise in ranking	World rankng	T	3	2016	Completed
39	2437	1772	2016	0	275	O	4	Improved	Fuel	Fuel	Yearly	T	4	2016	Electrified and

Result 1 Result 2

[note]

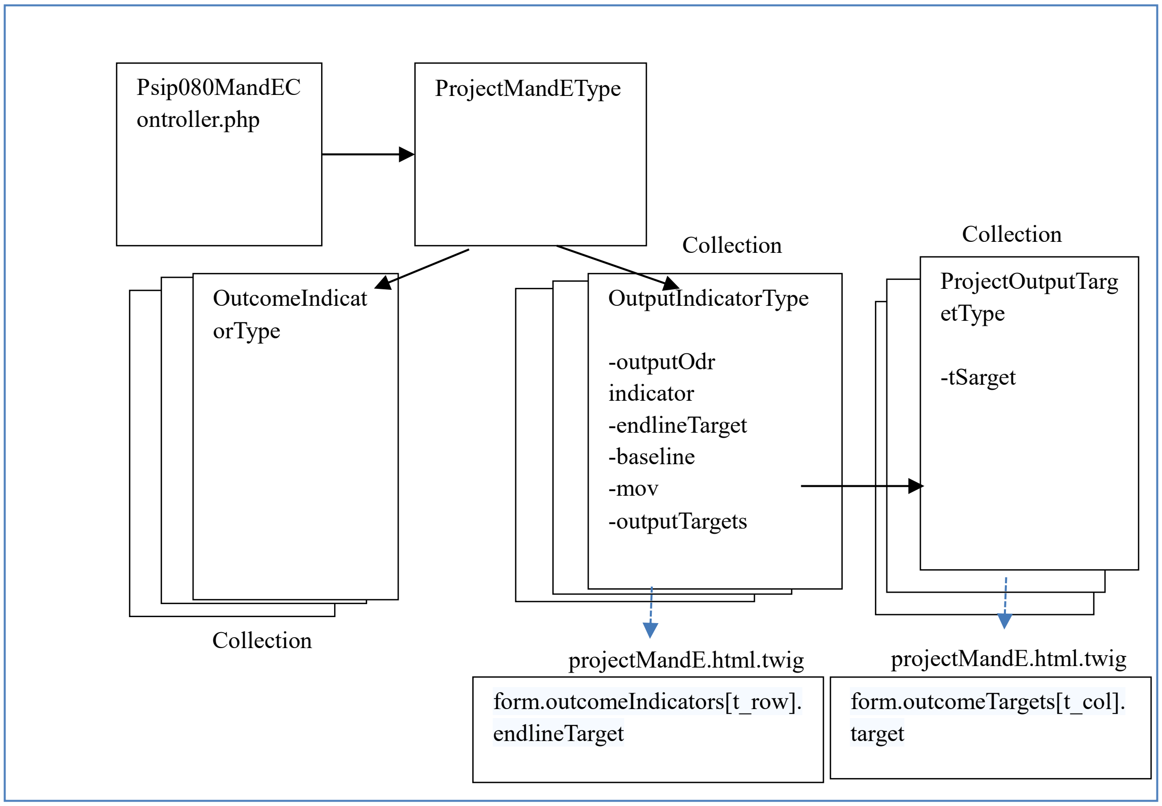
'used4' for the related tables is differente in New and Ongoing.

New; used4 = 'T' (represents **total years information**)

Ongoing; used4 = 'A' (represents **annual** information)

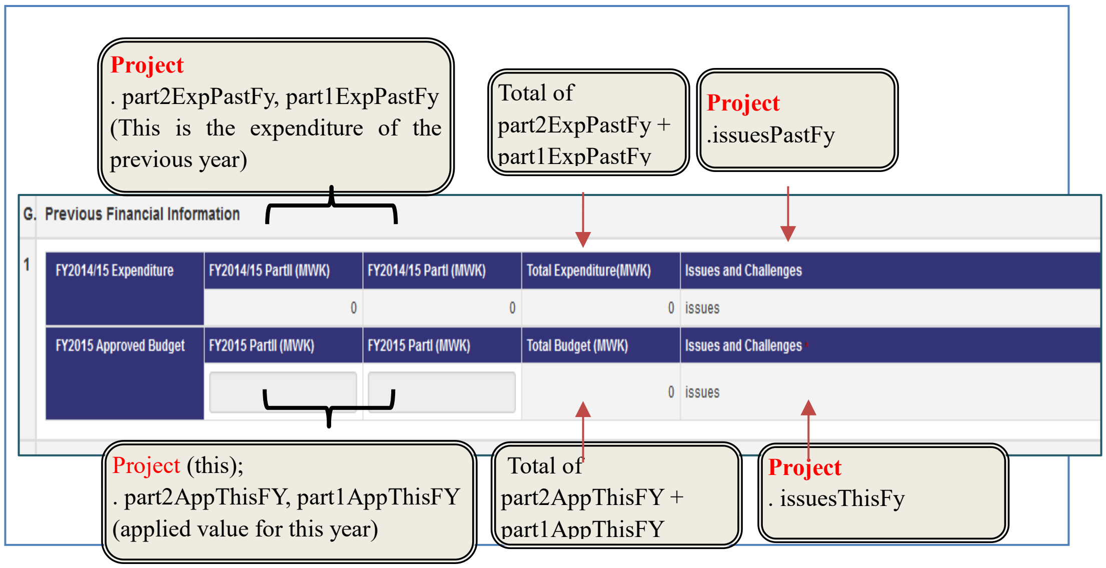
8.11.4. Controller and form type relation

In the Monitoring and Evaluation, the top form is ProjectMandEType. It has collection of OutputIndicatorType forms. Each OutputIndicatorType class has also collection of ProjectOutputTargetType class. The following figure shows the relation of the form type and its collection.

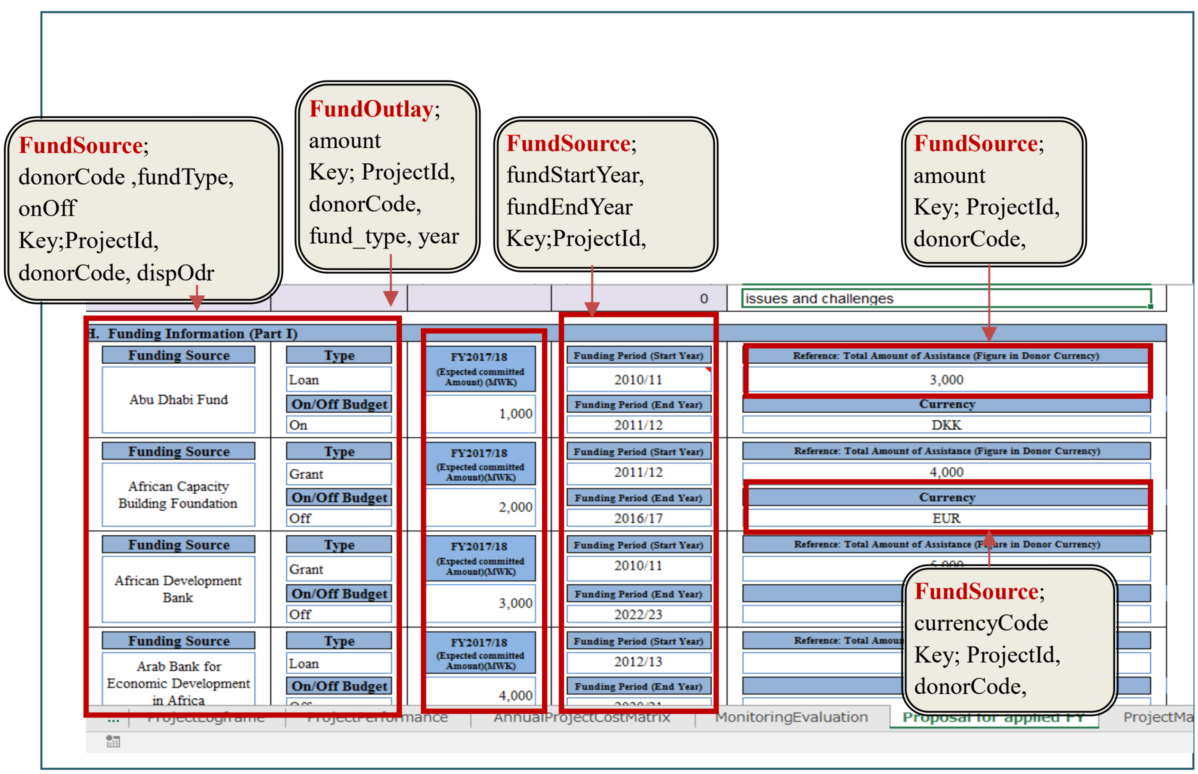


8.12. ProposalAppliedFy (OnGoing)

8.12.1. Previous Financial Information

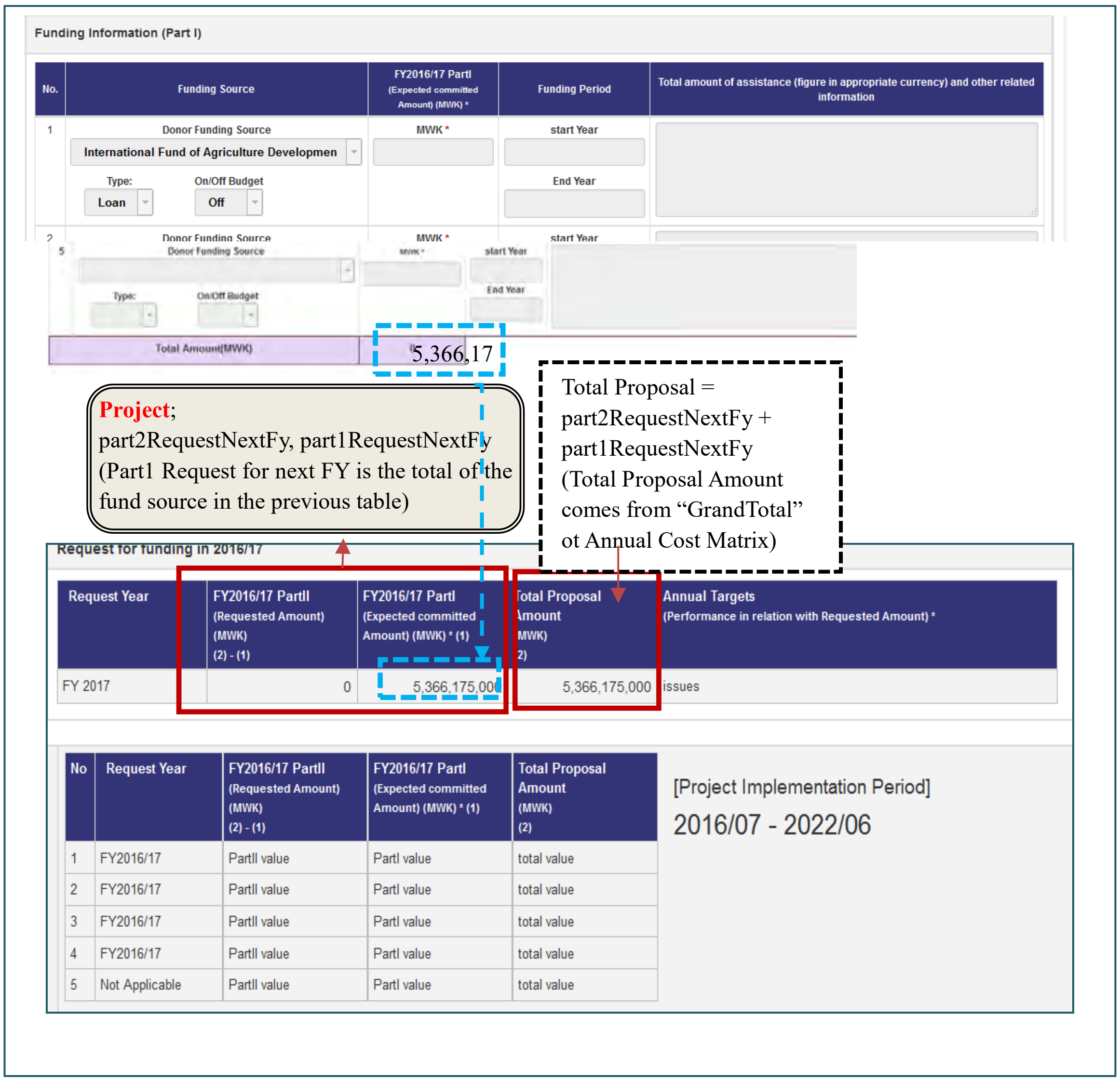


8.12.2. Funding Source

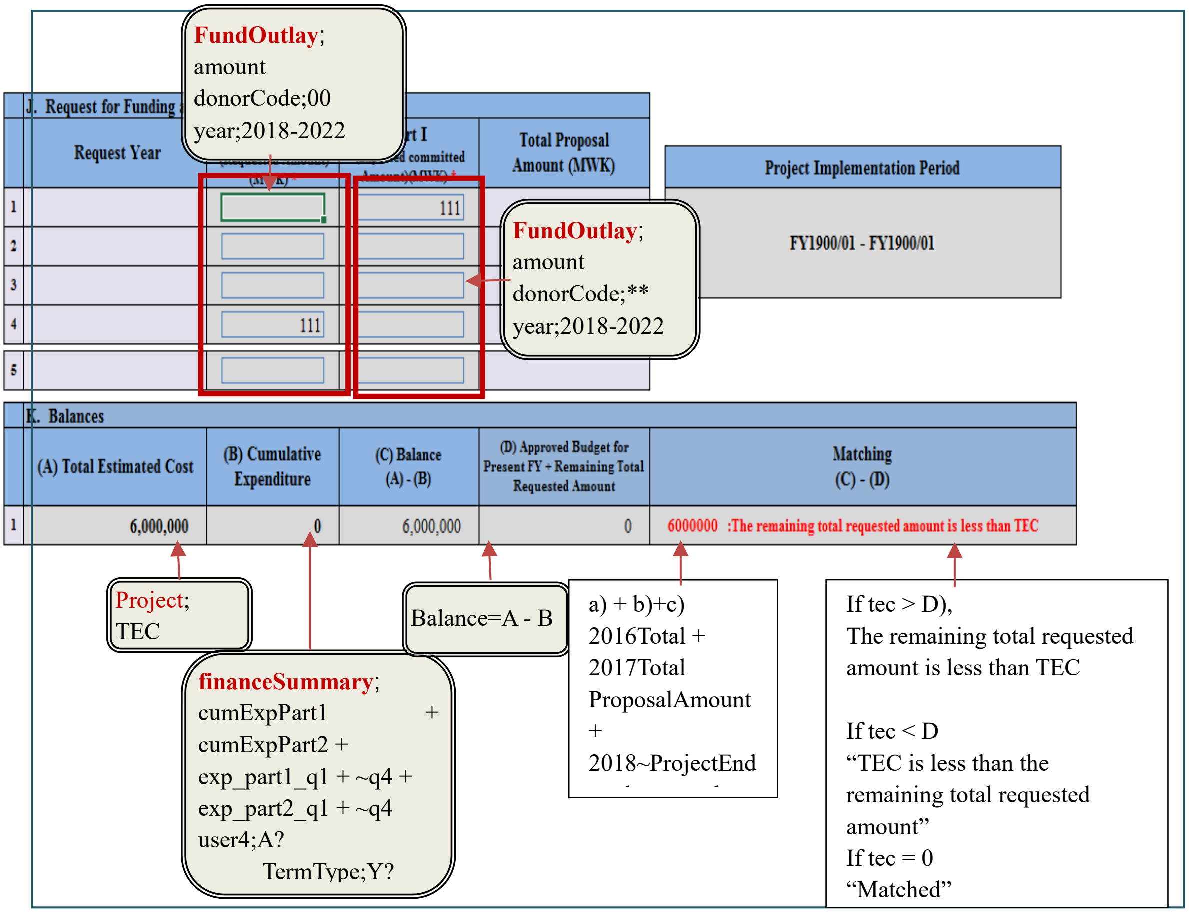


- Dropdown list of Funding Period (Start Year);
From start year FY of project start year until Project end year FY
- Dropdown list of Funding Period (End Year);
From User input year of of Funding Period (Start Year) until Project end year FY

8.12.3. Request for funding



8.12.4. Balances

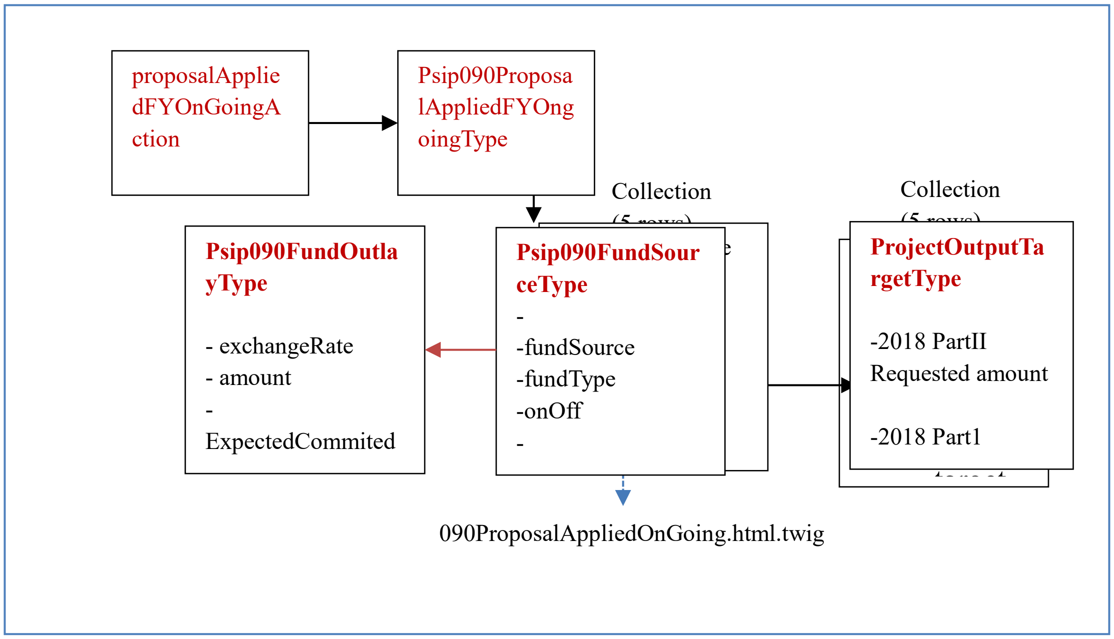


[note]

- In the fundOutlay table, you can obtain the request amount from the next year. For part1 of Donor total request amount for each year, set ** as donorCode.
- For part2, set "00" to donor code to obtain the request amount for the corresponding year.

8.12.5. FormType relations and structure

ProposalAppliedFy screen consist of the top form type of Psip090ProposalAppliedFyOntoingType. It contains the collection of Psip090FundSourceType form which also contains the collection of ProjectOutputTargetType form.



8.12.6. How to create collection form type

1) In the controller, create form Psip090ProposalAppliedFYOngoingType based on Project Entity and pass the project entity with data.

[src/Jica/PsipBundle/Controller/Psip090ProposalAppliedFYController.php]

```
// create form for Project entity
$form = $this->createForm(
     new Psip090ProposalAppliedFYOngoingType
     ($em, $e_project),
     $e_project,
     array(
          'read_only' => $c_readonly
     )
);Create top form type (Psip090ProposalAppliedFYOngoingType)
```

Pass the form type where input fields are defined

Pass the project entity data, so that the data will be displayed as default

2) In the Psip090ProposalAppliedFYOngoingType form, create fields you want to display which data is related to project entity.

3) If there is any collection type that requires array of information, prepare the array of entity type.

[src/Jica/PsipBundle/Entity/MyRepo/FundSourceRepository.php]

```
public function findDonorFundSourceOutlay(
```

```
             $arg_projectId, $arg_year )
{
$em = $this->getEntityManager();
$query = $em->createQuery(
  'SELECT s , o
  FROM JicaPsipBundle:FundSource s
  LEFT JOIN JicaPsipBundle:FundOutlay o
  WITH
    s.projectId=o.projectId AND
    s.donorCode=o.donorCode AND
    s.fundType = o.fundType AND
    o.year = :x_year
    WHERE
             s.projectId = :x_projectId AND
             s.donorCode <> :x_malawi
    ORDER by s.dispOdr
    ')
      ->setParameter('x_projectId',$arg_projectId)
      ->setParameter('x_year',$arg_year)
      ->setParameter('x_malawi',"00")
      ->setMaxResults(5)

  ;

  $results = $query->getResult();

  $arrFundSources = array();
  for ($i=0;$i<count($results); $i++){
    $fundSource= $results[$i] ;
    $i++;
    $fundSource->setFundOutlay($results[$i]);
    $arrFundSources[] =$fundSource;

  }
  return $arrFundSources;
//      return $results;
}
```

4) Next, call above DB access function to get necessary FundSource and FundOutlay data.

[src/Jica/PsipBundle/Form/Psip090ProposalAppliedFYOngoingType.php]

```
/* FundSource; Get FundSource Entity Array[] for Donors with Year
and start date, exclude Malawi source (donor_code="00" */
$e_FundSources = $this->em->getRepository
( 'JicaPsipBundle:FundSource' )
     ->findDonorFundSourceOutlay ( $this->projectId, $this->project-
>getYear ());
```

5) Create collection type passing the retrieved entities to the form type.

[src/Jica/PsipBundle/Form/Psip090ProposalAppliedFYOngoingType.php]

```
/* show FundOutlay and Fundsource for 5 Donors   */
```

The name you want to refer in the twig

Set type as collection

```
->add ('donorFundSourceOutlay', 'collection', array (
  'type' => new Psip090FundSourceType ($this->em, $this->project),
```

Create another form type where you define fields of another DB

Define the collection data you have retrieved to display as default

```
  'data' => $e_FundSources,
  'mapped'       => false,
  'options'   => array('read_only'=>$options['read_only'],)
) )
  ;
```

6) In the Psip090FundSourceType form, define the fields that can be retrieved from FundSource entity.
7) When you want to show the FundOutlay entity data, you have to create another form type

```
/*  show one fundOutlay for donors*/
$builder->add('fundOutlay', new Psip090FundOutlayType(),
  array(
    'label'   => false,

  ));;
```

[important] when you want the fields to be mapped with the data you passed in the ‘data’ parameter, the field name should correspond. For example, in the above case, ‘fundOutlay’ should exist inside the FundSource entity.

[FundSource.php]

```
  /*FundOutlay entity*/
  protected $fundOutlay;
```

8) Create Psip090FundOutlayType form.

```
$builder
/* show  Outlay amount */
->add('amount', 'number',
         array(
         'label'      => false
         ,'grouping'  => true
));

$builder
->add('exchangeRate', 'number',
         array(
         'label'  => false
))
->add('ExpectedCommitedAmount', 'number',
         array(
         'label'   => false
        ,'mapped'   => false
        ))
;
```

8.13. QTReport

8.13.1. QTReport Status list screen

The year, status and vote are the items selected by user. The data of QTReport Status list is extracted with the following conditions to check if the QT report is submitted.

1) get Project from DB by selected status & vote & year

This retrieves projects with selected year. Usually it is one year before the current year.

2) Retrieve all projects next year with status Ongoing, New, Ending.

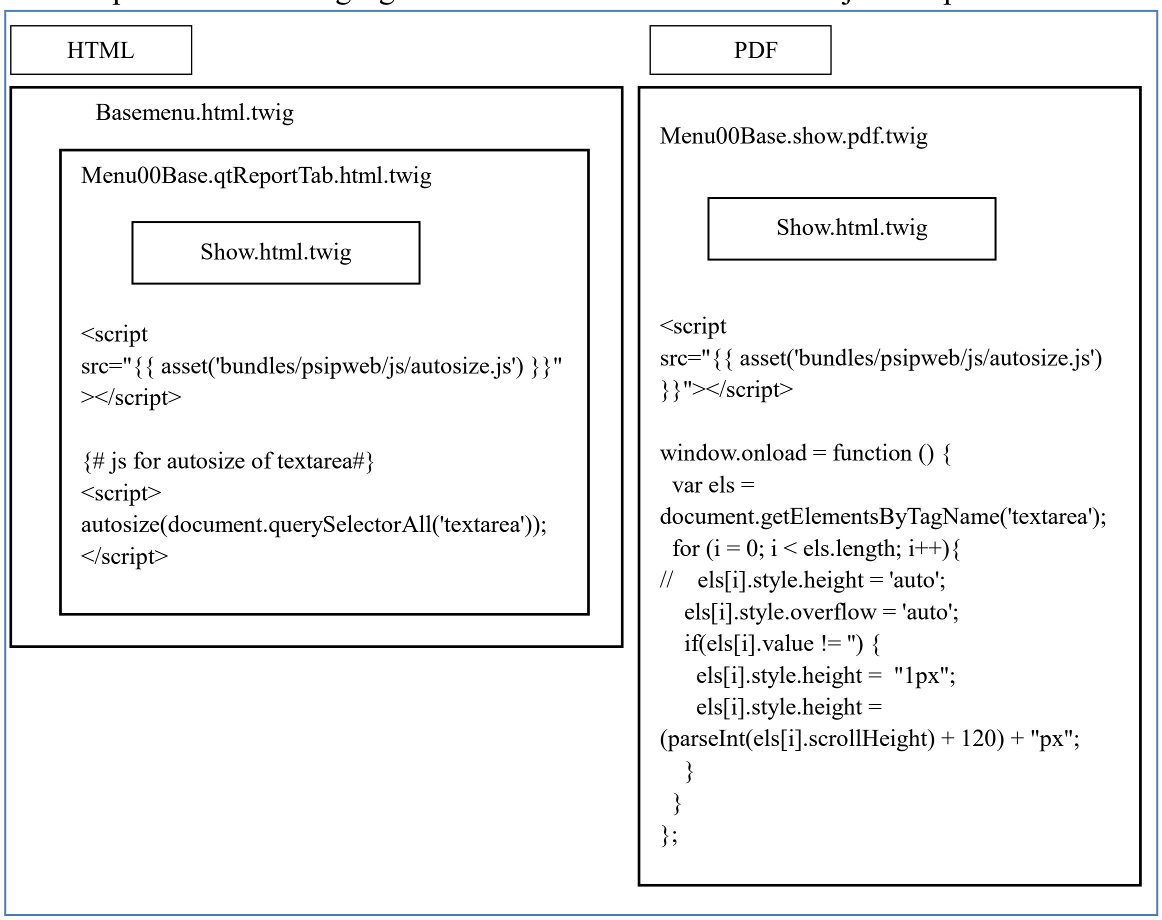
There were some projects that does not exist in the previous, but submit the project for current year proposal and QT reports with the selected status.

3) Retrieve all projects next year with status other than O,N,E

[note] The QT report is supposed to be submitted if the project has New, Ongoing or Ending status. The Pipiline, Pended, Terminated projects are not supposed to submit the report, however, there are users who submit it even those status.

8.13.2. QT Main PDF

There are some different actions to realize Autosize for textarea between html and PDF output. The following figure shows their structure and main javascript function.



[Autosize of textarea when using DataTables]
The following script can be applied when text area is used inside the DataTables. When not using DataTables, this script will not work.

```
<script
src="{{ asset('bundles/psipweb/js/autosize.js') }}"></script>

{# js for autosize of textarea#}
<script>
```

```
autosize(document.querySelectorAll('textarea'));
</script>
```

The following javascript is applied when PDF is printed without DataTables functions.
[src/Jica/PsipBundle/Resources/views/Psip310QtReportMain/show.pdf.twig]

```
  <script>
window.onload = function () {
  var els = document.getElementsByTagName('textarea');
  for (i = 0; i < els.length; i++){
    els[i].style.overflow = 'auto';
    if(els[i].value != '') {
      els[i].style.height =  "1px";
      els[i].style.height = (parseInt(els[i].scrollHeight) + 120) +
"px";
    }
  }
};
  </script>
```

8.13.3. QT Performance

Please refer 8.10.2Quarterly Performance.

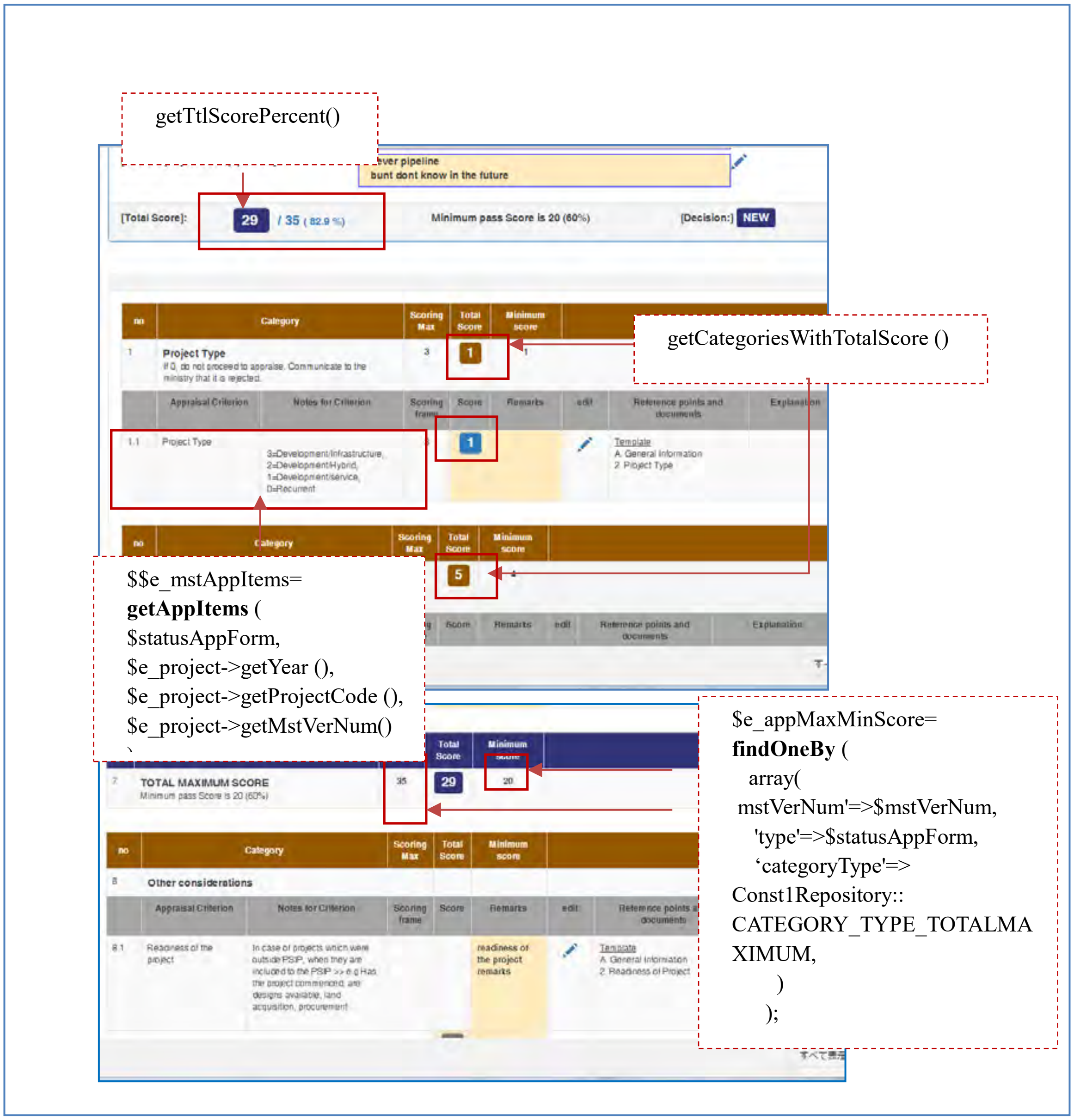
8.14. Appraisal Rating Matrix

8.14.1. Psip220AppraisalMatrixController

1) DB access modules in appMatrixShowAction

Repository	Method and parameters	Description	Twig variable and remarks
MstAppCategory	$e_mstAppCategoriesWithScore= **getCategoriesWithTotalScore (** $mstVerNum, $e_project->getYear (), $e_project->getProjectCode (), $statusAppForm, Const1Repository::APP_TYPE_INITIAL);	get categories and total scores of corresponding categories	c_mstAppCategoriesScore -SELECT c, COALESCE(sum(s.appScore)) as ttlAppScore
	$e_appMaxMinScore= **findOneBy (** array(	get one **Maximum**, **Minimum** total score defined in Category	c_appMaxMinScore

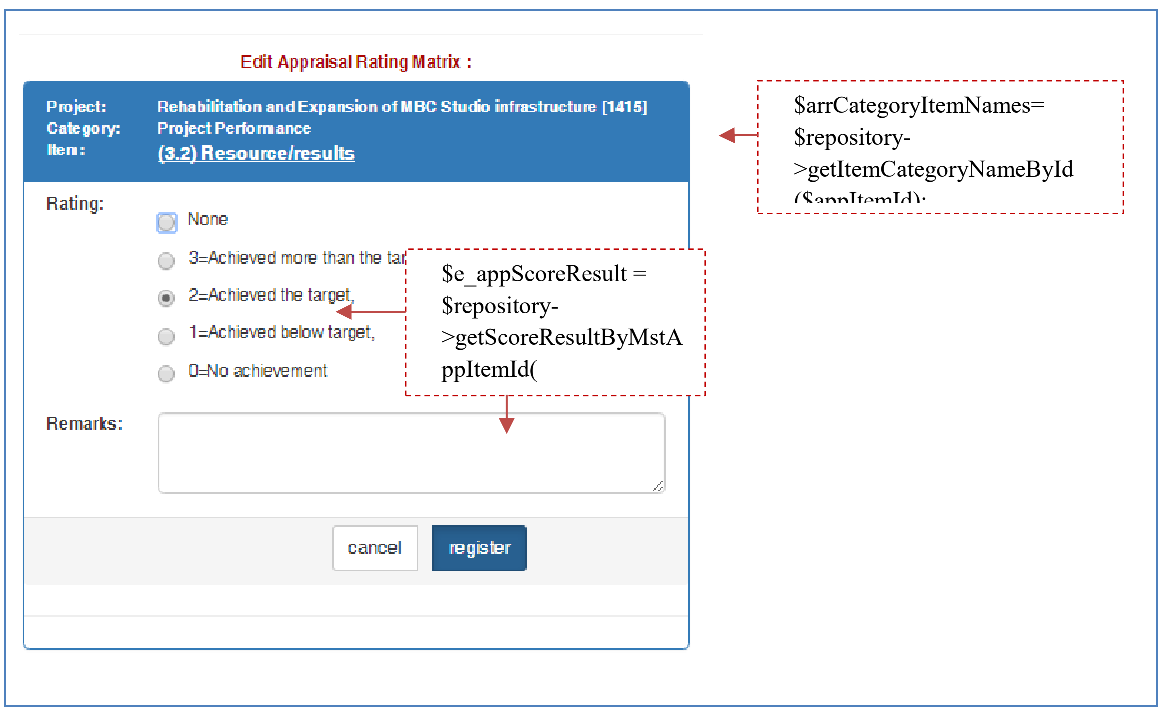
Repository	Method and parameters	Description	Twig variable and remarks
	'mstVerNum'=>$mstVerNum, 'type'=>$statusAppForm, 'categoryType'=> Const1Repository:: CATEGORY_TYPE_TOTALMAXIMUM,));	**(categoryType = 'T')** for header	
AppScoreResult	$arr_scoreTtl= **getTtlScorePercent (** $e_project->getYear (), $e_project->getProjectCode (), $e_project->getMstVerNum (), $statusAppForm, Const1Repository::APP_TYPE_INITIAL);	get % and total all scores of appMatrix for **header**	c_arrScoreTtlPct
MstAppItemRepo	$$e_mstAppItems= **getAppItems (** $statusAppForm, $e_project->getYear (), $e_project->getProjectCode (), $e_project->getMstVerNum());	get appraisal item data and appraisal score result by each row	c_mstAppItem - array of MstAppItem, appScore, appScoreDescrip, appRemarks
	$arr_countAppItems= **countAppItems (** $statusAppForm, $e_project->getMstVerNum());	count appraisal item row numberAppDecisionResult	c_mstAppItemCount - SELECT count (a.id) -array of mstAppItem numbers of each category
AppDecisionResult	$e_appDecisionResult= **findOneByProjectCodeYear (** $e_project->getYear (), $e_project->getProjectCode ());	get DeskOfficer and pipeline from appDecisionResult*	c_appDecisionResult
AppDecisionTransition	$e_appDecisionTransition= **findOneByProjectCodeYear (** $e_project->getYear (), $e_project->getProjectCode (), Const1Repository:: APP_DECISION_INITIAL);	get appDecisionTransition for initial status	c_appDecisionTransition



2) appMatrixEditScoreAction

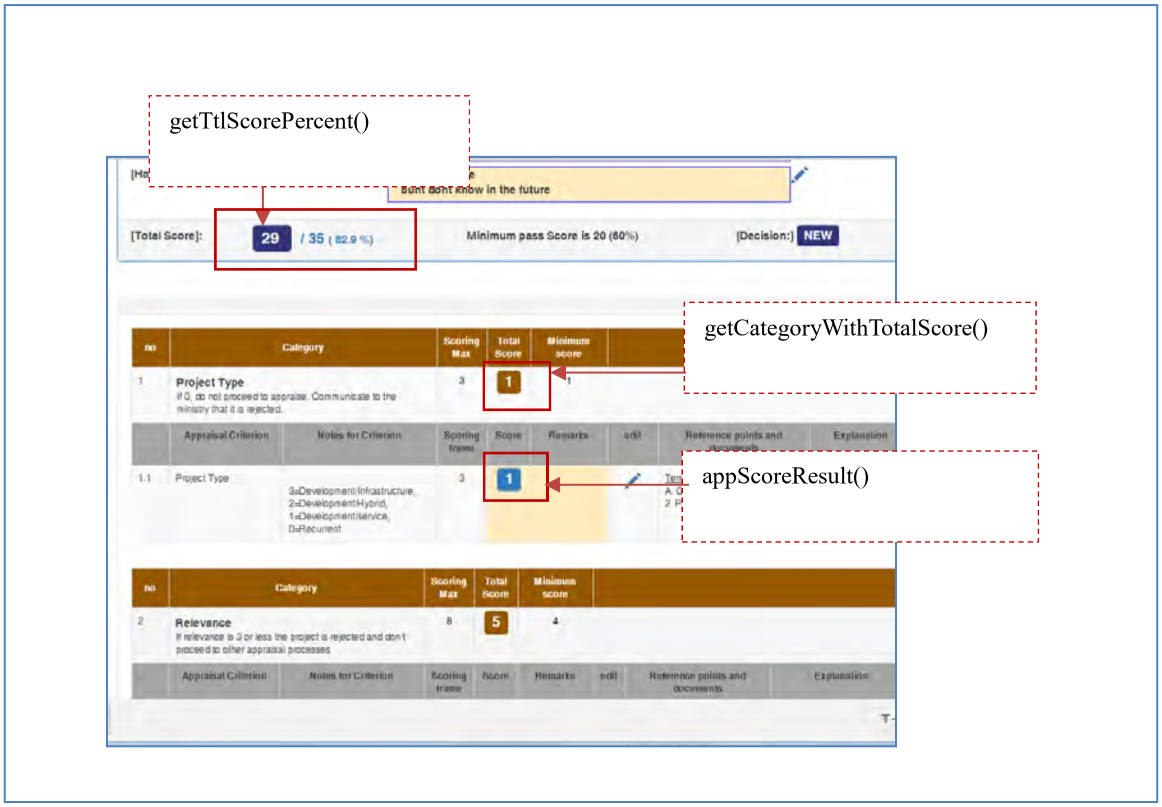
Repository	Method and parameters	Description	Twig variable
MstAppItem	$arrCategoryItemNames= $repository->**getItemCategoryNameById** ($appItemId);	get item title name and type	c_title (SELECT c.title as categoryTitle, i.title as itemTitle, i.type)
	$e_mstAppItem = $repository->**find**($appItemId);	get mstAppItem table from id	c_mstAppItem

Repository	Method and parameters	Description	Twig variable
AppScoreResult	$e_appScoreResult = $repository->**getScoreResultByMstAppItemId** ($e_project->getYear(), $e_project->getProjectCode(),$appItemId);	get app score	c_appScoreResult (SELECT s FROM JicaPsipBundle:AppScoreResult s)
MstAppCategory	$e_mstAppCategoryWithScore= $repository-> **getCategoryWithTotalScore** ($e_mstAppItem->getAppCategoryId (), $mstVerNum, $e_project->getYear (), $e_project->getProjectCode ());	get total score of each corresponding category for category header	Used for Ajax SELECT c, COALESCE(sum(s.appScore)) as ttlAppScore FROM JicaPsipBundle:MstAppCategory c
AppScoreResult	$e_appScoreResultTtlScore= $repository->**getTtlScorePercent** ($e_project->getYear (), $e_project->getProjectCode (), $e_project->getMstVerNum (), $e_project->getProjectStatus(), Const1Repository:: APP_TYPE_INITIAL);	get % and total scores of all categories appMatrix for header	Used for Ajax



After register button is clicked, it goes back to the main screen. The following fields will be recalculated and refreshed.

- Total score on the head
- Percentage on the head
- Total score of corresponding category
- The score of the item



8.14.2. App Matrix Show screen

1) The Edit window is open from App Matrix Show Screen as popup with the following JavaScript described in the appMatrixShow.html.twig.

[/Resources/views/Psip220AppraisalMatrix/appMatrixShow.html.twig]

```
script type="text/javascript">
$(document).ready(funcPsip220AppraisalMatrixControllertion(){
     $('.js-popupScore').click(function (event) {
          event.preventDefault();
```

```
          // window size
          var w_size=500;
          var h_size=550;

          // position of window
          var left=Number((screen.width-w_size)/2);
          var left=Number((screen.width-w_size));
          var top=Number((screen.height-h_size)/2);

          var $this = $(this);
          var url = $this.attr("href");
          var windowName = "AppScoreEditWin";
          var windowSize =
'width=500,height=550 ,
left='+left+'top='+top+',
toolbar=no,menubar=no';
left='+left+',
 top='+top+',
toolbar=no,
menubar=no';
     window.open(url, windowName, windowSize);
     });
});
</script>
```

8.14.3. App Matrix Edit Score score

1) The URL request is sent by Ajax to the Controller.

```
Psip220AppraisalMatrixController#appMatrixEditScoreAction()
```

2) Show the score and remarks for Appraisal

```
views/Psip220AppraisalMatrix/appMatrixEditScore.html.twig
```

3) When Register button is clicked the appScoreResult table is inserted/updated.

4) Send the following information to the parent Window of App Matrix Show

[Psip220AppraisalMatrixController#phpappMatrixEditScoreAction()]

```
$response = json_encode(array(
  "score" => $score,
  "remarks"        => $e_appScoreResult->getAppRemarks(),
  "ttlCategory"   =>$ttlCategory,
  "ttlScoreAppMatrix"   => $e_appScoreResultTtlScore['scoreTtl'],
  "success"    => true,
    )
  );
```

5) The windows is closed if the no error in Ajax communication and control goes back to the parent window

6) The parent window sets the received information to the corresponding score, remarks, total area

[/views/Psip220AppraisalMatrix/appMatrixEditScore.html.twig]

```
<script>
/* save appScoreResult and change score of parent window*/
$(document).ready(function() {
     $('#btnRegister').on('click', function(e){
     e.preventDefault();
     jsSelectedYear = this.value;
     $.ajax({
         url: "{{path('220appMatrixEditScore',
         {'projectId':c_project.projectId,
'appItemId':c_mstAppItem.id}) }}",
         type:"POST",
         data:   $("#frmAppMatrixEdit").serialize(),
         dataType: 'json', // jsonp
         success: function(data){
         var jsScore = data.score;
    // score
     window.opener.document.getElementById('lblScore{{  c_mstAppItem
.id}}').innerHTML = jsScore;
     window.opener.document.getElementById('lblRemarks{{  c_mstAppIt
em.id}}').innerHTML = data.remarks;
     /*if there is notes criterion but type is narrative, then do
not change total area*/
     {% if   c_mstAppItem.type !='N' %}
```

```
      // total score of corresponding category
      window.opener.document.getElementById('lblTtlCat{{  c_mstAppIte
m.appCategoryId}}').innerHTML = data.ttlCategory;
      // if yes/no type, then  total score of corresponding category
is score (yes or no)
       // header  total score on the top of the page of all
categories
      window.opener.document.getElementById('lblTtlScoreMatrix').inne
rHTML = data.ttlScoreAppMatrix;
      // TOTAL MAXIMUM SCORE
      window.opener.document.getElementById('lblTtlCat').innerHTML =
data.ttlScoreAppMatrix;
      {% endif %}
      // close window
      window.close();
      });
})
</script>
```

7) The parent window of App Matrix Show screen gets the response from Ajax.

