



Kenya Forest Service
Japan International Cooperation Agency



**Capacity Development Project for Sustainable Forest
Management in the Republic of Kenya
(REDD+ Readiness Component)**

**The Document of Design and
Using/Operation/Maintenance Manual
for Forest Information Platform (FIP)**

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Introduction

This document is constructed with the design sheet of Forest Information Platform (FIP) and its operation and maintenance manual. The content of each material are following;

Design sheet documents

1 Outline of system development

This document shows the out frame of purpose and functions of FIP. In addition, show the linkage of Kenya Forest Information System (KFIS), Open Foris Collect (forest inventory collection system) and Forest Information Management System (FIMS).

2 Requirement List

This document shows the result of the survey of mandate and expected functions for FIP.

3 Flowchart of Forest inventory collection work

This document shows the chart of data flow and related section / person for forest inventory data collection and process of data store.

4 Flowchart of FIP process

This document shows the chart of work flow and related section / person for operating FIP.

5 Flowchart of Forest Inventory Collection process

This document shows the chart of work flow and related section / person for process of forest inventory collection.

6 Flowchart of FMIS Link process

This document shows the linkage process of FIP and FMIS.

7 FMIS items for linkage to FIP

This document shows the process of data exporting, validating and importing from FMIS to FIP.

8 Components of the hardware

This documents show the hardware for FIP implementation.

9 Components of the software

This documents show the software for FIP implementation.

10 Server structure and installed software

This documents show the server construction and installed software for FIP.

11 Physical layout of hardware

This documents show the layout of physical server and hardware.

12 FIP Contents

This documents show the contents list of FIP.

13 MAP UI Design

This documents shows the basic layout of FIP user interface.

Manuals

1 Server operation of FIP

This manual shows the way of operation and maintenance for server hardware and operating system. Also shows the way of FIP web site administration.

2 How to construct and edit FIP by Portal for ArcGIS

This manual shows the way of create and maintain the FIP contents with Portal for ArcGIS.

3 How to use Survey 123

This manual shows the way of preparing the investigation sheet for survey 123. Also shows the way of working with Survey 123.

4 CO2 calculation tool (CO2CalcTool: ArcGIS Pro python tool box)

This manual shows the way of installing the tools of CO2 calculation with ArcGIS pro.

5 CO2 calculation tool (co2CalcTool: ArcGIS Pro python tool box)

This manual shows the way of using the tools of CO2 calculation with ArcGIS pro.

6 JJ FAST data retrieval tool (JJFastTool: ArcGIS Pro python tool box)

This manual shows the way of installing and using the tools of JJ FAST data retrieval tool with ArcGIS pro.

Design Document #

Design Document

1 Outline of system development

KFIS (Kenya Forest Information System)

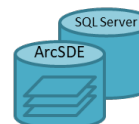
- Web Site for REDD+ related information and GIS
- Developed with "the Forest Preservation Programme" (2010 to 2013, ODA Grants fund aid, Japan)
- RHEL5.7 + MapServer6 + PostgreSQL8.4 + ArcGIS Server (ArcSDE)
- Currently, not in use
- Not use in this project. Refer the database and its definition (Hardware will be used as backup device)



Renew

FIP (Forest Information Portal)

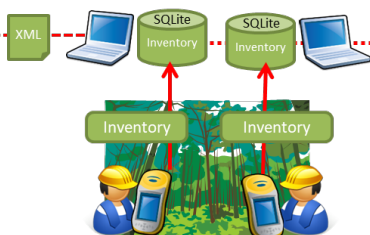
- Portal Web Site for forest information includes REDD+ and all related information
- Windows Server + ArcGIS Server + SQL Server
- Inherit the dataset of KFIS, also co-working with dataset of FMIS (Plantation, Inventory)
- Implement the new hardware (old hardware will be used as backup device)
- Utilize ArcGIS Server templates and minimize original development
- FRLs (Forest Reference Level)
- MRV (Measurement-Reporting-Verification)



Co-working

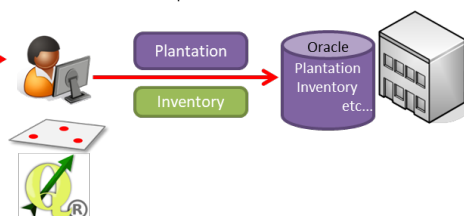
Open Foris Collect

- Field survey application of forest inventories
- Developed with ICFRA (Improved Capacity in Forest Resource Assessment) project (Finland)
- Open Source + SQLite -> Database are stored in officer's PC
- Upload to FMIS by manual
- Not working with KFIS



FMIS (Forest Management Information System)

- Collect and manage the information of plantation
- Developed with MMB (Miti Mingi Maisha Bora) project (Finland)
- Based on the Oracle WebCenter Portal package (UVIO) -> Black-box and hard to customize
- Only handle the text based information. GIS data are stored as append files
- Master database for plantation



2 Requirement list

Grouping	Item no	Item	The contents to understand	Check Point	The contents	Note
1.FIP						
Work Requirement	1-1-1	Process of work implementation	To understand framework, process, the flowcharts, Information of input and output and data volume	Person	【FIP Administrator】 •Web site Administrator who edits document or sets up map-set 【Map Editor】 Editor who makes map-data by using the editing function of Arc GIS 【Viewer】 Citizens who can view FIP information by Internet. Two type viewers ①Internal viewers: Only KFS ②External viewers: General Citizen and related to stakeholder →It is necessary to divide into two type " ②External", general citizen and related stakeholder depending on the contents on FIP	•Is it necessary to introduce not only public site but also Internal share site in KFS.
	1-1-2			Work Flow	•sheet「Flowchart of FIP process」	•discuss sheet 「Flowchart of FIP process」
	1-1-3			Information of input and output	•Public Documents: related Redd+ and forest restoration •Map: GIS data	
	1-1-4			Data volume	•Data volume of public document file : (pending) •The number of map for the document:(pending)	

Grouping	Item no	Item	The contents to understand	Check Point	The contents	Note
	1-1-5	Work volume including the number of users and survey	To understand the number of users and transactions per unit	The number of people who use FIP	• The number of FIP Administrator : 1(Mr.Mwangi) • The number of Map-data Editor : 30-50 (only KFS) • The number of Viewer:(pending)	
	1-1-6			Definition of unit	• per/year	
	1-1-7			The number of transactions per unit	• The number of update documents per year : (pending) • The number of update map-data per year : (pending) • The number of Viewer per year : (pending)	
	1-1-8	Season and time	To understand the season of work and busiest season and time	Work season	Every season of the year	
	1-1-9			Busiest season and time	• Busiest season : May, June, July (End of Financial year) • Busied time morning and night (9-13, 16-17)	
	1-1-10	Place and device	To understand work place, facility, necessary items	Work place(device)	• FIP Administrator : Office(PC) • Map-data Editor : Office(particular PC ※) • Viewer: Home and so on(PC or mobile device)	※The PC is necessary to install Arc GIS • It is necessary for viewers to view FIP by smartphone.
	1-1-11	Scope of information system	To understand the scope of systemization and non-systemization for work	Flowchart of process	• sheet「Flowchart of FIP process」	

Grouping	Item no	Item	The contents to understand	Check Point	The contents	Note
	1-1-12	Information security policy	To understand the policy of security measures along information importance and restriction information	Information security	•KFS has information security policy. FIP shall follow the policy.	
Functional Requirement	1-2-1	Function	To understand process contents, information and method of input and output	Faction list	•Display of document •Editing of document •Map display •Approval of maps	
	1-2-2			①The function: Display of document	•The Display function of text information and file-link related to work for public	
	1-2-3			②The function: Editing of document	•The edit function of text information and file-link related to work for public	•This function is not for KFS but also 3-4 stakeholder(not everybody)
	1-2-4			③The function: Map display	•Display of registered map-set for public	The editing function of GIS data is for FIP Administrator
	1-2-5			④The function: Approval of maps	•The function which sets public or nonpublic to registered map-set	•FIP Administrator can use this function

Grouping	Item no	Item	The contents to understand	Check Point	The contents	Note
	1-2-6	Screen	To understand basically concept of Screen list, summary and screen transaction	Screen list	•Screen for Document •Screen for Map	
	1-2-7			①The screen for Document	•The screen for show of text information and file-link related to work for public	
	1-2-8			②The screen for Map	•The screen for the map-set display registered and approved "Portal for ArcGIS"	
	1-2-9	Form	To understand form list, the summary and the output image	Form list	•It is necessary to export some form.	•What kind forms do you export? > TBD •How many forms or reports do you export? > TBD
	1-2-10	Information and data	To understand information data-list, requirement of transaction and data structure	Data list	•Document •Map	
	1-2-11			①Document	•The text information or file-link related to work for public on FIP	
	1-2-12			②Map	•Public map for FIP	
	1-2-13	External Interface	To understand linkage requirement of other system and so on	Linkage to system	•Portal for ArcGIS •KFIS (Abolishing and migrate into FIP) •FMIS(shape-file Linkage to FIP)	
	1-2-14			information of linkage	•map-set data •GIS data	

Grouping	Item no	Item	The contents to understand	Check Point	The contents	Note
	1-2-15			The timing of linkage	•when map editor registers and issues map •when map editor updates GIS data	•The timing for public is when FIP Administrator approved map or GIS data •Announcement to stakeholders automatically(pending)
	1-2-16			The method of linkage	•To use the function of registration of shape-file from ArcGIS to Portal for ArcGIS	
2.Forest inventory collection(FIC)						
Work Requirement	2-1-1	Process of Business implementation	To understand framework, process, the flowcharts, Information of input and output and data volume	Person	[Administrator] •Who is the Administrator? •The role : Data Management including checkin/checkout of data Allocation of survey points etc.. [Field surveyor] •The role : Entry of the survey result by Mobile device	
	2-1-2			Work Flow	•sheet「Flowchart of FIC」	
	2-1-3			Information of input and output	•Information of research point (including location and attribute) •Information of survey result •Information of Field Surveyor •Background image(Landsat image, Administrative boundaries etc.)	

Grouping	Item no	Item	The contents to understand	Check Point	The contents	Note
	2-1-4			Data volume	•The number of data : pending •data volume/per 1 survey : pending 4photos /per plot (16photo /per cluster)	
	2-1-5	Volume	To understand the number of users and transactions per unit	The number of people who use FIC	•The number of manager : 4people •The number of Field surveyor : →totally 17teams •each team has ten members (one person uses the device)	
	2-1-6			Definition of unit	•TBD	Make sure the interval of survey and its timing
	2-1-7			The number of transactions per unit	•The number of survey per year : TBD •The number of survey points per one survey : (pending) •The number of allocated survey point per survey : (pending)	average 2plots a day
	2-1-8	Season and time	To understand work season and busiest season and time	Work season		
	2-1-9			Busiest season and time	Season •January ~ March(dry season) •July~October(dry season)	
	2-1-10	Place and device	To understand work place, facility, necessary items	Work place(device)	•Administrator : KFS office(PC) •Field surveyor : Field (Tough pad) The reason they use tough pad is why its waterproof, memory, easy to use	•It is necessary for mobile device of Field Surveyor to install an application.

Grouping	Item no	Item	The contents to understand	Check Point	The contents	Note
					by surveyors, main to be used harsh condition	
	2-1-11	Scope of information system	To understand the scope of systemization and non-systemization for work	Flowchart of process	•sheet「Flowchart of FIC process」	
	2-1-12	Information security policy	To understand the policy of security measures along information importance and restriction information	Information security	FIC shall follow KFS IT policy	
Functional Requirement	2-2-1	Function	To understand process contents, information and method of input and output	Faction list	•Information Management of survey points •Entry of survey results •Management of survey result information •Management of Field Surveyor information •Management GIS data of background image , administrative boundaries and so on	
	2-2-2			1. The function: Information Management of survey points [@ArcGIS Online, Portal for ArcGIS]	•List of survey points •Detail display of survey points (including position information) •Allocation of survey points to Field Surveyor •Check out of	

Grouping	Item no	Item	The contents to understand	Check Point	The contents	Note
					allocated survey point	
	2-2-3			2. The function: Entry of survey results [@Survey123]	•List of survey points •Detail display of survey points (including position information) •Result entry of survey points •Registration of survey results	• It is necessary to use the function on off-line
	2-2-4			3. The function: Management of survey result information [ArcGIS Online, Portal for ArcGIS]	•List of survey result •Detail display of survey points (including position information) •Checking of survey result •Exporting survey results as CSV file	
				④The function: Data cleansing (Verification of entry data)	• If the data entry violates predefined data rules then the system should give warning or error	
	2-2-5			⑤The function: Management of Field Surveyor information [ArcGIS Online, Portal for ArcGIS]	•Insert ,update and delete of Field Surveyor's information •Allocation of survey points •Checking of survey status	
	2-2-6			⑥Management of background image and so on [Portal for ArcGIS]	•Output of data (for off-line) •Output of Landsat image, administrative boundaries and so on	

Grouping	Item no	Item	The contents to understand	Check Point	The contents	Note
	2-2-7	Screen	To understand basically concept of Screen list, summary and screen transaction	Screen list	• List of survey points[Management] • Detail information of survey points[Management] • Allocation of survey points[Management] • List of survey points[Survey] • Detail information of survey points[Survey] • Entry of survey result[Survey] • List of survey result[Management] • Detail survey result[Management] • Approval of survey result[Management]	
	2-2-8			1. List of survey points[Management] [@ArcGIS Online]	• Display list of registered survey points information	
	2-2-9			2. Detail information of survey points[Management] [@ArcGIS Online]	• Display of the detail survey points information selected from the list • Location Display from Map • Display from survey point on Map	
	2-2-10			3. Allocation of survey points[Management] [@ArcGIS Online, Portal for ArcGIS]	• Allocation of field surveyors from survey points list • Lock of Master-data(Checkout) when determining the allocation	
	2-2-11			4. List of survey points[Survey] [@Survey123]	• Viewing on the survey points information allocated to Field Surveyor's device • List Display of allocated survey points	

Grouping	Item no	Item	The contents to understand	Check Point	The contents	Note
	2-2-12			5. Detail survey result[Management] [@Survey123]	•Detail display of the survey points selected the list •Location display on Map display	
	2-2-13			6. Entry of survey result[Survey] [@Survey123]	•Entry of survey results •On offline situation, survey results are saved to the devices temporary →On online situation, the results reflect ArcGIS online manually	
	2-2-14			7. List of survey result[Management] [@ArcGIS Online]	•Display of the survey result list entered	
	2-2-15			8. Detail survey result[Management] [@ArcGIS Online]	•Display of detail survey result information •Location Display on Map display •Display of survey points on Map	
	2-2-16			9. Approval of survey result[Management] [@ArcGIS Online, Portal for ArcGIS]	•Reflection to Master-data of server(check-in) after approving survey result	
	2-2-17	Form	To understand form list, the summary and the output image	Form list	Pending	
	2-2-18	Information and data	To understand information data-list, requirement of transaction and data structure	Data list	•Survey points[GIS] •Survey result[TEXT] •Field Surveyor[TEXT] •Background Image (Landsat image、administrative boundaries) [GIS]	

Groupin g	Item no	Item	The contents to understand	Check Point	The contents	Note	
	2-2-19			①Survey points	•The GIS-data which show survey points location •Summarized information and unique ID as attribute		
	2-2-20			②Survey results	•Text information entered as survey results		
	2-2-21			③Field Surveyor	•Field Surveyor Information including their department and so on		
	2-2-22			④Background image	•Background image from ArcGIS Online •Landsat images •Administrative boundaries and so on		
	2-2-23	External Interface	To understand linkage requirement of other system and so on	Linkage to system	•Portal for ArcGIS •ArcGIS Online		
	2-2-24			information of linkage	•Information of survey points (Location and attribution) •Survey result information •Field Surveyor information •Background data (Landsat image、Administrative boundaries and so on)		
	2-2-25			The timing of linkage	•When starting survey : check-out •When finishing survey : check-in		
	2-2-26			The method of linkage	•Reflection of the administers command on display using the software function		
	3.Linkage to FMIS						

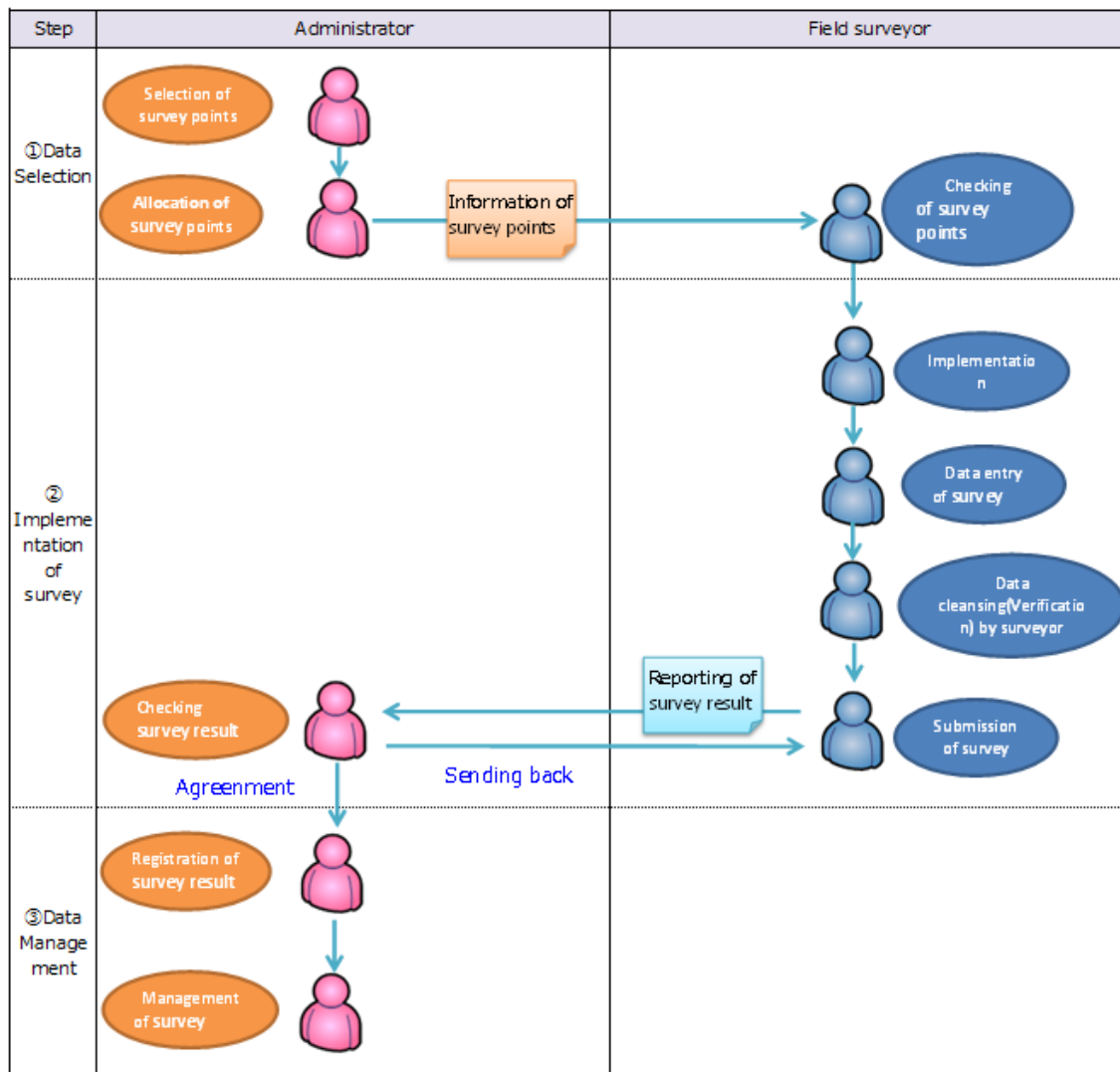
Grouping	Item no	Item	The contents to understand	Check Point	The contents	Note
Work Requirement	3-1-1	Process of Business implementation	To understand framework, process, the flowcharts, Information of input and output and data volume	Person	【FMIS Administrator】 The administrator who update Contents pages' linkage in FMIS: Mr. Mwangi 【FMIS data manager】 The data manager who updates plantation shape data in KFS 【Viewer】 • The Viewer who Views public Information through Internet • Viewers are divided into following two type. 1. Internal(only KFS) 2. External viewer	On FIP, FMIS shape file including all attribution shall be opened for KFS. And FMIS shape file including some attribution shall be opened for External viewer.
	3-1-2			Work Flow	• Sheet「Flowchart of FMIS Link process」	
	3-1-3			Information of input and output	• Plantation polygon shape file • The URL of FMIS contents	
	3-1-4			Data volume	• Data volume of plantation polygon shape file : 31MB • The number of FMIS contents page : (pending)	
	3-1-5	Volume	To understand the number of users and transactions per unit	The number of people	• The number of FMIS Administrator : 1 (Mr.Mwangi) • The number of FMIS data manager : Three people • The number of Viewer : Persons who related: (pending) General citizens:(pending)	

Grouping	Item no	Item	The contents to understand	Check Point	The contents	Note
	3-1-6			Definition of unit	•per/year	
	3-1-7			The number of transactions per unit	• The number of shape-file update and linkage to FIP per/week : Maximum once a week • The number of FMIS contents update per year:(pending) • The number of Viewers per/year:(pending)	
	3-1-8	Season and time	To understand the season of work and busiest season and time	Work season		
	3-1-9			Busiest season and time		
	3-1-10	Place and device	To understand work place, facility, necessary items	Work place(device)	•FIP Administrator: KFS Office (PC) •FMIS data manager: FMIS (PC) •Viewer: Home and so on (PC)	
	3-1-11	Scope of information system	To understand the scope of systemization and non-systemization for work	Flowchart of process	•Flowchart of FMIS Link process	
	3-1-12	Information security policy	To understand the policy of security measures along information importance and restriction information	Information security	FMIS linkage shall follow KFS IT policy	
Functional Requirement	3-2-1	Function	To understand process contents, information and method	Faction list	•Validation for plantation shape file •Registration of plantation shape file	

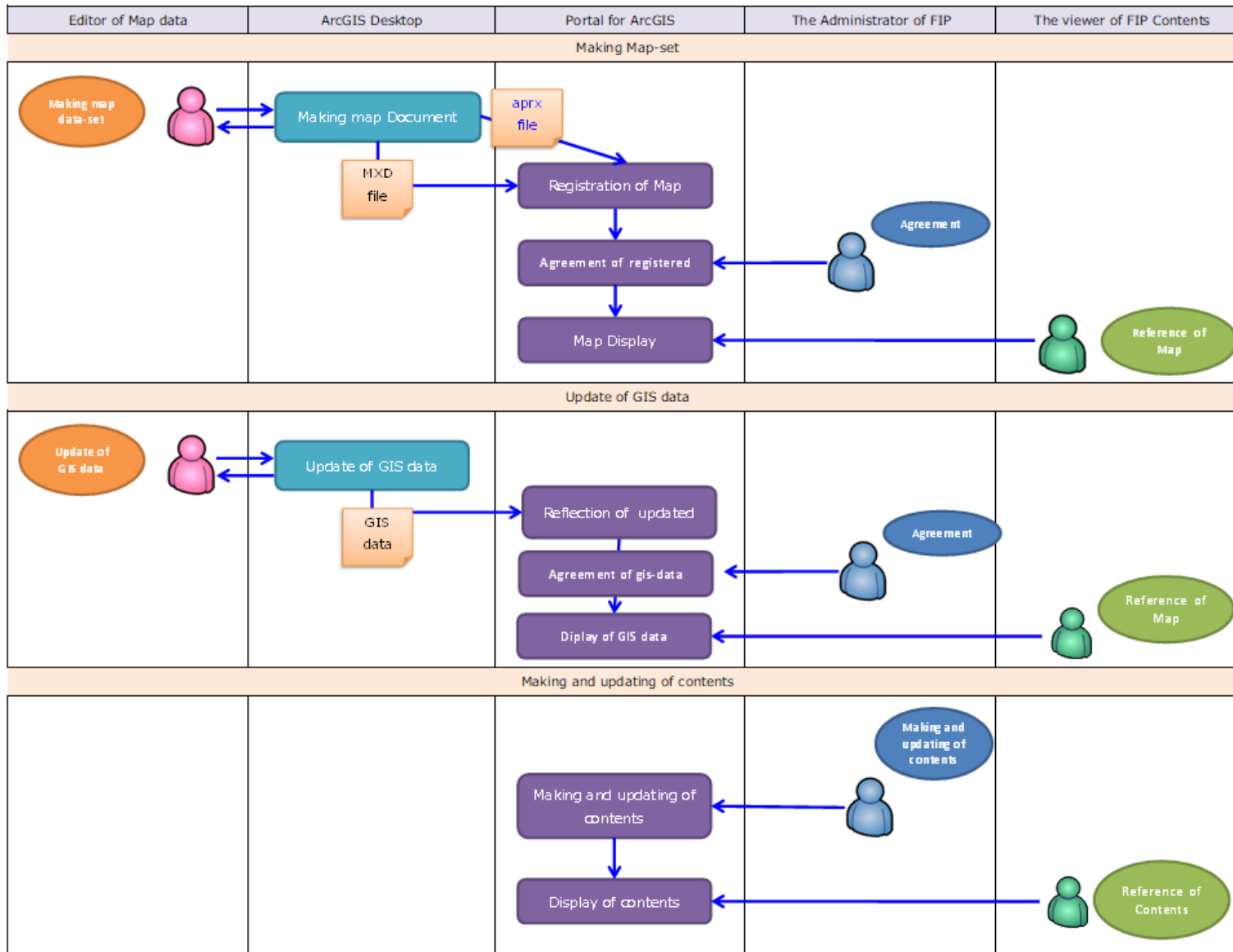
Grouping	Item no	Item	The contents to understand	Check Point	The contents	Note
			of input and output			
	3-2-2			①The function: Validation for plantation shape file	~The validation function of consistency of plantation shape file	—
	3-2-3			②The function: Registration of plantation shape file	• The registration function of the plantation shape file	
	3-2-4	Screen	To understand basically concept of Screen list, summary and screen transaction	Screen list		
	3-2-5	Form	To understand form list, the summary and the output image	Form list	(pending)	
	3-2-6	Information and data	To understand information data-list, requirement of transaction and data structure	Data list	• Plantation shape file • Contents linkage page URL of FMIS	
	3-2-7			①Plantation shape file	• The Plantation shape file which is updated by FMIS data manager	• Holding only latest data on FIP > It's unnecessary to hold old data on FIP
	3-2-8			②Contents linkage page URL of FMIS	• The contents page URL of FMIS linked to FIP	
	3-2-9	External Interface	To understand linkage requirement of other system and so on	Linkage to system	• FMIS(UVIO)	Cold linkage(only shape file)

Grouping	Item no	Item	The contents to understand	Check Point	The contents	Note
	3-2-10			information of linkage	• Plantation shape file • Contents linkage page URL of FMIS	
	3-2-11			The timing of linkage	• When FMIS data manager updates plantation shape data • When FIP Administrator updates the contents page	
	3-2-12			The method of linkage	• To link shape data and contents using the function of registration and issue from Arc GIS to Portal for ArcGIS	• It is supported using Software function

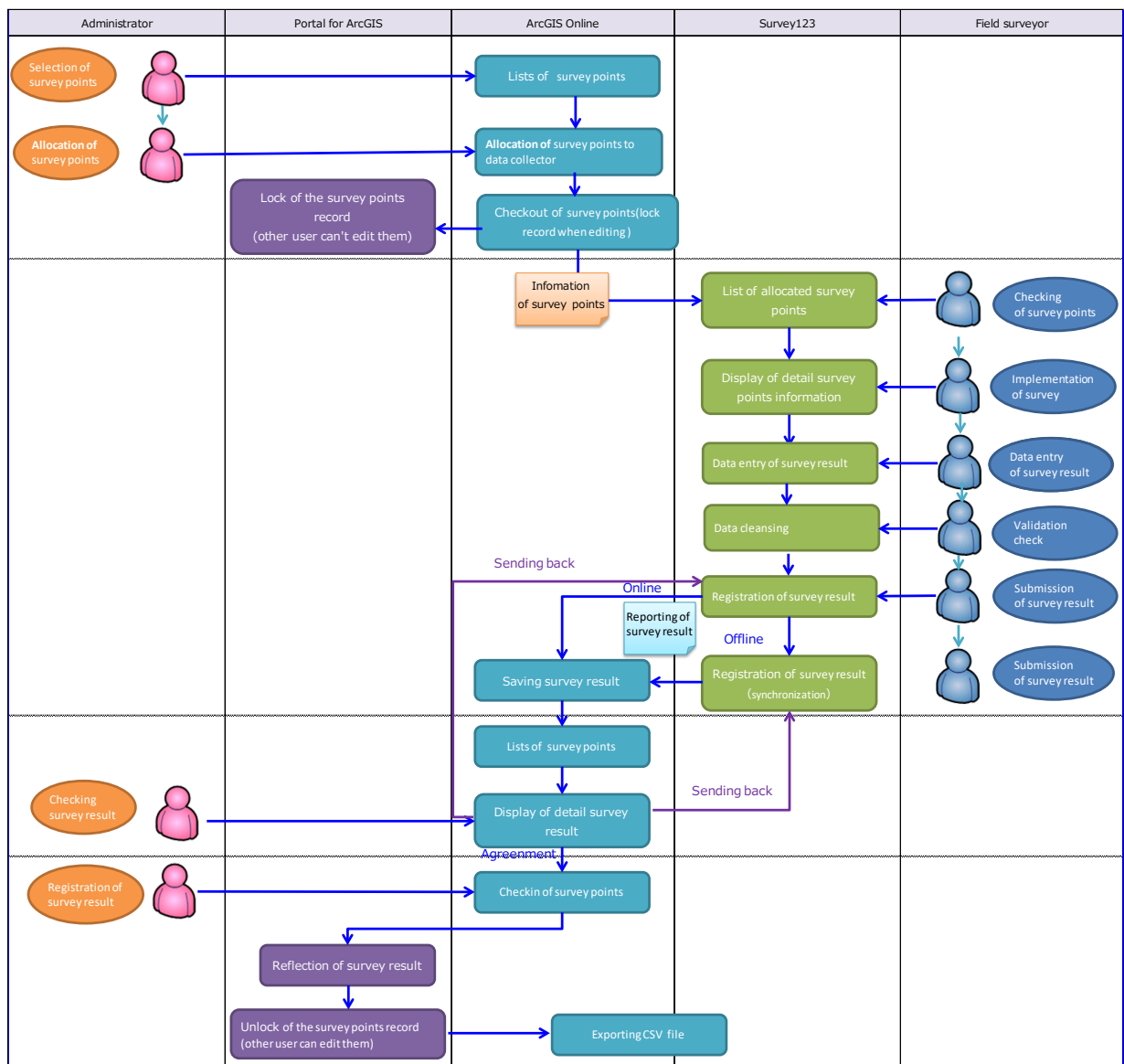
3 Flowchart of Forest inventory collection work



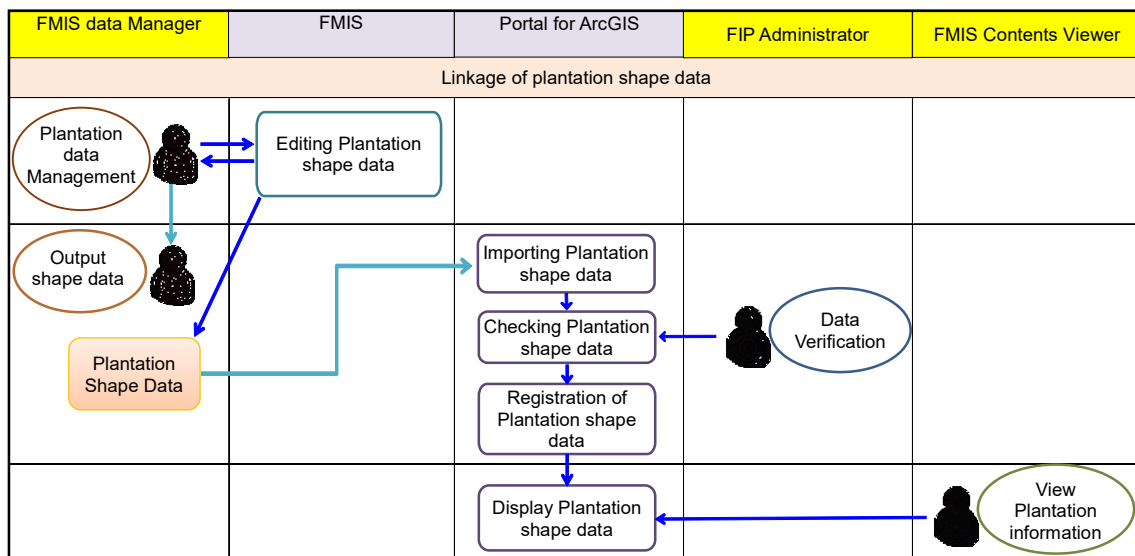
4 Flowchart of FIP process



5 Flowchart of Forest Inventory Collection process



6 Flowchart of FMIS Link process



7 FMIS items for linkage to FIP

No	Field Name	Alias	Field type	Field Length	null	The meaning of field and data	note
1	FID	FID	OID	4	-	The serial number to specify each shape data	The number starts from [0]
2	Shape	Shape	Geometry	0	-	Shape type - "Polygon"	
3	OID1	OID1	Integer	9	-	Unknown.	All records are "0"
4	GEO_ID	GEO_ID	String	254	No	Unique number of UVIO system. It matches [SC_ID]	This information is not unique id as each shape data.
5	FMIS_QUANT	FMIS_QUANT	Double	19	-	Unknown	
6	Station	Station	String	254	No	Large division	
7	Block Name	Block Name	String	254	Yes	Middle division	
8	Block_ID	Block_ID	String	254	Yes	Omitted informatoin of [Block Name]	It doesn't match [Block Name]
9	Comp	Comp	Double	19	-	The branch number of [Block_ID]	
10	Sub_Comp	Sub_Comp	String	254	Yes	The branch number of [Comp]. The smallest unit of plantation	
11	SC_Code	SC_Code	String	254	Yes	Combination information of [Comp]+[Sub_Comp]	
12	SC_ID	SC_ID	String	254	Yes	Combination information of [Block_ID]+[SC_Code], Unique number of UVIO system. It matches [Geo_ID]	It doesn't match each [Block_ID] and [SC_Code] perfectly
13	Geo_Class	Geo_Class	String	254	Yes	The information of Indigenous Forest or not	All records are "Indigenous Forest" or "null"
14	GEO_C_CODE	GEO_C_CODE	String	254	Yes	Omitted writing of "Plantation"→"PLT"	All records are null or "0"
15	Geo_Group	Geo_Group	String	254	Yes	The information of Conservation or not	All records are "Conservation" or "null"
16	Geo_G_Code	Geo_G_Code	String	254	Yes	Omitted writing of [Geo_Group] "Conservation"→"Con"	It doesn't match [Geo_Group]
17	Species_1	Species_1	String	254	Yes	Species.class1.	How to write is not unified including mixing up Large and small letter of Alphabet or having a space in the first letter of a word
18	Year	Year	Double	19	-	Plantation year related to Species.class1.	Plantation year is displayed as A.D. but some case occurs "0","10" "25" or "163".
19	Area_Ha	Area_Ha	Double	19	-	area of Species.class1 per/ha	
20	Land_Cover	Land_Cover	String	254	Yes	The classification of Forest Cover.	How to write is not unified including mixing up Large and small letter of Alphabet or having a space in the first letter of a word
21	Land use	Land use	Double	19	-	Land use	All records are "0"
22	Species_2	Species_2	String	254	Yes	Species.class2.	How to write is not unified including mixing up Large and small letter of Alphabet or having a space in the first letter of a word
23	Age	Age	Double	19	-	Stand age.	All records are "0"
24	Volume	Volume	Double	19	-	Tree volume from Inventory survey	All records are "0"
25	Label	Label	Double	19	-	Unknown.	All records are "0"
26	Year	Year	Double	19	-	Plantation year related to Species.class2.	All records are "0" except for 1 record
27	Area_1	Area_1	Double	19	-	area of Species.class2 per/ha	All records are "0"
28	Units	Units	Double	19	-	ha	All records are "0"
29	cat	cat	Double	19	-	Unknown.	All records are "0"

For public(including general citizen and related stakeholder)

Only KFS

The information for coloring on MAP

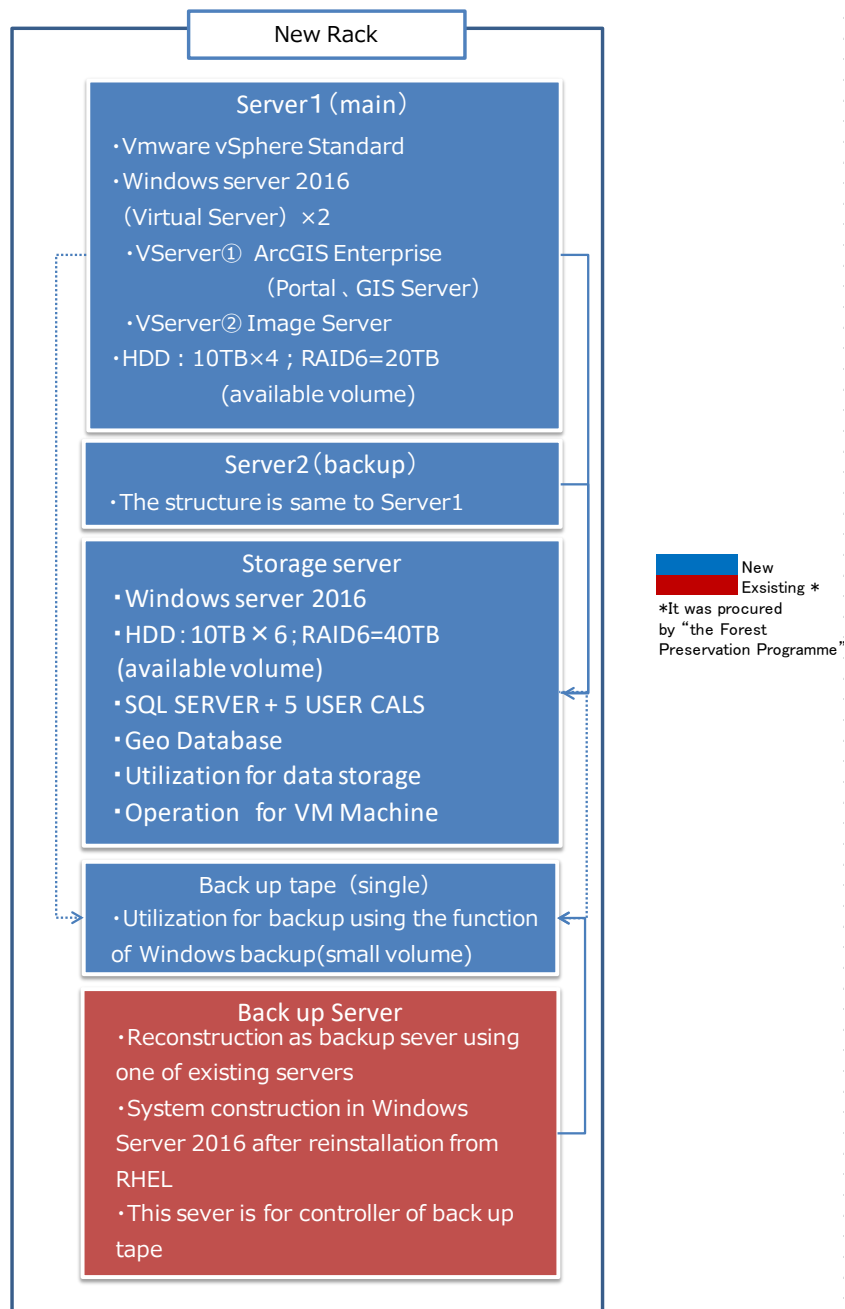
8 Components of the hardware

Item	Specification
New server: GIS server	- CPU: Intel® Xeon®E5-2640 v4 2.4GHz for 10 core, - Memory: 32 GB - HardDisk: 8 x SAS 3.84TB, or more, RAID 6 - Rack type 2U server * Including VMware vSphere Standard
New server: SQL database.	- CPU: Intel® Xeon®E5-2640 v4 2.4GHz for 10 core, - Memory: 32 GB - HardDisk: 8 x SAS 3.84TB, or more, RAID 6 - Rack type 2U server * Including VMware vSphere Standard
New data storage server	- CPU: 1 x Intel® Xeon® E5-26xx v3 series, 1.9GHz, or more - Memory: 32 GB - HardDisk: 24 x SAS 2TB or more, RAID 6 - Rack type 2U server
New Backup device HPE MSL2024 0-Drive Tape Library (AK379A)	- Support Tape: LTO-5, LTO-6,LTO-7 - Tape Slot: 24 - Capacity: 320TB (Compress) - Rack type 2U
New Backup device HPE MSL2024 0-Drive Tape Library (AK379A)	- Support Tape: LTO-5, LTO-6,LTO-7 - Tape Slot: 24 - Capacity: 320TB (Compress) - Rack type 2U
New PC workstation for image processing and GIS processing: x 6	- OS: Windows 10 Pro Edition 64 bit (English) - CPU: Intel® Xeon® Processor ES-1620, 3.7GHz Turbo or higher, 12M L3, 5.86GT/s or higher - Memory: 16 GB or more - Hard Disk: at least 2TB totally, SATA (No RAID) or more - DVD Super Multi Drive - Graphic Card: 1G NVIDIA Quadro K600 (1DP and 1DVI) (1DP-DVI and 1DVI-VGA adapter) or higher - Wireless network USB adopter (support 11n/11a/11g/11b) - 29inch Wide Monitor - Microsoft Office 2016 (Home & Business) - Security software (24 months) - System Recovery media - Auto Ranging (100V- 240V) - UPS 650 (650VA - 400 Watts), Input 230V / Output 230V
New Laptop PC for Field survey: x 2	- OS: Windows 10 Pro Edition 64 bit (English) - CPU: Intel® Core i7® series Processor - Memory: 16 GB or more - Hard Disk: at least 1TB

9 Components of the software

Item	Specification
Geo-information database software with spatial data management	ESRI ArcGIS for Server Enterprise Standard, Portal for ArcGIS Level1
Image server software	ESRI ArcGIS image Extension for Server Enterprise
GIS Cloud server software	ESRI ArcGIS Online Organization Plan Level 1 + additional 5 named user
GIS software for Desktops for administrators	ESRI ArcGIS for desktop advanced 10.4 with spatial analyst, 3D analyst, geostatistics analyst, publisher
GIS software for Desktops for the operating engineer: x 3	ESRI ArcGIS for desktop standard 10.4 with spatial analyst, 3D analyst, geostatistics analyst, publisher
Remote sensing software for desktop	ERDAS IMAGINE 2016 version
Database Server Software	Microsoft SQL SERVER 2016 or Higher + 5 USER CALS

10 Server structure and installed software



11 Physical layout of hardware

42	
41	
40	
39	
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37	
36	
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31	
30	
29	
28	
27	
26	
25	L3 Switching HUB
24	DELL PowerEdge R710 *1
23	(Backup Server)
22	
21	
20	KVM Console , KVM Switch
19	HP ProLiant DL380 Gen9
18	[Server1;main]
17	HP ProLiant DL380 Gen9
16	[Server2;backup]
15	HP ProLiant DL380 Gen9
14	[Storage Server]
13	
12	
11	
10	LTO-5 ULTRIUM 3000 *2
9	[Back-up Device (Single)]
8	
7	DELL PowerVault TL4000 *1
6	[Back-up Device (Multi)]
5	
4	APC Smart-UPS RT 3000
3	[UPS1]
2	APC Smart-UPS RT 3000
1	[UPS1]



*1 Old hardware (moved from old rack)

*2 Old hardware (not working)

New server rack layout

42	
41	
40	L3 Switching HUB
39	
38	
37	
36	
35	
34	
33	
32	
31	
30	
29	
28	KVM Console , KVM Switch
27	DELL PowerEdge R710 (ArcGIS Server)
26	
25	DELL PowerEdge R710 *1 (Web Server)
24	
23	DELL PowerEdge R710 (Backup Server)
22	
21	DELL PowerEdge R710 (Database)
20	
19	DELL PowerVault MD3200 (Backup Server)
18	
17	DELL PowerVault MD3200 (Backup Server)
16	
15	
14	
13	
12	
11	DELL PowerVault TL4000 *1
10	[Back-up Device (Multi)]
9	
8	
7	
6	APC Smart-UPS RT 8000
5	
4	
3	Battery Pack
2	
1	



*1 Moved to new rack

Old server rack layout

12 FIP Contents

Component	Contents	Type
Forest Information Platform		APP
FRLs	What is FRLs?	Description
	Kenya FRL	APP
	Kenya FRL Dec. 2019	Document
	Kenya FRL Aug. 2020	Document
	Evidence of formulation of FRELs/FRLs	Document
	Activity data	APP
	Land cover / land use change table	Table
	Land cover / land use change map	Map
	Land cover/land use map of the historical reference years	Map
	Emission factor	APP
	Forest inventory survey	Document
	Biomass conversion information	Document
	Emission estimate	Document
MRV	What is MRV?	Description
	Measurement system	APP
	Monitoring Activity data	APP
	Land cover / land use change table	Table
	Land cover / land use change map	Map
	Land cover/land use map of the historical reference years	Map
	Emission estimate	APP
	Forest inventory survey	Document
	Biomass conversion information	Document
	Forest carbon stock removal and emissions	Document
	Reports from Reporting system	Document
	Verification system	Document
	MRV Training	Document
	Community Monitoring of Forest	Map
Safeguards Information System	Safeguard information	APP
Forest cover change monitoring	JJ-FAST	Map
	NRTFAS	Map
	Field Survey Report	Map
National REDD+ Strategy and Related Information	National REDD+ strategy	Document
	Legislation and strategy related REDD+	Document
	Other information related REDD+ in Kenya	Document
	Conventions related climate change ratified	Document
Forest Sector Administrative Information	Forest related organization chart	Document
	Legal jurisdiction of Forest Management	Document
	Relevant information	APP

		Information on protected areas including national parks	Map
		Demographic information including ethnic communities	Map
		Forest and Landscape Restoration	Map
		EOLAB	Link
		Other related maps	APP
		Soil maps	Map
		Precipitation map	Map
		Temperature map	Map
		Landuse 2010	Map
		FMS	Map
		Forest Fires	Map
		Glossary	Document
REDD+ & A/R CDM Project Information		REDD+ & A/R CDM Project Information	Map

No	Contents Type		Content	Identifier
1	Map		Map application	MAP
2	Image		Image data and/or Link	IMG
3	Video		Video data and/or Link	MOV
4	Web page		Web pages	(WEB)
	4-1	APP	Web application (implemented and managed in Portal)	APP
	4-2	Description	Description for contents	DES
	4-3	Document	Document data (managed in portal)	DOC
	4-4	Table	Table data	TAB
	4-5	Link	Outside link	LNK

13 MAP UI Design

Forest Information Platform

portal.kenyaforestservice.org/portal/apps/MapSeries/index.html?appid=bf97262a51484b0eb4dcd18c4e570b#

Forest Information Platform

Home

FRLs

What is FRL?
 Kenya FRL
 Evidence of formulation of FRELs/FRLs
 - Activity data
 - Emission factor
 - Emission estimate

Safeguard information system

Forest Cover Change Monitoring

Activity data

Land cover/Land use change area

Land cover/Land use change Map

Land cover/Land use Map

レイヤーリスト

☒ LCU Change Legend
☒ LCU Change Legend
☒ LULCCChangeLayer
☒ change_2002_2006.tif
☒ change_2006_2010.tif
☒ change_2010_2014.tif
☒ change_2014_2018.tif

+

-

Home

SOUTH SUDAN

Juba

Kampala

Kigali

Mwanza

Arusha

Limba

Tanga

Dodoma

Dar es Salaam

Esri HERE Garmin FAO NOAA USGS

esri

When sub component has multiple contents, they are shown as tabbed interface

Each contents will be displayed here

Main 8 components and sub components are shown here as TOC (Table of Contents)

Technical Manual

1 Server operation of FIP

1.1 Sever structure of FIP

1.1.1 Rack Layout

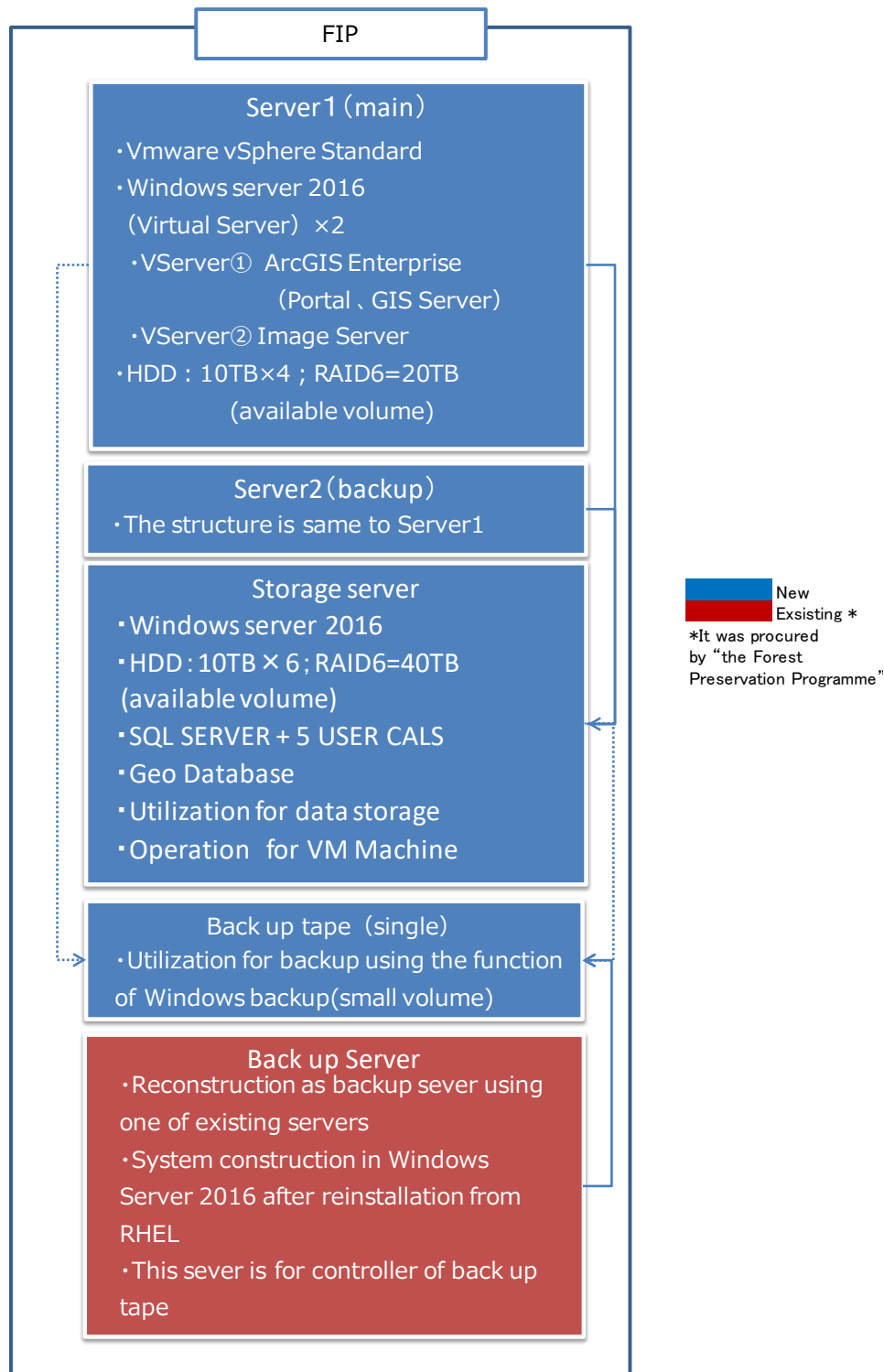
The rack layout of FIP is as follows.

42		42
41		41
40		40
39		39
38		38
37		37
36		36
35		35
34		34
33		33
32		32
31		31
30		30
29		29
28		28
27		27
26		26
25	L3 Switching HUB	25
24	DELL PowerEdge R710 (Backup Server)	24
23		23
22		22
21		21
20	KVM Console , KVM Switch	20
19	HP ProLiant DL380 Gen9	19
18	[Server1;main]	18
17	HP ProLiant DL380 Gen9	17
16	[Server2;backup]	16
15	HP ProLiant DL380 Gen9	15
14	[Strage Server]	14
13		13
12		12
11		11
10	LTO-5 ULTRIUM 3000	10
9	[Back-up Device (Single)]	9
8		8
7	DELL PowerVault TL4000	7
6	[Back-up Device (Multi)]	6
5		5
4	APC Smart-UPS RT 3000	4
3	[UPS1]	3
2	APC Smart-UPS RT 3000	2
1	[UPS1]	1



1.1.2 SW/HW Design of FIP

The SW/HW Design of FIP contains the contents below.



UPS connection design of FIP

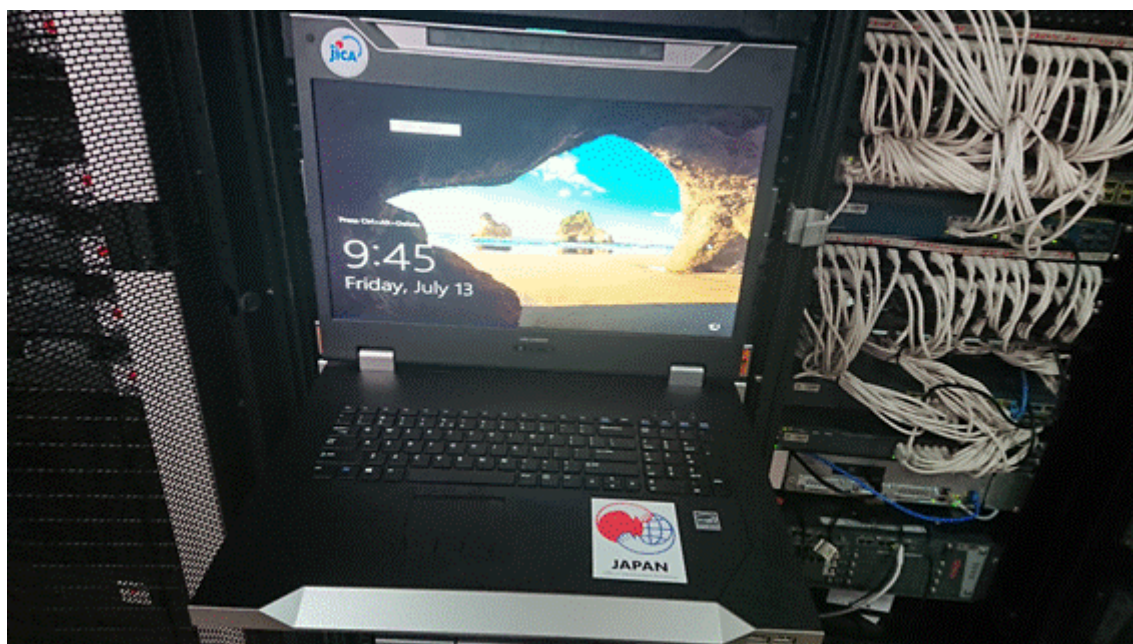
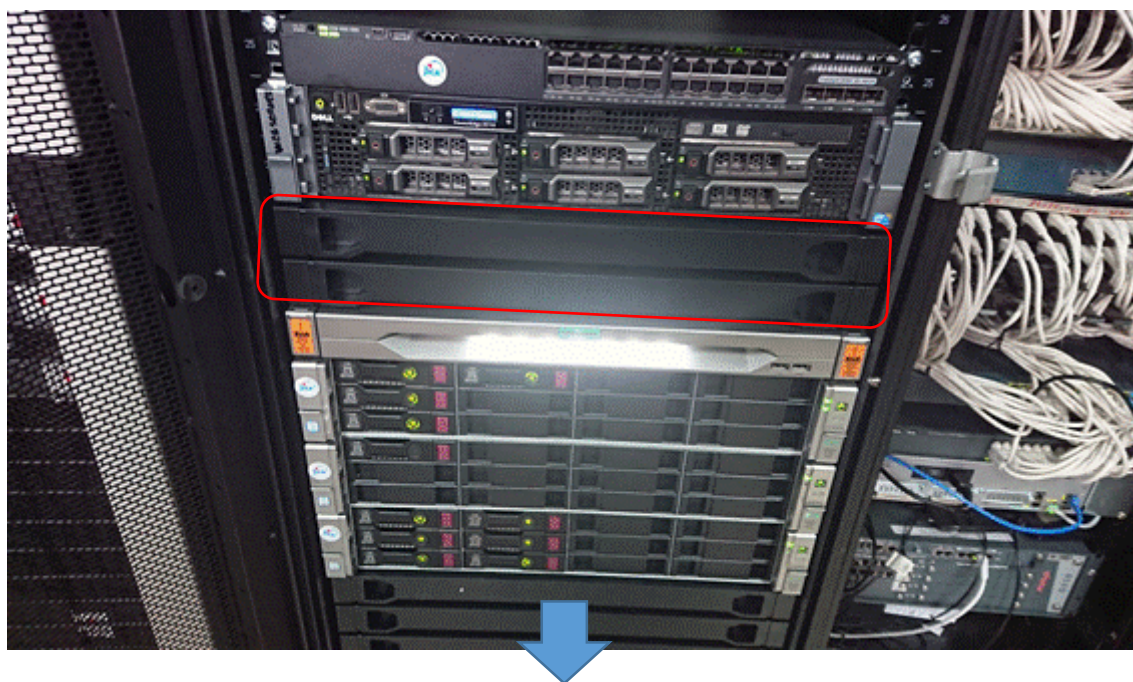
UPS connection of FIP server entails the following;

necessary power volume (W)		Output Power (W)		
		above ; Actual volume		
		below ; Max volume		
Sever1 (main)	800			
Sever2 (backup)	800			
Storage Sever	800			
Switching Hub	250			
Back up tape (single)	34			
KVM Console	36			
KVM Console Switch	20			
Backup Server	870			
Back up tape (multi)	350			
			1,725	UPS1
			2,100	
			1,885	UPS2
			2,100	
※ Red letter means estimated volume				

1.2 How to operate server and access FIP

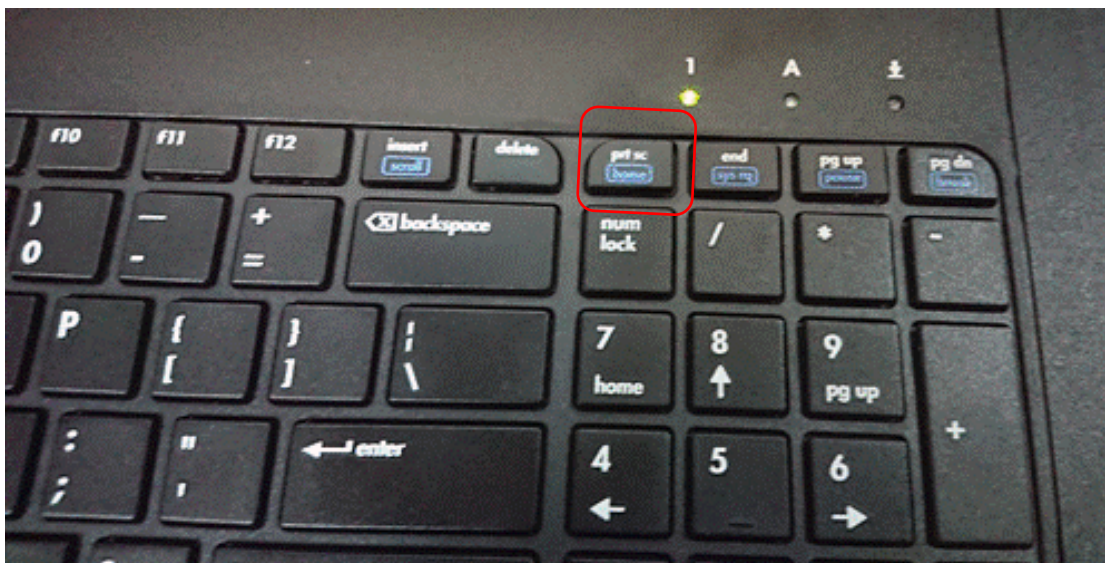
1.2.1 How to operate physical server

- ① Enter the server room and open FIP server rack.
- ② Pull KVM console and open the display (The power of display is on automatically)



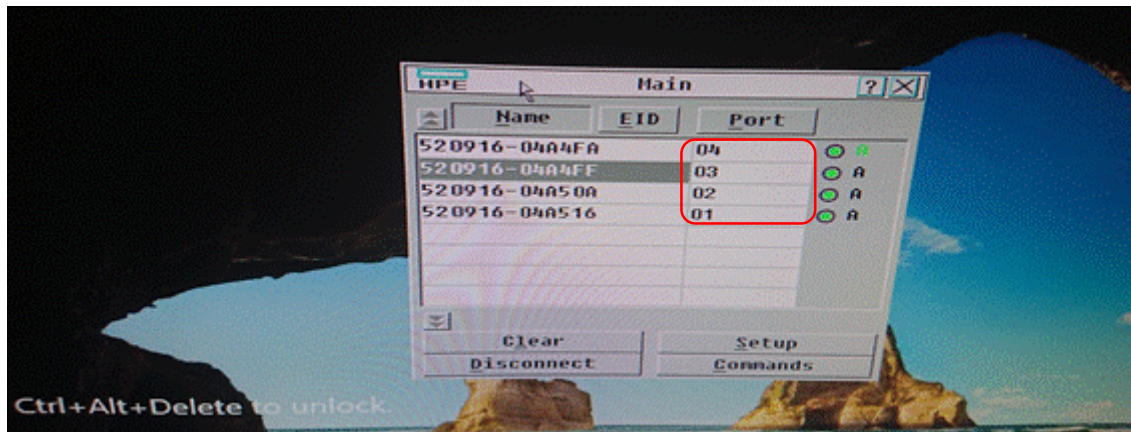
- ③ To change the monitor of each Server, push the 「prt sc」 button of the Keyboard

of KVM console.