[considerations]

- If type of mst_app_item is 'N' (narrative), the score is set to appScoreDescrip of AppScoreResult table
- If type of mst_app_item is 'S' (Score), the score is set to appScore of AppScoreResult table
- If type of mst_app_item is 'Y' (Yes/No), the score is set to appScoreDescrip of AppScoreResult table
- The App Score of AppScoreResult table is used as follows;

Item	Used	Result	Remarks
appScore	Result of each score as value	All scores are summed and shown as total scores	
appScoreDescrip	Result of each score narrative such as Yes/No , or Other consideration dropdown list	The result of the score is excluded from total scores.	Should convert 'Y'->Yes 'N'->No In appMatrixEditScoreAction ()

The appScore or appScoreDescrip is defined in

```
Form/Psip220AppMatrixScoreType.php
```

The result is saved to AppScoreResult table.

[Controller/Psip220AppraisalMatrixController#appMatrixEditScoreAction()]

```
/*If register button is clicked, save to table.*/
$e_appScoreResult->setYear($e_project->getYear());
$e_appScoreResult->setProjectCode($e_project->getProjectCode());
$e_appScoreResult->setAppCategoryId($e_mstAppItem-
>getAppCategoryId());
$e_appScoreResult->setAppItemOdr($e_mstAppItem->getOdr());
$e_appScoreResult->setProjectId($e_project->getProjectId());
$e_appScoreResult->setLogId($loginId);
$e_appScoreResult->setTs(new \DateTime());

$em->merge($e_appScoreResult); // MERGE not PERSIST
$em->flush();
```

The score related items are obtained in the following sources.

① src/Jica/PsipBundle/Form/Psip220AppMatrixScoreType.php
② src/Jica/PsipBundle/Controller/Psip220AppraisalMatrixController#appMatrixEditScoreAction()
③ views/Psip220AppraisalMatrix/appMatrixEditScore.html.twig

```
{#   ---show appraisal decision judge dropdownlist---#}
{% if c_mstAppItem.type == 'S'  %}
{{ form_row(form.appScore) }}
{% elseif  c_mstAppItem.type == 'Y' or c_mstAppItem.type == 'N'  %}
{{ form_row(form.appScoreDescrip) }}
{% endif %}
```

④ views/Psip220AppraisalMatrix/appMatrixShow.html.twig

```
<td class="text-center {{t_backgroundColor}}">
{#<td class="text-center psipYellowLite">#}
<div >
{% set t_score='' %}

{# *** if item type is ''S' (core),  get score. #}
{% if  t_appItem.type=='S' %}
     {#{% if  t_appItem.type=='S' or#}
     {#t_appItem.type =='N' and t_appItem.notesCriterion%}#}
   {%set t_score = t_appItemRow.appScore %}
```

```
    {#--- if 'N'(Narrative) with score get appScoreDescrip#}
  {% elseif t_appItem.type =='N' and t_appItem.notesCriterion%}
    {%set t_score = t_appItemRow.appScoreDescrip %}

    {#--- if item type is yes/no, get scoreDescriptive and convert
to string. #}
  {% elseif  t_appItem.type=='Y'%}
    {% if  t_appItemRow.appScoreDescrip=='Y'%}
        {%  set t_score ='Yes' %}

    {#Yes#}
    {% elseif t_appItemRow.appScoreDescrip=='N'%}
        {%  set t_score ='No' %}

    {#No#}
    {% endif %}
{% endif %}
<label id="lblScore{{ t_appItem.id}}"
    class="label label-primary"
    style="font-size: 150%">{{ t_score }}</label>
</div>
</td>
```

8.15. Final Appraisal

8.15.1. Scroll function

The Final appraisal has scroll function to keep the location of the page even after the save button is clicked.The page has the following JavaScript.

```
<script type="text/javascript">
window.onload = function(){
  var element_to_scroll_to = document.getElementById('{{  var
element_to_scroll_to =
document.getElementById('{{ c_clickedAnchorId }}');
  element_to_scroll_to.scrollIntoView();
}
</script>
```

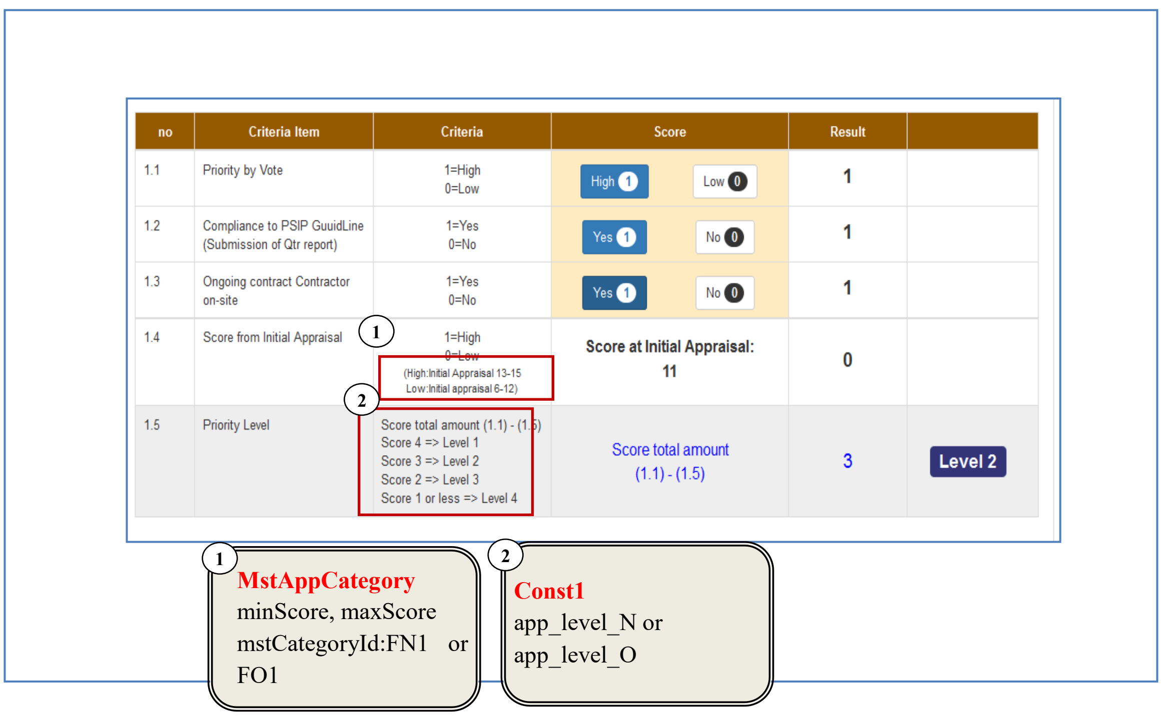
When the window is loaded, it jumps to the c_clickedAnchorId.
On the controller, the related anchor id name is set to the variable $clickedAnchorId.

[example]

```
 // check which save button is clicked and set it to pass to twig.
// Twig jumps to the anchor by JavaScript.
if ($request->request->has ('btnCriticalInfo')) {
  // get CategoryId from hidden
  $catId =  $request->request->get('hdnCriticalInfoCategoryId');
  // set clicked anchor ID
  $clickedAnchorId='tbl'.$catId;
}
 if ($request->request->has ('btnSaveAlloc')) {
  // set clicked anchor ID
  $clickedAnchorId='tblAppAlloc';
}
```

The anchor is set to the related table, setting its table id when clicked.

8.15.2. Final Appraisal Screen



1) (High:Initial Appraisal 13-15
Low:Initial appraisal 6-12)

The low range of high/low score is obtained from **MstAppCategory**. If the project is OnGoing, you can find the value 6 in minScore and 13 in max score of 'FO1' appCategoryId.

2) Score and Level definition can obtain from const1.

86	user_status	E	Enable
87	user_status	D	Disable
88	user_status	X	Expired
89	app_level_N	5	Level 1
90	app_level_N	4	Level 2
91	app_level_N	3	Level 3
92	app_level_N	2	Level 4
93	app_level_O	4	Level 1
94	app_level_O	3	Level 2
95	app_level_O	2	Level 3
96	app_level_O	1	Level 4

8.16. Update Project table counting up hist_num

The project table has history number which controls the version each time the table is updated. In reality the table is not updated but it is inserted copying from the most recent project data and setting hist_num as 0(zero) which means the most recent data.

1) Get the most recent project data with id or project_code + year + hist_num=0
2) Copy the retrieved project and insert changing hist_num= -1
3) Get new project id obtained in 2)
4) Get all project related tables which have project ID as one of the unique key.
5) Update project ID of the related tables retrieved in 4) to new project ID obtained in 3).
6) Finally increment hist_num of all project data order by descending, otherwise it causes access violation with duplicate ID error.

8.16.1. Project related tables

The project related tables are listed in the following table. There are 13 tables which will be updated with the unique key, and another 8 tables which will be updated with USED4 condition, since Project Id area is shared by QT id. Therefore totally 21 tables are target of the update operation.

No.	Category	Table name	Remarks
1	Tables that do not have USED4 column	'activity'	
2		'contact'	
3		~~cost_outlay'~~	Table is removed (2017/08)

4		desc_logframe'	
5		'finance_misc'	
6		'fund_outlay'	
7		'fund_source'	
8		'me_framework	
9		'outcome'	
10		'outline'	
11		'output'	
12		'project'	
13		'rel_output_outcome'	
14	Tables that have USED4 column	'cost_matrix	USED4 should be ‘T’ or ‘A’
15		'cost_matrix_data'	
16		'finance_summary'	
17		'outcome_indicator'	
18		'outcome_target'	
19		'output_achievement'	
20		'output_indicator'	
21		'output_achievement'	

8.16.2. Procedure of update project table

When a project record is updated, the following procedure is required to maintain the history of the changes.

1. Retrieve project data
   1) Retrieve project data by (project id) or (project_code and year)

2. Prepare a new record
   1) Copy the data from 1.1)
   2) hist_num = -1
   3) ts = null
   4) project_id = null
   5) log_id = current log_id

3. insert the above record into project table and get new project_id.

4. Copy and Insert a new record to proposal related tables
   1) Retrieve previous record with project_id of 1.1)
   - if no field of "used4" retrieve all data with project_id

- if the table has use4 field, exclude the data that has field used4 = 'Q', since those data are related to QT Report ID. Those tables are above Tables that have USED4 column (8 tables)

2) Insert a new record with the following information
- id = null (auto increment field)
- project_id = new project_id obtained in above 3.
- hist_num = 0
- ts = null (or current time)
- log_id = current log id
- other fields will keep the previous information

3) Repeat 2) to all PSIP Proposal related the tables that **do not have** USED4 column.
[tables to retrieve all data (11 tables)]

5. Update existing projects with the project_code
   1) Retrieve all existing projects by the project_code and year with different hist_num, order by descending
   2) Update all retrieved projects order by desc with the following fields
   - hist_num = hist_num + 1
   - ts = ts (no change)
   - other fields will not be changed.

8.17. html jump or link within page

You can easily jump or link to the specified location within the page inserting “#” after URL
For example if the div tag has id <div id=’myid123’>, then you can call the URL

```
psip.malawi.gov.mw#myid123
```

and the page will jump to the specified id.

If you use Symfony action, the following example shows how to redirect to another action specifying the URL and anchor.

[Psip210AppraisalDecisionController.php appraisalDecisionUpdateAction()]

```
return $this->
redirect($this->generateurl
('210appraisalDecisionBack').'#tr'.1453);
```

The redirected action does not do anything special in its route definition.

```
* @Route("/psipuser/210appraisalDecisionBack",
name="210appraisalDecisionBack")
*/
public function appraisalDecisionBackAction(Request $request) {
```

in the HTML code, the ID should be set to indicate the location of link.

```
<tr class="even" id="tr1453" role="row">
```

8.18. Set URL path with Symfony

You can set parameters in the URL address with Symfony

```
*@Route("/psipstaff/210appraisalDecisionUpdate/{year}/{projectCode}"
, name="210appraisalDecisionUpdate")
```

The function should have the parameters set to the Route

```
public function appraisalDecisionUpdateAction(Request $request,
$year, $projectCode) {
```

To call this action from the browser you can set as follows

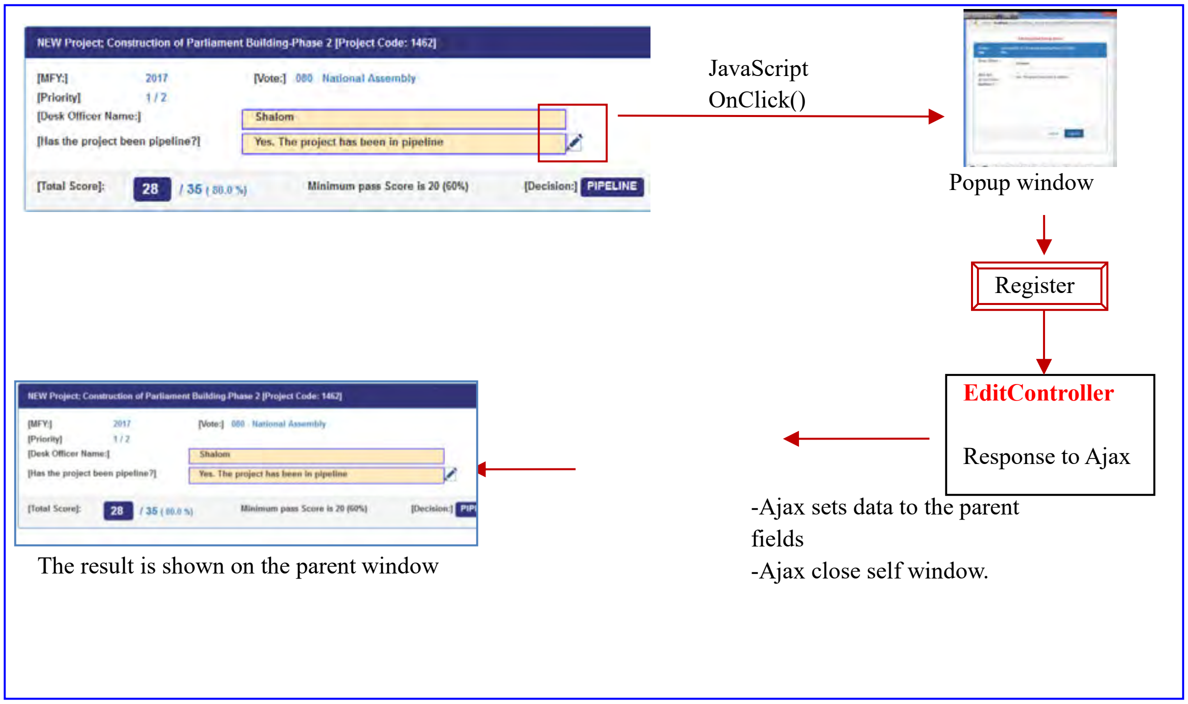
```
psips/web/psipuser/210appraisalDecisionUpdate/2017/1100
```

8.19. Ajax

8.19.1. Ajax call

Ajax is used at Initial appraisal and Status&budget screen, etc.

① On the parent screen, when the edit pencil is clicked, the edit screen is displayed.



[Ajax code example]

```
      $(document).ready(function() {
      $('#btnRegister').on('click', function(e){
          e.preventDefault();
          jsSelectedYear = this.value;

      $.ajax({
      url: "{{path('220appMatrixEditScore',
      {'projectId':c_project.projectId, 'appItemId':c_mstAppItem.id,
'num':c_categoryNum}) }}",
          type:"POST",
          data:   $("#frmAppMatrixEdit").serialize(),
          dataType: 'json', // jsonp
          async: false,  //IGNORED!!
          success: function(data){
          var jsScore = data.score;
          // if ajax return success
          if(data.success){
          // set score to lblScore+ item id score label
      window.opener.document.getElementById('lblScore{{  c_mstAppItem
```

```
.id}}').innerHTML = jsScore;
         // remarks
     window.opener.document.getElementById('lblRemarks{{  c_mstAppIt
em.id}}').innerHTML = data.remarks;
      /*if the type is score (not narrative, nor yes/no*/
     {% if   c_mstAppItem.type =='S' %}
     // total score of corresponding category
     window.opener.document.getElementById('lblTtlCat{{  c_mstAppIte
m.appCategoryId}}').innerHTML = data.ttlCategory;
     // header  total score on the top of the page of all categories
     window.opener.document.getElementById('lblTtlScoreMatrix').inne
rHTML = data.ttlScoreAppMatrix;
     // TOTAL MAXIMUM SCORE
     window.opener.document.getElementById('lblTtlCat').innerHTML =
data.ttlScoreAppMatrix;
     // % percentage score/total
     window.opener.document.getElementById('spnScorePercent').innerH
TML = (data.scorePct);
     {% endif %}
     // if yes/no type, then  total score of corresponding category
is score (yes or no)
     {%  if c_mstAppItem.type=='Y'  %}

     window.opener.document.getElementById('lblTtlCat{{  c_mstAppIte
m.appCategoryId}}').innerHTML = jsScore;
     {% endif %}
     // close window
     window.close();

}        // if (data.success)
}    ,   // function(data)
     error: function (request, status, error) {
     document.getElementById("page-wrapper").innerHTML =
request.responseText;    //ok
     }
     });
     });
})
```

8.19.2. How to test Ajax

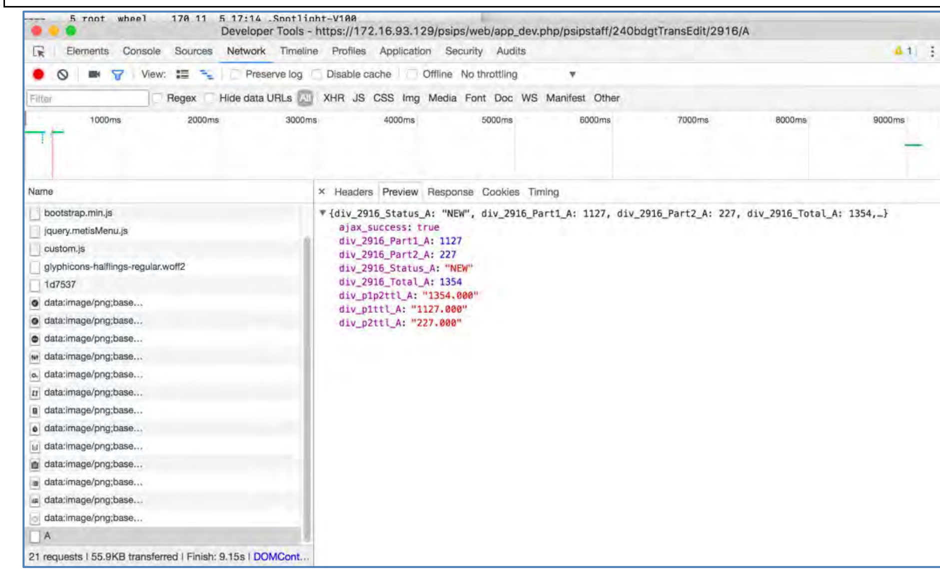
(1) You can call directly the route name from the browser. Once the controller returns the response to the Ajax, and the response will be displayed to the browser.

[example call of the route]

```
https://localhost/psips/web/app_dev.php/psipstaff/240bdgtTransEdit/2
916/A
```

(2) You can use browser development tool which shows you the parameters sent to the server and the response status.

```
Open Developer Tools->Network->click the current connection
```



From the tab, select Network->Preview (in FireFox) to see the response from the server.

(3) You can also set try catch clause to catch any error during the execution of JavaScript.

```
success: function(data){//      alert (data.ajax_success);
      alert (data.div_2916_Status_A);
      alert
( window.opener.document.getElementById('div_p1ttl_A').innerHTML);
      $.each(data, function(divId, val) {
    //display the key and value pair
    alert(divId + ' is ' + val);
```

```
    try{
    window.opener.document.getElementById(divId).innerHTML = val;
    }catch(err){
        alert ( 'javascript error! ' + err.message);

    }
```

Output the messages with “alert” command, or catch the error with try/catch clause.

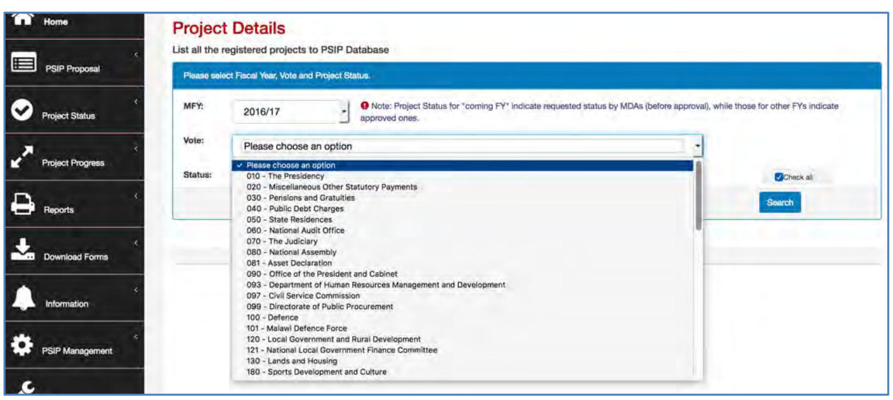
(4) You can use success or error callback of Ajax.In case of error, the error message can be displayed in the child window.

```
error: function (request, status, error) {
     document.getElementById("page-wrapper").innerHTML =
request.responseText;
}
```

8.19.3. Change vote by year

The dropdown list of the vote code in the search conditions is dynamically changed when the dropdown of the year is changed, extracting the vote information from database through Ajax call. The following screen applies this mechanism.

- Project Details screen
- Status & Approved Budget
- Project Quarterly Progress Report Status



The above example shows the content of vote information of the year 2016/17.

This is done with the following process.

① The JavaScript “on change” works first when the year is changed.
② The selected year is sent to the server by Ajax. The route is;

```
psips/web/psipuser/a0pGetVotesYear
```

③ The server returns vote information to the JavaScript.
④ The returned vote information is set to the dropdown list of the vote.

The JavaScript is created in "custom.js" file.
[custom.js]

```
/******************************************************************
 * change vote to corresponding by Ajax when year is selected
 * set year id; idYear
 * set vote id; idVote
 *****************************************************************/
 $(document).ready(function() {
    $("#idYear").on("change", function(){
        var jsSelectedYear = this.value;
        $.post("a0pGetVotesYear",
            {ajaxYear: jsSelectedYear, data2:"mydata2"},

            function(data){
                var jsVote = data.code;
                $("#idVote option").remove();

                for (i in jsVote) {
                    // create option with vote
                     option = $("<option></option>").
                    attr("value", jsVote[i][0]).text(jsVote[i][1]);

                    // append to vote to votes select
                    $("#idVote").append(option);
                }
            }, "json");
    });
});
```

If you want to apply this function to another screen or page, follow the next step.
① Include customer.js into the page twig.
② Set id to the year as "idYear".
You can set id to form.widget by array.

```
{{ form_row(form.voteCode, { 'id': 'idYear'}) }}
```

8.20. Check all checkbox

When the checkbox is clicked, all the checkboxes will be checked/unchecked.

[JavaScript]

```
function checkAll (clsName,isChecked) {
    $(clsName + " :checkbox").prop('checked', isChecked);
}
```

The above jQuery has a selector with classname and checkbox tag which will set the checked status of the caller to the selector class.

If you have form type, you can set the css class name

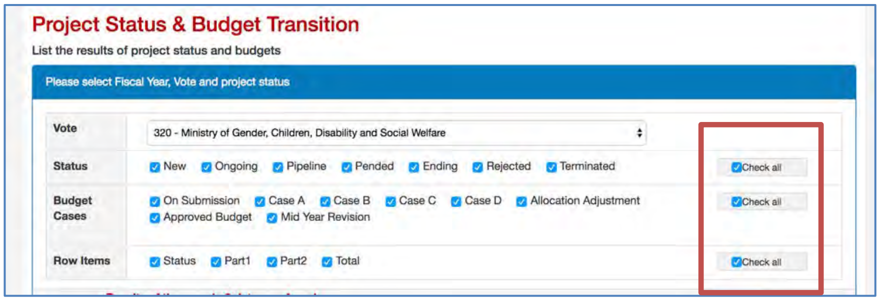
```
/* status for checkbox */
->add('searchStatus', 'choice', array(
'choices'     => $arrStatus
,'multiple' => true
,'label'    => false
,'mapped'     => false
,'expanded'   => true
,'label_attr' => array('class'=>"checkbox-inline no_indent
chkRowBdgts" )
,'empty_data' => null
,'placeholder'=> 'Please choose at least one option'
,'data'      => array_keys($arrStatus)
,'constraints'=> array(
     new Count(array('min'=>1,'minMessage' => "At least one item
must be selected")
     ))
  ))
;
```

[html input tag of]

```
<div class="col-xs-2 ">
<label for="checkall" class="label label-danger clsCheckAll">
     <input type="checkbox" name="checkall" id="checkall"
checked="checked"
onClick="checkAll('.chkRowBdgts ',this.checked );" />
```

```
     checkAll</label>
</div>
```

In the html input checkbox tag, add onClick event with the JavaScript function name.



If you create html tag not by Symfony formType, then set the class name in the checkbox tag to be checked by JavaScript.
[html checkbox tag]

```
<div class="control-group">
<label class="checkbox-inline no_indent chkRowBdgts"><input
type="checkbox" id="Psip240BdgtTransType_chkRowBdgt_0"
name="Psip240BdgtTransType[chkRowBdgt][]" value="Status"
checked="checked">Status</label>

<label class="checkbox-inline no_indent chkRowBdgts"><input
type="checkbox" id="Psip240BdgtTransType_chkRowBdgt_1"
name="Psip240BdgtTransType[chkRowBdgt][]" value="Part1"
checked="checked">Part1</label>

<label class="checkbox-inline no_indent chkRowBdgts"><input
type="checkbox" id="Psip240BdgtTransType_chkRowBdgt_2"
name="Psip240BdgtTransType[chkRowBdgt][]" value="Part2"
checked="checked">Part2</label>

<label class="checkbox-inline no_indent chkRowBdgts"><input
type="checkbox" id="Psip240BdgtTransType_chkRowBdgt_3"
name="Psip240BdgtTransType[chkRowBdgt][]" value="Total"
checked="checked">Total</label>
    </div>
```

8.21. Submit by Post method

8.21.1. By plain JS

http://stackoverflow.com/questions/20906066/making-href-anchor-tag-request-post-instead-of-get

There are several ways to submit the request with post method.

[example by JavaScript]

```
window.onload=function() {
   document.getElementById("myId").onclick=function() {
   document.getElementById("myForm")method = 'post';
   document.getElementById("myForm").action = url;
   //action(set URL)
  document.getElementById("myForm").submit();
     return false;       // cancel the actual link
   }
 }
```

[example by eventListener]

```
var form = document.getElementById("form-id");
document.getElementById("your-id").addEventListener("click",
function () {
  form.submit();
});
```

[example by onClick]

```
<form id="form-id">
  <a href="#" onclick="document.getElementById('form-
id').submit();"> submit </a>

</form>
```

[example by JavaScript function]

```
     <input type="button" value="click here" onclick="return
mySubmit('myForm', 'form.html', 'POST');">
```

```
<script type="text/javascript">
 <!--
 function mySubmit(formName, url, method)
```

```
{
  // get form
  var f = document.forms[formName];

  f.method = method; // method(GET or POST)
  f.action = url; // action(URL)
  f.submit(); // submit
  return true;
}
// -->
</script>
```

8.21.2. Send form from button

```
<div>
{#edit score and remark#}
<a
     href="{{ path('220appMatrixEditHeader',
     {'projectId':c_project.projectId}) }}"
     class="js-popupScore"
>
     <span class="glyphicon glyphicon-pencil">
     </span>
</a>
</div>
```

8.21.3. Send form by jQuery

[example by closest method]

```
$('form .submit-link').on({
    click: function (event) {
        event.preventDefault();
        $(this).closest('form').submit();
    }
});
```

[example by click event]

```
$(document).ready(function() {
    $('#btn').click(function() {
```

```
        $('#form1').submit();
    });
});});
```

[example by post method (ajax)]

```
$(function() {
  $("#employeeLink").on("click",function(e) {
    e.preventDefault(); // cancel the link itself
    $.post(this.href,function(data) {
      $("#someContainer").html(data);
    });
  });
});
```

8.22. Window Print button

The most pages, window print button uses the general window.print() javascript function. However, the following pages will not to be print directly from window.print() function since the page uses DataTables javascript plugin.

- Financing
- M&E (new, ongoing)
- Project performance

1) In the projectDetailTab.html.twig, those pages are sent to server to create contents without DataTables.

[src/Jica/PsipBundle/Resources/views/Menu00Base/projectDetailTab.html.twig]

```
{# JS function of print screen for general#}
{% set t_scriptname = "printDiv('printableArea')" %}

{# JS function of print screen for project performance,
ProjectMandE, Financing#}
{% if
(app.request.attributes.get('_route') == '050performance')  or
(app.request.attributes.get('_route') == '080projectME') or
(app.request.attributes.get('_route') == '070projectFinance')
%}
     {% set  t_href=path(app.request.attributes.get('_route'),
     { projectId:c_project.projectId, _format:'nojs'})
         %}
```

```
     {% set t_scriptname = "printNoDataTbl('"~t_href ~"')" %}
{% endif %}

<button type="submit" class="btn btn-primary btn-sm"
     onclick={{t_scriptname}}>
     {#onclick="printDiv('printableArea')">#}
     <span class="glyphicon glyphicon-print"></span>
     print
</button>
```

It is setting the server URL

```
Route_name/id.nojs
```

'nojs' is the format to require content without javascript.

For example, the financing for print image is called to the server as follows;

```
http://server_name/psips/web/app_dev.php/psipuser/070projectFinance/2923.nojs
```

2) When the print button is clicked, the following javascript will open new window to print. The above URL is defined when open the window.

[custom.js]

```
function printNoDataTbl($arg_href) {
var winPrint = window.open($arg_href, "printNoJs",
"left=100,top=100,width=700,height=400");
}
```

3) On the server action, change @Route name with the following option

```
* @Route("/psipuser/070projectFinance/{projectId}.{_format}",
*   name="070projectFinance",
*   defaults={"_format": "html"},
*   requirements={"_format": "html|pdf|nojs"}
```

4) When you send the response to the server, add option for the print.

```
/*create array for response parameters to twig*/
$arrResponse = array(
     'form' => $form->createView(),
     'c_message' => $c_message,
     'c_project' => $e_project
```

```
);

  /*twig file name*/
$responseTwig='JicaPsipBundle:' .'Psip070Finance:projectFinance.html
.twig';

 /*if window.print(), then create html without DataTables
javascript*/
if ($_format == 'nojs'){
     $arrResponse['c_format']='nojs';
}

 /*show View*/
return   $this-> render($responseTwig, $arrResponse);
```

5) On the html for printing, disable the javascript you want to exclude, such as DataTables using c_format.

```
{% if c_format is not defined %}
<script>
// Part II table scroll
$(document).ready(function () {
$('#tblPartII').DataTables({
paging:false,
scrollY: false,
scrollX: true,
info: false,
ordering: false,
searching: false
});
});
</script>
{% endif %}
```

6) Insert the following javascript so that the content is printed when it is loaded.

```
{% if c_format is  defined and c_format == 'nojs' %}
<script>
window.onload = function() {
```

```
     window.print();
     setTimeout(function(){window.close();}, 1);
}
</script>
{% endif %}
```

8.23. How to debug print image

1) Open browser and set breakpoint to the javascript in custom.js.

[custom.js]

```
function printNoDataTbl($arg_href) {
var winPrint = window.open($arg_href, "printNoJs",
"left=100,top=100,width=700,height=400");
}
```

Set breakpoint here

2) Remove window.close() function to keep the window open in the html.twig.

[src/Jica/PsipBundle/Resources/views/Psip070Finance/projectFinance.html.twig]

```
{% if c_format is  defined and c_format == 'nojs' %}
<script>
window.onload = function() {
     window.print();
     //setTimeout(function(){window.close();}, 1);
}
</script>
```

3) Click print button from the browser page. It will stop at the break point and you can see step by step.

8.24. CSS and Design

The main PSIP CSS file is customer.css found in;

```
  psips/web/bundles/psipweb/css/custom.css
```

However, if you use the form type and show input controls such as text, textarea, dropdown list, radio, checkbox, the controls are generated from corresponding form type of Symfony.

For example, Output dropdown list in Performance sheet, you can find “outputOdr” field in dropdown control. The control is generated by the following file;

```
‶/src/Jica/PsipBundle/Form/ProjectOutputIndicatorType.phpProjectOutp
```

```
utIndicatorType.php”
```

In the form type, the corresponding “outputOdr” field is generated. You can see something style setting;

```
  $builder
     ->add('outputOdr' , 'choice',array(
         'label' => false
         , 'choices' => $options['psip_choices']
         ,'placeholder' => 'Please choose an option'
         ,'empty_data' => null
         ,'attr' => array(
         'style' => 'min-width:90px;
                     padding-left:0px;
                     padding-right:0px'),
```

The style for this control is defined in the ‘style’ property in the array.

8.25. CSS, JS libraries

The following CSS and JavaScript files are basic css and javascript files applied for the system.

	File name	Defined in	Remarks
CSS	psipweb/css/bootstrap.css	/src/Jica/PsipBundle/Resources/views/**basepsipmenu.html.twig**	Bootstrap
	psipweb/font-awesome-4.4.0/css/font-awesome.css	/src/Jica/PsipBundle/Resources/views/**basepsipmenu.html.twig**	Fonts
	psipweb/css/custom.css	/src/Jica/PsipBundle/Resources/views/**basepsipmenu.html.twig**	PSIP custom css
	psipweb/js/DataTabless/jquery.DataTabless-1.10.9.min.css	/src/Jica/PsipBundle/Resources/views/Menu00Base/**projectDetailTab.html.twig**	DataTables (for scroll)
	psipweb/css/psipPrint.css	/src/Jica/PsipBundle/Resources/views/Menu00Base/**projectDetailTab.html.twig**	Print
JS	psipweb/js/jquery-1.11.3.min.js	/src/Jica/PsipBundle/Resources/views/**basepsipmenu.html.twig**	jQuery
	psipweb/js/bootstrap.min.js	/src/Jica/PsipBundle/Resources/views/**basepsipmenu.html.twig**	BootStrap
	psipweb/js/jquery.metisMenu.js	/src/Jica/PsipBundle/Resources/views/**basepsipmenu.html.twig**	JS for Side menu
	bundles/psipweb/js/custom.js	/src/Jica/PsipBundle/Resources/views/**basepsipmenu.html.twig**	PSIP custom JS

	psipweb/js/DataTabless/jquery.DataTabless-1.10.9.min.js	/src/Jica/PsipBundle/Resources/views/Menu00Base/**projectDetailTab.html.twig**	DataTables
	psipweb/js/DataTabless/DataTabless.fixedColumns.min.js	/src/Jica/PsipBundle/Resources/views/Menu00Base/**projectDetailTab.html.twig**	DataTables for fixed columns

[note] There are more CSS and JavaScript files applied to each page specifically. Be careful to adopt the files with the version, since some version such as DataTables plugin will not always work in different version (even upgraded version).

8.26. wkhtmltopdf

http://www.tecmint.com/install-wkhtmltopdf-html-page-to-pdf-converter-in-rhel-centos-fedora/
http://wkhtmltopdf.org/
https://gist.github.com/calebbrewer/aca424fb14618df8aadd
wkthmltopdf is an application to output pdf format file from html code.

8.26.1. Install wkhtmltopdf for command line tool

`wkhtmltopdf` and `wkhtmltoimage` are open source (LGPLv3) command line tools to render HTML into PDF and various image formats using the Qt WebKit rendering engine.

1) Install PDF reader

```
yum install evincesu
```

2) Download wkhtmltopdf for RHEL/CentOS/Fedora 64-bit OS

```
wget https://wkhtmltopdf.googlecode.com/files/wkhtmltopdf-0.10.0_rc2-static-amd64.tar.bz2
```

[note]It is possible that the location of the server may change. Please refer

```
http://wkhtmltopdf.org/downloads.html
```

if you can not locate the file.

3) Extract wkhtmltopdf.

```
tar xjflo wkhtmltopdf-0.10.0_rc2-static-amd64.tar.bz2 -C /opt
```

4) Rename it and move under /usr/local/bin

```
cd /opt
mv wkhtmltopdf-amd64 wkhtmltopdf
```

```
mv wkhtmltopdf /usr/local/bin
```

5) Verify if the file owner is “psip”.

8.26.2. Update wkthmltopdf

http://www.intra-mart.jp/download/product/forma/setup_guide/texts/install/linux/pdf.html

1) Download the recent wkhtmltopdf from

```
http://wkhtmltopdf.org/downloads.html
```

2) Place downloaded xxxx.tar.xz under /usr/local/bin
3) Decompress the downloaded file, for example

```
$ cd /usr/local/bin
$ xz -dv wkhtmltox-0.12.3_linux-generic-amd64.tar.xz
$ tar -xf wkhtmltox-0.12.3_linux-generic-amd64.tar
```

4) Create symbolic link “wkhtmltopdf” to the executable file “wkhtmltopdf-amd64”

```
$ cd /usr/local/bin
$ ln -s wkhtmltox/bin/wkhtmltopdf wkhtmltopdf
```

5) Confirm if the application is correctly installed.

```
$ wkhtmltopdf --version
```

You may have the following response.

```
wkhtmltopdf 0.12.3 (with patched qt)
```

8.27. How to install KnpSnappyBundle for use of PDF

https://github.com/KnpLabs/KnpSnappyBundle

Snappy is a PHP (5.3+) wrapper for the wkhtmltopdf conversion utility. It allows you to generate either pdf or image files from your html documents, using the webkit engine.
The KnpSnappyBundle provides a simple integration for your Symfony project.

1) Install “wkhtmltopdf”. (see above)
2) Install KnpSnappyBundle which is the wrapper for the use of wkhtmltopdf. With composer under psips directory, add:

[psips/composer.json]

```
{
    "require": {
         "incenteev/composer-parameter-handler": "~2.0" ,
        "knplabs/knp-snappy-bundle": "dev-master"
    }
}
```

3) Then enable it in your kernel:

[psips/app/AppKernel.php]

```
// app/AppKernel.php
public function registerBundles()
{
    $bundles = array(
        //...
         new Jica\PsipBundle\JicaPsipBundle(),
        new Knp\Bundle\SnappyBundle\KnpSnappyBundle(),
        //...
```

4) If you need to change the binaries, change the instance options or even disable one or both services, you can do it through the configuration.

[psips/app/config/config.yml]

```
# app/config/config.yml
knp_snappy:
    pdf:
        enabled:    true
        binary:     /usr/local/bin/wkhtmltopdf
        #"\"C:\\Program Files\\wkhtmltopdf\\bin\\wkhtmltopdf.exe\""
for Windows users
        options:    []
    image:
        enabled:    true
        binary:     /usr/local/bin/wkhtmltoimage
        #"\"C:\\Program
Files\\wkhtmltopdf\\bin\\wkhtmltoimage.exe\"" for Windows users
        options:    []
```

[note] In yml file you **cannot use tab for indentation. Use space instead**.

5) Update the composer from psips/

```
php composer.phar update
```

8.28. How to printout PDF from Symfony

http://www.michaelperrin.fr/2016/02/17/generating-pdf-files-with-symfony/

8.28.1. Setting Controller

1) Set annotation to the @Route of Controller
[Psip310QtReportMainController]

```
  * @Route("/psipuser/310qtreportmain/{qtId}.{_format}",
    *   name="310qtreportmain" ,
    *   defaults={"_format": "html"},
    *   requirements={"_format": "html|pdf"}
    * )
```

The '_format' element is added in the end of the parameter passed to the action from browser. The controller can determine if it is called from html or PDF button

2) Set parameter to the action(), so that it is used as variable.

```
   public function showAction(Request $request, $qtId,$_format)
```

3) Create the parameters that can be passed to twig in the end of action(). Set $format information (=pdf) to the c_format to the twig view.

```
  /*printout parameters of twig  for pdf  (set 'pdf' to c_format )*/
      if ($_format == 'pdf'){
        $arrResponse = array(
          'form' => $form->createView(),
          'c_message'                  => $c_message,
          'c_statusName'   => $c_statusName,
          'c_project'                  => $e_project,
          'c_qtreport'                 => $e_qtReport,
          'c_financeSummary'     => $e_FinanceSummary,
          'c_format'   =>$_format,
        );
```

4) Call parent function to create Response object for PDF creation. Finally send the response object to the user who can download created PDF file with specified twig design.

```
//  twig file name
```

```
$responseTwig='Psip310QtReportMain:show.html.twig';

/*create response for knp_snappy PDF in parent
A0PsipBaseController*/
$response=parent::returnResponse (
$arrResponse, $_format, $responseTwig, 'QTReport.pdf');

/*send PDF response to the user*/
return $response;
```

8.28.2. Parent controller

1) If you controller extends A0PsipBaseController, you can use all the functions defined in the parent.

```
class Psip310QtReportMainController extends A0PsipBaseController
```

The above controller extends A0PsipBaseController as parent as OOP.

2) The base controller has a function called “returnResponse” which generates response for print out such as “excel”, “pdf”, etc.

3) You can set following 4 response parameters to generate PDF response

```
      * @param $arg_arrResponse;  array() that parameters to pass to
twig
      * @param $arg_format;    html/excel/pdf
      * @param $arg_twig;       twig file name
      * @param $arg_filename; output file name
      * @param $arg_orientation; Portait(default)/Landscape
```

For example from the child controller you can call;

```
 $responseTwig='Psip310QtReportMain:show.html.twig';
 $arrResponse = array(
          'form' => $form->createView(),
          'c_message' => $c_message,
          'c_statusName'   => $c_statusName,
          'c_project'     => $e_project,
          'c_qtreport'    => $e_qtReport,
          'c_financeSummary'    => $e_FinanceSummary,
          'c_format'  =>$_format,
        );
 /*create response for knp_snappy PDF in parent
```

```
A0PsipBaseController*/
  $response=parent::returnResponse (
  $arrResponse, $_format, $responseTwig, 'QTReport.pdf');
```

The 1st parameter contains all the response parameters to generate twig file.
The 2nd parameter indicate the format of the output file. You can set “pdf”.
The 3rd parameter is the twig file name to be generated.
The 4th parameter is the pdf file name that the user will receive when download is successful.
You can refer all the parameters for wkhtmltopdf at
http://wkhtmltopdf.org/usage/wkhtmltopdf.txt

8.28.3. Setting PDF Outline Twig

You can check the example in;

```
src/Jica/PsipBundle/Resources/views/Psip310QtReportMain/show.pdf.twi
g
```

1) Create twig PDF outline file inserting html , head, body tags to include the content of the information.

```
{% form_theme form 'bootstrap_3_layout.html.twig' %}

<!DOCTYPE html>
<html>
<head>
  <meta charset="UTF-8" />

  <title>{% block title %}PSIP Database  {% endblock %}</title>
  {# Bootstrap Style 3.3.2 #}
```

In the first line, introduce the form_theme if you use bootstrap form layout.