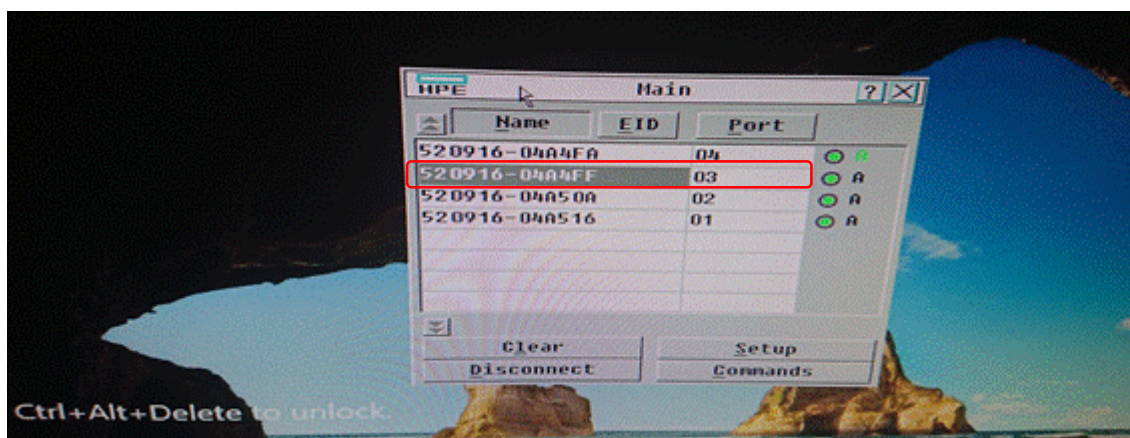
- ④ When the display of selected server is shown, push 「the arrow」 buttons and select the server you want to display.

Note: Server name and Port Number enable easy identification of the server.



1.2.2 How to access FIP site on physical server

- ① FIP is running on Virtual Servers of Server1. To connect virtual servers, KFS can operate virtual servers by Virtual Machine management server, Storage Server = Server03.
- ② Based on the method of "2-1 How to operate physical server", select Server03(port:03).

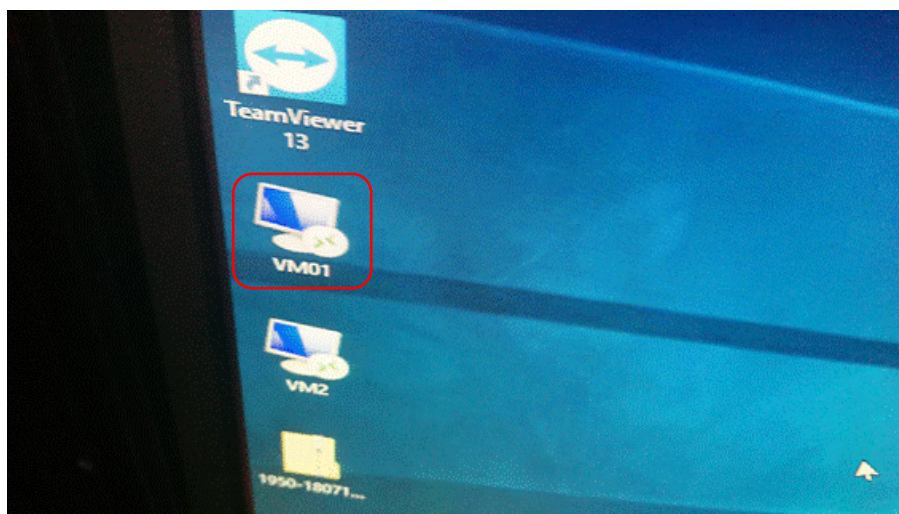


- ③ After the display of Server03 (Storage Server), push the 「Ctrl+Alt+Delete」 button at the same time and log-in the following account,

User ID : Administrator

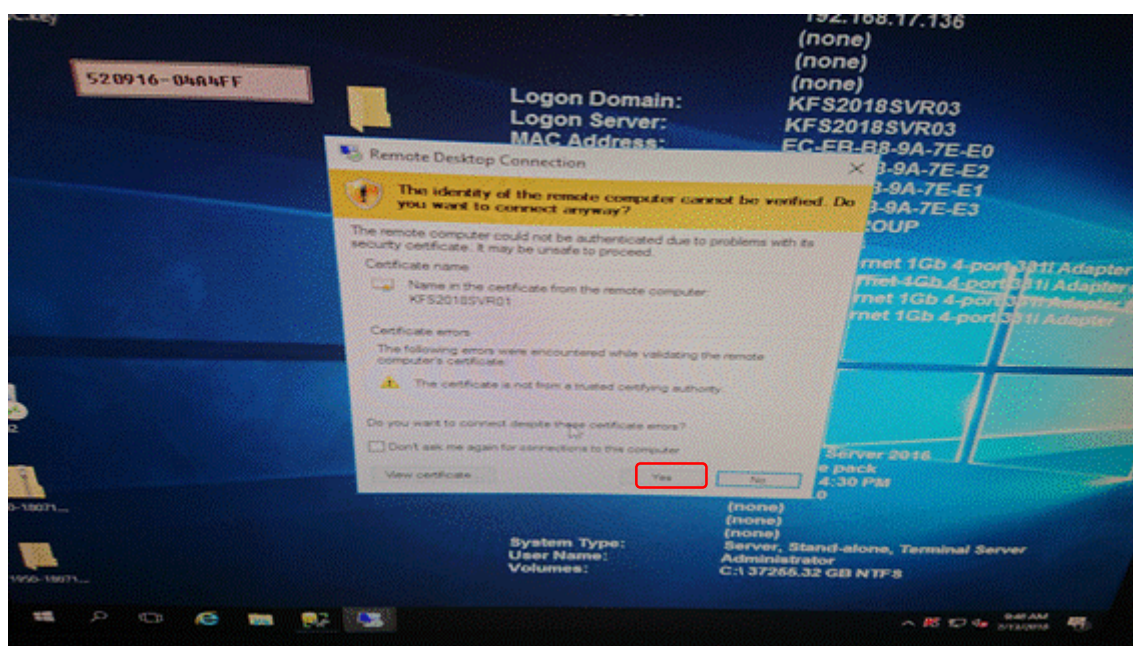
Password : (ask system administrator)

- ④ After the display of Server03 (Storage Server), which is for operation of VM machine, double click 「VM01」 short-cut icon on Desktop.



Note :VM02 is for Image server.

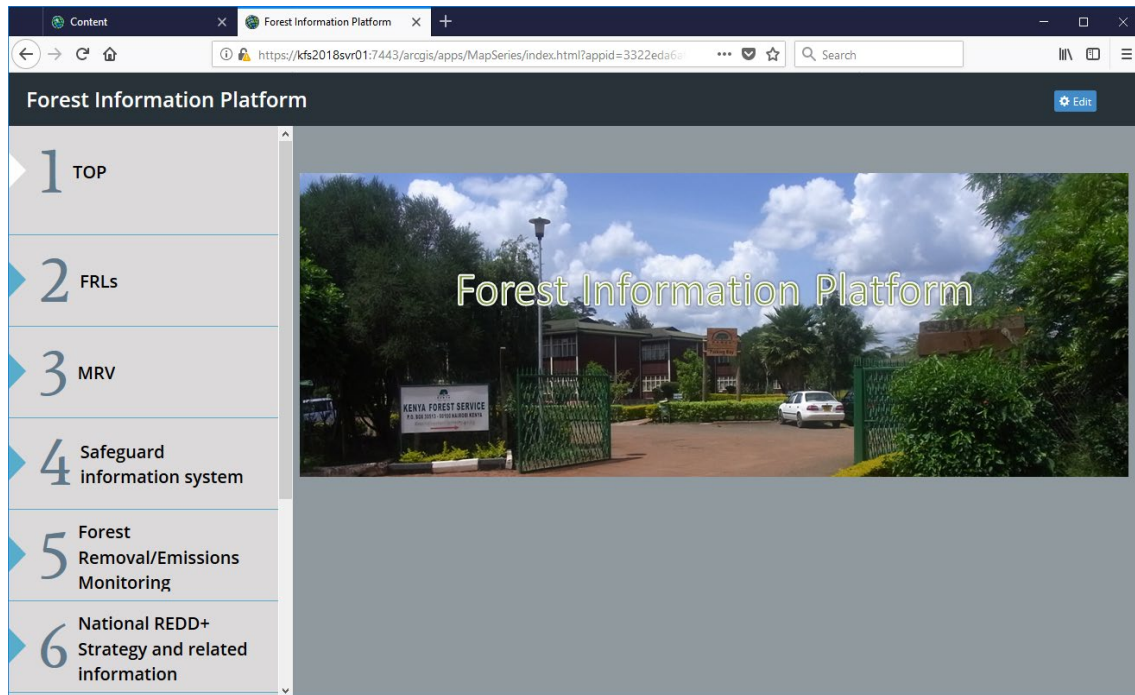
- ⑤ In case of the alert of certification, push the 「Yes」 button.



- ⑥ After accessing the Virtual server, open the internet browser including 「Firefox」 and click the 「Forest Information Platform」 in 「Favorite」.
Or use following URL.

<https://kfs2018svr01:7443/portal/apps/MapSeries/index.html?appid=3322eda6af894573aea4a3811a4a09c7>

⑦ You can see following display of FIP site.



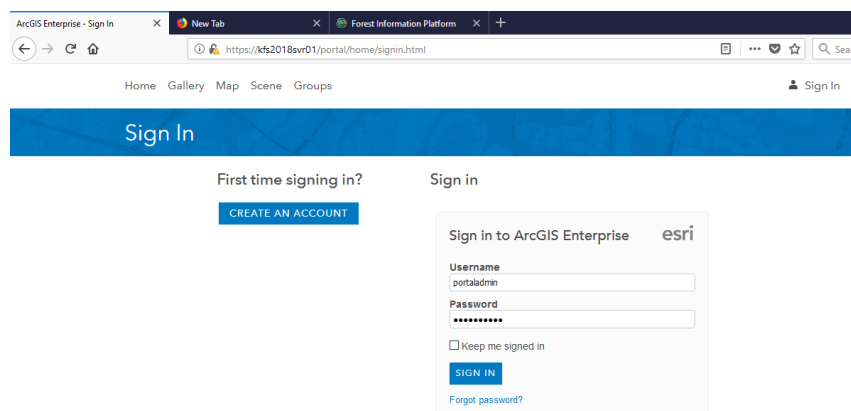
1.2.3 How to access FIP contents management display

① Portal for ArcGIS manages FIP site. If you want to access Portal for ArcGIS, open the internet browser including 「Firefox」 and click the 「Portal for ArcGIS」 in 「Favorite」.

② Or use following URL.

<https://kfs2018svr01/portal/home/>

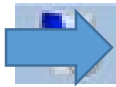
③ After accessing, sign in specified USER ID and password.



1.2.4 How to access FIP site or FIP contents management display on your PC by remote desktop

Through “remote desktop” application, you can access FIP site or FIP contents management display without entering in server room. How to Access account of Virtual server is following.

Click “remote desktop” icon and input following information



User name : KFS2018SVR01¥Administrator
Password : (ask system administrator)

1.3 Sustainable server operation

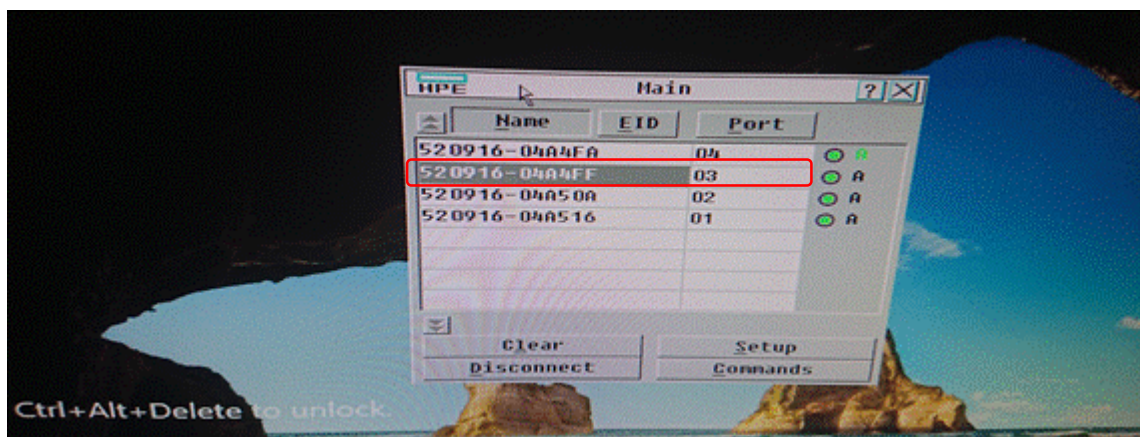
1.3.1 How to copy server1 to server2

Server2 is introduced for the cold standby environment in case of crash of Server1. For example, if the version of the software of Server1 is updated, it's necessary for KFS to copy server1 environment to Server2.

The procedure of how to copy server1 to sever2 is described below:

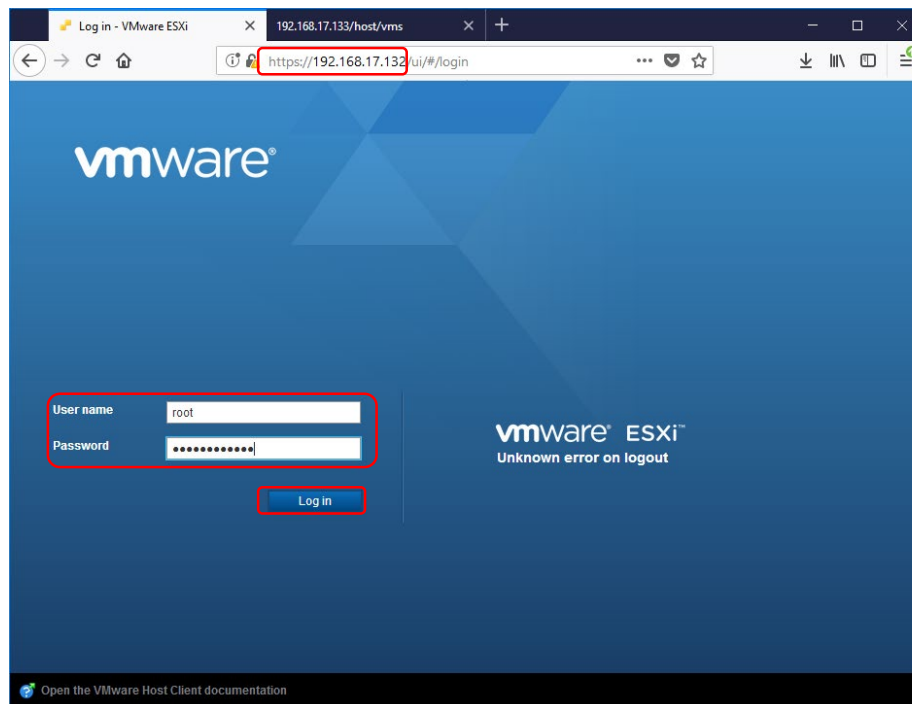
Note: All datasets are stored is Server3 (Data storage server). So copying from server 1 to server 2 is for the sustainable operation of system. The operation of data back-up is related server3 and backup device including backup tape and server. It's necessary to KFS to decide how to operate back-up.

- ① Based on the method of "2-1 How to operate physical server", select Server03(port:03).

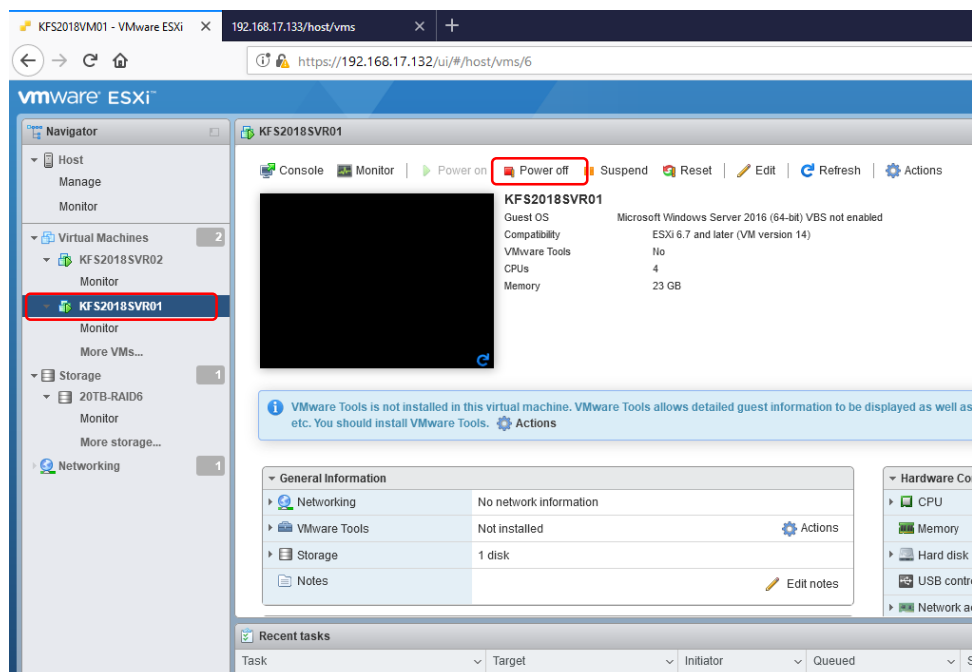


- ② If Virtual server1 and Virtual server2 of "Server1" are power on, it's necessary to power off.

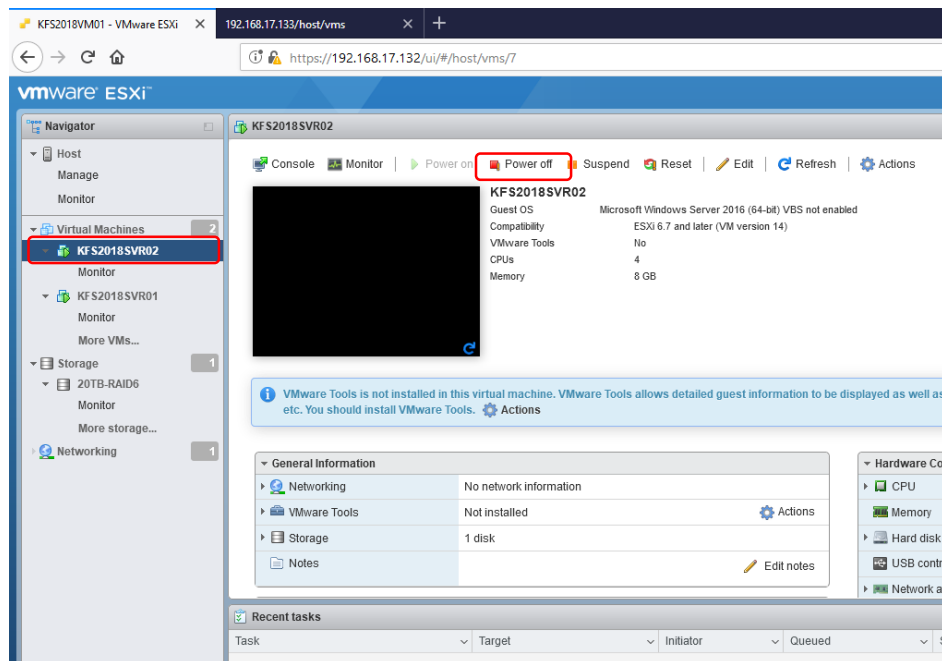
Input the URL," <https://192.168.17.132>" and input User name and Password of [Server1].



- ③ If Virtual Server1 is power on, select Virtual Server1(KFS2018SVR01) and push 「Power off」 button.

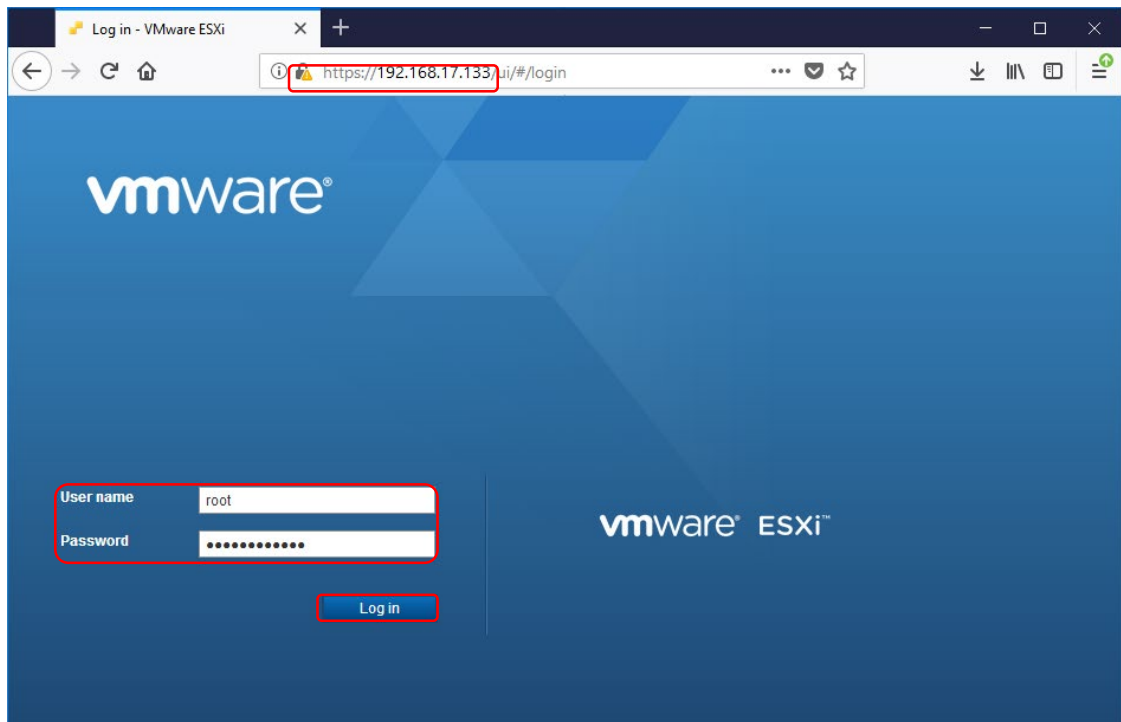


- ④ Next, if Virtual Server2 is power on, select Virtual Server2(KFS2018SVR02) and push 「Power off」 button.

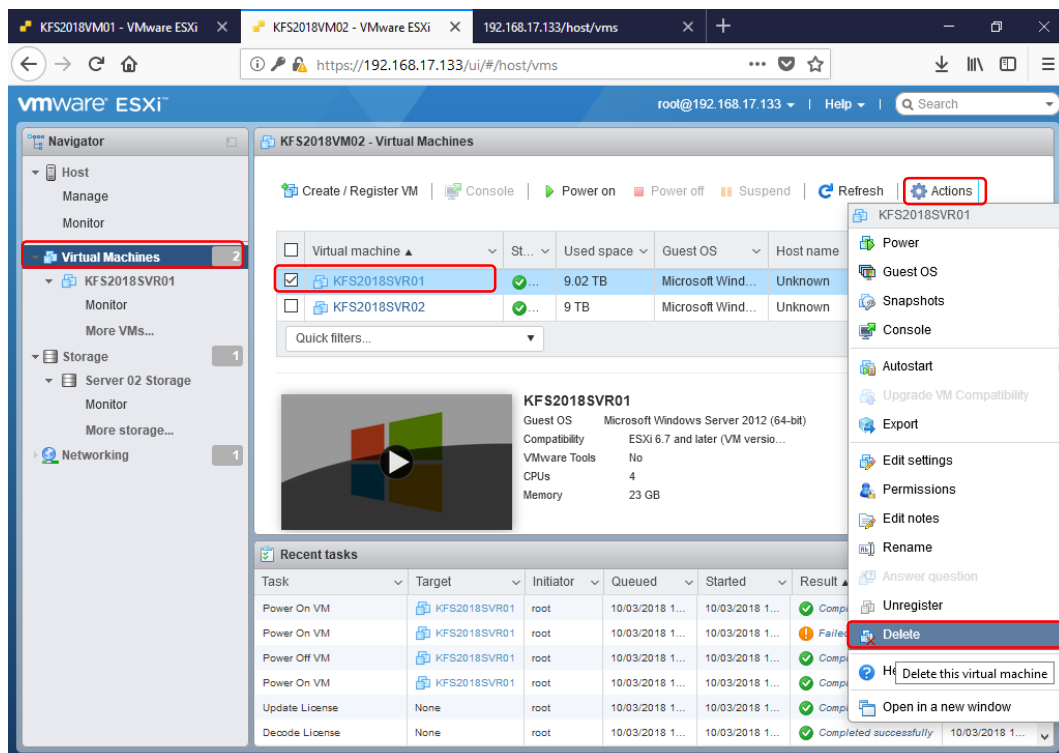


- ⑤ If the copy of Virtual server1 and Virtual server2 of “Server2” exist, it’s necessary to delete both environments because of the limit of server2 storage volume.

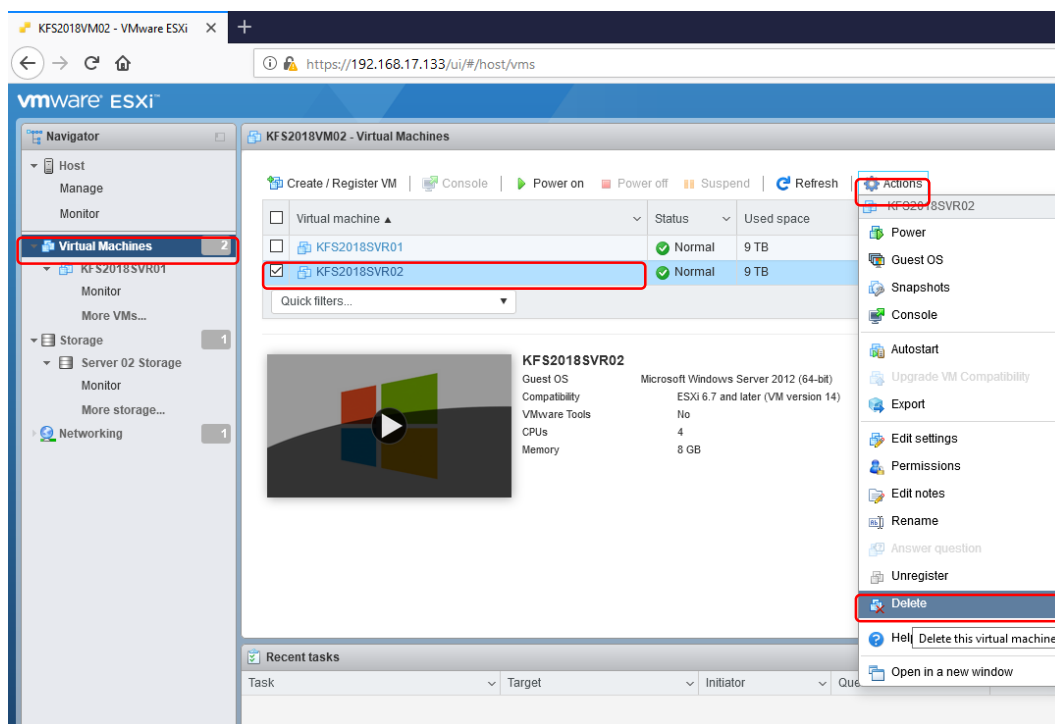
Input the URL, “<https://192.168.17.133>” and Input User name and Password of 「Server2」.



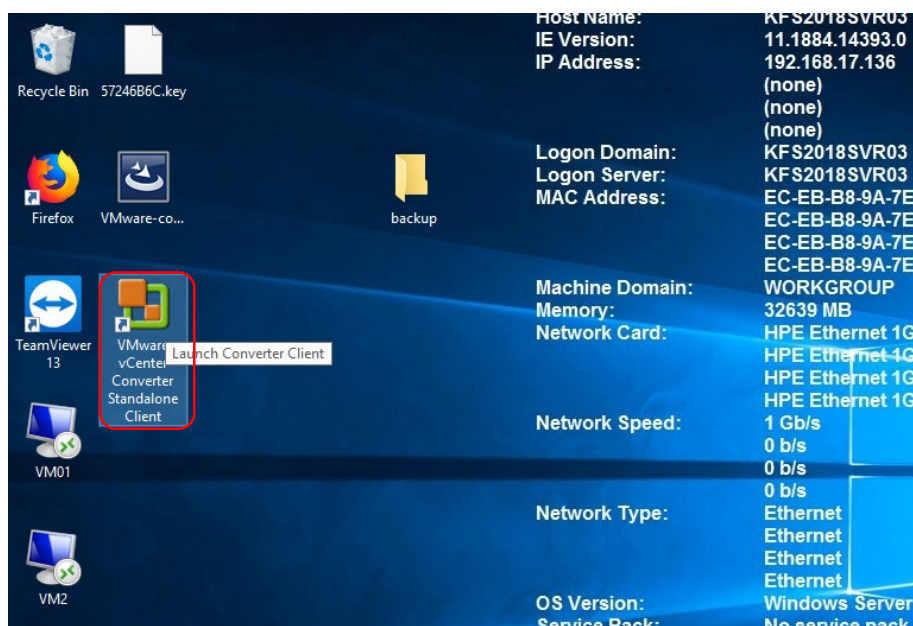
- ⑥ On VMware ESXi display, select “Virtual machines” and “KFS2018SVR01”. And push 「Action」 button and select 「Delete」.



- ⑦ After delete of Virtual Server1(KFS2018SVR01) of Server2, delete Virtual Server2(KFS2018SVR02) of Server2



- ⑧ At the next step, you copy from Virtual server1&2 of Server1 to Server2.At first, double click 「VMware vCenter Converter Standalone client」.



- ⑨ On 「VMware vCenter Converter Standalone」display, click 「Convert machine」 .

VMware vCenter Converter Standalone

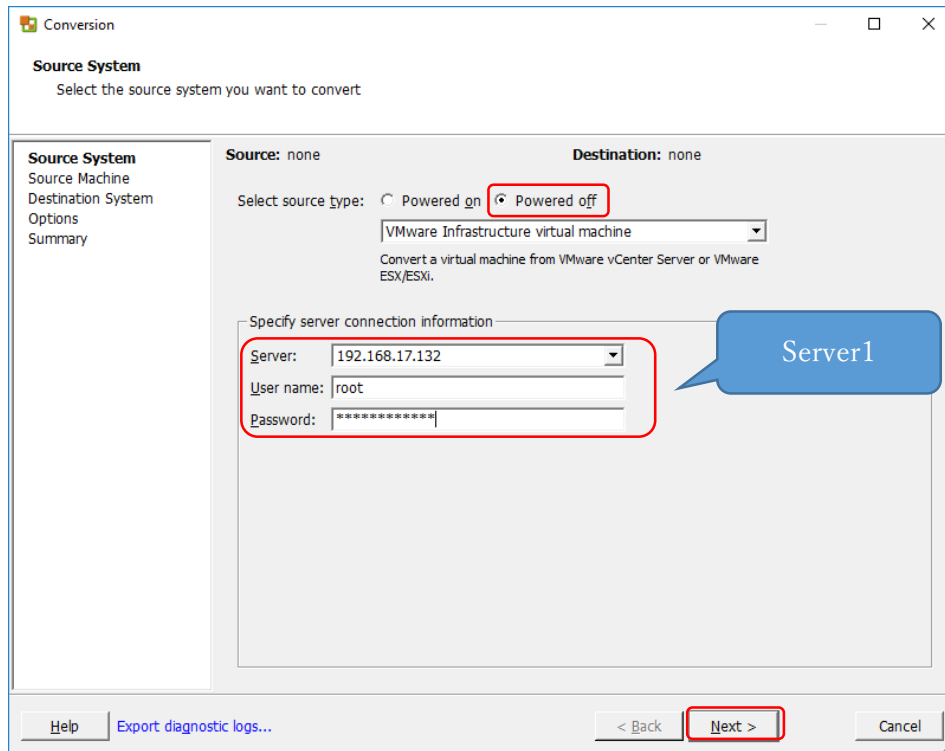
File View Task Administration Help

Convert machine Configure machine

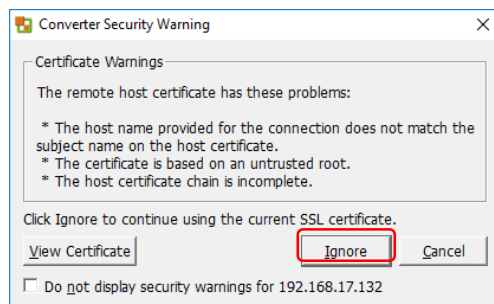
View by: Tasks Show: All tasks in Recent tasks

Task ID	Job ID	Source	Destination	Status	Start time	End time
1	1	192.168.17.132/KFS20...	192.168.17.13...	Completed	10/2/2018 3:21:46 PM	10/2/2018 10:03:04 PM
2	2	192.168.17.132/KFS20...	192.168.17.13...	Completed	10/2/2018 3:38:38 PM	10/2/2018 7:39:04 PM

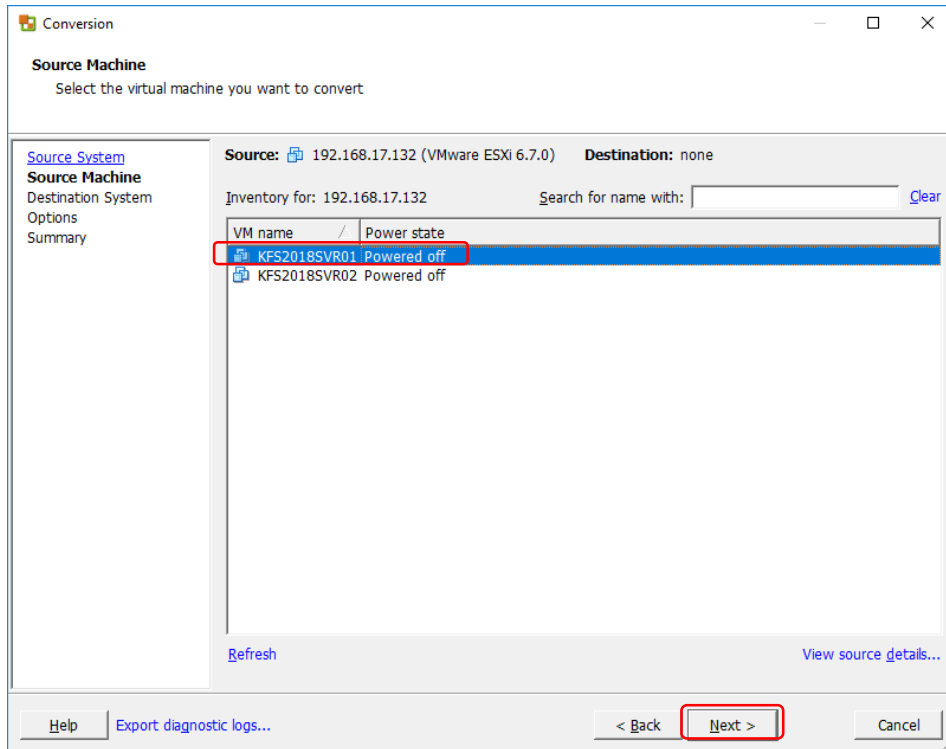
- ⑩ On 「Conversion」display, set following image. The source system of copying is server1.



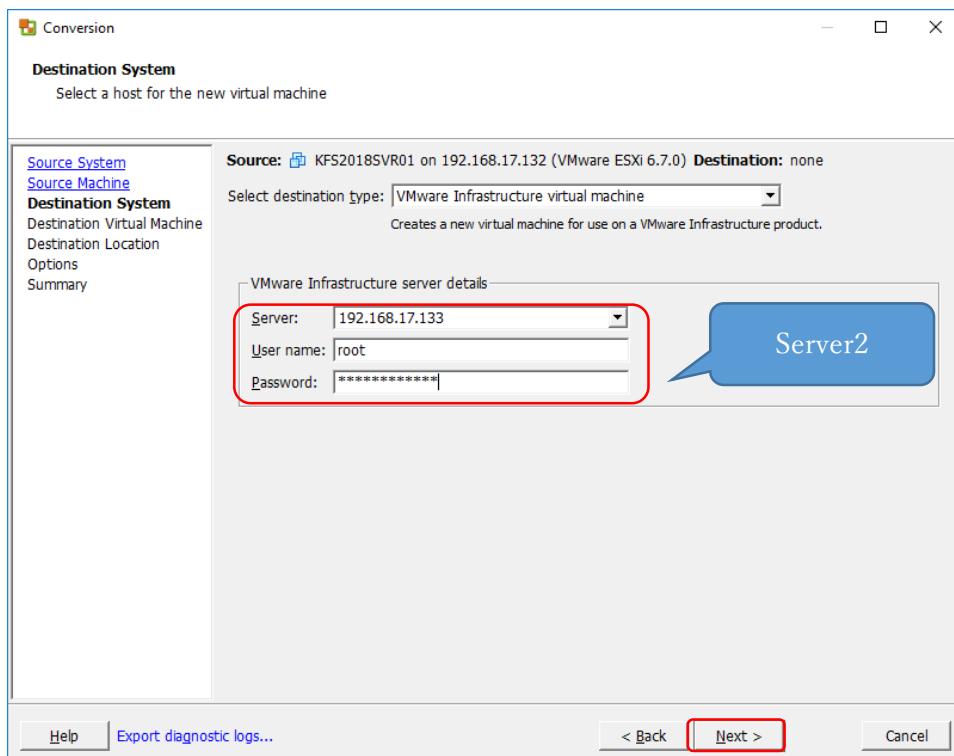
- ⑪ In case of following display, push the 「Ignore」 button.



- ⑫ It's necessary to copy both 「Virtual server1」(KFS2018SVR01) and 「Virtual server2」(KFS2018SVR02) a of Server1 to Server2.
On source Machine, at first select 「KFS2018SVR01」.

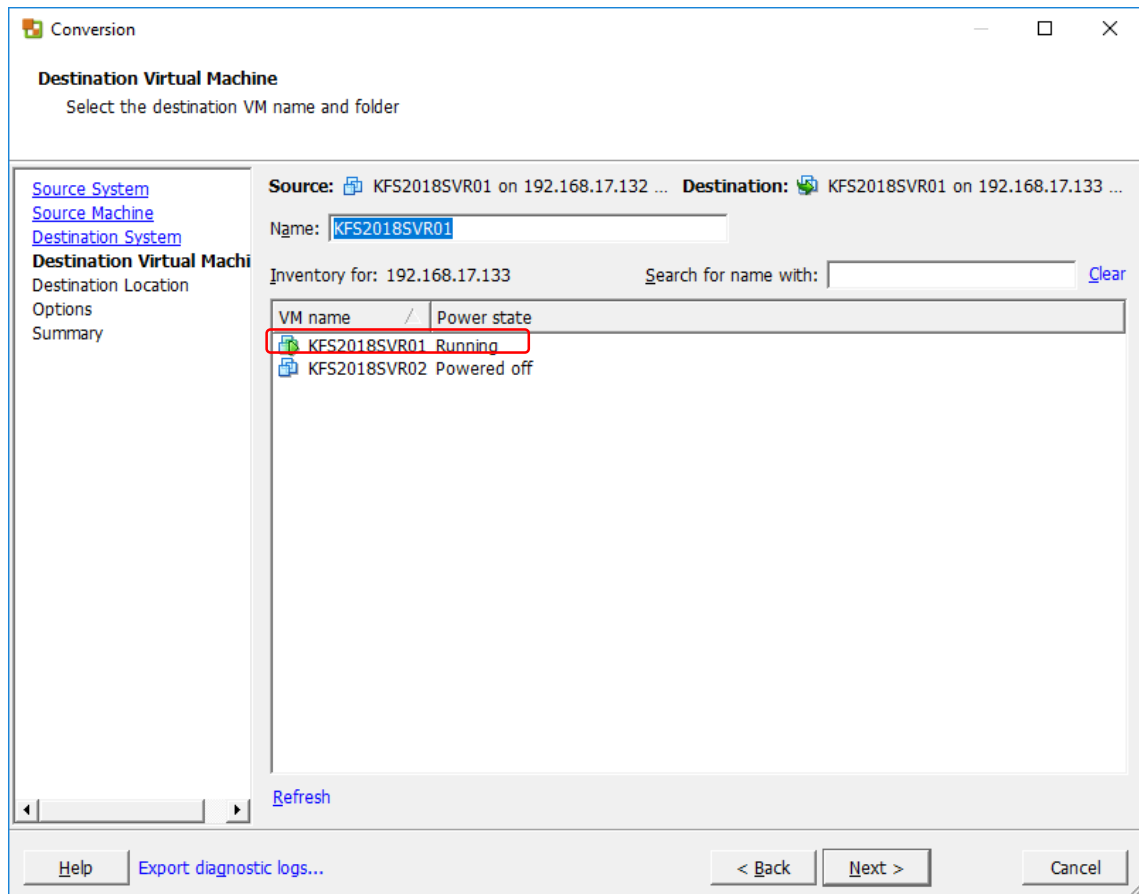


- ⑬ On Destination System, input the information of Server2.



- ⑭ Input "Name" as 「KFS2018SVR01」.

Note: If you select 「KFS2018SVR02」 above display, Input "Name" as 「KFS2018SVR02」.



- ⑮ On Destination Location, push 「next」 button.

Conversion

Destination Location
Select the location for the new virtual machine

[Source System](#)
[Source Machine](#)
[Destination System](#)
[Destination Virtual Machine](#)
Destination Location
[Options](#)
[Summary](#)

Source: KFS2018SVR01 on 192.168.17.132 ... **Destination:** KFS2018SVR01B on 192.168.17.133 ...

Inventory for: 192.168.17.133

Total source disks size: 9,216 GB

Source Disks:

Source Disk
KFS2018VM02

[Refresh](#)

Datastore:

Server 02 Storage

Capacity: 18,627.75 GB
Free: 193.45 GB
Type: VMFS6
Block size: 1 MB

Virtual machine version:

Version 14

[Help](#) [Export diagnostic logs...](#) [< Back](#) **Next >** [Cancel](#)

- ⑯ On Options, push 「next」 button.

Conversion

Options
Set up the parameters for the conversion task

[Source System](#)
[Source Machine](#)
[Destination System](#)
[Destination Virtual Machine](#)
[Destination Location](#)
Options
[Summary](#)

Source: KFS2018SVR01 on 192.168.17.132 ... **Destination:** KFS2018SVR01B on KFS2018VM02 (...)

Click on an option below to edit it.

Current settings:

- Data to copy** [Edit](#)
Copy type: Disk-based
VirtualDisk1: 9,216 GB
- Devices** [Edit](#)
vCPUs: 4 (4 sockets ...)
Disk controller: Pres...
Memory: 23GB
- Networks** [Edit](#)
NIC1: VM Network
- Services** [Edit](#)
Total: 224 service(s)
- Advanced options** [Edit](#)
Power on destination...
Install VMware Tools...
Customize Guest OS...
Remove Restore Ch...
Reconfigure: Yes
- Throttling** [Edit](#)
CPU: None
Network bandwidth:...

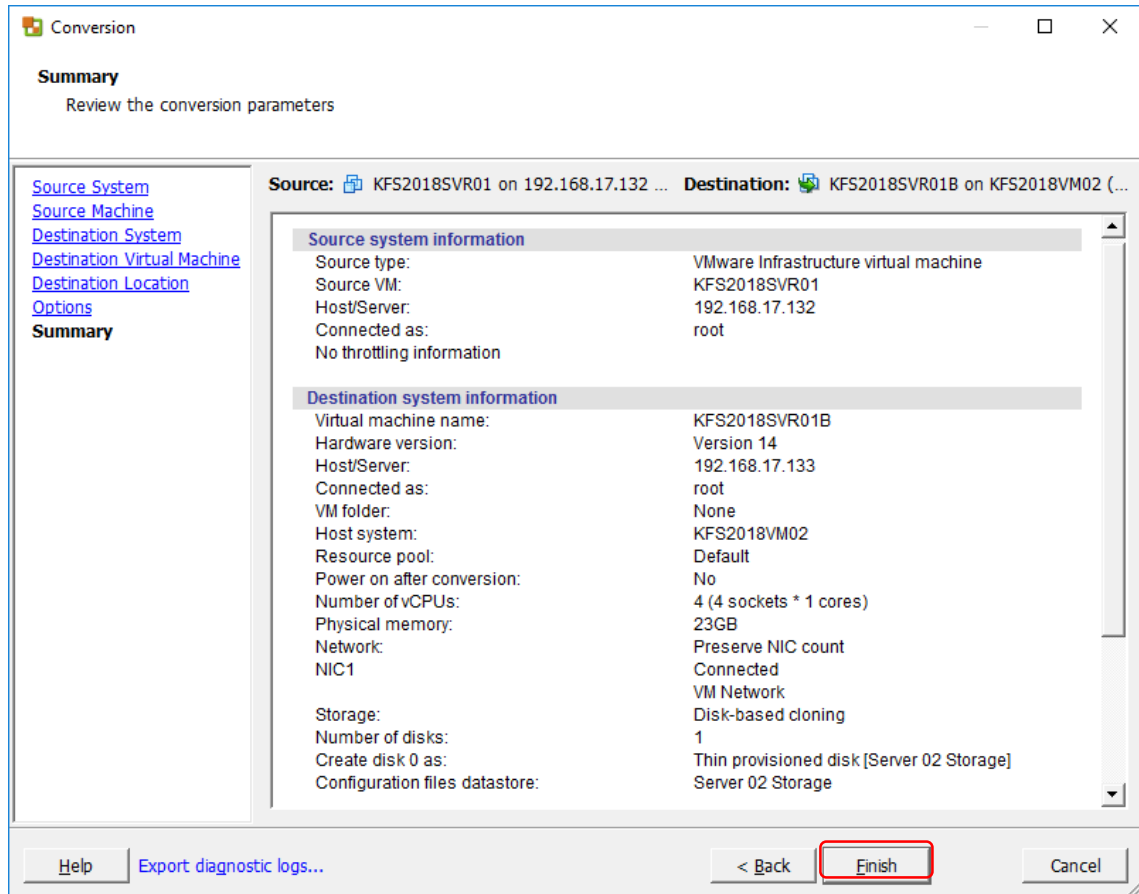
Data copy type: Copy all disks and maintain layout

Configuration (VMX) file location: Server 02 Storage (193.45 GB)

Disk	Size	Type	Destination datastore
VirtualDisk1	9,216 GB	Thick	Server 02 Storage (193.45 GB)

[Help](#) [Export diagnostic logs...](#) [< Back](#) **Next >** [Cancel](#)

- ⑰ On Summary, after checking the information, push 「Finish」 button.
The copy starts.



- ⑱ You can copy Virtual server2 at the same time to Virtual server1. Implement above procedure⑫～⑰ for Virtual Server2.

★Remark-Operation of Server2★

Since you are using cold standby, you can leave server2 powered off.

You can turn on server2 in the following scenarios:

- in case of server1 crashes
- when there is a major update(on VM1 and/or VM2 on server1) and you want to copy server1 to server2.
- at least once every month to check if server2 and the virtual machines are working.

2 How to construct and edit FIP by Portal for ArcGIS

Please refer Portal for ArcGIS help site as follows if you want to know how to use in detail.

<https://enterprise.arcgis.com/en/portal/>

(Other document of ArcGIS: <https://doc.arcgis.com/en/>)

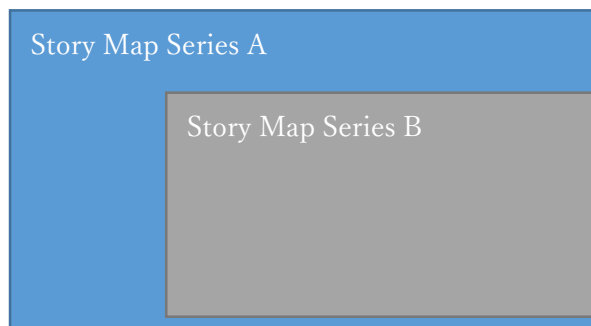
2.1 Basic policy of constructing FIP

- FIP shall be constructed by basic function of Portal for ArcGIS including existing template.

→ You can deal with FIP by operation maintenance or updated version up of software, instead of customizing by programming.

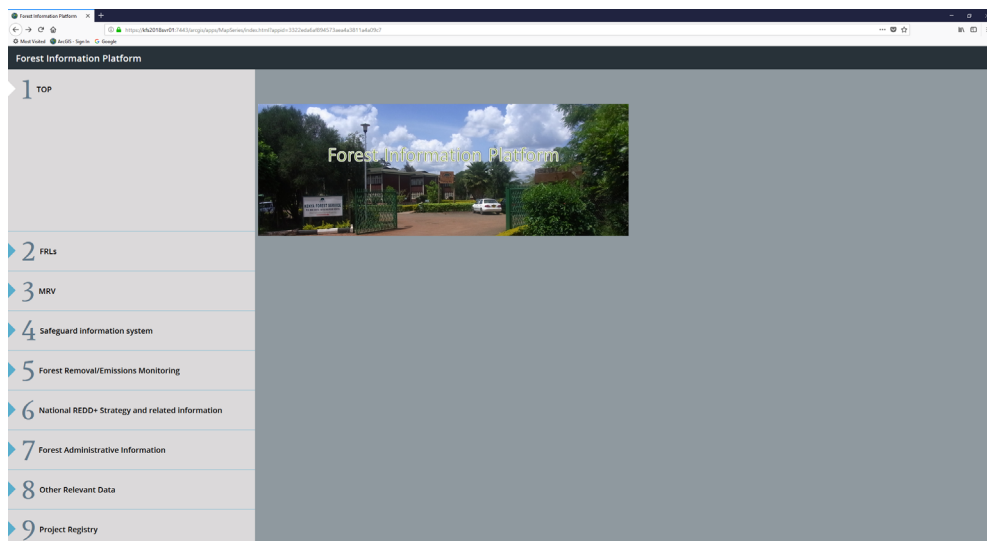
- Main components of sitemap shall be made by “Story Map Series*” of existing template.

*Note: *The 「Story Map Series」 template enables FIP to manage display of multiple maps or web pages. In addition, nest structures of “Story Map Series” enables to display layered structures as follows.*



You can see Current FIP situation as sitemap accessing following URL.

<https://kfs2018svr01:7443/arcgis/apps/MapSeries/index.html?appid=3322eda6af894573aea4a3811a4a09c7>



2.2 Accessing to Portal for ArcGIS

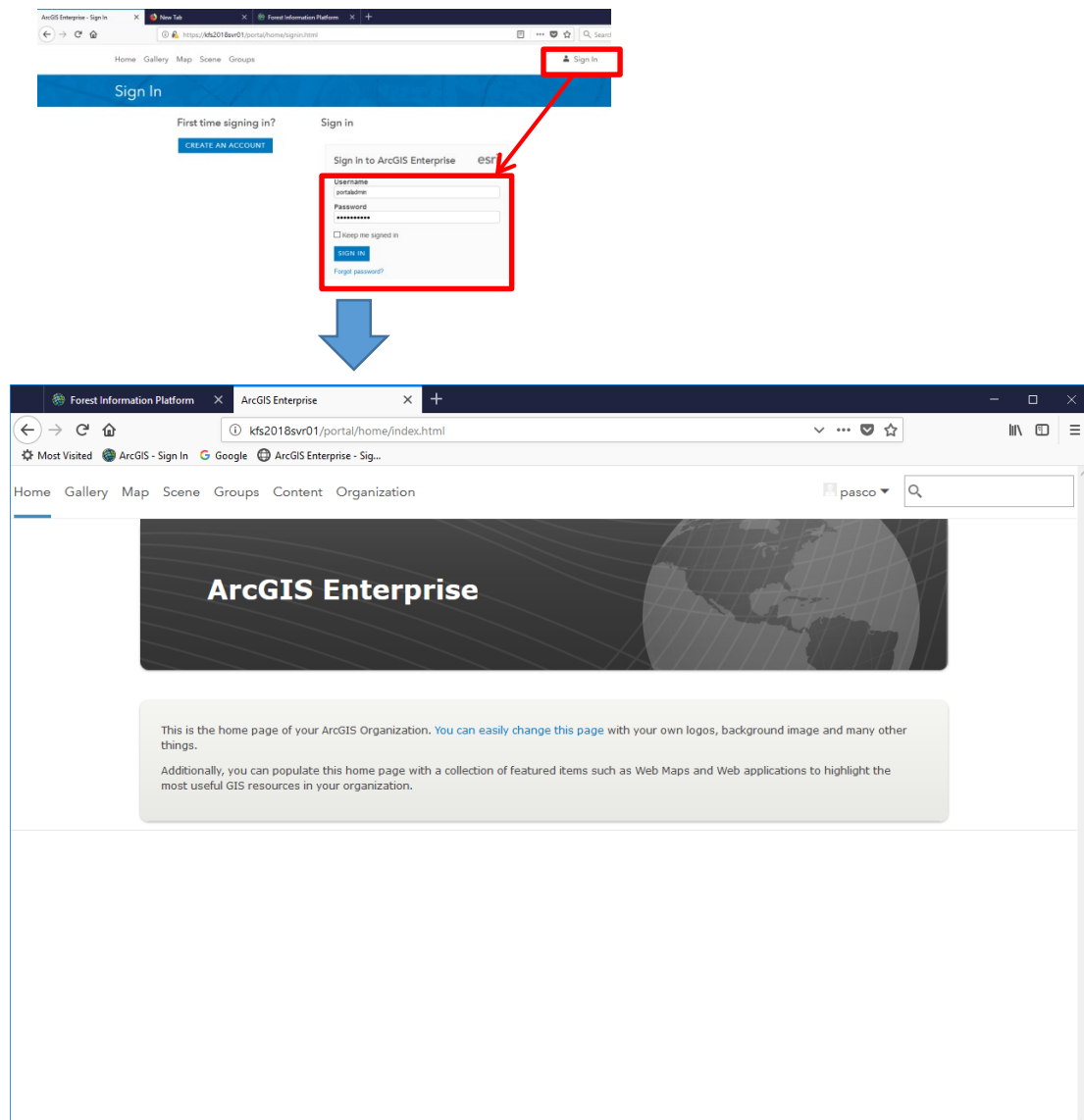
Before accessing Portal for ArcGIS, acquire your account from System Administrator.

(1) URL to access Portal for ArcGIS

<https://kfs2018svr01/portal/home/>

(2) Sign In to Portal for ArcGIS

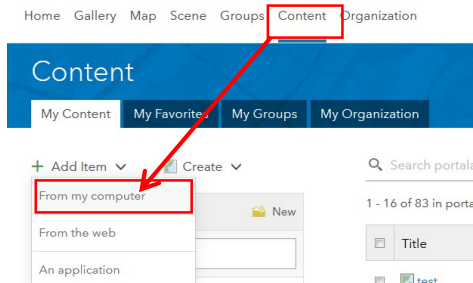
Sign In to Portal for ArcGIS, using the user account with editing right (Level 2).



2.3 How to import data on Portal for ArcGIS from your PC

(1) How to import shape file

Select "Add Item" list from "Content" page and "From my computer".



Select zipped your shape file

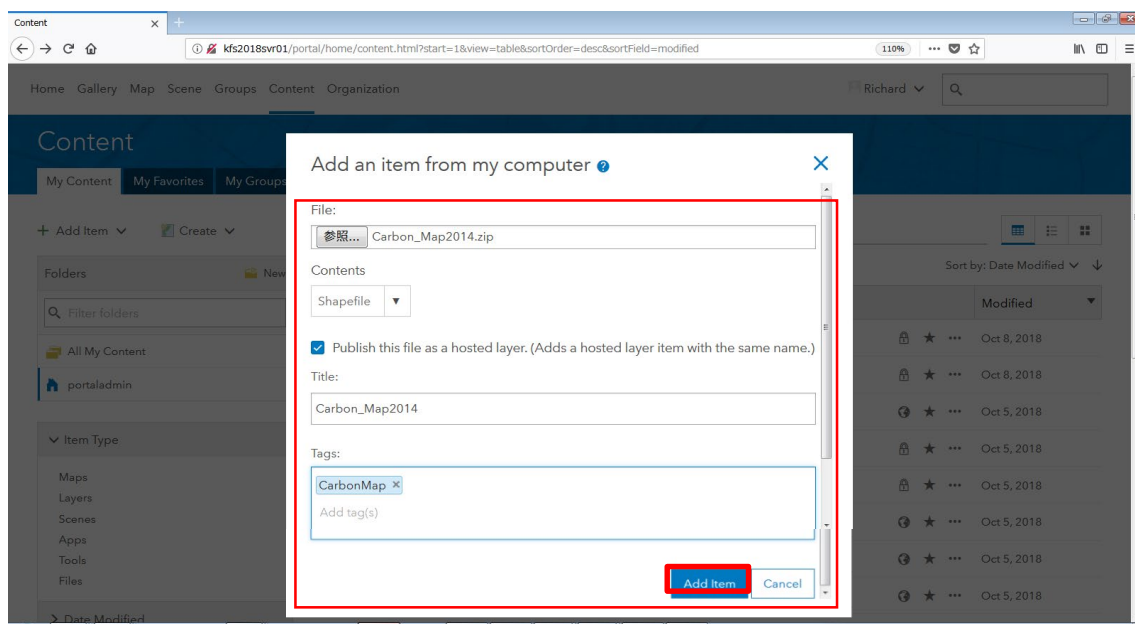
Note: If you import shape data into Portal for ArcGIS directly, the data related to shape file is necessary to unify to one zip file.

Carbon_Map2014.cpg	2018/01/10 22:36
Carbon_Map2014.dbf	2018/01/10 22:36
Carbon_Map2014.prj	2018/01/10 19:58
Carbon_Map2014.sbn	2018/01/10 19:58
Carbon_Map2014.sbx	2018/01/10 19:58
Carbon_Map2014.shp	2018/01/10 22:36
Carbon_Map2014.shp.xml	2018/01/10 19:58
Carbon_Map2014.shx	2018/01/10 22:36
Carbon_Map2014.zip	2018/01/10 22:45

Select "Contents" and input "Title" and "Tags".

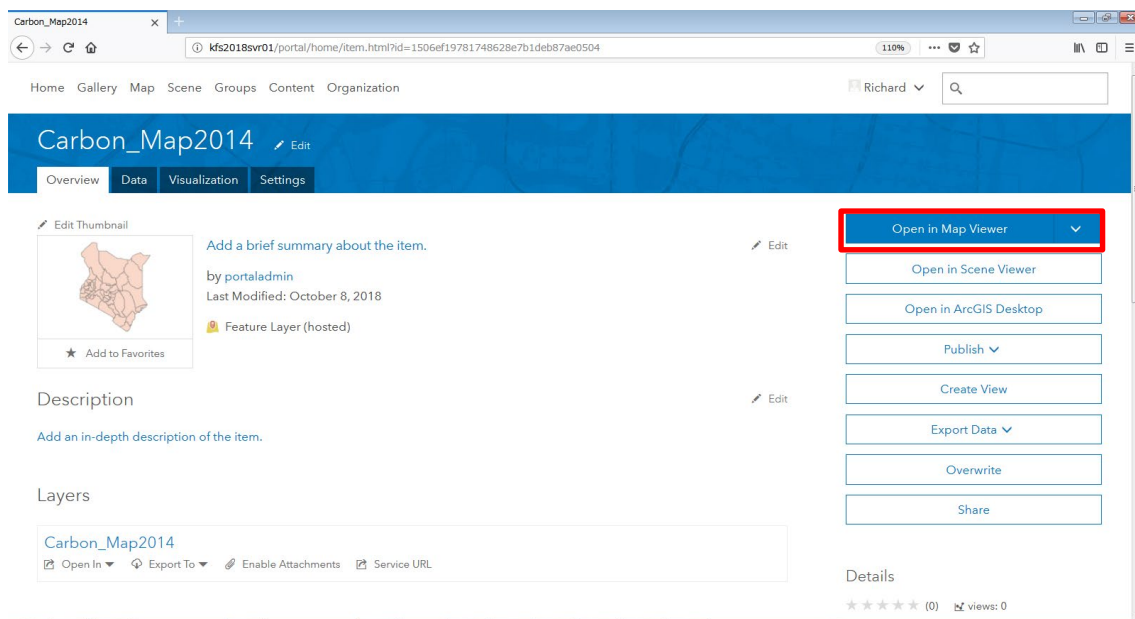
Finally push "Add Item" button.

Note: "Title" and "Tags" is necessary to set easy name because this information is relation to easy search on Portal for ArcGIS.

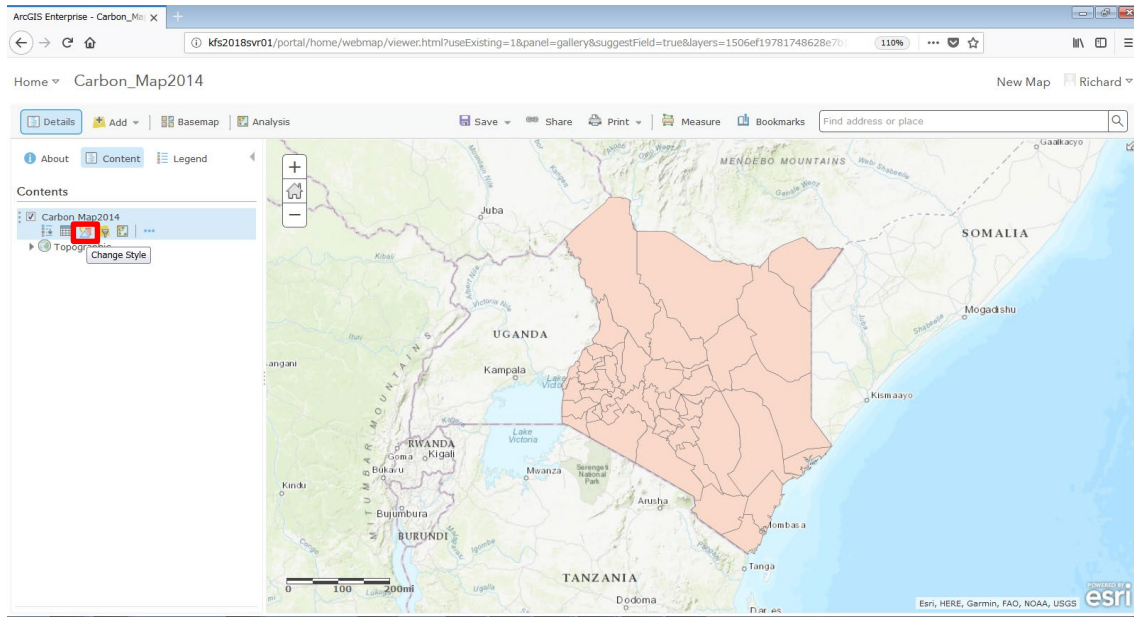


(2) Setting to symbol of Map on Portal for ArcGIS

Select "Open in Map Viewer".

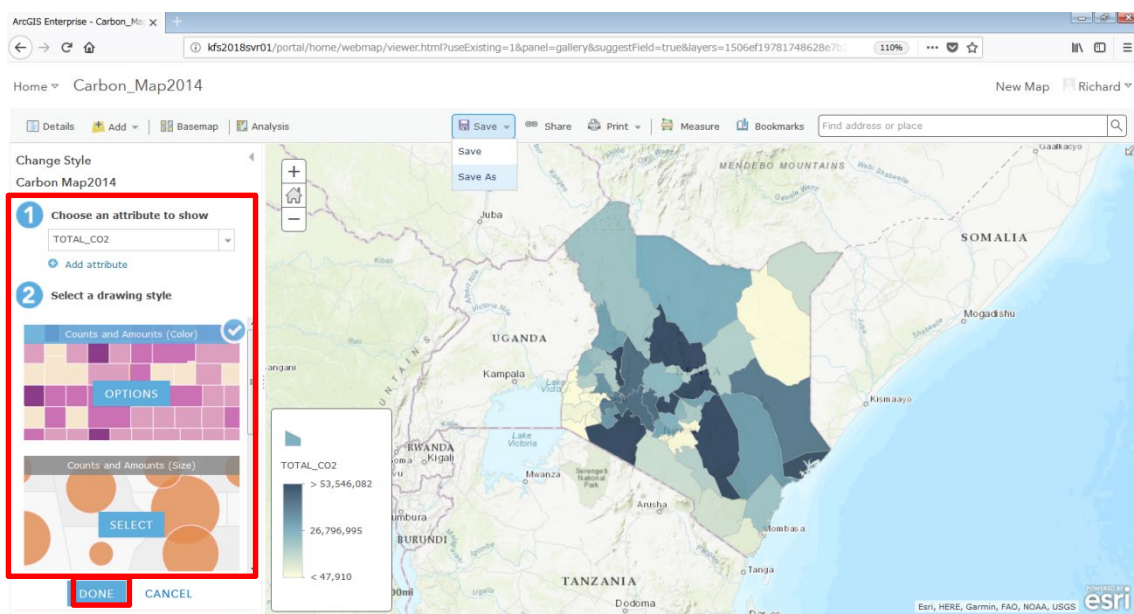


After display of Map viewer, select change style.

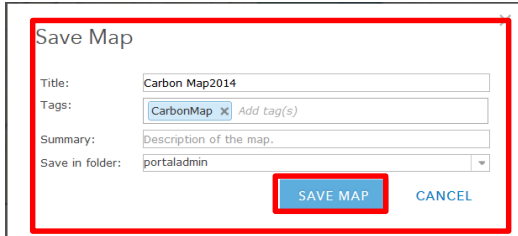


“Change Style” enables to change symbol based on attribution and so on.

After changing symbol style, push “DONE” button and select Save As.



On Save Map display, register “Title” and “Tags” for researching the data in portal for ArcGIS and push the “SAVE MAP” button.

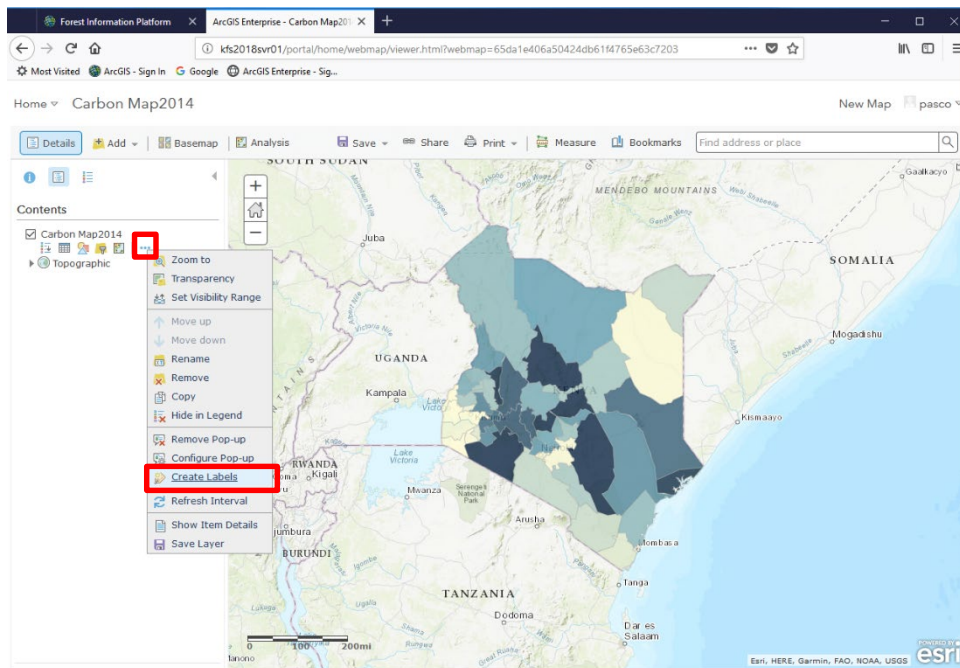


The image shows a 'Save Map' dialog box with the following fields and options:

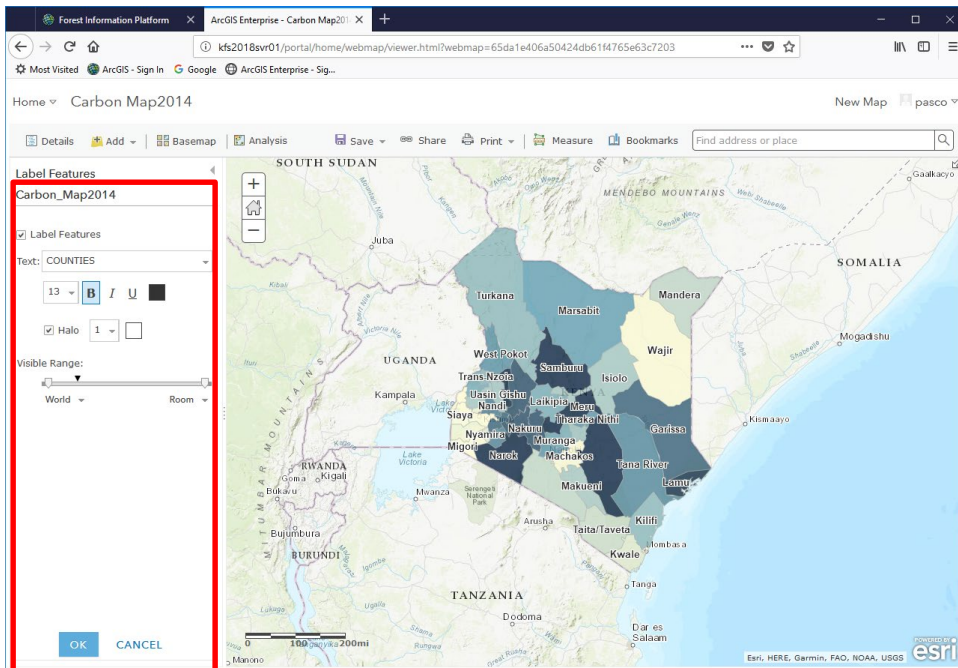
- Title:** Carbon Map2014
- Tags:** CarbonMap (with a dropdown arrow and 'Add tag(s)' link)
- Summary:** Description of the map.
- Save in folder:** portaladmin (with a dropdown arrow)
- Buttons:** SAVE MAP (highlighted with a red box) and CANCEL

(3) Setting to label of MAP on Portal for ArcGIS

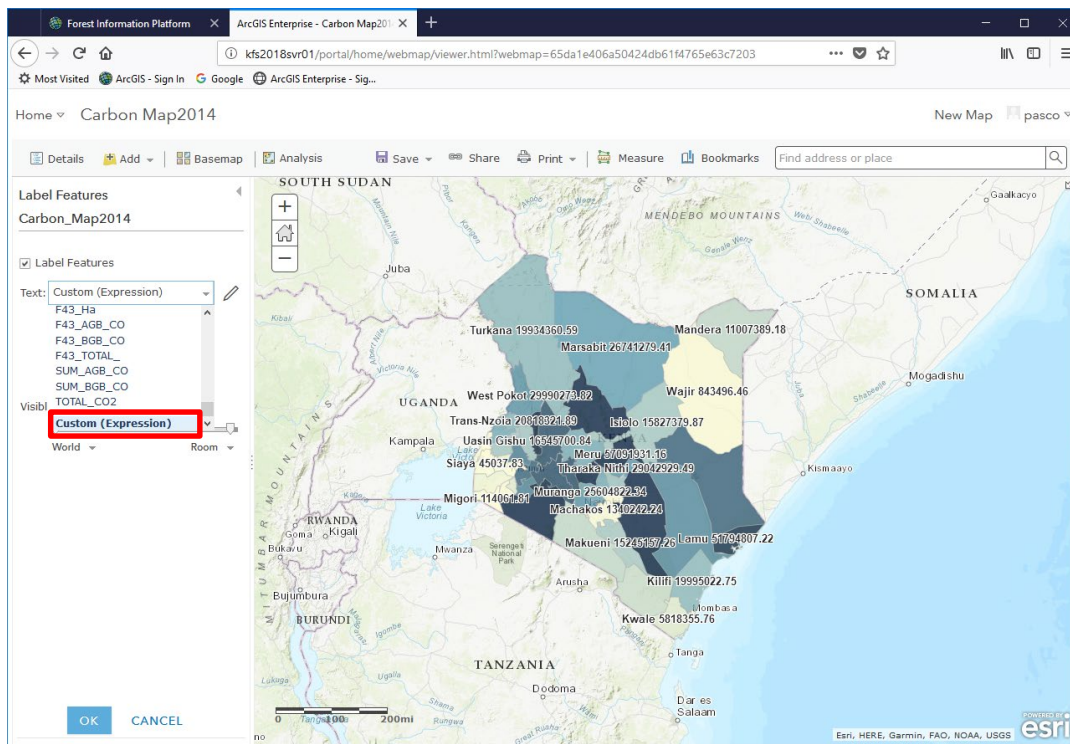
On a display of Map viewer, select “More Options” and “Create Labels”.

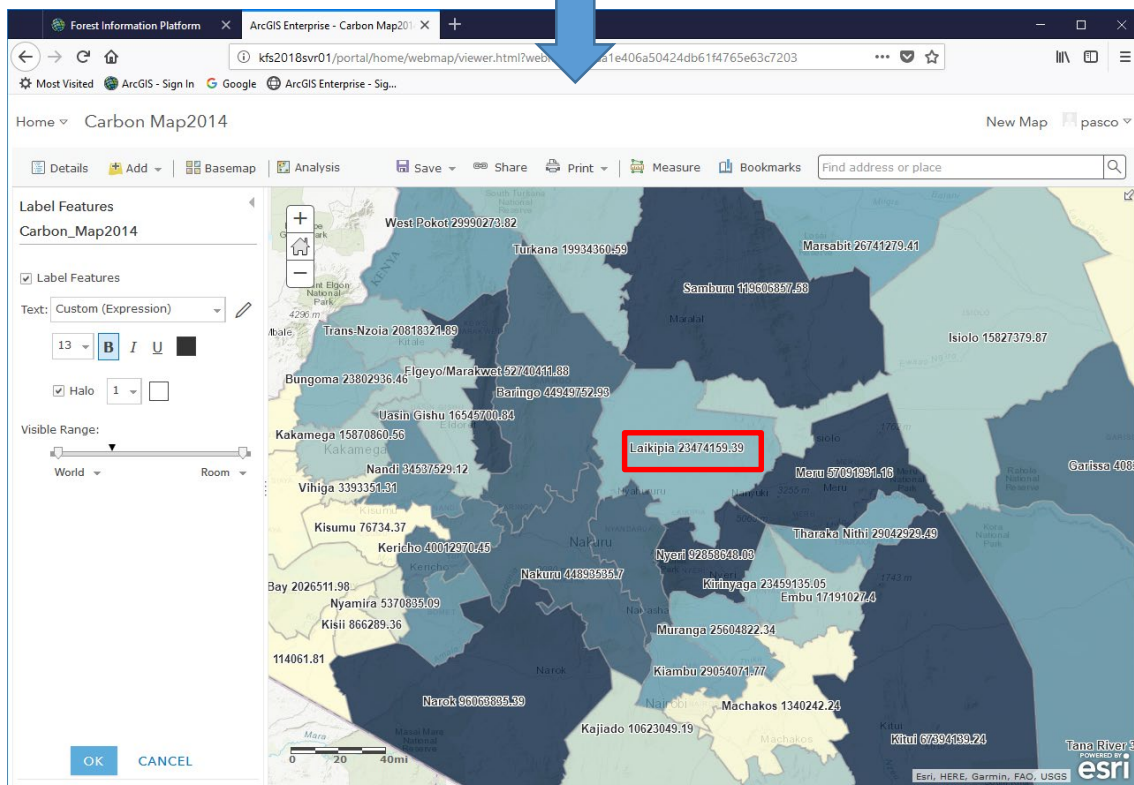
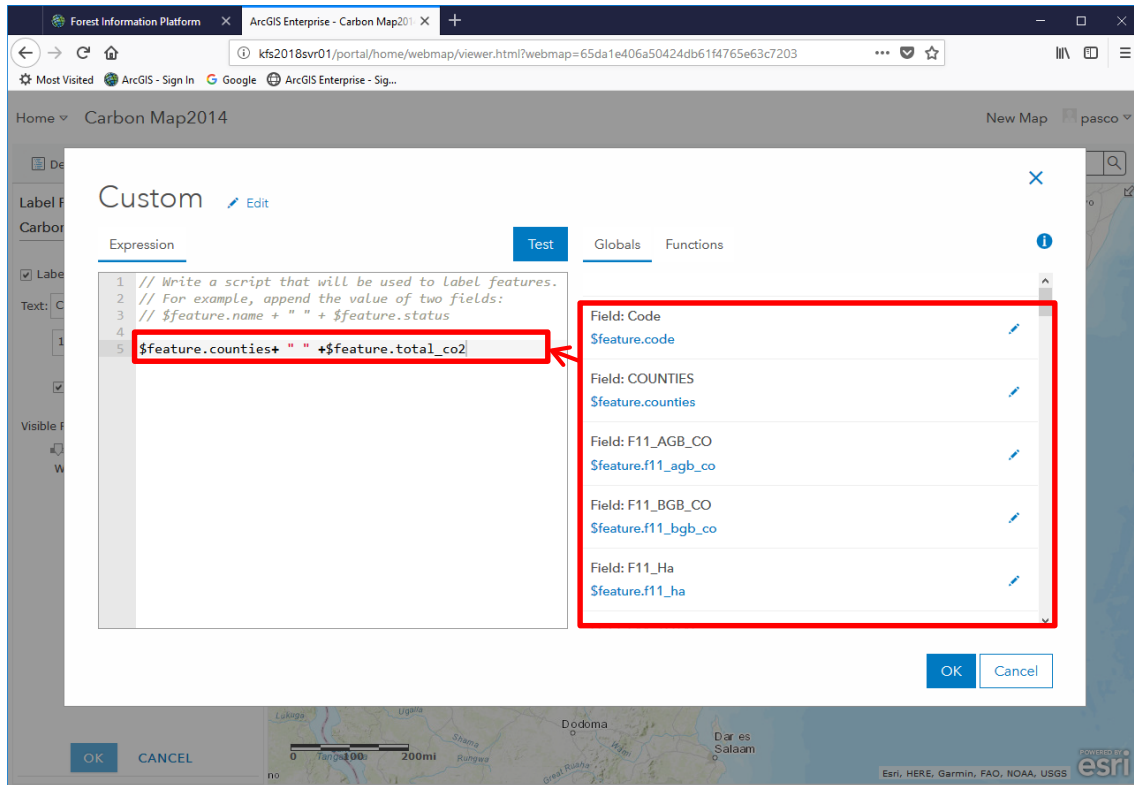


Editing left box, you can set label.



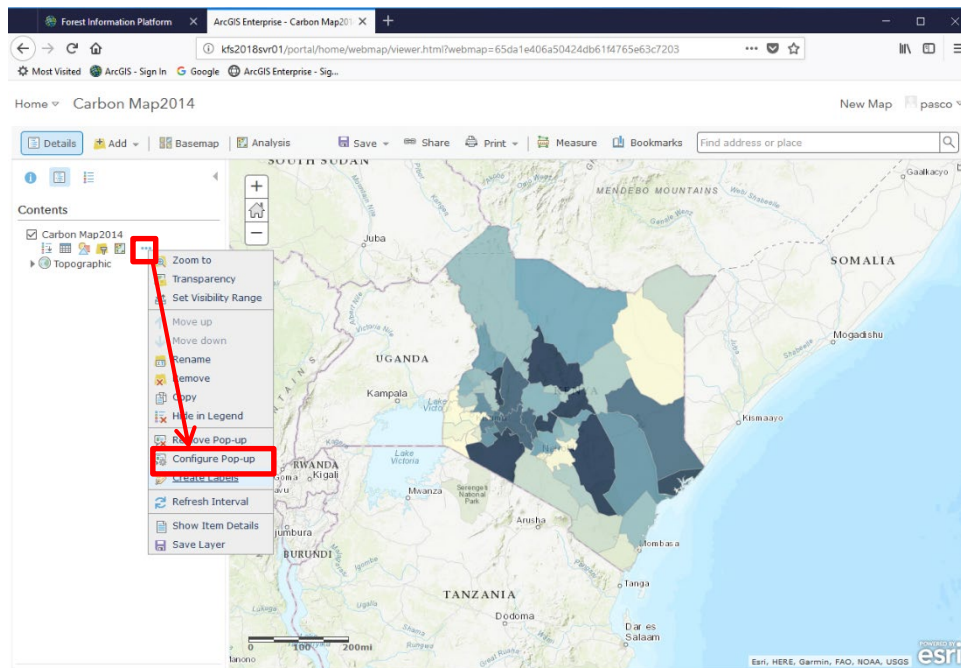
Note: Using “Custom” from “Text”, you can realize advance setting of label.



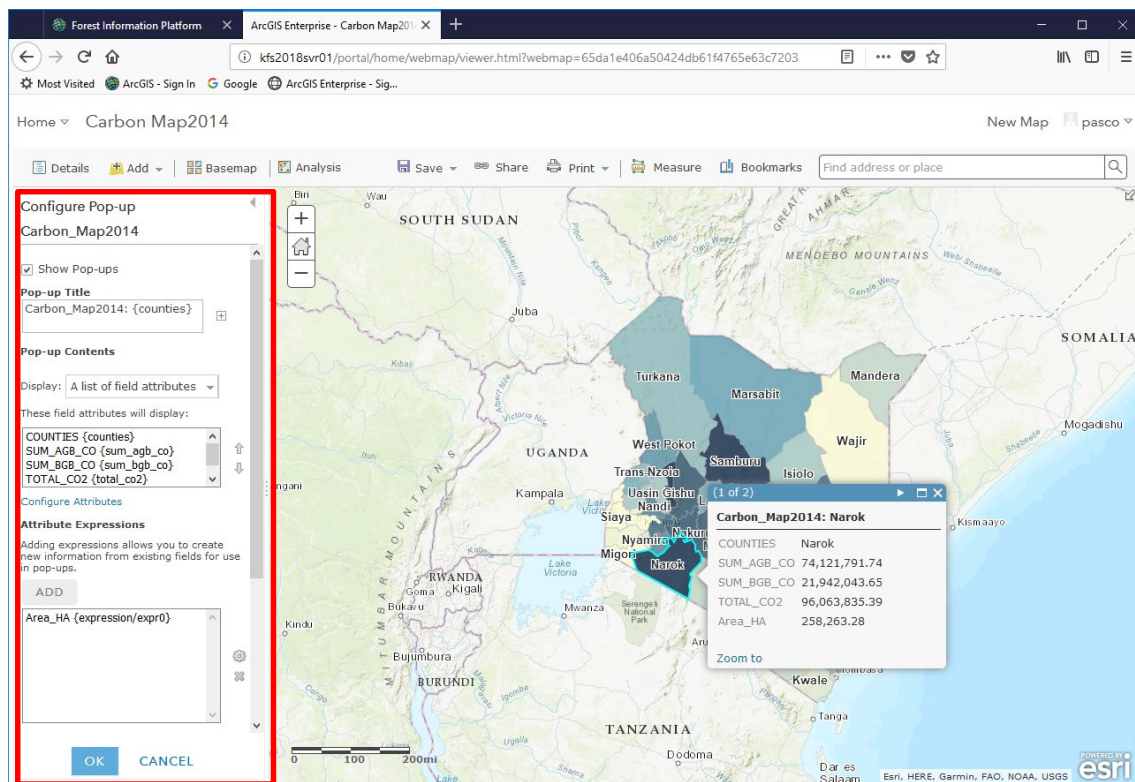


(4) Setting to Pop-up of MAP on Portal for ArcGIS

On a display of Map viewer, select “More Options” and “Configure Pop-up”.



Editing left box, you can set label.



Note: Using “ADD” button, you can realize advance setting of Pop-up.

Pop-up Contents

Display: A list of field attributes

These field attributes will display:

- COUNTIES {counties}
- SUM_AGB_CO {sum_agb_co}
- SUM_BGB_CO {sum_bgb_co}
- TOTAL_CO2 {total_co2}

Configure Attributes

Attribute Expressions

Adding expressions allows you to create new information from existing fields for use in pop-ups.

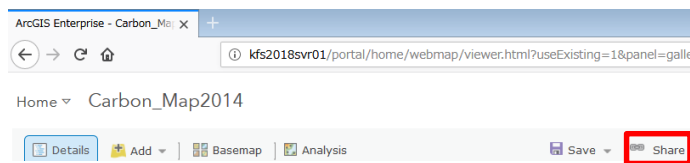
ADD

Area_HA {expression/expr0}

(5) How to share your data

This setting is important for the data to publish on FIP site.

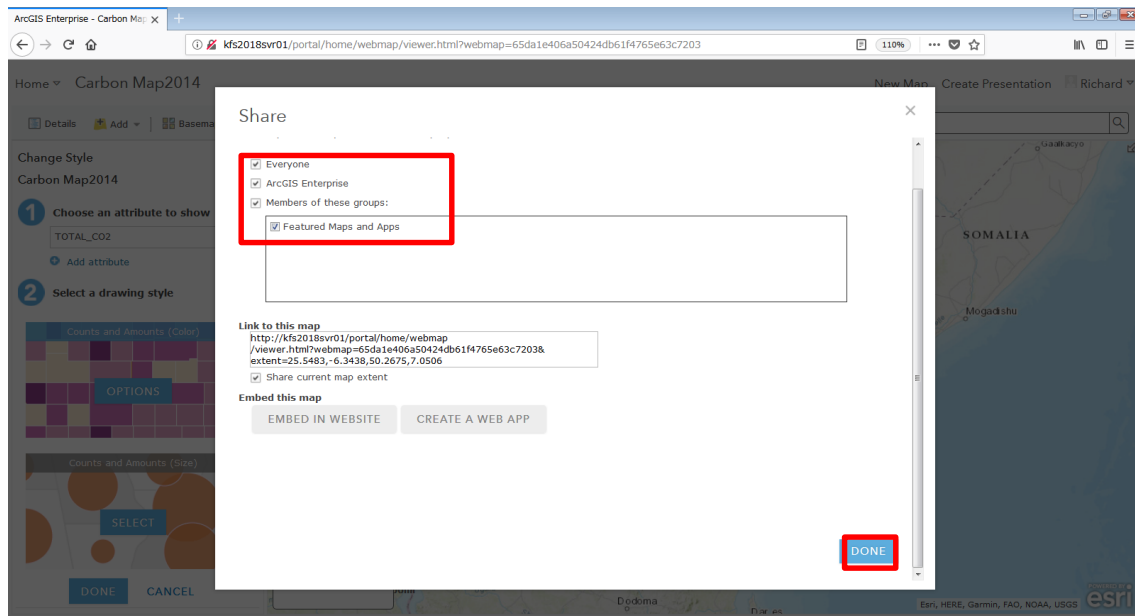
On a display of Map viewer, push “Share” button.



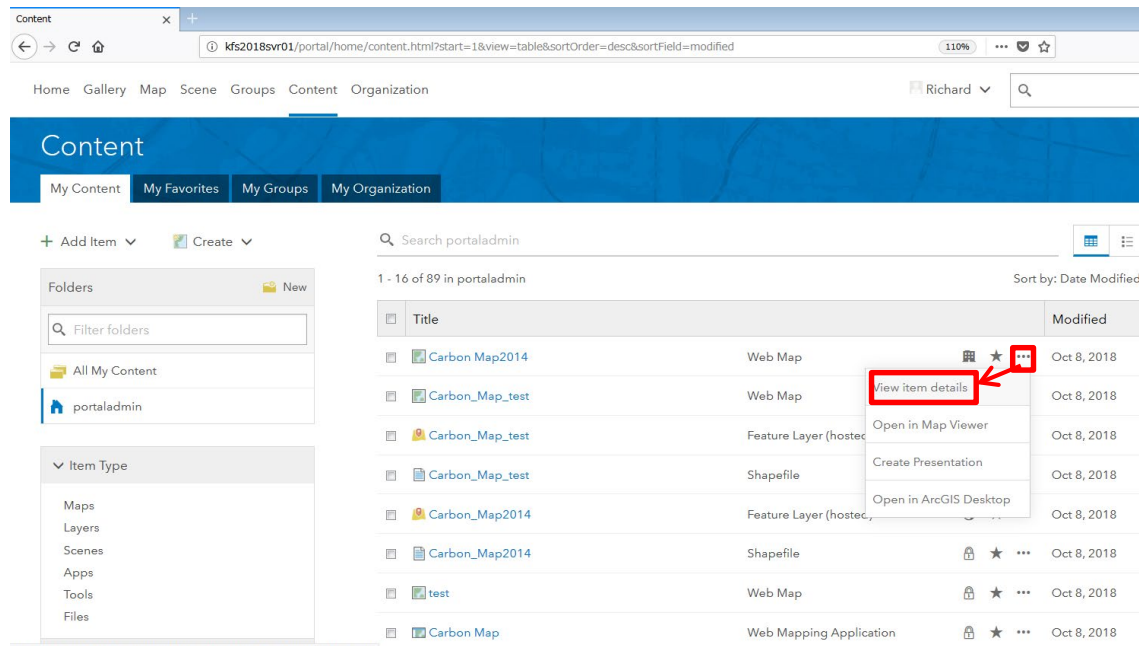
On Share display, select the scope of sharing the data and “DONE” button.

Note: If the data is necessary to import into FIP site, select Everyone.

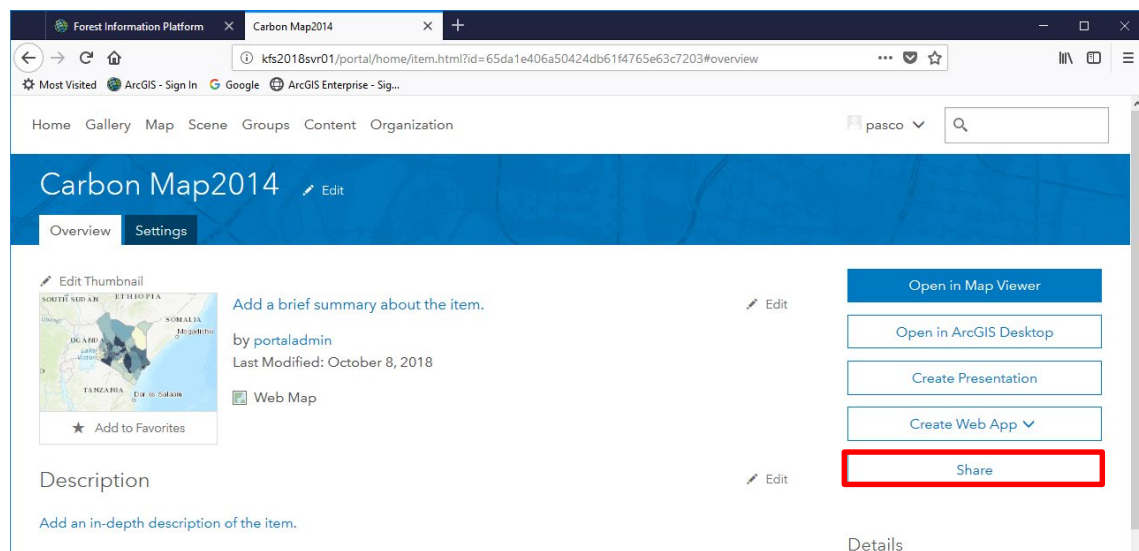
On the other hand, if you don't want to share, you don't have to any check.



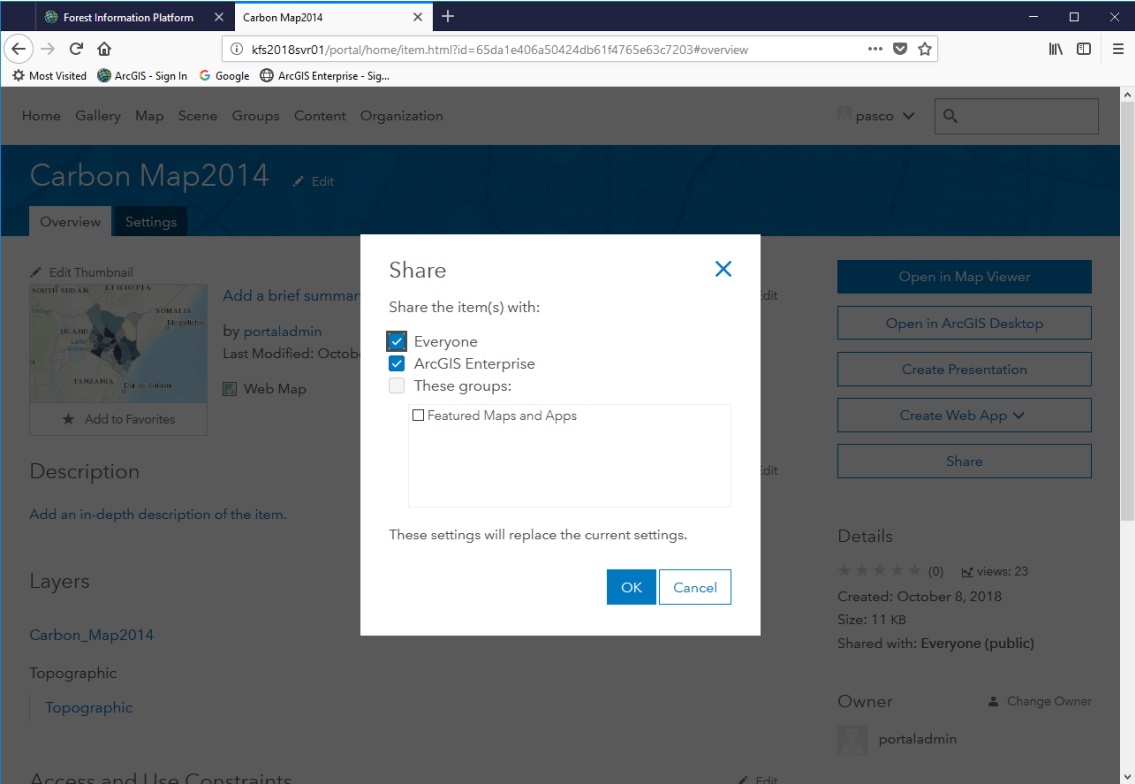
On Content display, you can change the setting of sharing. Select “View item details”.



On Overview display, push “Share” button.

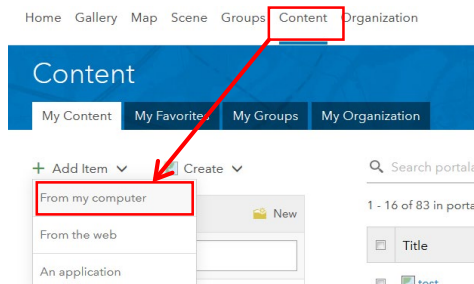


On Share display, you can change the setting of sharing.



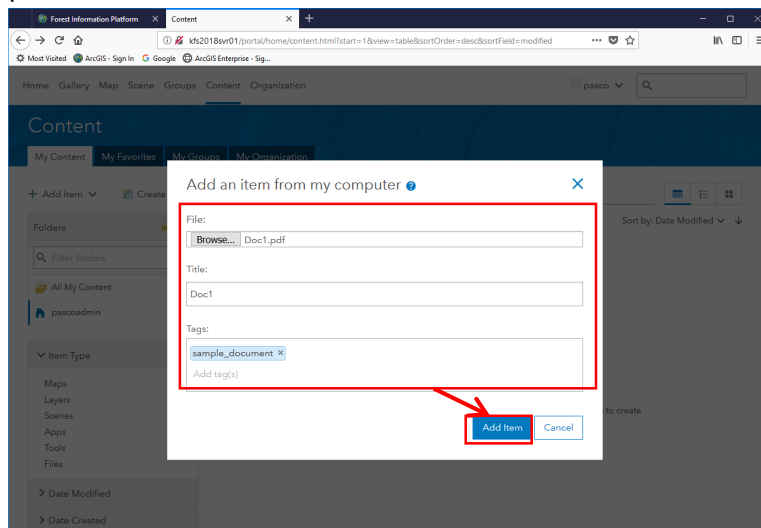
(6) How to import other data

Select “Add Item” list from “Content” page and “From my computer”.



Select the data you want to upload including PDF, xlsx ,doc file and so on.

And register “Title” and “Tags” for researching the data in portal for ArcGIS and push the “Add Items” button.



If you want to share this data, with same method, “(5) How to share your data” , you can change the setting.

Forest Information Platform x Content x +

kfs2018svr01/portal/home/content.html?start=1&view=table&sortOrder=desc&sortField=modified#organ...

Most Visited ArcGIS - Sign In Google ArcGIS Enterprise - Sig...

Home Gallery Map Scene Groups Content Organization pasco

Content

My Content My Favorites My Groups My Organization

Item Type

- Maps
- Layers
- Scenes
- Apps
- Tools
- Files

> Date Modified

> Date Created

> Shared

Search My Organization

1 - 16 of 1792 Sort by: Date Modified

	Title	Modified	Owner	Views
☐	Doc1	Oct 9, 2018	pascoadmin	0
☐	Carbon Map	Oct 8, 2018	portaladmin	28
☐	MAP-8204_Carbon map	Oct 8, 2018	portaladmin	33
☐	Carbon Map2014	Oct 8, 2018	portaladmin	26
☐	Carbon_Map_test	Oct 8, 2018	portaladmin	0
☐	Carbon_Map_test	Oct 8, 2018	portaladmin	3
☐	Carbon_Map_test	Oct 8, 2018	portaladmin	1
☐	Carbon_Map2014	Oct 8, 2018	portaladmin	21
☐	Carbon_Map2014	Oct 8, 2018	portaladmin	1

kfs2018svr01/portal/home/item.html?id=df3154d1ede14da9bd0797b032c85024



Forest Information Platform x Doc1 x +

kfs2018svr01/portal/home/item.html?id=df3154d1ede14da9bd0797b032c85024

Most Visited ArcGIS - Sign In Google ArcGIS Enterprise - Sig...

Home Gallery Map Scene Groups Content Organization pasco

Doc1

Edit

Overview Settings

Edit Thumbnail

Add a brief summary about the item.

by pascoadmin

Last Modified: October 9, 2018

PDF

Add to Favorites

Description

Add an in-depth description of the item.

Access and Use Constraints

Add any special restrictions, disclaimers, terms and conditions, or limitations on using the item's content.

Open

Update

Share

Details

views: 0

Created: October 9, 2018

Size: 310 KB

Shared with: The item is not shared.

Owner

Change Owner

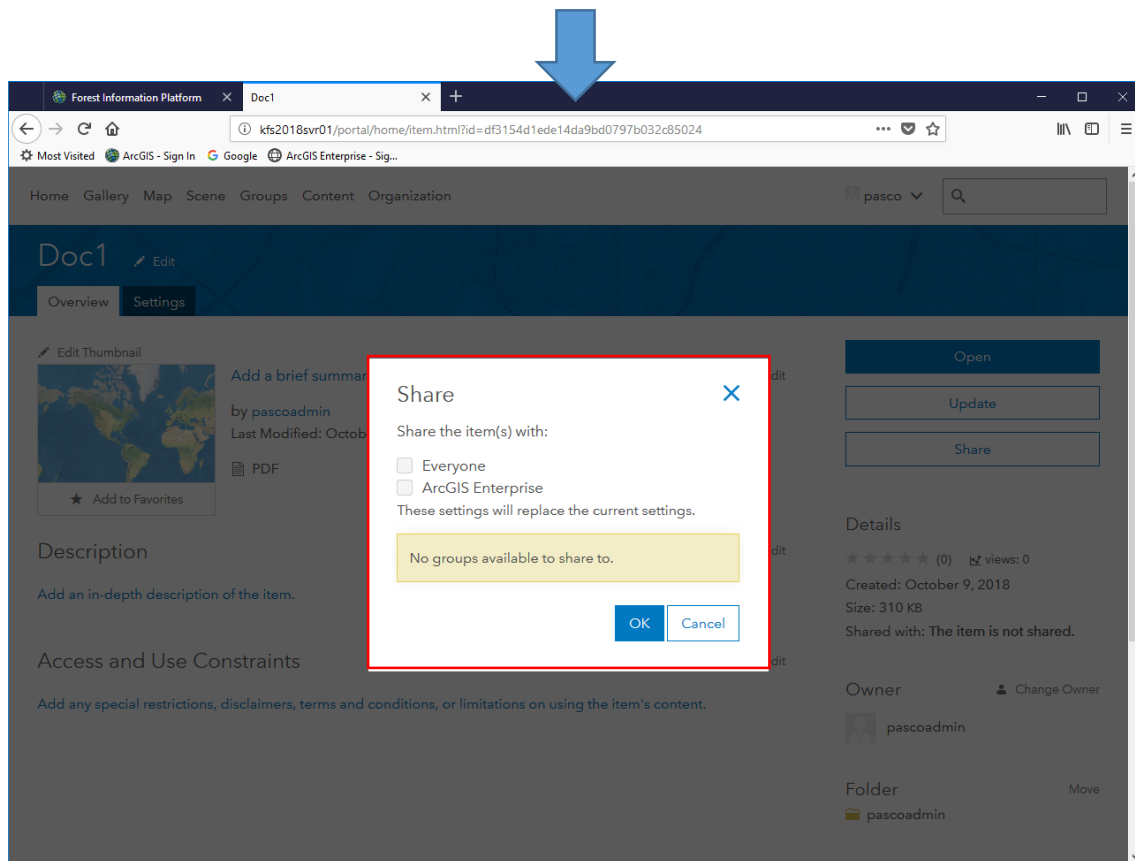
pascoadmin

Folder

pascoadmin

Move



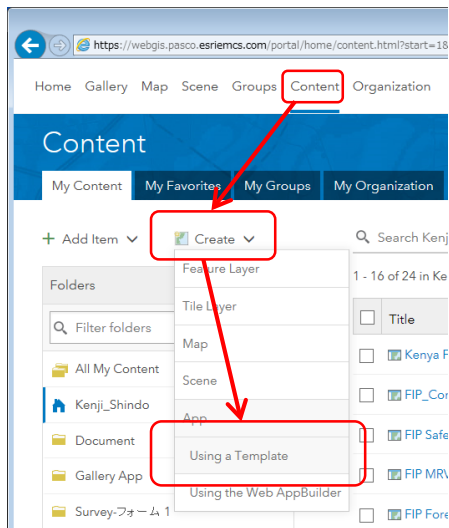


2.4 The order of constructing FIP

This chapter shows how the framework of FIP is constructed. With understanding this chapter, you can edit or update FIP.

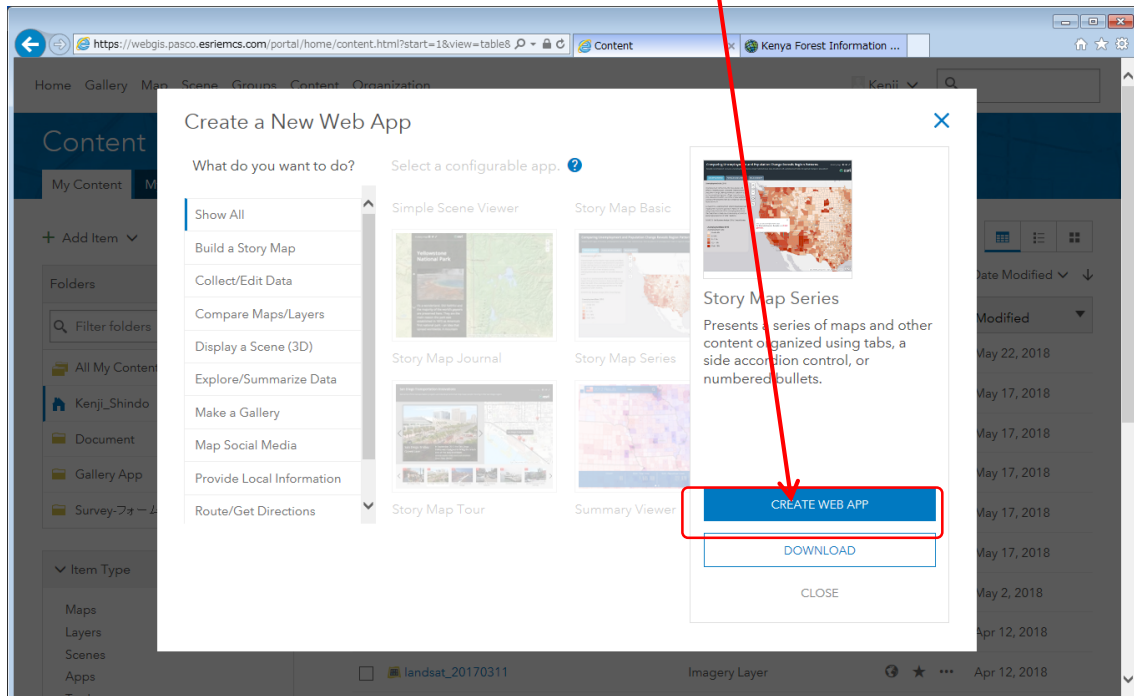
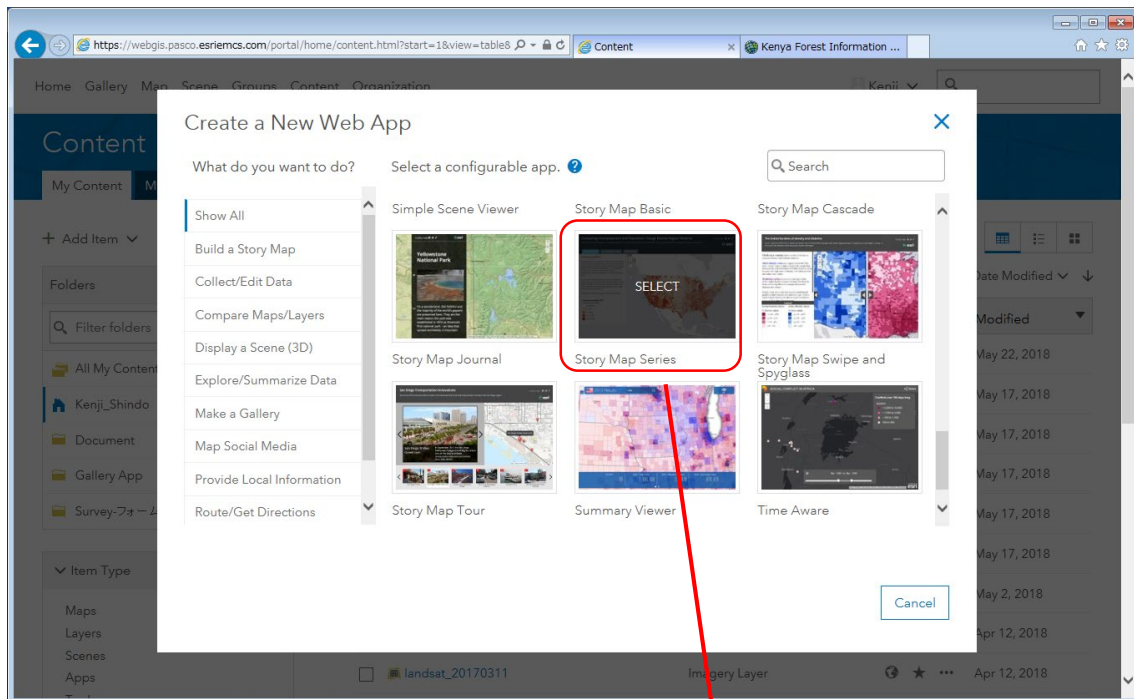
(1) Making contents

Select “Create” list from “Content” page and “App Using a Template”.



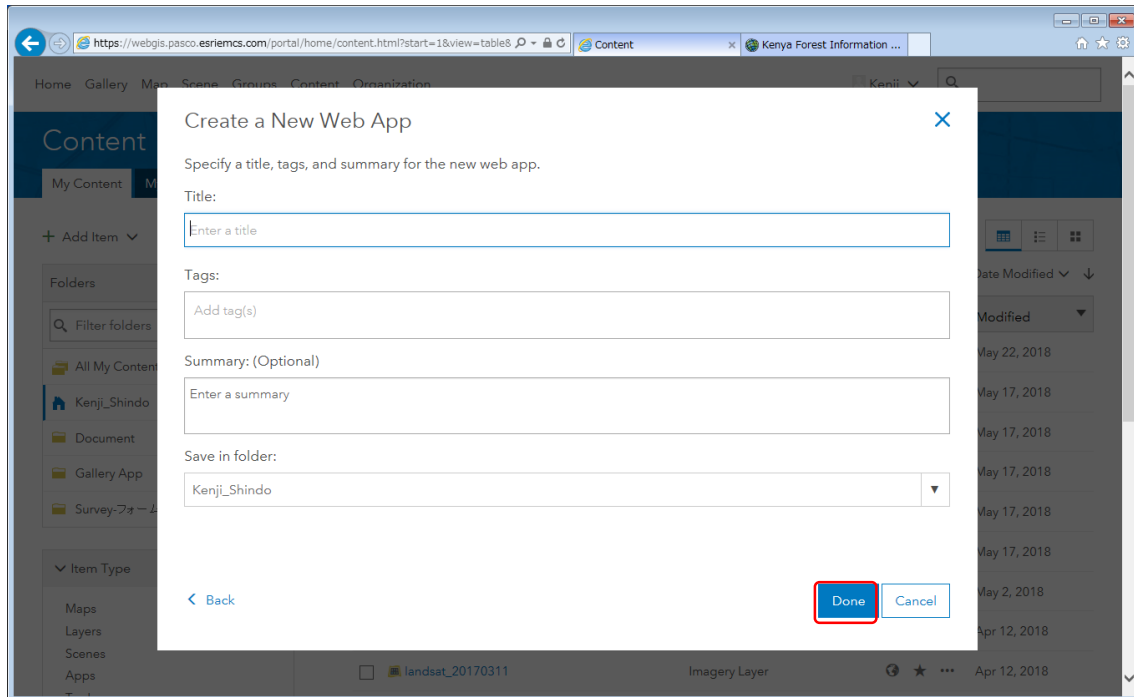
(2) Selection of template

From templates, select “Story Map Series” and push “CREATE WEB APP” button.



(3) Setting App including Title and so on.

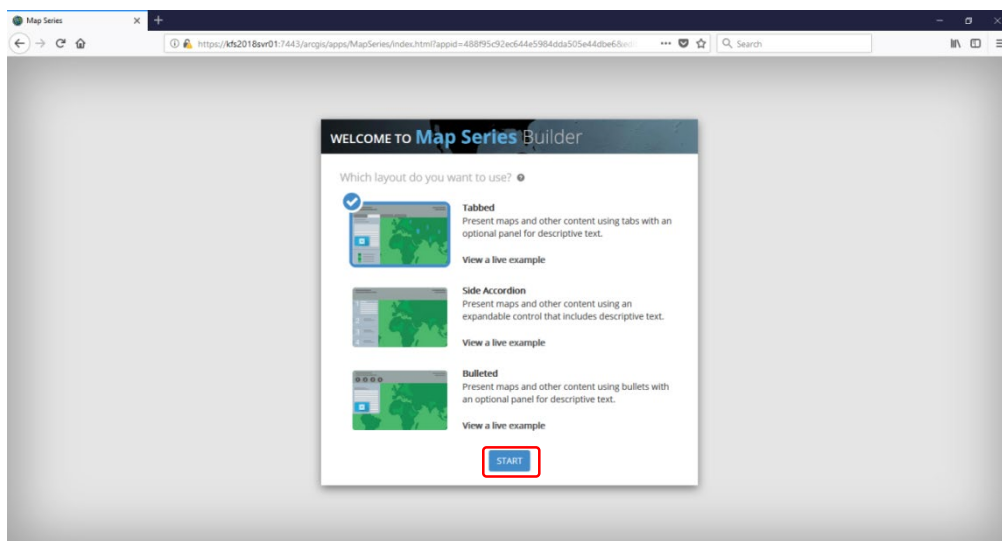
Register title to make everyone understand and push "Done" button.