2) Set style or script if necessary.

```
  {# Bootstrap Style 3.3.2 #}
  <link rel="stylesheet"  type="text/css"
href="{{ asset('bundles/psipweb/css/bootstrap.css' ,
absolute=true)  }}" />

  {# <!-- FONTAWESOME STYLES--> #}
  <link rel="stylesheet"
```

```
href="{{asset('bundles/psipweb/font-awesome-4.4.0/css/font-awesome.css', absolute=true) }}" />

  {# {# <!-- CUSTOM STYLES--> #}
  <link rel="stylesheet"  media="print"
href="{{asset('bundles/psipweb/css/psipPrint.css',
absolute=true) }}" />

  <script src="{{ asset('bundles/psipweb/js/autosize.js' ,
absolute=true) }}"></script>
  <script>
```

The wkhtmltopdf does not accept the relative path in the local server. You can use "absolute=true" attribute to generate absolute path in twig script.

```
href="{{ asset('bundles/psipweb/css/bootstrap.css' ,
absolute=true)  }}" />
```

3) In the body tag, you can create another twig file where the content will be inserted automatically by the system.

```
<body >
{#<div id="wrapper">#}
  {{form is defined?form_start(form) }}
{% block tabcontent %}
{% endblock %}
{{ form is defined?form_end(form) }}
</body>
```

In the above sample, the content twig file will be integrated into the "block tabcontent".

8.28.4. Setting Twig content

You can check the example in;

```
psips\src\Jica\PsipBundle\Resources\views\Psip310QtReportMain\show.html.twig
```

1) Usually you have already created the content twig file to show the information to the browser. You can reuse it to create the PDF file. Just extends the previous outline twig file in the condition of PDF parameter (c_format) which is passed to the twig file. For example, the following script shows that if the variable "c_format" exists, then extends

PDF outline file. Else extends the html menu outline to show on the brower.

```
{% extends c_format is defined?
'JicaPsipBundle:Psip310QtReportMain:show.pdf.twig':'JicaPsipBundle:M
enu00Base:qtReportTab.html.twig' %}
```

2) It seems that the wkhtmltopdf does not support the “col-sm” style of the bootstrap. You can use “col-xs” instead.

8.29. EasyAdmin bundle

EasyAdmin generates database administration management tools for Symfony applications.

[Features]

- **CRUD** operations on Doctrine entities (create, edit, list, delete).
- Full-text **search**, **pagination** and column **sorting**.

[Requirements]

- Symfony 2.3+ applications (Silex not supported).
- Doctrine ORM entities (Doctrine ODM and Propel not supported).
- Entities with simple primary keys (composite keys not supported).
- All kinds of entity associations are supported, except many-to-many.
- Entities using inheritance are not supported.

8.29.1. How to install

The EasyAdmin installation requires you to edit two files and execute two console commands, as explained in the following steps.

1) First of all check if composer is already installed in your computer.

2) If composer is not installed in your computer you can download it using the link below.

```
https://getcomposer.org/download/
```

3) Or you can download the Bundle by Opening a command console/prompt (cmd), enter your project directory (/home/psip/public_html/psips) and execute the following command to download the latest stable version of this bundle.

```
composer require javiereguiluz/easyadmin-bundle
```

This command requires you to have Composer installed globally already,

4) If you have connection error, you can try to put the proxy setting as follows.

```
set http_proxy=10.1.99.8:8080
set https_proxy=10.1.99.8:8080
set HTTPS_PROXY_REQUEST_FULLURI=false
set HTTP_PROXY_REQUEST_FULLURI=false
```

5) Enable the bundle by opening this file

```
psips/app/AppKernel.php
```

6) Add the following lines below:

```
<?php
// app/AppKernel.php

// ...
class AppKernel extends Kernel
{
    public function registerBundles()
    {
        $bundles = array(
            new Jica\PsipBundle\JicaPsipBundle(),
            // ...
            new
JavierEguiluz\Bundle\EasyAdminBundle\EasyAdminBundle(),
        );
    }
    // ...
}
```

7) Load the Routes of the Bundle

Load the routes of the bundle by adding this configuration at the very beginning of the following file;

```
psips/app/config/routing.yml
```

```
# app/config/routing.yml
easy_admin_bundle:
    resource: "@EasyAdminBundle/Controller/"
    type:     annotation
    prefix:   /admin
```

```
#........
```

[note] yml file is very sensitive with tab or space. Be careful with the spaces.

8) This bundle uses several CSS, JavaScript and font files to create the backend interfaces. Execute the following command to make those assets available in your Symfony application:

```
# Symfony 2
php app/console assets:install --symlink

# Symfony 3
php bin/console assets:install –symlink
```

9) Open the **app/config/config.yml** file and add the following configuration:

```
# app/config/config.yml
easy_admin:
    entities:
        - Jica\PsipBundle\Entity\Announcement
        - Jica\PsipBundle\Entity\MstVote
```

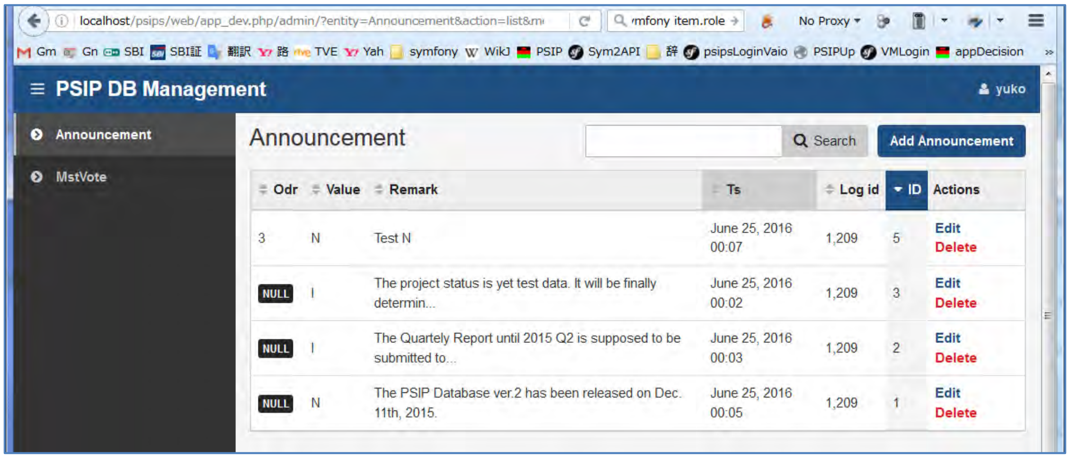
10) Enable the translation in the config.yml.

```
# app/config/config.yml
framework:
#translator:      { fallbacks: ["%locale%"] }
translator:      { fallbacks: ["%locale%"] }
```

11) Access to the main page of the bundle with the “/admin” path, and you can display the main page of the DB maintenance.

[example URL]

```
http://localhost/psips/web/app_dev.php/admin
```



8.29.2. Configure the views in New and Edit

1) You can configure the fields which you want to display in the New and Edit page in the config.yml. The following code shows that the Announcement table can be editable for **'odr','value', 'remark'** fields.

```
# app/config/config.yml
…
easy_admin:
    site_name: 'PSIP DB Management'
    entities:
        Announcement:
              class: Jica\PsipBundle\Entity\Announcement
              form:
                  fields: ['odr','value', 'remark']
        MstVote:
              class: Jica\PsipBundle\Entity\MstVote
              form:
                  fields: ['mstVerNum', 'voteCode', 'mdaCode',
'name', 'abbrev', 'remark']
```

8.29.3. Timestamp type

The New and Edit screen may fail to open by the following error;

```
Unable to transform value for "ts". Expected a \Datetime or
\DateTimeInterface…
```

- This error is caused due to the ORM generation of Timestamp area. “ts” is the field of timestamp type created in all tables to indicate the date and time of creation and edition.

You can solve it by the following way.

1) Insert the constructor for the entity class.

```
/**
 * Announcement
 *
 * @ORM\Table(name="announcement")
 *
@ORM\Entity(repositoryClass="Jica\PsipBundle\Entity\MyRepo\AnnouncementRepository")
 */
class Announcement
{
   // inserted to get default date
    public function __construct()
    {
        $this->ts = new \DateTime();
    }
```

2) Delete initial value assigned for "ts" generated by ORM.

```
//  private $ts = 'CURRENT_TIMESTAMP';
    private $ts ;
```

8.29.4. Set login ID to the entity when New or Edit

https://github.com/javiereguiluz/EasyAdminBundle/blob/master/Resources/doc/book/7-complex-dynamic-backends.md

Login ID should be registered when the entity is newly created or modified. The EasyAdmin may update the content through user modification, but user cannot identify their Login ID. That is why it should be registered by the system.

The Login ID is determined when the user logs in the system and it is set to the session. This is done in the;

```
Psips/src/Jica/PsipBundle/Handler/AuthenticationSuccessHandler.php
```

To set login ID, EasyAdmin requires you to create your own controller and override the original controller.

1) Create your controller under

```
psips/src/Jica/PsipBundle/Controller/Psip920EasyAdminController.php
```

2) Overrides the original EasyAdmin controller.

```
class Psip920EasyAdminController extends BaseAdminController
```

3) Overrides the methods before saving new entity and before update inside the preUpdateEntity method.

```
  public function prePersistEntity($entity)
    {
        $this->updateLogId ($entity);
    }

    public function preUpdateEntity($entity)
    {
        $this->updateLogId ($entity);
    }
```

4) Create the function you have set to the previous method. You can set Login ID when the entity is saved or modified.

```
   private function updateLogId($entity)
    {
        $session = $this->get("session");
        $logId=null;
        if ($session->get (A0PsipBaseController::SESSION_LOG_ID)) {
            $logId=$session->get
(A0PsipBaseController::SESSION_LOG_ID);

            if (method_exists ($entity, 'setLogId')) {
                $entity->setLogId ($logId);
            }
        }
    }
```

5) After updating and creation of the controller you can go back to the directory where the files routing.yml are. Open the file and make changes by adding the statements below at the end.

```
easy_admin_bundle:
    resource:
"@JicaPsipBundle/Controller/Psip920EasyAdminController.php"
```

```
#    resource: "@EasyAdminBundle/Controller/"
```

[note] This declaration of the resource indicates that the main controller for the application is your custom controller which extends the base EasyAdmin Controller. Do not forget to comment out the original controller.

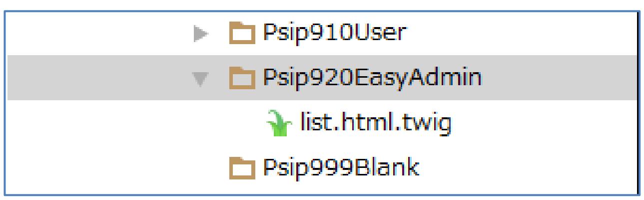
8.29.5. Hide some actions by ROLE

https://github.com/javiereguiluz/EasyAdminBundle/blob/master/Resources/doc/book/3-list-search-show-configuration.md

By default, the EasyAdmin enables all the actions, such as list, search, New, Edit, Delete.
Let's hide some actions for PSIP staff while enable all actions like New, Edit, Delete for Admininstrator. To customize the view, you are required to override the twig file.

1) Create your twig directory and twig file on your project directory.

```
Directory; src/Jica/PsipBundle/Resources/views/Psip920EasyAdmin
File; list.html.twig
```



2) Extends the original EasyAdmin List view on your list.html.twig.

```
{% extends '@EasyAdmin/default/list.html.twig' %}
```

3) Insert the following block to disable New action except Admin

```
{% block new_action %}
  {#Override the new action to display button only for Admin.#}
  {% if is_granted('ROLE_ADMIN') %}
    {{ parent() }}
   {% endif %}

{% endblock new_action %}
```

4) Set the view location to the config.yml file
[psips/config/config.yml]

```
easy_admin:
```

```
    site_name: 'PSIP DB Management'
    design:
        templates:
            list: '@JicaPsip/Psip920EasyAdmin/list.html.twig'
```

8.30. Database

8.30.1. How to export (backup) the database

1) Connect to the Server with psip user.
2) Change directory to /home/psip/tmp/
3) From the terminal execute the following command changing the date. The output file name is "20160626_192168131_psip2Dump.sql" in the next example

```
mysqldump psip2 > 20160626_192168131_psip2Dump.sql -u psip -p
```

Database name   Change the file name   user   password

4) The SQL dump file is created in the current directory. Move or copy it to your local if necessary. The dump file includes all the information of the database,

8.31. SSL connection

8.31.1. Mechanism to set private key and information to Apache.

1) Install mod_ssl from shell.

```
yum -y install mod_ssl
```

2) On the Homepage of DigiCert, get the parameters of the corporate domain "malawi.gov.mw" necessary for OpenSSL. (This will be done by e-Government who administrates the multiple certificate).

3) Create private key and CSR using OpenSSL on the server which will be submit to the DigiCert. You are requested to use the above corporate parameters.

4) Send the created private key and CSR to the DigiCert. They will later send the necessary information to the mail of registered responsible person (eg. Mr. Moses).

5) On the server, you will place the files received from DigiCert. The location of the following files is set at /etc/httpd/conf.d/ssl.conf.

[etc/httpd/conf.d/ssl.conf]

```
SSLCertificateFile
SSLCertificateKeyFile
SSLCertificateChainFile
```

[example of the setting]

```
SSLCertificateChainFile /etc/pki/tls/certs/DigiCertCA.crt
```

6) Change the server information

[ssl.conf]

```
DocumentRoot "/home/psip/public_html"
ServerName psip.malawi.gov.mw:443
```

7) The port 443 should be open in CentOS.

8) Restart the server.

8.31.2. Setting the PSIP redirection

1) Enable UserDir to be able to use public_html for Apache.

[/etc/httpd/conf.d/userdir.conf]

```
<IfModule mod_userdir.c>
    #
    # UserDir is disabled by default since it can confirm the
presence
    # of a username on the system (depending on home directory
    # permissions).
    #
    #UserDir disable (Commented out)

    #
    # To enable requests to /~user/ to serve the user's public_html
    # directory, remove the "UserDir disable" line above, and
uncomment
    # the following line instead:
    #
    UserDir public_html
```

2) Configure redirection to https except 192.168.1.x and /psips/ path.

[/etc/httpd/conf.d/https_redirect.conf]

```
<ifModule mod_rewrite.c>
      RewriteEngine On
      LogLevel alert rewrite:trace3
      RewriteCond %{HTTPS} off
      RewriteCond %{REMOTE_ADDR} !^(192.168.1.).*$
      RewriteRule ^(.*)$ https://%{HTTP_HOST}%{REQUEST_URI} [R,L]
</ifModule>
```

8.31.3. HTTPS setting in Symfony

You can set http of https connection in Symfony from app/security.yml file.
[psips/app/security.yml]

```
    access_control:
    - { path: ^/login,    roles: IS_AUTHENTICATED_ANONYMOUSLY }
    - { path: ^/psipuser, roles: ROLE_GUEST, requires_channel:
http }
    - { path: ^/admin,    roles: ROLE_PSIP,requires_channel: https }
    - { path: ^/psipstaff,    roles: ROLE_PSIP, requires_channel:
https }
```

If you set "requires_channel:https" the path is redirected to use https connection. In the above example, the path which start with /admin or /psipstaff always will be redirected to https connection.

[note] When the HTTPS is set by Symfony, if you access to the database by IP "192.168.1.31", then you will get certificate alert or error, since the certificate has the domain "*.malawi.gov.mw". If you accept the certificate of 192.168.1.31, anyway the content will be shown.

[note] Currently the HTTPS is not set by Symfony configuration, but controlled by Apache to redirect all request to HTTPS.

Government of Malawi

Public Sector Investment Programme (PSIP)

PSIP Database
Excel Template Loader / Generator
Design Document
(Inside Template Loader and Generator)

The Ministry of Finance, Economic Planning and Development
Department of Economic Planning and Development
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21 Aug, 2017	0.02	Y.Ishikawa	Revised version for Ver.4

Table of Contents

Inside Template Loader and Generator

1. General structure Smarty based Web application

```
<?php
{
```

```
  $priv_roles = array(
    'ROLE_ADMIN' => 1,
    'ROLE_PSIP'  => 1,
    'ROLE_USER'  => 0,
    'ROLE_GUEST' => 0
  );
  require_once('auth_check.php');
```

Authentication and privilege check

```
  require_once("tload2_config.php");
  require_once("MySmarty.class.php");
```

Commonly included

Program body

```
  $sm->assign("xxx", $xxx);
  $sm->assign("yyy", $yyy);
    :
```

Variables used in the View

```
  $sm->display("tload2/tl_view_filename.tpl");
```

Calls a view (smarty)

```
}
?>
```

2. parse_project.php

The purpose of this program is as below.

- Read the contents of templates (project proposal and quarterly progress report)
- Parse the contents and map the data to the database table and column
- There are 2 modes such as "CLI mode" and "Web mode". CLIstands for command line interface
- In CLI mode, program is called from shell and exit after inserting the data into the database
- In Web mode, displays the data comparison screen

Followings explain the features.

Comments to explain the usage of CLI mode

```
<?php
{
  require_once("define.php");
  /*
   * parseproject.php
   * Command line syntax: php parseproject.php [-r] [-a] path_to_file file_name
   *    path_to_file full path of to the input file
   *    file_name    file name
   *    -r           Record the result into submission table
```

```
 *    -a           Indicate auto-mode when being recorded
 * Example:
 * php parseproject.php -r "/home/psip/files2" "1617_310_ONGOING_Const.xlsm"
 *
 */
// "cli" for command line, "apache2handler" for web
$cli_mode = (php_sapi_name() == "cli");
```

```
//===============
// Retrieve data from Excel template
//===============
Function retrieve_datasend($file_path, &$dlist) {
  $desc_spec = array(
    1 => array("pipe", "w"),
    2 => array("pipe", "w")
  );
  $line_delim = "\r";

  $msg = '';

  $command = JAVA_COMMAND . " -jar " . EXCEL_UTY . " -p2 "
    . "'" . $file_path . "'";

  $env = array('LANG' => 'ja_JP.UTF-8');

  $proc = proc_open($command, $desc_spec, $pipes, NULL, $env);

  if ($proc === false) {
    return false;
  }
```

Calls an external Java program for reading the Excel template files

```
// Insert tables
if ($TemplateType == 'Q') {
  $project_code = $tmp['QtReport']->project_code;
  $year = $tmp['QtReport']->year;
  $qt = $tmp['QtReport']->qt;

  // Keep original qt_report_id
  $original_qt_id = get_qt_report_id($project_code, $year, 0);

  // Deletre qt working record
  $qt_id = get_qt_report_id($project_code, $year, -1);

  if ($qt_id) {
    remove_qt_report_by_id($qt_id);
    remove_qt_related_records($qt_id);
  }

  $project_id = $prInfo->project_id;
  $object = $tmp['QtReport'];

  $qt_id = insert_object($object, $project_code, $project_id);


  foreach ($insQ as $object) {
```

Insert quarterly progress report data

```
        $className = get_class($object);

        // Some objects have qt_report_id property
        if (isset($listQtDedicatedClass[$className])) {
          $object->qt_report_id = $qt_id;
        }
```

Insert into the other quarterly progress report related tables

```
        $id = insert_object($object, $project_code, $qt_id);
        if (!$id) {
          $errmsg .= "Insertion of data failed (insQ): class=" .
get_class($object) . ", p\
roject_code={$project_code}\n";
          print_r($object);
        }
      }
```

3. data.class.php

The purpose of this program is as below.

- Define the database tables and columns as class
- Define the tables according to the template types

To add a table, followings must be considered.

(1) Add the table name into $classList array in class name format.
i.e.) project_code → ProjectCode

(2) Add the table name into $classList_T array in class name format with corresponding key index.
i.e.) Tables for New Project Template, add the table name into $classList_T['N'].

(3) For Quarterly progress report, add the table name into $classList_T['Q'] and $listQtDedicatedClass.
The latter one is defining the tables which only used in Quarterly Report domain.

(4) Add the new table class in following format.

```
 /*******************************************************
  * EXTENSION_REQUEST
  *******************************************************/
 class ExtensionRequest {
   // Constructor for set database data
   Public Function __construct($qt_report_id=null) {
     if (!$qt_report_id) {
       return;
     }

     $db_data = db_find('extension_request', '*',
     "qt_report_id='{$qt_report_id}'");

     if (!$db_data) {
       return;
     }

     $prop_names = get_object_vars($this);
     foreach ($prop_names as $key => $val) {
       $this->$key = $db_data[$key];
     }
   }
```

← Comment

← Constructor which obtains the corresponding record if the parameter is given and returns the result by setting the values to the corresponding properties.

← Properties (class variables). The names and order must be same as the table columns.

```
    var $id;
    var $project_code;
    var $qt_report_id;
    var $req_date;
    var $req_name;
```

4. loadspec.php

The purpose of this program is as below.

- Define the data loading specification. The specification is for mapping the Excel data label name to database table and column. Such definitions are used for loader.
- The generating specification is automatically created from the loading specification during the generation process.

The format of the specification is as below.

```
$spec+<table class name> = array(
    '<label name1>' => array('<operation1>', '<column name1 or stack name1>'),
    '<label name2>' => array('<operation2>', '<column name2 or stack name2>'),
      :
```

Followings are the explanations of above format elements.

- **$spec+<*table class name*>**

  i.e.)

  extension_request table → $specExtensionRequest

  spec_rel_output_outcome table → $specRelOutputOutcome

- ***'<label name1>'***

  This can be simple label name such as ‘x_project_code’ but it also can include regular expressions. For example if there are numbered labels such as x_output_01 to x_output_30, it can be expressed using regular expression by '/^x_output_[0-9][0-9]/'. The regular expression must be enclosed by slashes (/ /).

- ***'<operation1>'***

  This could be one of followings.

  ‘set’ set the value to the column

  ‘filter:<*filter name*> set the value to the column after passing the specified filter function.

  ‘encode:<*encode name*>’ encode the value with specified encoding function and set the result to the column

  ‘stack’ stack the value until the end and process the stacked values using specified stack name function.

  ‘regex:/<*regular expression*>/’ Retrieve data using the specified regular expression and set into the column

- *'<column name1 or stack name1>'*

For the operations such as set, filter and regex, this part specifies a column name but for stack operation, this specifies the stack name.

5. process_template.php

This program processes the Excel data using the specifications defined in loadspec.php.

```
ksort(EvalProcess::$stackPool);

foreach (EvalProcess::$stackPool as $field => $x) {
  $Xvals = $x;

  switch($field) {
  case 'tec':      ← stack name
    $tmp['Project']->tec = '';
    $tmp['Project']->tec_orig = '';
   :
    break;

  case 'project_readiness':    ← stack name
    $tmp['Project']->project_readiness = '';
    $readiness_result = array();
   :
```

As seen above, each stack is processed in the corresponding 'case' block. In the block, followings are commonly used.

- `$tmp['`*class name*`']->`*column name*

  $tmp[ ] is pre-instantiated object and it corresponds to the table object. The data will be inserted to the table later.

  $tmp[ ] is only applicable for the single record object. If there are multiple records, the records has to be accommodated by creating new object like below.

```
foreach ($x as $key => $val) {
   if (!$val) {
     continue;
   }
   // Ignore x_in_output01_outcome
   if (strpos($key, 'x_in_output') !== false) {
     continue;
   }
   // n_output01_outcome --> 1
   $matches = array();
   preg_match('/([0-9]+)/', $key, $matches);
   // 01 --> 1
   $output_num = $matches[1] * 1;
   $tmp['RelOutputOutcome']->output_odr = $output_num;
   $tmp['RelOutputOutcome']->outcome_odrs = $val;

   $insQ[] = clone $tmp['RelOutputOutcome'];
 }

 unset($tmp['RelOutputOutcome']);
```

- `xd('`*label name*`')`

  This function extracts the Excel column value of specified label. Although the label does not exist, it returns an empty string. Therefore the existence checking and null checking are not required.

6. file_restore.php

This program is the controller of Template Generator. When it makes the project list by vote, a function "vote rewrite" is applied. It change the vote code from the database to specified one based on the definitions in vote_rewrite table. This is to correspond to vote merging and separation.

Below is the table specification and explanation.

{{ **VOTE_REWRITE** **Added in 3.04**

No.	Column Name	Data Type	Other Attributes	Origin of Column Name	Data Example	Remarks
1	ID	INT	PRIMARY KEY AUTO_INCREMENT	ID	22	Surrogate key
2	PROJECT_CODE	VARCHAR(20)		Project Code	'1234'	
3	YEAR	INT	NOT NULL	Year	2016	Year to apply
4	FROM_VOTE_CODE	VARCHAR(10)		From Vote Code	'324'	Code from
5	TO_VOTE_CODE	VARCHAR(10)	NOT NULL	To Vote Code	'320'	Code to
6	TS	TIMESTAMP				
7	*LOG_ID*	INT		Log ID	10223	

}}

Usage of VOTE_REWRITE
project_code='1234', to_vote_code='222' --> Rewrite the vote code of project 1234 to 222
project_code='*', from_vote_code='221', to_vote_code='222' --> Rewrite the vote code of all projects in vote 221 to 222

7. libTemplate.php, restore_stack_func.php

This program generates the Excel datasend format data from database. The specification of data mapping from the database to Excel is automatically created from loadspec.php and processed accordingly. But only the process of 'stack' must be made by the programmer. The processing function name is 'stack' + *stack name*. The functions are gathered into restore_stack_func.php. Next is the example of the stack name 'tec'.

```
Function stack_tec(&$mod, &$dbdat, $proj_year) {
  if ($dbdat[0]->tec_orig) {
    $mod['x_estimated_cost'] = floor($dbdat[0]->tec_orig);
    $mod['x_estimated_cost_rev'] = floor($dbdat[0]->tec);
    $mod['x_project_appdate_rev'] = year2fy($dbdat[0]->tec_year_approval);
  }
  else {
    $mod['x_estimated_cost'] = floor($dbdat[0]->tec);
  }
}
```

The parameters of the function are as below.

- &$mod

  This is to return the result of the mapping. The index is the Excel datasend label name.
- &$dbdat

  This is an array which keeps the database record(s). It may contain single record or more reocrds.
- &proj_year

This holds the project year.

8. process_restore.php

This program works for generating Excel files. The below part is selecting the base template file by template type.

```
switch ($t_type) {
case 'N':
  $infile .= BASE_TEMPLATE_NEW;
  break;
case 'O':
  $infile .= BASE_TEMPLATE_ONGOING;
  break;
case 'Q':
  $infile .= BASE_TEMPLATE_QTREPORT;
  break;
case 'P':
  $infile .= BASE_TEMPLATE_PFM_IT;
  break;
default:
  //
}
```

The constants such as BASE_TEMPLATE_NEW, BASE_TEMPLATE_ONGOING and so on are defined in define.php as seen below.

```
define("BASE_TEMPLATE_PATH", BASE_DIR . "/base_templates2");
define("BASE_TEMPLATE_NEW", "new.xlsm");
define("BASE_TEMPLATE_ONGOING", "ongoing.xlsm");
define("BASE_TEMPLATE_QTREPORT", "qtreport.xlsm");
define("BASE_TEMPLATE_PFM_IT", "pfm-it.xlsm");
```

Next part composes the output Excel file name.

```
  if ($t_type == 'N' || $t_type == 'O') {
    $outfile = ($PlanFY - 2000) * 100 + ($PlanFY - 2000 + 1) . '_'
      //. $dbProjects->rep_institution_code . '_'
      . $vote_code . '_'
      . ($t_type=='N'? 'NEW': 'ONGOING') . '_'
      . create_filename($mod['x_project_title'])
      . '.' . INFILE_EXT;
  }
  else if ($t_type == 'Q') {
    // $t_type = 'Q'
    $outfile = ($qt_year - 2000) * 100 + ($qt_year - 2000 + 1) . '_'
      //. $dbProjects->rep_institution_code . '_'
      . $vote_code . '_'
      . 'QTREPORT' . '_'
      . create_filename($mod['x_project_title'])
      . '.' . INFILE_EXT;
  }
  else if ($t_type == 'P') {
    // $t_type = 'P'
    $outfile = ($pfm_year - 2000) * 100 + ($pfm_year - 2000 + 1) . '_'
      //. $dbProjects->rep_institution_code . '_'
      . $vote_code . '_'
      . 'PFM-IT' . '_'
```

```
        . create_filename($mod['x_project_title'])
        . '.' . INFILE_EXT;
    }
```

Next part executes the external Java command for Excel file generation.

```
   // Execute ExcelUtil to modify Template
    // java -jar ExcelUtil.jar -m2 modfile from-file to-file
    $command = JAVA_COMMAND . " -jar " . EXCEL_UTY . " -m2 " . $modfile
      . " " . "'" . $infile . "'" . " "
      . "'" . $outdir . PATH_DELIM . $outfile . "'";

    $proc = proc_open($command, $desc_spec, $pipes, NULL, $env);
```

9. show_project.php, model_view_project.php

These programs are for displaying the project information as same formats as the Excel templates. There is a definition of tabs which correspond to Excel sheets.

```
    // Tab
    $tab_menu = array();

    if ($TemplateType == 'N') {
      // New
      $tab_menu = array (
        "GeneralInfo",
        "ProjectOutline",
        "ProjectLogframe",
        "TotalProjectCostMatrix",
        "AnnualProjectCostMatrix",
        "Financing",
        "MonitoringEvaluation",
        "Proposal_for_applied_FY",
        "ProjectManagementStructure"
      );
    }
    else if ($TemplateType == 'O') {
      // On-going
      $tab_menu = array (
        "GeneralInfo",
        "ProjectOutline",
        "ProjectLogframe",
        "ProjectPerformance",
        "AnnualProjectCostMatrix",
        "MonitoringEvaluation",
        "Proposal_for_applied_FY",
        "ProjectManagementStructure"
      );
    }
    else if ($TemplateType == 'Q') {
      // Quarterly Report
      $tab_menu = array (
        "1_Main",
        "2_ProjectPerformance",
        "3_Request for Extension"
      );
    }
```

10. tl_view_project.tpl, tl_view_qtreport.tpl (in smarty/templates/tload2/)

These are the views for displaying the project information as same formats as the Excel templates. Following example is from tl_view_qtreport.tpl

```
{*=================== 1_Main (Quarterly Report) ====================*}
{if ! $sheet_name || $sheet_name == "1_Main"}
  <div id="1_Main">
    <table class="tab" border="1" style="width:1000px;">
      <tr>
        <td colspan="3" style="background-color:#046;color:#fff;font-
weight:bold;font-si\
ze:18px;text-align:center">
          FY{$year_begin}/{$year_begin-1999} Project Quarterly Progress
Report form
        </td>
      </tr>
      <tr>
```

To implement tab menu function, the parts “`{if ! $sheet_name || $sheet_name == "1_Main"}`” and “`<div id="1_Main">`” are important. The compared literal value and the id value of “div” tag must be same as the contents of $tab_menu defined in model_view_project.php.

To display the data, same name as the Excel‘s label can be used as below.

```
    <td>
      <div class="box" style="float:left;width:80px;text-align:center">
        {$ds.x_project_code}
      </div>
      <div style="float:left;margin-left:20px">
        Previous Project Code
      </div>
      <div class="box" style="float:left;width:90px;text-align:center;">
        {$ds.x_project_code_v2}
      </div>
      <div class="box" style="float:right;width:120px;text-align:center;">
        {$ds.x_project_status}
      </div>
      <div style="float:right">Project Status </div>
    </td>
```

Government of Malawi

Public Sector Investment Programme (PSIP)

PSIP DATABASE
TEST SPECIFICATION

The Ministry of Finance, Economic Planning and Development
Department of Economic Planning and Development
P. O. Box 30136
Lilongwe 3, Malawi

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Supported by
Project for Capacity Enhancement in Public Sector Investment Programming II
(CEPSIP II)

Japan International Cooperation Agency

System	PSIP Database Ver. 3.01.10	Tester	
Function	Site Validation Log	Date	

No.	Preparation	Initial State	Input	Outcome	Result	Comment
1	Press [Create] button in PSIP Process Management screen in "Site Validation Log" column	The page is just opened	Observe	- The initial value of "Visited Date & Time" is current date & time (5min resolution). Other input columns are empty. - "Creating" is blinking at the top.		
2		The page is just opened	Press [Cancel] button	The window is closed		
3		The page is just opened	- Change the Visited Date & Time - Input text into all input columns Note: Put more than 1 line into textarea columns - Press [Register] button	- "Registration Success" appears		
4		"Registration Success" appears	Press [Close] button	- The window is closed - The button on the PSIP Process Management screen is changed to [show] with green color.		
5		A site validation log is registered and the button is [show] in green color	Press [show] button.	- PSIP Site Validation Log screen opens - The registered contents appear in the table. - The MDA and Implementing agency is correct.		
6		PSIP Site Validation Log screen is opened	Press PEN icon (Edit) in the "Edit/Delete" column	- "Edit Site Validation Log Record" window opens - The contents are same as registered info. - "Editing" in blinking at the top.		
7		"Edit Site Validation Log Record" window is opened	Edit the all items and press [Register] button.	- "Registration Success" appears		
8		"Registration Success" appears	Press [Close] button	- The contents in the table on PSIP Site Validation Log screen are properly changed.		
9		PSIP Site Validation Log screen is opening	Press PEN icon (Edit) in the "Edit/Delete" column	- "Edit Site Validation Log Record" window opens		
10		"Edit Site Validation Log Record" window is opened	Press [Cancel] button.	- "Edit Site Validation Log Record" window is closed - The contents in PSIP Site Validation Log screen are not changed.		
11		PSIP Site Validation Log screen is opening	Press Trash Can icon (Delete) in the "Edit/Delete" column	A confirmation diargue box appears		
12		A Dletion confirmation diargue box appears	Press [Cancel] button	The Deletion confirmation dialogue close		
13		A Dletion confirmation diargue box appears	Press [OK] button	- The record on PSIP Site Validation Log screen is deleted - If no more record "No log record found" is displayed.		
14	Redo up to No.4 and press [show] button. Prepare 10 picture files in JPG and PNG format, and 2 non-picture files. (Non-picture files are such as Excel, Word, etc.)	PSIP Site Validation Log screen is opened	Press Upload icon in the Photos coloumn	- Upload Photo Files window opens - Project code, title, MDA, Date & Time and Site information are correct.		
15		"Upload Photo Files" window opens	Drag & drop all 12 files into "Drop files here!" Area	- 10 picture files are uploaded - Non-picture files are ignored		
16		Picture files are uploaded	Press [Close] button of "Upload Photo Files" window	- The window is closed - Upload, show and Trash Can icons appear in Photos cloumn in the PSIP Site Validation Log table		
17		PSIP Site Validation Log screen is opened	Press Upload icon in the Photos coloumn	- Upload Photo Files window opens		
18	Prepare 2new picture files in JPG format	"Upload Photo Files" window opens	Drag & drop all 2 new files and 2 same files into "Drop files here!" Area	- Uploaded with 2 Added and 2 Updated indications (Press [Close] button after confirming)		
19		PSIP Site Validation Log screen is opened	Press show icon.	Photo Viewer window opens.		
20		Photo Viewer window opens with Thumbnail mode.	Press a thumbnail	- Switch to Individual Photo mode		
21		Individual Photo Viewer mode	Operate [Prev], [Next] Icons	- The functions of the icons are as expected		
22		Thumbnail mode	Press [Close Window] button	Photo Viewer window is closed.		
23		PSIP Site Validation Log screen is opened	Press Trash Can icon in the Photos coloumn	- A confirmation diargue box appears - [Cancel] can cancel the deletion - [OK] deletes all photos		
24		After pressing [OK] on the deletion confirmation dialogue box	Observe	- Upload and show icons dissappear from Photo column on the Site Validation Log screen		

System	PSIP Database Ver. ******	Tester	
Page	Login,Proposal,show summary,project status,progress feature,reports,download forms,initial appraisal,Minestrial Meeting,Final	Date	

No.	Preparation	Initial State	Input	Outcome	Result	Comment
1	Press login to PSIP button on the portal page	The page just opened		blank log in page appears		
2		blank login window appears	enter the wrong log in creditials and click enter	invalid creditials message comes in		
3		blank login window appears	enter the right log in creditials and click enter	PSIP database ver 3 home page opens		
4		PSIP database ver 3 home page opens	observe	> the current sytem is shown as 2017/18 > the log out button is shown > psip proposal, project status, project progress, reports , download forms , information , psip management and sytem setup features are shown >announcements message is shown		
5		psip home page	observe	an expansion of proposal featutes appears which has submission status, project details and show summary sub-features		
6		sub-features list appears	click sub-feature of submission status	submission status page containing all votes submitted appears		
7		submission status page containing all votes submitted appears	observe	> list of submitted projects appears categorised into votes > green colour is shown if the project is both submitted and loaded > for the projects which are not loaded, there is no green colour shown > go to menu button is shown > drop down list of votes is shown where you can select a vote of your choice		
8		project template submission status page	click on on of the project code	the project template opens		
9			click on on of the project title	the project template opens		
10			Select all votes option on the drop down list of votes	all projects appears from diffferent votes		
11			Select on vote ie Judiciary	only projects submitted by the vote appears (judiaciary projects)		
12			click on go to menu button	PSIP home page menu appears		
13		Psip home page menu appears	click on a sub feature of project details under psip proposal feature	project details page appears		
14		project details page appears	observe	> drop down list of FY appears > drop down list of votes appears > different status of the projects appears ie pended , ongoing new ; where you can check or uncheck		
15		project details page appears	Select a FY in the drop down list and click search	a comment appears saying an item should be selected in the vote drop down list		
16		project details page appears	Select a vote in the drop down list and click search (while all the statuses are unchecked)	a list of projects appears		
17		project details page appears	check the project status of your choice and click search (while vote and FY year are already selected)	a list of projects appears (only those projects which its status was checked)		
18		a list of projects appears	click on the project code	directs to the project template		
19			click on copy button	the copy to clipboard message pops up		
20			click on csv button	save as window appears and download is successful		
21			click on excel button	download window appears and download is successful		
22			click on pdf button	download window appears and download is successful		
23			click on print window	printing window appears		
24		directs to the project template	observe	edit button is shown		
25				pdf button is shown		
26				print button is shown		
27		edit button is shown	edit on the project title , flagship project and click edit	editing is successful		
28	show summary subfeature		click on show summary sub-feature	project summary form appears		
29		project summary form appears	observe	drop down list of votes is shown		
30		project summary form appears		drop down list of FY is shown		
31		project summary form appears		download button is shown		
32		download button is shown	click on the download button	Save as window appears and download is successful		
33		project summary form appears	select a vote of your choice on a drop down list i.e Greenbelt Authority	a list of projects from the selected vote appears		
34		a list of projects from the selected vote appears	click on the title of the project in the summary form	project template window appears		
35		project template window appears	click on back button	navigates to the summary form		
36		project template window appears	click on to menu button	Menu window appears		
37	Click on the project status feature in the menu	Menu window appears	observe	sub menu of project status which is called status and approved budget appears		
38		sub menu of project status which is called status and approved budget appears	click on status and approved budget	status and approved budget window appears		
39		status and approved budget window appears	observe	drop downlist of FY		
40				Drop downlist of votes		
41				Status bar containing project status i.e pended, new , ongoing , completed etc		
42			Select a FY from the drop downlist and click search	warning message pops in saying a vote has to be selected		

System	PSIP Database Ver. ******	Tester	
Page	Login,Proposal,show summary,project status,progress feature,reports,download forms,initial appraisal,Minestrial Meeting,Final	Date	

No.	Preparation	Initial State	Input	Outcome	Result	Comment
43			Select the vote from the drop down list and click search while all status are unchecked	All projecst under the chosen vote appears		
44		status and approved budget window appears	Ckeck the status of your choice and click search	the list of only projects under the checked statuses appears		
45		the list of only projects under the checked statuses appears	click on the hyperlink of the project title	navigates to the project template		
46		the list of only projects under the checked statuses appears	Click on the update button	Navigates to edit appraisal results of proposals window		
47		Navigates to edit appraisal results of proposals window	observe	project status drop down list		
48				Appraisal decision drop down list		
49				Approved budget status drop down list		
50				Mid year revised status drop down list		
51				register and go back button		
52				Psip database top hypelink		
53				Edit results of appraisal hyperlink		
54				Results of appraisal hyperlink		
55			click on Psip database top hyperlink	navigates to PSIP database home page		
56			Click on the the results of appraisal hyperlink	navigates to status and approved budget		
57			click on edit results of appraisal hyperlink	nothing happens because that's the window which you are		
58	Click on the project progress feature on the psip database menu	Menu window appears	Observe	quartely progress report which is a sub-feature of project progress feature appears		
59		quartely progress report which is a sub-feature of project progress feature appears	click on quartely progress report button	navigates to project quartely progress report status window		
60		navigates to project quartely progress report status window	Observe	FY drop down list		
61				Vote drop down list		
62				Show only submitted project check button		
63			select FY , Vote of your choice and click search while show all submitted button is unchecked	All projects under the vote appears showing the status of submission of quartely		
64			select FY , Vote of your choice and click search while show all submitted button is checked	the list of only projects which have submitted quartely reports appears		
65		the list of only projects which have submitted quartely reports appears	observe	blue colour button is shown if the quartely report is submitted		
66				extension button is shown		
67				No colour is shown if the quartely report is not submitted		
68			Click on the blue button marked "Ok"	navigates to the submitted quartely report template		
69			click on the project code	navigates to the project template		
70		extension button is shown	click on the "extension button"	nothing happens.		
71	Click on reports feature on the psip database menu	Menu window appears	observe	sub- feature " project list" is shown		
72		sub- feature " project list" is shown	click on the project list sub-feature	project summary report window appears		
73		project summary report window appears	observe	drop down list of FY		
74				drop down list categorizing what kind of report should be produced i.e by sector, vote etc		
75			select a type of report you want without checking TEC or donor and click show button	a list of projects appears		
76			select a type of report you want while TEC or donor are checked and click show button	a list of projects showing TEC and donor column appears		
77			select a type of report you want while TEC or donor are checked and click excel button	save as window appears		
78		save as window appears	click on save button	the file saved successfully		
79		project summary report window appears	select the type of report wanted under resource allocation and click show button	project list appears by the type of report selected		
80		project list appears by the type of report selected	click on go back button	navigates to project summary report window		
81		project summary report window appears	select the type of report you want under resource allocation and click excel button	save as window appears		
82		save as window appears	click on the save button	the file saved successfully		
83	Click download forms feature	Menu window appears	observe	New project proposal(blank) sub-feaure is shown		
84				New project proposal (pipeline) sub-feature is shown		
85				Ongoing project proposal sub-feature is shown		
86				Quarterly progress report sub-feature is shown		
87				PFT-IT sub-feature is shown		
88		New project proposal(blank) sub-feaure is shown	Click on new project proposal (blank) button	save as window appears		
89		save as window appears	click on the save button	new blank template saved successfully		
90		New project proposal (pipeline) sub-feature is shown	click on new project roposal (pipeline) button	navigates to download project template (new, pipeline) window		

System	PSIP Database Ver. ******	Tester	
Page	Login,Proposal,show summary,project status,progress feature,reports,download forms,initial appraisal,Minestrial Meeting,Final	Date	

No.	Preparation	Initial State	Input	Outcome	Result	Comment
91		navigates to download project template (new, pipeline) window	observe	select vote drop downlist is shown		
92		navigates to download project template (new, pipeline) window		Go back to menu button is shown		
93		Go back to menu button is shown	Click on go back to menu	navigates to psip database menu window		
94		navigates to download project template (new, pipeline) window	select a vote from the drop downlist i.e judicialy	a list of pipeline projects under the selected vote appears		
95		a list of pipeline projects under the selected vote appears	observe	project titles are shown while underlined		
96		a list of pipeline projects under the selected vote appears		select /unselect all buttons are shown		
97		a list of pipeline projects under the selected vote appears		download selected button is shown		
98		a list of pipeline projects under the selected vote appears	Click on the project title	save as window pops up		
99		save as window pops up	click on the save button	New, pipeline template saved successfully		
100		a list of pipeline projects under the selected vote appears	select check all button and click download selected files	all files downloaded successful		
101		Ongoing project proposal sub-feature is shown	click on the ongoing template sub-feature	downlaod proposal template (ongoing) window appears		
102		downlaod proposal template (ongoing) window appears	observe	select vote drop downlist is shown		
103				Go back to menu button is shown		
104			Select a vote from the drop down list ie GBA	a list of ongoing projects appears of the selected vote		
105		a list of ongoing projects appears of the selected vote	observe	project titles are shown while underlined		
106				select /unselect all buttons are shown		
107				download selected button is shown		
108			Click on the project title	save as window pops up		
109			click on the save button	New, pipeline template saved successfully		
110			select check all button and click download selected files button	all files downloaded successful		
111			click on go back to menu button	navigates to psip database menu window		
112		Psip database menu window	Click on quartely progress report sub-feature	navigates to download project template (QT report) window		
113		navigates to download project template (QT report) window	observe	select vote drop downlist is shown		
114		navigates to download project template (QT report) window		Go back to menu button is shown		
115		a list of quartely reports appears of the selected vote		project titles are shown while underlined		
116		a list of quartely reports appears of the selected vote		select /unselect all buttons are shown		
117		a list of quartely reports appears of the selected vote		download selected button is shown		
118		a list of quartely reports appears of the selected vote	Click on the project title	save as window pops up		
119		Save as window appears	click on the save button	quarterly report saved successfully		
120		a list of quartely reports appears of the selected vote	select check all button and click download selected files	all files downloaded successful		
121		a list of quartely reports appears of the selected vote	click on go back to menu button	navigates to psip database menu window		
122		psip database menu window	click on the PFM-IT sub-feature	Download project template (PFM-IT) window appears		
123		Download project template (PFM-IT) window appears	observe	select vote drop downlist is shown		
124		Download project template (PFM-IT) window appears		Go back to menu button is shown		
125		Download project template (PFM-IT) window appears	Select the vote from the drop down list	a list of PFM-IT templates appears		
126		a list of PFM-IT templates appears	observe	project titles are shown while underlined		
127		a list of PFM-IT templates appears		select /unselect all buttons are shown		
128		a list of PFM-IT templates appears		download selected button is shown		
129		a list of PFM-IT templates appears	Click on the project title	save as window pops up		
130		save as window appears	click on the save button	PFM-IT saved successfully		
131		a list of PFM-IT templates appears	select check all button and click download selected files	all files downloaded successful		
132		a list of PFM-IT templates appears	click on go back to menu button	navigates to psip database menu window		
133	Press [create] button in PSIP process management screen in " initial appraisal " column	The page [appraisal rating matrix and reference documents] opens	observe	appraisal cretiorion are shown on every row		
134				edit button is shown against each appraisal creteria		
135				go back button is shown		
136				print button is shown		
137				pdf button is shown		

System	PSIP Database Ver. ******	Tester	
Page	Login,Proposal,show summary,project status,progress feature,reports,download forms,initial appraisal,Minestrial Meeting,Final	Date	

No.	Preparation	Initial State	Input	Outcome	Result	Comment
138		edit button is shown against each appraisal creteria	press edit button on an appraisal creteria	edit rating appraisal matrix window opens		
139		edit rating appraisal matrix window opens	click register button	registration success appears		
140		edit rating appraisal matrix window opens	Click go back button	navigates to process mangement screen		
141		The page (ministerial meeting records) opens	observe	edit button for 4 meetings are shown		
142				edit button for overal comments comment box is shown		
143				edit button for recording minutes for each project is shown		
144				close window button is shown		
145				Not conclude button is shown		
146				delete this minute button is shown		
147		edit button for 4 meetings are shown	click on the edit button for 1st meeting	navigates to attandance window		
148		navigates to attandance window	observe	date and time adjustment row is shown		
149				Venue row is shown		
150				attendees (PSIP) edit box is shown		
151				attendees (MDA) edit box is shown		
152				cancel button is shown		
153				register button is shown		
154			adjust date , time , edit both attendees of PSIP and MDA nd click register	Register successful and window close automatically		
155		Not conclude button is shown	click on edit button of not concluded	navigates to vote level conclusion window		
156		navigates to vote level conclusion window	observe	cancel button is shown		
157				register button is shown		
158				check button for yes/no is shown		
159		check button for yes/no is shown	check yes/no decision and click register	Register successful and window close automatically		
160		edit button for overal comments comment box is shown	Click on the edit button	navigates to overall comment window		
161		navigates to overall comment window	observe	> comment box is shown > register button is shown > cancel button is shown		
162		navigates to overall comment window	input the overall comments and click register	Register successful and window close automatically		
163		edit button for recording minutes for each project is shown	click on the edit button	navigates to edit ministerial minutes window		
164		navigates to edit ministerial minutes window	observe	> comment box is shown > register button is shown > cancell button is shown > check button for yes/no is shown		
165		navigates to edit ministerial minutes window	Input the minutes for the project and click register	Register successful and window close automatically		
166		delete this minute button is shown	click on " delete this minute" button	minutes records deleted successfully		
167		close window button is shown	click on "close window ' button	ministerial minutes window closed successfully		
168	Press [create] button in PSIP process management screen in " Final Appraisal " column	The page final appraisal opens	observe	go back button is shown		
169				pdf button is shown		
170				print button is shown		
171				select score (high/low) button is shown		
172				edit "critical information' button is shown		
173				edit " allocation proposal status and budget" button is shown		
174		select score (high/low) button is shown	click on high/low button	the result is reflected on the result collumn		
175		edit "critical information' button is shown	click on edit button	description box becomes editable		
176		description box becomes editable	input the data and click save	information saved successfully		

System	PSIP Database Ver. ******	Tester	
Page	Login,Proposal,show summary,project status,progress feature,reports,download forms,initial appraisal,Minestrial Meeting,Final	Date	

No.	Preparation	Initial State	Input	Outcome	Result	Comment
177		edit " allocation proposal status and budget" button is shown	click on the edit button	all collumns becomes editable for all the cases from A-D		
178		all collumns becomes editable for all the cases from A-D	select status and input figures then click save	the allocations and status are saved successfully		
179			select status and input letters then click save	the allocations and status not saved (This value is not valid) message appears		
180		pdf button is shown	click on the pdf button	save as window pops up		
181		save as window pops up	click save button	pdf file is saved successfully		
182		print button is shown	click on the print button	navigates to printing window		
183		navigates to printing window	click print button	printing the page successfully		
184		The page final appraisal opens	click on go back button	navigates to psip process management screen		
185		Quarterly Report ([EX]=Extension request) collum is shown in psip process management screen	click on "Ex" button in the collumn	navigates you to approval/withdraw extension request		
186		navigates you to approval/withdraw extension request window	observe	close button is shown		
187				edit button "reasons for decision made" is shown		
188				reject the request button is shown		
189				approve the request button is shown		
190				withdraw the decision button is shown		
191		edit button "reasons for decision made" is shown	click on the edit button	navigates to edit for decision window		
192		navigates to edit for decision window	observe	comment box is shown		
193				cancel button is shown		
194				ok button is shown		
195			input data in the comment box and click ok	inputted data is saved and the window closes automatically		
196		reject the request button is shown	click on reject button	a small window pops up asking if you realy want to reject		
197		a small window pops up asking if you realy want to reject	click on the ok button	extension request is rejected		
198		approve the request button is shown	click on "approve the request button"	a small window pops up asking if you realy want to accept		
199		a small window pops up asking if you realy want to accept	click on ok button	extension request is accepted		
200		withdraw the decision button is shown	click on withdraw the decision button	withdraw of the decision successfully		
201		close button is shown	click on close button	the window closed successfully		
202		Add progress Remark table opens	observe	cancel button is shown		
203				register button is shown		
204				change date and time row is shown		
205				progress edit box is shown		
206				challenges edit box is shown		
207				recommendations edit box is shown		
208		change date and time row is shown	select date and time of when the progress is being written			
209		progress edit box is shown	input data in progress edit box			
210		challenges edit box is shown	input data in challenges edit box			
211		recommendations edit box is shown	input data in recommendations edit box			
212			click on "register" button	registration succesfully		
213		"Show progress remark button" is shown	click on show progress remark button	psip progress remark window opens		
214		psip progress remark window opens	observe	back button is shown		
215				no log record found message is shown		

System	PSIP Database Ver. ******	Tester	
Page	Login,Proposal,show summary,project status,progress feature,reports,download forms,initial appraisal,Minestrial Meeting,Final	Date	

No.	Preparation	Initial State	Input	Outcome	Result	Comment
216			click go back button	navigates back to process management window		
217	press [view ministerial minutes summary] in the process management	navigates to a ministerial minutes summary window	observe	fiscal year drop down list is shown		
218				drop down list of votes is shown		
219				download button is shown		
220				close window button is shown		
221				table of vote , date, overall coments and summary of discussion by project are shown		
222			select the Fiscal year , vote and click the dowload button	save as window pops up		
223		save as window pops up	click on the save button	the file of ministerial minutes summary is saved		
224		close window button is shown	click on the close window button	the ministerial minutes summary window closed		
225	click on the " sub menu project comparison" on the menu of process management	navigates to select project comparison window	observe	vote selection drop down list is shown		
226				template type selection window is shown		
227				project history and history date drop down lists are shown		
228				project status ie pended, ongoing , new are shown		
229				go to menu button is shown		
230				compare button is shown		
231		select vote eg state residence and check project status	observe	the list of projects based on the status checked are shown		
232		the list of projects based on the status checked are shown	check the project for comparison	fiscal years drop down list becomes active		
233			select the fiscal year A eg 2015 and select another fiscal year B eg 2016 and click compare button	navigates to compare project data view window		
234		navigates to compare project data view window	Observe	parts of project template proposal are shown		
235				2 Note buttons separated by colours are shown		
236				back button is shown		
237		back button is shown	click on the " back" button	navigates to "select project comparison" window but the list of projects under the vote disappears		
238		go to menu button is shown	click on "go back to menu' button	navigates to "PSIP home page "		

System	PSIP Database Ver. ******	Tester	
Page	PSIP Web Portal	Date	

No.	Preparation	Initial State	Input	Outcome	Result	Comment
1	Type Url to Navigate through the PSIP Web Portal Page	page is just opened	Observe	Navigates to the PSIP Web Portal		
2		page is just opened	Observe	General Information Appears having links to (FY2017/18 PSIP Circular, PSIP Guidelines and Attachment,Login to PSIP database and User Registration Form)and inquiry PSIP email and phone numbers.		
3		Page is just opened	Click on FY2017-18 Circular 1 link under PSIP on the web Portal Screen	New screen appears PSIP 2017/18 with the link PSIP Circular 1/PSIP Preparation Guidelines and an attention date		
4		Page for FY2017-18 is just opened	Click on the link for FY2017-18 Circular 1	Download links appears for -FY2017-18 PSIP Circular 1 Main Body.pdf -2017-18_PSIP Guideline & Attachments.pdf - Back to Home Link		
5		Download links page is just Opened	Click on the documents links	Documents downloaded		
6		Download links page is just Opened	Click on Back to Home	Takes you back to the PSIP Web Portal Screen		
7		Page for PSIP Web Portal Screen is just opened	Click on PSIP Documents	New Screen with link to PSIP documents appears		
8		Page with link to PSIP documents is just opened	Click on the document link	Documents opens		
9		Opened Document Page is opened	Click Back	PSIP Web Portal Screen Appears		
10		PSIP Web Portal Screen is just opened	click on PSIP Preparation Handbook	New screen with link to PSIP Preparation Handbook appears		
11		PSIP Web Portal Screen is just opened	Click link on the PSIP Preparation Handbook	The PSIP Preparation Handbook opens		
12		PSIP Web Portal Screen is just opened	Click on Back	PSIP Web Portal Screen Appears		
13		PSIP Web Portal Screen is just opened	Click on Login	Navigates to a new login window		
14		New login Window is just opened	Close window	window is closed		
15		PSIP Web Portal Screen is just opened	Click on MGDS Report	New Screen with link to the MGDS Report appears		
16		New Screen with link to the MGDS Reports is just opened	Click on the link against the report of Choice	MGDS Report Opens		
17		MGDS Report opened page is opened	Click on Back	Takes you back to the PSIP Web Portal Screen		
18	Repeat 14-16 to view MDG Report,Economic Report,Poverty Analysis Report (2014-), Reference (Project Management Document),Others (Newsletter)	PSIP Web Portal Screen is just opened				
19		PSIP Web Portal Screen is just opened	Observe	List ofactual status 2017/18 Proposal Template submission by votes aand a total of Submitted and Uploade Projects is seen		
20		PSIP Web Portal Screen is just opened	Click on number of submitted in the submitted Column on vote	List of projects submitted appears in a table innew window having Number of projects,Date,Type and Project Title		
21		PSIP Web Portal Screen is just opened	Click on the number of uploaded	List of projects submitted appears in a table innew window having Number of projects,Date,Type and Project Title		
22	Download User Registration Form	PSIP Web Portal Screen is just opened	Click on the User registration link	User Registration gets downloaded		

System	PSIP Database Ver. ******
Function	Template Loader & Web Based Submission,

Tester	
Date	

No.	Preparation	Initial State	Input	Outcome	Result	Comment
1	Uploading a Project Using Auto in	Home page is just opened	click on PSIP Management Management	drop downlist appears		
2		Home page is just opened	Click on Web-based Submission	Web-based Template submission tool Screen Appears		
3	Open Project Source Folder for file selection	Web based template submission tool screen is just opened	Drag Template (New,Ongoing and Quarterly Report) into the drag in	Template failing to go		
4		Web based template submission tool screen is just opened	Click on Go to Top	Returns to the Home Screen Page		
5	Uploading a Project Using Template Loader	Home page is just opened	click on PSIP Management Management	drop downlist appears		
6		Home page is just opened	Click on Template Loader	Template loader page appears on top left appears Go to menu click box		
7		Template Loader Page is Just opened	Click on Choose File	Explores inside computer		
8		Template Loader Page is Just opened	Choose file(Ongoing,New templates or Quarterly Report)	Open file and loads to the template loade page		
9		Template Loader Page is Just opened	Click Load	Compare data view window appears: bearing Template file name,Project Title,Project		
10		Compare data view window appears is just opened	Click register on the registration dialogue box	.Registration Screen opens; Project result appears in a tabular with vote code on top;		
11		Registration Screen is just opened	Click on Back to file selection	Compare data view opens		
12		Compare data view is just opened	Click on Back to file selection	Template loader page appears with go to menu click box on top left		
13		Template Loader is just opened	Click on Go to menu	Returns to the Home Page Screen		

System	PSIP Database Ver. ******	Tester	
Function	Project Quick View	Date	

No.	Preparation	Initial State	Input	Outcome	Result	Comment
1	View Project Quick View	Home Page is Just Opened	Click on menu PSIP Management Management	Drop Down List appears		
2		Home Page is Just Opened	Click on project Quick View sub menu	Project Quick View page appears		
3		Project Quick View page is just opened	observe	>Red click tab button for Go to Menu on top left > Total Project count, Quarterly project Count, Note by for log frame >Dropdown list for Proposal FY, Quartely Report FY and Vote dropdown list >Vote Code and number of projects on each Tabular bearing column for .No of projects, .Project proposal FY 2017/18; click button on each project .Quarterly Report for 2016/17 FY; Click Button if submitted and blank if not .Project Status for FY2016/17, A:AM.Applied Status in FY2017/18, .Project code .Project Title		
4		Project Quick View page is just opened	Click on Proposal	Drop Down List appears		
5		Project Quick View page is just opened	Select FY 17/18	Submitted projects for FY17/18 appears		
6	Repeat 4 and 5 for other Proposal FY	Project Quick View page is just opened	Select FY of choice (2015/16,2015/14/2013/14	Submitted projects against that year appears		
7		Project Quick View page is just opened	Click on Quarterly report FY2016/17	Quarterly report button appears in column with projects with Quarterly Report		
8		Project Quick View page is just opened	Click on Quarterly report button	Quarterly report opens		
9		Project Quick View page is just opened	click back	Project Quick View page appears		
10	Repeat 7 and 9 for other Quarterly Report FY	Project Quick View page is just opened	Click on Quarterly report FY17/18,FY15/16,14/13	No quarterly reports shows for FY17/18,13/14/14/13 & shows for previous years except for 15/16		
11		Project Quick View page is just opened	observe Quarterly report	.Page navigates to new Page .Quarterly report shows .Quarterly report has 4 tabs .Main Sheet .Project Performance .Request Extension .Completion Report		
12		Project Quick View page is just opened	click on the tabs	each tab opens		
13	Project Quick View by Vote	Project Quick View page is just opened	Click on Vote	Drop Down List appears		
14		Project Quick View page is just opened	Select Vote e.g 50 State Residences	Tabular box bearing projects from state residences appears		
15	To View Proposal	Project Quick View page is just opened	Click on the click button of the proposal under FY 2017/18	templates opens on top left a red go back button		
16		Template is just opened	Click on the red go back button	Project Quick View page appears		
17	To View Proposal for other years	Project Quick View page is just opened	Click against fiscal year of choice	templates opens against the year of choice		
18	Repeat 13 to 15 to view Quartely reports					
19	To return to the homepage	Project Quick View page is just opened	Click on GO Back to Menu	Returns to the Home Page		

System	PSIP Database Ver. ******	Tester	
Function	Appraisal Summary	Date	

No.	Preparation	Initial State	Input	Outcome	Result	Comment
1	Show Summary	Home page is just opened	Click on menu PSIP Management	Drop downlist appears		
2		Home page is just opened	click on Appraisal summary submenu	Page Navigates to the Appraisal Summary page		
3		Appraisal Summary Page is just opened	Observe	• Box for fiscal year with drop down arrow • All Votes bar with drop down arrow • Hide Project Purpose and Performance columns check box • Tabular for totals of requested amounts • Appraisal Statistics icon • Download Icon • All votes tabular with headings on .No of projects .Vote, in rows labelled the vote and name .Status New/Ongoing-has hyperlink Ongoing, pended, pipeline, ending .Project Title-has a hyperlink .Project Purpose . Donors . FY2017/18 Part 1 in columns with requested amounts .FY2017/18 Part2 .Performance in relation to requested amounts .Priority by Vote-If high lapelled 1 in row and 0 if low .Compliance to PSIP Guidelines (New: full/complete data; ongoing Q1/Q2) –labelled 1 if in compliance and 0 if not complying .Ongoing contractor on site, labelled 1 if onsite and 0 if not onsite .Donor confirmed, 1 if confirmed for project and 0 .Critical information, labelled for projects with critical information and blank for those without. .Initial Appraisal Score, rated out of 35 for those projects with initial appraisal and blank for those without .Final Appraisal Score rated out of 5.0 of 5 for those projects without final appraisal .Initial Recommended Status, Labelled new,pipeline,ongoing or pended made from the initial score .Case A, B,C,D these have status and allocation; all projects with Case A and Case B,C,D if New or Ongoing has allocation and if Pended, Pipelined or Rejected has no allocations		
4		Appraisal Summary Page is just opened	click on the Fiscal Year FY	Drop downlist appears bearing FY17/18,16/17,15/16,14/15,13/14		
5		Appraisal Summary Page is just opened	Click on FY17/18	Information for FY17/18 appears in the tabular for 17/18 and total project summary box for requested amounts for new and ongoing projects		
6		Appraisal Summary Page is just Opened	Click on Summation Symbol labelled Statistics	New window appears with a Close click button on topleft and 'New window appears with a Close click button on topleft and with two tables these .Allocation by Status (Vote code: All Vote) this table has columns bearing'New window appears with a Close click button on topleft and with two tables these .Allocation by Status (Vote code: All Vote) this table has columns bearing =>Status of project which has rows for Ongoing, New, Pipeline, Ending, Terminated, Pended, Rejected => Cases A-D columns bearing amounts with respect to the status and Number of allocated projects in respect to status and beneath are totals .Allocation by Vote (All Vote) =>Column of Vote which has rows for all votes =>Project Count made by each Vote => Cases A-D columns bearing amounts with respect to the vote and Totals =>Status of project i.e. Ongoing, New, Pipeline, Ending, Terminated, Pended, Rejected => Cases A-D columns bearing amounts with respect to the status and Number of allocated projects in respect to status		
7	Close the Appraisal Statistic window					
8		The Appraisal Statistic window is just opened	click on close window	window closes		
9		Appraisal Summary Page is just displayed	Click on FY16/17	Observed content information changes to information pertaining to FY16/17. & IN Tabular only two projects from Ministry of Agriculture appears		
10		Appraisal Summary Page is just Opened	Click on Summation Symbol labelled Statistics	New window appears with a Closse click button and 2 No data for status statisctics messages appears		
11		New window appears with a Closse click tab and 2 No data for status statisctics messages appears	Click on the close window click button	Window closes		
12		Appraisal Summary Page is just Opened	Click the excel sheet symbol labelled	Excel Sheet downloads		
13		Appraisal Sumaary Page is just Opened	Click on FY15/16	>Zeros in the total project summary box for requested amounts for new and ongoing projects >No project in Tabular		
14		Appraisal Summary Page is just Opened	Click on Summation Symbol labelled Statistics	New window appears with a Closse click button and 2 No data for status statisctics messages appears		
15		New window appears with a Closse click tab and 2 No data for status statisctics messages appears	Click on the close window click button	Window closes		
16		Appraisal Summary Page is just Opened	Click the excel sheet symbol labelled	Excel Sheet downloads		
17		Appraisal Sumaary Page is just Opened	Click on FY14/15	>Zeros in the total project summary box for requested amounts for new and ongoing projects >No project in Tabular		
18		Appraisal Summary Page is just Opened	Click on Summation Symbol labelled Statistics	New window appears with a Closse click button and 2 No data for status statisctics messages appears		
19		New window appears with a Closse click tab and 2 No data for status statisctics messages appears	Click on the close window click button	Window closes		
20		Appraisal Summary Page is just Opened	Click the excel sheet symbol labelled	Excel Sheet downloads		
21		Appraisal Sumaary Page is just Opened	Click on FY13/14	>Zeros in the total project summary box for requested amounts for new and ongoing projects >No project in Tabular		
22		Appraisal Summary Page is just Opened	Click on Summation Symbol labelled Statistics	New window appears with a Closse click button and 2 No data for status statisctics messages appears		
23		New window appears with a Closse click tab and 2 No data for status statisctics messages appears	Click on the close window click button	Window closes		
24	To View Summary by Vote	Appraisal Summary Page is just Opened	Click the excel sheet symbol labelled	Excel Sheet downloads		
25		Appraisal Summary is just opened	Click on Vote	drop downlist for votes appears		
26	To Hide project purpose and perfomance in relation to requested amounts	Appraisal Summary is just opened	Select Vote of Choice	Summary comes in accordance with the observed features		
27		Appraisal Summary is just opened	Check the hide button	Project Purpose and Perfomance in relation to requested amounts is hiden		
28		Appraisal Summary is just opened	Click on Go to Menu	Returns to the Home Page		

System	PSIP Database Ver. ******		Tester	
Function	Appraisal Summary		Date	

No.	Preparation	Initial State	Input	Outcome	Result	Comment
1	To Generate Template Forms	Home Page is Just Opened	Click on Menu PSIP Management	Drop down list appears		
2		Home Page is Just Opened	Select on Template Generator submenu	Navigates to Generate project forms window		
3		Generate Project forms page is just opened	Observe	▯Vote Selection drop down box appears on screen ▯Purpose of Generation .i.e. check buttons for Generate for Circular and Repair Excel Form ▯Template Type . Check buttons for New, Ongoing and box for selectin FY you want generate template labelled Latest .Quarterly Report check button and a box for selecting FY labelled 2016 .PFM-IT check button and a box for selecting FY labelled 2016 ▯Download Box in it Download Button and Force Zip check box ▯Display Option .For checking New, Ongoing, Pipeline, Pended, Ending, Terminated, Rejected, undefined, FY2016/17 submitted projects only ▯Select box with select all, clear all and select no-ending project buttons and a Go to menu red button on top left		
4		Generate Project forms page is just opened	Click on Vote selection	Drop down list appears		
5		Generate Project forms page is just opened	select vote of choice	Projects from that vote appears		
6		Generate Project forms page is just opened	observe	projects from that vote appears in tabualar bearing ,Status, check select box,project code,Fiscal year,project title and the observed above appears		
7		Generate Project forms page is just opened	Check Purpose of generation thus check the generate for Circular	generate for circular checked		
8		Generate Project forms page is just opened	Check on template type to new	template type checked		
9		Generate Project forms page is just opened	select FY to Latest FY in the selection for FY box	Box for FY changes to Latest		
10		Generate Project forms page is just opened	Check on the display option to Ongoing	Ongoing checkbox checked		
11		Generate Project forms page is just opened	check the select button for all projects	Projects selected		
12		Generate Project forms page is just opened	check force zip	force zip checked		
13		Generate Project forms page is just opened	click on download button	projects download in zipped format		
14	repeat 7 to 13 for new, ongoing template with varying years and for quarterly report and PFM-IT Tool checking the display tools	Generate Project forms page is just opened				
15		Generate Project forms page is just opened	click on go to menu button	returns to the home page		

System	PSIP Database Ver. ******			Tester	
Function	Information			Date	

No.	Preparation	Initial State	Input	Outcome	Result	Comment
1	To view Information	Home Page is just opened	click on Menu-Information	drop downlist appears		
2		Home Page is just opened	select announcements	Home page is just opened with announcements		
3		Home Page is just opened	observe	One announcent with a pop up download link button uof names of desk officers		
4		Home Page is just opened	Click on the Pop-Up download button	Dialogue box appears with Save,Open and Save as		
5		Dialogue box is just Opened	Click on open	the click opens a word file with names of deskofficers without been saved		
6		Dialogue box is just Opened	click on save	the document automatically is saved in computer		
7		Dialogue box is just Opened	Click on save as	the download file pop up a dialogue box on the kind of format to save		
8		Dialogue box is just Opened	Click on cancel	Home page is just opened with announcements		
9		Home Page is just opened	click on menu Information	drop downlist appears		
10		Home Page is just opened	select submenu-Newsletter	Newletters loads and opens		
11		Newsletter is opened	click on back in tab	returns to the Home Page		
12	To view rensponsible Desk-officer	Home Page is just opened	Observe	Announcements with a Pop up of		

System	PSIP Database Ver. ******			Tester	
Function	User Registration			Date	

No.	Preparation	Initial State	Input	Outcome	Result	Comment
1	View user Registration	Homepage is just opened	Click on menu -System Set Up	drop downlist appears		
2		Homepage is just opened	Select User Registration on sub menu	Navigates to the Registration Users List Page		
3		Registration Users List Page is Just Opened	Observe	> Page has Title labelled Registered Users List >Has buttons alligned in the same row these are .Copy .CSV .Excel .PDF .Print > Has a Show entries box in it there is a drop downlist for entries,50,100,200and All >Has a Search Box >Has the Followining Columns .Number .Login Id .First Name .Last Name .Role .Vote Code .Status .Gender .Position .E-mail .Tele 1- for Telephone .Cel 1-for Celephone .Last Login date .Login Count .Actions- In rows there appears the blue show buttons .Rows filled against each Column- .Hyperlink in the Login Id .Number of Pages on on bottom of tabular		
4		Registration Users List Page is Just Opened	Click on Copy Button	Contents copied to the click board		
5		Registration Users List Page is Just Opened	Click on Copy Button	Contents download in Excel		
6		Registration Users List Page is Just Opened	Click on CSV Button	Contents download in Excel		
7		Registration Users List Page is Just Opened	Click on Excel Button	Contents download in Excel		
8		Registration Users List Page is Just Opened	Click on PDF Button	Contents download in PDF		
9		Registration Users List Page is Just Opened	Click on Show entries box	drop downlist appears		
10	Repeat 9 and 10 for the options in the show Entries box which are: 50,100,200 & All	Registration Users List Page is Just Opened	Select one of the options in the show entries box	Number of Rows adjust to the Selection		
11		Registration Users List Page is Just Opened	Search any registered name in the Search box by typing the name e.g	Name appears in the tabular		
12		Registration Users List Page is Just Opened	Blind type word characters numbers and symbols	No results found appears in tabular		
13		Registration Users List Page is Just Opened	Click on the hyperlink in the Login Id	Navigates to the new Window fro registered User data		
14		Registered user data window opened	Observe	>Page Has Title labelled Show Registered User Data > Back to list Button >Tabular with roles corresponding to information. Rows labelled .Login Id .First name .Gender .Role .Vote .Status .Organization .Address .PO Box .Email .Tel 1 .Tel 2 .Cell 1 .Cell 2 .Last Login .Login Count .Ts .Id .Rows filled in accordance with the above		
15		Registered user data window opened	Click on the back to list	Navigates to Registered User List		
16		Registered user data window is just oopened	Click on Show button in the actions column	Navigates to the registration user data window		
17		Registered user data window is just oopened	Click on back to list	Returns to the Registration List Window		
18	Repeat 17 and 18 for the other pages	Registered user data window is just oopened	Click on Page Buttons below the tabular	Pages changes in accordance to the page selected		

System	PSIP Database Ver. ******
Function	PSIP Process Management & view

Tester	
Date	

No.	Preparation	Initial State	Input	Outcome	Result	Comment
1	Observing PSIP Process Management	Home page is just opened	Click on the PSIP Management menu	menu for dropdownlist appears		
2		Home page is just opened	Select process management	Navigates to the Process management Screen		
3		Process Management Screen is just Opened	Observe	.Red Go to Menu Button .FY (2017/18)- box with a drop downlist symbol .Vote with all votes bar with a drop down list .Tabular Matrices demarcated bearing the following . Vote, Vote name and bracket for number of projects on top of tabular matrix, . No of projects column .Project Title- Names of project appear .Project code- 4 digit code appears .Approved Status in FY (2016/17) Budgeted-Labelled ongoing, New, Pended, Pipeline, Completed and Rejected or ended .Quarterly report column, labelled Q if submitted and Ex in orange if request for extension . Site Validation Log .Request for PSIP FY2017/18 Submission Deadline headline on tabular matrix showing submitted date column, uploaded column, Errors in template, show button for show template. .Latest Upload heading on tabular; Showing uploaded date, errors in template, and show template latest, red cell labelled required if upload date not defined. .Appraisal Progress heading on tabular; Showing initial appraisal column green if appraisal made for a project and grey button if not filled, Ministerial Minutes column and Yellow if minutes typed and a grey button in corresponding row of project if not typed, Final appraisal column, green button corresponding to project in row if filled and grey button if not filled. .Project status transition heading on tabular bearing the on submission, PSIP recommended, on budget approval and revised mid-year columns and Show budget Transition column bearing Create button for each corresponding project, green if the transition was made and grey button if not made.		
4	to view the Quarterly report	PSIP Process Management is just opened	Click on the Quarterly report button in Quarterly report column	The page navigates to a project report template		
5		Project report template is just opened	observe	Template with four tabs these are : Main,project perfomance,request for extension,completion report		

System	PSIP Database Ver. ******	Tester	
Function	Budget Transition	Date	

No.	Preparation	Initial State	Input	Outcome	Result	Comment
1	Observe Budget transtion screen	Process Management is just opened	click on Budget Transition button of any	Navigates to the budget transtion screen		
2		Budget Transtion Screen is Just opened	Observe	. Go back Button .Vote bar with drop downlist for all projects .Status; each status with check box (New,ongoing,pipeline,pended,ending,rejected,terminated,completed & undefined) .Budget Cases;check box against each Case(On submission,Case A,Case B,Case C, Case D,Allocation Adjustement,Approved Budget,Mid year Revision) .Row items; check box against (Status,Part 1,Part 2 and Total) . Red Check box for check all against,far end of status,nudget case and row items. .Results of the selected vote's project are found (labelled ....xx..data was found) .Search Button .Quick View for show/hide items (will not be applied to print) . Check box for columns (on submission,case A,Case B, Case C, Case D,allocation Adjustment, Approved Budget and Midyear. .Check box for the rows on status,part 1,part 2 and total .Copy, Excel print and pdf buttons with a show box bearing a dropdownlist for all entries .Search Box .Tabular with headings on column (No, Vote, Project, On Submission, PSIP Recommendation (Case A – Case D) Allocation Adjustment has(Copy and Save & selected status shown), Approved Budeget with an edit symbol and Mid-Year Revision		
3	Change Vote	Budget Transtion Screen is Just opened	Click on the vote bar and select vote of choice and search	projects of that vote appears in tabular		
4	Check Status	Budget Transtion Screen is Just opened	Check on the status of choice and search in regards to the vote	Projects appear according to checked status,unchecked do not apear		
5	Check on budget case	Budget Transtion Screen is Just opened	Check on budget case of choice and search in regards to the vote	Tabular appears of the checked status and unchecked status do not appear		
6	Check on Row Items	Budget Transtion Screen is Just opened	Check or uncheck the row items of choice in regards to the vote	Tabular appears of the checked row items and omits those unchecked		
7	To copy	Budget Transtion Screen is Just opened	Click on copy button in regard to the vote and status	Box appears with xx copied on clipboard		
8	To download excel	Budget Transtion Screen is Just opened	Click on Excel button in regard to the vote and status	Excel sheets automatically downloads		
9	To Print	Budget Transtion Screen is Just opened	Click print button ain regard to vote and sta	Print preview window pops up		
10	To show	Budget Transtion Screen is Just opened	Click on show entry box select entries (50,100,200 and All)	Projects change in accordance to selection if projects above 50.		
11	To Search	Budget Transtion Screen is Just opened	Type project in regard to vote selection	Project appear singular in tabular		
12		Budget Transtion Screen is Just opened	Blind type characters and symbols o	No matches found in tabular appears		
13	To edit	Budget Transtion Screen is Just opened	click on the edit pen button in the cases	New window pops up,select status and edit the allocation and register		
14	To Copy allocation adjustment	Budget Transtion Screen is Just opened	Click on the the copy button in the allocation button screen	new window pops up labelled copy status and budget transtion 17/18		
15		Status and budget transtion 17/18 is just opened	Observe	.vote drop down list .Status check box (New, Ongoing, Pipeline, Pended, Ending, Rejected, Terminated, Undefined) .Check All box .Check box for all Cases . Go back button .Copy Button		
16		Status and budget transtion 17/18 is just opened	check the selected case	the selected case is checked		
17		Status and budget transtion 17/18 is just opened	Click on Copy button	new pop up box for confimation of the copy appears		
18		New pop up confirmation box	click okay on the pop up box	the case is copied simulateneously there appears the percentage load		
19		Copy project status box	click on back button	Status and budget transtion 17/18 screen appears		
20	To Save allocation adjustment	Status and budget transtion 17/18 is just opened	Click on Save button	Save project Status and budget Transtion (17/18)		

System	PSIP Database Ver. ******
Function	Budget Transition

Tester	
Date	

No.	Preparation	Initial State	Input	Outcome	Result	Comment
21		Save project status and budget transtion is just opened	Observe	vote drop down list .Status check box (New, Ongoing, Pipeline, Pended, Ending, Rejected, Terminated,completed, Undefined) .Check All box .Allocation Adjustment check box . Go back button .Save Button		
22		Save project status and budget transtion is just opened	Click on Save button	a new pop up box appears that need confirmation		
23		on the new pop up box	click okay on the pop up box	pop up box disappears and project saving in percentage term loads on the save project and budget transtion window		
24		Save project status and budget transtion is just opened	click on back button	Returns to the Status and budget transtion 17/18 page		

Government of Malawi

Public Sector Investment Programme (PSIP)

PSIP PROPOSAL EXCEL TEMPLATE Ver.4 for New and Ongoing Project

DEVELOPMENT MANUAL

The Ministry of Finance, Economic Planning and Development
Department of Economic Planning and Development
P. O. Box 30136
Lilongwe 3, Malawi

July 2017

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Project for Capacity Enhancement in Public Sector Investment Programming II (CEPSIP II)

Japan International Cooperation Agency

Document History

Date	Revision	By	Remarks
31 Oct 2014	1.0	Yuko Shiraishi	Initial version
17 Dec 2014	1.1	Yuko Shiraishi	Revised for progress report
29 Sep 2015	2.0	Rena Mizuno	Revised for ver.2.0
6 Dec 2015	2.1	Rena Mizuno	Revised for progress report
31 Jul 2017	4.0	Rena MIZUNO	Revised for ver.4.0

Table of Contents

1 Overview of Excel Proposal Template Ver. 4

1.1 System requirements

The following table shows actual versions and conditions.

System	Version	Remarks
Excel Proposal Template	ver. 4.0	
OS	Windows 7 or later version	
Microsoft Excel	2010 or later version, Mac Excel 2011, 2016	Excel 2003 and 2007 are not supported
Loader system	ver. 4.0	
PSIP Database Web	ver. 4.0	

1.2 Template sheets

There are two types of templates;

- New
- Ongoing

New Proposal templates consist of the following sheets.

1) Instruction
2) GeneralInfo
3) ProjectOutline
4) ProjectLogframe
5) TotalProjectCostMatrix
6) AnnualProjectCostMatrix
7) Financing
8) MonitoringEvaluation
9) Proposal for applied FY
10) ProjectManagementStructure

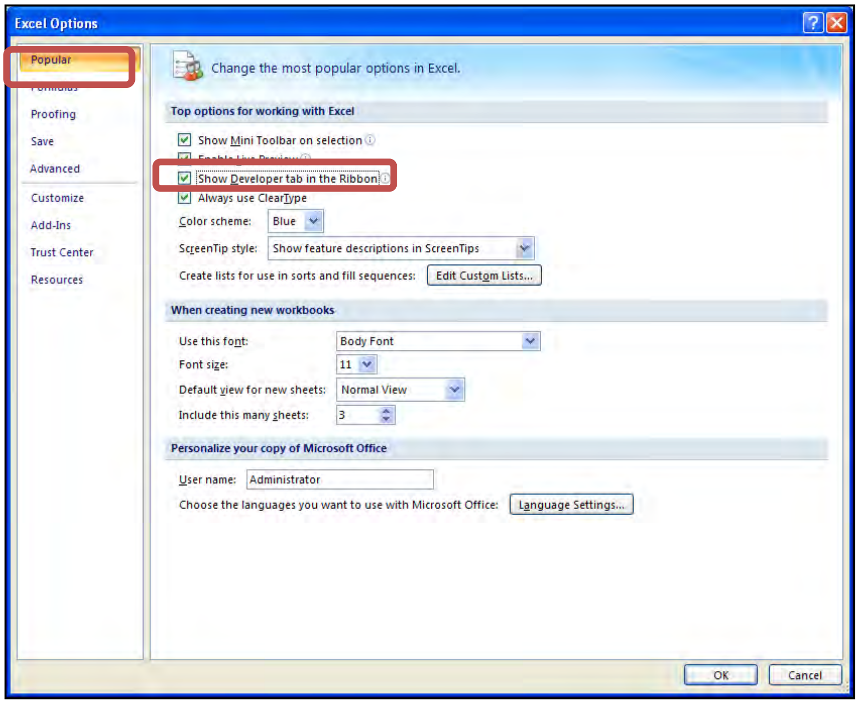
On-Going Proposal templates consist of the following sheets.

1) Instruction
2) GeneralInfo
3) ProjectOutline
4) ProjectLogframe
5) ProjectPerformance
6) AnnualProjectCostMatrix
7) MonitoringEvaluation
8) Proposal for applied FY
9) ProjectManagementStructure

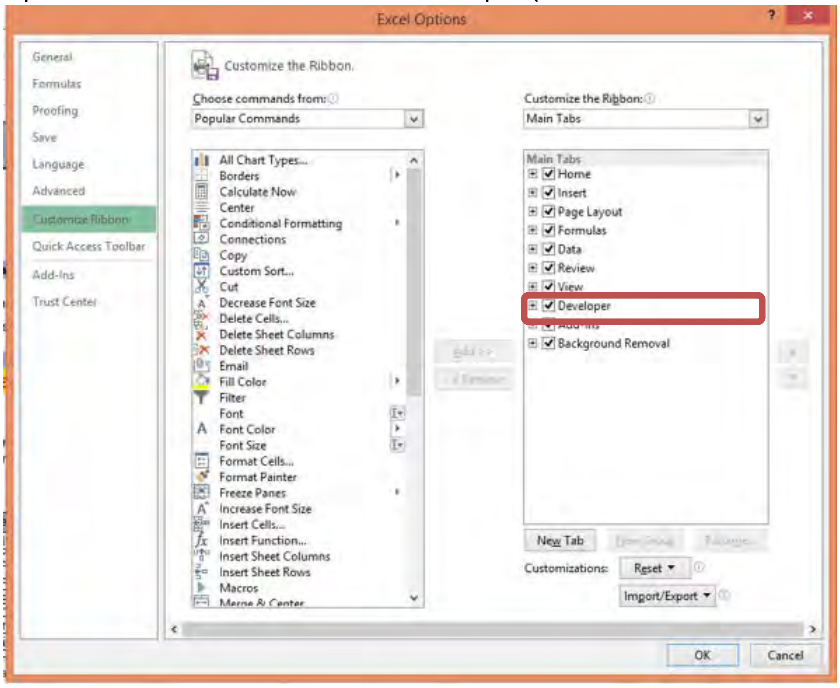
2 Development

2.1 How to show developer tabs

Excel Option-> Popular->Show Developer tab in the Ribbon (Excel 2007)



Option-> Customize Ribon->Click Developer (Excel 2010 or later version)

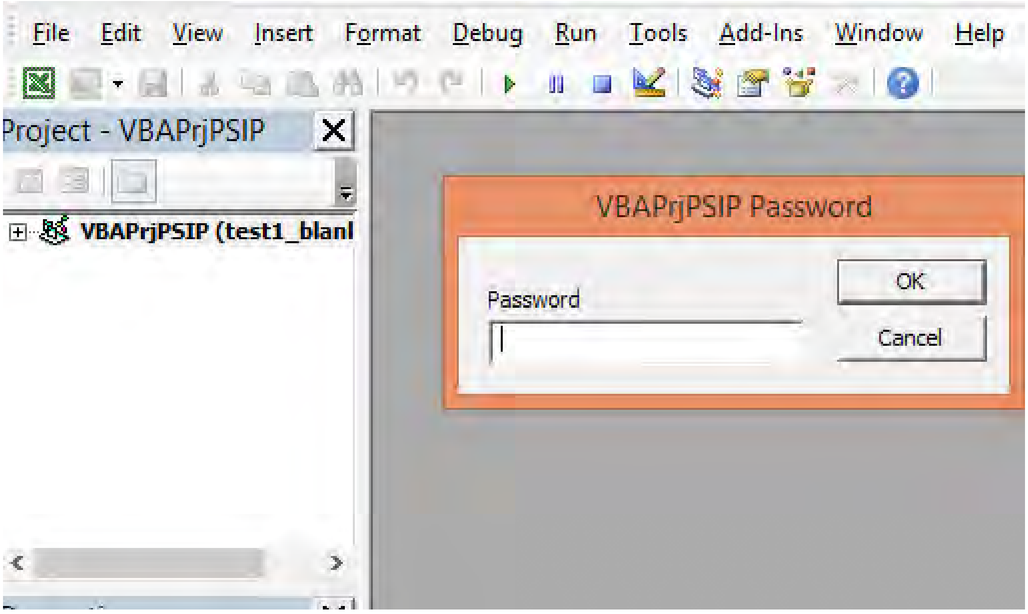


The way of showing developer tabs are different by version of Excel, but you can find the setting in Excel Options.

2.2 Unprotect/Protect

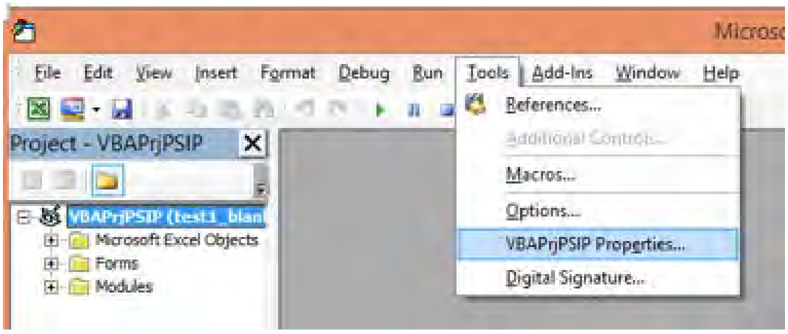
2.2.1 Protect/Unprotect VBA

VBA is protected with password. If you try to open VBA source, you will be asked to type the password.

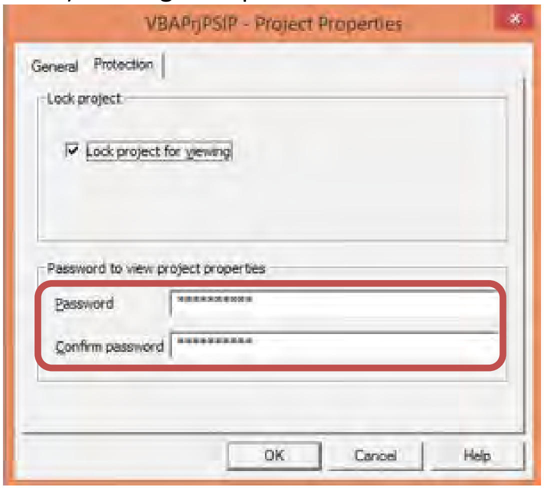


If you need to change the password, please follow the steps below.