(4) Setting App's layout

Select app layout from "Tabbed", "Side accordion" and "Bulleted". After that, push the "Start" button.

Note: It is easy to change layout after this setting.

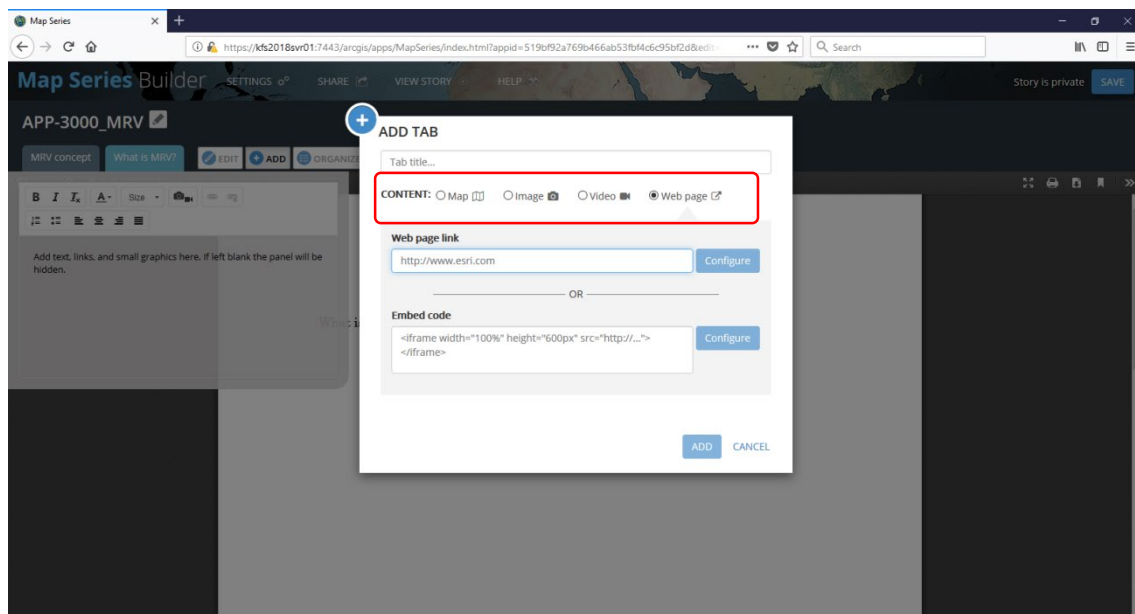


(5) Addition of contents

Designate contents name and contents type to add.

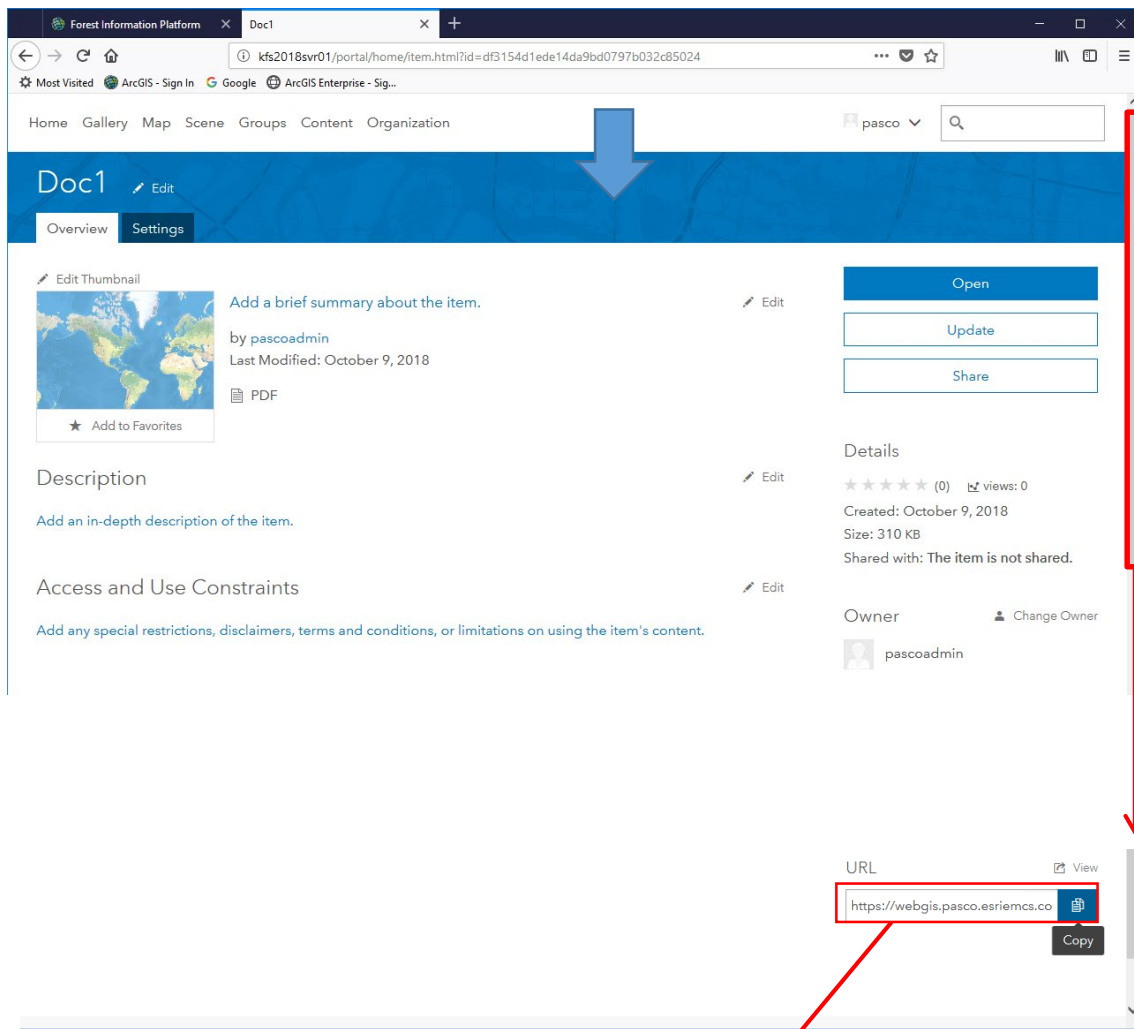
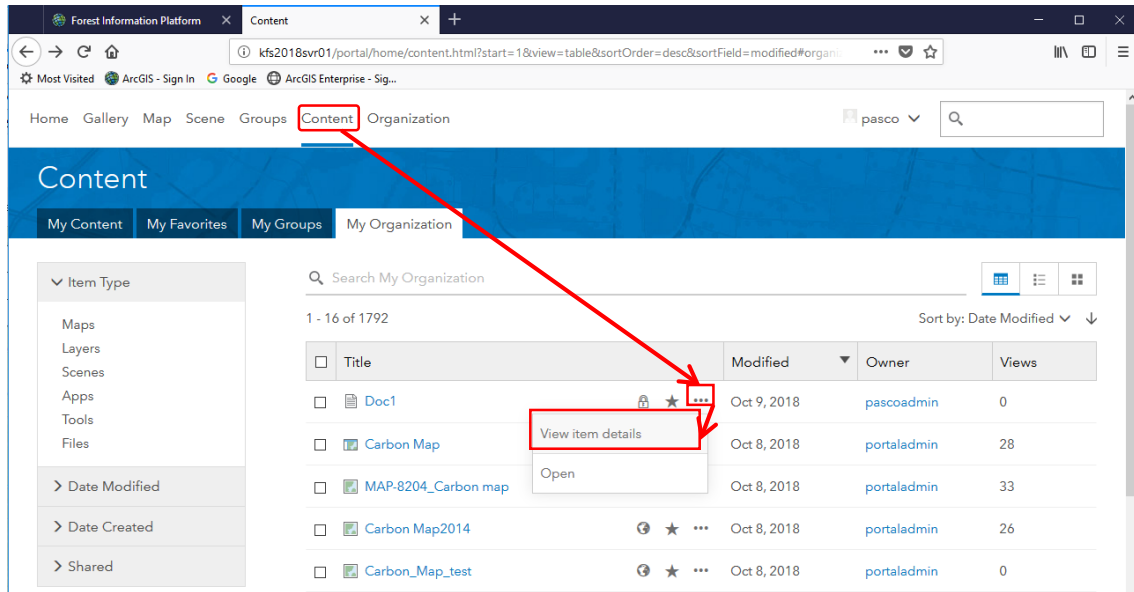
Contents type to add is as follows.

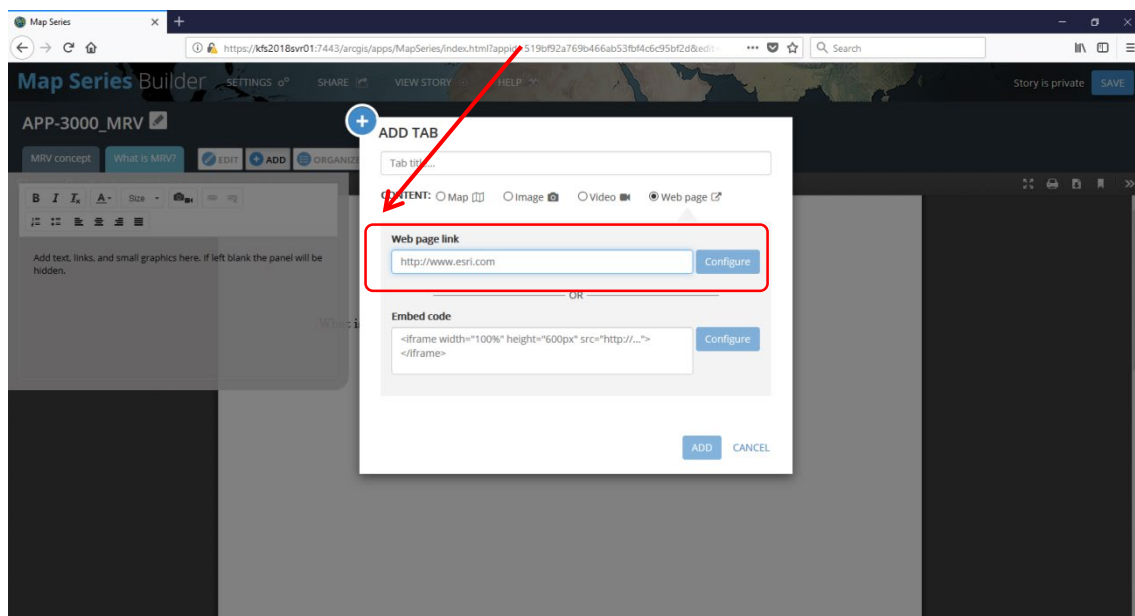
- ① Map : Maps registered into contents
- ② Image : Image data including photo or picture , the service Google+ and web page of Image
- ③ Video : Web page including You Tube
- ④ Web page : Web page Linkage or Embedding code



The contents type “Web page” enables to display other App contents, setting the URL of other contents. This setting enables to display many type information using access rights of Portal for ArcGIS.

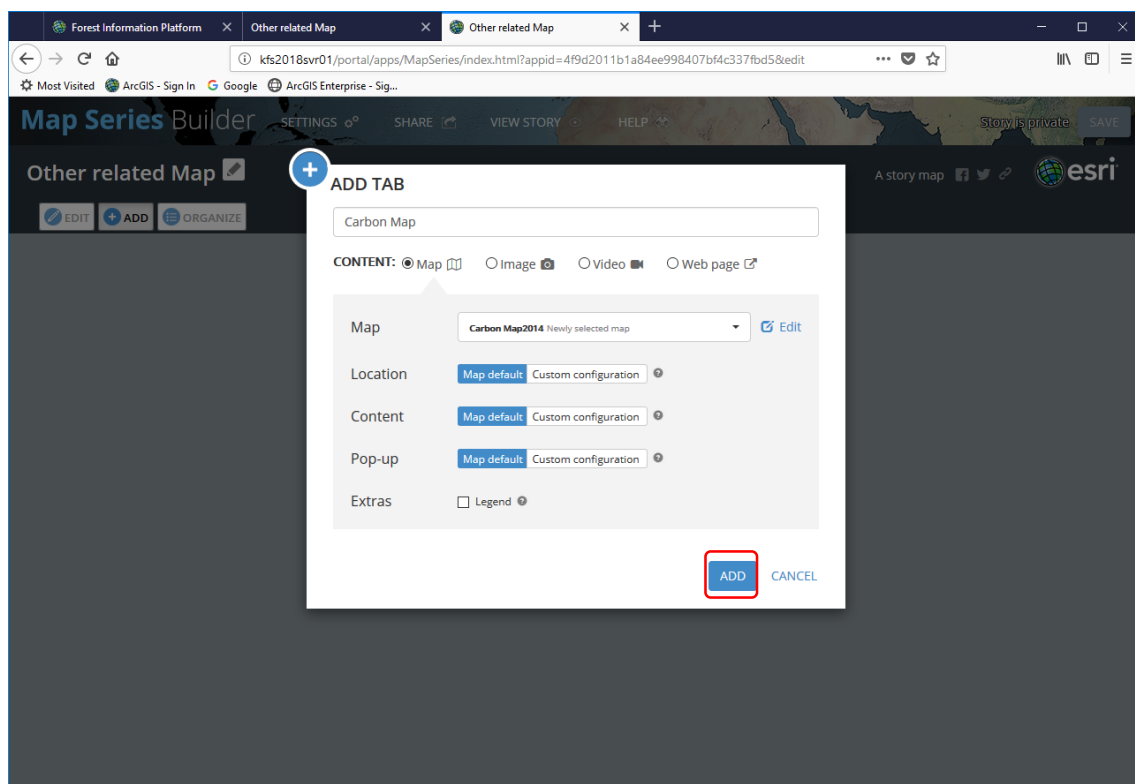
Note: URL setting of “Story Map Series” enables to display layer structure of contents.



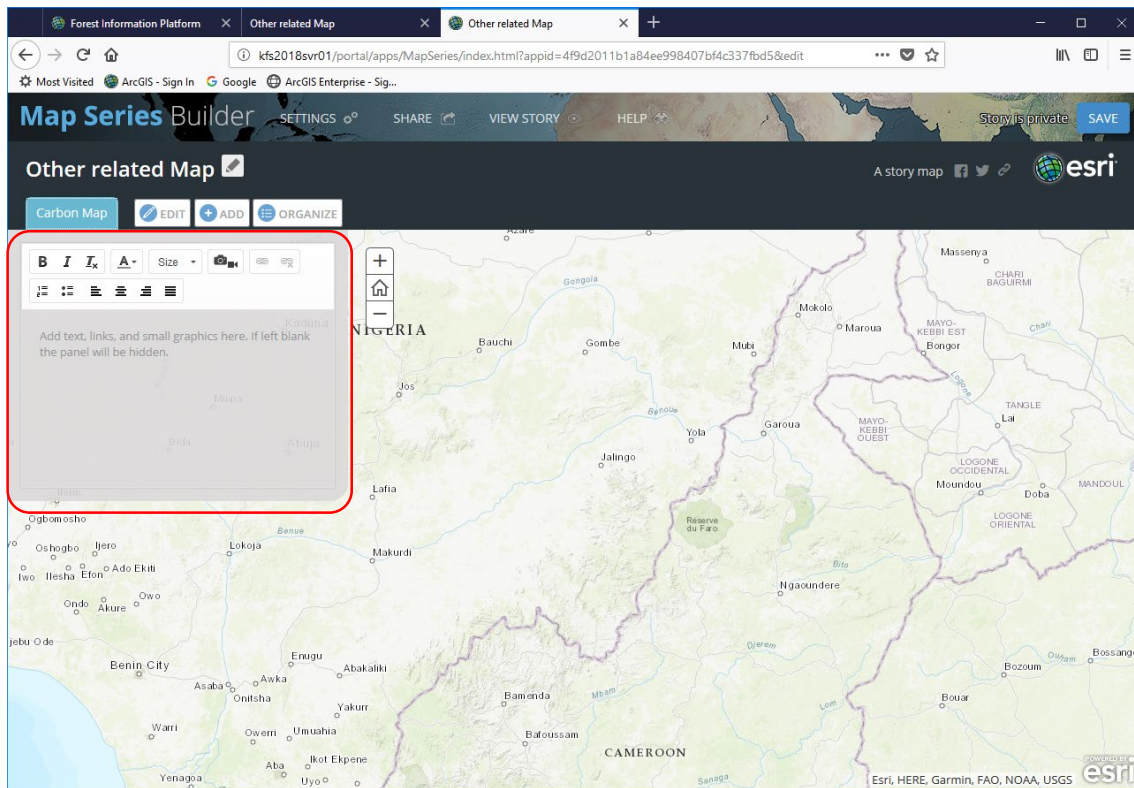


(6) Setting contents including layout

Designating setting of contents including layout and pushing “ADD” button, contents are added.

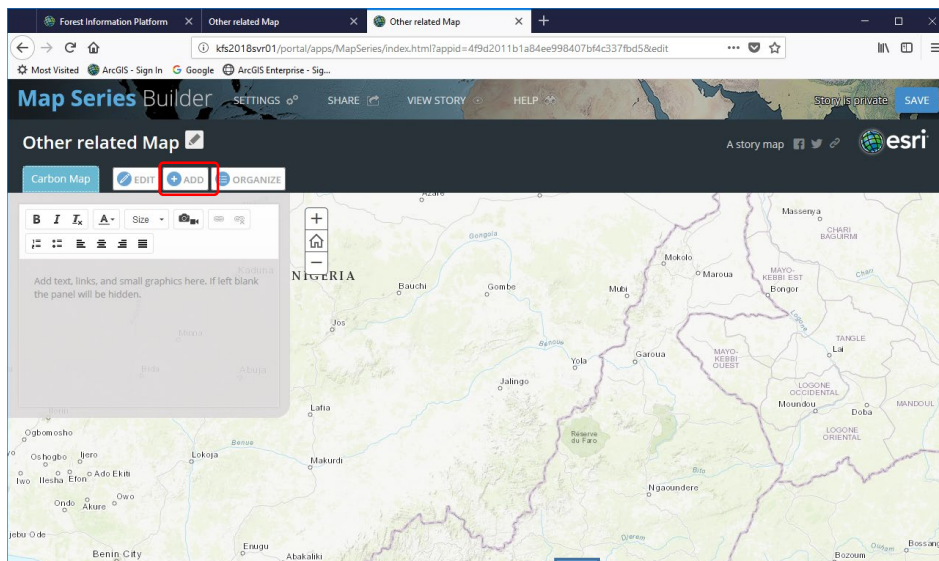


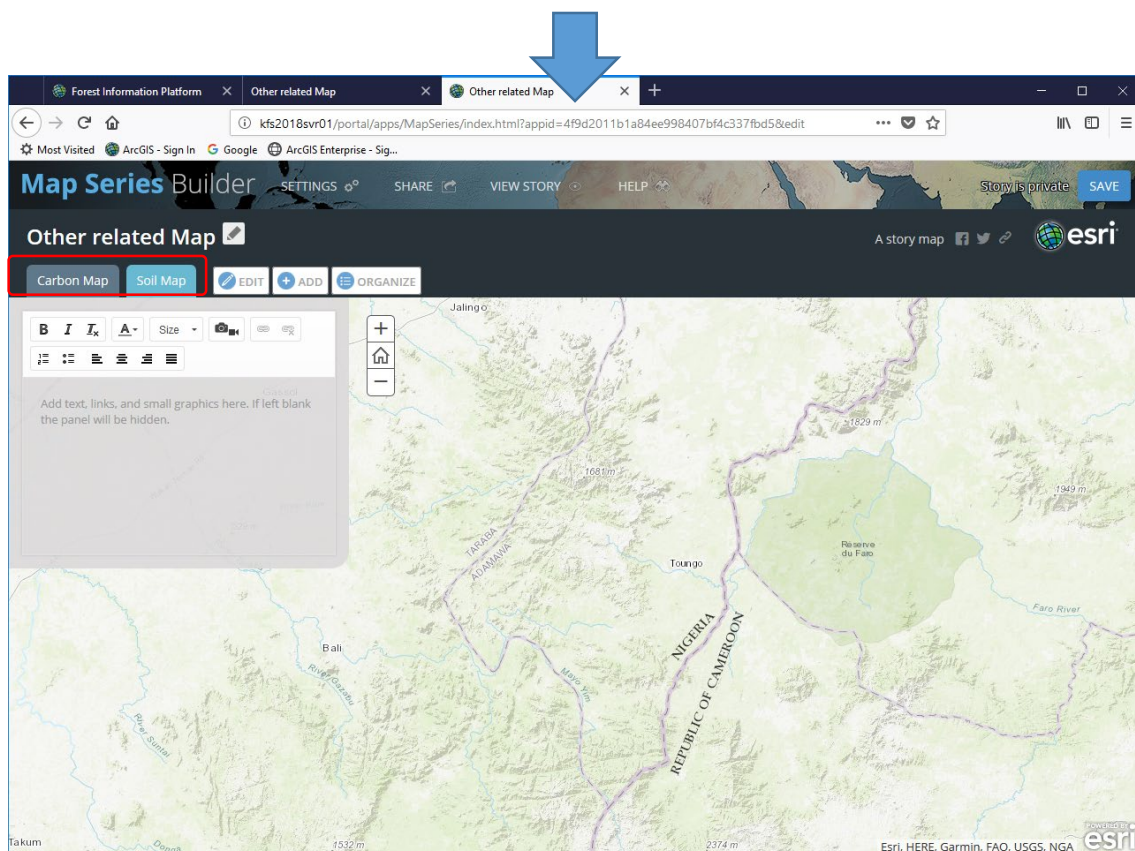
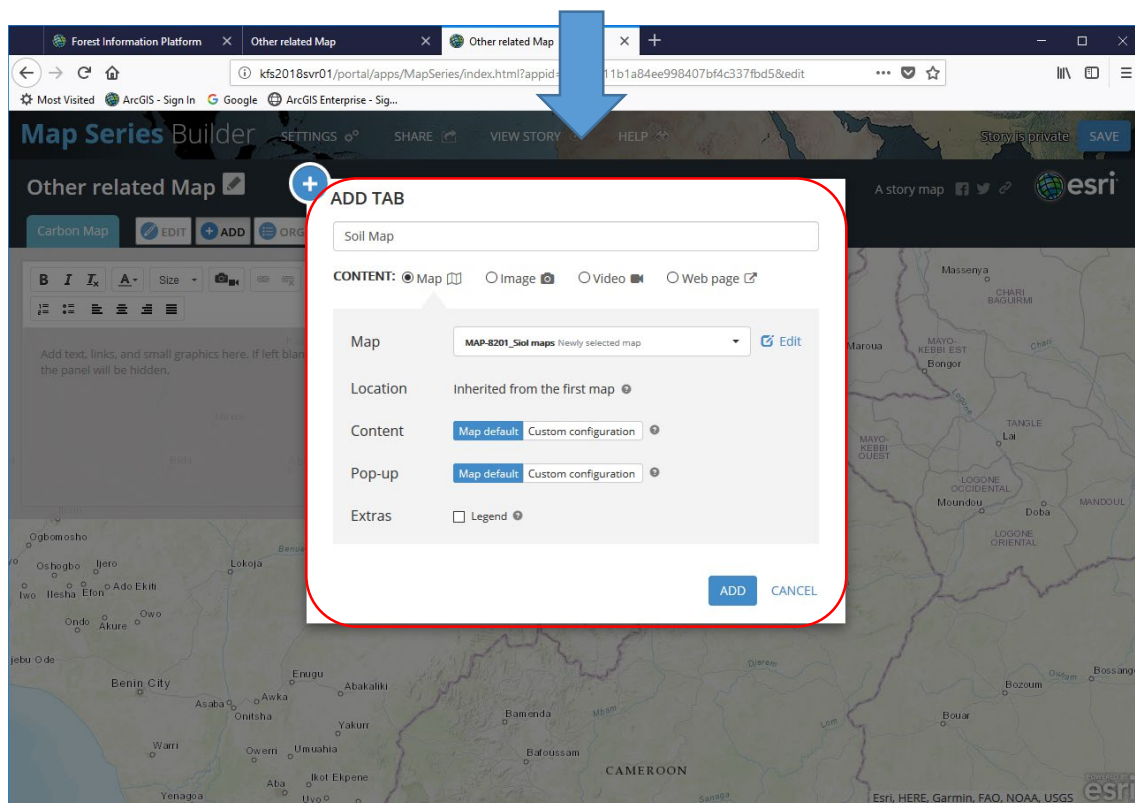
After registering contents, it enables to register explanation or image of contents.



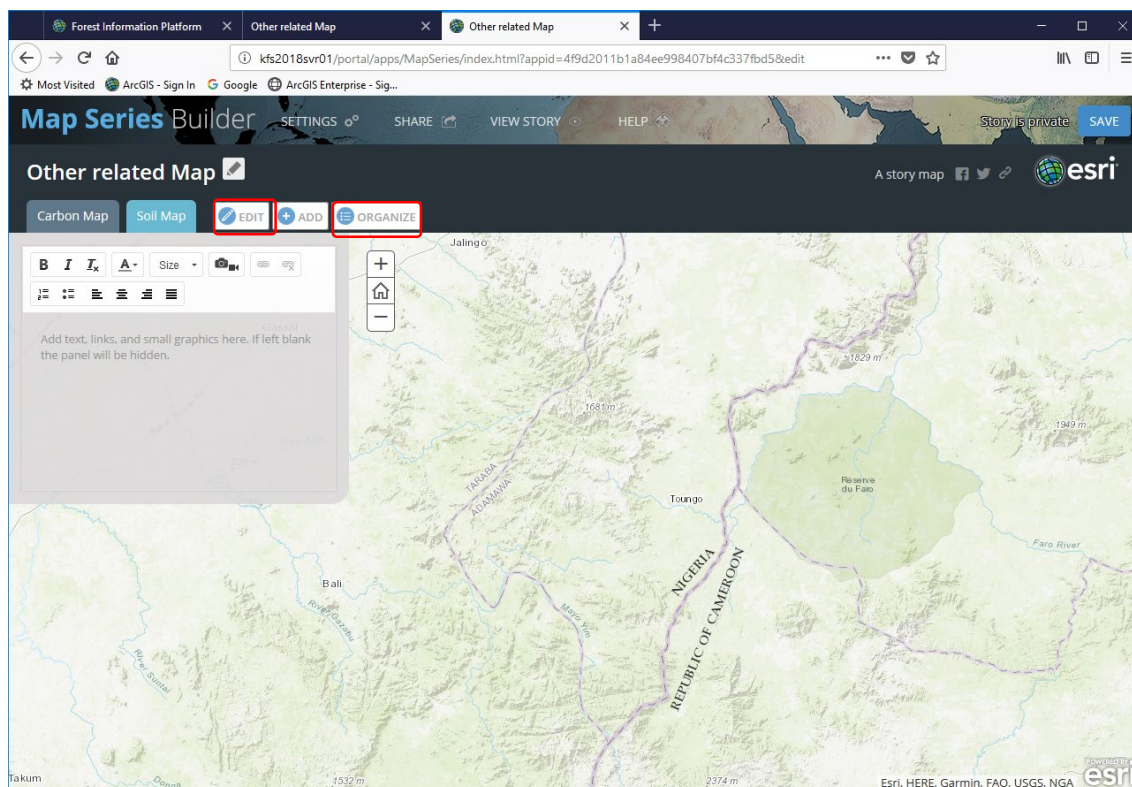
(7) Constructing multiple contents

Pushing “ADD” button and repeat (5)(6), it enables to display multiple contents in an App.

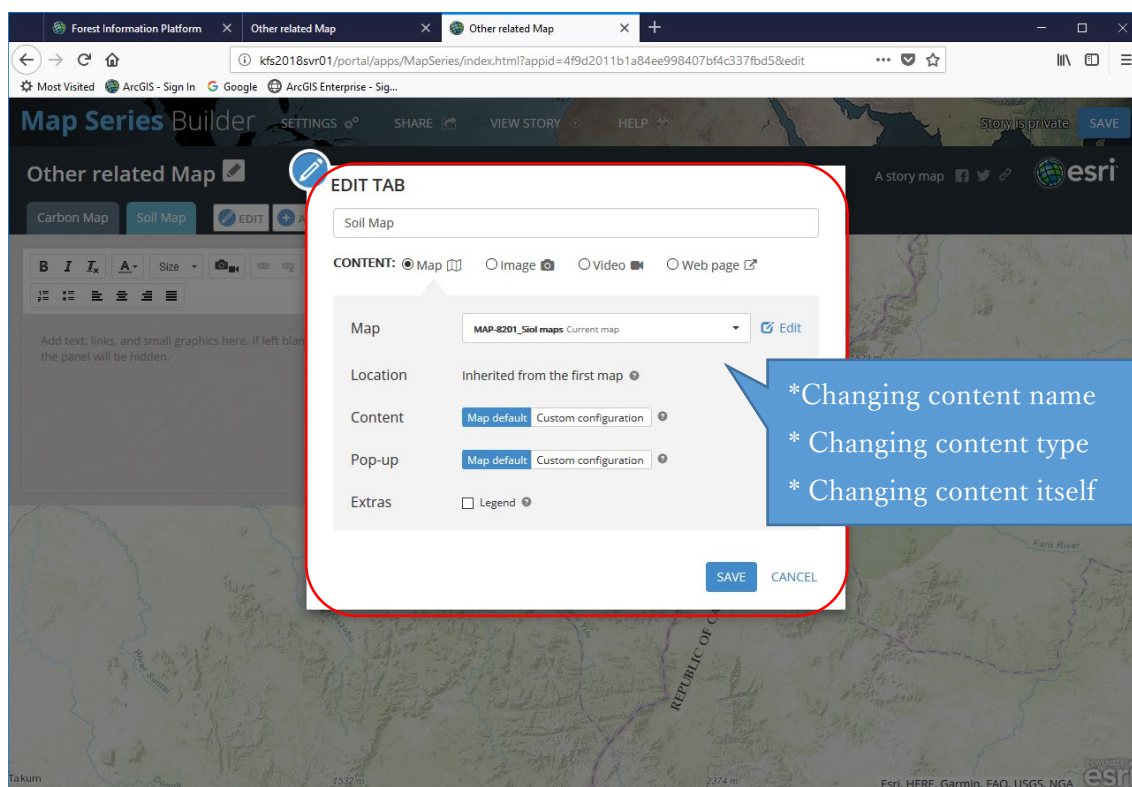




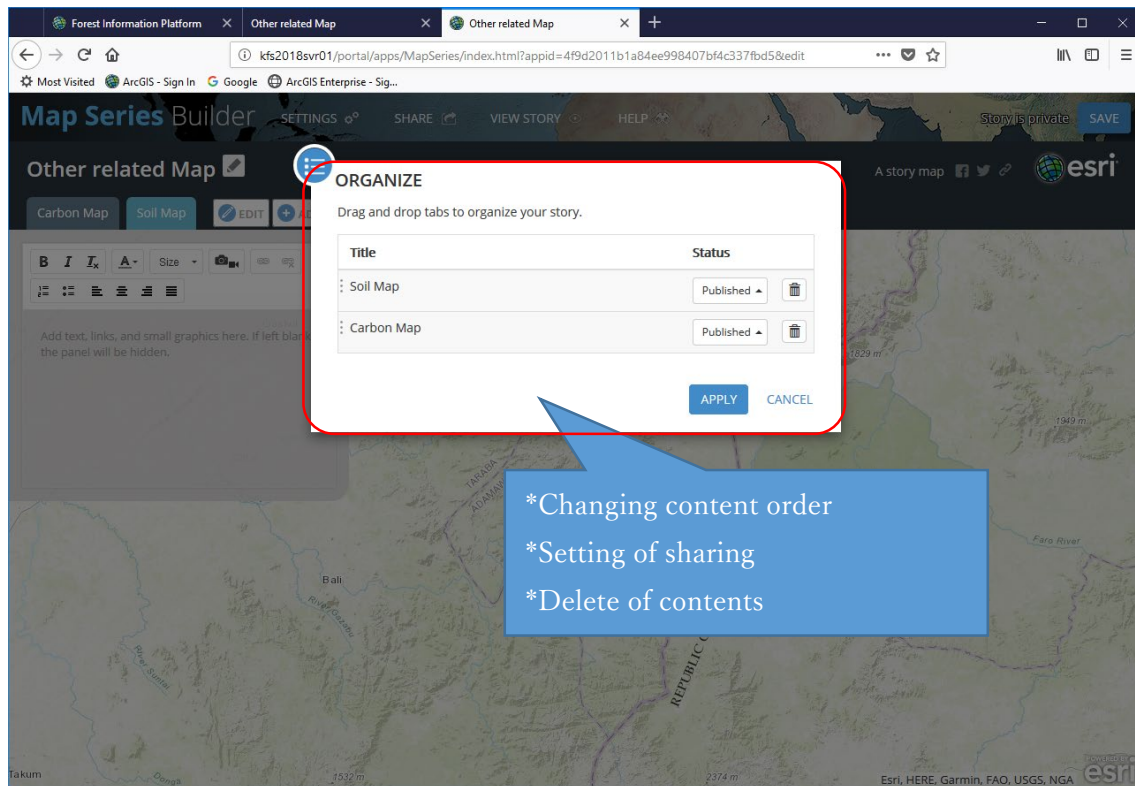
If you want to update or edit content, push “EDIT” button or “ORGANIZE” button”



<EDIT TAB>



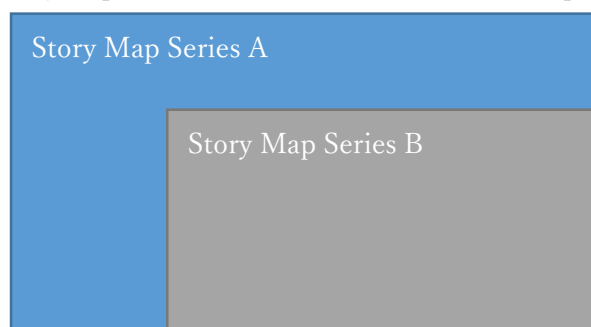
<ORGANIZE>

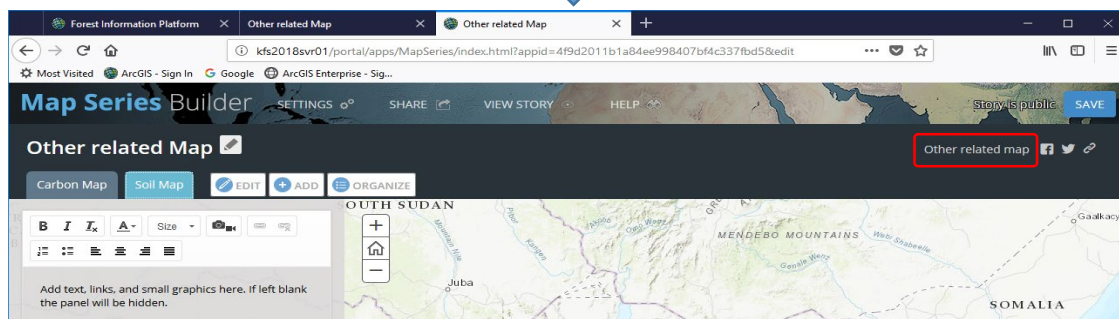
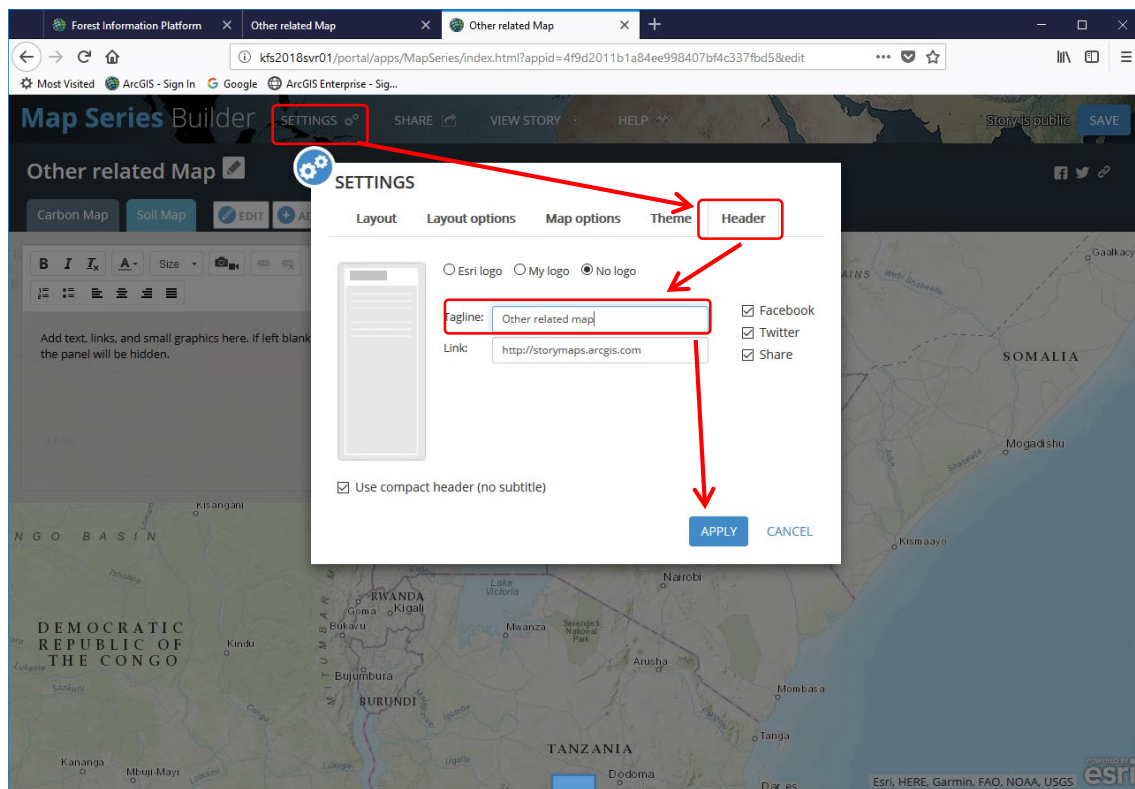


(8) Other setting

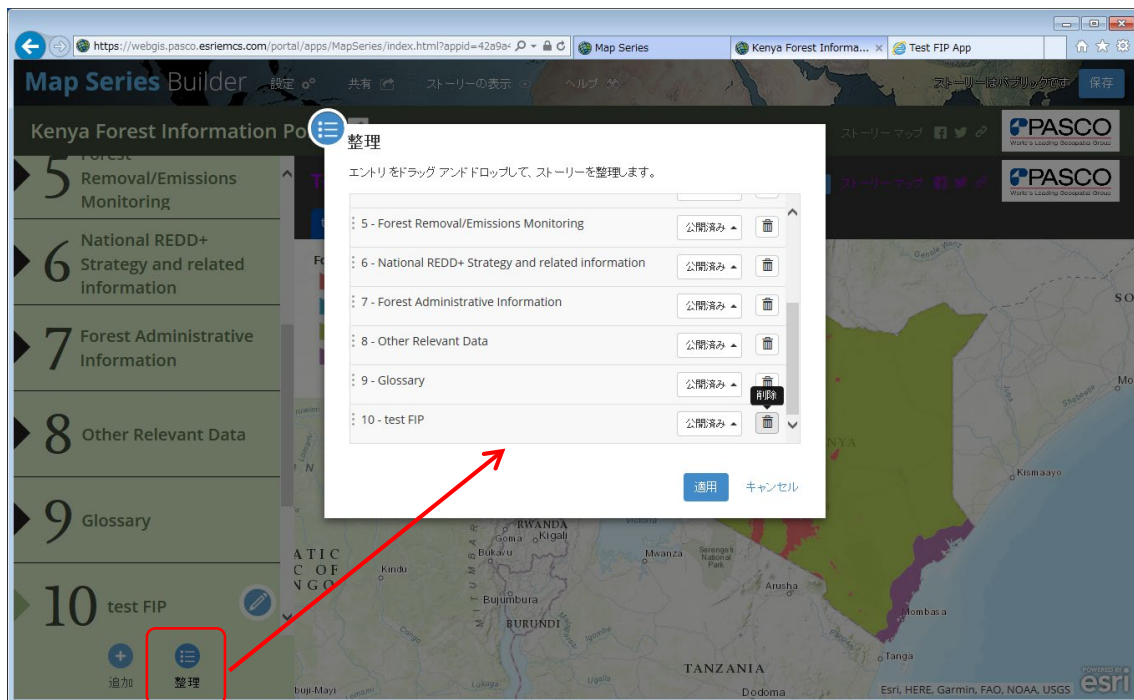
“SETTING” enables to set logotype of Header, display/hidden to share and theme of contents and so on.

Note: As below, “Story Map Series B” is better not to set header display.



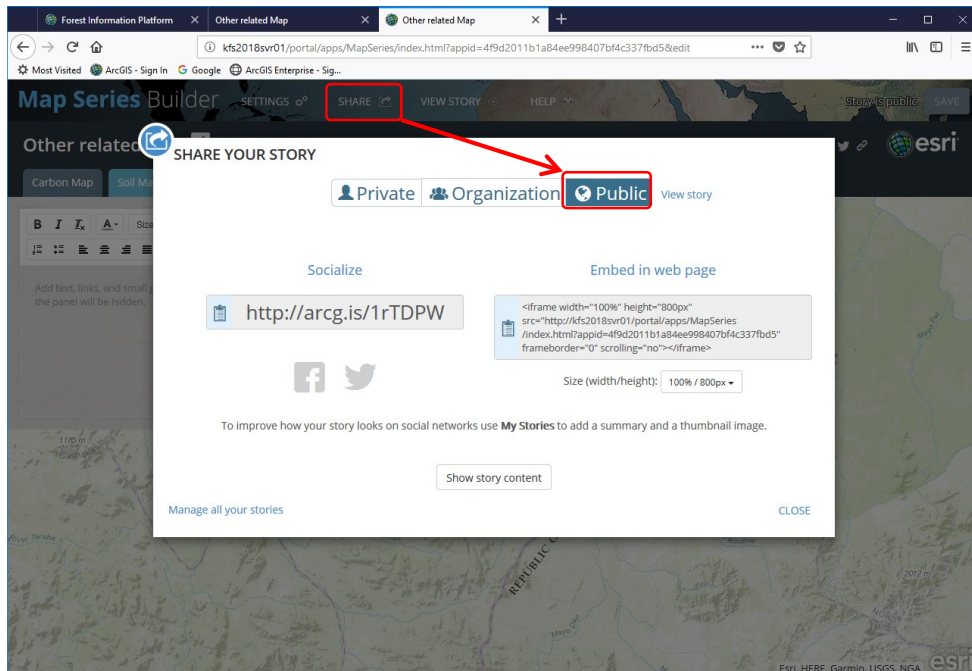


Registered contents enable to manage the display order, delete and so on from "Order:整理" icon.



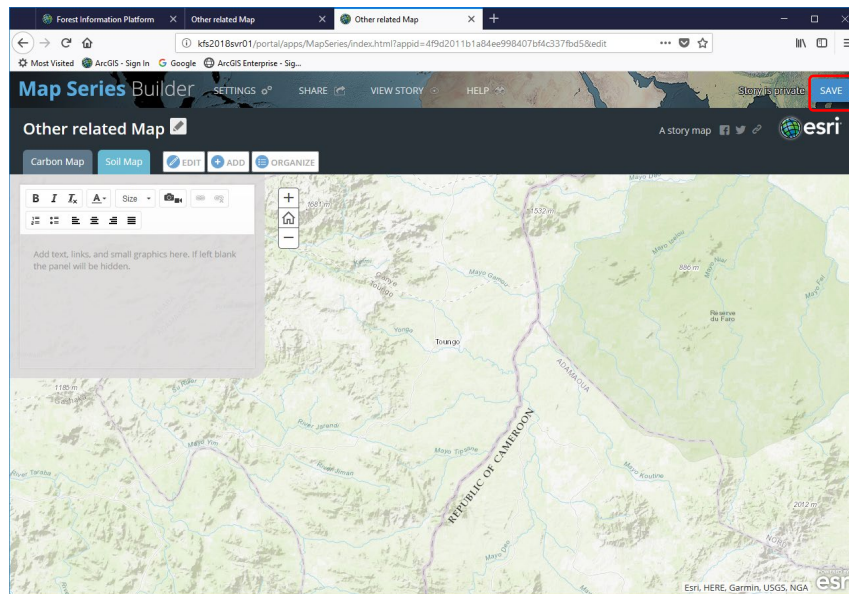
(9) Sharing the template

Using sharing button, you can share this template (Story map Series).



(10) Saving

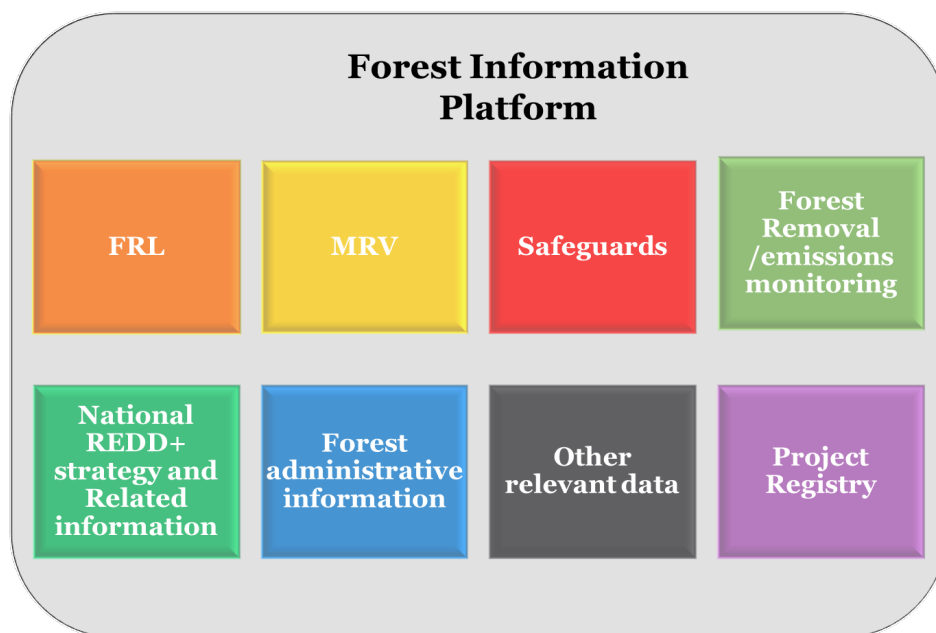
After setting, push the "SAVE" button.



(11) How to edit component

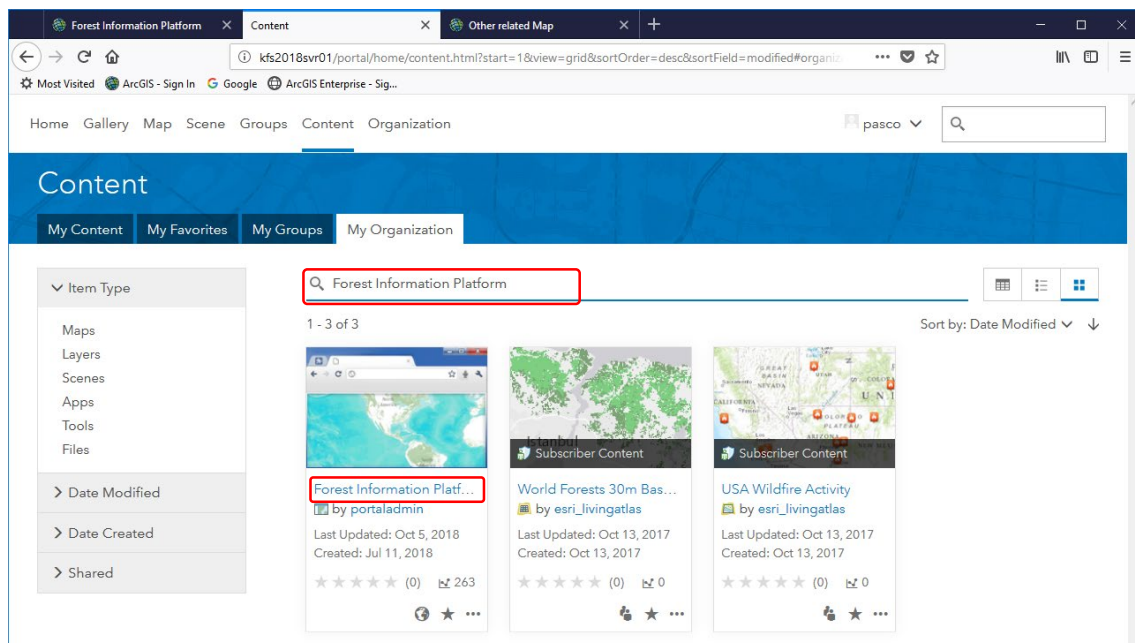
This method is review of above method.

“Component” is main 8 subject of FIP information as below.

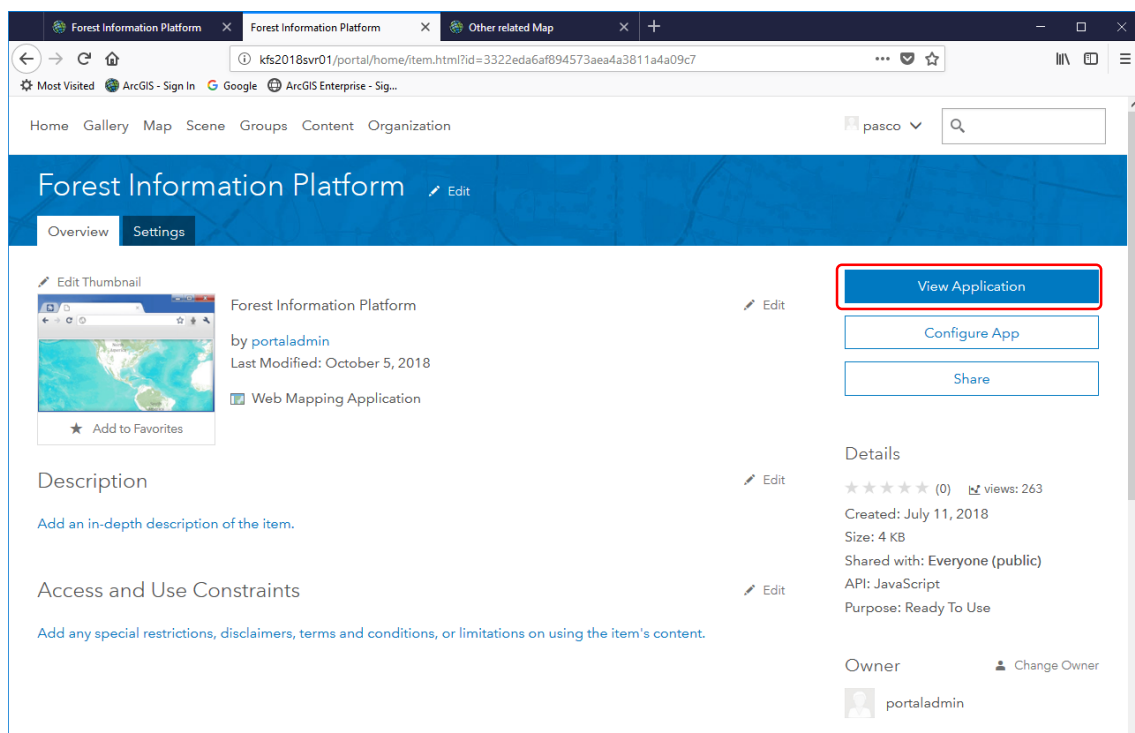


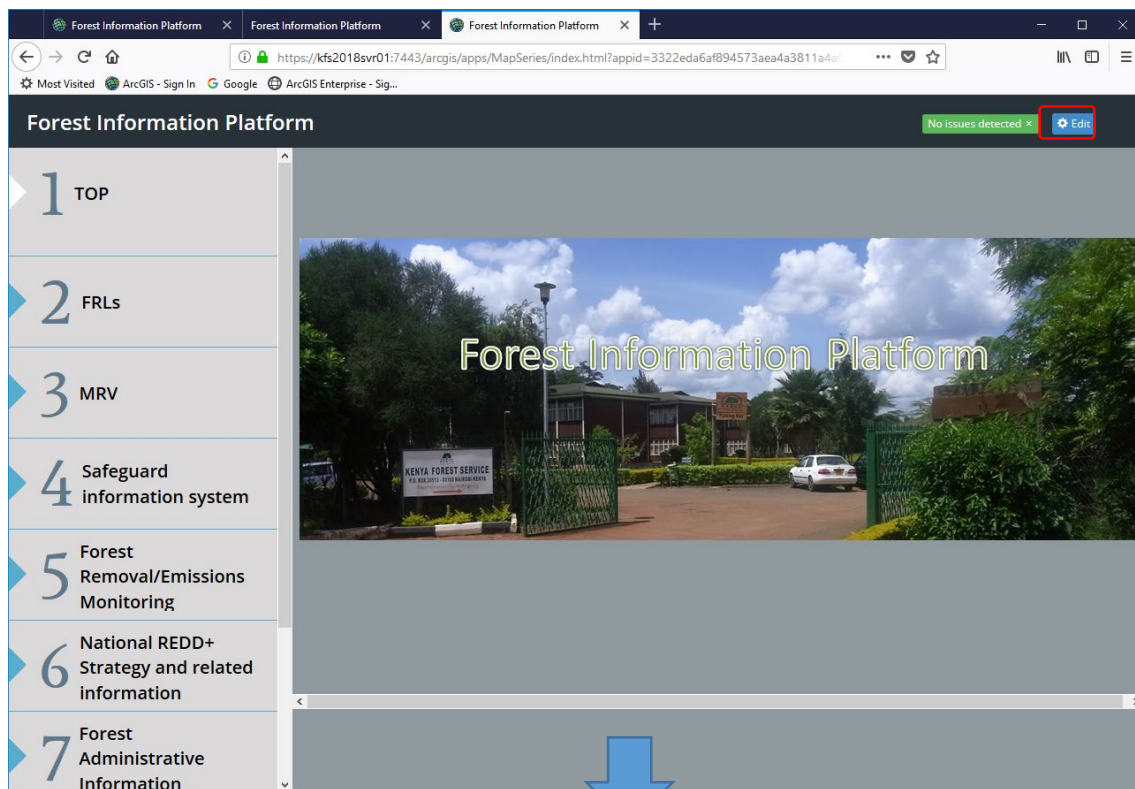
The following explanation shows how to edit component page including adding components or changing component name and so on.

From “Content”, search “Forest Information Platform” and click the contents name.

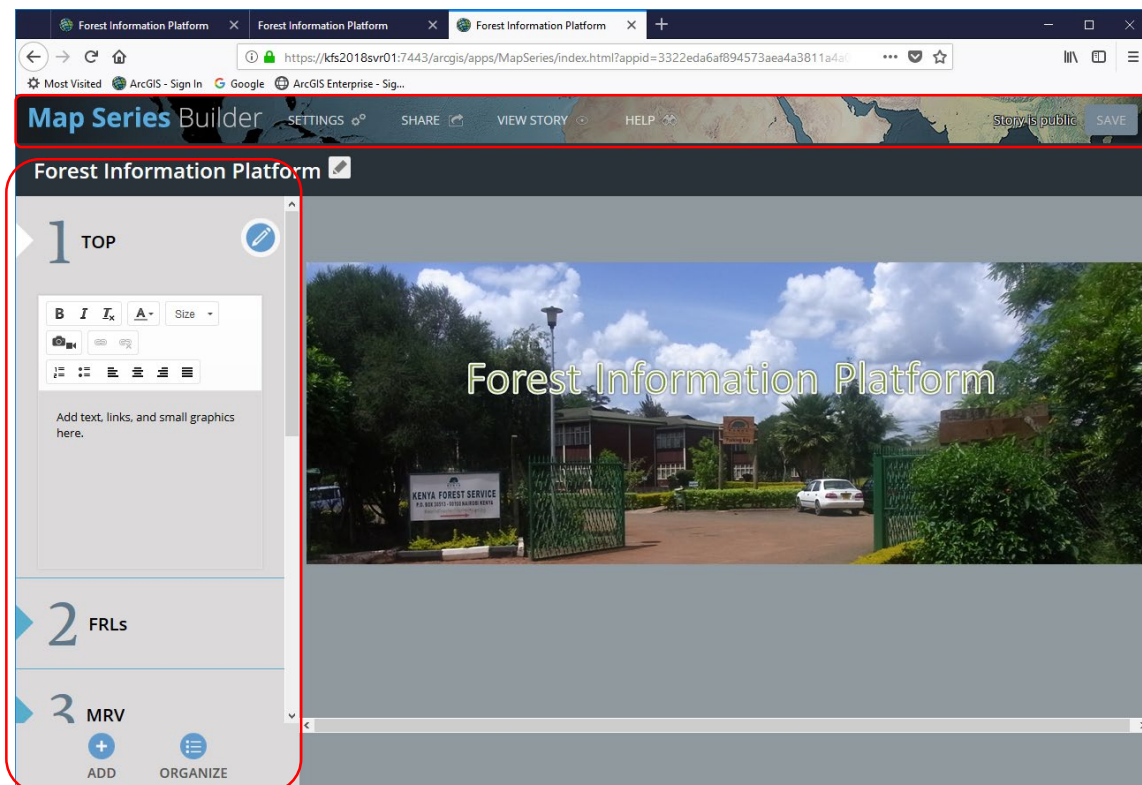


Push “View Application” button.





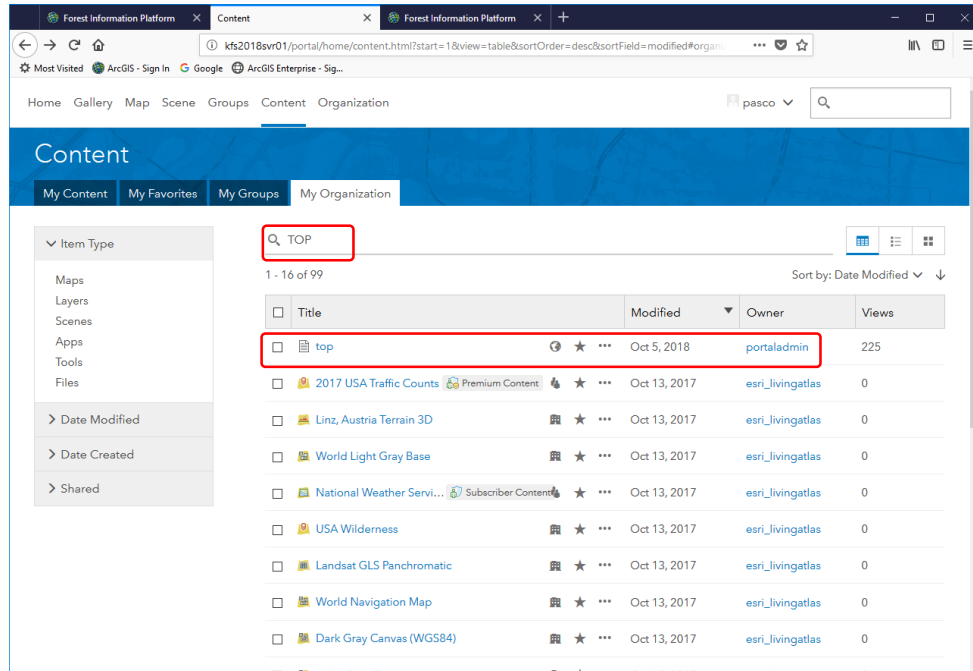
Using these function of red frame, you can edit component display.



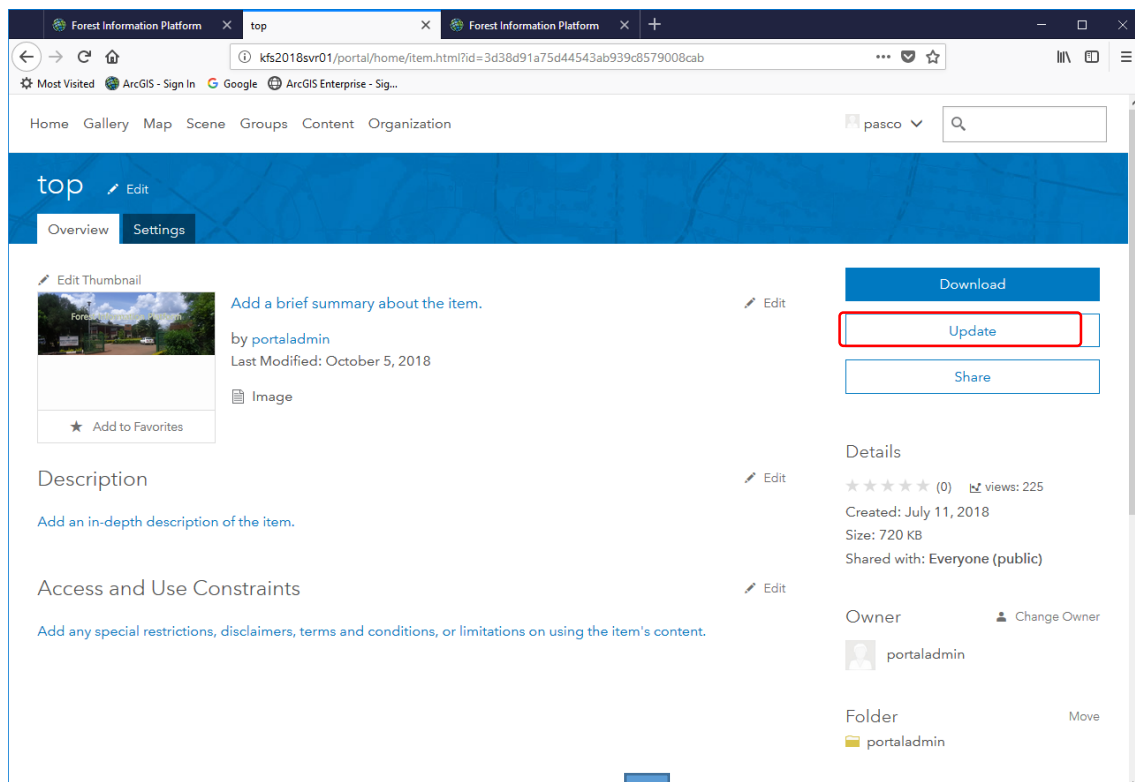
(12) How to edit TOP display

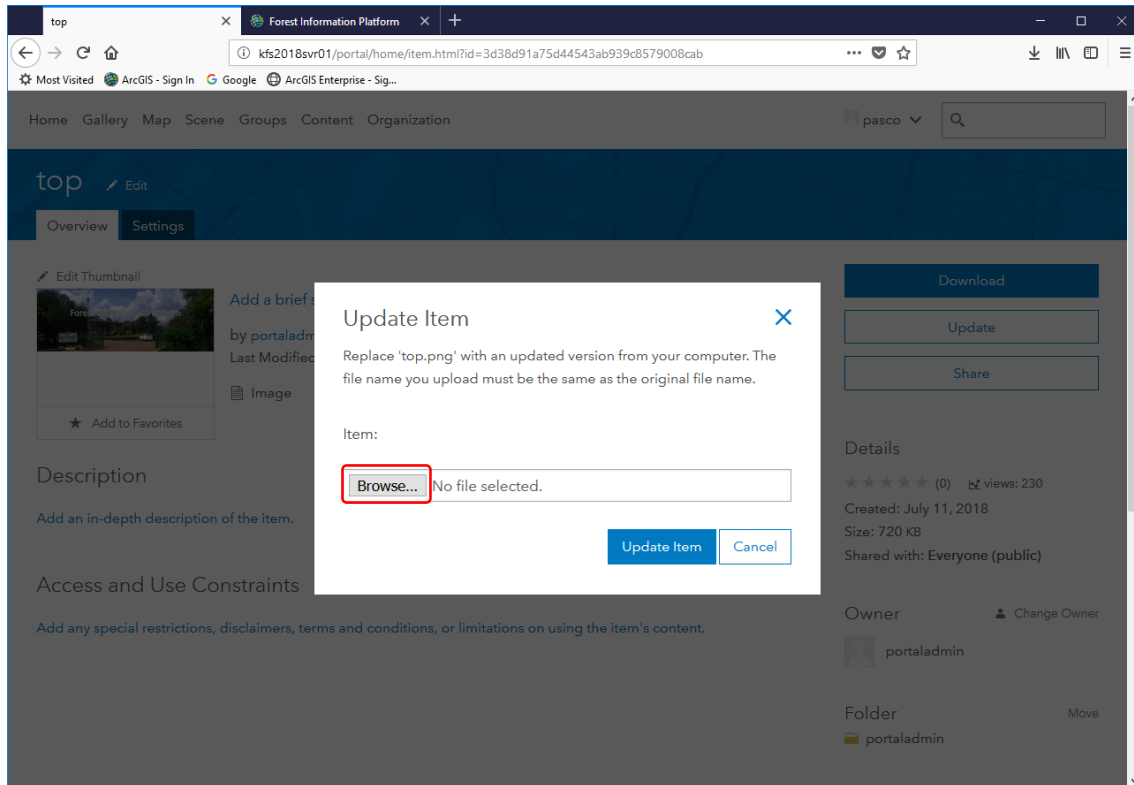
This method is review of above method.

From "Content", search "TOP".



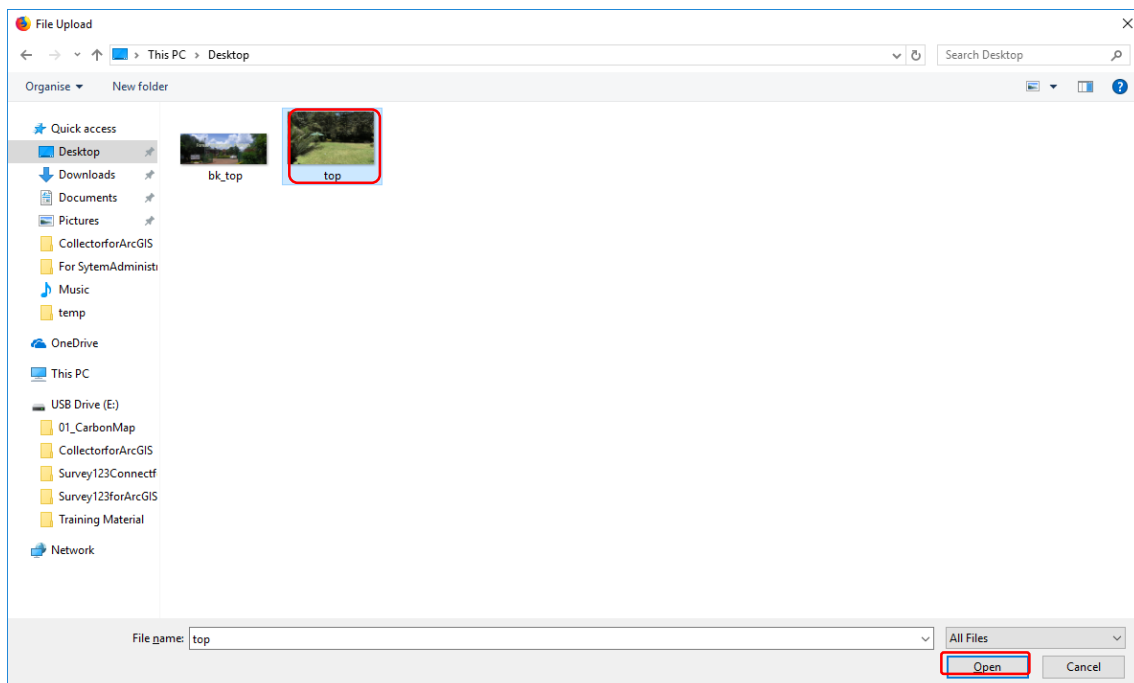
Push "Update" button.

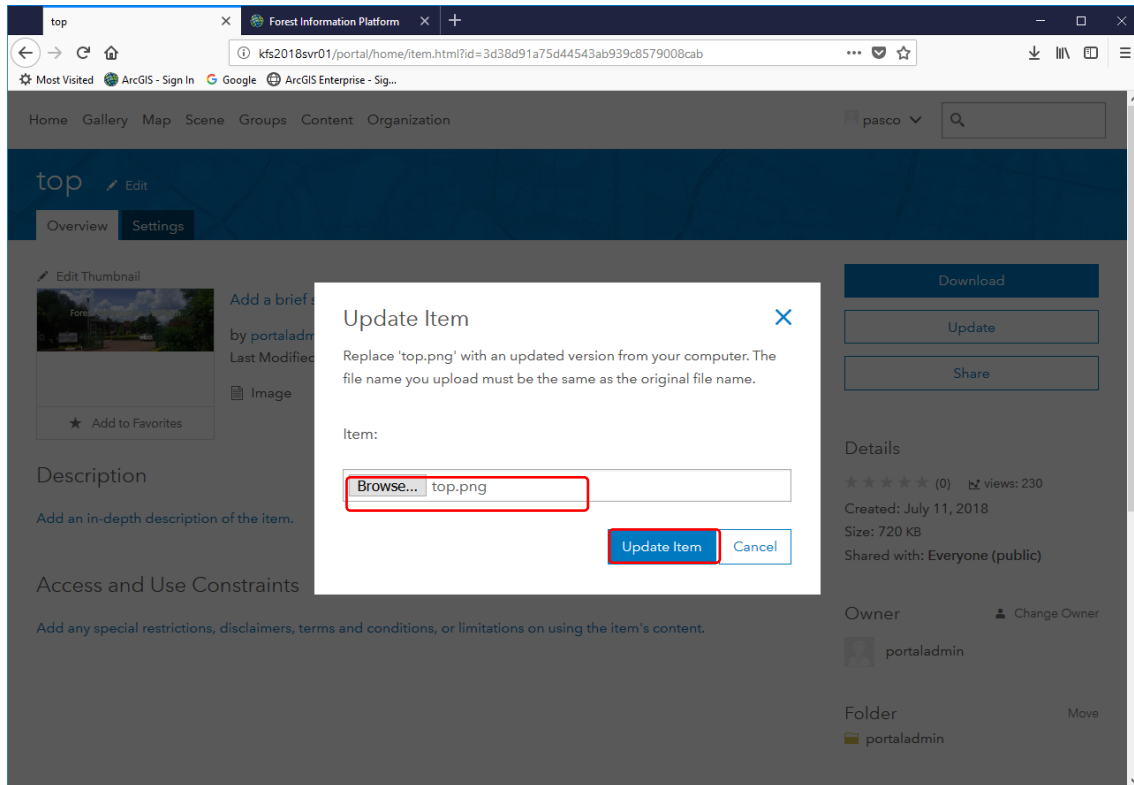




Select updated "top" file.

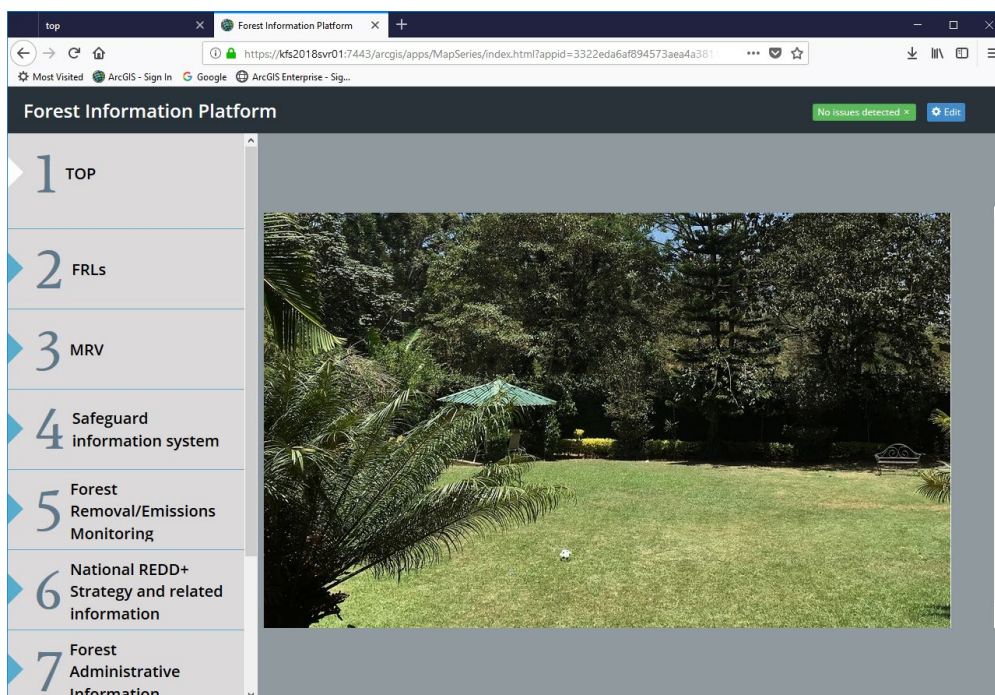
Note: To update image, it's necessary to maintain same file name and file extension "png".





Confirm the change, using following URL

<https://kfs2018svr01:7443/arcgis/apps/MapSeries/index.html?appid=3322eda6af894573aea4a3811a4a09c7>



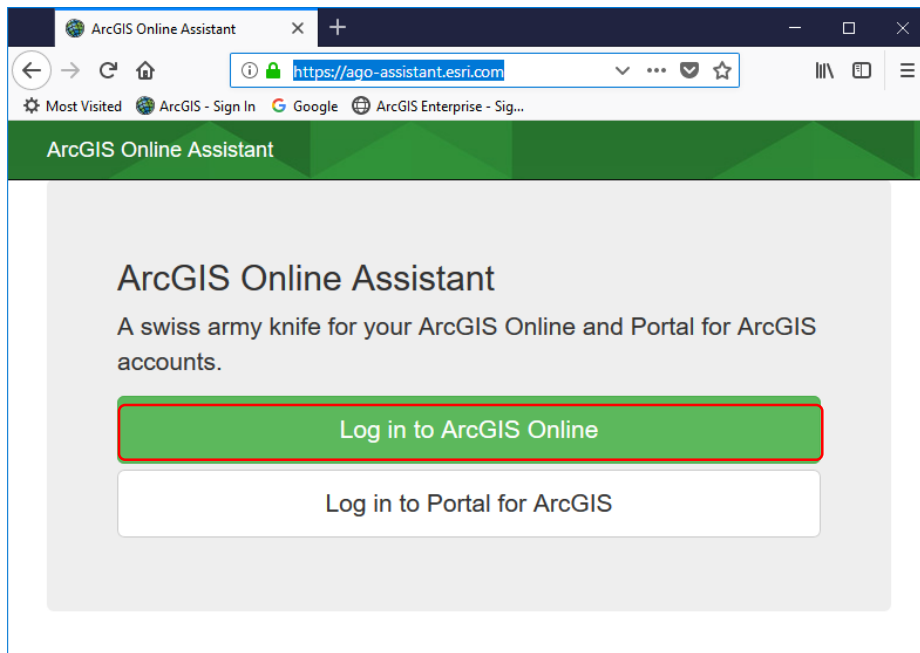
2.5 How to migrate data from ArcGIS Online to Portal for ArcGIS

Input following URL.

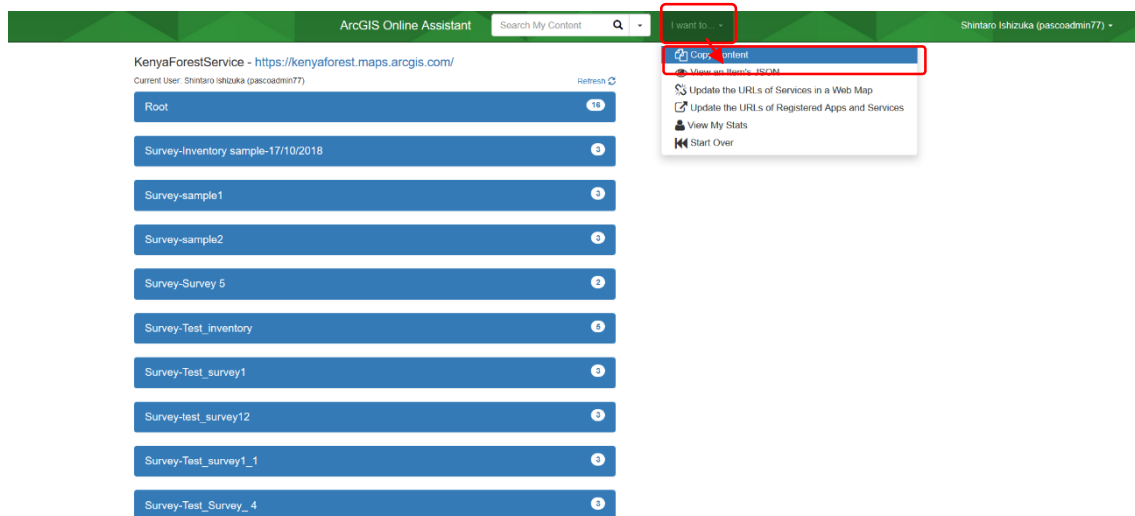
<https://ago-assistant.esri.com>

On the following display, select “Log in to ArcGIS Online”.

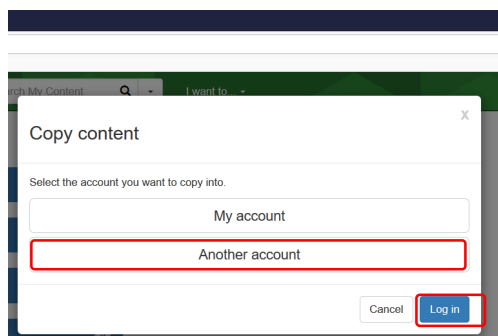
Note: If you want to migrate your data from Portal for ArcGIS to ArcGIS Online, select “Log in to Portal for ArcGIS”.



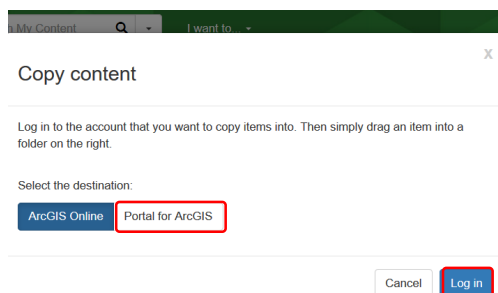
Select “I want to…” and “Copy Content”



Select “Another account”.



Select “Portal for ArcGIS”.



Input URL to your portal as following

<https://kfs2018svr01/portal/home/>

And select “Direct Login tab” and input Username and Password of portal for ArcGIS.

Copy content

Log in to the account that you want to copy items into. Then simply drag an item into a folder on the right.

Select the destination:

ArcGIS Online

Portal for ArcGIS

Enter the URL to your Portal

https://kfs2018svr01/portal/

✓

Direct Login

OAuth Login

PKI or IWA Login

Username

portaladmin

Password

[More info](#)

Cancel

Log in

Note: In case of following error, input following URL into web browser and try again.

<https://kfs2018svr01/portal/home/>

Copy content

Log in to the account that you want to copy items into. Then simply drag an item into a folder on the right.

Select the destination:

ArcGIS Online

Portal for ArcGIS

Enter the URL to your Portal

https://kfs2018svr01/portal/

▼

Direct Login

OAuth Login

PKI or IWA Login

Username

pascoadmin

Password

[More info](#)

Cancel

Log in

Uh oh! There's a problem with the url.
Make sure you've entered the url to your portal's web adaptor.
example: https://mydomain.com/portal



←

→

↻

🏠

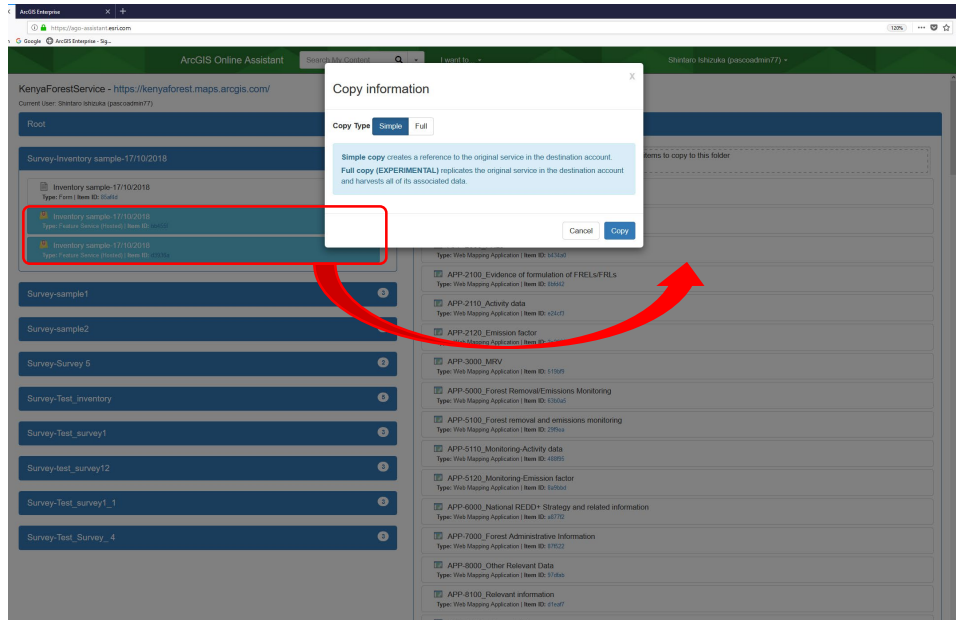
🔍

https://kfs2018svr01/portal/home/

→

With drag&drop, copy the contents form ArcGIS online to Portal for ArcGIS.

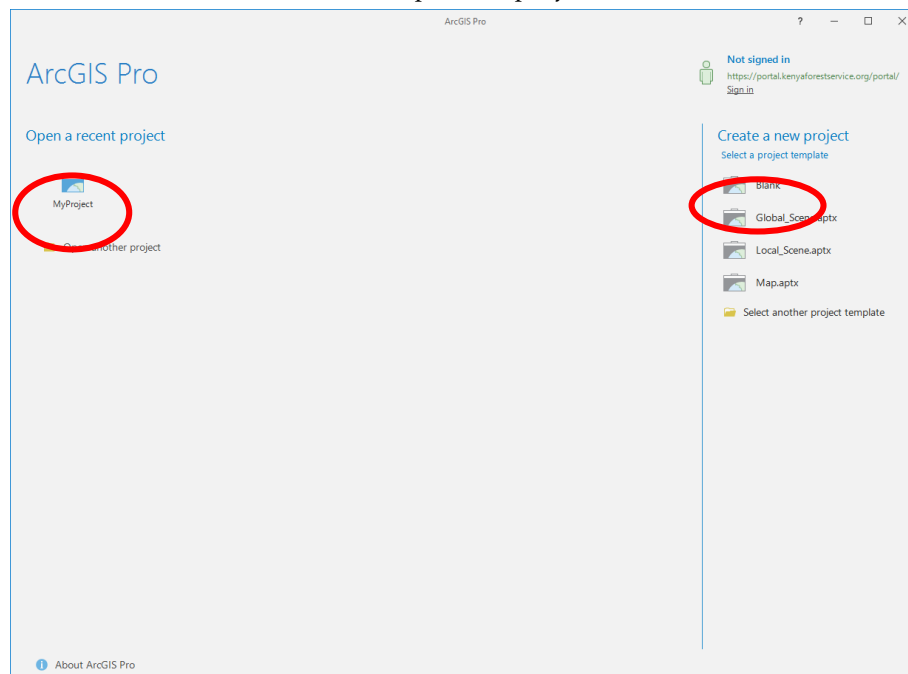
<https://kfs2018svr01/portal/home/>



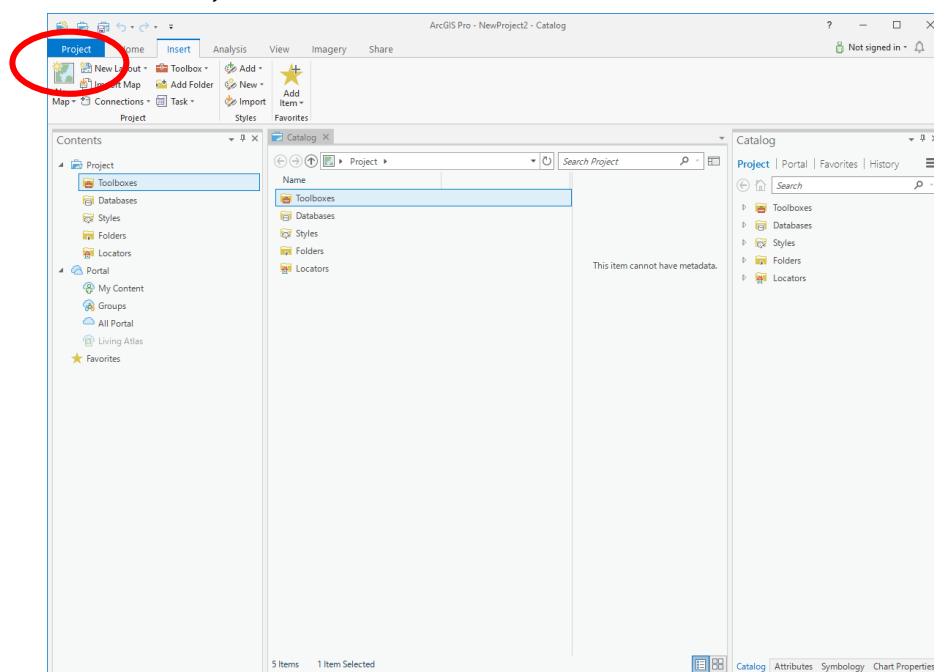
2.6 Create the Web Map with ArcGIS Pro

2.6.1 Connect to the portal from ArcGIS Pro.

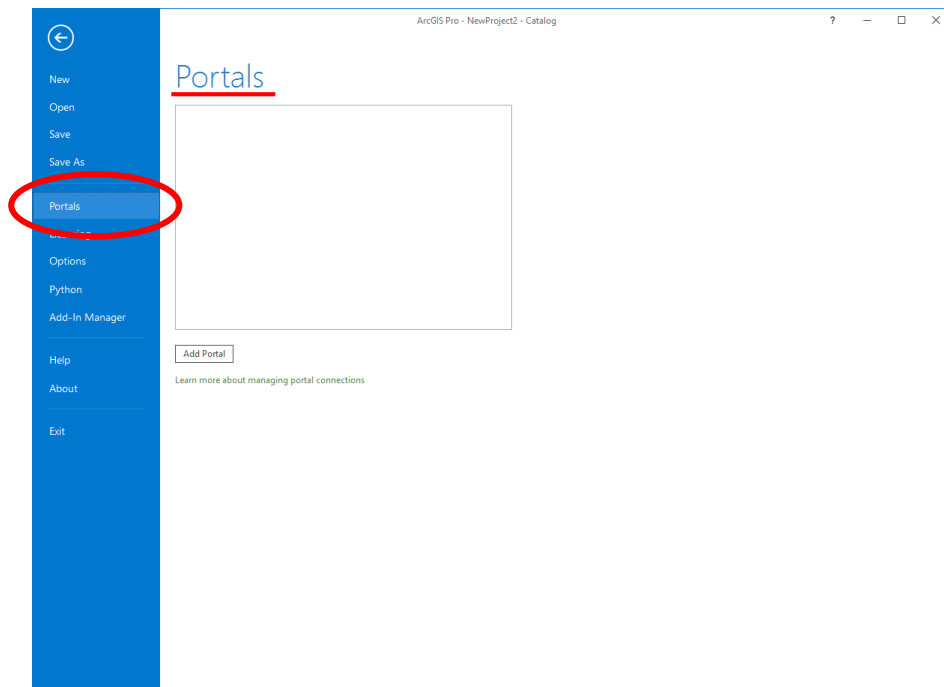
[Step 1] Start ArcGIS Pro and Create or open the project.



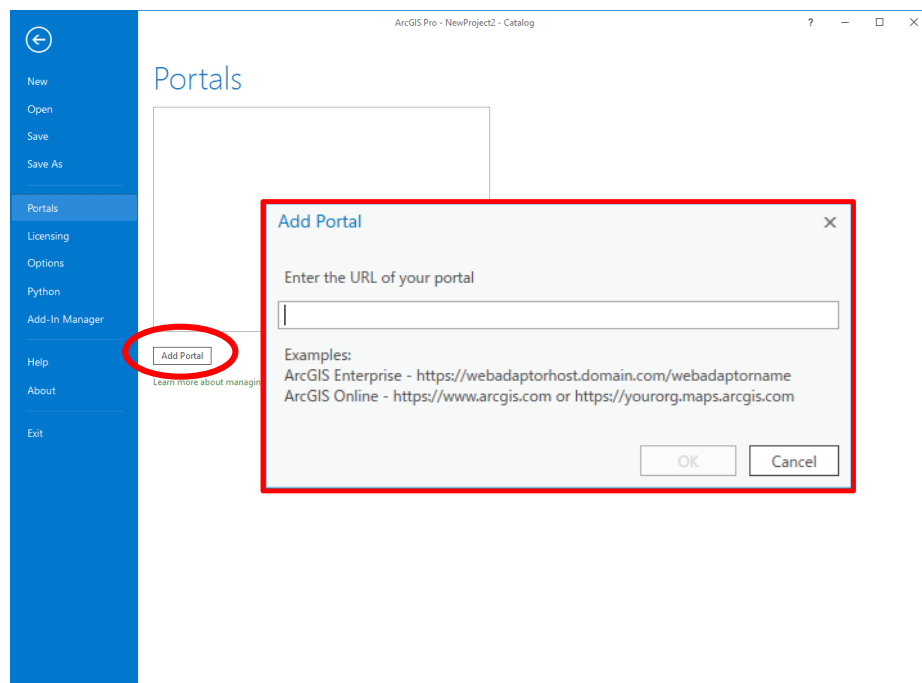
[Step 2] Click the “Project” tab.



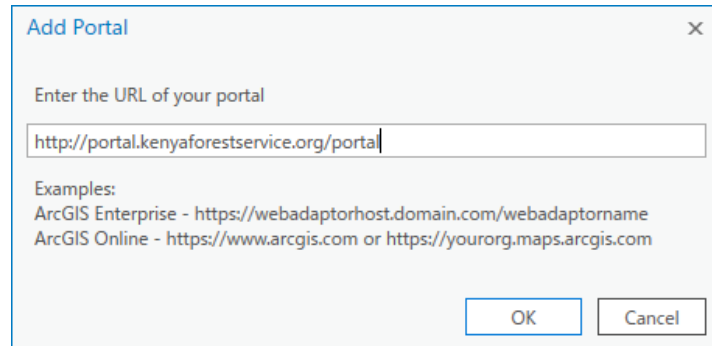
[Step 3] Click “Portals” and open the portal menu.



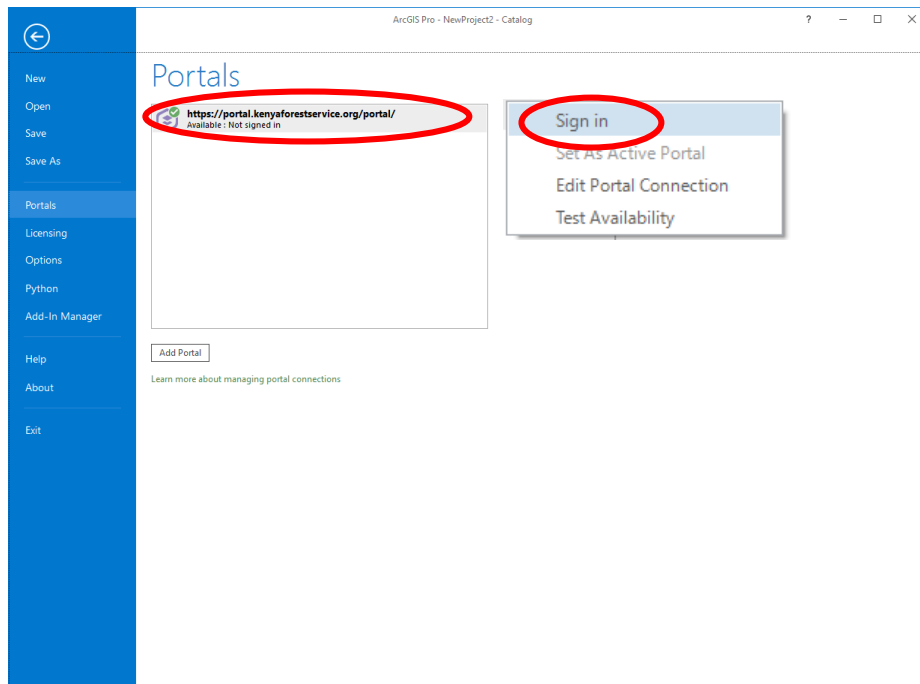
[Step 4] Click the “Add Portal” button and load the “Add Portal” dialog.



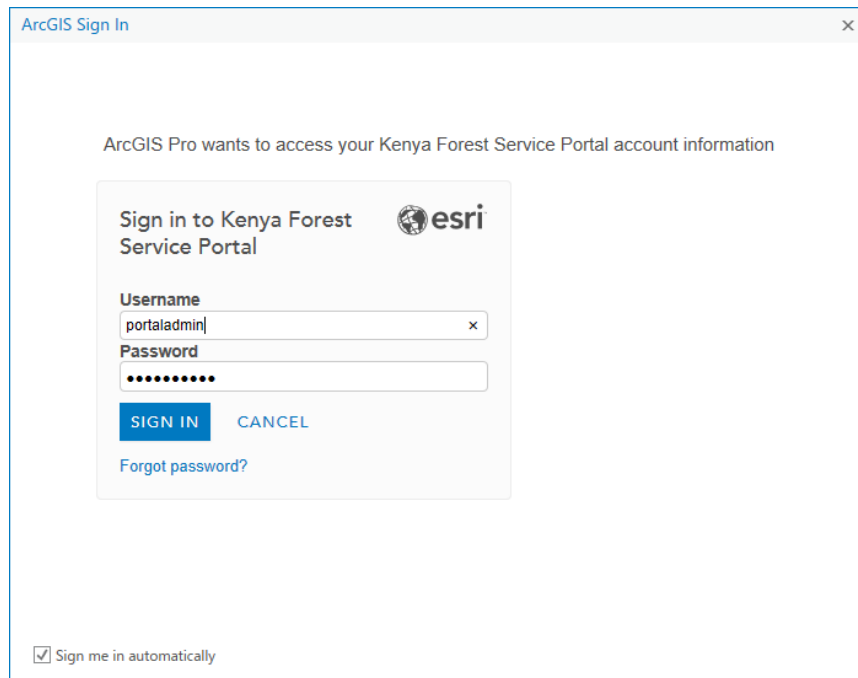
[Step 5] Input the following portal address to the dialog;
<http://portal.kenyaforestservice.org/portal>



[Step 6] Right click the portal name and select “Sign in”.



[Step 7] Type in the user name and password for the portal and click the “SIGN IN”. Make sure that the user should have the administrator’s permission.



ArcGIS Sign In

ArcGIS Pro wants to access your Kenya Forest Service Portal account information

Sign in to Kenya Forest Service Portal 

Username
portaladmin

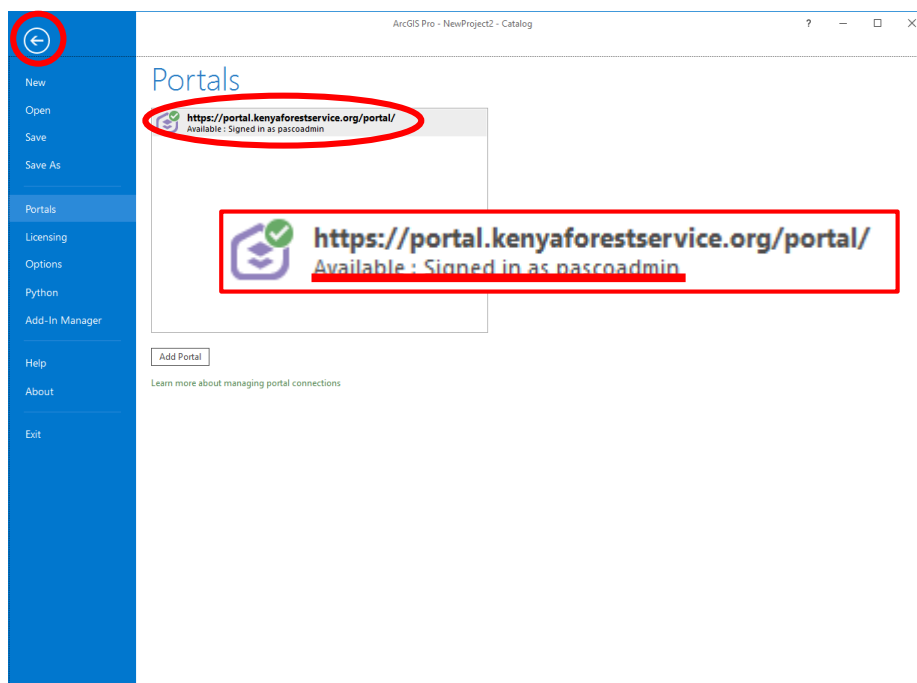
Password
.....

SIGN IN CANCEL

[Forgot password?](#)

☒ Sign me in automatically

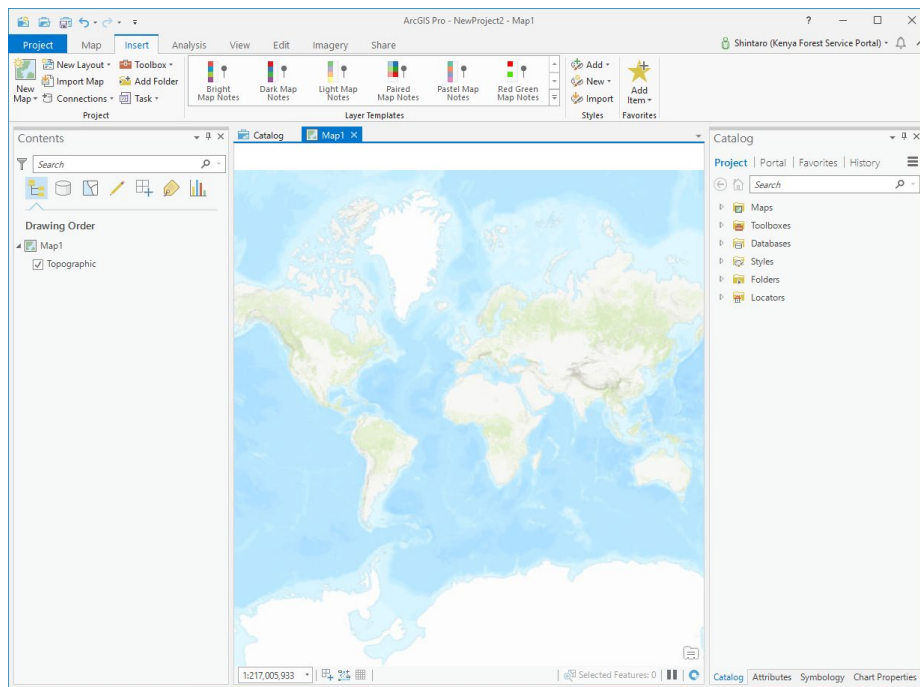
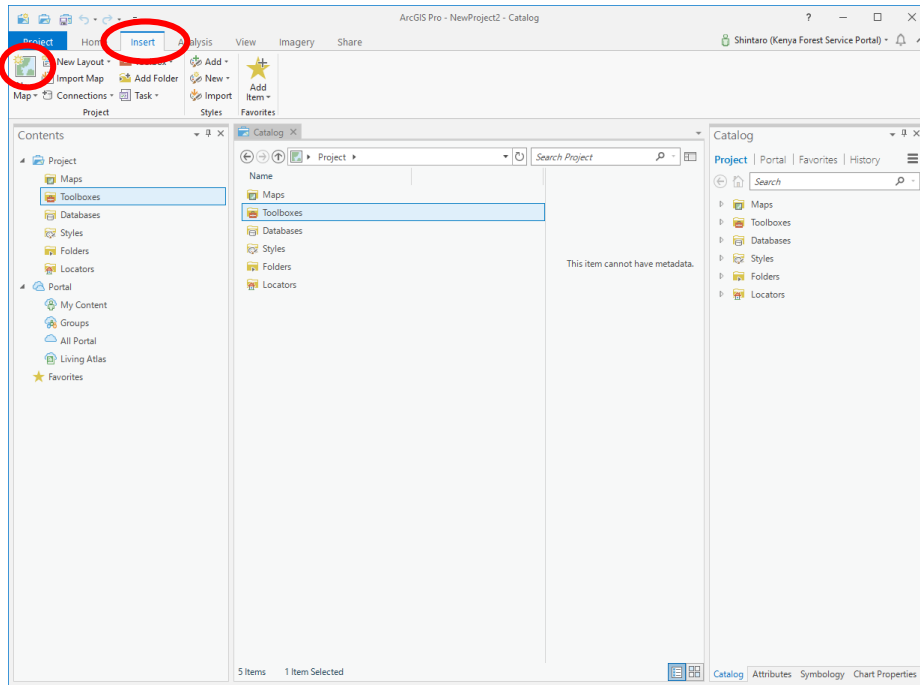
[Step 8] Click “Left arrow” and back to main page.



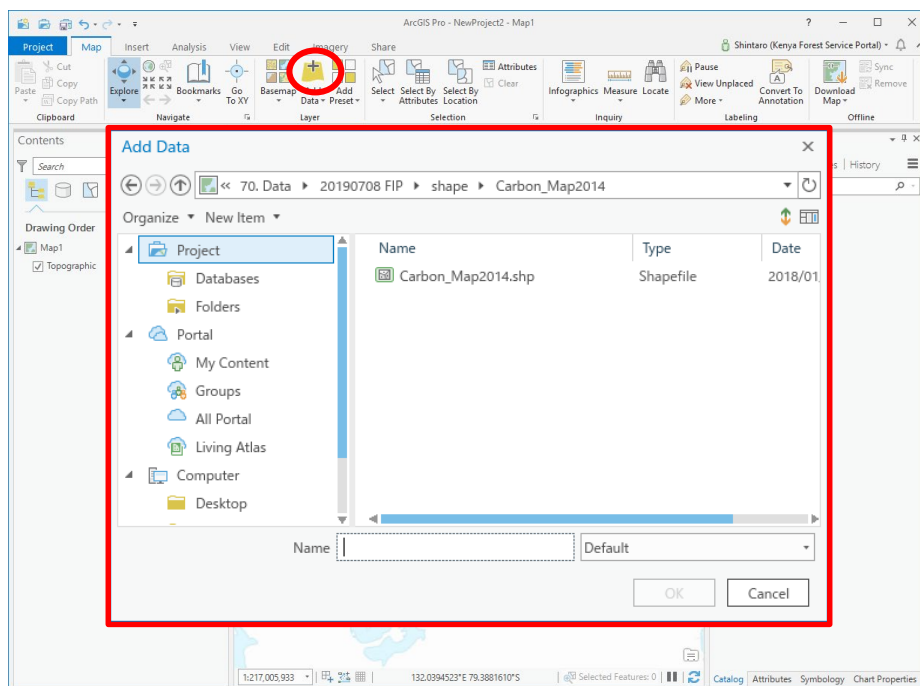
Check the connection status and make sure to connect to the portal successfully.

2.6.2 Add the data to the map and symbolize it.

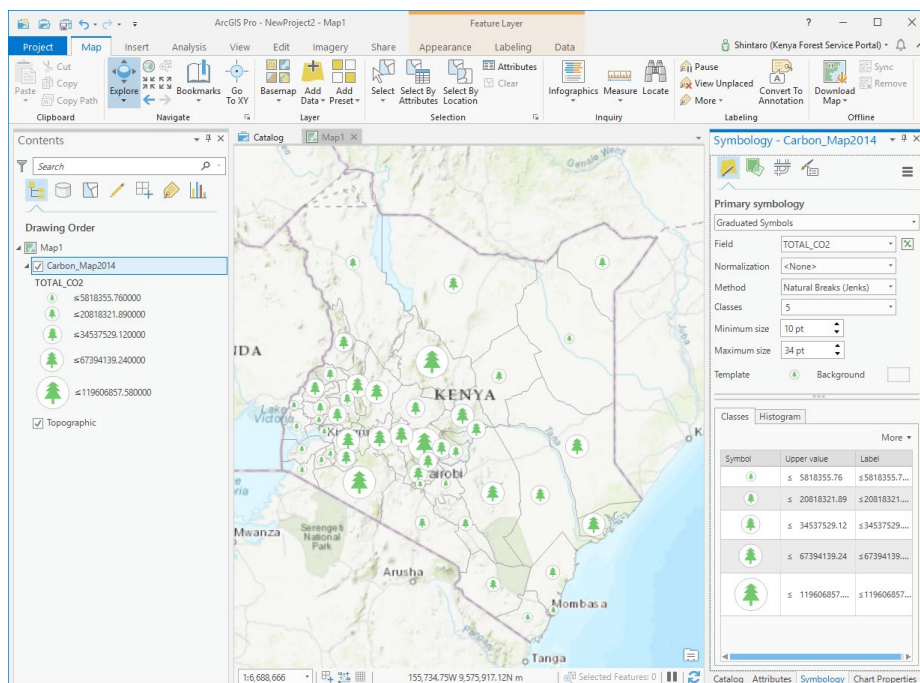
[Step 1] At the “Insert” tab, click “New Map” for add the map.



[Step 2] At the “Map” tab, click “Add Data” to open the

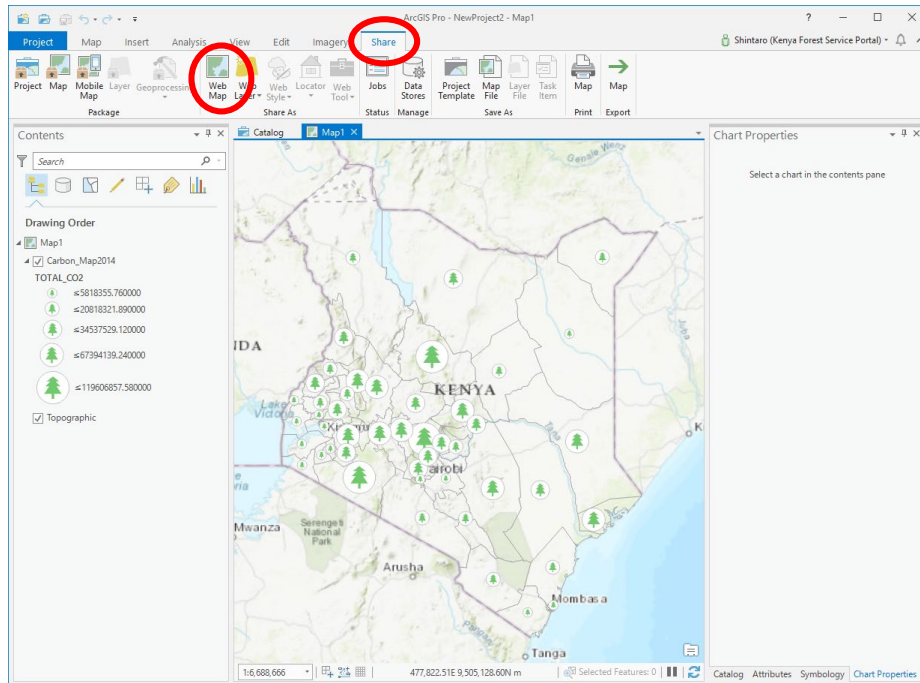


[Step 3] Change the layer symbols as you wish.

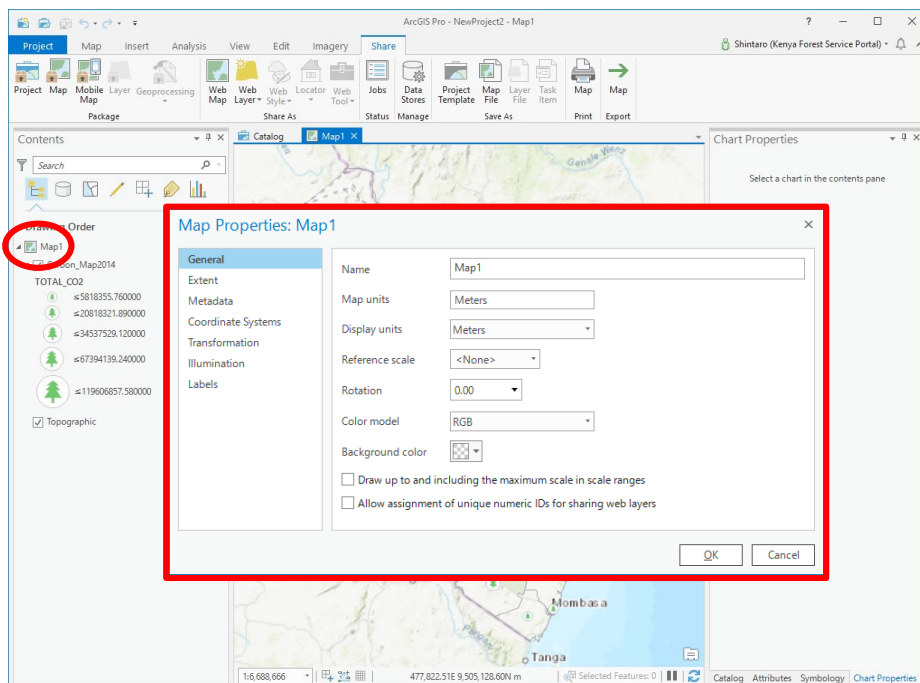


2.6.3 Upload to the portal server as Web Map.

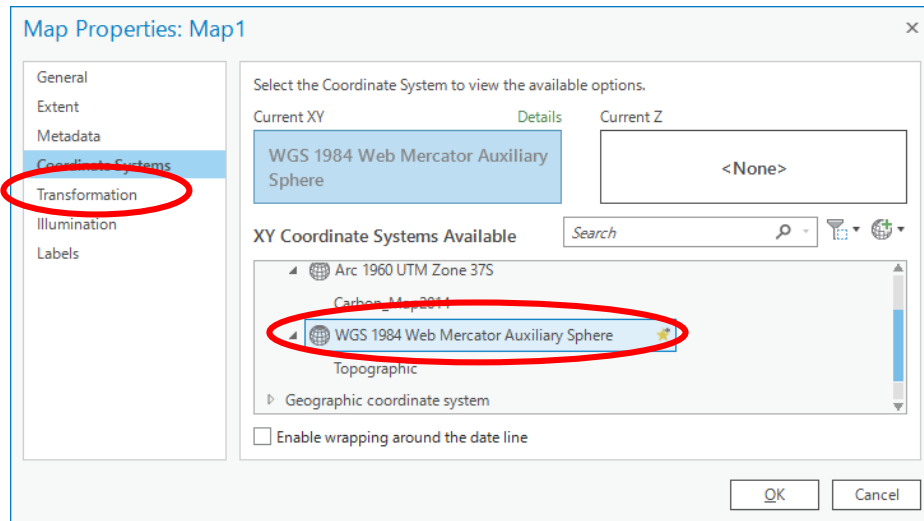
[Step 1] At “Share” tab, click “Web Map”.



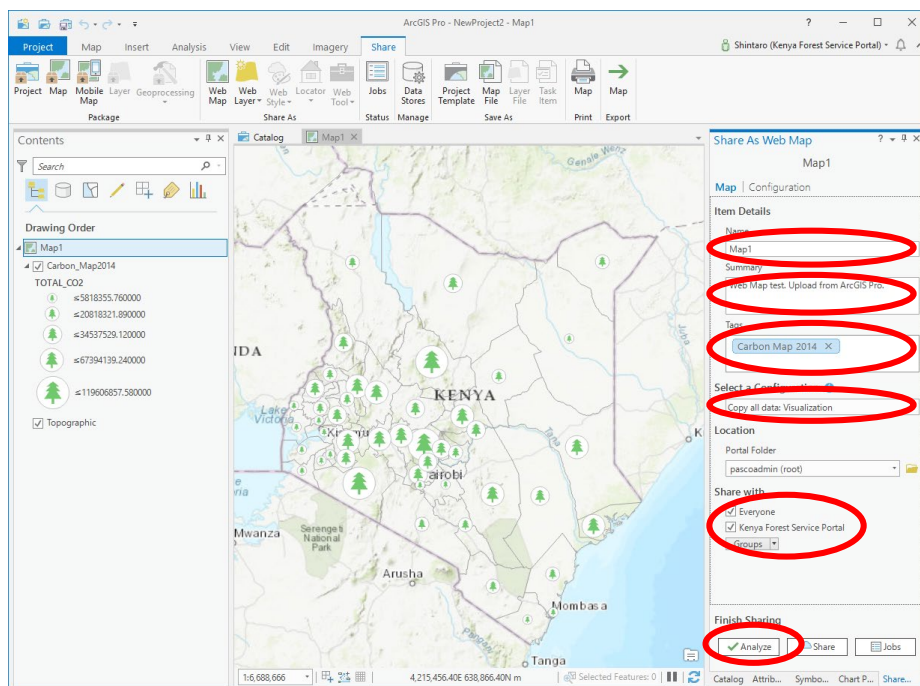
[Step 2] Right click “Map 1” (or map name you defined) and open “Properties”.



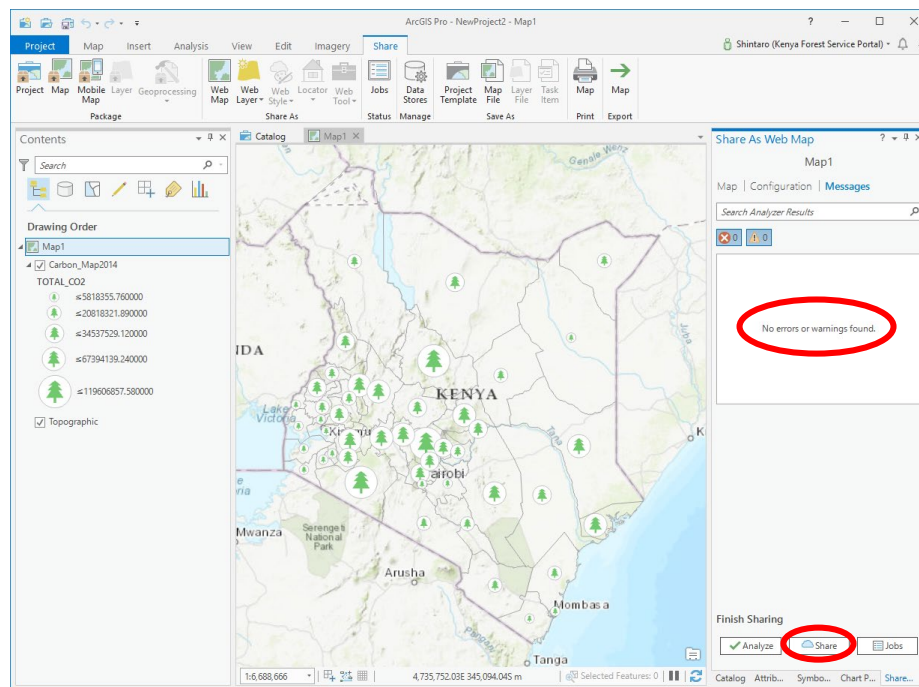
[Step 3] Select “Coordinate System” and choose “WGS1984 Web Mercator Auxiliary Sphere” for “Current XY”.