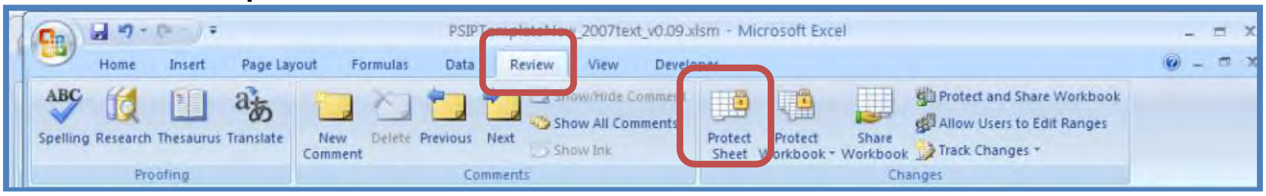
1) Click Tools -> VBAPrgPSIP Propertiies



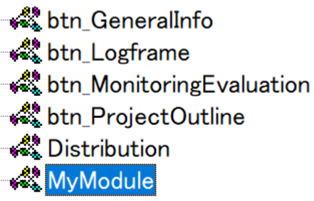
2) Change the password in “Protection” in the following dialogue.



2.2.2 Protect/Unprotect Worksheets and Workbook



All Worksheets and Workbook is protected when the template file is opened. You can switch protect/unprotect from “Review” tab in Excel menu as shown above. Please note that all Worksheets and Workbook is protected by the same password set in “mkpasswd” function. If you want to change the password, you can change the wording in [redacted] in this Function, which can be found under “MyModule” in VBA.




```
'*****************************************************
' Set the password for Workbook and Worksheets
''****************************************************
Function mkpasswd()

  mkpasswd = " [redacted] "

End Function
```

[Note]

<u>Before starting the development, you had better unprotect all Worksheets.</u>

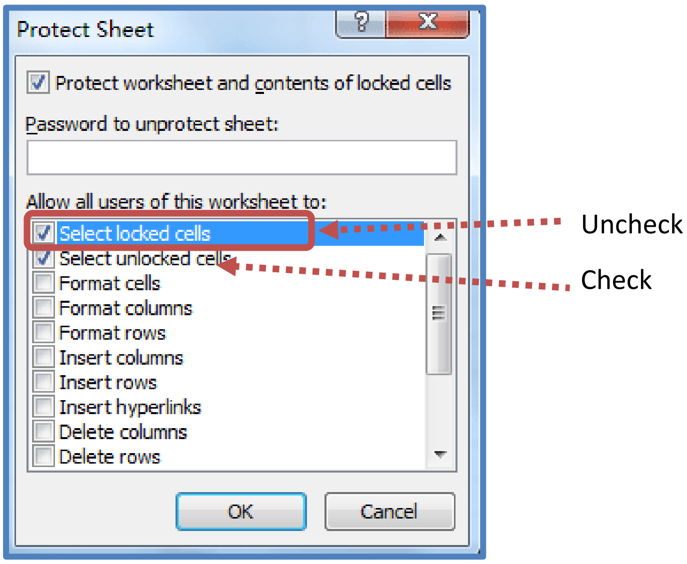
Please follow the steps below to unlock all the Worksheets at the same time.

Developer tab -> Macro -> Run “UnprotectAllSheets”

[Note]

To protect the Sheets again, please uncheck the "Select locked cells and check “Select unlocked cells”.

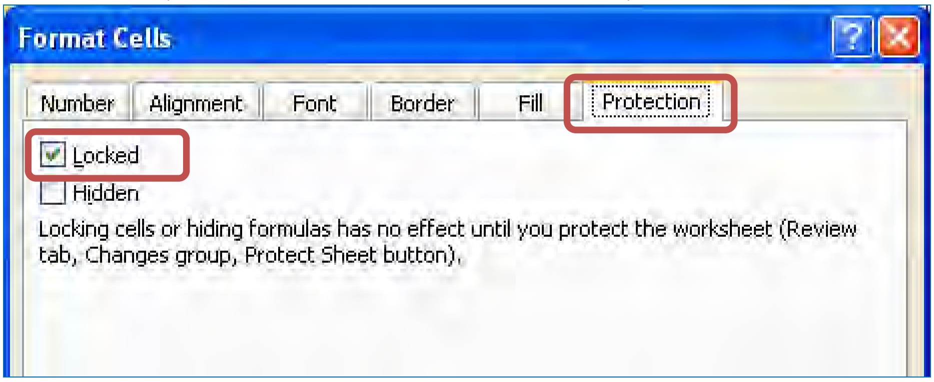
- Select locked cells <- uncheck
- Select unlocked cells <- check



Once the sheet is protected, all the locked cells will be impossible to be accessed by Users.

2.2.3 Locked/Unloked of cell

You can switch the locked/unlocked of each cell by "Format Cells" in Home tab. If the cell is data entry field for users, "Locked" status should be unchecked, while it should be checked for other cells.



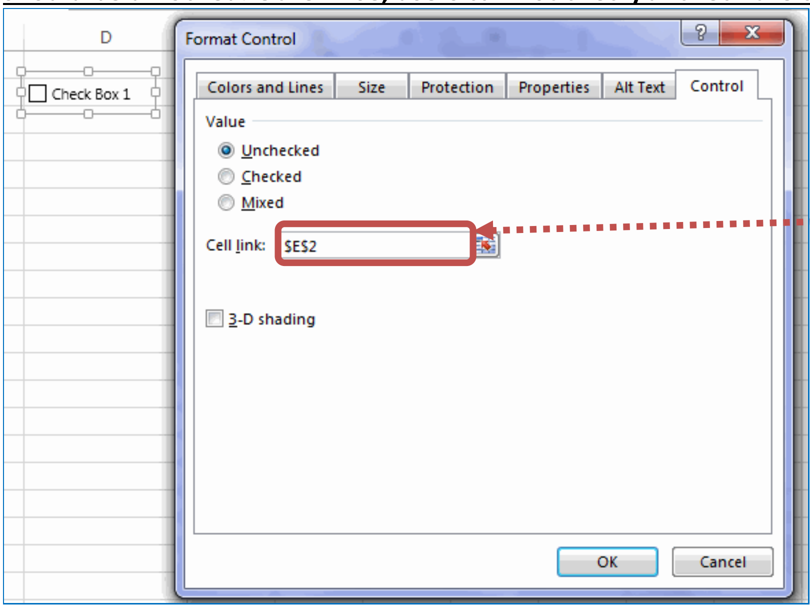
However, if the field is locked, Macro program also cannot access to the cells. To enable macro program to work freely whichever the cell is locked or unlocked, the following program should be applied once Macro is enabled.

```
ActiveSheet.Protect UserInterfaceOnly:=True
```

This program is existed in "Auto_Open" procedure, which automatically runs when the template program is enabled.

[Note]

If you use radio button or checkboxes, you should select the cell linking to those controls to store the check/uncheck status of the radio button or checkboxex. The check/uncheck status of checkbox is represented by 'True/False' respectively. Even though **the cell is not directly edited by users, this cell should be unlocked. Otherwise, users can not check/uncheck the controls.**



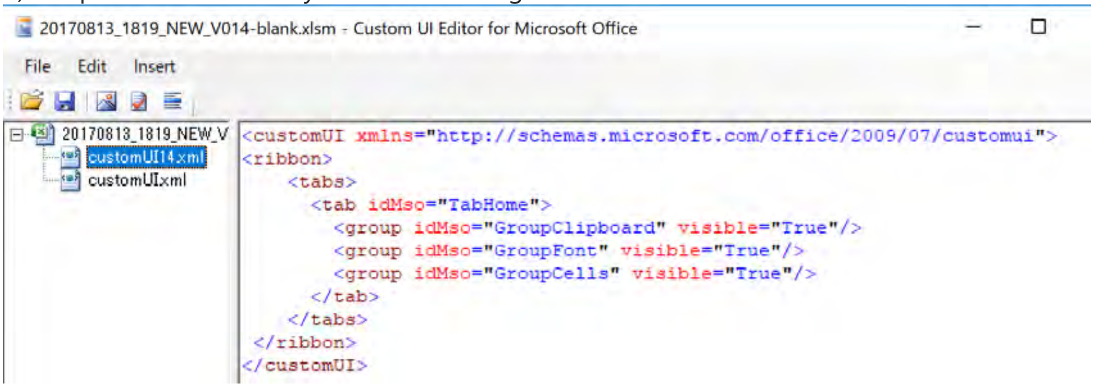
Need to unlock this cell, as this is linked to CheckBox 1.

2.2.4 Office Custom UI editor for Microsoft

The Custom UI Editor enables to create a customized Microsoft Office Fluent.

1) Download the tool from Microsoft site and install the application to your PC.
2) Execute the tool

3) Open the document you want to configure



4) Create the XML setting true/false for the following versions

- customUI14.xml; for Microsoft Excel 2010 and later version
- customUI.xml; for Microsoft Excel 2007

For the template, the visibility of “GroupClipboard”, “GroupFont”, and “GroupCells” is changed to “False”.

[Note]

Before starting the development, you had better change the visibility status from “False” to “True” for all Groups.

2.2.5 Disable right click, Drag & Drop and Control Short-Cut key (Ctrl + V)

The right click, drag&drop should be disabled when the template is distributed. This is to avoid users to destroy the format and delete the label named for each cell, by mainly copy&paste function. The short-cut key for Pasting (Ctrl + V) should also be controlled only for “Pasting Value” (to avoid pasting format and other unnecessary information). These limitations are specified in the program in the **Auto_Open** macro as follow;

```
Public Sub Auto_Open()
  ' ----- Change Short-cut "Ctrl+V" to just paste value (not the format)
  Application.MacroOptions Macro:="PasteValue", ShortcutKey:="v"

  ' ----- Forbidden Drag And Drop Function
  Application.CellDragAndDrop = False

  ' ----- Forbidden Right-Click.
  Call PasteCommandControl(False)

End Sub
```

[Note]

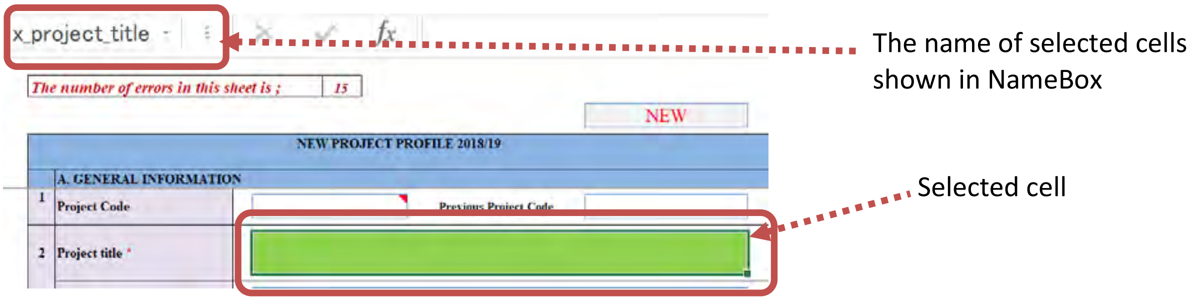
Before starting the development, you had better Comments out all these limitations (Otherwise, development will be difficult).

2.3 Name fields

In the template the location of the information is referred by making unique name for each cell. You can check all named fields from Formulas->Name manager. There are following naming rule.

Prefix	Meaning	Remark
wk_	Working cell	
lst_	List of data or list of master data	
x_	Data which is imported from and exported to the database	
n_	Data which is exported to the database, but not imported from the database.	Usually, this data area contains formula.
c_	Constant data such as title name (Not variable)	
h_	Inconstant Header title such as fiscal year	

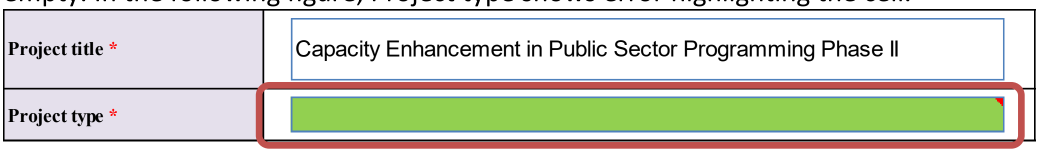
If the cell is editable by users, its name should start with "x_". If the cell is not directly editable by users but changeable by other field value edited by users and necessary to be sent to the database (eg. Donor code), its name should start with "n_". If the cell is not editable and changeable by users, but necessary to be sent to the database for the references purpose, its name should start with "h_". The name of cell can be checked in "Name box" by selecting its cell.



2.4 Error check and Restriction of Data Entry

2.4.1 Error Check for Compulsory Fields

If the field is compulsory, you can use the Conditional formatting to highlight the cells when the cell is empty. In the following figure, Project type shows error highlighting the cell.



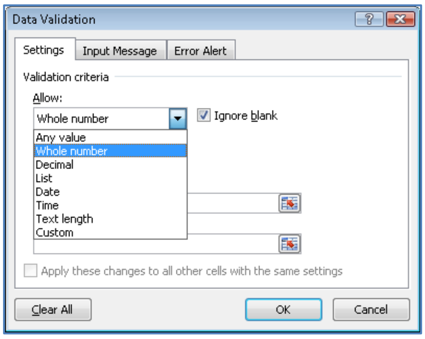
2.4.2 Error Check for Data Type

If the field require numeric data, Data Validation should be applied to the field. Data Validation can be used to restrict some data entry and to predefine a data list to be entered in the field.

[How to set data validation]

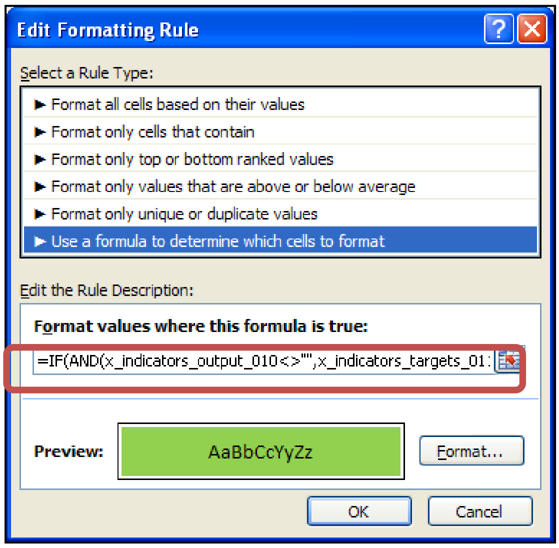
1) Select Data Validation from Data tab.

2) Select validation criteria



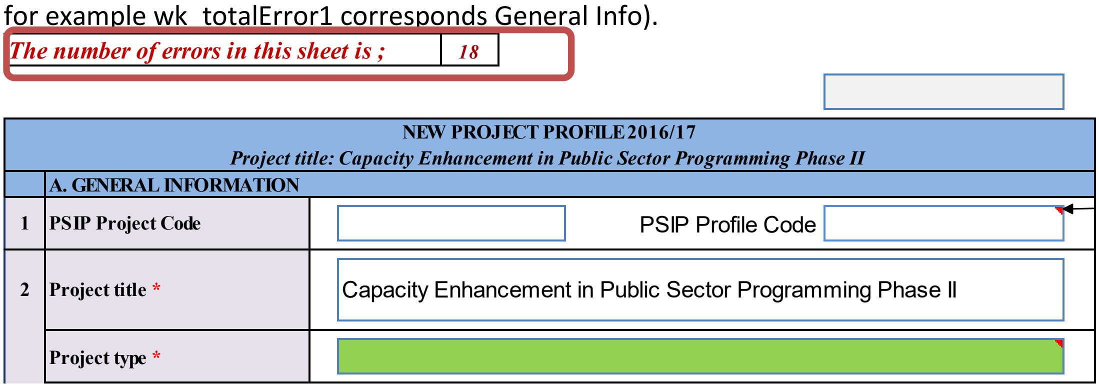
2.4.3 Error check for the Logical connection between Fields

Whether the field is required or not is sometimes changed by data in other cells. For example, if output indicator is entered, the data entry in endline target for that output indicator will be required. On the other hand, if output indicator is empty, the end-line target field should also be empty. The formula to check this kind of relation between multiple cells are set in Conditional formatting with a rule type of "Use a formula to determine which cells to format".



2.4.4 Error count

The number of error is counted and displayed on the top of each sheet. The error in "ProjectOutline" sheet is counted in the wk_sheet and the error in other sheets are counted by "getErrCount" function. The total errors in each sheet is set in field named wk_totalErrorX (X is corresponding number of sheet, for example wk_totalError1 corresponds General Info).



The summary of the error is listed in the Instruction sheet.

2 Fill in the following eight sheets. Verify the status of the sheet which will appear in the status cell below. Red color means that the required fields are not filled in, or there will be some errors. If they are white it means no error and now you can submit this Excel file to MFEPD.

Sheet name		Status	Number of errors	
1)	GeneralInfo	Error!!	18	
2)	ProjectOutline	Error!!	13	
3)	ProjectLogframe	Error!!	8	
4)	TotalProjectCostMatrix	Error!!	1	
5)	Financing	OK!!	0	
6)	MonitoringEvaluation	Error!!	4	
7)	Proposal for applied FY	OK!!	0	
8)	ProjectManagementStructure	Error!!	24	
Total error			**68**	

[getErrCount() Function]

The macro Function which count the number of errors in each sheet is created in VBA.

1) Please create the cell range where all the compulsory data entry fields are included and name the cell range as “wk_XXXXXXX”. (eg. Data range in “GeneralInfo” sheet is named as “wk_AllDataentry_GeneralInfo”).
2) If users change the data included in the cell range above, “getErrCount” will run to count the number of errors. The macro will return the number of cells with errors.
3) The example below is “gerErrCount” function set in “GeneralInfo” sheet. All the data entry field in “GeneralInfo” sheet is included into the range “wk_AllDataentry_GeneralInfo”. If its data is changed, gerErroCount Function runs and the error count in “GeneralInfo” will be recalculated.

[example]

```
getErrCount(wk_AllDataentry_GeneralInfo)
```

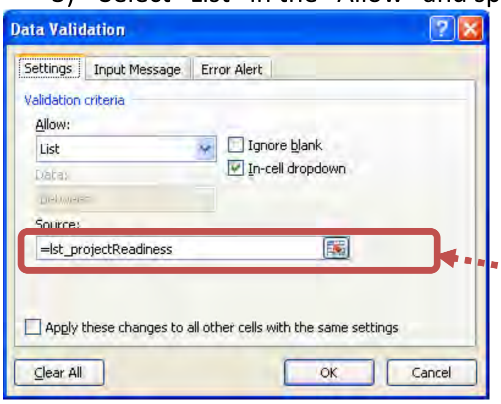
[Note]

If you add additional field into the template, please include that cell into the range of cells to be used for “getErrCount”. For example, if you add one field in “GeneralInfo” sheet, please add the field into “wk_AllDataentry_GeneralInfo” using Name Manager.

2.4.5 **How to make a list of data**

List of data should be made to restriction the data entry which allows users only to select the data from the list. The way of making a list of data is shown as follow.

1) Create a list of data in somewhere in worksheets and name them starting with “lst_” using “Name Manager” under “Formula” tab.
2) Go to Data -> Data Validation -> Settings.
3) Select “List” in the “Allow” and specify the name of list data in the source.



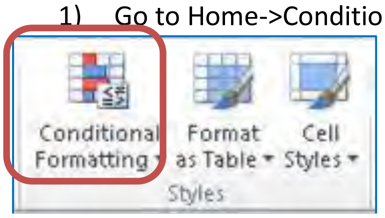
The name of list data

4) Select “Error Alert” tab and set the error message if a user selects other than list item.

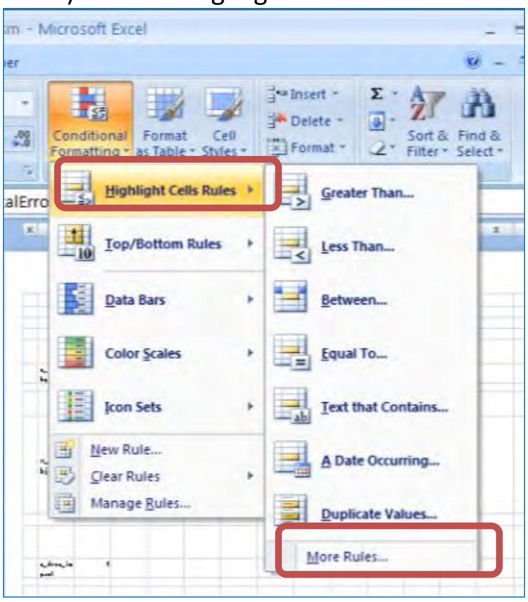
2.4.6 How to use Conditional formatting

The following procedure explains how to set color for compulsory field.

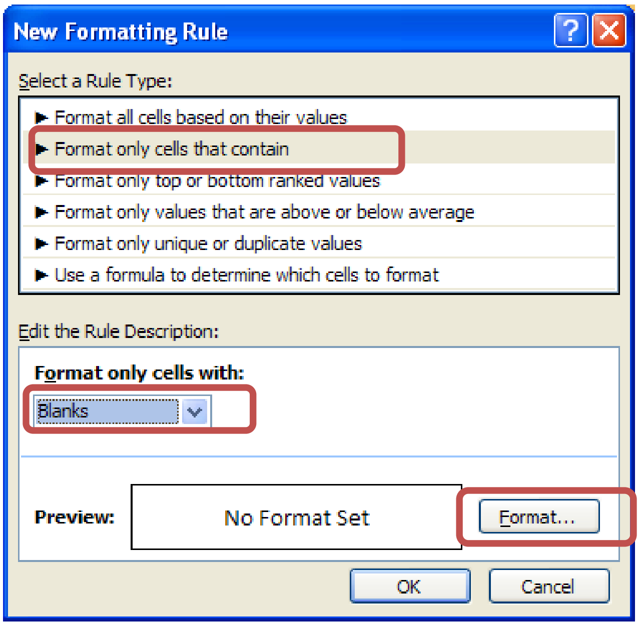
1) Go to Home->Conditional formatting



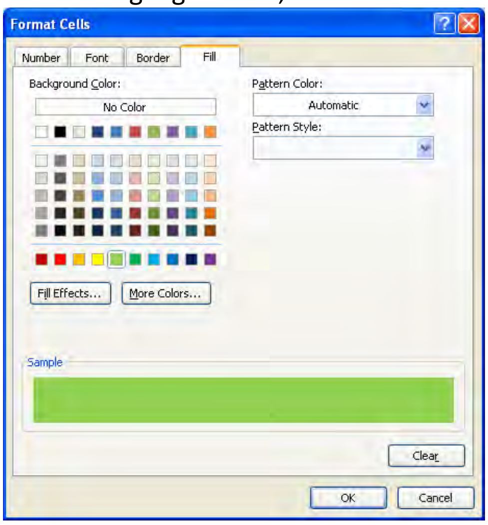
2) Select Highlight Cells Rules-> More Rules



3) Select "Format only cells that contain". Set "Blanks" to the "Format only cells with:"



4) Click Format button to set the background color in case of an error. You can select the highlight color;



2.5 Hidden sheets

Other than the sheets which is editable by users, there are also other sheets such as the sheet for master data, working sheets ("wk_sheets") and "datasend" sheet. They are hidden as default and cannot be seen without unprotecting Workbook.

Sheet name	Detail	Remarks
tbl_	Store master data	Do not change the name of Worksheets as they are related to template loader.
wk_sheet	Store some flg_data, the linked cell for check-boxes, calculation of fiscal year and the result of the error check in ProjectOutline sheet.	
datasend	The sheet is used to list up all data related server side database. Here the data with "x_" prefix, "h_" prefix and "n_" prefix are listed up.	Do not change the name of Worksheets as they are related to template loader.

Sheet name	Detail	Remarks
Version	Record the version number and the content of the modification.	

2.6 Datasend sheet

"datasend" sheet is used to send all the data field name (Variable names) and data value to the database. Header (prefix "h_") and entry data (prefix "x_" and prefix "n_") are the target to upload to the database. All data entry field except "Cost Matrix" will be sent to "datasend" sheet.

2.6.1 Structure of the sheet

Column	*Content*	Remarks
A	Variable names	Prefix with "h_" and "x_" and "n_" only
B	Data Location	Generated by the Excel
C	Values	Formula to get values from column B
D	Values	Values copied from column C with macro. Whenever the template is saved, the "**Workbook_BeforeSave"** procedure runs and copy the whole data in column C and paste their values only to D column. This is critical function to send correct data to the database.

(CAUTION!!!)

The format for all cells in "datasend" Sheet should be set as "TEXT", otherwise the value is sometimes converted automatically to the wrong format. For example, even though a user type "50%" in the data field, it is converted to "0.5" and sent to the database as "0.5" instead of "50%".

2.6.2 How to finalize the datasend sheet

If you add new field into the template, you have to remake "datasend" sheet. Please follow the step as follow.

Developer tab -> Macro -> Run "Makedatasend".

2.7 Data generation from the database

In times of template generation, the project data extracted from the PSIP database will be inserted to the New and Ongoing Templates. Once the template is generated, "x_refresh_flg"(the variable existed in "wk_sheets" in the template) will be changed to 1.

```
x_refresh_flg=1
```

x_refresh_flg is used to set all the pre-filled data to appropriate fields with appropriate formats in Excel Template. If "x_refresh_flg" is 1, the following programs are executed in the "Auto-Open" macro procedure which runs once the macro is enabled.

<In case of New Template>

```
If Range("x_refresh_flg").Value = 1 Then

  ' ----- Function Stops
```

```
    Application.Calculation = xlCalculationManual

    Call DonorNameObtain
    Call OutputOutcomeObtain
    Call NumberSet
    Call ProgramNameObtain

    adjustCellHeight ("x_me_framework")
    adjustCellHeight ("x_contractinfo")
    Call CellHeightAutofit

    ' ----- Function Starts
    Application.Calculate
    Application.Calculation = xlCalculationAutomatic
    ActiveWorkbook.Save

End If
```

<In case of ON-Going Template>

```
If Range("x_refresh_flg").Value = 1 Then

    ' ----- Function Stops
    Application.Calculation = xlCalculationManual

    Call DonorNameObtain
    Call OutputOutcomeObtain
    Call NumberSet
    Call ProgramNameObtain

    adjustCellHeight ("x_me_framework")
    adjustCellHeight ("x_contractinfo")
    Call CellHeightAutofit

    ' ----- Function Starts
    Application.Calculate
    Application.Calculation = xlCalculationAutomatic
    ActiveWorkbook.Save

End If
```

In the above program, outcomes linked to each output in “ProjectLogframe” sheet (the data which should be set to checkbox) are obtained from " x_in_outputXX_outcome" (where "X" means the index) in “wk_sheet”. Likewise, donor names are obtained from “x_donor_code_inX” (where “X” means the index) in “wk_sheet”.

These process is necessary only just after the data is stored from the database. Therefore, once that template file is saved, “x_refresh_flg” will be changed to zero (0) in the program. This “x_refresh_flg” will never be changed to 1 again in the template program.

```
Private Sub Workbook_BeforeSave(ByVal SaveAsUI As Boolean, Cancel As Boolean)
  Range("x_refresh_flg").Value = 0
  ----- Other program ------
End Sub
```

[Note]
What is "NumberSet" procedure?

"NumberSet" is the public procedure which set all the numeric data to the field in the template. Even though the data is stocked to proper fields after template is generated from the database, at first, the numeric data is not recognized as numeric data by Excel Application, and the automatic calculation will not properly done. By setting all the numeric data again into the fields in the Excel template in "Auto_Open" procedure, Excel can recognize the numeric data as numeric and makes calculation properly.

<In case of New Template>

```
Sub NumberSet()
        Dim rng As Range

        '---set project outline data to the same cell
        Call setAllRangeValueToSameCell(Range("wk_AllDataEntry_GeneralInfo"))
        Call setAllRangeValueToSameCell(Range("wk_entry_flg2_ProjectPerformance2"))
        Call setAllRangeValueToSameCell(Range("wk_entry_flg1_ProjectPerformance"))
        Call setAllRangeValueToSameCell(Range("wk_entry_flg1_ProjectPerformance2"))
        Call setAllRangeValueToSameCell(Range("wk_entry_flg1_ProjectPerformance3"))
        Call setAllRangeValueToSameCell(Range("wk_cumulative_info"))

        '---set proposal for applied FY data to the same cell
        Call setAllRangeValueToSameCell(Range("wk_Alldataentry_ProposalforappliedFY"))
    End Sub

Sub setAllRangeValueToSameCell(rng As Range)
    Dim rngCell As Range
    For Each rngCell In rng
      rngCell.Value = rngCell.Value
    Next
End Sub
```

2.8 Note for Development

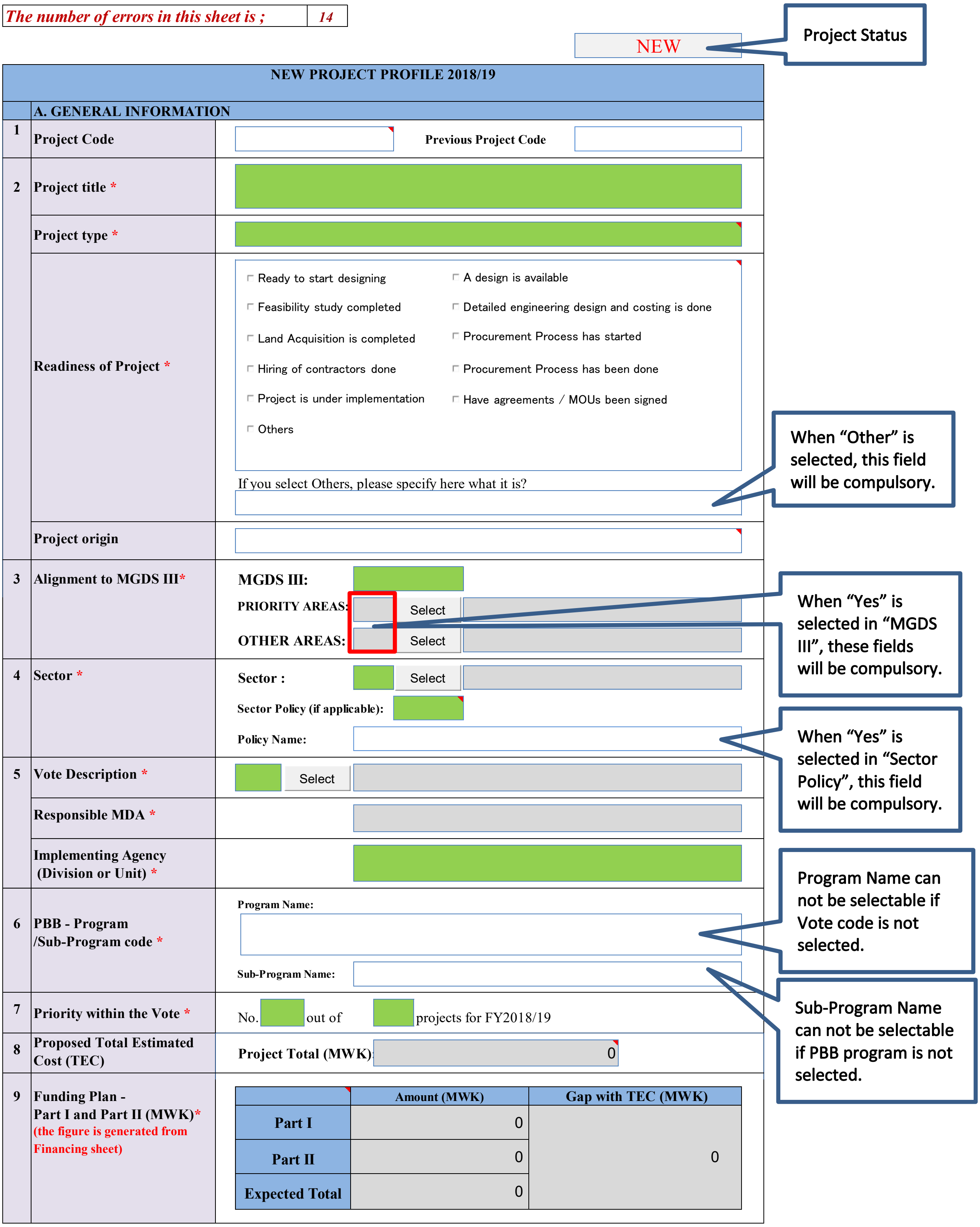
There are two ways to make buttons or checkboxes; 1) Form controls and 2) Active X. As ActiveX does not work on a Mac computer, please do not change them, rather use Form control.

3 Design and Development of Worksheet in New Template

This sections show the detailed design for each worksheet and how it is developed.

3.1 GeneralInfo sheet

The following figure shows a screen shot of "GeneralInfo" sheet in New Template.



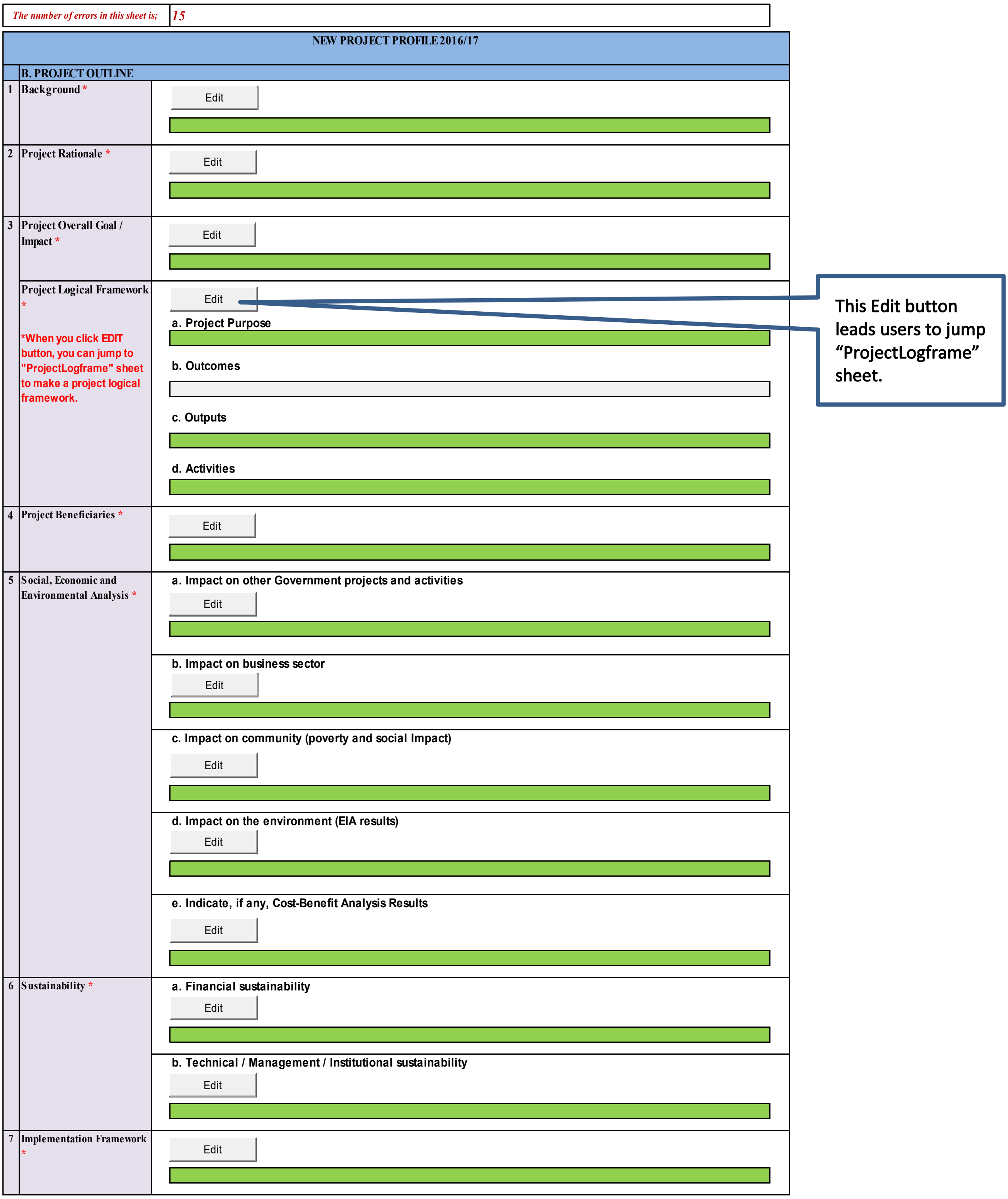
10	**Planned Period of Implementation** *	Year Month Year Month **FROM:** **TO:** year(s) month(s)
11	**Contract Information***	**Is contractor engaged?** **The number of contracts:** *Describe: (1) Name of the contractor, (2) Contract Sum, (3) Contract Period, and (4) Contract details* Edit
12	**Location (Project Implementation Sites)***	Select All Unselect All

Center		
999 – Ministry / Department Headquarters		
Northern Region	**Central Region**	**Southern Region**
905 – Chitipa District	906 – Dedza District	901 – Balaka District
908 – Karonga District	802 – Dedza Town	801 – Balaka Town
803 – Karonga Town	907 – Dowa District	601 – Blantyre City
910 – Likoma District	909 – Kasungu District	902 – Blantyre District
915 – Mzimba District	804 – Kasungu Town	903 – Chikhwawa District
603 – Mzuzu City	602 – Lilongwe City	904 – Chiladzulu District
919 – Nkhata-Bay District	911 – Lilongwe District	805 – Liwonde Town
925 – Rumphi District	914 – Mchinji District	806 – Luchenza Town
	920 – Nkhota-kota District	912 – Machinga District
	922 – Ntcheu District	913 – Mangochi District
	923 – Ntchisi District	807 – Mangochi Town
	926 – Salima District	916 – Mulanje District
	808 – Salima Town	917 – Mwanza District
		918 – Neno District
		921 – Nsanje District
		924 – Phalombe District
		927 – Thyolo District
		604 – Zomba City
		928 – Zomba District
Other		
000 – Others (out of Malawi)		

Describe specific name(s) of the place(s) where the project is being implemented.
(eg. Traditional Authority, Trading centre, etc.)

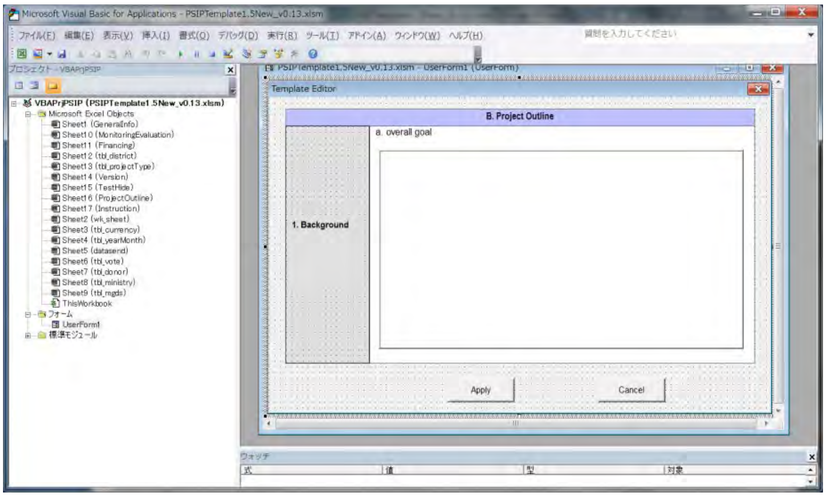
When "Yes" is selected in "Is contractor engaged?", these fields will be compulsory.

3.2 Project Outline sheet



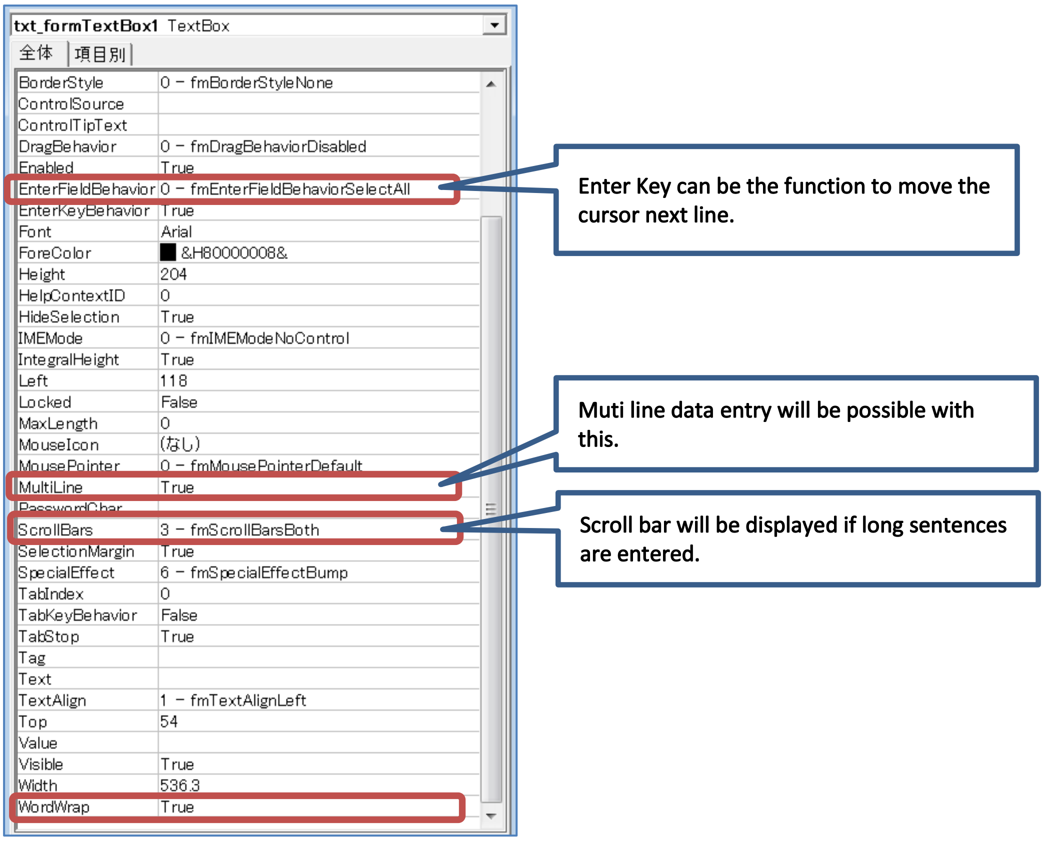
3.2.1 Working with Textbox

In "ProjectOutline" sheet all information are descriptive. Since the Excel editing function is not user friendly to write long sentences, Userform is introduced for users to edit the contents. The textbox in Userform enables users to copy and paste from other documents, and the texts entered into Userform can be inserted into the corresponding cell in "ProjectOutline" sheet once "Apply" button in Userform is clicked. All the cells in "ProjectOutline" sheet is protected, so the user can not fill the data directly into the cells without using the Userform. The following figure is UserForm in VBA.



[Textbox property]

The textbox is required to have Enter key behavior to move the cursor next line, and to enable the multiline sentences to be contained. To enable these functions, following values should be set in the properties of textbox. (The properties of the textbox will be displayed once the textbox is selected in VBA)



3.2.2 Cell Height

1) In "ProjectOutline" sheet, each field is single cell (not merged cell) so that once the data is reflected into the cell, the cell height is automatically adjusted by Excel Autofit function.
   [Note] Excel autofit function works only for single cell and does not work for merged cell.

2) However, in case that the sentence typed in Userform is very long, Excel Autofit function does not properly work and not some texts will be hidden. To avoid this situation, the cell height of each field in "ProjectOutline" sheet is calculated based on the number of lines in UserForm, and the result of calculation will be used to adjust the cell height in "ProjectOutline" sheet. To enable this adjustment to work properly, the width of Textbox, font size in Userform, the cell height in "ProjectOutline" and font size are adjusted.
3) Once "Apply" button in Userform is clicked, the following VBA programs will work to adjust cell height.