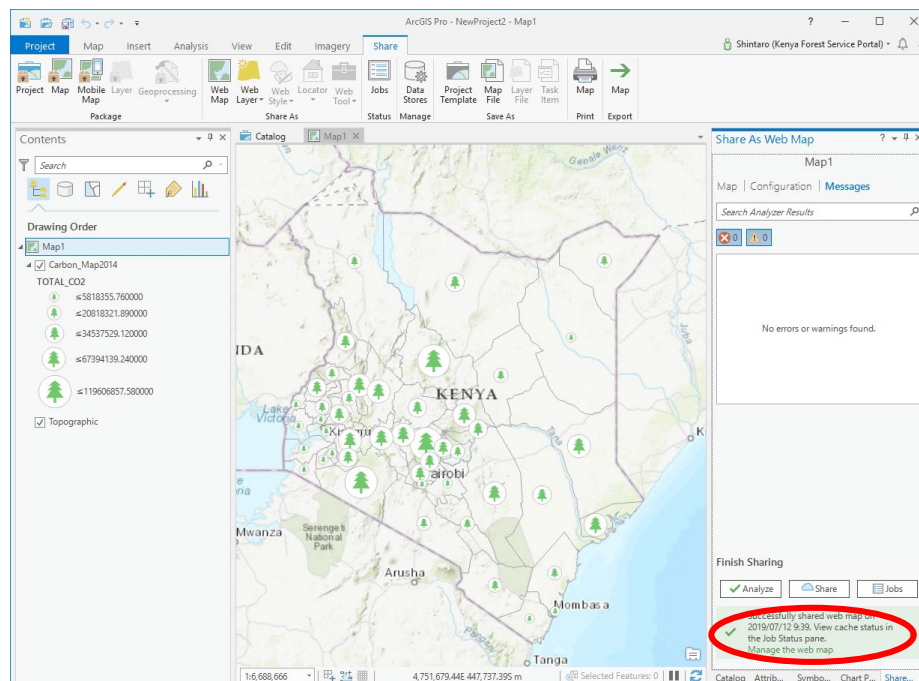
[Step 4] At the “Share As Web Map” tab, give the suitable name for publish. Input the “Summary” and “Tags”. Choose “Copy all data: Visualization” in “Select a Configuration”. Also Select “Everyone” for “Share with”. Then click “Analyze”



[Step 5] When you got error or warning with “Analyze”, following the error/warning message and fix them. If “Analyze” did not find any errors/warnings, hit “Share” button.

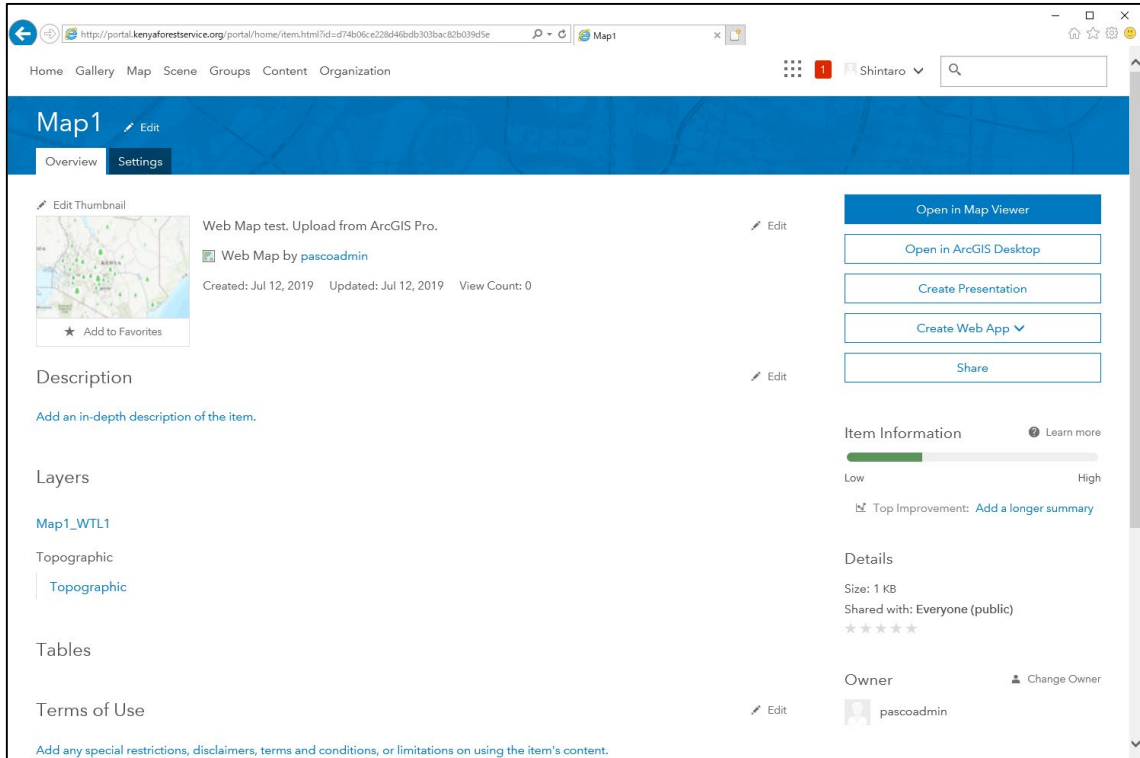


[Step 6] When success message is shown on the lower right corner, upload finished successfully. Gratz! On the other case, please contact to the administrator,



2.6.4 Check the result of upload from portal

[Step 1] Connect to the portal site as administrator permission and move to “Content” menu. Click the web map name which you gave and check the status.



When you could not find the web map, contact to the administrator.

3 How to use Survey 123

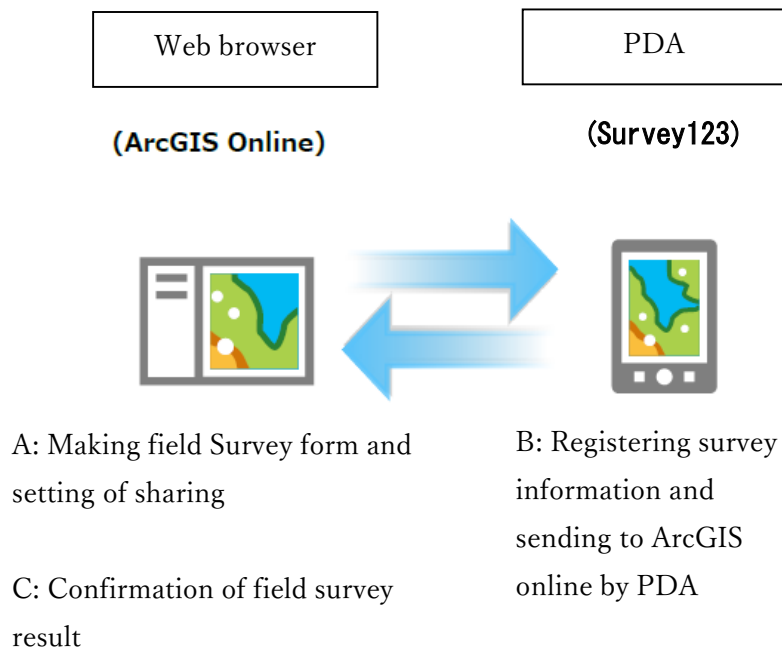
Introduction

Survey123 is one of ArcGIS online service for Field Survey.

Compare to Collector for ArcGIS, which is one of the Field Survey tool, Survey123 has following characteristic.

Characteristic	Collector for ArcGIS	Survey123
Easy setting of research form	○	◎
Friendly GUI	○	◎
Setting survey point or area in advance	○	×
Editing feature data on PDA	○	×
Using background data	◎	○

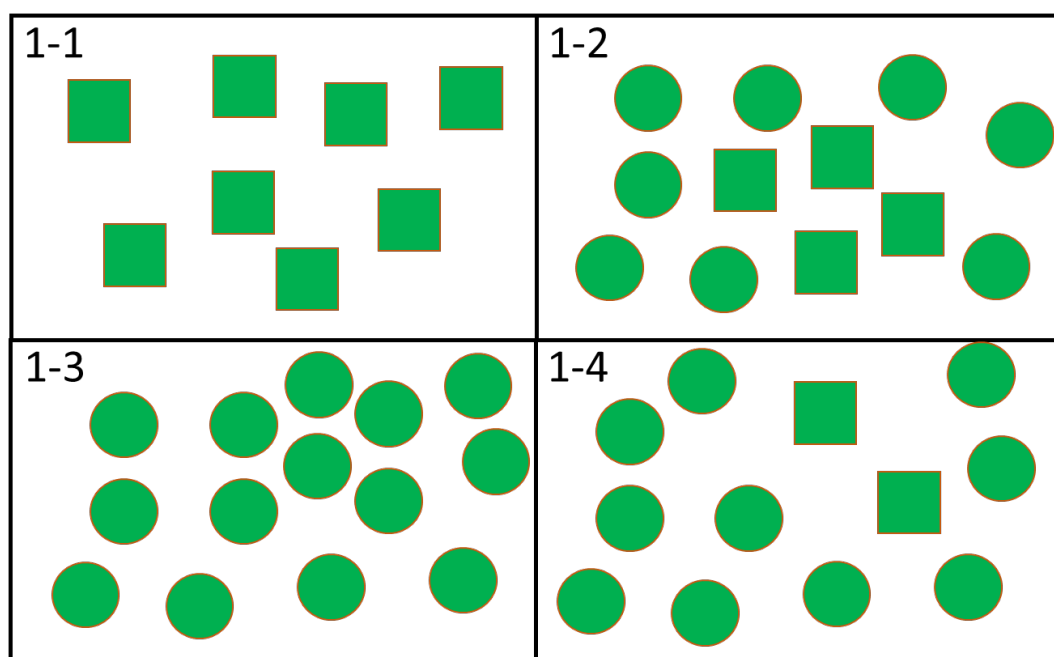
The flow of field survey through Survey123 is following.



This document shows how to make the survey form as following image.

When you want to register Plot information (1-1, ..., 1-4) and each tree information, using the function of “repeat function”, you can make survey form by “Web Designer” or “Survey123 connect for ArcGIS”*.

* Web designer is easy to make form. On the other hand, complex form like repeating function is possible for “Survey123 connect for ArcGIS”.



If you want to know how to use Survey123 for ArcGIS in detail, refer to following URL.

<https://doc.arcgis.com/en/survey123/desktop/create-surveys/createsurveys.htm>

A: Making field Survey form and setting of sharing

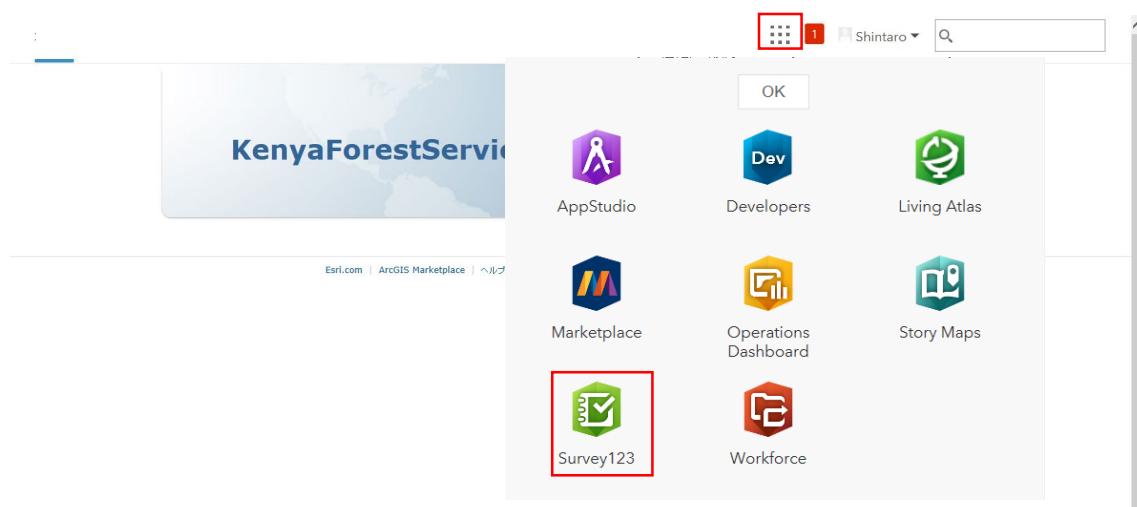
A-1: Making field Survey form by web designer

1.Input following URL for accessing ArcGIS Online

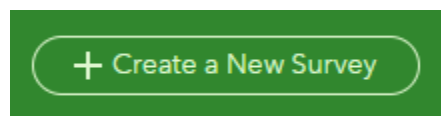
<https://kenyaforest.maps.arcgis.com/home/organization.html>

2.Sign-in by designed User ID and Password

3.After sign-in, push “Application” button and select “Survey123”.



4. Push “Making new survey”

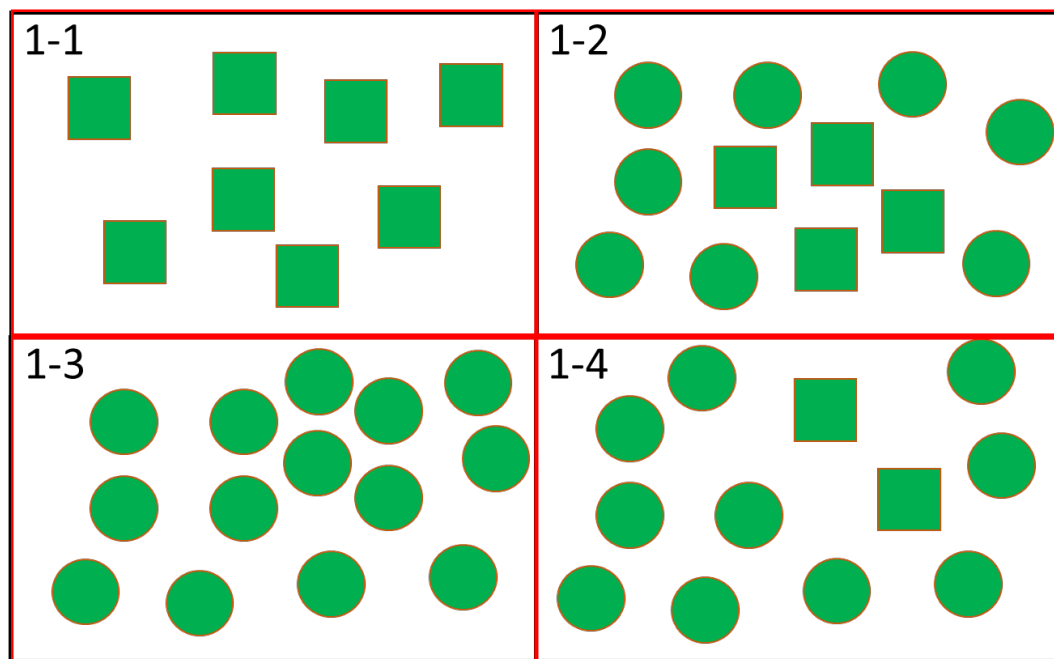


5. To make survey form, you can select Web designer or Survey123 Connect. In this lesson, select web designer because it's easier to make survey form than Survey123 Connect.



6. At first, make the form for inputting the information of each Plot, as following red line instead of the information of each tree.

Referring to the document, “HOW TO: Create a survey in Survey123”, from 2 to 8 page, create survey form. After making the form, save and publish it.



Test_inventory

Test_inventory

Inventory Survey

1
Date *

2
Plot Dimentions

3
Subplot Dimentions

Test_inventory

4

Plot ID *

5

Orientation

6

Inventory Leader

7

Assistant

8

Botanist

9

County *

11

SurveyPoint

場所の設定

Note: Geo-point (Survey point) is necessary to set in the form.

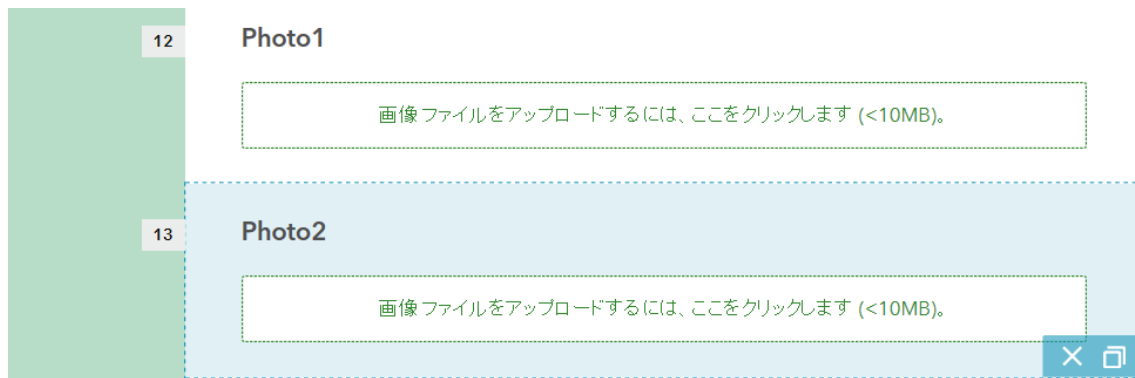
10

Ownership

11

SurveyPoint

場所の設定

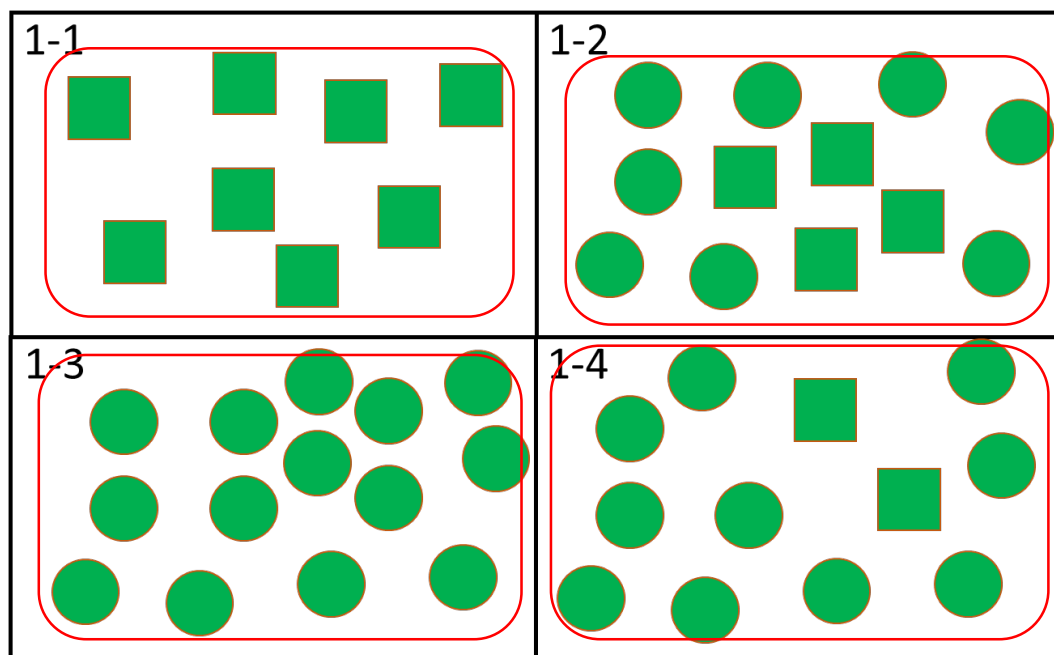


Note:Referring to the code-list, set the code if necessary.

A-2: Making field Survey form by Survey123 connect for ArcGIS

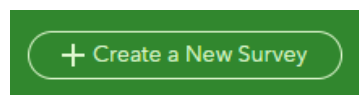
1. At the next step, you have to make the form for the information of each tree linked to each Plot ID as following red scopes. To realize the form for registering the information of each tree, function of “repeating” is necessary. However, because of not having the function in “Web Designer”, you have to use “ Survey123 Connect for ArcGIS”

Note: You can set various style form by Survey123 Connect for ArcGIS instead of Web Designer.

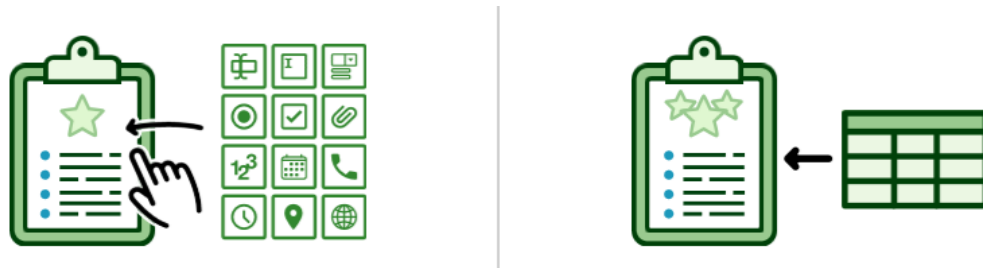


2. If you don't download “ Survey123 Connect for ArcGIS” , at first download it. Go back to Create a New Survey

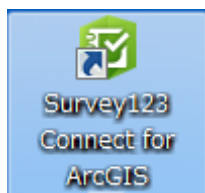
Note: If you have already downloaded “ Survey123 Connect for ArcGIS”, skip following 3 and go on to 4.



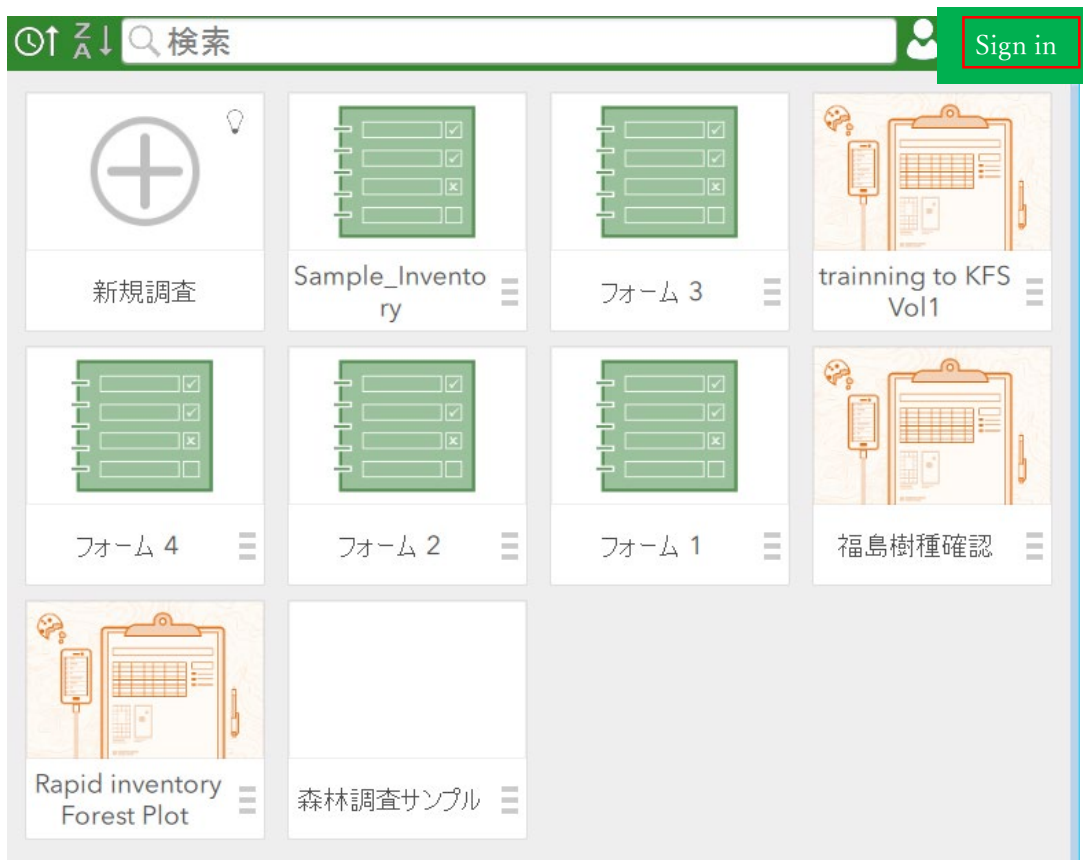
3. Select using “ Survey123 Connect “ and on next display, download it on your PC.



4. After downloading, launch “Survey123 Connect for ArcGIS”.

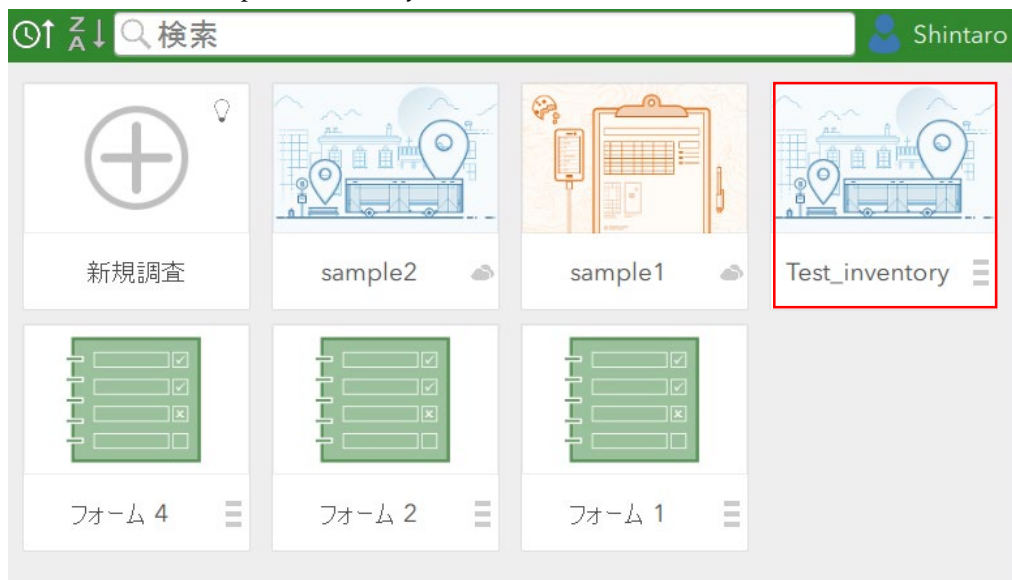


5. Push “sign in” button.



6. Sign in by ArcGIS Online account.

7. Download and open the form you made.



8. On Survey123 connect display, you can see same display to WebDesign.

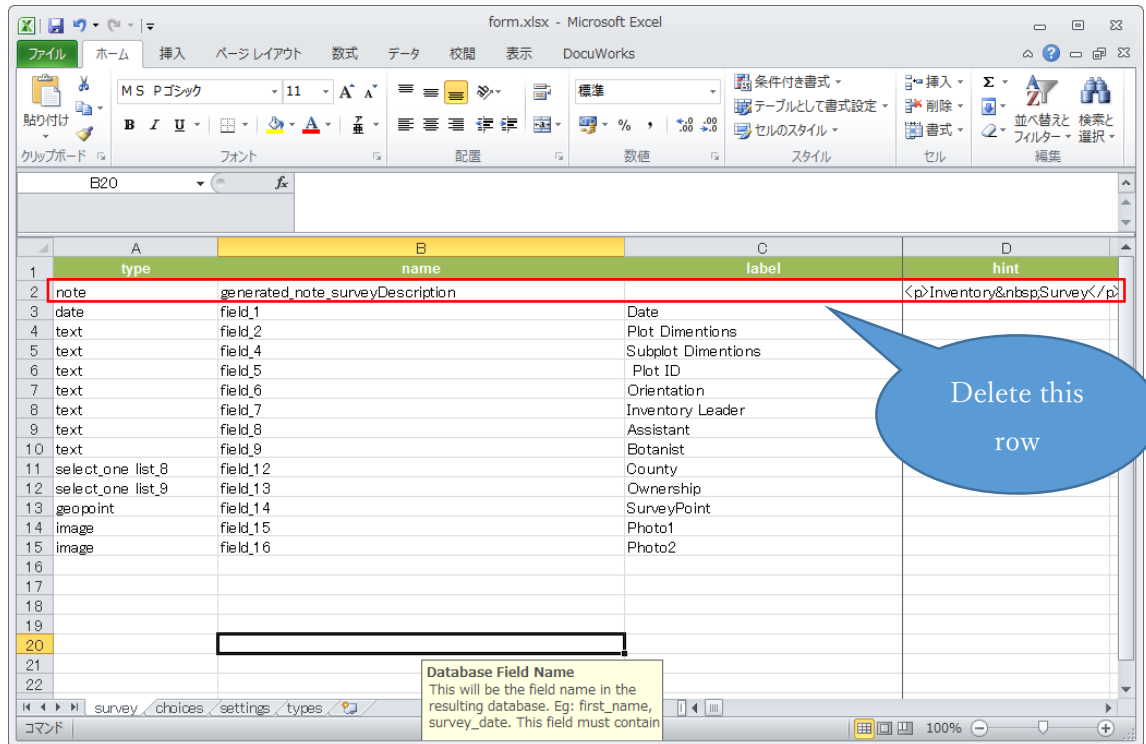
Edit this form for registering the information of each tree.

Push “” button.

A screenshot of the 'Test_inventory' form within the Survey123 Connect application. The form has a green header bar with the title 'Test_inventory'. On the left side, there is a vertical green sidebar with several icons; the top icon, which is a grid, is highlighted with a red square. The form itself consists of several input fields: 'Date *' with a dropdown menu showing '日付'; 'Plot Dimentions' with a text input field; 'Subplot Dimentions' with a text input field; 'Plot ID *' with a text input field; 'Orientation' with a text input field; 'Inventory Leader' with a text input field; and 'Assistant' with a text input field. The form is designed for data entry related to tree inventory.

9. Excel sheet is opened. Add the information for each tree survey.

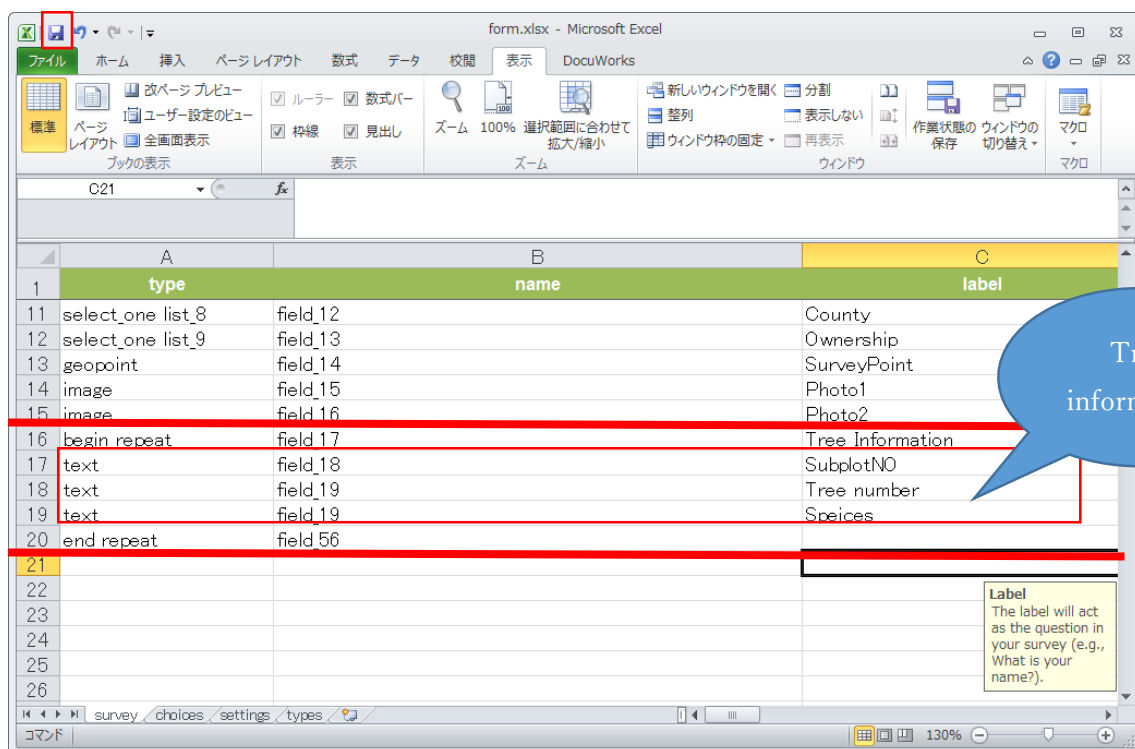
At first, delete second row, type “note”, name “generated_note_surveyDescription”



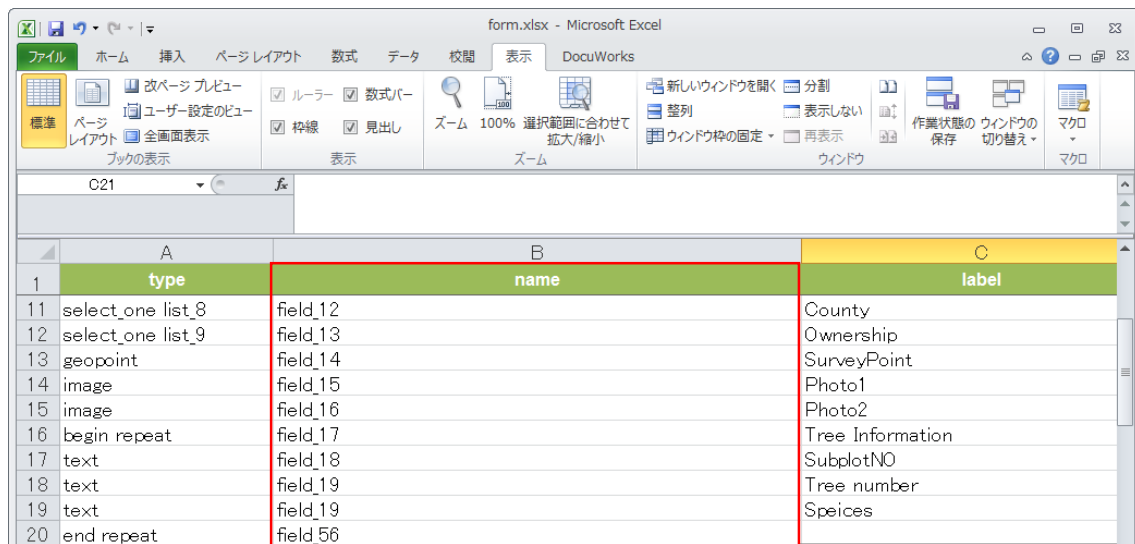
10. On excel sheet, add the information of following red frame, for each tree survey.

Important thing is that the information of each tree is between “type” of “begin repeat” and “end repeat”.

After above setting, push “save” button.

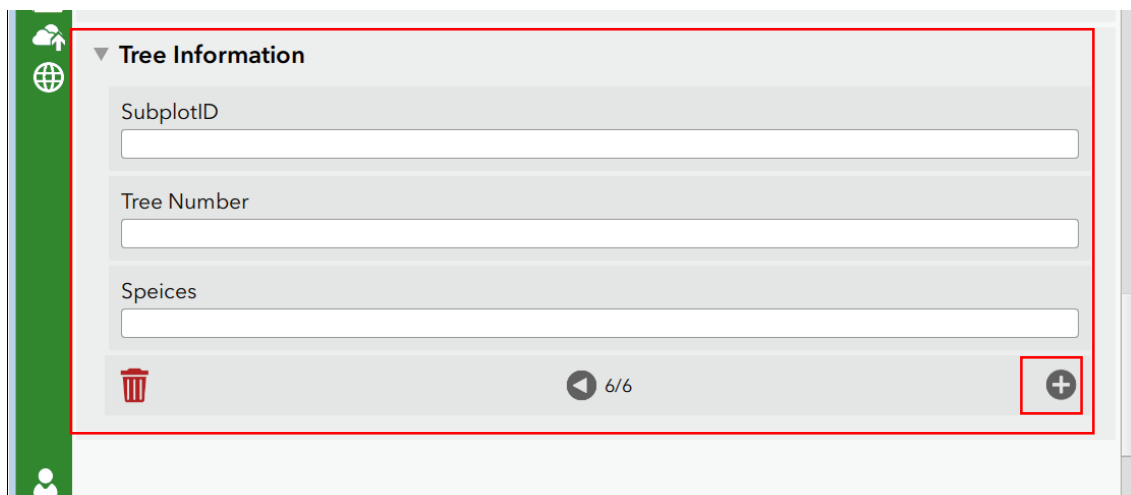


Note: Don't use " (space) or "- (hyphen) letter in "name" column(field). This cause error when making form or registering data. Instead of " (space), it's better use _ (underbar) and so on.



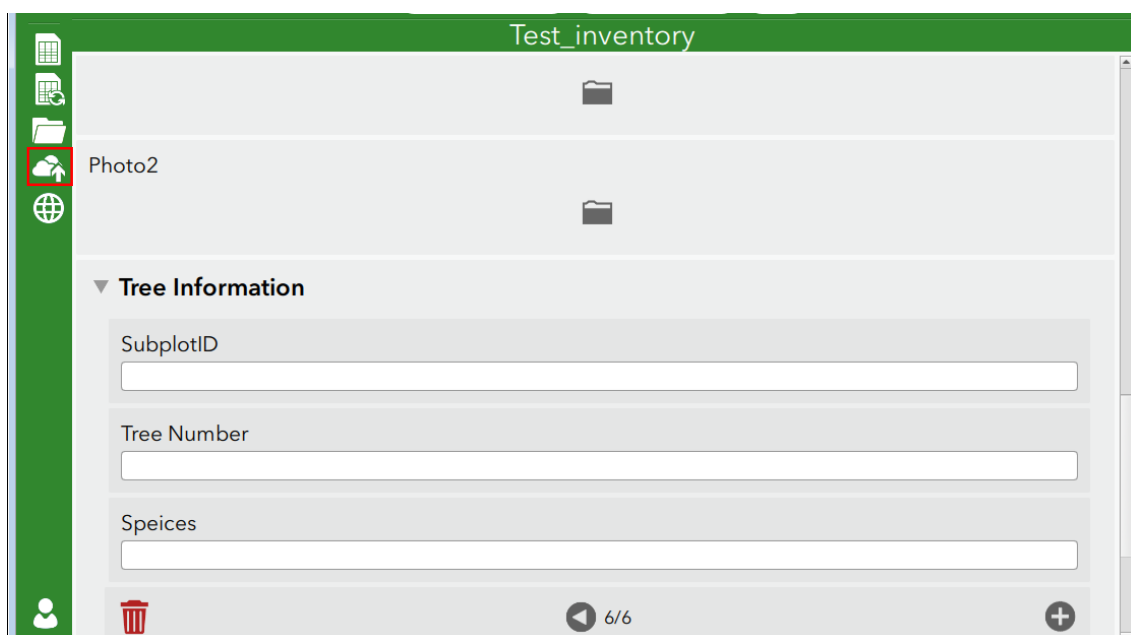
11. On the survey123 connect display, confirm addition of “Tree information”.

Tree information is made by the function of repeating “begin repeat” and “end repeat”.
“On the survey, pushing “plus” button, you can register tree information infinity.



The screenshot shows a web interface for data collection. On the left is a green sidebar with icons for a home, a globe, and a user profile. The main area is titled 'Tree Information' and contains three text input fields labeled 'SubplotID', 'Tree Number', and 'Speices'. At the bottom of the form, there is a red trash can icon, a pagination indicator '6/6', and a red square button with a white plus sign, which is highlighted by a red box.

12. After making form, push “publish button for updating ArcGIS online.



The screenshot shows a web interface for data collection. On the left is a green sidebar with icons for a home, a globe, and a user profile. The main area is titled 'Test_inventory' and contains three text input fields labeled 'SubplotID', 'Tree Number', and 'Speices'. At the bottom of the form, there is a red trash can icon, a pagination indicator '6/6', and a red square button with a white plus sign, which is highlighted by a red box.

A-3: Various setting by Survey123 connect for ArcGIS

Survey123 connect enables to make various type setting.

a. type : select_one [list name]

1	type	name	label
2	date	field_1	Date
3	text	field_2	Plot Dimentions
4	text	field_4	Subplot Dimentions
5	text	field_5	Plot ID
6	text	field_6	Orientation
7	text	field_7	Inventory Leader
8	text	field_8	Assistant
9	text	field_9	Botanist
10	select_one list_8	field_12	County
11	select_one list_9	field_13	Ownership
12	geopoint	field_14	SurveyPoint
13	image	field_15	Photo1
14	image	field_16	Photo2
15	begin repeat	field_17	
16	text	field_18	
17	text	field_19	
18	text	field_20	
19	end repeat	field_21	
20			
21			
22			

Database Field Name
This will be the field name in the resulting database. Eg: first_name, survey_date. This field must contain:

- unique values
- no spaces or non-ascii characters
- no reserved keywords or special symbols (these are listed on the type worksheet).

Note: On “choices” sheet, don’t use “(space) in information of “name” column..

1	list_name	name	label	image	label::language1
2	list_8	choice0	Kwale		
3	list_8	choice1	Laikipia		
4	list_8	choice2	Bungoma		
5	list_8	choice3	ElgeiyoMarakwet		
6	list_8	choice4	WestPokot		
7	list_9	choice0	Central Government		
8	list_9	choice1	Community Forest		
9	list_9	choice2	Private Forest		
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

County *

- ☐ Kwale
- ☐ Laikipia
- ☐ Bungoma
- ☐ ElgeiyoMarakwet
- ☐ WestPokot

b. combination of type : select one [list name] and relevant

For example, when county and a location of county are related, you can realize the setting of two phase select list.

The screenshot illustrates the configuration of a two-phase select list in a survey form using Microsoft Excel. The top table defines the fields and their types, while the bottom table lists the choices for each field. Red arrows indicate the logic flow from the field definitions to the relevant column formula and the final form display.

	type	name	label	default	readonly	relevant	calculation
1							
2	date	field_1	Date				
3	text	field_2	Plot Dimentions				
4	text	field_4	Subplot Dimentions				
5	text	field_5	Plot ID				
6	text	field_6	Orientation				
7	text	field_7	Inventory Leader				
8	text	field_8	Assistant				
9	text	field_9	Botanist				
10	select one list	field_12	County				
11	select one	Kwale	Location of Kwale			<code>\$(field 12)="choice0"</code>	
12	geopoint	field_14	SurveyPoint				
13	image	field_15	Photo1				
14	image	field_16	Photo2				
15	begin repeat	field_17	Tree Information				
16	text	field_18	SubplotID				
17	text	field_19	Tree Number				
18	text	field_20	Speices				
19	end repeat	field_21					
20							
21							
22							

	list_name	name	label	image	label:language1
1					
2	list_8	choice0	Kwale		
3	list_8	choice1	Laikipia		
4	list_8	choice2	Bungoma		
5	list_8	choice3	ElgeyoMarakwet		
6	list_8	choice4	WestPokot		
7	list_9	choice0	Central Government		
8	list_9	choice1	Community Forest		
9	list_9	choice2	Private Forest		
10	Kwale	Chengoni	Chengoni		
11	Kwale	Kasemeni	Kasemeni		
12	Kwale	Kinango	Kinango		
13	Kwale	Mtaaa	Mtaaa		
14	Kwale	Mwavumbo	Mwavumbo		
15	Kwale	Ndavaya	Ndavaya		
16	Kwale	Puma	Puma		
17	Kwale	Samburu	Samburu		
18	Kwale	Taru	Taru		
19	Kwale	gandini	gandini		
20	Kwale	Lukore	Lukore		
21	Kwale	Majimboni	Majimboni		
22	Kwale	Mkongani	Mkongani		
23	Kwale	Mwaluphamba	Mwaluphamba		
24	Kwale	Shimba.hills	Shimba.hills		
25	Kwale	mwaluvanga	mwaluvanga		
26	Kwale	manawani	manawani		

The bottom image shows the resulting form interface. The 'County' dropdown is set to 'Kwale'. The 'Location of Kwale' dropdown is active, showing a list of locations: Kasemeni, Kinango, and Mtaaa. Red arrows indicate the flow from the Excel configuration to the form display.

Note: Setting “appearance” column as “minimal”, you can set drop-down list.

	type	name	label	required_message	appearance	default	readonly
1							
2	date	field_1	Date	This information is required.			
3	text	field_2	Plot Dimentions				
4	text	field_4	Subplot Dimentions				
5	text	field_5	Plot ID	This information is required.			
6	text	field_6	Orientation				
7	text	field_7	Inventory Leader				
8	text	field_8	Assistant				
9	text	field_9	Botanist				
10	select_one list_8	field_12	County	This information is required.	minimal		
11	select_one Kwale	Kwale	Location of Kwale				
12	geopoint	field_14	SurveyPoint		hide-input		
13	image	field_15	Photo1				
14	image	field_16	Photo2				
15	begin repeat	field_17	Tree Information				
16	text	field_18	SubplotID				
17	text	field_19	Tree Number				
18	text	field_20	Speices				
19	end repeat	field_21					
20							
21							
22							
23							

Survey123 Connect for ArcGIS

フォームのプレビュー スキーマプレビュー 設定

Test_inventory

Assistant

Botanist

County *

Kwale

Location of Kwale *

- ☐ Chengoni
- ☐ Kasemeni
- ☐ Kinango
- ☐ Mtaaa
- ☐ Mwavumbo

SurveyPoint

Windows の読み込み時間: 3.7 秒

✓ 入力の整合チェック

c. type : select_multiple [list name]

1	type	name	label	appearance	default	readonly
2	date	field_1	Date			
3	text	field_2	Plot Dimentions			
4	text	field_4	Subplot Dimentions			
5	text	field_5	Plot ID			
6	text	field_6	Orientation			
7	text	field_7	Inventory Leader			
8	text	field_8	Assistant			
9	text	field_9	Botanist			
10	select_one list.8	field_12	County	minimal		
11	select_one Kwale	Kwale	Location of Kwale	minimal		
12	geopoint	field_14	SurveyPoint	hide-input		
13	image	field_15	Photo1			
14	image	field_16	Photo2			
15	begin repeat	field_17	Tree Information			
16	text	field_18	SubplotID			
17	text	field_19	Tree Number			
18	text	field_20	Speices			
19	select_multiple FLAG1	FLAG1	Tree Codes	minimal		
20	end repeat	field_21				

This setting enables to display friendly.

Default
Set the default value for this field. This will pre-populate the survey with the default value. This can either be used to save time by supplying a commonly used answer or by showing what type of answer choice is expected.

1	list name	name	label	image	label::language1
47	Kwale	kacamani	kacamani		
48	FLAG1	a	a=Alive normal,should be used by itself unless a tree is a recruit		
49	FLAG1	b	b= Alive,broken/snapped.Write in comments what height the stem is broken		
50	FLAG1	c	c=Alive,leaning by > 10%.DO NOT use leaning code with the fallen code 'd'		
51	FLAG1	d	d= Alive,fallen (e.g on the ground)		
52	FLAG1	e	e=Alive,tree fluted or fenestrated		
53	FLAG1	f	f=Alive,hollow		
54	FLAG1	g	g= Alive, rotten		
55	FLAG1	h	h=Multiple stemmed individual.Each stem >10cm gets a number.Should be used with other code e.g. if a tree is broken and with multiple stems use 'bh'		
56	FLAG1	i	i= Alive,no leaves,few leaves		
57	FLAG1	j	j=Alive, burnt		
58	FLAG1	k	k= Alive,snapped<1.3m (therefore the diameter at 1.3 is 0 mm)		
59	FLAG1	l	l=Alive, has liana>10 cm diameter on stem or in canopy		
60	FLAG1	m	m= Covered by lianas.Use where canopy is atleast 50% covered by lianas,even if no individual liana reaches 10cm diameter		
61	FLAG1	n	n= New recruit.Always use with another code-e.g. if a tree is normal and new then use the code 'an' if the tree is broken and a new recruit the code is 'bn'		
62	FLAG1	o	o= Lighting Damage		
63	FLAG1	p	p= Cut		
64	FLAG1	q	q= Peeling bark (bark loose/flaking)		
65	FLAG1	r	r= Pests present.In comments write % of crown affected by pests		
66	FLAG1	s	s=Has a strangler		
67	FLAG1	z	z= Alive,declining productivity (nearing death)		

Test_inventory

Tree Codes

a=Alive normal,should be used by itself unless a tree is a recruit,c=Alive,leaning by > 10%.DO NOT use leaning code with the fallen code 'd',g= Alive, rotten,i= Alive,no leaves,few leaves

☒ a=Alive normal,should be used by itself unless a tree is a recruit

☐ b= Alive,broken/snapped.Write in comments what height the stem is broken

☒ c=Alive,leaning by > 10%.DO NOT use leaning code with the fallen code 'd'

☐ d= Alive,fallen (e.g on the ground)

☐ e=Alive,tree fluted or fenestrated

☐ f=Alive,hollow

☒ g= Alive, rotten

☐ h=Multiple stemmed individual.Each stem >10cm gets a number.Should be used with other code e.g. if a tree is broken and with multiple stems use 'bh'

☒ i= Alive,no leaves,few leaves

☐ j=Alive, burnt

☐ k= Alive,snapped<1.3m (therefore the diameter at 1.3 is 0 mm)

☐ l=Alive, has liana>10 cm diameter on stem or in canopy

☐ m= Covered by lianas.Use where canopy is atleast 50% covered by lianas,even if no individual liana reaches 10cm diameter

☐ n= New recruit.Always use with another code-e.g. if a tree is normal and new then use the code

d. type : integer

It is not allowed to input text letter or decimal value, only integer.

	A	B	C	I	J	K
4	text	field.4	Subplot Dimentions			
5	text	field.5	Plot ID			
6	text	field.6	Orientation			
7	text	field.7	Inventory Leader			
8	text	field.8	Assistant			
9	text	field.9	Botanist			
10	select_one list.8	field.12	County	minimal		
11	select_one Kwale	Kwale	Location of Kwale	minimal		\$(field
12	geopoint	field.14	SurveyPoint	hide-input		
13	image	field.15	Photo1			
14	image	field.16	Photo2			
15	begin repeat	field.17	Tree Information			
16	text	field.18	SubplotID			
17	text	field.19	Tree Number			
18	text	field.20	Speices			
19	integer	DBH mm	DBH mm			
20	select_multiple FLAG1	FLAG1	Tree Codes	minimal		
21	end repeat	field.21				
22						
23						

Test_inventory

tree information

SubplotID

Tree Number

Speices

DBH_mm

Tree Codes

1/1

e. type : decimal

It is allowed to not only integer value but also decimal value.

	A	B	C	I	J	K
10	select_one list_8	field_12	County	minimal		
11	select_one Kwale	Kwale	Location of Kwale	minimal		\$(field
12	geopoint	field_14	SurveyPoint	hide-input		
13	image	field_15	Photo1			
14	image	field_16	Photo2			
15	begin repeat	field_17	Tree Information			
16	text	field_18	SubplotID			
17	text	field_19	Tree Number			
18	text	field_20	Speices			
19	integer	DBH_mm	DBH_mm			
20	decimal	Height_m	Height_m			
21	select_multiple FLAG1	FLAG1	Tree Codes	minimal		
22	end repeat	field_21				
23						
24						
25						
26						
27						
28						
29						

Database Field Name

This will be the field name in the resulting database. Eg: first_name, survey_date. This field must contain:

- unique values
- no spaces or non-ascii characters
- no reserved keywords or special symbols (these are listed on the type worksheet)

Survey123 Connect for ArcGIS

フォームのプレビュー スキーマプレビュー 設定

Test_inventory

Tree Number

Speices

DBH_mm

Height_m

Tree Codes

1/1

Windows の読み込み時間: 4.0 秒

✓ 入力の整合チェック

f. combination of type : decimal or integer and constraint

	A	B	C	D	E
1	type	name	label	hint	constraint
11	select_one Kwale	Kwale	Location of Kwale		
12	geopoint		SurveyPoint		
13	image		Photo1		
14	image		Photo2		
15	begin		Tree Information		
16	text	field_18	SubplotID		
17	text	field_19	Tree Number		
18	text	field_20	Speices		
19	integer	DBH_mm	DBH mm		>0
20	decimal	Height_m	Height m		>0
21	select_multiple FLAG1	FLAG1	Tree Codes		
22	end repeat	field_21			

.>0

Test_inventory

Tree Number

Speices

DBH_mm

-11

Height_m

0

Tree Codes

1/1

Constraint error happens

g. The setting of “required” column.

The setting of “yes” in “required” column enables to set essential information to register.

And the setting of some message in “required_message” column enables to display the message in case of empty information.

1	type	name	label	required	required_message
2	date	field_1	Date	yes	This information is required.
3	text	field_2	Plot Dimentions		
4	text	field_4	Subplot Dimentions		
5	text	field_5	Plot ID	yes	This information is required.
6	text	field_6	Orientation		
7	text	field_7	Inventory Leader		
8	text	field_8	Assistant		
9	text	field_9	Botanist		
10	select_one list_8	field_12	County	yes	This information is required.
11	select_one Kwale	Kwale	Location of Kwale	yes	This information is required.
12	geopoint	field_14	SurveyPoint		
13	image	field_15	Photo1		
14	image	field_16	Photo2		
15	begin repeat	field_17	Tree Information		
16	text	field_18	SubplotID		
17	text	field_19	Tree Number		
18	text	field_20	Speices		
19	integer	DBH_mm	DBH_mm		
20	decimal	Height_m	Height_m		
21	select_multiple FLAG1	FLAG1	Tree Codes		
22	end repeat	field_21			
23					
24					
25					
26					

Test_inventory

Date *

Plot Dimentions

Subplot Dimentions

Plot ID *

Orientation

Inventory Leader

Survey123 Connect for... This information is required. OK

h. The setting of “default” column.

1	type	name	label	default
2	date	field_1	Date	
3	text	field_2	Plot Dimentions	
4	text	field_4	Subplot Dimentions	
5	text	field_5	Plot ID	
6	text	field_6	Orientation	
7	text	field_7	Inventory Leader	
8	text	field_8	Assistant	
9	text	field_9	Botanist	
10	select_one list_8	field_12	County	
11	select_one Kwale	Kwale	Location of Kwale	
12	geopoint	field_14	SurveyPoint	
13	image	field_15	Photo1	
14	image	field_16	Photo2	
15	begin repeat	field_17	Tree Information	
16	text	field_18	SubplotID	
17	text	field_19	Tree Number	
18	text	field_20	Speices	
19	integer	DBH_mm	DBH_mm	
20	integer	POM_cm	POM_cm	130
21	decimal	Height_m	Height_m	
22	select_multiple FLAG1	FLAG1	Tree Codes	
23	end repeat	field_21		

You can set the value or text used frequently

Test_inventory

▼ Tree Information

SubplotID

Tree Number

Speices

DBH_mm

POM_cm

130

Height_m

As advanced lesson, set the select list of other “location of county”, “Speices” and so on , with using choice list.

< other “location of county”>

1	type	name	label	required	required_message	appearance	relevant
2	date	field_1	Date	yes	This information is required.		
3	text	field_2	Plot Dimentions				
4	text	field_4	Subplot Dimentions				
5	text	field_5	Plot ID	yes	This information is required.		
6	text	field_6	Orientation				
7	text	field_7	Inventory Leader				
8	text	field_8	Assistant				
9	text	field_9	Botanist				
10	select_one	list_8	field_12	County	yes	This information is required.	minimal
11	select_one	Kwale	Kwale	Location of Kwale	yes	This information is required.	minimal
12	select_one	Laikipia	Laikipia	Location of Laikipia	yes	This information is required.	minimal
13	select_one	Trans_Nzoia	Trans_Nzoia	Location of Trans_Nzoia	yes	This information is required.	minimal
14	select_one	Bungoma	Bungoma	Location of Bungoma	yes	This information is required.	minimal
15	select_one	ElgeiyoMarakwet	ElgeiyoMarakwet	Location of ElgeiyoMarakwet	yes	This information is required.	minimal
16	select_one	WestPokot	WestPokot	Location of WestPokot	yes	This information is required.	minimal
17	geopoint	field_14	SurveyPoint			hide-input	
18	image	field_15	Photo1				
19	image	field_16	Photo2				
20	begin repeat	field_17	Tree Information				
21	text	field_18	SubplotID				
22	text	field_19	Tree Number				
23	text	field_20	Speices				
24	integer	DBH mm	DBH mm				

1	list_name	name	label	image
2	list_8	choice0	Kwale	
3	list_8	choice1	Laikipia	
4	list_8	choice2	Trans_Nzoia	
5	list_8	choice3	Bungoma	
6	list_8	choice4	ElgeiyoMarakwet	
7	list_8	choice5	WestPokot	
8	list_9	choice0	Central Government Forest	
9	list_9	choice1	Community Forest	
10	list_9	choice2	Private Forest	
11	Kwale	Chengoni	Chengoni	
12	Kwale	Kasemeni	Kasemeni	
13	Kwale	Kinango	Kinango	
14	Kwale	Mtaaa	Mtaaa	
15	Kwale	Mwavumbo	Mwavumbo	
16	Kwale	Ndavaya	Ndavaya	
17	Kwale	Puma	Puma	
18	Kwale	Samburu	Samburu	
19	Kwale	Taru	Taru	
20	Kwale	gandini	gandini	
21	Kwale	Lukore	Lukore	
22	Kwale	Majimboni	Majimboni	
23	Kwale	Mkongani	Mkongani	
24	Kwale	Mwaluphamba	Mwaluphamba	
25	Kwale	Shimba_hills	Shimba_hills	
26	Kwale	mwaluvanga	mwaluvanga	

County *

Bungoma

Location of Bungoma *

☐ chepkube
☐ chesikak
☐ sasur
☐ bumula
☐ musikoma

<From first letter of speices to speices name , using 2 phase dropdown-list>

1	type	name	label	required	required_message	appearance
2	date	field.1	Date	yes	This information is required.	
3	text	field.2	Plot Dimentions			
4	text	field.4	Subplot Dimentions			
5	text	field.5	Plot ID	yes	This information is required.	
6	text	field.6	Orientation			
7	text	field.7	Inventory Leader			
8	text	field.8	Assistant			
9	text	field.9	Botanist			
10	select_one list.8	field.12	County	yes	This information is required.	minimal
11	select_one Kwale	Kwale	Location of Kwale	yes	This information is required.	minimal
12	select_one Laikipia	Laikipia	Location of Laikipia	yes	This information is required.	minimal
13	select_one Trans_Nzoia	Trans_Nzoia	Location of Trans_Nzoia	yes	This information is required.	minimal
14	select_one Bungoma	Bungoma	Location of Bungoma	yes	This information is required.	minimal
15	select_one ElgeiyoMarakwet	ElgeiyoMarakwet	Location of ElgeiyoMarakwet	yes	This information is required.	minimal
16	select_one WestPokot	WestPokot	Location of WestPokot	yes	This information is required.	minimal
17	geopoint	field.14	SurveyPoint			hide-input
18	image	field.15	Photo1			
19	image	field.16	Photo2			
20	begin repeat	field.17	Tree Information			
21	text	field.18	SubplotID			
22	text	field.19	Tree Number			
23	select_one A-7	First letter of Speices	First letter of Speices	yes	This information is required.	minimal
24	integer	DBH_mm	DBH_mm			
25	integer	POM_cm	POM_cm			
26	integer	Height_m	Height_m			

1	list_name	name	label
69	rating		3 3 Stars
70	rating		4 4 Stars
71	rating		5 5 Stars
72	A-Z	A	A
73	A-Z	B	B
74	A-Z	C	C
75	A-Z	D	D
76	A-Z	E	E
77	A-Z	F	F
78	A-Z	G	G
79	A-Z	H	H
80	A-Z	I	I
81	A-Z	J	J
82	A-Z	K	K
83	A-Z	L	L
84	A-Z	M	M
85	A-Z	N	N
86	A-Z	O	O
87	A-Z	P	P
88	A-Z	Q	Q
89	A-Z	R	R
90	A-Z	S	S
91	A-Z	T	T
92	A-Z	U	U
93	A-Z	V	V
94	A-Z	W	W
95	A-Z	X	X
96	A-Z	Y	Y
97	A-Z	Z	Z
98	A	A1	1. Abutilon longicuspe
99	A	A2	2. Acacia brevispica
100	A	A3	3. Acacia drepanolobium

Test_inventory

Tree Information

SubplotID

Tree Number

First letter of Speices *

C

DBH_mm

	A	B	C	G	H	I	L
22	text	field.19	Tree Number				
23	select_one A-Z	First letter of Species	First letter of Species	yes	This information is required	minimal	
24	select_one A	A.Species	A.Species	yes	This information is required	minimal	\$(First_letter_of_Species)-A'
25	select_one B	B.Species	B.Species	yes	This information is required	minimal	\$(First_letter_of_Species)-B'
26	select_one C	C.Species	C.Species	yes	This information is required	minimal	\$(First_letter_of_Species)-C'
27	select_one D	D.Species	D.Species	yes	This information is required	minimal	\$(First_letter_of_Species)-D'
28	select_one E	E.Species	E.Species	yes	This information is required	minimal	\$(First_letter_of_Species)-E'
29	select_one F	F.Species	F.Species	yes	This information is required	minimal	\$(First_letter_of_Species)-F'
30	select_one G	G.Species	G.Species	yes	This information is required	minimal	\$(First_letter_of_Species)-G'
31	select_one H	H.Species	H.Species	yes	This information is required	minimal	\$(First_letter_of_Species)-H'
32	select_one I	I.Species	I.Species	yes	This information is required	minimal	\$(First_letter_of_Species)-I'
33	select_one J	J.Species	J.Species	yes	This information is required	minimal	\$(First_letter_of_Species)-J'
34	select_one K	K.Species	K.Species	yes	This information is required	minimal	\$(First_letter_of_Species)-K'
35	select_one L	L.Species	L.Species	yes	This information is required	minimal	\$(First_letter_of_Species)-L'
36	select_one M	M.Species	M.Species	yes	This information is required	minimal	\$(First_letter_of_Species)-M'
37	select_one N	N.Species	N.Species	yes	This information is required	minimal	\$(First_letter_of_Species)-N'
38	select_one O	O.Species	O.Species	yes	This information is required	minimal	\$(First_letter_of_Species)-O'
39	select_one P	P.Species	P.Species	yes	This information is required	minimal	\$(First_letter_of_Species)-P'
40	select_one Q	Q.Species	Q.Species	yes	This information is required	minimal	\$(First_letter_of_Species)-Q'
41	select_one R	R.Species	R.Species	yes	This information is required	minimal	\$(First_letter_of_Species)-R'
42	select_one S	S.Species	S.Species	yes	This information is required	minimal	\$(First_letter_of_Species)-S'
43	select_one T	T.Species	Label The label will act as the question in your survey (e.g., What is your name?).	yes	This information is required	minimal	\$(First_letter_of_Species)-T'
44	select_one U	U.Species		yes	This information is required	minimal	\$(First_letter_of_Species)-U'
45	select_one V	V.Species		yes	This information is required	minimal	\$(First_letter_of_Species)-V'

1	list_name	name	label	image	la
258	A-Z	X	X		
259	A-Z	Y	Y		
260	A-Z	Z	Z		
261	A	A1	1. Abutilon longicuspe		
262	A	A2	2. Acacia brevispica		
263	A	A3	3. Acacia drepanolobium		
264	A	A4	4. Acacia elatior		
265	A	A5	5. Acacia gerrardii		
266	A	A6	6. Acacia hockii		
267	A	A7	7. Acacia lahai		
268	A	A8	8. Acacia melanoxylon		
269	A	A9	9. Acacia mellifera		
270	A	A10	10. Acacia nilotica		
271	A	A11	11. Acacia nubica		
272	A	A12	12. Acacia reficiens		
273	A	A13	13. Acacia seyal		
274	A	A14	14. Acacia sieberiana		
275	A	A15	15. Acacia tortilis		
276	A	A16	16. Acacia xanthophloea		
277	A	A17	17. Acalypha fruticosa		
278	A	A18	18. Acalypha sp.		
279	A	A19	19. Achyrosporum schimperi		
280	A	A20	20. Acokanthera oppositifolia		
281	A	A21	21. Acokanthera schimperi		
282	A	A22	22. Adenia bequaertii		
283	A	A23	23. Adenocarpus mannii		
284	A	A24	24. Aeschynomene abyssinica		

649	V	V3	379. Vangueria volkensii	
650	V	V4	380. Vernonia adoensis	
651	V	V5	381. Vernonia auriculifera	
652	V	V6	382. Vernonia brachycalyx	
653	V	V7	383. Vernonia lasiopus	
654	V	V8	384. Vernonia urticifolia	
655	V	V9	385. Vitex doniana	
656	V	V10	386. Vitex keniensis	
657	V	V11	0. Other species	
658	W	W1	Warburgia ugandensis	
659	W	W2	Withania somnifera	
660	W	W3	Other species	
661	X	X1	387. Xylocarpus granatum	
662	X	X2	388. Xylocarpus moluccensis	
663	X	X3	389. Xymalos monospora	
664	X	X4	390. Xylopia Parvifolia	
665	X	X5	0. Other species	
666	Y	Y1	0. Other species	
667	Z	Z1	391. Zanthoxylum gillettii	
668	Z	Z2	392. Zanthoxylum usambarense	
669	Z	Z3	393. Ziziphus mucronata	
670	Z	Z4	0. Other species	

Test_inventory

▼ Tree Information

SubplotID

Tree Number

First letter of Species *

H

H_Species *

○ 186. Hypericum revolutum

○ 187. Haplocoelum foliolosum

○ 188. Hymenodictyon parvifolium

○ 189. Haplocoelum inoploem

<FLAG2:MODE OD DEATH, if FLAG1 is “dead 0” >

1	type	name	label	appearance	relevant
35	select_one L	L_Species	L_Species	minimal	\${First_letter_of_Species}='L'
36	select_one M	M_Species	M_Species	minimal	\${First_letter_of_Species}='M'
37	select_one N	N_Species	N_Species	minimal	\${First_letter_of_Species}='N'
38	select_one O	O_Species	O_Species	minimal	\${First_letter_of_Species}='O'
39	select_one P	P_Species	P_Species	minimal	\${First_letter_of_Species}='P'
40	select_one Q	Q_Species	Q_Species	minimal	\${First_letter_of_Species}='Q'
41	select_one R	R_Species	R_Species	minimal	\${First_letter_of_Species}='R'
42	select_one S	S_Species	S_Species	minimal	\${First_letter_of_Species}='S'
43	select_one T	T_Species	T_Species	minimal	\${First_letter_of_Species}='T'
44	select_one U	U_Species	U_Species	minimal	\${First_letter_of_Species}='U'
45	select_one V	V_Species	V_Species	minimal	\${First_letter_of_Species}='V'
46	select_one W	W_Species	W_Species	minimal	\${First_letter_of_Species}='W'
47	select_one X	X_Species	X_Species	minimal	\${First_letter_of_Species}='X'
48	select_one Y	Y_Species	Y_Species	minimal	\${First_letter_of_Species}='Y'
49	select_one Z	Z_Species	Z_Species	minimal	\${First_letter_of_Species}='Z'
50	integer	DBH_mm	DBH_mm		
51	integer	POM_cm	POM_cm		
52	decimal	Height_m	Height_m		
53	select_multiple FLAG1	FLAG1	Tree Codes	minimal	
54	select_multiple FLAG2	FLAG2	MODE OF DEATH	minimal	\$(FLAG1)='0'
55	text	Note	Note		
56	end repeat	field_21			
57					

1	list_name	name	label	image	label::language1
669	Z	Z3	393. Ziziphus mucronata		
670	Z	Z4	0 Other species		
671	FLAG1	0	0=Dead		
672	FLAG1	a	a=Alive normal,should be used by itself unless a tree is a recruit		
673	FLAG1	b	b= Alive,broken/snapped,Write in comments what height the stem is broken		
674	FLAG1	c	c=Alive,leaning by > 10%,DO NOT use leaning code with the fallen code 'd'		
675	FLAG1	d	d= Alive,fallen (e.g on the ground)		
676	FLAG1	e	e=Alive,tree fluted or fenestrated		
677	FLAG1	f	f=Alive,hollow		
678	FLAG1	g	g= Alive, rotten		
679	FLAG1	h	h=Multiple stemmed individual,Each stem >10cm gets a number.Should be used with other code e.g. if a		
680	FLAG1	i	i= Alive,no leaves,few leaves		
681	FLAG1	j	j=Alive, burnt		
682	FLAG1	k	k= Alive,snapped<1.3m (therefore the diameter at 1.3 is 0 mm)		
683	FLAG1	l	l=Alive, has liana>10 cm diameter on stem or in canopy		
684	FLAG1	m	m= Covered by lianas,Use where canopy is atleast 50% covered by lianas,even if no individual liana rea		
685	FLAG1	n	n= New recruit,Always use with another code-e.g. if a tree is normal and new then use the code 'an',if t		
686	FLAG1	o	o= Lighting Damage		
687	FLAG1	p	p= Cut		
688	FLAG1	q	q= Peeling bark (bark loose/flaking)		
689	FLAG1	r	r= Pests present,In comments write % of crown affected by pests		
690	FLAG1	s	s=Has a strangler		
691	FLAG1	z	z= Alive,declining productivity (nearing death)		
692	FLAG2	a	a = Standing		
693	FLAG2	b	b = Broken (snapped trunk)		
694	FLAG2	m	m = Unknown		
695	FLAG2	p	p = Died alone		
696	FLAG2	q	q = One of multiple deaths		
697	FLAG2	r	r = Unknown		
698	FLAG2	j	j = Anthropogenic		
699	FLAG2	k	k = Pests		
700	FLAG2	n	n = Burnt		
701	FLAG2	o	o = Lightning		
702	FLAG2	u	u = Killed,no more information		
703	FLAG2	z	z = Killed by Strangler		
704	FLAG2	2 3	=Killed by liana		
705					
706					
707					

test_inventory

Tree Codes

0=Dead

MODE OF DEATH

☐ a = Standing

☐ b = Broken (snapped trunk)

☐ m = Unknown

☐ p = Died alone

☐ q = One of multiple deaths

☐ r = Unknown

☐ j = Anthropogenic

☐ k = Pests

☐ n = Burnt

☐ o = Lightning

☐ u = Killed,no more information

☐ z = Killed by Strangler

☐ 3 =Killed by liana

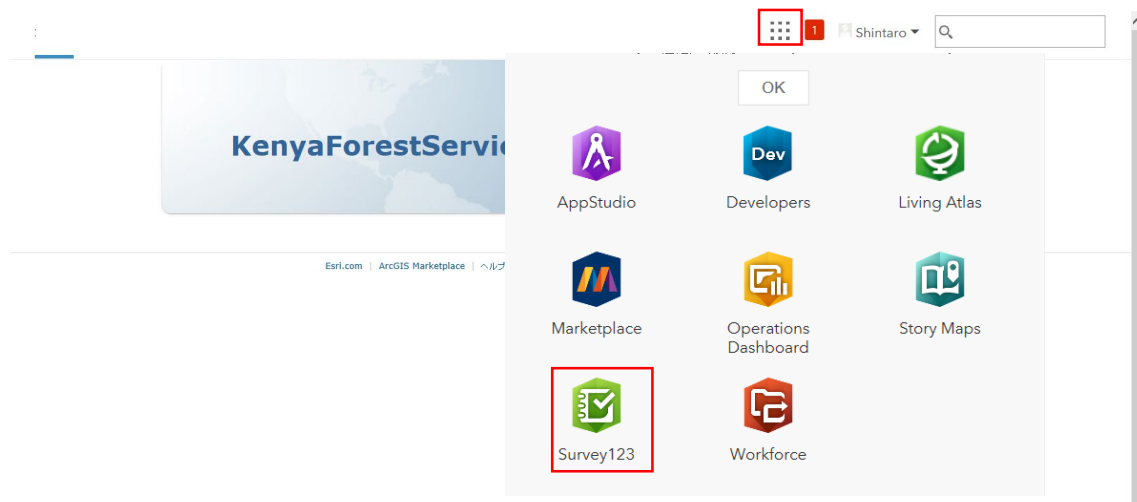
A-4: Sharing field Survey form on ArcGIS online.

1.Input following URL for accessing ArcGIS Online

<https://kenyaforest.maps.arcgis.com/home/organization.html>

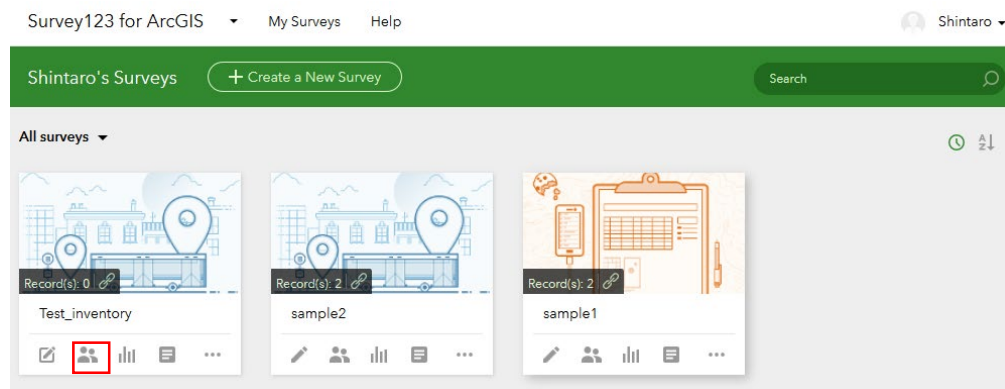
2.Sign-in by designed User ID and Password

3.After sign-in, push “Application” button and select “Survey123”.



4.Push the “Collaborate” button of the updated form.

Note: If you use the function including repeating, which don't have in Web designer, you can't open the form in web designer.



5. Select “Submitter” and choose “Who can submit data to this survey?”.

And select how to open the form.

Finally push “Save button”.

Survey123 for ArcGIS My Surveys Help

Test_inventory Overview Design Collaborate

Submitter

Viewer

Group Settings

Choose who can submit data to this survey:

- ☐ Everyone (Public)
- ☒ Members of my organization (KenyaForestService)
- ☒ Following Groups:
 - ☒ Training of forest survey Details

Survey link:

☐ Open the survey in browser directly

☒ Ask the user how to open the survey, in browser or in the Survey123 field app

☐ Open the survey in the Survey123 field app directly. [\(Learn more about this option\)](#)

Save

Checking “Everyone” enable to register data Without ArcGIS online account (Possibly not secure)

6. With this URL or QR-code, you can share the form to register date.

Survey123 for ArcGIS My Surveys Help Shintaro

Test_inventory Overview Design Collaborate Analyze Data Settings

Submitter

Viewer

Group Settings

Choose who can submit data to this survey:

- ☐ Everyone (Public)
- ☒ Members of my organization (KenyaForestService)
- ☒ Following Groups:
 - ☒ Training of forest survey Details

Survey link:

☐ Open the survey in browser directly

☒ Ask the user how to open the survey, in browser or in the Survey123 field app

☐ Open the survey in the Survey123 field app directly. [\(Learn more about this option\)](#)

Save

Scan the QR code to open the survey on your device

7. Select “Viewer” and Choose “Who can submit data to this survey?”.

And select “What data can viewers see?”

Finally push “Save button”.

Survey123 for ArcGIS My Surveys Help

Test_inventory Overview Design

Submitter

Viewer

Group Settings

Who can view data of this survey?

- ☐ Everyone (Public)
- ☒ Members of my organization (KenyaForestService)
- ☒ Following Groups:
 - ☒ Training of forest survey [Details](#)

What data can viewers see?

- ☒ All records in this survey
- ☐ Only their own submitted records

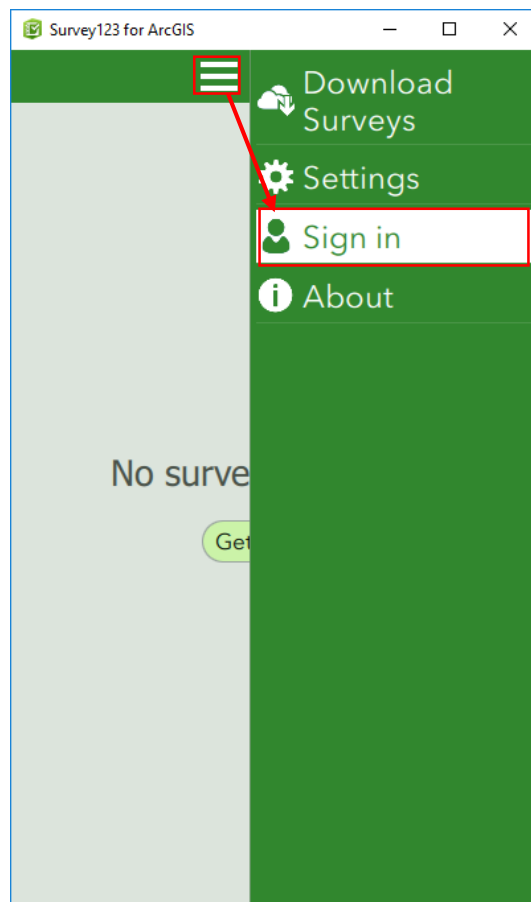
Save

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B: Registering survey information and sending to ArcGIS online by PDA

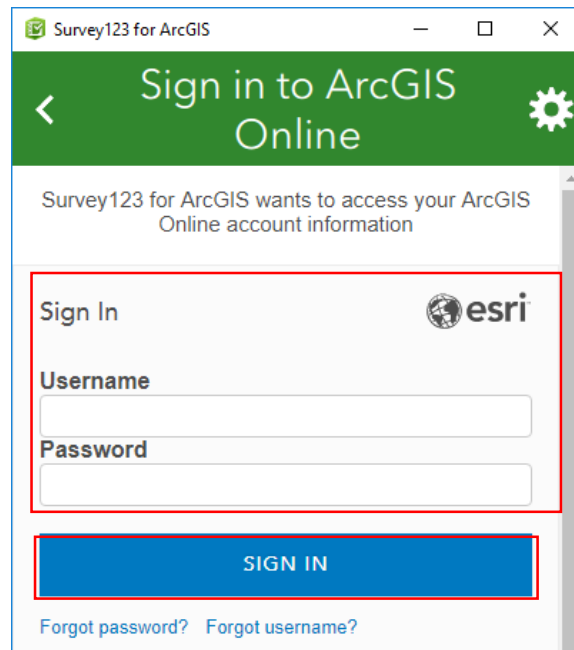
1. Download “Survey123 for ArcGIS”  application into your PDA by iOS or Android.
Note: This application enables to download in your PC.

2. Launch “Survey123 for ArcGIS”  application.
3. To download a survey form, select “Sign in”.

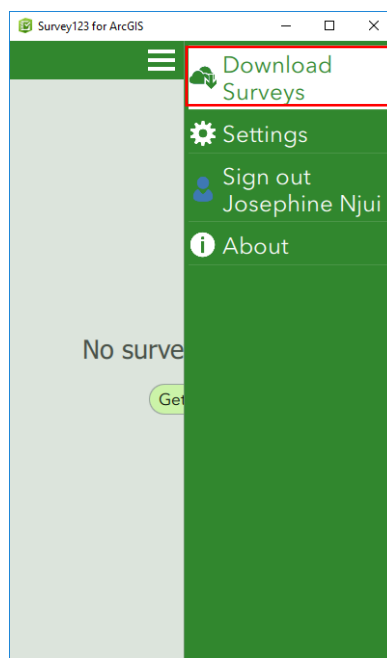


C: Registering survey information and sending to ArcGIS online by PDA

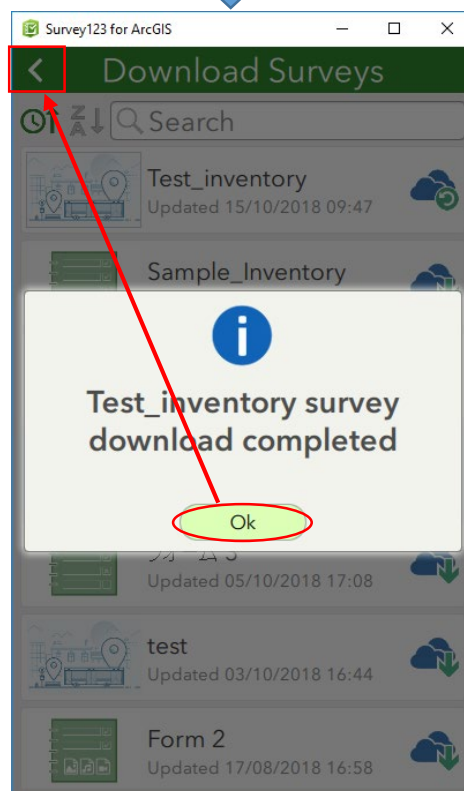
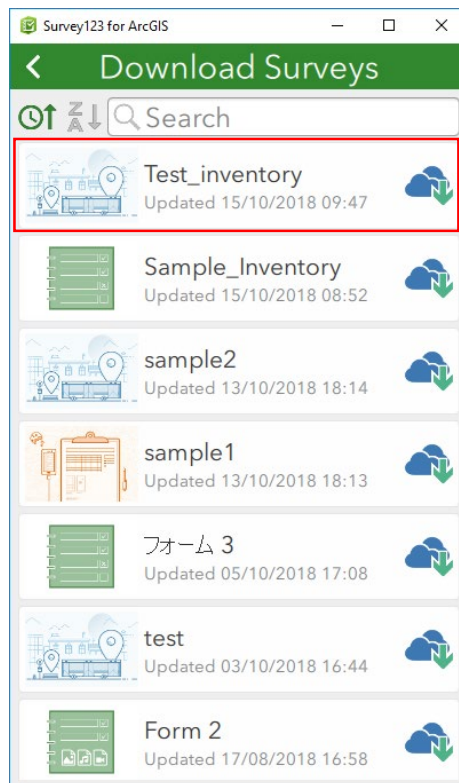
4. Sign in by ArcGIS online account.



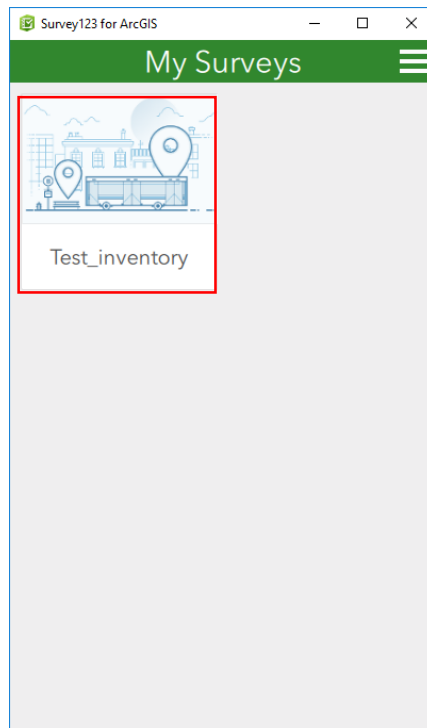
5. Select "Download Surveys".



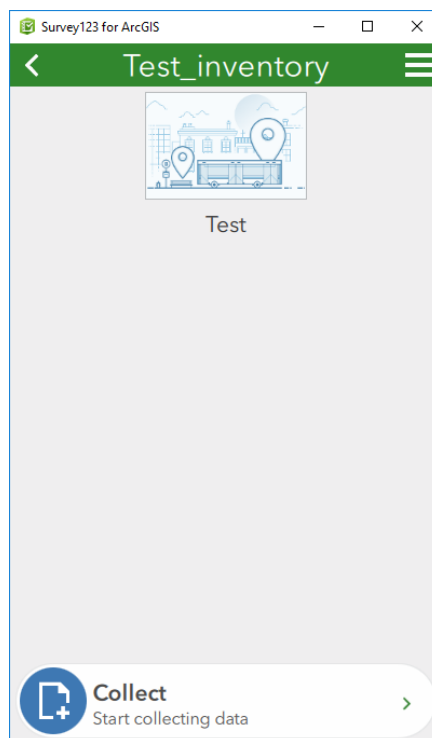
6. Select “the form you made” and the download starts.



7. On “My Surveys display”, select the form you downloaded.



8. Select “Collect”.



9. Based on the form, register field data.

Survey123 for ArcGIS

Test_inventory

Date*
Monday, 15 October 2018

Plot Dimensions
22*22

Subplot Dimensions
11*11

Plot ID*
001

Orientation

Inventory Leader
Ishizuka

Assistant

Required information to register

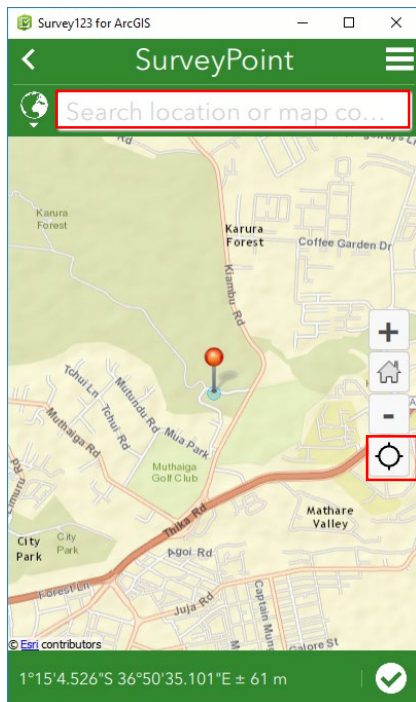
10. When you register geo-point, click on the map.

SurveyPoint

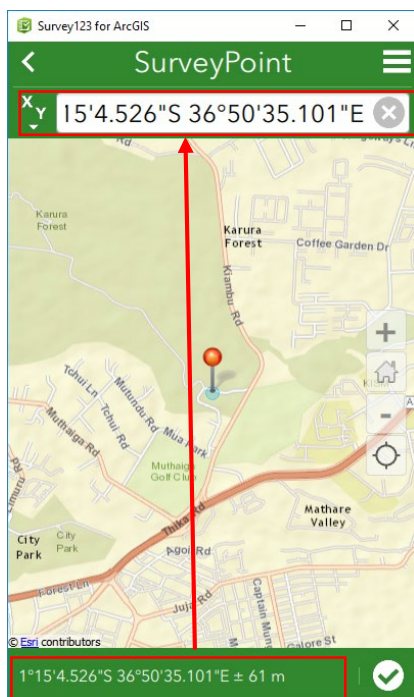
1°15'53.6"S 51°E ± 63 m

Photo1

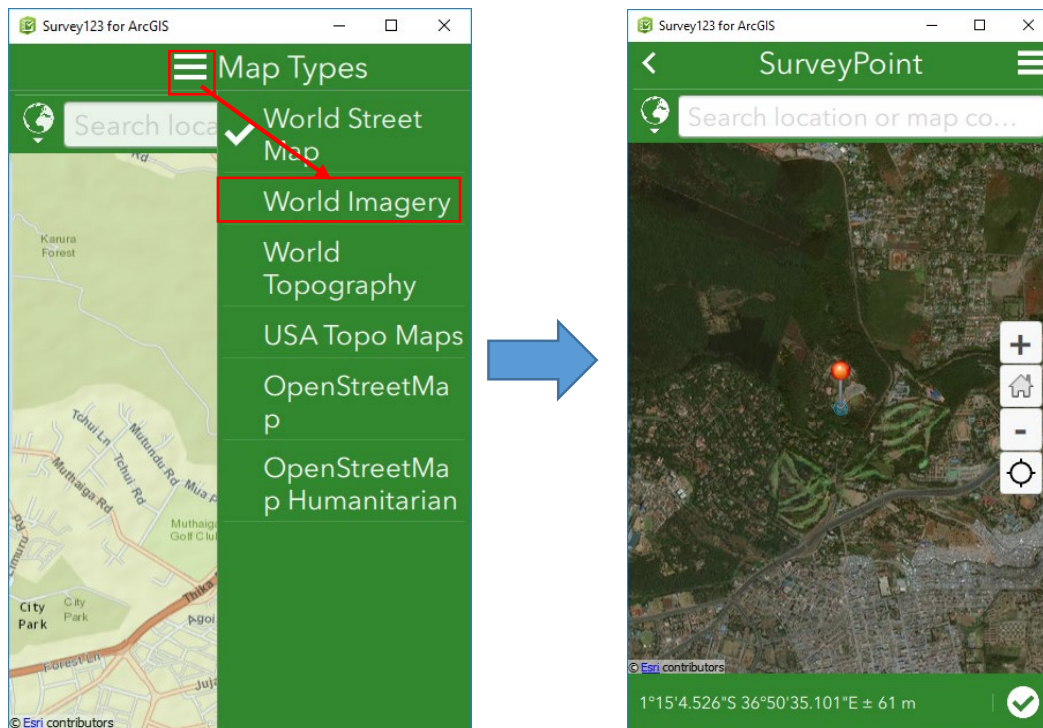
11. You can move this map by Searching or clicking on the map or  button.



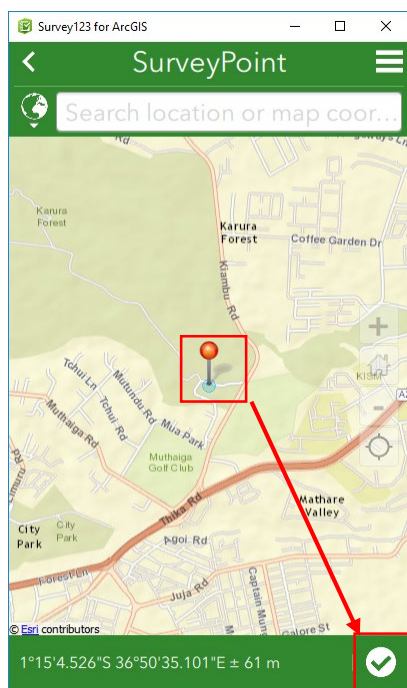
12. And also clicking latitude and longitude below, you can see same information above display. Changing this information, including referring exact GPS information, you can set exact geo-point.



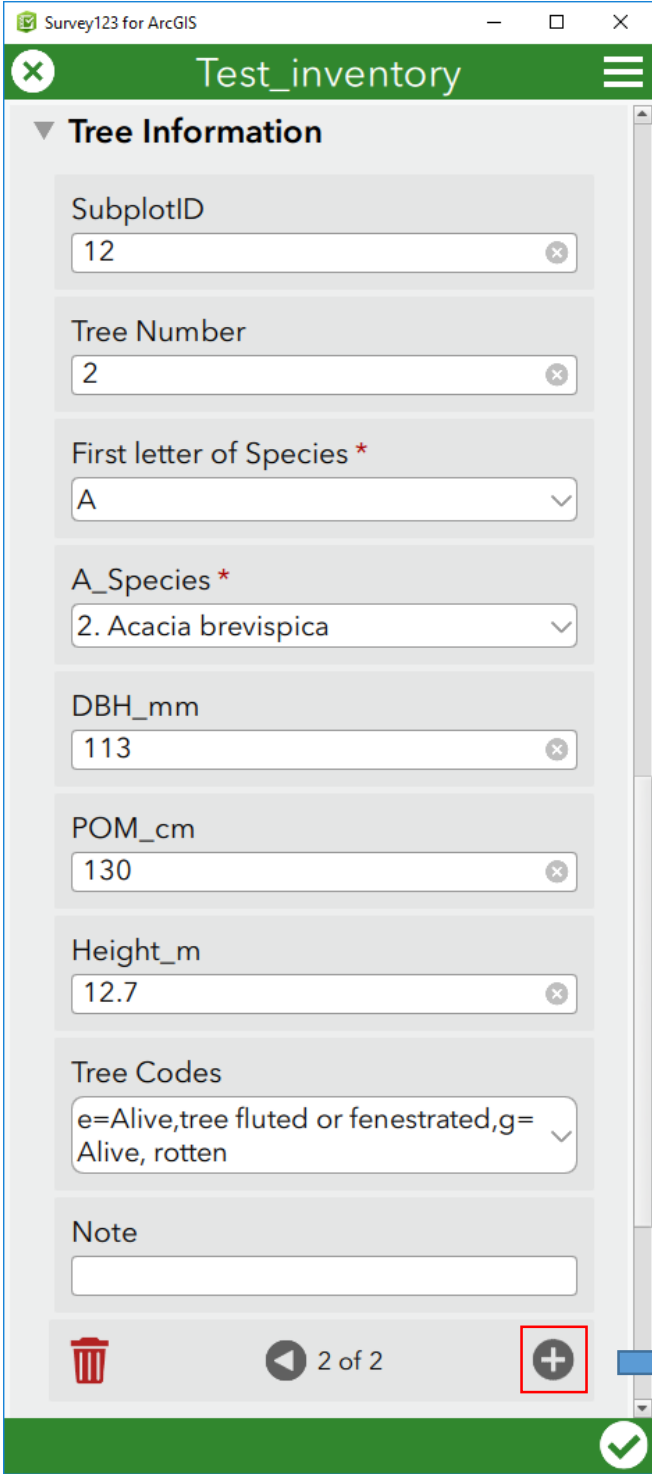
13. If you want to change background map, from “Map Types”, select other map.
Using useful background data, you can set exact geo-point, regardless of off-line situation, too.



14. After setting geo-point, push  button.



15. As following form, if repeating function is used, for registering the information of each tree, pushing  button, you can continue to register the information of another tree.

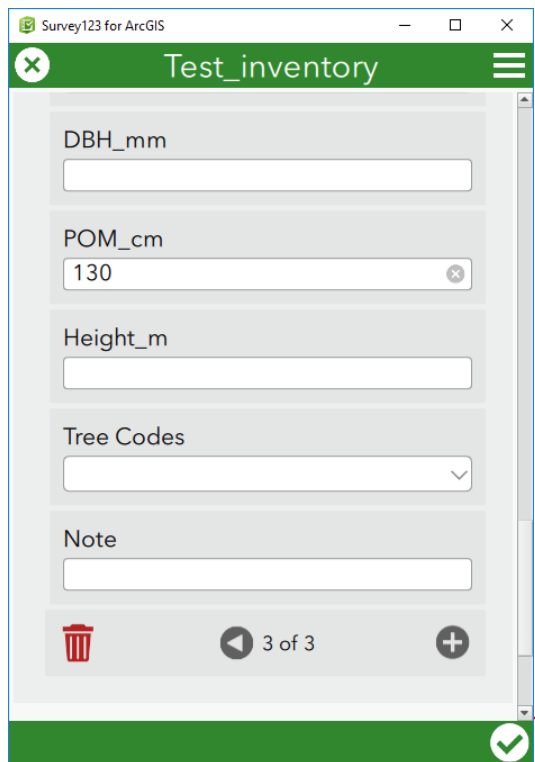


The screenshot shows the 'Test_inventory' form in Survey123 for ArcGIS. The 'Tree Information' section contains the following fields:

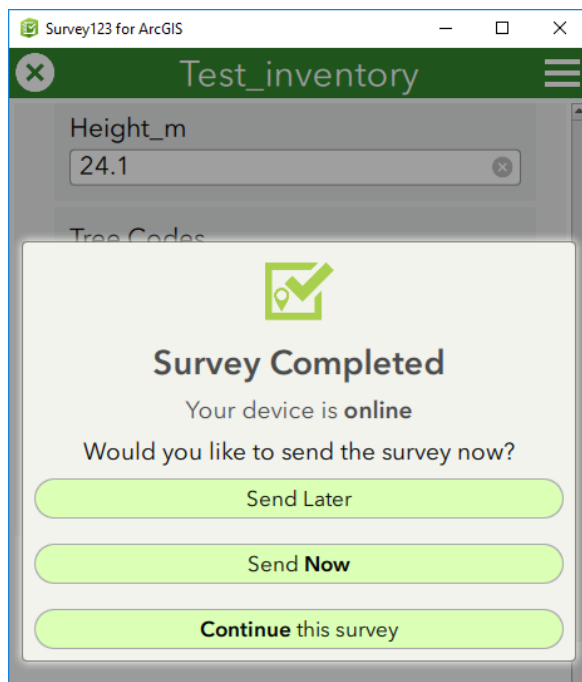
- SubplotID: 12
- Tree Number: 2
- First letter of Species *: A
- A_Species *: 2. Acacia brevispica
- DBH_mm: 113
- POM_cm: 130
- Height_m: 12.7
- Tree Codes: e=Alive, tree fluted or fenestrated, g=Alive, rotten
- Note: (empty text box)

At the bottom of the form, there is a repeating section indicator showing a trash icon, a left arrow, '2 of 2', a plus icon in a red box, and a right arrow. A blue arrow points from this plus icon to a second, partially visible form on the right, which shows the next instance of the repeating section with '3 of 3' and another plus icon.

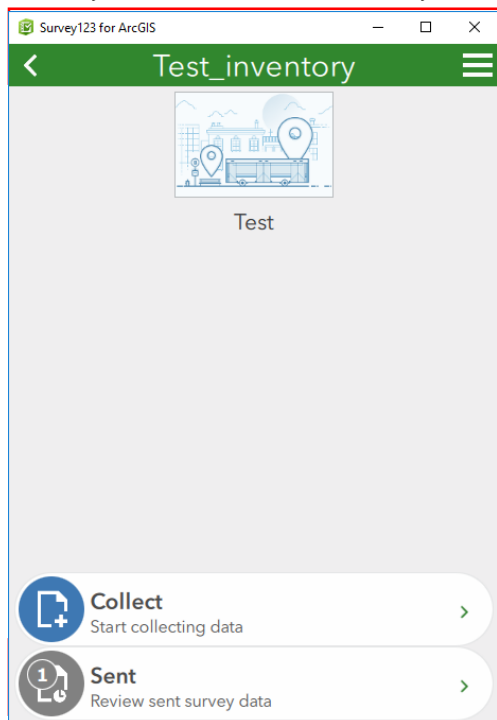
16. After inputting necessary data, push  button.



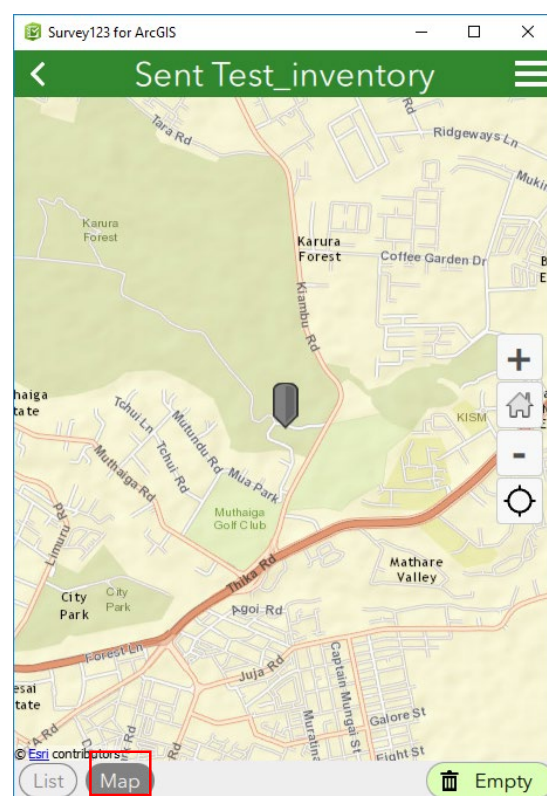
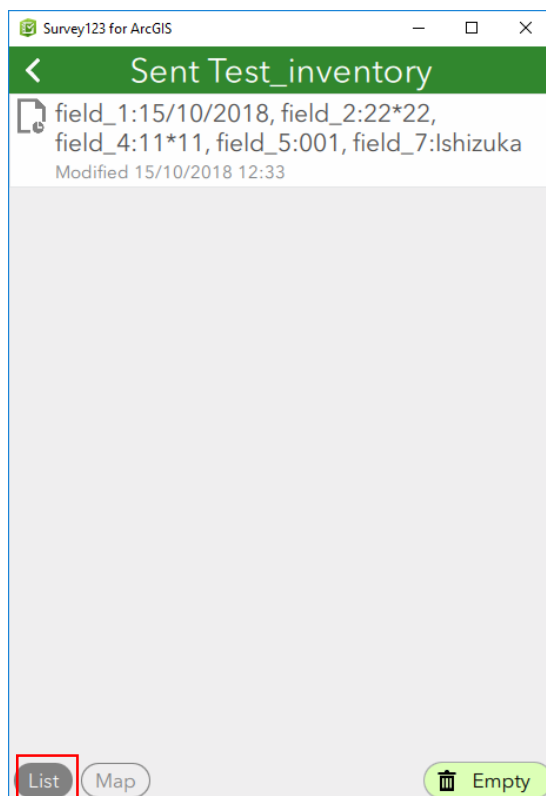
17. You can select the survey is sent now or later. On online situation, selecting “Send Now”, the data is updated into ArcGIS Online. This time, select “Send Now”.



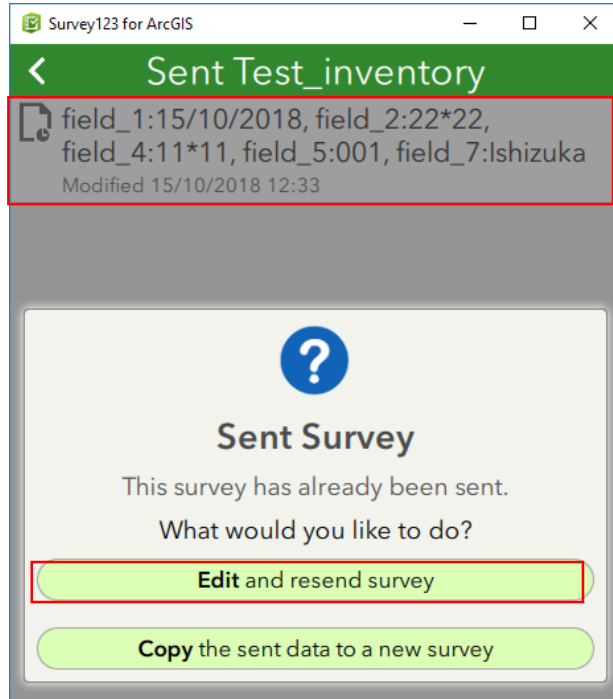
18. If you want to edit sent survey, select “Sent”.



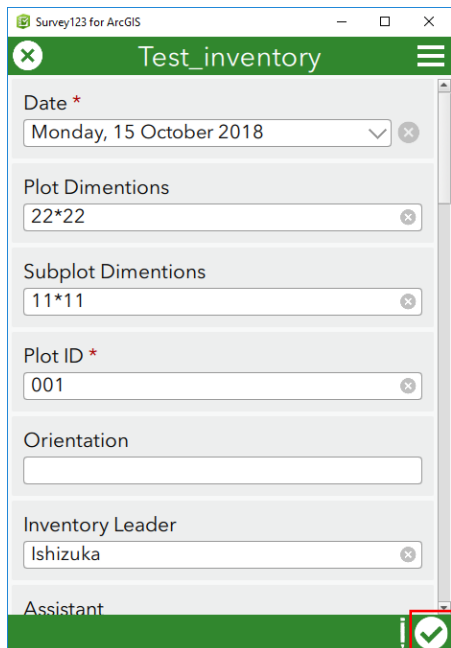
19. You can see sent data from “List” tab and sent geo-point from “Map” tab.



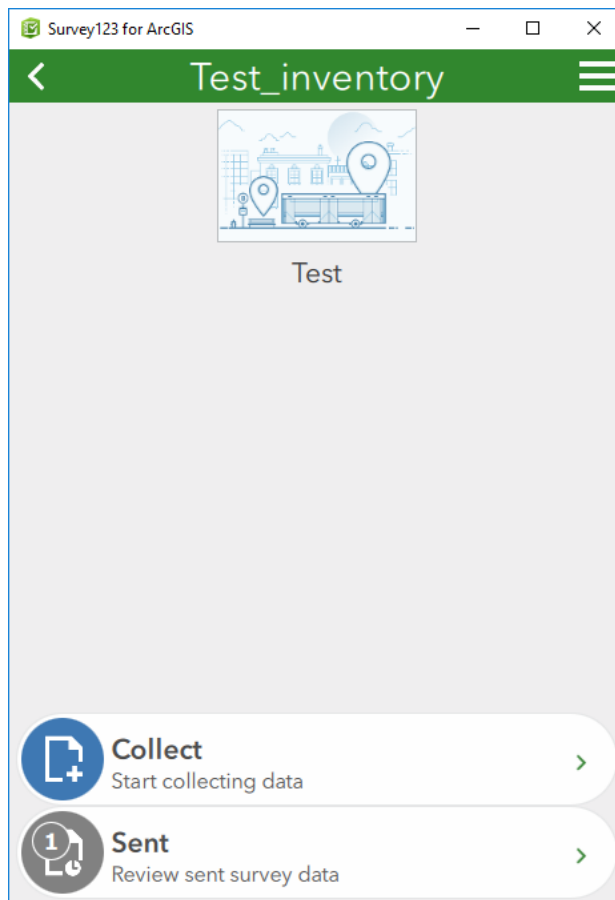
20. From “List” tab, select sent data. If you want to edit sent data again, select “Edit and resend survey”.



21. After editing sent data, pushing  button, you can resend survey to ArcGIS Online .



22. If you want to proceed another survey, select “Collect”.



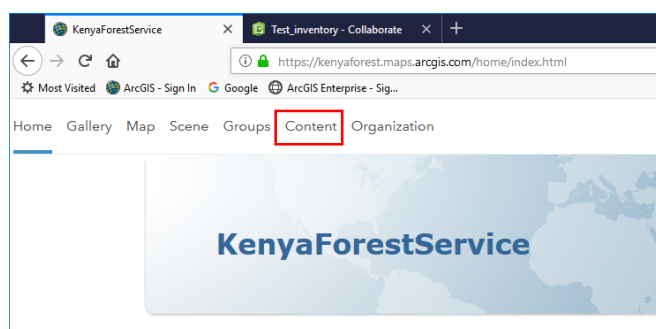
C: Confirmation of field survey result

1.Input following URL for accessing ArcGIS Online

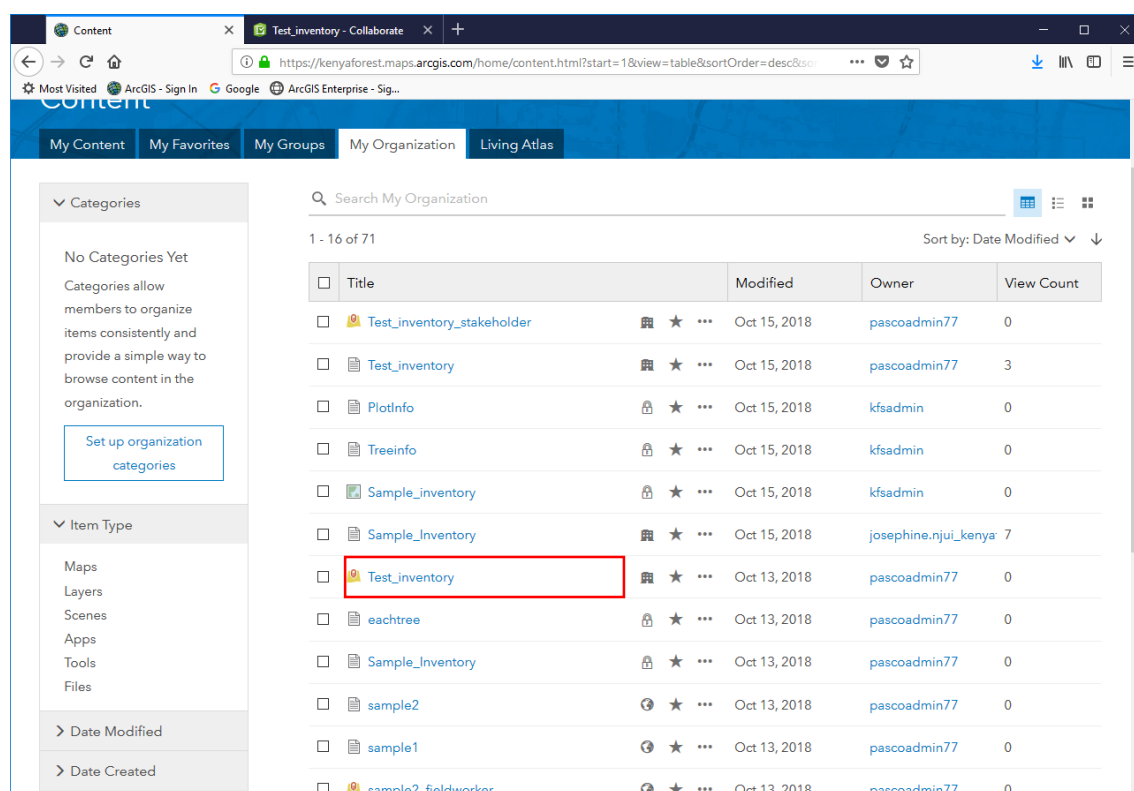
<https://kenyaforest.maps.arcgis.com/home/organization.html>

2.Sign-in by designed User ID and Password

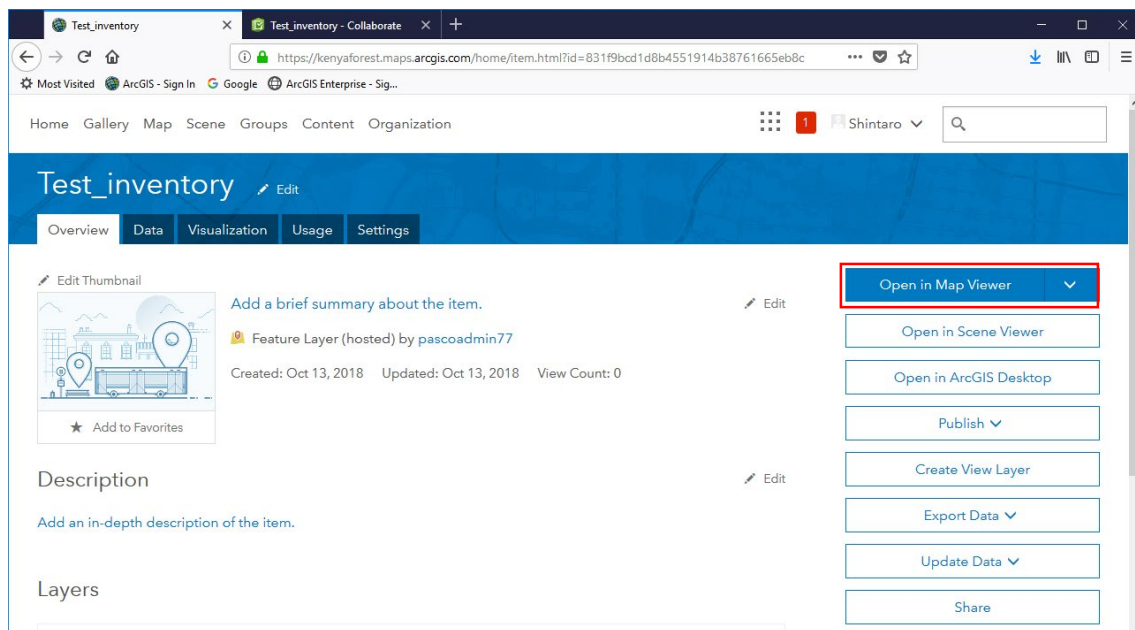
3.After sign-in, select “Content”.



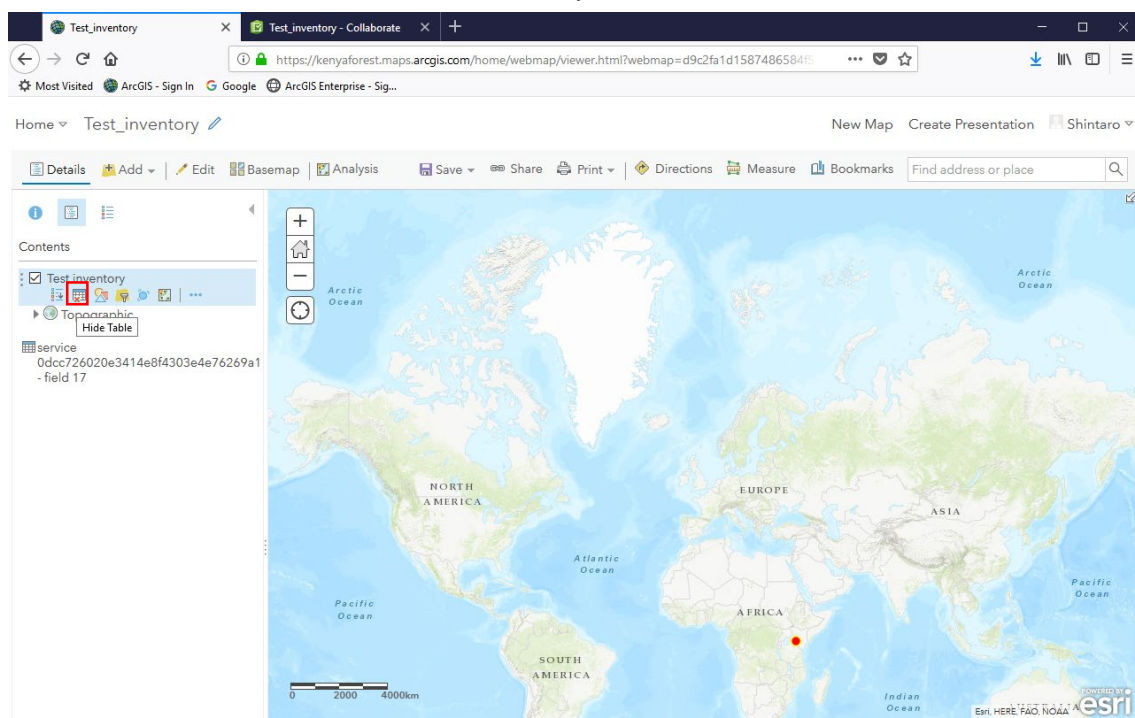
4.From “My Organization” tab, select your feature layer.



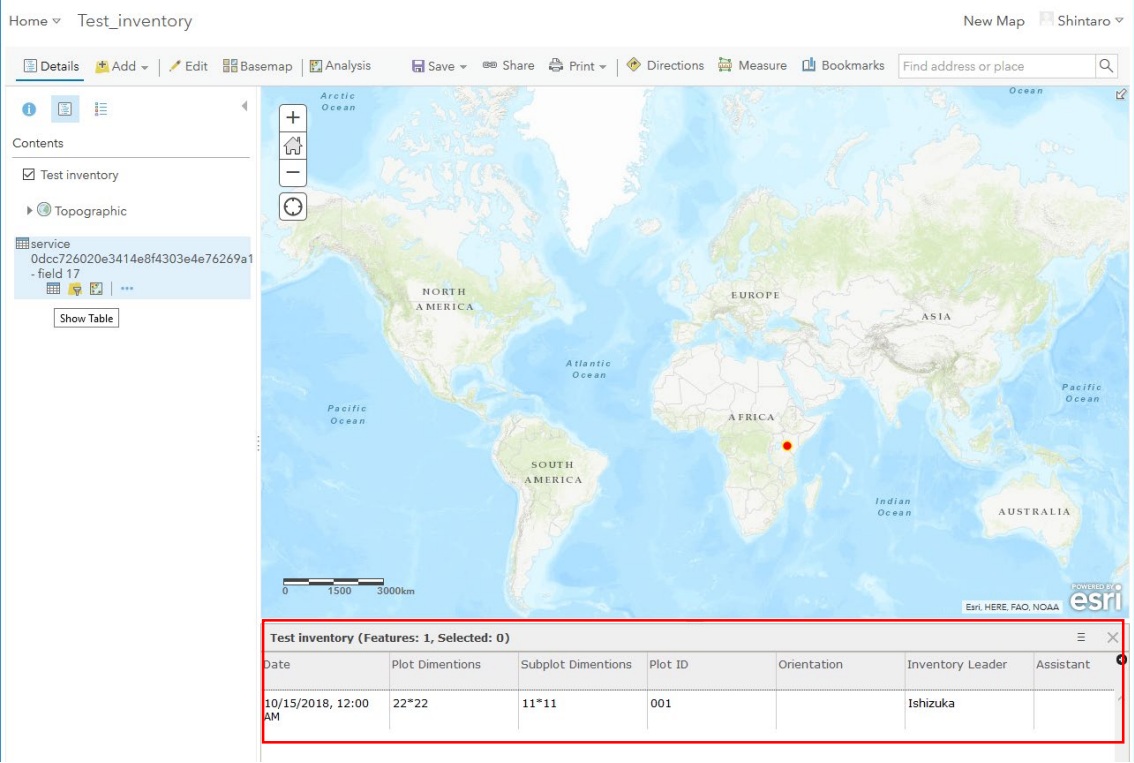
5. Select “Open in Map Viewer”.