[Note]

The height of cell in Excel can be 409 at maximum. So if variable "lRowHeight" in the program below become greater than 409, the programme avoids inserting "lRowHeight" to the value for cell height, and inserts 409 instead.

```
Private Sub btn_formApply_Click()

  Dim linenum As Integer
  Dim lRowHeight As Long

  txt_formTextBox1.SetFocus

  '----- reflect textbox to Excel cell
  Range(g_linkName).Value = txt_formTextBox1.Value
  If Not (g_linkName = "x_contractinfo") And Not (g_linkName = "x_me_framework") Then

    linenum = txt_formTextBox1.LineCount
    lRowHeight = 12 * (linenum + 1)

    If lRowHeight <= 409 Then
      Range(g_linkName).RowHeight = lRowHeight
    Else
      Range(g_linkName).RowHeight = 409
    End If
  End If

  If g_linkName = "x_contractinfo" Then
    adjustCellHeight ("x_contractinfo")
  End If
  If g_linkName = "x_me_framework" Then
    adjustCellHeight ("x_me_framework")
  End If

  '----- Hide the form
  UserForm1.Hide End Sub
```

[Note]

Just after the data is imported from the database, counting the number of lines with Userform is impossible and the Program above will not run. Instead, Excel Autofit function works, but some texts may be hidden because of the limitation of Excel Autofit function explained above. These hidden texts will be displayed by clicking apply button in the UserForm again.

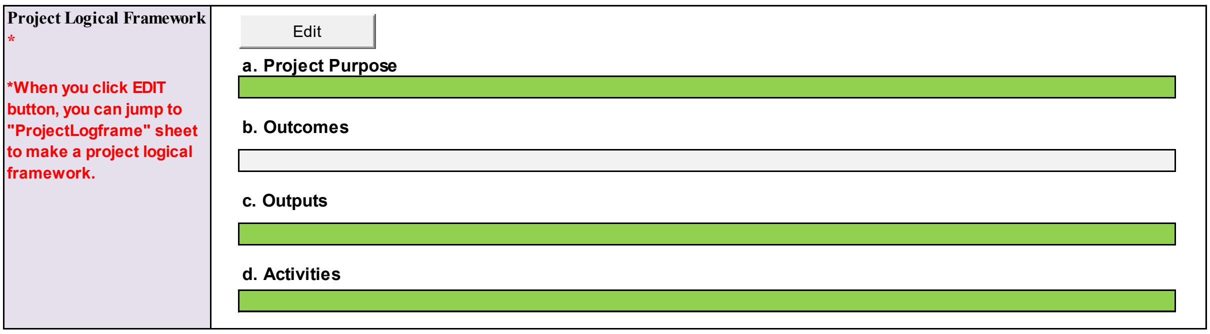
[Note]
The height of cells using the same UserForm in other sheets (“x_contract_info” and “x_me_framework”) are adjusted using another logic, that is, adjustCellHeight procedure. This is because the widths of these cells are not adjusted to be matched with the fields in the UserForm explained above.

3.2.3 Cell format

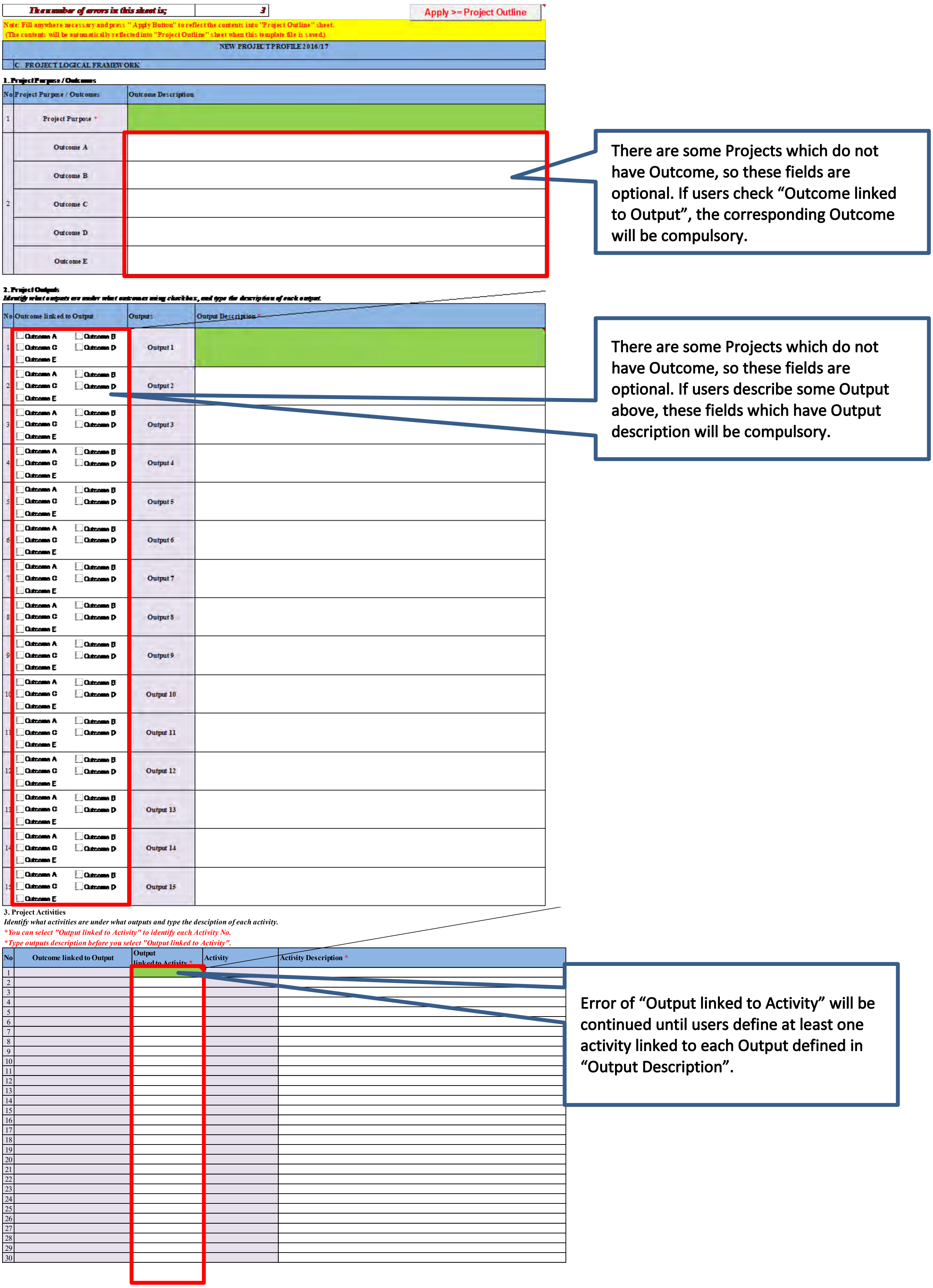
The format for the cells which store the descriptive information should be "General". If the format is "Text" for these cells and many characters are in the cells, the information displayed in these cells will be “**************************”.

3.2.4 Project Logical Framework

When users click Edit button in “Project Logical Framework” in “Project Outline” sheet, users can jump to “ProjectLogframe” sheet to make a project logical framework.



3.3 Project Logframe sheet



3.3.1 Linkage between Outcomes and Outputs

1) Users can check one or more than one outcomes to which each output can contribute.

No	Outcome linked to Output	Outputs	Output Description *
1	☐ Outcome A ☐ Outcome B ☐ Outcome C ☐ Outcome D ☐ Outcome E	Output 1	

2) The checkbox for outcomes are linked to the cell in “tbl_output” sheet. For example, if users check Outcome A, B and C for output1 as follow, corresponding cell in “tbl_output” sheet will be changed from “False” to “True” and “Linked Outcome” for Output 1 will be ”Outcome ABC”.

1	☑ Outcome A ☑ Outcome B ☑ Outcome C ☐ Outcome D ☐ Outcome E	Output 1	

“tbl_output” sheet

	A	B	C	D	E	T or F	Linked outcome (Data displayed in Project LogFrame sheet)
Output 1	TRUE	TRUE	TRUE	FALSE	FALSE	TRUE	Outcome ABC
Output 2	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	No Outcome
Output 3	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	No Outcome
Output 4	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	No Outcome
Output 5	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	No Outcome
Output 6	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	No Outcome
Output 7	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	No Outcome
Output 8	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	No Outcome
Output 9	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	No Outcome
Output 10	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	No Outcome
Output 11	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	No Outcome
Output 12	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	No Outcome
Output 13	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	No Outcome
Output 14	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	No Outcome
Output 15	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	No Outcome
	TRUE	TRUE	TRUE	FALSE	FALSE		

3) Data in “Linked Outcome in “tbl_output” sheet is automatically displayed based on which outcomes are “True” for each output. This data is linked in the cell in “Outcome linked to Output” under Project Activities in “ProjectLogframe” sheet. For example, in above case, “Outcome ABC” is displayed in “Outcome linked to Output” field once users select “Output 1” in “Output linked to Activity” field.

No	Outcome linked to Output	Output linked to Activity *	Activity	Activity Description *
1	Outcome ABC	Output 1	Activity 1-1	

3.3.2 Selection of “Output linked to Activity”

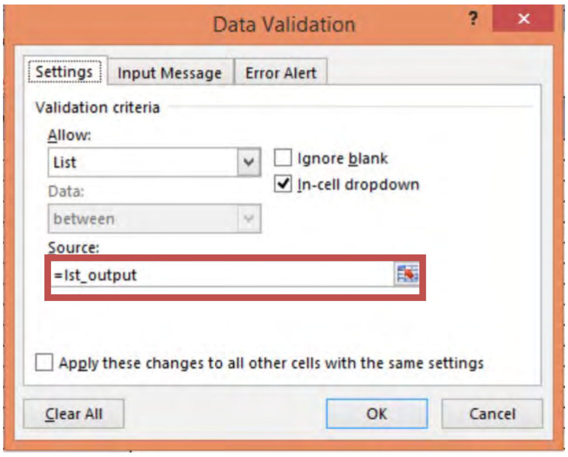
1) The items selectable for “Output linked to Activity” in “ProjectLogframe” sheet are changed based on the “Output Description” typed by users and the output selected in “Output linked Activity” so far.
2) For example, if users type “Output description” from Output 1 to 4 and Output 2 is selected in the field one above the field users are currently working, the list displayed in the current field for “Output linked to Activity” will be “Output2 or Output 3” as follow. Output 4 cannot be displayed in the list to avoid users skip necessary output number so that output number will be listed continuously).

No	Outcome linked to Output	Output linked to Activity *	Activity	Activity Description *
1	Outcome ABC	Output 1	Activity 1-1	Develop PSIP Database function
2	Outcome ABC	Output 1	Activity 1-2	
3	No Outcome	Output 2	Activity 2-1	
4				
5		Output 2		
6		Output 3		

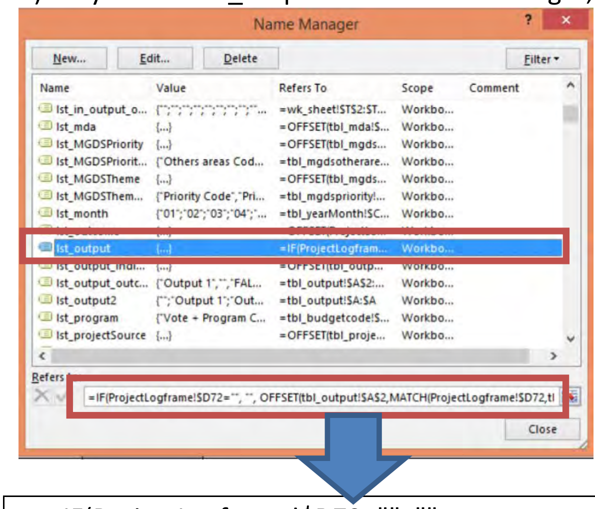
3) If Users type "Output description" from Output 1 to 4 and Output 4 is selected in the field one above the field users are currently working, the list in the current field will only contain "Output 4".

No	Outcome linked to Output	Output linked to Activity *	Activity	Activity Description *
1	Outcome ABC	Output 1	Activity 1-1	Develop PSIP Database function
2	Outcome ABC	Output 1	Activity 1-2	
3	No Outcome	Output 2	Activity 2-1	
4	No Outcome	Output 3	Activity 3-1	
5	No Outcome	Output 4	Activity 4-1	
6				
7		Output 4		

4) The list for "Output linked to Activity" is constructed by Data Validation. The formula applied for "D73" in "ProjectLogframe" with Data Validation is "=lst_output".



5) If you see "lst_output" with Name manager, you can find the following formula.



=IF(ProjectLogframe!$D72="", "", OFFSET(tbl_output!A2,MATCH(ProjectLogframe!$D72,tbl_output!$A:$A,0)-2,,IF(MATCH(ProjectLogframe!$D72,tbl_output!$A:$A,0)<COUNTA(wk_output),2,COUNTA(wk_output)-MATCH(ProjectLogframe!$D72,tbl_output!$A:$A,0)+2),1))

3.4 Total Project Cost Matrix and Annual Project Cost Matrix sheet

The number of errors in this sheet is;	1	*Annual Project Cost Matrix*

ONGOING PROJECT PROFILE 2018/19

Project title: Rehabilitation Works for Mzuzu University

E. Activity/ Item Costing Matrix for PSIP Project **[ANNUAL COST for the PROJECT] (FY2018/19)**

Propotion of Capital/ Total -

Column Number			Administrative Cost for the Project (Item by item)	1	2	3	4	5
Project Outputs				Output 1 Rehabilitated Hostels	Output 2 Rehabilitated Classrooms	Output 3 Office block completed	Output 4 Asbestos pipes replaced by pvc	Output 5 Rehabilitated road network
Project Activities				Activity 1-1 Rehabilitation of hostels	Activity 2-1 Rehabilitation of classrooms	Activity 3-1 Completion of office block	Activity 4-1 Asbestos pipes replaced	Activity 5-1 Rehabilitation of road network
	Line Items	Total by Line Item						
Current	01 - Interests on Local Loans	0						
	02 - Interest on External Loans	0						
	07- General Compensation	0						
	10 - Personal Emmoluments	0						
	11 - Other allowances	0						
	12 - Foreign Mission Allowances	0						
	21 - Internal Travel	0						
	22 - External Travel	0						
	23 - Public Utilities	0						
	24 - Office Supplies	0						
	25 - Medical Expense	0						
	26 - Rent Expenses	0						
	27 - Educational Expenses	0						
	28 - Training Expenses	0						
	29 - Acquisition of Technical Services	0						
	30 - Insurance Expenses	0						
	31 - Agricultural Inputs	0						
	32 - Food and Rations	0						
	33 - Other Goods and Services	0						
	34 - Motor Vehicle Running Expenses	0						
	35 - Routine Maintenance of Capital Assets	0						
	36 - Agricultural Subsidy	0						
	39 - Grants to International Organisation	0						
	40 - Grants and Subventions	0						
Capital	41 - Acquisition of Fixed Assets	0						
	Grand Total	0	0	0	0	0	0	0

3.4.1 The way to exchange data with Database

1) **Unlike other sheets**, each field in "TotalProjectCostMatrix" and "AnnualProjectCostMatrix" sheet, do not have its own name so that the field data is not sent to "datasend" sheet. To enable the database to identify the areas where users can fill in the data, the template has the cell which includes the data "**1**". When the data exchange is conducted between database and template, the template loader first finds the field which contain "**1**", and judges the range of data areas. The field with "**1**" is located as follow.

Project Outputs			Administrative Cost for the Project (Item by item)	Output 1 Increase a
Project Activities				Activity 1-1 Develop PS
Line Items	Total by Line Item	**1**		
01 - Interests on Local Loans	0			
02 - Interest on External Loans	0			

[Note]

The column which contains the field with "**1**" is hidden as default, and users cannot see this.

2) As well as the data in the data area, the template sends the activity number (Activity 1-1, 1-2 …..) to the database. As the database needs Value, not the Formula, the value of Activity number is copied from the "Project Activities" row and pasted to the row just above the "Project Outputs" row when the ProjectLogframe is constructed.

		Activity 1-1	Activity 1-2	Activity 2-1	Activity 3-1	Activity 4-1	
	Administrative Cost for the Project (Item by item)	Output 1	Output 1	Output 2	Output 3	Output 4	
		Increase a	Increase a	aaaaaaaaaa	bbbbbbbbbb	aaaaaaaaaa	
		Activity 1-1	Activity 1-2	Activity 2-1	Activity 3-1	Activity 4-1	
1		Develop PS					

[Note]
The row to which value is pasted is hidden as default, and users cannot see this.

3) "ApplyProjectOutline" procedure runs when "Apply" button in "ProjectLogframe" is clicked or the file is saved. In this procedure, the value of Activity number is copied from the "Project Activities" row and pasted to the row just above the "Project Outputs" row. The program is shown below.

```
'Copy All Activity number (15 row) in TotalProjectCostMatrix sheet to 11 row
For i = 1 To 5
    EndColumn(i) = Range("wk_act_row_" & i).End(xlToRight).Column
    ThisWorkbook.Worksheets("TotalProjectCostMatrix").Range("G11").Offset(33 * (i - 1), 0).Resize(1, EndColumn(i)).Value = _
    Range("wk_act_row_" & i).Resize(1, EndColumn(i)).Value

    ThisWorkbook.Worksheets("AnnualProjectCostMatrix").Range("G11").Offset(33 * (i - 1), 0).Resize(1, EndColumn(i)).Value = _
    Range("wk_act_row_" & i).Resize(1, EndColumn(i)).Value
Next i
```

3.5 Financing (New only)

3.5.1 Landscape mode

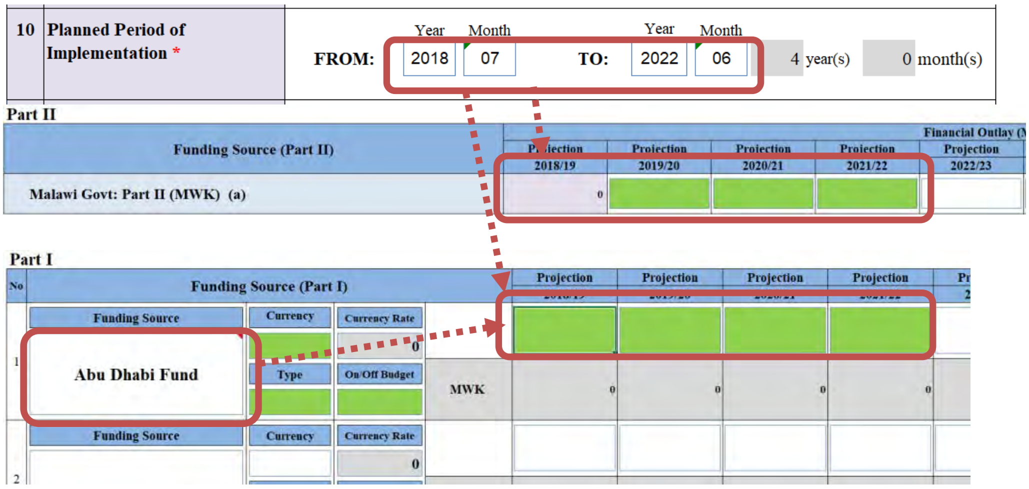
The Financing sheet is displayed in landscape mode to show ten years financial outlay.

3.5.2 Ten years header

The fields for financial outlay is only for 10 years. Even if the project implementation period is longer than 10 years, no field is available to enter the finance information for remaining years.

3.5.3 Financial Outlay for Part II

The compulsory field for Part II financial outlay will be changed based on the project implementation period set in “GeneralInfo” sheet. The compulsory fields for Part I outlay will be changed based on the project implementation period and the data availability of funding source.

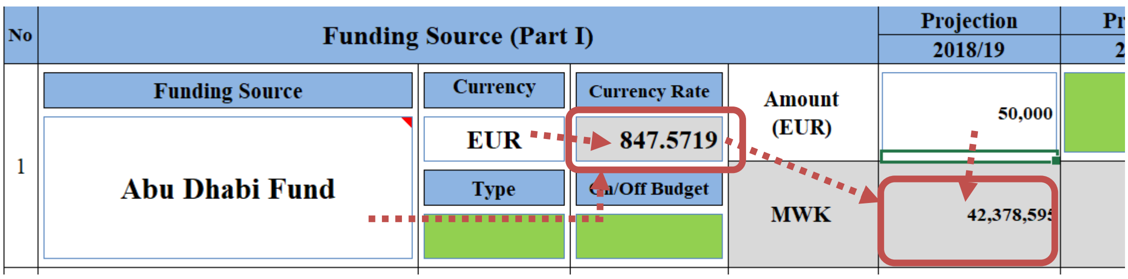


[Note] If there is no funding in the respective year, users can type 0 (zero).

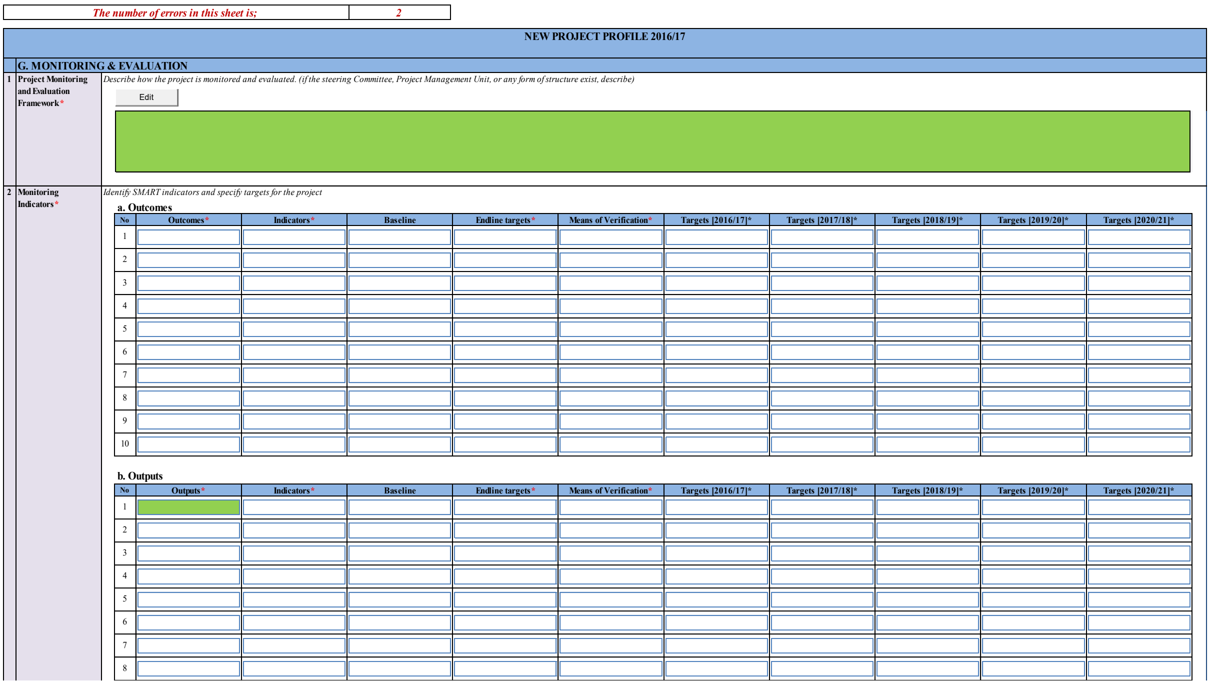
3.5.4 Currency rate

1) When both the funding source and donor currency are selected, corresponding currency rate is obtained from the currency table (in “tbl_currency” sheet). The total funding MWK is calculated at the same time.

2) When the donor currency or the funding source is set to blank, the corresponding currency rate will be reset to zero (0).

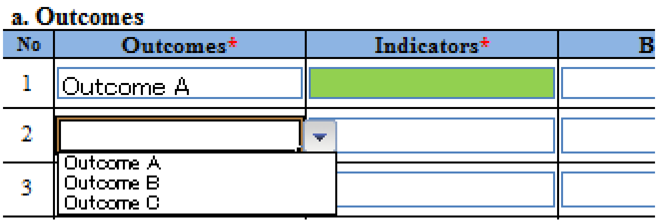


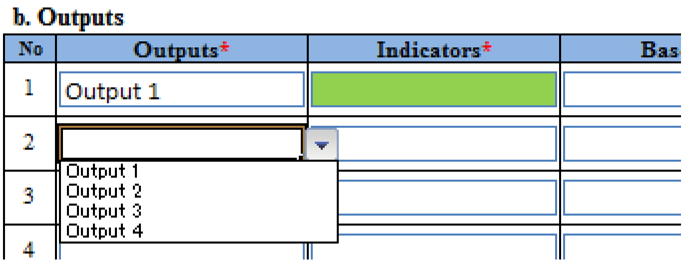
3.6 Monitoring Evaluation sheet



3.6.1 Selection of Outcomes and Outputs

Lists of Outcomes and Outputs selectable for the fields is changed based on the Outcomes and Outputs constructed in "ProjectLogframe" sheet. For example, if users set Outcome A, B and C and Output 1-4 in "ProjectLogframe" sheet, users can select one of them from the list as follow.



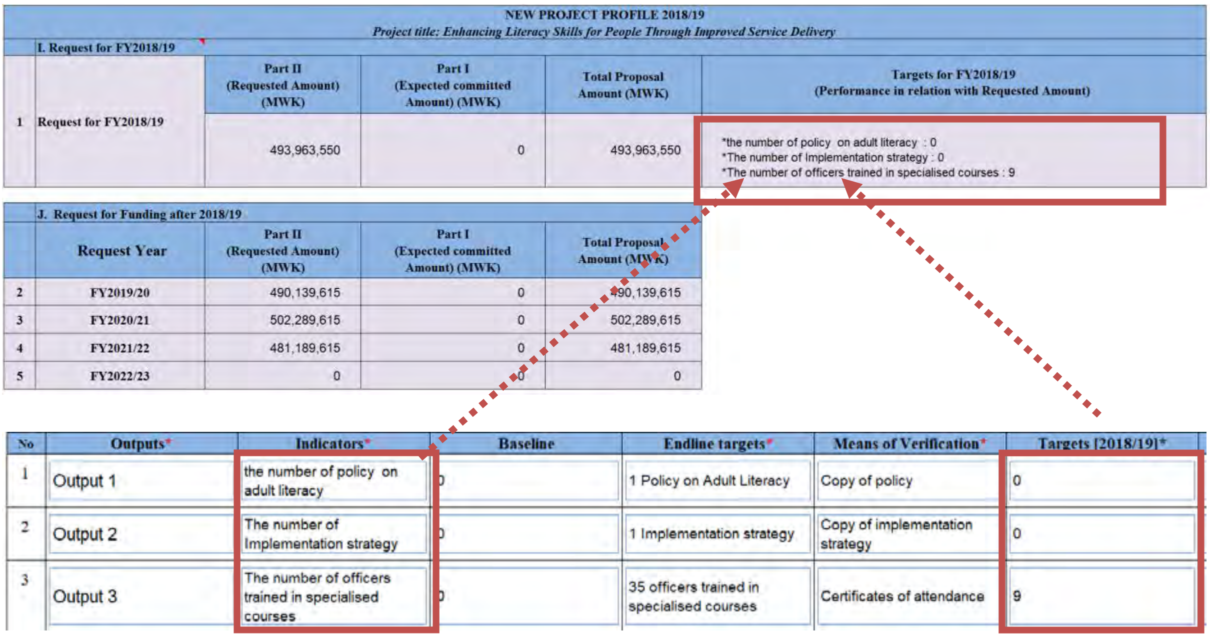


3.6.2 Cell Format

It is better to set format of Cells as "Text", since user may enter some numeric values or "%" values which Excel system possibly changes to other formats which users do not intend.

3.7 Proposal for applied FY sheet (New)

"Proposal for applied FY" sheet in New template is automatically created based on the value from "Financing" and "MonitoringEvaluation" sheet. Particularly, the field for Targets for the 1st fiscal year is automatically filled by combining the sentences filled in Indicators and Targets in "Monitoring Evaluation" sheet.



NEW PROJECT PROFILE 2018/19

Project title: Enhancing Literacy Skills for People Through Improved Service Delivery

I. Request for FY2018/19

		Part II (Requested Amount) (MWK)	Part I (Expected committed Amount) (MWK)	Total Proposal Amount (MWK)	Targets for FY2018/19 (Performance in relation with Requested Amount)
1	Request for FY2018/19	493,963,550	0	493,963,550	*the number of policy on adult literacy : 0 *The number of Implementation strategy : 0 *The number of officers trained in specialised courses : 9

J. Request for Funding after 2018/19

	Request Year	Part II (Requested Amount) (MWK)	Part I (Expected committed Amount) (MWK)	Total Proposal Amount (MWK)
2	FY2019/20	490,139,615	0	490,139,615
3	FY2020/21	502,289,615	0	502,289,615
4	FY2021/22	481,189,615	0	481,189,615
5	FY2022/23	0	0	0

No	Outputs*	Indicators*	Baseline	Endline targets*	Means of Verification*	Targets [2018/19]*
1	Output 1	the number of policy on adult literacy	0	1 Policy on Adult Literacy	Copy of policy	0
2	Output 2	The number of Implementation strategy	0	1 Implementation strategy	Copy of implementation strategy	0
3	Output 3	The number of officers trained in specialised courses	0	35 officers trained in specialised courses	Certificates of attendance	9

3.8 Master Data Sheet

There are following master sheets in the template. The same master data is used for both New and Ongoing template.

Sheet Name	Linked Sheet	Remark
tbl_yearMonth	-	The master data which provides a list of fiscal year to be used for the selection of "year" in Project Implementation Period in "GeneralInfo" sheet. The data in the list is changed based on "x_fixcal_year" automatically, so no need to maintain.
tbl_vote	tbl_mda tbl_budgetcode tbl_subbudgetcode	Master for Donor. This master has "Responsible MDA" and "MDA Code" to be linked with "tbl_mda" sheet.
tbl_mda	tbl_vote	Master for MDAs. "MDA code in this master should be same as the code as the one in "tbl_vote".
tbl_donor	-	Master for Donor.
tbl_mgdspriority	-	Master for MGDS Priority
tbl_mgdsotherarea	-	Master for MGDS Other Area
tbl_sector	-	Master for Sector
tbl_projectType	-	Master for Project Type and Master for Project Source
tbl_budgetcode	tbl_vote tbl_subbudgetcode	Master for PBB Program. Vote code (3 digit) is used as group code to identify the selection list of PBB program once Vote is selected in the template. A combination of vote Code (3 digit) + Program Code (2 digit) is used as unique code (5 digit) to identify each PBB program (each row).
tbl_subbudgetcode	tbl_vote tbl_budgetcode	Master for PBB subprogram. A combination of vote Code (3 digit) + Program Code (2 digit) is used as group code (5 digit) to identify the selection list of PBB subprogram once Vote and PBB is selected. A combination of Vote code, Program Code and Sub-Program code (2 digits) is used as unique code (7 digit) to identify each PBB sub-program code (each row)
tbl_output	*The number of output and outcomes	Master for output and outcome linkage. If the number of output and outcome is changed, this master also should be modified.
tbl_currency	-	Master for currency. This master should be modified every year.
tbl_district	-	Master for district (GeneralInfo sheet)
tbl_lineitem	-	Master for lineitem (CostMatrix sheet)

[Note]
Worksheet name for these master data and column name (header) described in each Master sheet must not be changed as they are linked to the template loader.

[Note]
Code indicated in each Master should be unique. Therefore, when new data is added in a master, you need to find the maximum code existed in the master, and set the maximum number + 1 as a new code for the new data. Template master will be the one to be loaded to the database, and very important to be maintained properly.

[Note]

Some master data is not independent, and they are linked to some other master data shown in the Table above. The example of the linkage among “tbl_mda”, “tbl_vote”, “tbl_budgetcode” and “tbl_subbudgetcode” are shown below.

<tbl_mda>

MDA Co	MDA Name
100(	Accountant General's Department
101(	Anti-Corruption Bureau
103(	Civil Service Commission
160(	Department of Administrator General
104(	Department of Human Resources Management and Development
110(	Department of Immigration

<tbl_vote>

Vote	Description (Vote name)	Vote Code and Name	Responsible MDAs	MDA Cod
050	State Residences	050 - State Residences	State Residences	1410
060	National Audit Office	060 - National Audit Office	National Audit Office	1350
070	The Judiciary	070 - The Judiciary	The Judiciary	1420
080	National Assembly	080 - National Assembly	National Assembly	1340
081	Office of the Director of Public Officer's Declarations	081 - Office of the Director of Public Officer's Declaratio	Office of the Director of Public Officer's Declarations	1020
090	Office of the President and Cabinet	090 - Office of the President and Cabinet	Office of the President and Cabinet	1390
093	Department of Human Resources Management and De	093 - Department of Human Resources Management a	Department of Human Resources Management and Develop	1040

<tbl_budgetcode>

Vote + Program Code	Vote Code	Program
05020	050	20. Management and Administration
05030	050	30. Presidency Office and Residence Management
05031	050	31. Presidency Infrastructure and Technical Services
06020	060	20. Management and Administration
06032	060	32. Audit Services
07020	070	20. Management and Administration
07033	070	33. Adjudication and Case Management
07034	070	34. Judiciary/Legal Services

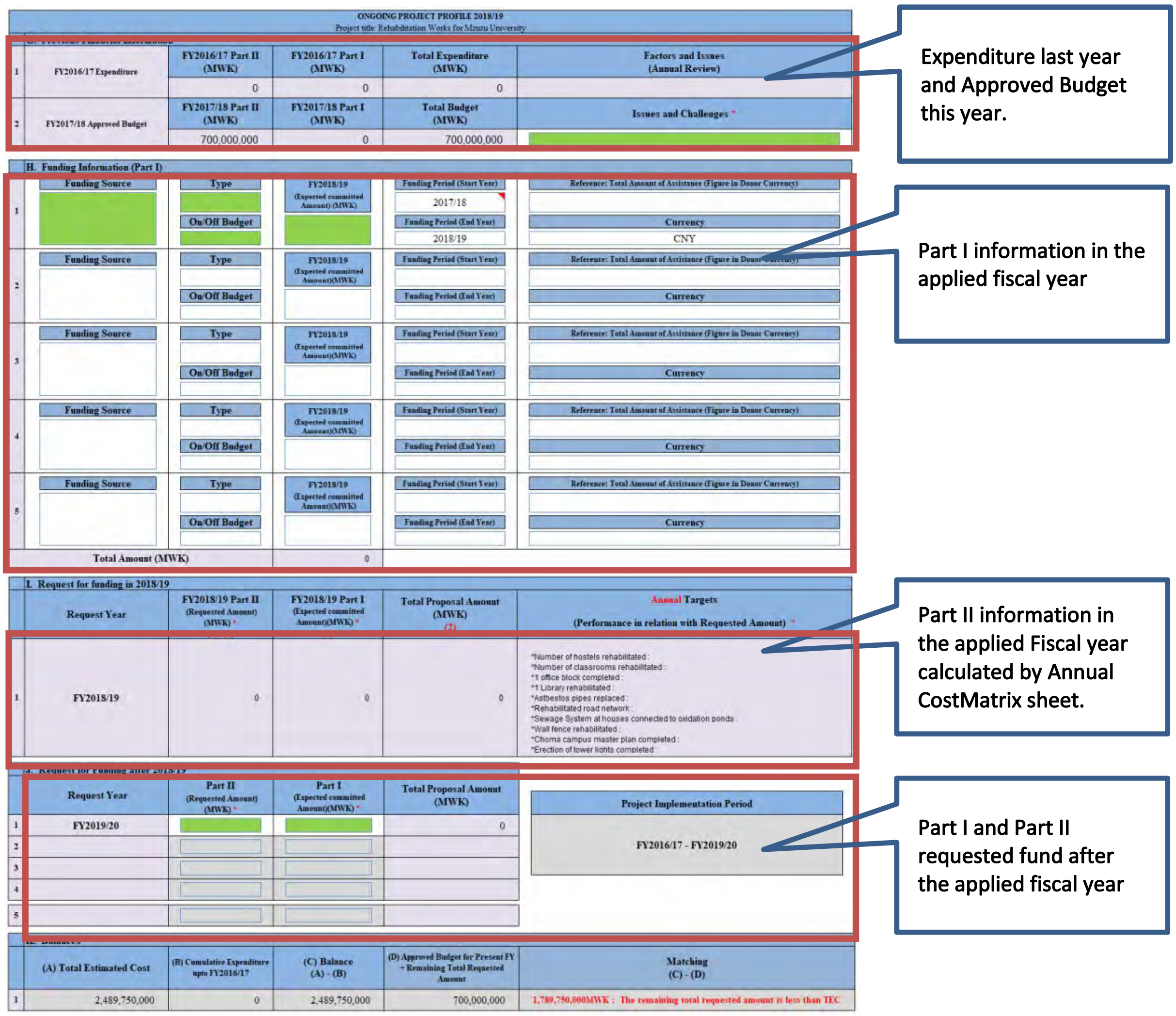
<tbl_subbudgetcode>

Vote + Program + Sub-Program Code	Vote + Program Code	Sub-Program
0502001	05020	01. Administration,Planning and M&E
0502002	05020	02. Financial Management and Audit Services
0502008	05020	08. Human Resources Management
0502010	05020	10. Information and Communication Technology
0503001	05030	01. Household and Building Management
0503002	05030	02. Security Services
0503003	05030	03. VVIP Functions
0503004	05030	04. Communication Services
0503005	05030	05. Presidential Advisory Services
0503101	05031	01. Buildings and Maintenance

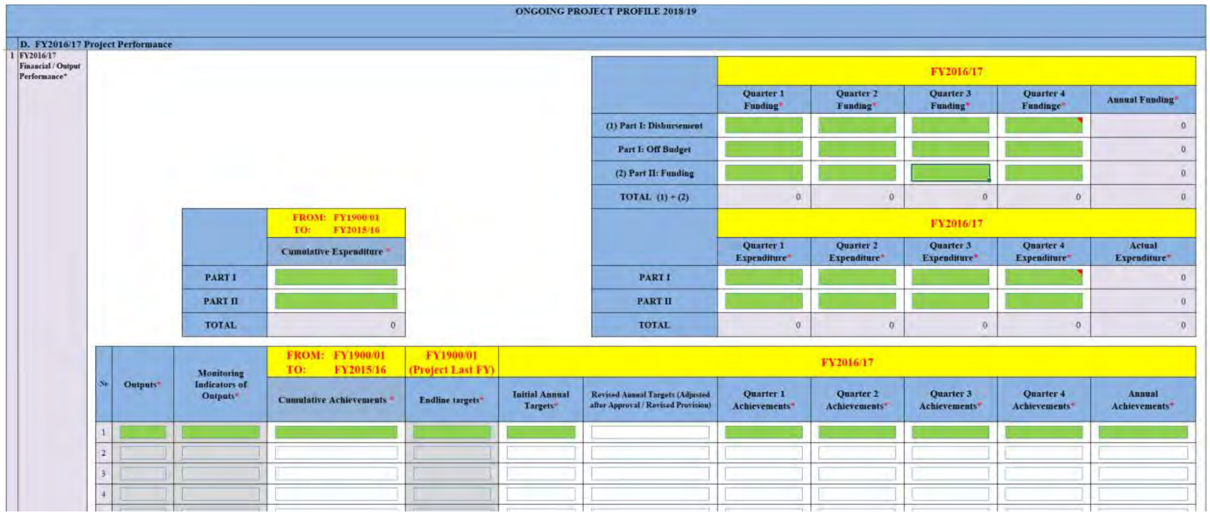
4 On-Going Excel Template

4.1 Proposal for applied FY sheet (Ongoing)

"Proposal for applied FY" sheet in Ongoing template has different design from the one in New template. This sheet include the financial information for Part I and also expenditure and approved budget information as well as the requestd fund in the applied fiscal year.



4.2 ProjectPerformance



4.2.1 **Project Fiscal Year**

The project start fiscal year and end fiscal year are calculated in “wk_sheet” based on the Project start date and end date filled in “GeneralInfo” sheet.

The fiscal year is **from Jul to Jun.** For example if the project start 2011 May until 2017 Dec, the project start fiscal year is

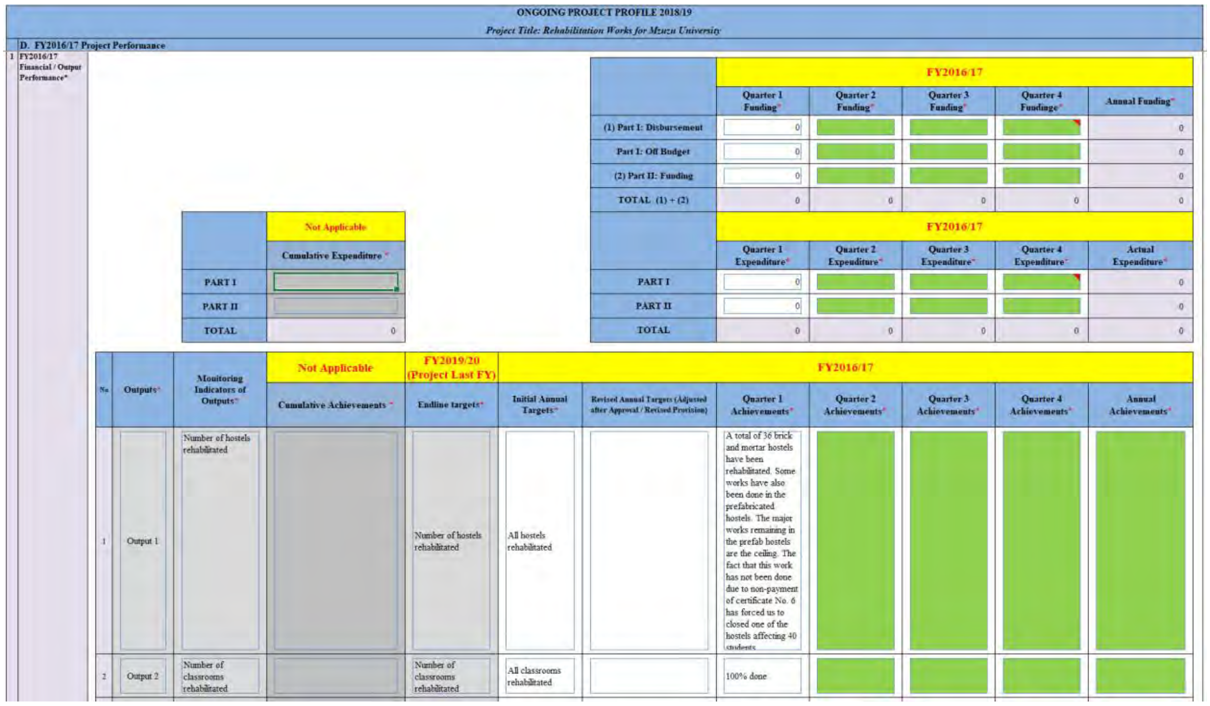
- the project start fiscal year is;2010/11
- the project end fiscal year is;2017/18

4.2.2 **wk_perform_entry_flg**

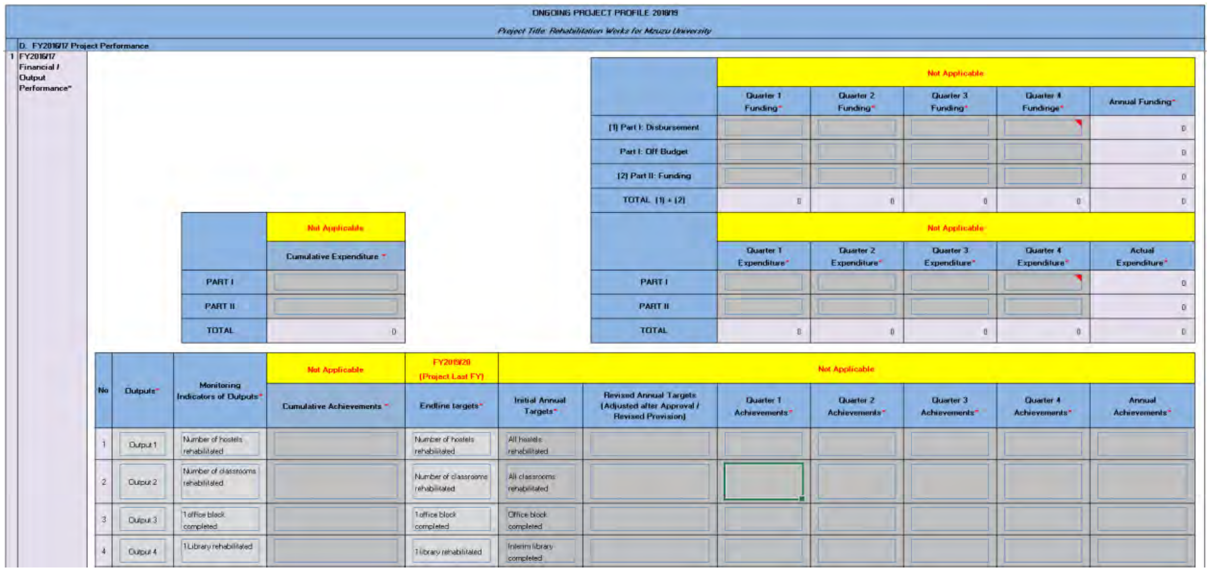
Some on-going project may not necessary to have cumulative information and project performance information if the project started recent years. Based on the project start fiscal year, “wk_perform_entry_flg” in “wk_sheet” judges which information in “ProjectPerformance” sheet needs to be entered. For example, suppose the template is for FY2018/19, and the on-going project starts in FY2016/17, this project does not need to enter cumulative expenditure and achievements as this cumulative information is the amount accumulated from the start year to FY2015/16. If the template is for FY2018/19, and the on-going project starts FY2017/18, this project does not need to enter cumulative expenditure, cumulative achievements and also all the performance information in FY2016/17. The value of “wk_perform_entry_flg” is changed based on the project fiscal start year as follow.

0: All data should be entered
1: Cumulative information is not necessary to enter
2: Cumulative information and performance information are not necessary to enter

Based on this value of “wk_perform_entry_flg”, the color of the fields will be changed. For example, if “wk_perform_entry_flg” = 1, “ProjectPerformance” sheet will be as follow.



if “wk_perform_entry_flg” = 2, “ProjectPerformance” sheet will be as follow.



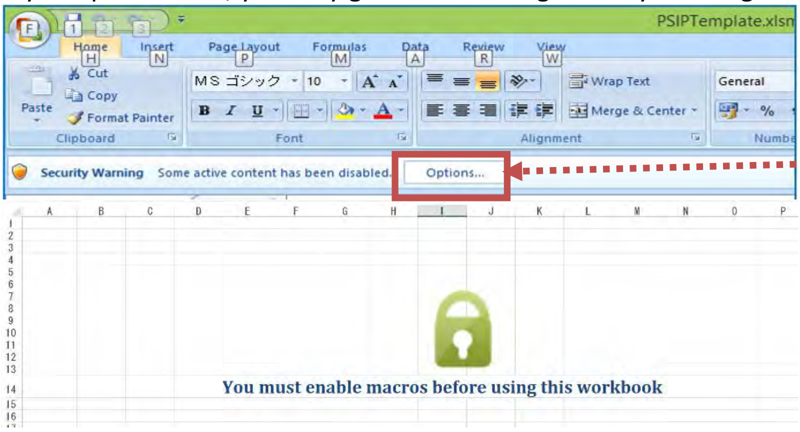
5 Support for users

5.1 Security warning

The macro function is fundamental in the proposal template. For the template ver.4 has the function to force users to enable the macro.

5.1.1 Enable macro (Excel 2013)

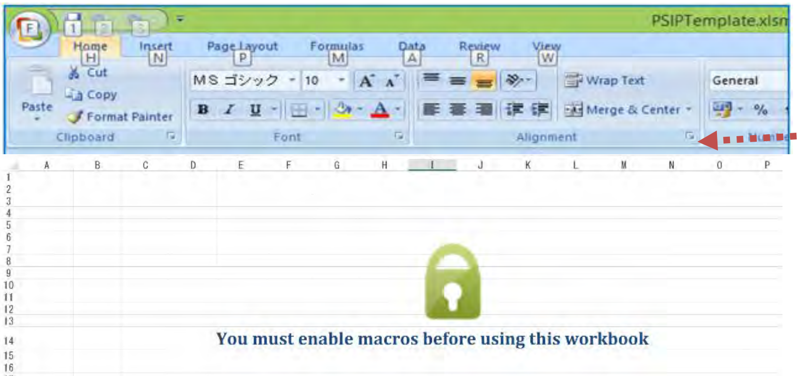
If you open the file, you may get the following security warning. Please enable the macro



Click this Option button to enable the macro.

5.1.2 Troubles to enable Macro

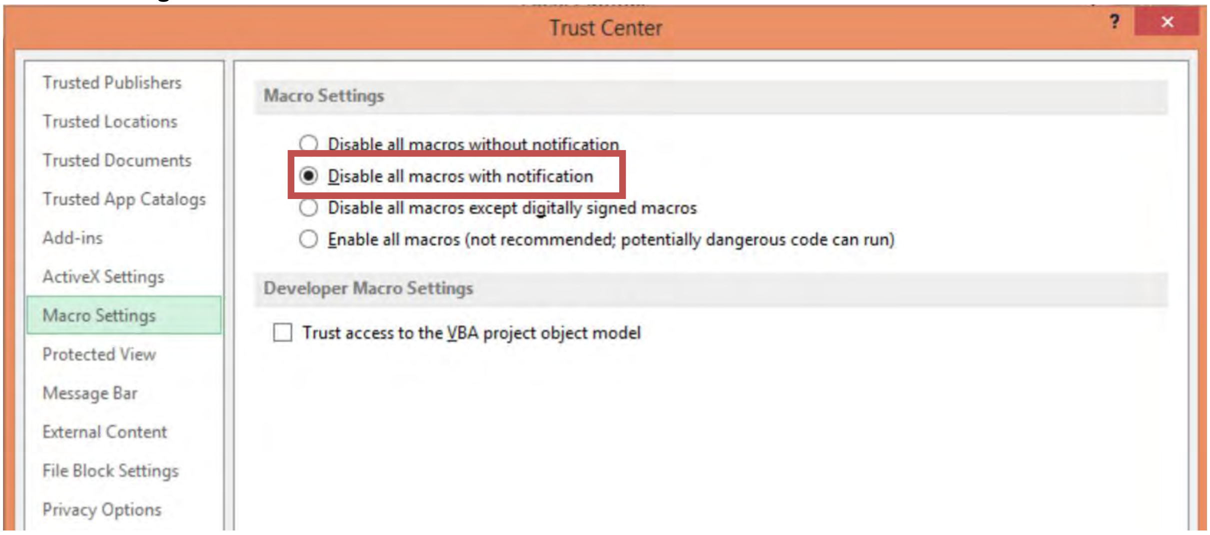
Sometimes, users can not enable macro as the options to enable macro as shown above will not be displayed.



Option button to enable macro is not displayed.

In this case, you can check Macro Setting.
Excel Options -> Trust Center -> Trust Center Settings

Macro Settings -> Select “Disable all macros with notirication”.



5.2 Workbook View mode

Normal view is recommended since “Page Layout” causes sometime failure of controls objects view (buttons, option buttons, etc.). You can set the mode from View->Workbook view.

6 Troubleshooting issues/problems

Solutions to problems that may face while operating Excel Proposal Template are summarized in Q & A format. Please try these solutions to resolve problems.

Q1: ***When Excel Proposal Template is opened, the error message "Excel can not find some contents…" is displayed, and some macro functions do not work properly after that. What shall we do?***

A: This error occurs depending on PC setting. Check the computer setting which displays this error message.

[Solution]

1) Check VBA at office feature is installed. (Do the following process) Control Panel > Programs > Select Microsoft Office and click on Change >Add or Remove Programs > at the bottom of the list, click on the "plus" next to Office Shared Features > select Visual Basic for Applications > Right Click and Choose Run from My computer > Continue. Reboot the computer when it has finished.
2) Check Macro Security Settings from Trusted Site in Excel Options. > Adjust the Security level to the proper settings. (See 5.1.2)
3) If error message continues to be displayed after doing 1) and 2), please change the computers to be used.

Q2: ***Some Error Count is not properly Working as shown below.***

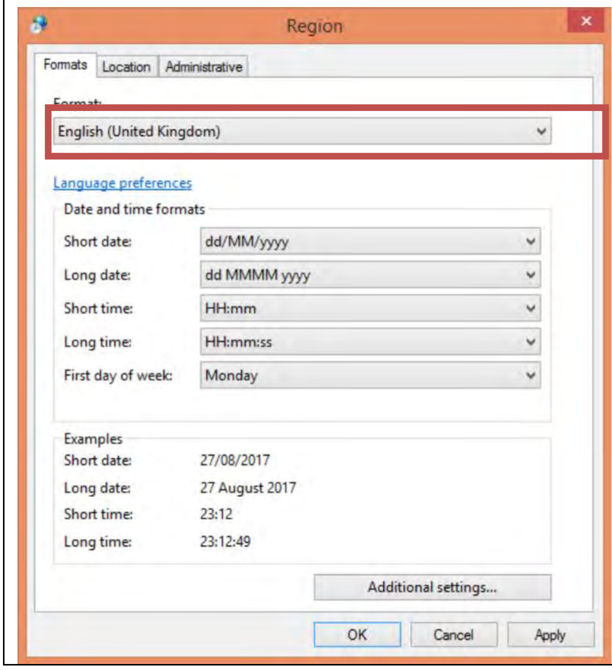
	Sheet name	Status	Number of errors
1)	GeneralInfo	#VALUE!	#VALUE!
2)	ProjectOutline	OK!!	0
3)	ProjectLogframe	#VALUE!	#VALUE!
4)	ProjectPerformance	#VALUE!	#VALUE!
5)	AnnualProjectCostMatrix	Error!!	1
6)	MonitoringEvaluation	#VALUE!	#VALUE!
7)	Proposal for applied FY	#VALUE!	#VALUE!
8)	ProjectManagementStructure	#VALUE!	#VALUE!
	Total error		#VALUE!

A: This error occurs because of the setting of "number format" in the PC.

[Solution]

1) Click "Change date, time or number formats" in Control Panel as follow.

2) Change the Format to "English (United Kingdom)".



Q3:	***Macro enabling is impossible and can not start the template filling.***
A:	This error occurs depending on Macro setting in Excel Application. Please Check Macro Security Settings from Trusted Site in Excel Options. > Adjust the Security level to the proper settings. (See 5.1.2)

Q4:	***Button or checkbox are disappeared. What shall we do?***
A:	They are not disappeared, but its image size may be changed to very small. Please select the objects using "object selection" and make it larger size manually.

Q5:	***Layout of the template is broken. What shall we do?***
A:	The cause for the broken layout is not yet found. If the template with broken layout is submitted, upload this template data to the test server and generate the template again using the right template format.

Appendix 1: Template Development Preparation

<Obstacles to start Development>

1. Some buttons are hidden in the ribbon (Copy&Paste)
2. Protection of the WorkSheet and Workbook
3. Restriction of "Ctrl + V", Drag & Drop and right-click menu

<Solution>

<Obstacle 1: Some buttons are hidden in the ribbon>

1) Open the template file with Application of "Custom UI Editor".

```
<group idMso="GroupClipboard" visible="False"/>
<group idMso="GroupFont" visible="False"/>
<group idMso="GroupCells" visible="False"/>
```

2) From the program above, please change "False" to "True".

<Obstacle 2: Protection of the WorkSheet and Workbook>

- ✓ Please unprotect sheet and unprotect book by the corresponding button in "review" tab.
- ✓ If you need to unprotect all the sheets once, please follow the step below.
  Developer tab -> Macro -> Run "UnprotectAllSheets".

<Obstacle 3: Restriction of "Ctrl + V", Drag & Drop and right-click menu>

1) Please comment out the following program in "Auto_Open".

```
' ----- Change Short-cut "Ctrl+V" to just paste value (not the format)
Application.MacroOptions Macro:="PasteValue", ShortcutKey:="v"

' ----- Forbidden Drag And Drop Function
Application.CellDragAndDrop = False

Call PasteCommandControl(False)
```

2) Save the file, close it, and open it again.

Appendix 2: Template Distribution Preparation (Finalization)

Before the distribution for users, set obstacles again.

1) Please recover the following program in "Auto_Open".

```
' ----- Change Short-cut "Ctrl+V" to just paste value (not the format)
Application.MacroOptions Macro:="PasteValue", ShortcutKey:="v"

' ----- Forbidden Drag And Drop Function
Application.CellDragAndDrop = False

Call PasteCommandControl(False)
```

2) Save the file, close it, and open it again.

3) Open the template file with Application of "Custom UI Editor".

```
<group idMso="GroupClipboard" visible="True"/>
<group idMso="GroupFont" visible="True"/>
<group idMso="GroupCells" visible="True"/>
```

4) From the program above, please change "True" to "False".

5) Run "SetForUserDistribution" to make the template ready for distribution.

Appendix 3: Check list: Before distribution the templates to users

Before you distribute the templates for users, please check the following points. The yellow highlighted parts can be set automatically by running macro “SetforUserDistribution” explained in “Appendix 2”.

Check items	Target	Procedure	Remarks
Deadline	Instruction sheet	Check the deadline	
Fiscal Year	Instruction sheet	Check if “n_fiscal_year” in instruction sheet is changed to the correct year. Once you change this, all the related fiscal year is changed.	
Update master	tbl_currency, tbl_vote,	Check if the values are updated	
Protect VBA	VBA Programme	Protect with password	
Sheet View	All Worksheets	Check Proposal sheets in **normal view.**	
Format and Error check	All Proposal sheets	Check all the entry cells formats are appropriate	
Recalculation		Recalculation is auto	
Print image	all proposal sheets	Check the print area is appropriate	
Protect mode	all Worksheets Workbook	Check All Worksheets and Workbook are protected with password.	
Hide sheets	Master table sheets and working area sheets	Hide the sheets	Master table sheets will be protected more strictly
Data fields in “datasend” sheet	datasend sheet	Check if all the entry data are listed up	
Focus in each Worksheet		If the focus is set to the first data entry field in each Worksheet	
Location of Scroll bar	Scroll bar	Make the location of vertical scroll bar at the most top and the location of horizontal scroll bar at the most left.	

Ministry of Finance, Economic Planning and Development (MFEPD)
The Republic of Malawi

Technical Report 3

Public Sector Investment Programme (PSIP)
And Its Improvement toward Strengthened National Development Management of Malawi

August 2017

The Project for Capacity Enhancement in
Public Sector Investment Programming Phase II (CEPSIP II)
Japan International Cooperation Agency (JICA)

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Koei Research & Consulting Inc.

Table of Contents

ACRONYMS

ADP	Aquaculture Development Project
AGD	Accountant General's Department
CEPSIP	(The Project for) Capacity Enhancement in Public Sector Investment Programming
DAC	Development Assistance Committee
F/S	Feasibility Study
GIS	Geographic Information System
GoM	Government of Malawi
IFMIS	Integrated Financial Management Information System
IMES	Implementation, Monitoring and Evaluation Strategy (for the National Fisheries and Aquaculture Policy)
IPC	Internal Procurement Committee
IRR	Internal Rate of Return
JBIC	Japan Bank for International Cooperation
JICA	Japan International Cooperation Agency
M&E	Monitoring and Evaluation
MDA	Ministries, Departments and Agencies
MFEPD	Ministry of Finance, Economic Planning and Development
MGDS	Malawi Growth and Development Strategy
MTEF	Medium Term Expenditure Framework
NAC	National Aquaculture Centre
NAO	National Audit Office
NFAP	National Fisheries and Aquaculture Policy
NPV	Net Present Value
OECD	Organization for Economic Cooperation and Development
O&M	Operation and Maintenance
OPC	Office of the President and Cabinet
ORT	Other Recurrent Transactions
PBB	Programme Based Budgeting
PCO	Project Coordination Office
PCR	Project Completion Report
PE	Personal Emoluments
PFM-IT	Project Financial Management Information Tool

PIAD	Presidential Initiative on Aquaculture Development
PIU	Project Implementation Unit
PLCM	Project Life Cycle Management
PPP	Public Private Partnership
PSIP	Public Sector Investment Programme
PSC	Project Steering Committee
SAPS	Special Assistance for Project Sustainability
SWAP	Sector Wide Approach

Preface & Summary

This is the third and final version of the Technical Report of CEPSIP II. Most of the substantial contents are already contained and discussed in the preceding Technical Reports 1 and 2, and this Technical Report 3 intends to edit fundamental issues along the line of logic to intensively review the central role and function of PSIP in Malawi's national management of development. It also details the result of the trial project management audit on a selected project, which was performed to provide a base for institutionally solid national management on projects which embody all the development activities conducted by the government. The following is the skeleton of contents. Technical Report 3 is edited to conclude the essence of CEPSIP II showing only the result skipping background and analyses. For more detail of each issue, relevant part of the Technical Reports 1 or 2 should be also referred to.

PSIP is the pivotal system of national development management of Malawi. National development management is a cyclical process consisting of "Planning," "Budgeting," "Implementation," "Evaluation" and "Feedback" phases. PSIP intervenes in almost all the areas of that development management cycle. In order for PSIP to fulfill its management function, all the development activities must be enrolled in it (comprehensiveness of coverage), and it must contain only the activities of development in nature (genuineness of contents). It is the main task of CEPSIP II to improve the system to ensure those two requirements. In Malawi, all the development activities are supposed to be projectized, therefore project management is conceptually identical with development management. Under that system, project or development management constitutes two layers which consist of national project management by means of PSIP and individual project management by implementing MDAs concerned. CEPSIP II is primarily charged with improvement of that outer project management layer. In its assignment, CEPSIP II made relevant definitions clear including concepts of "development" and "recurrent," and improved templates in order to collect more appropriate and informative project information into PSIP. To upgrade quality of appraisal, CEPSIP II also improved the existing appraisal manual and carried out capacity development of PSIP officers.

In addition to the original assignment to deal with PSIP itself, CEPSIP II also tried to strengthen implementing MDAs' project management systems to produce and provide more reliable project information for PSIP, since the total project or development management can not been completed until the inner layer has become reliable. PSIP also needs "reliability of project information" besides the two requirements specified above. However, it is out of the PSIP's control. For that purpose, CEPSIP II developed the "Project Financial Management Information Tool (PFM-IT)" and disseminated it to enable MDAs to produce more accurate and comprehensive project financial information. However, it is by far over the CEPSIP II's scope of work to directly deal with all the MDAs. Therefore, CEPSIP II collaborated with "Accountant General's Department," "National Audit Office" and "Internal

Auditors” in studying individual project management systems and their operation, and attempted trial project management audit for the sake of establishing national supervision and strengthening of each MDA’s project management capacity.

1. Public Management for Development (Development Management)

The Malawi's public management system administers government activities distinguishing between the "development" and "recurrent" from its intended purposes. As a logical consequence, the government budget and expenditures are separately managed accordingly in accordance with their respective uses. The "development activities" are the ones that contribute toward specific progress or improvement upon present conditions, while the "recurrent activities" carry out governments' regular daily running or routine tasks to maintain the status quo. The PSIP is a pivotal system in the Malawi's public management for development or "development management" to comprehensively manage all the development portion of the government activities and connect them to the country's development budget.

The "development management" is a cyclical management process. The basic concept itself is commonly applicable to any organization which is functionally organized to achieve its common objective efficiently, economically and effectively, regardless whether it works in a private or a public sector of an economic society. That management cycle consists of "*Plan,*" "*Do,*" "*See*" and "*Feedback*" processes, or they are more practically interpreted in the context of public management as "Policy Making," "Planning," "Budgeting," "Implementation," "Evaluation" and "Feedback" stages respectively. The effectiveness of the system and operation should be viewed from the perspective whether this cyclical process is properly structured (a static aspect) and is smoothly working (dynamic aspect).

(1) Planning

Based on the basic national development policy, the Malawi's development plans are composed from the long-term national vision for twenty years down to the annual work plans of each ministry who implements the activities planned for development. Each development plan must be (a) logically structured with hierarchal alignment under clear development objectives and (b) articulate concrete activities to convert available inputs into required development outputs.

(National Development Planning System of Malawi)

- Vision 2020: Long-term Development Plan (20 years until 2020)
- Malawi Growth and Development Strategy (MGDS) III: Medium-term Development Strategy (5 years from 2017 to 2022)
- Sector Strategies (5years)
- Ministerial Strategic Work Plan (1 year)

Activities to achieve development goals specified in the planning structure are carried out under the finance of development budget allocated by the Ministry of Finance and Economic Planning, and the performance of each implementation is then evaluated the result of which is fed back upstream to the following policy making, planning and budgeting.

(2) Budgeting

A "Budget" in a public sector functions as a tool to efficiently, economically and effectively implement plans and programs that embody intended policy, translating them into monetary terms. In other words a "budget" financially bridges the gap between the policy and its execution. This technically requires departure from a conventional way of budgeting practice that had been prevailing in a public sector among the world. The paradigm shift must be taken in three different directions as follows:

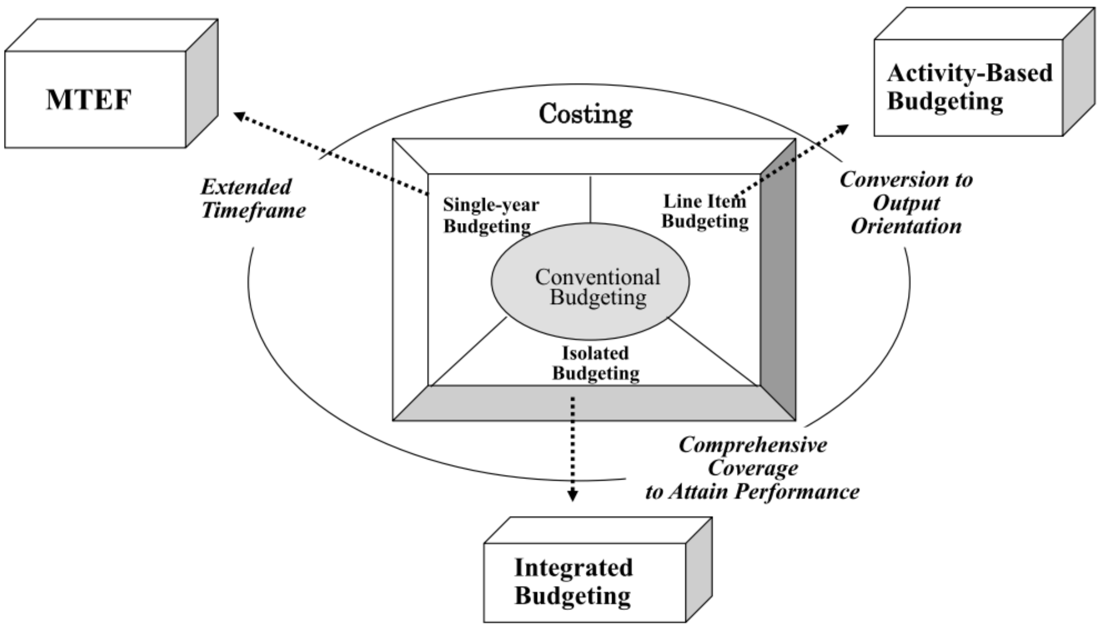


Figure 1: Paradigm Shift from Conventional Budgeting

(a) Shift from an isolated single-year budgeting to a multi-year budgeting based on a Medium-Term Expenditure Framework. **<MTEF>**

Few policy targets are normally achieved in a single year which is artificially fixed for fiscal and other administrative purposes. As a financial tool which monetarily supports policy and plans for their implementation, budgets must be prepared corresponding to a particular period respectively needed for attaining the targets concerned. However, too long timeframe makes the budget estimation vague and inaccurate. In order to formulate a rational as well as reliable budget, the base period is fixed at 3 years in the Malawi's MTEF.

(b) Shift from input-oriented incremental budgeting based on line-items to output-oriented performance or activity based budgeting. **<Activity-Based Budgeting>**

As a financial tool which monetarily embodies the policies and plans for their implementation, budgets must be prepared based on costing of required activities to attain the policy target concerned. In the Malawi's context, it is termed "output" budgeting. However, the "output" cannot be directly costed, it is therefore done by costing the activities which convert necessary "input" into the targeted "output."

(c) Shift from isolated piecemeal budgeting to integrated budgeting. **<Integrated Budgeting>**

As a financial tool which monetarily embodies the policy and plans for implementation, budgets must be collectively compiled on a program basis getting rid of narrow-minded and vertically isolated piecemeal units with little contact directly with each other. The prevailing Sector Wide Approach (SWAP) is on this track to conduct a sector-holistic deal, which underlies the concept that "sectors" should be looked at in totality. In some instances, they are not necessarily synonymous with sector ministries and overlaps occur.

It can be thought that the Programme Based Budgeting (PBB) of Malawi is a pragmatic attempt which intends to crystallize this paradigm shift.

(3) Implementation Management

The key requirement of the management of the implementation phase is to record and report every movement or progress of activity implementation in physical and financial terms: the former represents progress management and the latter is managed by means of accounting. This process must also detect problems hindering smooth implementation and provide practical remedies.

(4) Performance Evaluation

The result of implementation achieved during the specified period of plan/program/project has to be duly evaluated for the external or accountability purpose as well as the internal or managerial purpose to extract lessons learned from the implementation process and consequences. The method of evaluation is now internationally standardized in the DAC 5 Criteria which consist of the following aspects.

Table 1: **DAC 5 Criteria**

Relevance	The extent to which the plan/program/project is suited to the development priorities and policies of the country and target group.
Efficiency	Efficiency measures the outputs -- qualitative and quantitative -- in relation to the inputs. It is an economic term which signifies that the plan/program/project uses the least costly resources possible in order to achieve the desired results. This generally requires comparing alternative approaches to achieving the same

	outputs, to see whether the most efficient process has been adopted.
Effectiveness	A measure of the extent to which the outputs through the activities attain the plan/program/project objectives.
Impact	The positive and negative changes produced by a development intervention, directly or indirectly, intended or unintended. This involves the main impacts and effects resulting from the activity on the local social, economic, environmental and other development indicators. The examination should be concerned with both intended and unintended results and must also include the positive and negative impact of external factors on economic, social and natural environment.
Sustainability	Sustainability is concerned with measuring whether the benefits of an activity are likely to continue in medium and long terms after the plan/program/project has been completed. The sustainability is supported by managerial, financial and technical factors.

2. Role of PSIP in Development Management

PSIP of Malawi is a multi-functional management device for "Projects" that institutionally embody all the development activities specified in the development plans within a framework of the total public management for development or development management discussed in the preceding section.

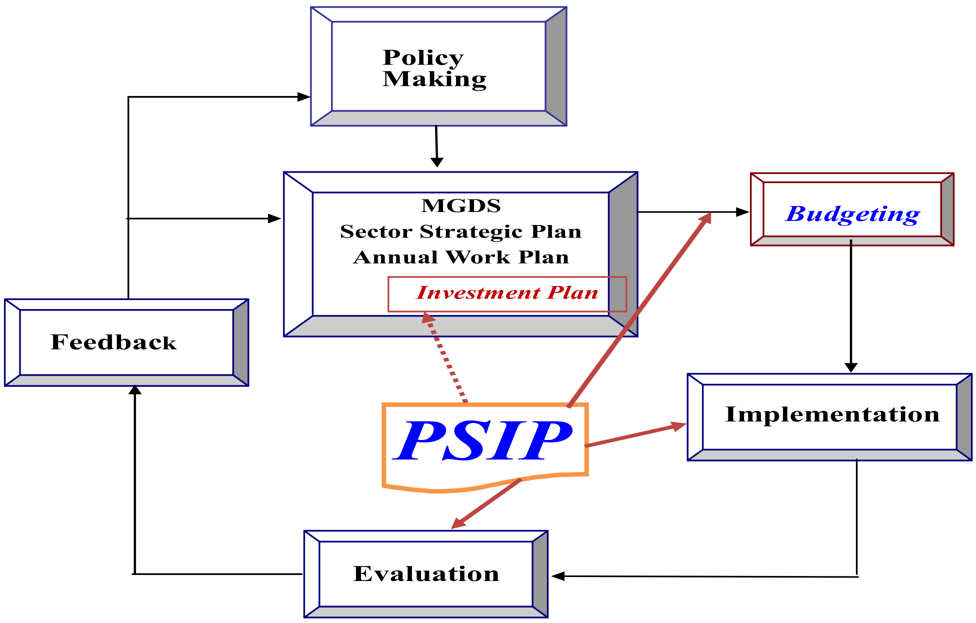


Figure 2: Public Sector Management Cycle for Development and Role of PSIP

In the total development management system, PSIP is located between the "planning" and the "budgeting" phases with its primary role to bring planned development activities into execution by securing the development budget. In addition to that main function, PSIP also takes part in the implementation phase that follows with a role to oversee state of implementation of the development projects. It further supports the project and development policy evaluations, which are primarily tasked to the implementation agencies concerned and M&E Division of MFEPD respectively. Thus, PSIP intervenes in almost all the areas of the development management cycle.

Each aspect of the PSIP's task takes the following steps.

a) Development Execution Management

Appraisal and approval of newly proposed "Projects" from MDAs or implementing bodies of development projects in accordance with specific judgment criteria to qualify the projects as "development," not "recurrent," activities.

b) Development Budget Formulation

Budgeting of the approved projects and handing them over to the Treasury for assigning development budgets.

c) Monitoring of Project/Development Progress

Physical and financial progress monitoring of project implementation using registered progress indicators based on the information from respective sector ministries or other implementing bodies.

d) Evaluation of Projects and Information Provision for Evaluations of Sectoral and National Development Plans

PSIP is participated in the evaluation phase of the project cycle and total public management for development. PSIP database collects comprehensive information including implementation monitoring and performance evaluation. For the policy evaluation of MGDS and other development plans, PSIP provides each evaluation body with financial information of "development expenditures" expended for having achieved the development targets and goals. Performance of development activities measured with the achieved levels of output, outcome and impact have to be compared against the inputs (to be or have been) invested or consumed for that attainment which are represented by development budget and expenditures respectively in development evaluations. It is the PSIP that arranges the development budget and comprehensively aggregates the development expenditures.

e) Base for Physical Assets Management after Project Completion

Provision of both physical (categorized assets) and financial (acquisition costs) information for the asset management after the completion of infrastructure development projects.

3. Requirements for Fulfilling PSIP's Role

In order for the PSIP to fulfill its assigned mission specified in the previous section, the following conditions must be fulfilled:

A) All the "Development Activities" implemented or to be implemented have to be comprehensively captured and managed in PSIP without omission. (Comprehensiveness of Coverage)

B) Only genuine "Development Activities" are to be contained in PSIP. There must not be "Non-Development or Recurrent-Natured Activities" contained in PSIP. (Genuineness of Contents)

To ensure the above two conditions, "comprehensiveness" and "genuineness," to carry out its mandated function, PSIP has to clear several requirements as follows.

a) Projectization of all the development activities (Institutional Aspect)

b) Definitive distinction between "development" and "recurrent" (Conceptual Aspect)

c) Collection of sufficient project information from implementing MDAs (Informational Aspect)

d) Right project appraisal by MFEPD (Appraisal Aspect)

4. Rearrangement of Conceptual Definitions

The functions and role of the PSIP discussed in preceding sections had not been explicitly defined in any related official documents and guidelines. For getting right understanding of the actual PSIP-related concepts and practices, CEPSIP II had deep discussions with key officials of MFEPD and reached a consensus on key development management issues. Based on that confirmed facts, CEPSIP II gave clear definitions of PSIP itself and relating technical terms specifying PSIP's mandated function and role as the pivotal system to nationally manage all the development activities that the government sector implements. Those are reflected in the revision of the PSIP Preparation Handbook and other relevant guiding documents to practically instruct the whole process of the PSIP preparation and are disseminated to all the relating parties who are supposed to be involved.

The following are the main key PSIP related terms and their confirmed conceptual definitions on which the Malawi's development management surrounding PSIP has been functioning in practice.

■ PSIP (Public Sector Investment Programme)

The term "investment" tends to confuse ones' proper understanding on the Malawi's PSIP, because normally one associates it with "investments to acquire physical assets or to develop physical infrastructure." As reviewed in the Technical Report 1 issued in February 2014, there are other developing countries which operate systems termed PSIP with different public management uses. PSIPs of those countries correspond to the above normal sense of "investment," which solely deal with "physical investment" in the government sector linked with the country's physical assets or infrastructure management.

Different from the above practices, the Malawi's PSIP specifically manages "development" embodied in "projects" which includes not only physical investments but also involves non-physical improvements such as human resource and institutional development as long as they are development in nature.

- <u>Project</u>

  A ring-fenced unit comprising a planned set of activities to be executed to attain a predetermined particular purpose within a fixed period and cost.

- <u>Development (Activity, Budget, Expenditure)</u>

  The "development" is an act that intends to make specific progress or improvement upon present status in normal conditions, or an action to raise a "bar." Specific actions taken aiming to improve the present situation are the "development activities," the estimated fund to finance the activities is the "development budget" and the corresponding actual amount expended is the "development expenditure." The "development" is by no means merely physical investment or infrastructure development in Malawi, but includes human resource and institutional developments as stated above.

- <u>Recurrent (Activity, Budget, Expenditure)</u>

  The "recurrent" is an act to carry out government's regular daily running or routine tasks to maintain the status quo, or an action to keep the height position of a "bar."

The "Development and Recurrent" is the classification from the aspect of purpose of activities in question, not from the angle of the expenditure's nature or accounting line items.

- <u>Capital (Expenditure)</u>

  The "capital expenditure" is investment to acquire "asset" whose durable life or useful period producing the benefit over one year, or expenditures to make improvements that prolong the life of the property and add value to it.

- <u>Current (Expenditure)</u>

  This is expenditure for consumptive transactions. In the Malawi's context, it consists of "Personal Emoluments (PE)" and "Other Recurrent Transactions (ORT)."

Different from the distinction between the "Development" and "Recurrent" discussed above, classification between "Capital" and "Current" is from the aspect of the nature of expenditure of their *own or in a financial accounting context. However, the "Recurrent" is often identified with and called "ORT" due to the misleading terminology in the Budget Manual which defines "Recurrent Expenditures" as the total of PE and ORT. It also defines ORT as the "ongoing costs of governmental operations, excluding those in PE."*

In reality, "Development" and "Recurrent" activities commonly consume both "Capital" and "Current (or Consumptive)" costs. Therefore, it is incorrect to consider that "Recurrent is the total of PE and ORT," as well as "Recurrent equals ORT" (double mistake misunderstanding the inaccurate definition).

■ <u>Logical Framework of a Project</u>

Logical structure and flow to attain a project goal comprising the following dynamic components.

(Input)

Resources consumed by "Activities" to produce "Outputs."

(Activities)

Specified actions to produce "Outputs" from "Inputs."

(Outputs)

Goods and/or services directly produced/obtained or delivered by "Activities."

(Outcome)

Benefits to targeted direct beneficiaries brought by "Outputs," i.e. "Services" directly (Service Projects" or by "services by operation of the "facilities" produced or procured (Physical Investment Projects).

(Impacts)

Benefits or adverse influence on related natural and social environments (indirect beneficiaries) over "Outcome."

5. Collection of Reliable Project Information for PSIP

Section 3 articulated that "Comprehensiveness of Coverage" and "Genuineness of Contents" constitute two necessary conditions for PSIP to fulfil its assigned mission in Malawi's development management. To ensure them, right project information must be submitted by each MDA first. To carry out that practice solidly, the following conditions are to be satisfactorily fulfilled.

(A) Existence of reliable project management system in each implementing MDA

(B) Clear guidance and instruction for preparing project information and data to MDAs

Project information essential for the PSIP appraisals for new and on-going projects includes the following basic requirements respectively among other supporting information.

(New Projects)

(N-1) Expected "Outcomes" and "Outputs" to be generated from the project implementation, and "Activities" necessary to be carried out to produce them.

(N-2) The logical structure among the three elements specified above.

(N-3) Project cost rationally estimated on an "activity basis."

(On-going Projects)

(O-1) Periodic (quarterly) progress information vis-à-vis the planned implementation schedule.

(O-2) Project specific revenue (funding) and expenditure records in accounting line items by "Activity" and "Output" in comparison with the preset financial schedule of implementation and with the approved and funded budgets.

Regarding the point (A) above, every information is basically produced within the internal project management system of the project implementers, or MDAs, which currently carries fundamental weaknesses. The problems involved are twofold: MDAs' individual project management and guiding and supervising outer management. This fundamental issue will be dealt with more comprehensively in the section after the next. In advance of that, the next section discusses collection of more pertinent information by PSIP to fit its management purpose.

(1) Revised Template Formats

(1)-1 New-Project Template

CEPSIP II substantially revised existing templates in order to collect more appropriate and informative project information. The point of the revision II is to require precise project description along enhanced logical structure with clear interrelations among outcomes, outputs and activities explicitly linked with the targeted project purpose. The revised template also requires the estimated project cost matrix newly designed corresponding to the logically structured project contents. The key point of the project cost matrix is to show the total estimated project cost classified on an activity basis aligned with the superordinate outputs and outcomes logically specified in the main part of the template. The activity-based cost structure is entered in accordance with the official line items, and the project overhead cost for the implementation administration is collectively reported in the independent column set aside from the activity-based cost entries.

The above related revised format of the new project template and the cost matrix are shown below.

■ Logical Linkage of Project Contents

3. Project Activities

Identify what activities are under what outputs and type the desciption of each activity.

****You can select "Output linked to Activity" to identify each Activity No.***

****Type outputs description before you select "Output linked to Activity".***

No	Outcome linked to Output	Output linked to Activity	Activity	Activity Description
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				

■ Activity-based Project Cost Matrix

Project Outputs		Administrative Cost for the Project	Project Output 1		Project Output 2	
Project Activities			Activity 1-1	Activity 1-2	Activity 2-1	Activity 2-2
Budget Items	Total by Budget Item	(Item by item)	[Unit Cost Info.]	[Unit Cost Info.]	[Unit Cost Info.]	[Unit Cost Info.]
10 – Salaries						
11 – Other allowances						
21 – Internal travel						
22 – External travel						
23 – Public Utilities						
24 – Office supplies and expenses						
25 – Medical supplies and expense						
26 – Rents						
27 – Education supplies and services						
28 – Training expenses						
29 – Acquisition of technical services						
30 – Insurance expenses						
31 – Agricultural inputs						
32 – Food and rations						
33 – Other goods and services						
34 – Motor vehicle running expenses						
35 – Routine Maintenance of Assets						
36 – Agricultural Subsidies						
39 – Grants to International Organisations						
40 – Grantd and Subventions						
41 – Acquisition of Fixed Assets						
Ground Total						

(1)-2 Ongoing Project Template

The new "on-going template" intends to put the main focus on detailed project financial performance information. It requires records of actual cost expended for project implementation vis-à-vis physical progress indicated by predetermined implementation monitoring or output indicators. The implementation performance in financial terms is compared with the amounts of approved as well as actually funded budgets for that particular project. Showing the targeted performance of the next year based on the figures of the current progress, the new template is able to rationally show and propose estimated necessary amount of budget for the following fiscal year on a solid performance base.

The following is the main part of the new template to display project implementation performance.

- <u>Progress Reporting on New "On-going Template"</u>

ON-GOING PROJECT PROFILE 2016/17

D. FY2014/15 Project Performance

1 FY2014/15 Financial / Output Performance*

	Cumulative Expenditure * FROM: FY2000/01 TO: FY2013/14
PART I	
PART II	
TOTAL	0

	FY2014/15				
	Quareter 1 Expenditure*	Quareter 2 Expenditure*	Quareter 3 Expenditure*	Quareter 4 Expenditure*	Actual Expenditure*
PART I					0
PART II					0
TOTAL	0	0	0	0	0

No	Outputs*	Monitoring Indicators of Outputs*	Cumulative Achievements * FROM: FY2000/01 TO: FY2013/14	Endline targets*	Initial Annual Targets*	Revised Annual Targets (Adjusted after Approval / Revised Provision)	FY2014/15 Quarter 1 Achievements*	Quarter 2 Achievements*	Quarter 3 Achievements*	Quarter 4 Achievements*	Annual Achievements*
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											

FY2014/15 Financial Information

	Approved Provision / Commitment*	Revised Provision / Commitment	Actual Funding / Disbursement*	Actual Expenditure
Part I				0
Part II				0
Total	0	0	0	0

	Cumulative Expenditure * 0 FROM: FY2000/01 0 0 TO: FY2014/15 0
Part I	0
Part II	0
Total	0

In order to rationally fill in reliable template information, the projects have to be equipped with a well-established and systematically operated project accounting system. The "Project Financial Management Information Tool (PFM-IT)" was designed by CEPSIP II in cooperation with the Accountant General's Department, and was started to be applied to pilot projects of three focused MDAs to systematically produce financial information to satisfy various project management requirements of each project management unit and also for the above PSIP information needs. The details of PFM-IT are going to be discussed in the following section regarding the next issue on the MDAs' project accounting in the framework of the total project management.

(2) Project Financial Management Information Tool (PFM-IT)

As stressed in the section above, PSIP's new "on-going template" puts its focus on detailed financial performance information. Reliable financial information for the PSIP appraisal purpose is unable to be submitted by each project implementation agency unless it is systematically produced from a well-designed and operated project accounting system. According to the field study results of focused MDAs on project management and accounting systems, however, MDAs' prevailing project accounting systems are weak in general, and many projects do not have independent project accounting systems as reported in the CEPSIP II progress report submitted in the beginning of 2015. The prevailing state of affairs is as follows.

In some cases, project transactions are mingled with general accounting, therefore project accounting is not independent from a general accounting system. To prepare project financial reports or to make expenditure performance report of on-going projects to PSIP under this circumstances, one has to extract transactions which may belong to project implementation manually and post them into the project financial statements ex post facto. Under this kind of unsystematic ad hoc measures, results may differ each time the reports are produced.

Although project accounting is kept independent from general accounting in other cases, it is observed that some of the implementing agencies do not keep its own accounting records or ledgers to record project transactions but is entirely dependent on the IFMIS payment records. The IFMIS records are able to provide project-wise expenditures but fail to give such details as expenditures attached to project outputs and activities. If the implementation agency wants to do so, it is obliged to take the same way of the manual classification like the above.

Following the new procedures introduced under CEPSIP II assistance for new project proposals, MDAs are requested to submit project cost estimation according to planned outputs and activities. To make appropriate project management during the implementation, project accounting should also take expenditure management corresponding to the planned output and activity classification.

Essentially, project accounting has to be kept independent not only from general accounting but also from other projects being concurrently implemented. It is also required to assign one-ledger for one-project for independent bookkeeping to periodically produce respective project financial statements. However in reality, the CEPSIP II field survey has found such one-ledger one-project practice at only two MDAs; namely Department of Survey, under the Ministry of Lands, Housing and Urban Development and the Department of Irrigation, under the Ministry of Agriculture, Irrigation and Water Development.

Taking account of this serious fact, CEPSIP II has designed an excel-based "Project Financial

Management Information Tool (PFM-IT)" as a convenient user-friendly device to financially manage the project implementation comprehensively. It is useful for producing quite rich information for various project financial management uses covering all the PSIP requirements requested by the new "on-going project template."

Financial Analysis Report
(to know Gaps between Provision (or Comitment), Total Funding (or Disbursement) and Total Expenditure)

None Selection

Information Items

No	Funding Source	Figure Displayed
1	donor by donor (Maximum: 5)	Commitment
2	donor by donor (Maximum: 5)	Total Disbursement
3	donor by donor (Maximum: 5)	Total Expenditure
4	donor by donor (Maximum: 5)	GAP between Commitment and Total Disbursement
5	donor by donor (Maximum: 5)	GAP between Commitment and Total Expenditure
6	donor by donor (Maximum: 5)	GAP between Total Disbursement and Total Expenditure
7	donor by donor (Maximum: 5)	Ratio (Total Disbursement / Commitment)
8	donor by donor (Maximum: 5)	Ratio (Total Expenditure / Total Disbursement)
9	donor by donor (Maximum: 5)	Ratio (Total Expenditure / Commitment)
10	Part I Total	Commitment
11	Part I Total	Total Disbursement
12	Part I Total	Total Expenditure
13	Part I Total	GAP between Commitment and Total Disbursement
14	Part I Total	GAP between Commitment and Total Expenditure
15	Part I Total	GAP between Total Disbursement and Total Expenditure
16	Part I Total	Ratio (Total Disbursement / Commitment)
17	Part I Total	Ratio (Total Expenditure / Total Disbursement)
18	Part I Total	Ratio (Total Expenditure / Commitment)
19	Part II (GoM)	Approved Provision
20	Part II (GoM)	Revised Provision
21	Part II (GoM)	Total Funding
22	Part II (GoM)	Total Expenditure
23	Part II (GoM)	GAP between Approved Provisoin and Total Funding
24	Part II (GoM)	GAP between Approved Provisoin and Total Expenditure
25	Part II (GoM)	GAP between Revised Provisoin and Total Funding
26	Part II (GoM)	GAP between Revised Provisoin and Total Expenditure
27	Part II (GoM)	GAP between Total Funding and Total Expenditure
28	Part II (GoM)	Ratio (Total Funding / Approved Provision)
29	Part II (GoM)	Ratio (Total Funding / Revised Provision)
30	Part II (GoM)	Ratio (Total Expenditure / Total Funding)
31	Part II (GoM)	Ratio (Total Expenditure / Approved Provision)
32	Part II (GoM)	Ratio (Total Expenditure / Revised Provision)
33	Part I and Part II	Approved Provision + Commitment
34	Part I and Part II	Revised Provision and Commitment
35	Part I and Part II	Total Funding and Disbursement
36	Part I and Part II	Total Expenditure (Part I and II)
37	Part I and Part II	Gap between Approved Provison + Commitment, and Funding + Disbursement
38	Part I and Part II	Gap between Revised Provison + Commitment, and Funding + Disbursement
39	Part I and Part II	Gap between Funding + Disbursement, and Part I and II Expenditure
40	Part I and Part II	Gap between Approved Provison + Commitment,and Part I and II Expenditure
41	Part I and Part II	Gap between Revised Provison + Commitment,and Part I and II Expenditure
42	Part I and Part II	Ratio (Total Funding and Disbursement / Approved Provision and Commitment)
43	Part I and Part II	Ratio (Total Funding and Disbursement / Revised Provision and Commitment)
44	Part I and Part II	Ratio (Total Expenditure (Part I and Part II) / Total Funding and Disbursement)
45	Part I and Part II	Ratio (Total Expenditure Part I and Part II) / Approved Provision)
46	Part I and Part II	Ratio (Total Expenditure Part I and Part II) / Revised Provision)

Summary Report by Outputs / Activities
(to know aggregated figures based on outputs and activities)

Selected source

No	Funding Source
1	Each donor (Maximum: 5)
2	Part I total
3	Part II (GoM)
4	Part I and Part II

×

Information Items

No	Aggregation Base	Aggregation Unit
1	Administrative Cost	Monthly
2	Administrative Cost	Quarterly
3	Administrative Cost	Biannual
4	Administrative Cost	Annual
5	Each Output (1 – 15)	Monthly
6	Each Output (1 – 15)	Quarterly
7	Each Output (1 – 15)	Biannual
8	Each Output (1 – 15)	Annual
9	Each Activity (1 – 30)	Monthly
10	Each Activity (1 – 30)	Quarterly
11	Each Activity (1 – 30)	Biannual
12	Each Activity (1 – 30)	Annual
13	Total	Monthly
14	Total	Quarterly
15	Total	Biannual
16	Total	Annual

Summary Report by Line Items
(to know aggregated figures based on Line Item)

Selected source

No	Funding Source
1	Each donor (Maximum: 5)
2	Part I total
3	Part II (GoM)
4	Part I and Part II

×

Information Items

No	Aggregation Base	Aggregation Unit
1	Each Line Item	Monthly
2	Each Line Item	Quarterly
3	Each Line Item	Biannual
4	Each Line Item	Annual
5	Total	Monthly
6	Total	Quarterly
7	Total	Biannual
8	Total	Annual

Summary Report by Selected Activity and Line Items
(to know aggregated figures based on Selected Activity and Line Items)

Selected source

No	Funding Source
1	Each donor (Maximum: 5)
2	Part I total
3	Part II (GoM)
4	Part I and Part II

×

Selected Activity

No	Funding Source
1	Administrative Cost
2	Each Activity (1 – 30)

×

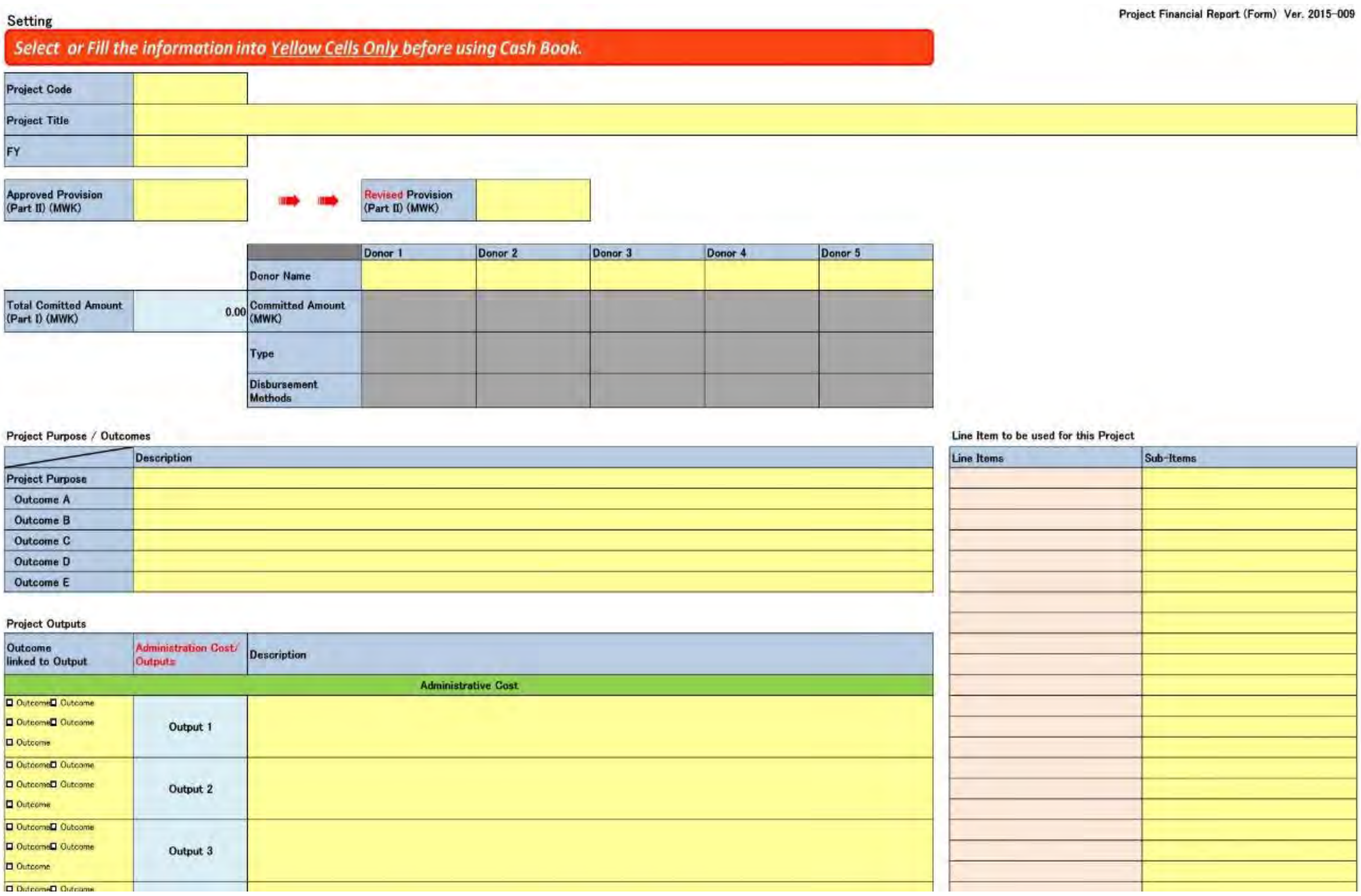
Information Items

No	Aggregation Base	Aggregation Unit
1	Each Line Item	Monthly
2	Each Line Item	Quarterly
3	Each Line Item	Biannual
4	Each Line Item	Annual
5	Total	Monthly
6	Total	Quarterly
7	Total	Biannual
8	Total	Annual

PFM-IT is able to automatically generate various kinds of useful financial information from a project accounting ledger being currently applied in majority of implementing agencies which have independent project accounting by inputting only one additional information on the book; that is the “activity” to which the expenditure being entered belongs. The table above displays the financial information automatically outputted from PFM-IT.

The critical point of PFM-IT is the provision of project financial information based on the “activities” specified in the elaborated logical framework carefully reviewed in advance.

Not only as a financial information tool, but PFM-IT also has an advantage to enable project financial management to be solidly based on the project’s logical structure. As a prerequisite for applying PFM-IT, every project implementing agency must thoroughly review the project’s logical framework and specify the structural linkages among the “outcomes,” “outputs” and “activities” that are expected to be generated by the project for its ultimate purpose. The result is entered in the initial setting of the logical structure and succeeding activity setting pages of the PFM-IT sheets shown below (first two yellow-color areas), which is followed by the project expenditure detail sheet (the last blue-gray area) that is prepared to record each expenditure showing its link with the preset activity for which that expenditure has been spent.



Project Code	
Project Title	
FY	

Project Activities

Outcome linked to Output	Output linked to Activity	Activity	Description	Planned Cost Part I + Part II (under Approved Provision)	Planned Cost Part I + Part II (under Revised Provision)
Administrative Cost				0.00	0.00
				0.00	0.00
				0.00	0.00
				0.00	0.00
				0.00	0.00

Project Expenditure Detail

Project Code	0
Project Title	0
FY	0

Click and Select Sub-item from the list.
* if nothing appears in the list, please go back to Setting sheet and set up Sub-items.

Click and Select an activity from the list.
* If no activity is displayed except "Administrative Cost", please go back to Setting sheet and set up Activities.

Type the Funding Amount here. It should be starting from funding information.

Type the Expenditure here.

If you want to change the row order by date (from earlier date to the latest), you can click this arrow, and select "Sort from A to Z".

	IN (Funding)	OUT (Expenditure)
Total	0.00	0.00
Total (Only Displayed Data Filtered)	0.00	0.00

No (Auto)	Date D	M	Y	Voucher No.	Payee	Sub-Item	Activity	Cheque No	Funding Source	Part I or II	Balance IN (MWK)	OUT (MWK)	Last Balance (Auto)	Description of transaction	Month Order
															99999999
															99999999
															99999999
															99999999
															99999999
															99999999
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6. Improvement of Project Information through Strengthened Project Management of MDAs

➢ Two-layered Project Management

The previous section mentioned that one of the two requirements to ensure reliable project information to be submitted to PSIP is the existence of reliable project management system in each implementing MDA.

Malawi's development management requires that all the "Development Activities" be projectized, in other words, "Projects" embody and represent all the "Development Activities" that the government implements, in which the "Projects" are identified with the "Development Activities" in Malawi. In order to most effectively and efficiently conduct the "Development Activities" under the limited resources available, they have to be conducted upon sound state management. Under the environment in which all the development activities are projectized, the "National Development Management" necessarily means the "National Project Management" in Malawi.

The "National Project Management" takes a two-layered management structure as follows. Primarily each project must be individually managed by a corresponding implementing agency (Individual Project Management <Inner Layer>). However, the "National Project Management" cannot be completed until all the individually managed projects have been centrally managed in an integrated way (Integrated Project Management at National Level <Outer layer>). Currently, both levels of the project management are weak and need improvement.

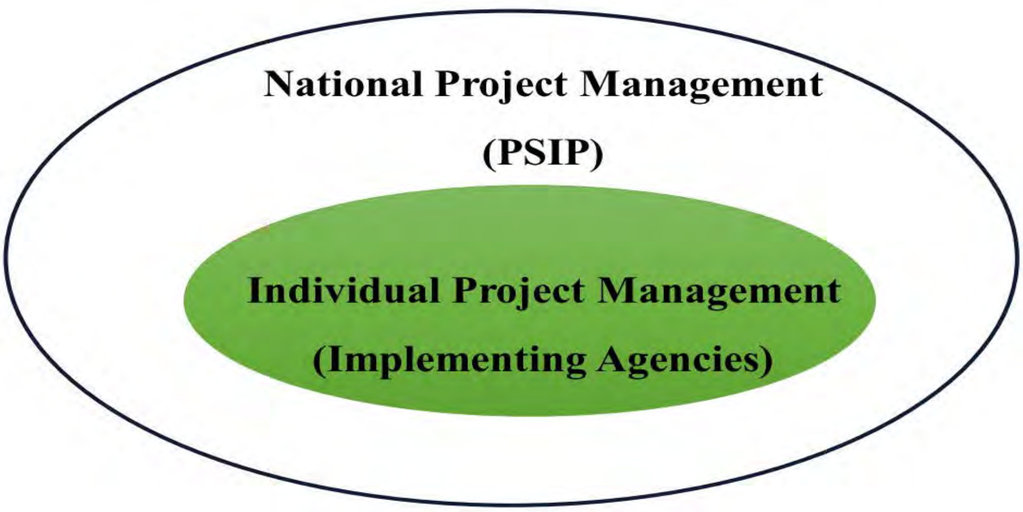

Figure 3: Two-Layered Project or Development Management

Among the above two layers, the "National Project Management" is comprehensively undertaken by PSIP for which CEPSIP II has been assisting its improvement and functional strengthening. However for the aspect of the "Individual Project Management" which is the duty of individual implementing agencies, no national efforts for its sound establishment and improvement have been substantially attempted. Consequently, the overall "National Project Management" system has not been solidly structured and functioning involving such weaknesses prevailing at that management level. The improvement of the "Individual Project Management" is out of the CEPSIP II's direct assistance scope, and it should be conducted by the government itself standing on a solid long-term basis. Three core parties to lead the improvement are supposed to be the "National Audit Office," the "Internal Auditors" dispatched by the Central Internal Audit Unit and the "Accountant General's Department."

The figure below illustrates the correlation among the three key institutions nominated above and their respective aspects of involvement in strengthening individual project management systems embracing total management cycle in relation to the submission of project information to PSIP. The "Individual Project Management" hands over its information to PSIP to start "Integrated Project Management at National Level" by this submission.

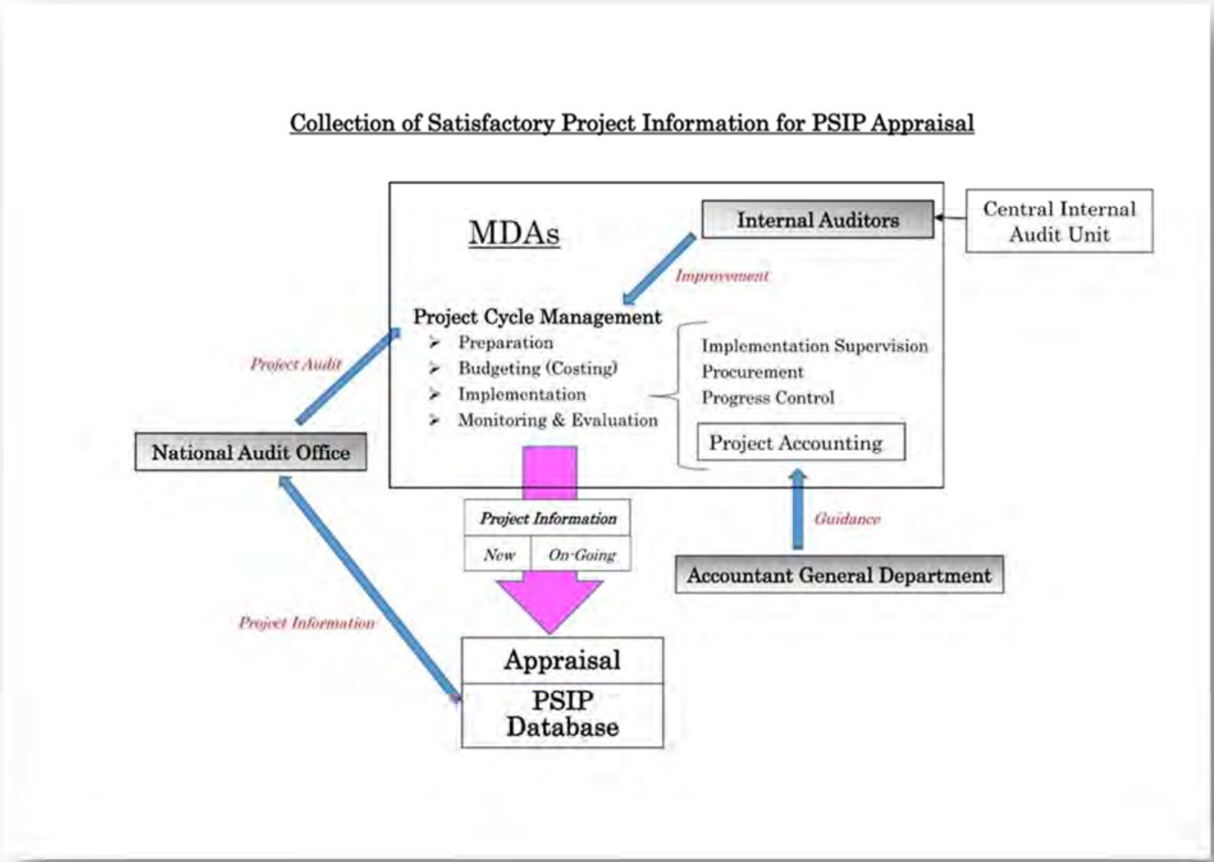

Figure 4: Satisfactory Project Information for PSIP and three key institutions

In order for all the project information to be reliable, it should be systematically produced through well-structured and operated project management systems at the MDA level which are composed of cyclical management processes (project cycle management) common to the national public management for development. The project cycle management consists of preparation, budgeting (costing), implementation and evaluation with close mutual managerial linkages. The implementation management phase contains overall implementation supervision, procurement, progress control and project accounting which independently deals with all the financial issues regarding the project implementation.

Inherently, the Accountant General's Department, the National Audit Office and Internal Auditors are charged with establishment and enhancement support of the individual project management systems at the national level with the following mandates respectively.

■ <u>Accountant General's Department (AGD)</u>

"Project Accounting" exclusively records every transaction occurred in implementing a project in monetary terms and is kept clearly segregated from general accounting and transactions of other projects. It must be thus independent, however in reality in many cases, project implementation agencies do not maintain independent project accounting in which project transactions are indifferently treated in the implementer's general accounting.

AGD is an official guiding and oversight body of all the accounting issues including project accounting, and expected to play such key roles as follows to guide establishment and enhancement of project accounting systems throughout the government sector.

a) Preparation of project accounting manual
b) Preparation of operational guidance
c) Implementation of practical training and hands-on assistance based on the above guidelines

■ <u>National Audit Office (NAO) <External Auditor></u>

"Project Audit" is conducted by NAO separately from the statutory general financial audits of public institutions. The object of the project audit is all aspects of a project encompassing its whole cycle from preparation to evaluation phases applying not only financial but operational, compliance and performance audit procedures. The targets of audit include, among others, feasibility studies in the preparation stage, structure and functioning of project management units including the project accounting system, procurement procedures in the implementation stage and performance achieved in the evaluation stage.

NAO is expected to be participated in carrying out the following roles in the total project management improvement.

- Audit of the total project cycle
  - i) Audit on design and operation status of the total project management system
  - ii) Rating according to the following criteria
    - A) The total project management system is (almost) completely established and operated, therefore the project information derived from the system is highly reliable.
    - B) Basic structure of total project management is established and operated, therefore the information generated from the system is basically reliable.
    - C) Basic structure of total project management is established but it is not well-operated, therefore the reliability of the information generated is not so high.
    - D) System of total project management system is existing and operated, but its structure is managerially vulnerable, therefore the project information outputted is unreliable.
    - E) Whether there is no project management system or it is so weak that no project information is systematically generated but scrambled up on an ad-hoc basis when requested. Project information should not be used for any managerial decision makings.

■ Internal Auditors

Internal auditing is an independent, objective assurance and consulting activity designed to add value and improve an organization's operations. It helps an organization accomplish its objectives by bringing a systematic, disciplined approach to evaluate and improve the effectiveness of risk management, control, and governance processes. Coordinating with the result of the project audit by the external auditor (NAO) and considering the above made ratings, the internal auditors seconded from the Central Internal Unit to every ministry seek ways of project management improvement as follows.

- a) Conduct deeper operational audits on a system evaluation basis to reveal existing weaknesses and their causes.
- b) Examine necessary devices for improvement in close cooperation with related divisions to specify remedial actions and guide its implementation (including introduction of relevant external experts).

Trial Project Management Audit – "Aquaculture Development Project (ADP)"

In order to solidify foundation of permanent project management audit execution after this management technical assistance of JICA, CEPSIP II attempted a trial project audit on the "Aquaculture Development Project (ADP)" being implemented by the Department of Fisheries, Ministry of Agriculture, Irrigation and Water Development involving internal and external auditors

(NAO). The audit carried out detailed and deep examination of each phase along "Project Life Cycle Management (PLCM)," grasping actual method and procedures of the project management being taken in practice first, and then identified missing elements for necessary project management with unfavorable consequences if any.

The following points were examined during the work.

<u>Initiation/Preparation Stage</u>

- Inventory of prevailing problems
- Prioritization to be tackled in light of mission
- Problem analysis
- Objective analysis
- Project selection
- Formulation of logical framework

<u>Planning Stage</u>

- Work Breakdown Structure
- Scheduling
- Cost estimation
- Communication plan
- Risk management plan

<u>Implementation Stage</u>

(Implementation Management)

- Progress management
- Procurement management
- Project accounting

(Check/Action)

- Monitoring current state of affairs
- Identification of gaps against plan
- Cause analysis
- Preparation of countermeasures

<u>Self-evaluation Stage</u>

DAC 5 Criteria

As a consequence, the audit result was detailed as follows in the "Project Lifecycle Management Report."

<Project Lifecycle Management Report on "Aquaculture Development Project (ADP)">

I. Initiation/Preparation

A project represents a set of development activities to improve the present situation. Key issues of management in this initial phase of project management are as follows.

(1) Identification of current problems or weaknesses inhibiting development and therefore need improvement.

(2) Prioritization of the identified issues to be tackled along their comparative importance and urgency.

(3) Problem analysis to find out cause and effect hierarchical structure composing each problem to be solved.

(4) Objective analysis to specify means to reverse each cause identified and seek effective remedies.

(5) Selection and elaboration of strategies to implement the remedies.

(6) Project formulation to select concrete activities to execute each strategy, or conversion of strategies into projects.

(7) Project formation to compose contents along a logical framework specifying relevant monitoring and evaluation indicators.

1. National Fisheries and Aquaculture Policy (NFAP) as a Fundamental Sector Development Policy

The "Aquaculture Development Project" is fundamentally based on the sector development policy of the fishery: "National Fisheries and Aquaculture Policy (NFAP)."

The present NFAP (June 2016) comprehensively reviews and analyses current state of affairs in the fishery sector and identifies prevailing weaknesses and challenges the sector is being faced. To tackle those issues and further strengthen the fishery sector, NFAP defines seven Policy Priority Areas as follows within the next five years with respective Objectives as policy statements.

(1) Capture Fisheries

(2) Aquaculture Development

(3) Fish Quality Control and Value Addition

(4) Governance

(5) Social Development and Decent Employment

(6) Research and Information

(7) Capacity Development

2. Implementation, Monitoring and Evaluation Strategy for the National Fisheries and Aquaculture Policy (IMES) to set up Sector Development Strategies

Strategies for development under several Objectives of each Policy Priority Area are formulated in

"Implementation, Monitoring and Evaluation Strategy for the National Fisheries and Aquaculture Policy (IMES) 2016-2021." Quantitative targets are also attached for quantifiable Objectives. For the "Aquaculture Development," four Objectives are set up supported by respective strategies as follows.

Objective 1: To promote development of small and large scale commercial aquaculture production in the country with a view of increasing production from 3,600 tons 10,000 tons by 2021. (to be achieved under four Strategies)

Objective 2: To promote coordination of aquaculture development initiatives. (to be achieved under five Strategies)

Objective 3: To develop, implement and adopt suitable control measures for aquaculture development. (to be achieved under three Strategies)

Objective 4: To promote public private partnership (PPP) and investment in aquaculture. (to be achieved under three Strategies)

IMES attaches a matrix of an "Implementation Plan" with respective responsible institutions to implement each Strategy. IMES also presents "Monitoring and Evaluation Plan" which outlines "Output," "Performance Indicator," "Target," "Baseline," "Source of Verification" and "Assumption/Risks" along the Objectives of each seven Policy Priority Areas.

3. Conversion of Strategies into Project

The "Aquaculture Development Project" is formulated to crystallize the above strategies for aquaculture development into implementation with the following components and subcomponents.

A. Fish Production Component

A-1. Establish 400 demonstration community ponds countrywide

A-2. Establish 1 fish farming scheme

A-3. Facilitate the rehabilitation of 200 ponds for integrated fish farming

A-4. Upscale restocking of dams and ponds

A-5. Consolidate national fish landing and harvesting data

B. Fingerling Production Component

B-1. Collect a total of 5,000 broodstock from wild to the research station

B-2. Produce 3,000,000 fingerlings at National Aquaculture Centre (NAC) and Mzuzu

B-3. Facilitate setting up of 1 private hatchery

B-4Rehabilitate research stations facilities to enhance fingerling production

C. Feed Production Component

C-1. Conduct research on new fish farming technology focusing on feed

D. Capacity Building Component

D-1. Organize aquaculture demonstrations during national events

D-2. Train 2,000 community members in fish farming husbandry practices

D-3. Conduct 3 training sessions of frontline staff on GIS based suitability analysis for fish farming in Malawi

E. Policy and Information Dissemination Component

E-1. Produce aquaculture extension materials

E-2. Identify and develop best practices on hatchery and facilitate small scale cage culture extension guidelines

The alignment of the "Aquaculture Development Project" to the strategic basis and background policy of the Fishery Sector is thus obvious.

4. Project Management Utilizing PSIP Templates

A noticeable fact is that the Fisheries Department utilizes the improved PSIP templates for their own project management practices: the New Project Template for formulating a project forming the logical framework and other key elements, and the On-going Template and Quarterly Report for project implementation management during the project period.

5. Evaluation

In light of the above, the initiation/preparation phase of the project management is judged to be well formulated and operated covering all the required key issues of project management listed in the opening of this section.

II. Planning

Key issues of this planning phase of project management are as follows.

(1) Specification of necessary activities with quantity factors to produce the targeted outputs set at the preparation phase.

(2) Scheduling of implementation.

(3) Project cost estimation based on the quantified volume of activities specified above.

(4) Formulating communication plan clarifying the following points.

- i) To whom (receiver of information)
- ii) What (matters and contents, format, degree of details, etc.)
- iii) Why (reason and purpose of information transmission)
- iv) Who (origin and transmitter of information)
- v) How (information transmission or communication devices, such as memo, e-mail, telephone, reports, meeting, etc.)
- vi) Feedback (by when, by whom and how the feedback is received

(5) Risk Management Plan based on risk analyses

1. Project Concept Note

The Department of Fisheries has four divisions at the headquarters; namely “Fisheries Extension and Training Division,” “Fisheries Planning and Development Division,” “Fisheries Research Division” and “General Administrative Support Division.” All the above factors are jointly discussed and examined involving the four divisions, and the agreed result is summarized in the “Project Concept Note” by the Fisheries Planning and Development Division. The contents determined are the following.

(1) Project Background

(2) Project Situation

- i) Importance of Aquaculture in Malawi
- ii) Potential for Fish Farming in Malawi
- iii) Current Constraints in Aquaculture Development in Malawi
  - a. Scarcity of input commodities such as fertilizer, feeds and fingerlings
  - b. Poor human and social capital
  - c. Poor understanding of small-holder fish farmers’ livelihoods
  - d. Antiquated technologies and poor dissemination of research results
  - e. Inability to access credit and institutional support
  - f. Limited resources of the Department of Fisheries
  - g. Weak capacity of government and private service providers in aquaculture extension
  - h. Unreliable statistics

(3) Sector Goal and Project Objective

(4) Project Components

(5) Project Zones and Sites

(6) Project Costs and Sources of Funding

(7) Relevance to the National Economy

(8) Economic Social and Environmental Consideration

(9) Institutional Aspects of Implementation

(10) Project Sustainability

(11) Monitoring and Evaluation

(12) Risks and Assumptions

2. Institutional Planning for Implementation

The project is planned to be implemented under the management of the Project Coordination Office (PCO) headed by the Project Coordinator centrally, and Project Implementation Units (PIU) headed by the Project Zone Manager regionally. An Implementation Plan to schedule the activities throughout the implementation period and detailed annual breakdown is also prepared as an Annual Plans of Action at this stage.

3. Monitoring and Communication Planning

To monitor the progress with internal communication, periodical progress as well as financial reports are planned to be produced, and tabled and discussed at the Project Steering Committee (PSC) planned to be established for providing policy guidelines and will meet every three months or more frequently as need arises. In addition to that, a Project Mid-term Review will be conducted to assess progress and give guidance towards the achievement of project objectives.

4. Indicator Setting

At this stage, a set of indicators are planned to be developed and monitored through the Quarterly Reports submitted by each PIU. At the planning stage the indicators will include (1) annual fingerlings production, (2) annual table fish production emanating from fish farming cycle, (3) income generated per year by communities and private sector, (4) fish prices at different selling points from each zone, (5) number of beneficiary smallholder fish farmers, (6) fish sales/market, (7) number of commercial aquaculture establishments, (8) number of hatcheries established and renovated and their production levels and (9) number of juveniles restocked.

5. Risk Management Planning

Finally, project risks and assumptions are identified, and will be reviewed from time to time with mitigation measures under a risk management system.

6. Feasibility Studies

Under the established project concept, concrete details of activities to be conducted, implementation scheduling and project cost estimation are examined and fixed in individual component's Feasibility Studies.

7. Evaluation

In light of the above, the planning phase of the project management is judged to be well formulated and practiced covering all the required key issues of project management listed in the opening of this section.

III. Implementation

The key issues of the implementation phase of project management are (1) Progress monitoring in both physical and financial terms, (2) Identification of problems hindering smooth implementation, preparation of countermeasures and their execution, (3) revision and adjustment of project contents and procedures, if needed, to fit changing situations and mitigating emerging new risks and (4) proper practice of Procurement and its management. Points above can be classified into implementation management and check/action activities as follows.

(Implementation Management)

(1) Progress management (Physical, Financial)
(2) Procurement management
(3) Project accounting

(Check/Action)

(4) Monitoring current state of affairs
(5) Identification of gaps against plan
(6) Cause analysis
(7) Preparation, execution of countermeasures and adjustment

1. Execution of Planned Project Management

The project implementation management structure and procedures formulated at the planning stage are put into practice under the institutional arrangement modified from the original plan reflecting the decentralization scheme in which field project implementation is performed by offices under the district council following the overall sector policy (NFAP) and strategies (IMES) for development.

2. Monitoring and Evaluation during the Project Implementation.

Performance of all the operation results including the project is collected by means of monthly reporting and ad hoc reporting for special issues on request. The contents of the reports including actual figures of performance indicators are put in the central fisheries database and controlled. The facts are verified and additional field information is collected by periodical field visits by the Fisheries Planning and Development Division. Based on all of the information collected, the Fisheries Planning and Development Division segregates development and recurrent activities. The development activities' result is further sorted out into individual projects semiannually. Each project performance result is then detailed in the Mid-year Progress Reports. The "Mid Year Progress Report for the "Aquaculture Development Project (ADP)" issued in January, 2015 highlights major achievements during the first half (July-December) of 2014-15 fiscal year. In addition to the progress of each component and sub-component with quantified achievement performance, the report also states the budget performance of each quarter and cumulative disbursement in comparison with the annual approved budget. It also analyzes prevailing key challenges and risks, and proposes overall recommendation for effective project implementation.

3. Procurement and Asset Management

As for procurement of goods and services, official procedures are commonly applied no matter whether that transaction is for project execution or a regular activity. Official procurement must be processed through the Internal Procurement Committee (IPC) and carried out on agreed IPC minutes on a competition basis. The procured goods are booked in Asset Ledgers separately prepared for projects and regular activities, in other words, assets (inventory and fixed assets) procured under the project are separately controlled. So is the payment control for procurement. All the expenditure transactions for acquiring assets are booked in different ledgers: project payments and regular payments. A project is a ring-fenced unit comprising a planned set of activities to be executed to attain a predetermined particular purpose within a fixed period and cost. Therefore the asset management of projects has to be independently managed being clearly separated from regular activities.

4. Project Accounting

By the same token, revenue, expenditure and other financial transactions occurred in project implementation process must be independently recorded and managed in a separate ledger like the asset management being currently conducted. More importantly for the project management purpose, expenditures are supposed to be managed being linked with activities in order for the project financial management to be aligned to the project logical framework. In the Department of Fisheries, project expenditures are not independently recorded in a separate cash ledger, but are commonly inputted with regular activities into IFMIS. IFMIS can segregate project transactions but is not able to trace individual expenditures to project activities. It is proposed that the "Project Financial Management Information Tool (PFM-IT)" developed under the JICA technical assistance (CEPSIP II) be used to enable logically linked independent project financial management.

5. Evaluation

In light of the above, the implementation phase except the project accounting of the project management is judged to be well formulated and practiced covering all the required key issues of project management listed in the opening of this section. For project specific independent project accounting and financial management, earliest possible introduction of PFM-IT is recommended.

IV. Post Evaluation

The ongoing Aquaculture Development Project succeeds the preceding "Presidential Initiative on Aquaculture Development (PIAD)." The post evaluation is carried out for PIAD and the result is reported in the "Project Completion Report (PCR)." PCR contains the following sections.

(1) Project Profile
(2) Project Performance
(3) Budget Performance
(4) Project Coordination and Management
(5) Project Sustainability Measures
(6) Challenges/Risks
(7) Lessons Learnt and Success Stories

1. Evaluation

In light of the above, the post evaluation of the project management is properly conducted. However, international performance evaluation nowadays applies DAC (Development Assistance Committee, OECD) 5 Criteria which consists of “Relevance,” “Efficiency,” “Effectiveness,” “Impact” and “Sustainability. The Department’s project post evaluation mostly covers those criteria, however, in order to more comprehensively and systematically conduct evaluations, application of DAC 5 Criteria is recommended (See Table 1).

V. Overall Evaluation & Conclusion

The total project management system of the “Aquaculture Development Project (ADP)” being implemented by the Department of Fisheries, Ministry of Agriculture, Irrigation and Water Development is almost completely established and operated except for project accounting which lacks independent bookkeeping. Therefore the project information derived from the system is highly reliable except project financial information. To complement the creditworthiness of overall project information, application of the Project Financial Management Information Tool (PFM-IT) is recommended.

<u>Documents Reviewed</u>

(1) Organization & Job Description
- ◆ Recommended Organization Structure
- ◆ JOB DESCRIPTIONS, DEPARTMENT OF FISHERY

(2) Manuals for Project Management
- ◆ Project Planning Manual, OPC, Department of EP&D, 1992
- ◆ Integrated Strategic and Implementation in the Government of Malawi – A Handbook for Planners Version 10, may 2007

(3) Policy & Strategy of Fishery Sector
- ◆ National Fisheries and Aquaculture Policy Second Edition, June 2016
- ◆ Implementation, Monitoring and Evaluation Strategy for the National Fisheries and Aquaculture Policy 2016-2021

(4) Background of the ADP
- ◆ Presidential Initiative on Aquaculture Development in Malawi, February 2006
- ◆ The NEPAD Action Plan for the Development of African Fisheries and Aquaculture

(5) Concept Papers & F/S
- ◆ Project Concept Note for Malawi Fish Farming Development Project
- ◆ Feasibility Study of Kashinthula Fish Farming Scheme, October 2010
- ◆ Village Fish Farming Development Project: The Case of Nyoka Village Fish Farming Scheme,

Mchinji

(6) Implementation Management

- Progress Report (Quarterly Report) for Aquaculture Development Program (ADP) – A Format and Checklist for PSIP
- Mid Year Progress Report for the Aquaculture Development Project (ADP) –Report Highlighting Major Achievements during the First Hal (July-December) of 2014-15 Fiscal Year
- Brief for the Aquaculture Development Project (ADP) with Highlights on Main Achievements during the 1st Quarter of 2016-17 Fiscal Year, September 2016

(7) Economic & Progress Reports

- Annual Economic Report 2016: Fisheries Sector Contribution, April 2016
- Progress on ASWAP Activities July-September 2016, October 2016

(8) Monthly & Quarterly Reports of Regional Offices

- Monthly Report for October 2016: Monkey Bay Fisheries Research Station
- 2016/17 First Quarter Report for Nkhatabay Fisheries Office

(9) Evaluation

- Project Completion Report (PCR): Presidential Initiative on Aquaculture Development (PIAD)

Main Respondents

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7. Project Appraisal

The final-step requirement for PSIP is right project appraisal by MFEPD (Appraisal Aspect) as specified in Section 3, especially to check whether the project proposed is eligible to be enrolled in PSIP as a set of development activities to be financed by the development budget. Prior to the execution of appraisal, all the project information is supposed to be collected by means of the revised templates and supporting information attached. The MFEPD's project appraisal is supposed to be conducted following the updated PSIP Appraisal Manual reviewed under CEPSIP II. The appraisal of projects constitutes a part of "project evaluation" which is sometimes called as "Ex-ante Evaluation" by contrast with "Ex-post Evaluation" carried out after project completion. The DAC 5 Criteria are also applied to the project appraisal in common with the Ex-post evaluation.

Key points of examination at the appraisal (Ex-ante evaluation) are shown below along the DAC 5 Criteria by contrast with the checkpoints at the Ex-post evaluation.

A. Relevance
(Ex-ante, Ex-post in common)

A-1 National Level: Consistency of the Project Objectives with National development policies.

A-2 Regional/Sector Level: Consistency of the Project Objectives with Sectoral and Regional development strategies.

A-3 Needs Level: Consistency of the Project Objectives with actual needs to remove development bottlenecks prevailing in the sector and region concerned.

B. Efficiency

(Ex-ante)

B-1-1 Appropriateness and achievability of the “project outputs” with the “activities” to be taken.

B-1-2 Implementability of the “activities” under the cost and period proposed.

B-1-3 Reasonability of the “cost” to carry out the “activities.”

B-1-4 Reasonability of the “period” to carry out the “activities.”

(Ex-post)

B-2-1 Degree of completion of the planned outputs by category in terms of physical assets acquired and services delivered.

B-2-2 Actual project implementation period compared to the planned schedule.

B-2-3 Actual total project cost by item and by disbursed year compared to the appraised plan.

C. Effectiveness

(Ex-ante)

C-1-1 Appropriateness and achievability of the “project purpose/outcome” from the “outputs” acquired and delivered.

C-1-2 Achievability of the “outcomes” and “project purpose” within the project life span.

C-1-3 Appropriateness (SMART: Specific, Measurable, Achievable, Relevant and Time-bound) of the “performance indicators” and availability of respective “baseline” data.

C-1-4 Applicability of financial and economic Cost-benefit Analysis.

C-1-5 Appropriateness of factors for the analyses (project life span, benefit &cost items, shadow prices for economic costs, etc.) applied.

C-1-6 Acceptability of the “calculation result” to endorse the financial and/or economic feasibility in terms of Internal Rate of return (IRR) or Net Present Value (NPV).

(Ex-post)

C-2-1 Degree of achievement of planned targets for the project purpose, including the degree of utilization of the (physical) project outputs.

C-2-2 Updating of the IRRs or NPVs replacing part of estimated benefit and cost figures with actual achievement or incurrence.

C-2-3 Degree of achievement examined by means of direct beneficiary surveys and analysis of statistical information. Identification of inhibiting factors for the achievement of the project purpose and possible remedies.

D. Impacts

(Ex-ante)

D-1-1 Appropriateness and achievability of the “overall goal/impact” within the medium-term during and /or after the project implementation.

D-1-2 Positive and negative impacts on economic, social and natural environment.

D-1-3 Preparation for countermeasures to alleviate negative impacts, if any.

(Ex-post)

D-2-1 Degree of achievement of the planned goals and contribution.

D-2-2 Degree of actual occurrence of the anticipated impacts and appropriateness of the countermeasures taken for alleviating negative impacts.

E. Sustainability (Basically only applicable for Physical Investment Projects)

(Ex-ante)

E-1-1 Favorability of policy environment for the project implementation

E-1-2 Adequacy of the number and technical capacity of operation and maintenance (O&M) staff for the project facilities including preparation of training and development of O&M manuals.

E-1-3 Degree to which the decision-making system and organizational control of the relevant organizations assure proper O&M activities.

E-1-4 Financial status of the executing and O&M agencies and their capacity to bear necessary O&M costs including the degree of cost recovery or stability of subsidization from the government.

(Ex-post)

E-2-1 Favorability of policy environment for the project operation.

E-2-2 Updated status of O&M technical capacity and performance of staff training and manual preparation.

E-2-3 Actual status of O&M systems and its operation.

E-2-4 Actual status of financial conditions for O&M.

E-2-5 Appropriateness of ongoing O&M practices including daily, periodic, on-demand and preventive maintenance, availability of spare parts or fuel for the O&M requirements, and conditions of the project facilities.

8. Program-Based Budgeting (PBB) and PSIP

Under the PBB which the government of Malawi is introducing, all the government activities or interventions are bundled up into selected numbers of programs under a common objective and a set of outcomes and outputs within a given budget including staffing and other necessary resources (cf. Zero Draft PBB Template – Guideline) without the development and recurrent category distinction.

The programs have to be carefully selected in a ministry in order to reflect its main policy and service delivery areas (ibid). Some activities irrespective of development or recurrent aligned to a common objective of a program are projectized and others are not, which means that a project is a subordinate element to achieve the expected program goals. A project also has a common structure with a program being composed of activities to achieve a single common goal. In a word, a project is a subordinate set of activities with a common objective that supports achievement of a higher goal of a program. Thus, the project management undertaken by the PSIP will remain essential for the Malawi's total public management even after the PBB has been fully applied as long as projects exist for a development purpose.

The table on the next page shows an example of PBB structure of the education sector (the Ministry of Education) where the activities including their projectized units (projects) to attain predetermined respective programs are logically aligned with necessary cost for each implementation separately estimated for current and capital expenditures[1]. This example PBB model which was proposed more than ten years ago happened to explicitly indicate the permanent need of the role of PSIP as a national project management system as long as development projects exist.

1 This is the proposed activity-based budgeting structure in the "Special Assistance for Project Sustainability (SAPS) for Public Financial Management," the Japan Bank for International Cooperation (JBIC) in 2005 with a little modification.

Table 2: PBB structure (Education Sector, Malawi as of 2005)

Programme	Objectives	Strategy	Activity	Costing: Current	Costing: Capital	Costing: Total
Service Cost : Cost directly attributable to upgrading mandated services of MOE						
33: Primary Education						
36: Secondary Education	1. Increase access to secondary education	1.1 Increase access to public secondary education	1.1.1 Construction of new classrooms/ schools within walking distance (not more than 10 km radius)			
			1.1.2 Re-organize/review the current selection system to fully utilize the existing infrastructure			
			1.1.3 Project 1.1.A			
		1.2 Increase access to secondary distance education	1.2.1 Provide distance education to primary school leavers who do not continue with formal schooling via MCDE			
			1.2.2 Provide distance education to adult group			
			1.2.3 Project 1.2.B			
	2. Improve equity to secondary education	2.1 Ensuring that access to secondary education is fairly distributed in every zone (315)	2.1.1 Construction of classrooms based on the school census and mapping			
		2.2 Increase the number of needy students gaining access to secondary education	2.2.1 Review of bursary scheme to target students from low social-economic groups (needy students) with particular focus on girls and orphans and increase the budget allocation			
			2.2.2 Project 2.2.C			
45: Tertiary Education						
Overhead Cost : Cost not directly attributable to upgrading particular mandated services specified above but necessary to carry out routine operation or to maintain overall capacity of MOE						
01: Administration & Support Services						
02: Auditing Services						
03: Budgeting Services						
11: Employment & Labor Services						
15: Financial Management & Accounting Services						
22: Information & Communication Technology						
			Total Budget	Current	Capital	Total

Development Activities At Present

Recurrent Activities At Present