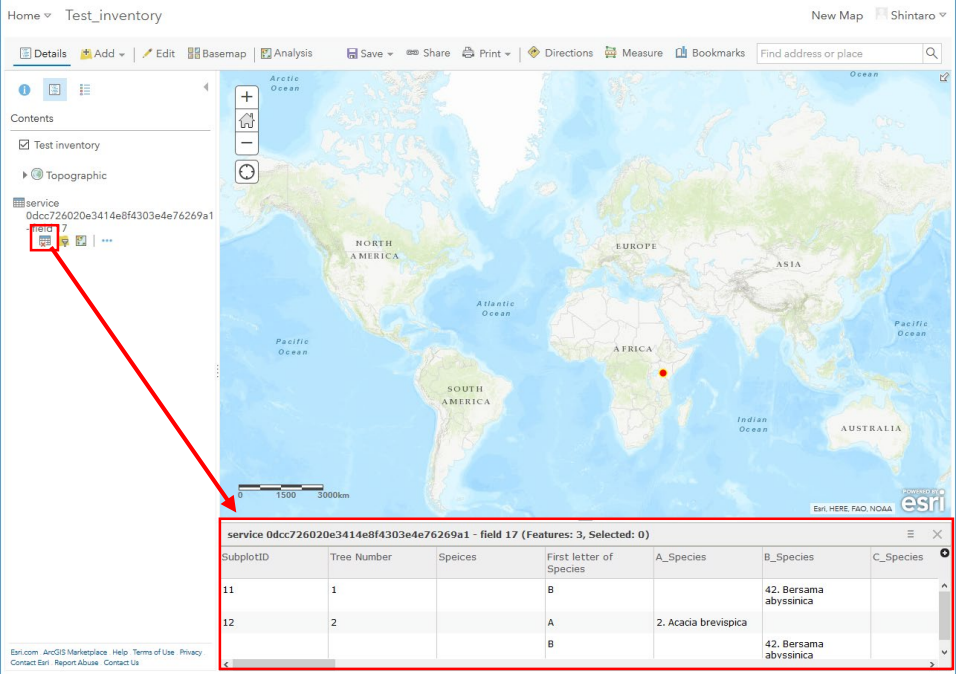
6. From “Details”, select “show table” from “layer name”.



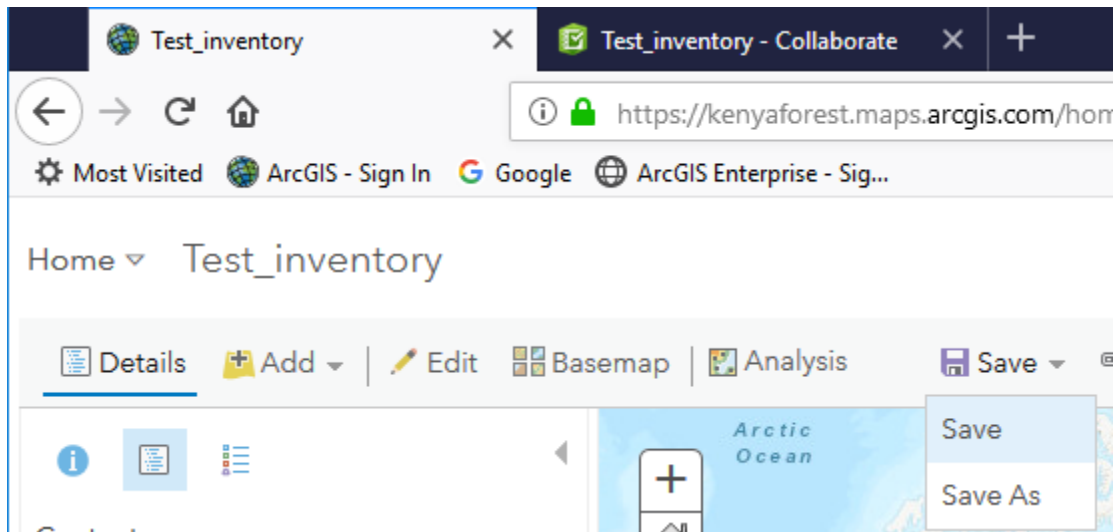
7.You can see the table of the layer below.Editing the informaiton directly, you can edit registerd data.



8.If you want to see the information of "the table",the information of each tree, select "show table" from "the table". Editing the informaiton directly, you can edit registerd data.



9. Push “Save” button and select “Save” .

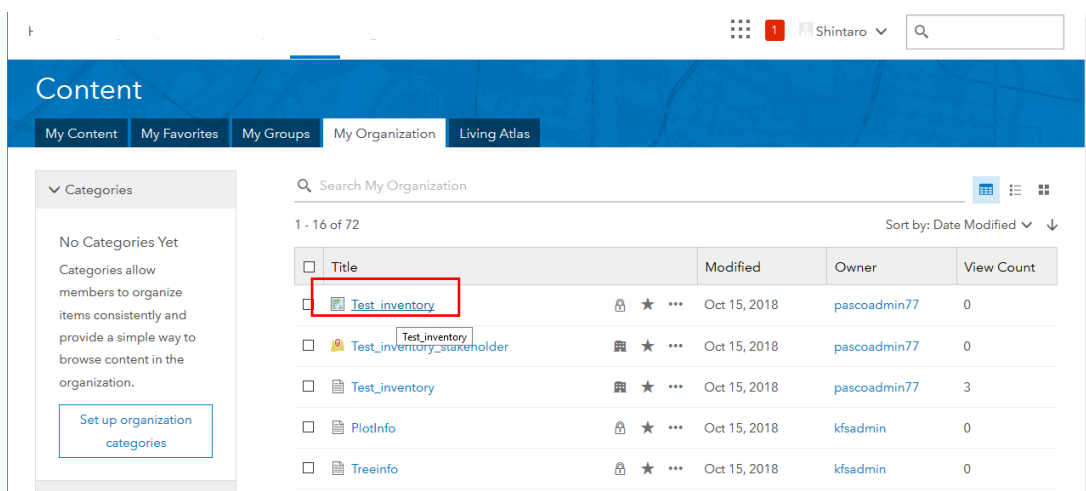


10. Input “Title“ and ”Tags”.Finally push “SAVE MAP” button.

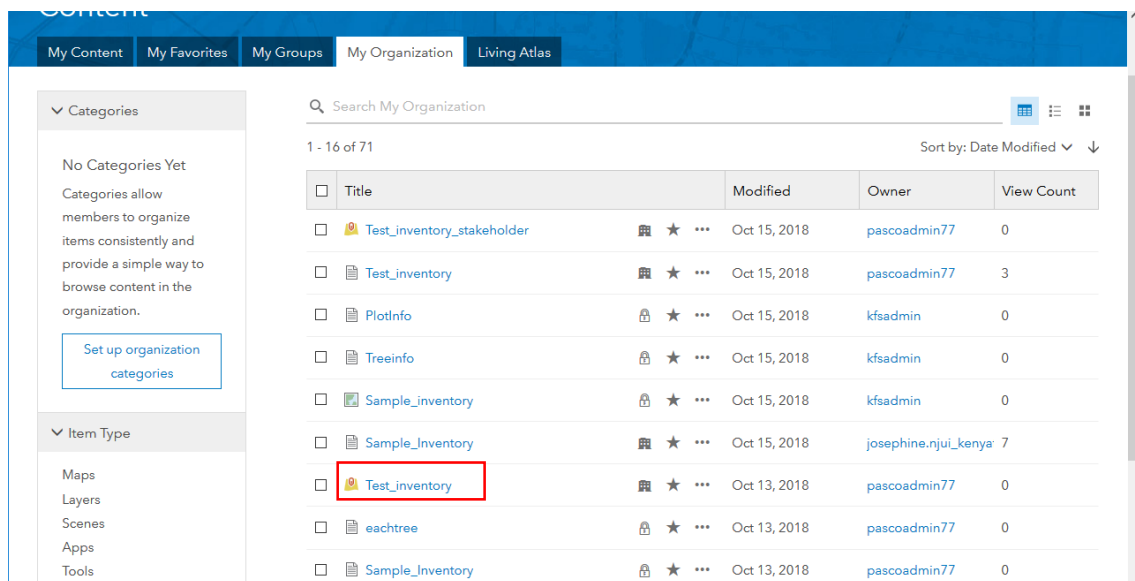
Note: “Title“ and ”Tags” is necessary to set easy name because this information is relation to easy search on ArcGIS Online

A screenshot of the 'Save Map' dialog box. The 'Title' field contains 'Test_inventory'. The 'Tags' field contains 'inventory' with a dropdown arrow and the text 'Add tags'. The 'Summary' field contains 'Description of the map.'. The 'Save in folder' dropdown is set to 'pascoadmin77'. The 'SAVE MAP' button is highlighted with a red box, and the 'CANCEL' button is also visible.

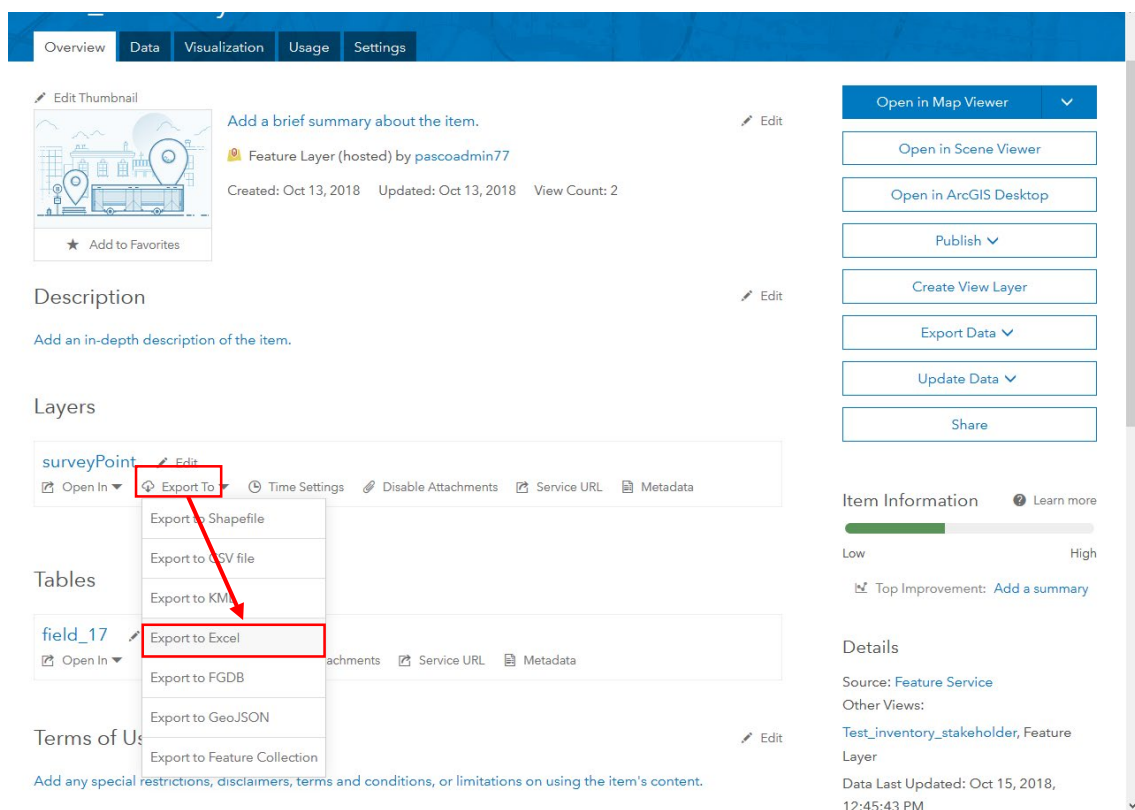
11. Saving map as MapViewer enables to display easily from Content next time.



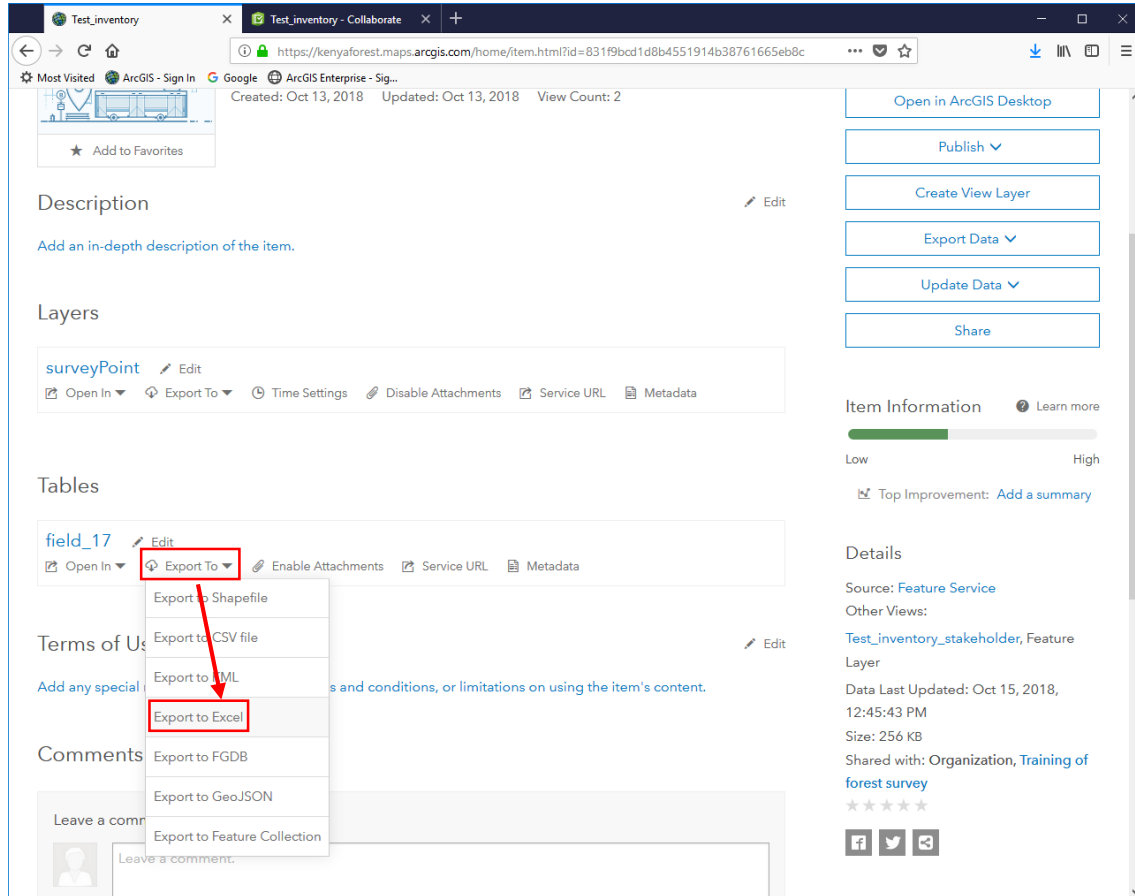
12. If you want to export the survey information. Select Feature Layer from contents.



13. If you want to export layer information, push “Export TO” button and select Export to Excel from Layers.



14. If you want to export table data, push “Export TO” button and select Export to Excel from Tables.



4 CO2 calculation tool (CO2CalcTool: ArcGIS Pro python tool box)

Install “R” and setup the environment manual

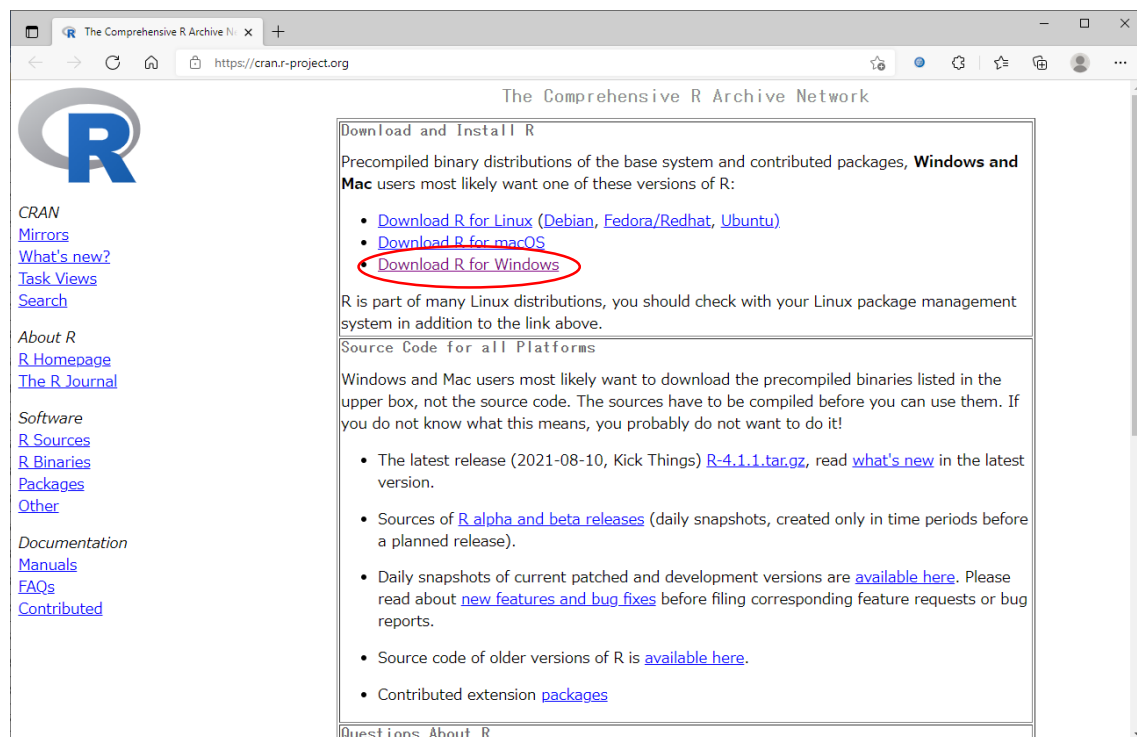
This manual instructs to install the “R” in your PC and set up the environment of Windows and ArcGIS Pro.

[Step 1] Required environment

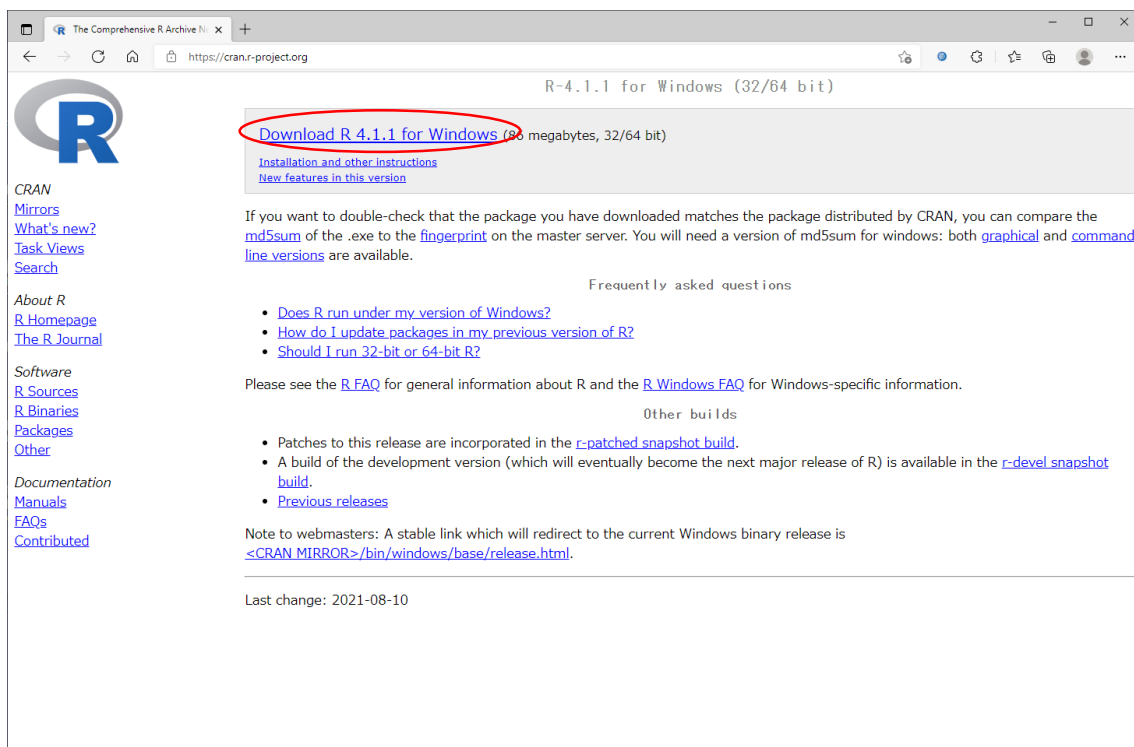
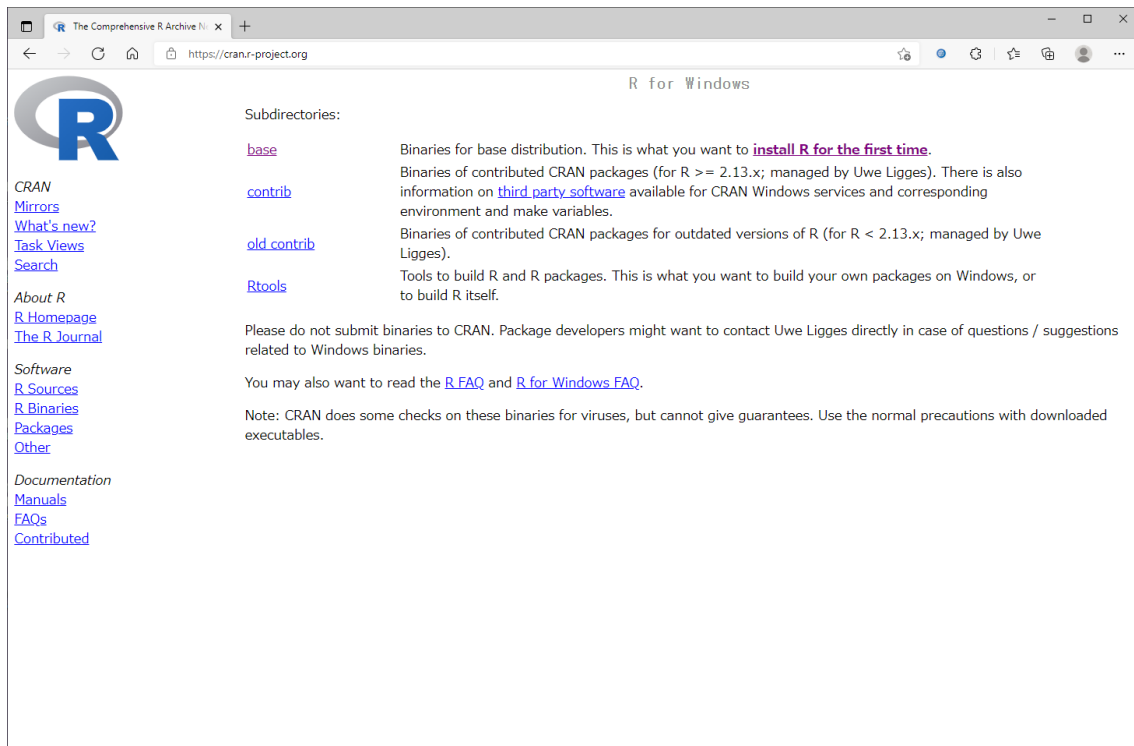
ESRI ArcGIS Pro 2.7 or higher

[Step2] Download and install the “R” package

1. Access to <https://cran.r-project.org/> and click the “Download R for Windows” in the “Download and Install R”.



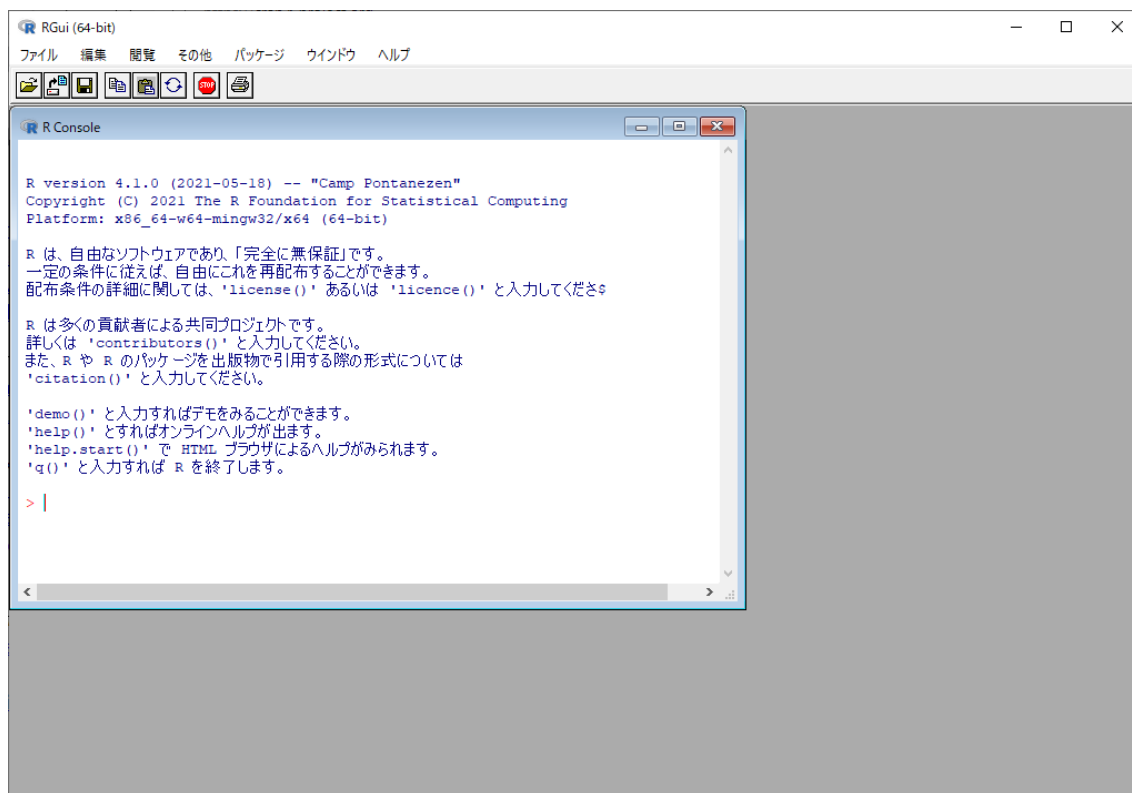
2. Click “base” then click “Download R 4.1.1 for Windows (86 megabytes, 32/64 bit)” (The version number will be changed).



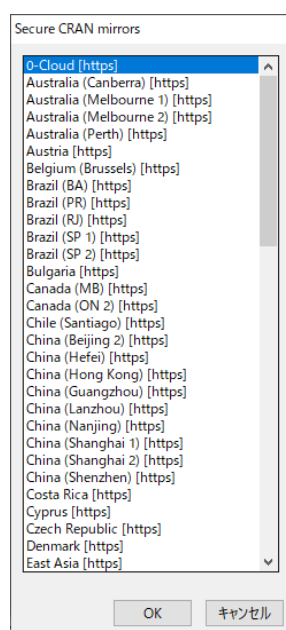
3. Install the “R” package with downloaded installer (ex. R-4.1.1-win.exe).

[Step 3] Install the libraries for “R”

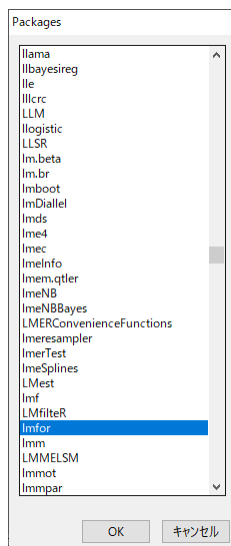
1. Start “R” (choose x64 version when installed version i386 & x64)



2. Click “Package” > “Install Package” then select the mirror site (closest site will be fine) and click “OK”.



3. Find and select “lmfor” (l is small “L”) and click “OK” for install. When you meet the error in this section, it means the lacking of other libraries. Check the error message and find the lacking libraries and install them first.



[Step 4] Set the environment variables in Windows

Add the following values to the Windows's environment variable.

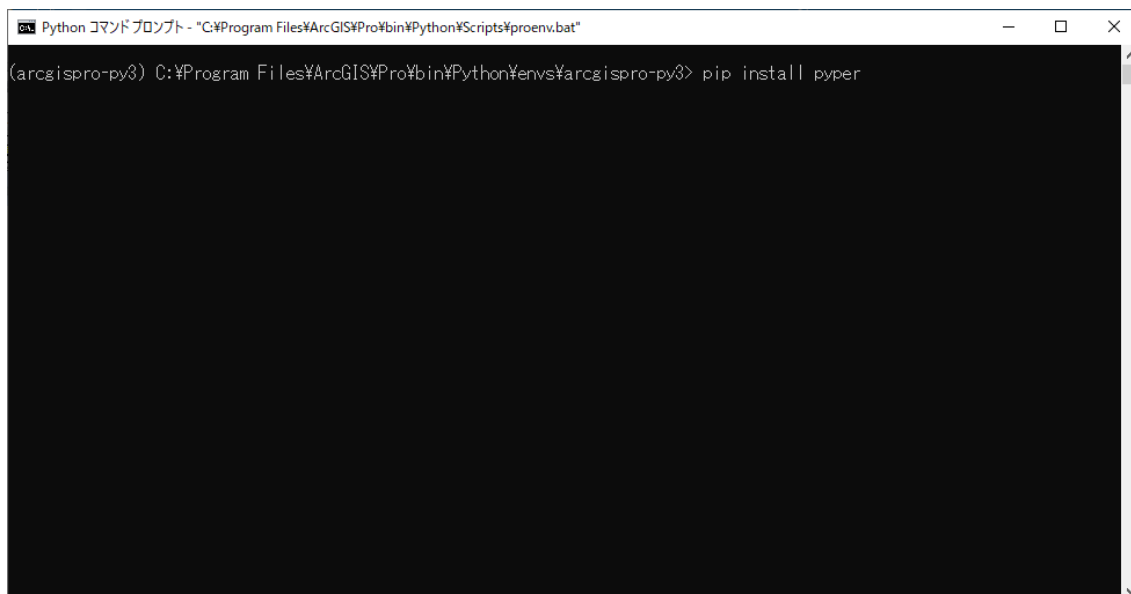
1. Create “R_HOME” and give the “C:\Program Files\R\R-4.0.5” to the value on “USER environment variable” (Value will not be same. It depends on the installed folder and version.).
2. Add “C:\Program Files\R\R-4.0.5” and “C:\Program Files\R\R-3.3.2\bin\x64” to the “Path” in “System environment variable” (Value will not be same. It depends on the installed folder and version.).

[Step 5] Install the “pyper”

“pyper” is the library for using “R” in the python script.

1. Start the python command prompt as an administrator. It will be found in “Start” > “ArcGIS”.

2. In the command prompt, type “pip install pyper”. Then “pyper” will be installed.



[Step 6] Replace the pyper.py

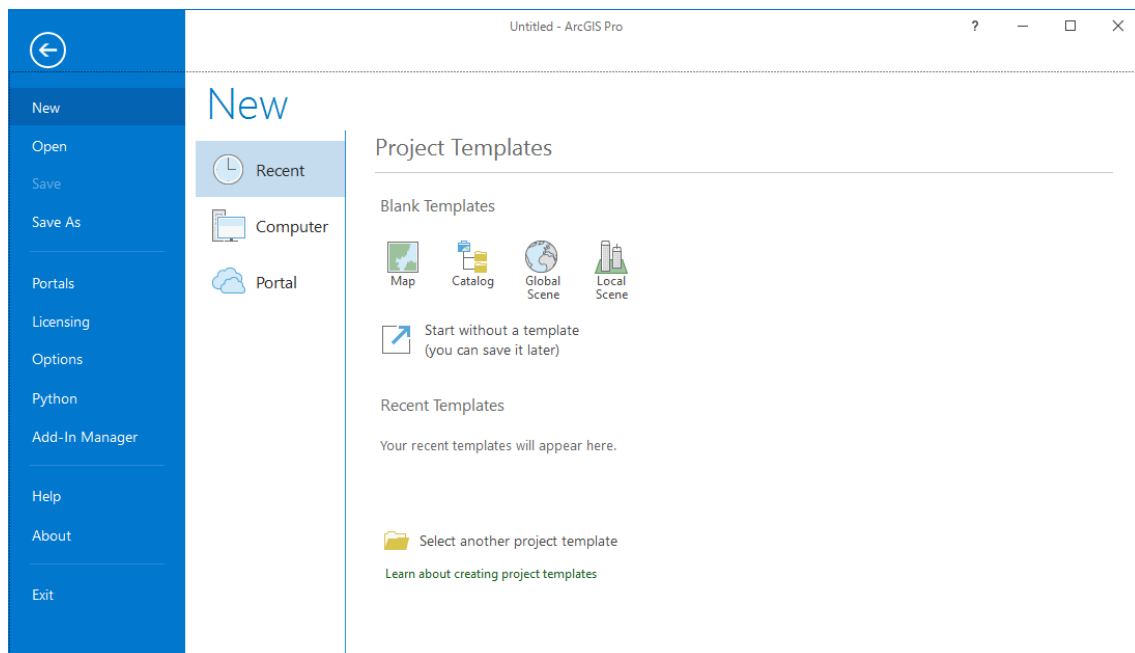
The pyper.py is designed for python2. However, ArcGIS Pro uses the python3 and the difference of version will cause the problem.

Replace the pyper.py. Usually it will be found in following folder (AppData is a hide folder. Make sure set the explore setting as “show hide folders/files”);

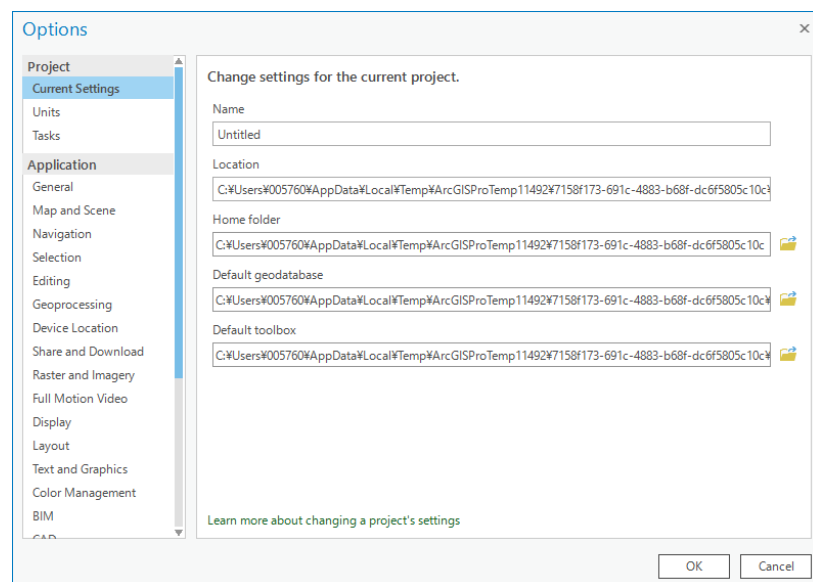
C:\\Users\\<username>\\AppData\\Roaming\\Python\\Python37\\site-packages

[Step 7] Use “R” from ArcGIS Pro

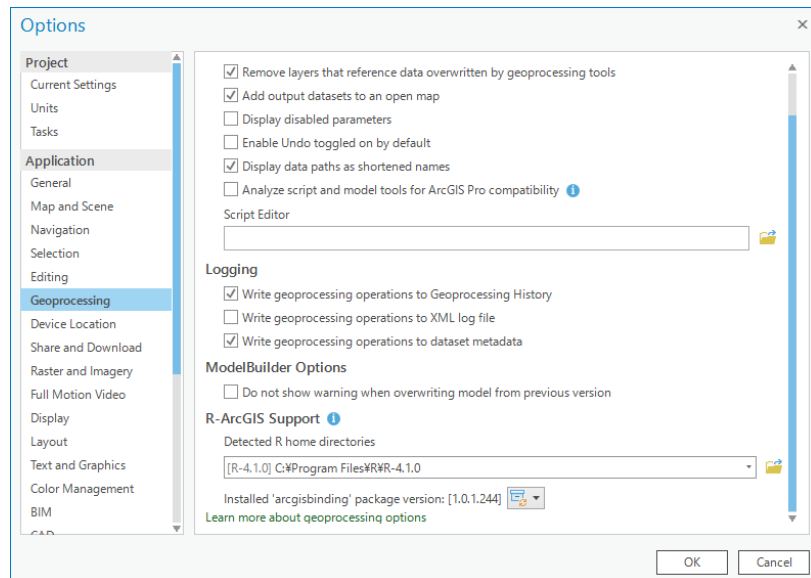
1. Start ArcGIS Pro and click the “Project” tab.



2. Click the “Options” in the left menu and open the “Options” dialog.



3. Click “Geoprocessing” in the left menu and find the “R-ArcGIS Support”.



4. When ArcGIS Pro requires the installation of “R”, follow the installation dialog and install the required libraries.

[Step 8] Finish

Now ArcGIS Pro is ready to use the CO2CalcTool.

5 CO2 calculation tool (co2CalcTool: ArcGIS Pro python tool box)

Install co2CalcTool and operation manual

Install the co2CalcTool

[Step 1] Copy the tool

1. Copy the “calc” folder to C:\work\kenya\calc. When copy to another folder, modify the parameter of “cst_pram6 = 'c:\work\kenya\calc’” in the “co2CalcTool.pyt”. This folder contains the calculation program. Tables below shows the list of formula and its program.

Volume Estimation		Called from: sel_calcvolm.R (by ID)	
ID	Type	Formula (m3)	Python Code
1	Common for natural forests and plantations	$\pi * (DBH_cm/200)^2 * H * 0.5$	calc_Volm1.R
2	Rhizophora sp. in mangroves	$\pi * (DBH_cm/200)^2 * H * 0.5$	calc_Volm2.R
3	Bamboo in montane forests	$DBH_cm^2 - (DBH_cm * 0.7)^2 / 4 * \pi * H * 0.8$	calc_Volm3.R
4	Climbers in natural forests	-	calc_Volm4.R

Biomass (Above Ground, AGB)		Called from: sel_calctype.R (by ID)	
ID	Type	Formula (kg)	Python Code
1	Common for natural forests and plantations	$0.0673 * (0.598 * DBH_cm^2 * H)^{0.976}$	calc_akb_kg1.R
2	Rhizophora sp. in mangroves	$0.128 * DBH_cm^{2.60}$	calc_akb_kg2.R
3	Bamboo in montane forests	$1.04 + 0.06 * DBH_cm * GW_{bmb}$ $GW_{bmb} = 1.11 + 0.36 * DBH_cm^2$ (bamboo diameter > 3 cm) $GW_{bmb} = 1.11 + 0.36 * 3.1^2$ (bamboo diameter ≤ 3 cm)	calc_akb_kg3.R
4	Climbers in natural forests	$e^{(-1.484 + 2.657 * \ln(DBH))}$	calc_akb_kg4.R

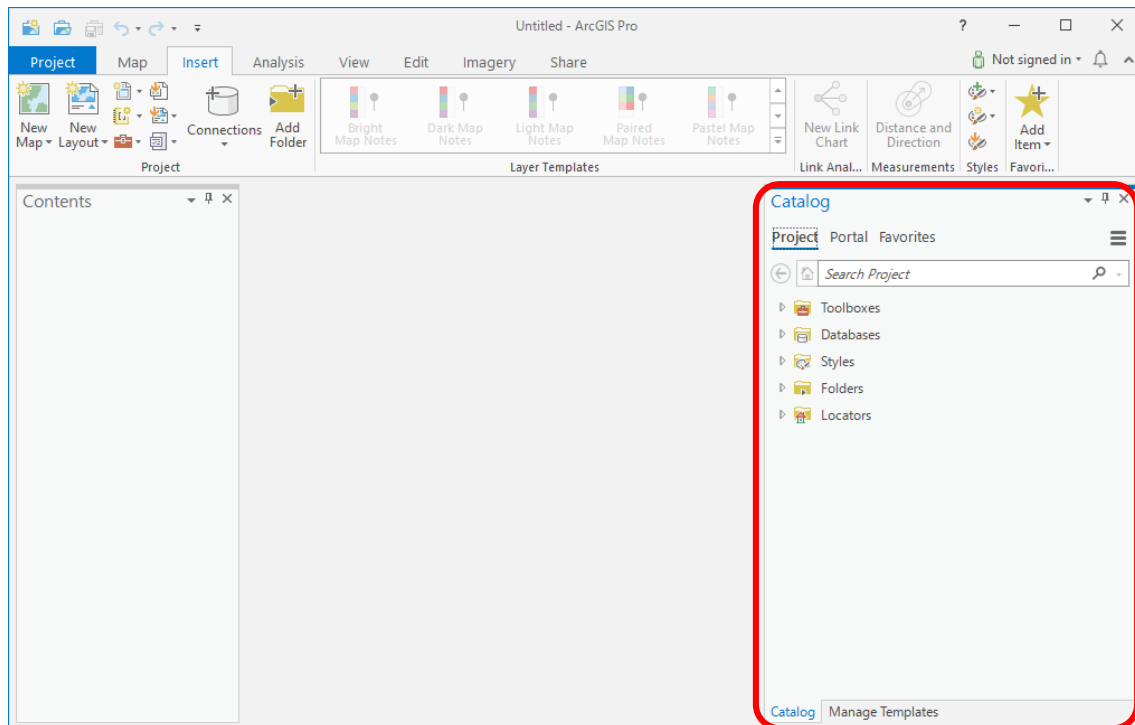
Biomass (Bellow Ground, BGB)		Called from: sel_calcbkg.R (by ID)	
ID	Type	Formula (kg)	Python Code
1	Montane	$AGB * 0.37$	calc_bkb_kg1.R
2	Dryland	$AGB * 0.20$	calc_bkb_kg2.R
3	Coastal and Mangrove	$AGB * 0.28$	calc_bkb_kg3.R
4	Plantation	$AGB * 0.27$	calc_bkb_kg4.R

2. Copy the “Toolbox” folder to any place. This folder contains the Python tool box for ArcGIS.

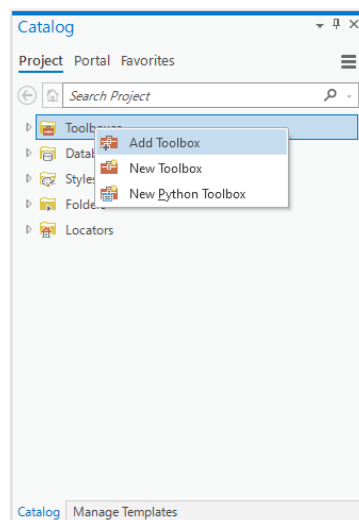
Using the co2CalcTool with ArcGIS Pro

[Step 1] Load the co2CalcTool

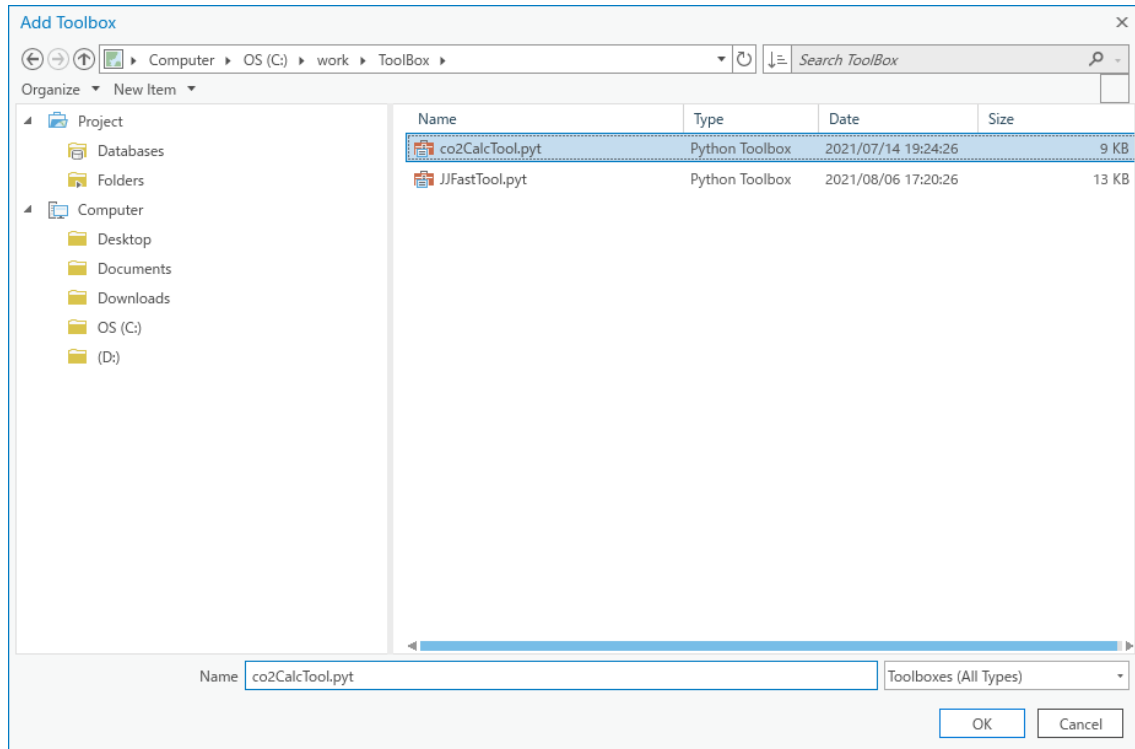
1. In the ArcGIS Pro, open the “Catalog” window. Usually it will be shown in the right side.



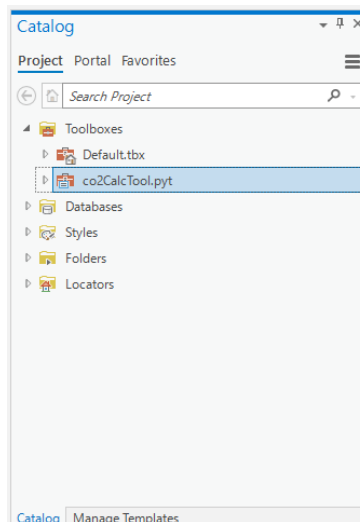
2. Right click the “Toolbox” and select “Add Toolbox”.



3. Select and open the “co2CalcTool.pyt”

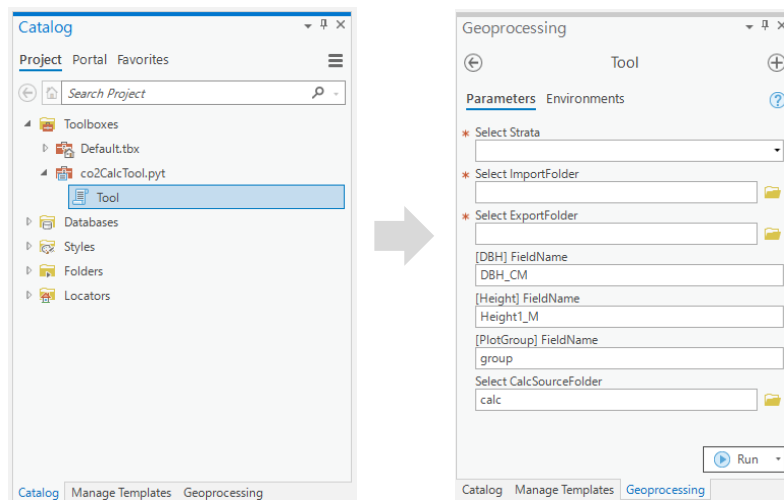


4. “co2CalcTool” will be added to the catalog.

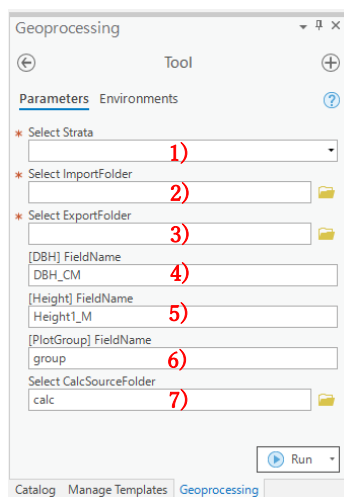


[Step 2] Load & use the tool

1. Click the “co2CalcTool” > “Tool” and start the tool.



2. Set the parameters to the tool window.



- 1) Choose the “Strata Type”
- 2) Select the import folder name where contains the survey data as CSV file
- 3) Select the export folder. Analyzed data will be stored in this folder with same name of input CSV file.
- 4) Input the DBH column name of input file. This tool will handle the DBH unit as millimeter (mm). When input data’s DBH has another unit (like centimeter), please convert the unit to millimeter before using this tool.
- 5) Input the height column name of input file. This tool will handle the height unit as meter (m).
- 6) Input the column name of sub-plot.
- 7) Select the calc source folder which contains the calculation formulas as python codes (Same as [Step 1] folder. When it has been installed in default folder, no need to change here).

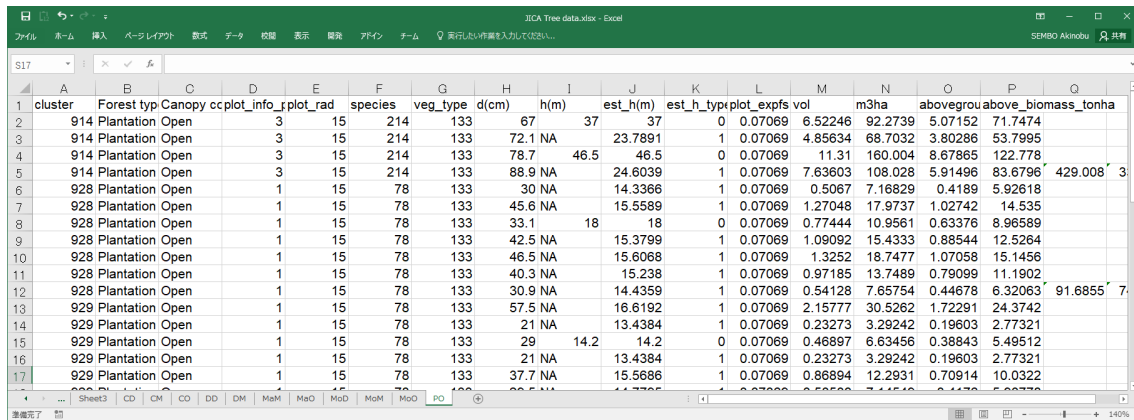
3. Click “Run” for analysis. Calculated values are added to export CSV file.

[Extra Step] CSV Preparation

For running this tool, following items should be included in the CSV File.

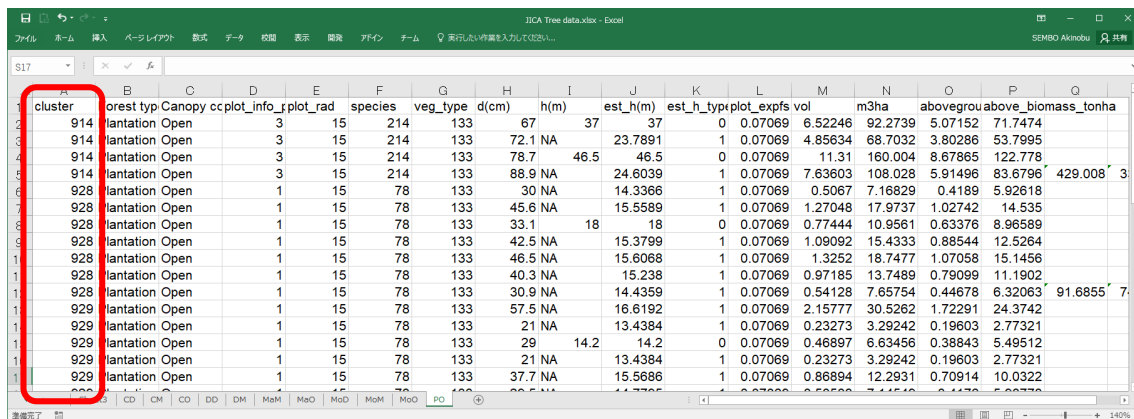
1. Field Name line

Field name line should be allocated in the top of CSV file.



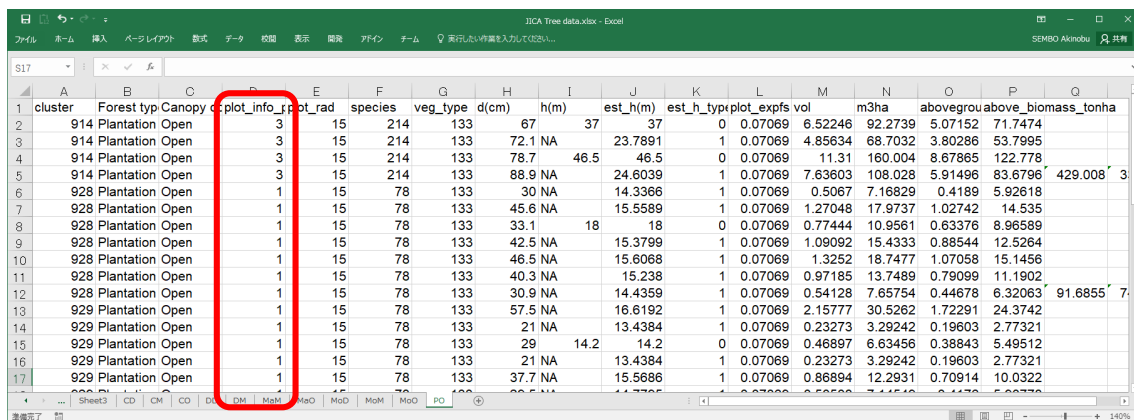
The screenshot shows an Excel spreadsheet titled "JICA Tree data.xlsx". The first row (row 1) contains the following field names: cluster, Forest type, Canopy, cc, plot_info, r, plot_rad, species, veg_type, d(cm), h(m), est_h(m), est_h_type, plot_expfs, vol, m3ha, abovegrou, above_biomass_tonha. The subsequent rows contain numerical data for these fields, with some cells containing "NA" for missing values. The spreadsheet is displayed in a standard Excel interface with a green header bar and a ribbon at the top.

2. Cluster field and value



This screenshot is identical to the one above, but with a red rectangular box highlighting the 'cluster' column. The box covers the first column of data, from row 1 to row 17, indicating the specific field being discussed in this section.

3. Plot field and value



This screenshot is identical to the one above, but with a red rectangular box highlighting the 'plot_rad' column. The box covers the column labeled 'plot_rad' from row 1 to row 17, indicating the specific field being discussed in this section.

4. Forest type (strata) filed and value

5. Canopy cover filed and value

JICA Tree data.xlsx - Excel																	
ファイル	ホーム	挿入	ページレイアウト	数式	データ	検閲	表示	開発	アイコン	名前	変換した内容を元に入力してください...	SEMO Akino	共有				
S17																	
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
	cluster	Forest type	Canopy cc	plot_info	plot_rad	species	veg_type	d(cm)	h(m)	est_h(m)	est_h_type	plot_expfs	vol	m3ha	abovegrou	above_biomass_tonha	
1	914	Plantation	Open	3	15	214	133	67	37	37	0	0.07069	6.52246	92.2739	5.07152	71.7474	
2	914	Plantation	Open	3	15	214	133	72.1	NA	23.7891	1	0.07069	4.85634	68.7032	3.80286	53.7995	
3	914	Plantation	Open	3	15	214	133	78.7	46.5	46.5	0	0.07069	11.31	160.004	8.67865	122.778	
4	914	Plantation	Open	3	15	214	133	88.9	NA	24.6039	1	0.07069	7.63603	108.028	5.91496	83.6796	
5	928	Plantation	Open	1	15	78	133	30	NA	14.3366	1	0.07069	0.5067	7.16829	0.4189	5.92618	
6	928	Plantation	Open	1	15	78	133	45.6	NA	15.5589	1	0.07069	1.27048	17.9737	1.02742	14.535	
7	928	Plantation	Open	1	15	78	133	33.1	18	18	0	0.07069	0.77444	10.9561	0.63376	8.96589	
8	928	Plantation	Open	1	15	78	133	42.5	NA	15.3799	1	0.07069	1.09092	15.4333	0.88544	12.5264	
9	928	Plantation	Open	1	15	78	133	46.5	NA	15.6068	1	0.07069	1.3252	18.7477	1.07058	15.1456	
10	928	Plantation	Open	1	15	78	133	40.3	NA	15.238	1	0.07069	0.97185	13.7489	0.79099	11.1902	
11	928	Plantation	Open	1	15	78	133	30.9	NA	14.4359	1	0.07069	0.54128	7.65754	0.44678	6.32063	
12	929	Plantation	Open	1	15	78	133	57.5	NA	16.6192	1	0.07069	2.15777	30.5262	1.72291	24.3742	
13	929	Plantation	Open	1	15	78	133	21	NA	13.4384	1	0.07069	0.23273	3.29242	0.19603	2.77321	
14	929	Plantation	Open	1	15	78	133	29	14.2	14.2	0	0.07069	0.46897	6.63456	0.38843	5.49512	
15	929	Plantation	Open	1	15	78	133	21	NA	13.4384	1	0.07069	0.23273	3.29242	0.19603	2.77321	
16	929	Plantation	Open	1	15	78	133	37.7	NA	15.5686	1	0.07069	0.86894	12.2931	0.70914	10.0322	
17	929	Plantation	Open	1	15	78	133	37.7	NA	15.5686	1	0.07069	0.86894	12.2931	0.70914	10.0322	

6. Radius field and value

JICA Tree data.xlsx - Excel																	
SEMO Akinochi 共有																	
S17	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	cluster	Forest type	Canopy cc	plot_info	plot_rad	species	veg_type	d(cm)	h(m)	est_h(m)	est_h_type	plot_expfs	vol	m3ha	abovegrou	above_biomass_tonha	
2	914	Plantation	Open	3	15	214	133	67	37	37	0	0.07069	6.52246	92.2739	5.07152	71.7474	
3	914	Plantation	Open	3	15	214	133	72.1	NA	23.7891	1	0.07069	4.85634	68.7032	3.80286	53.7995	
4	914	Plantation	Open	3	15	214	133	78.7	46.5	46.5	0	0.07069	11.31	160.004	8.67865	122.778	
5	914	Plantation	Open	3	15	214	133	88.9	NA	24.6039	1	0.07069	7.63603	108.028	5.91496	83.6796	429.008
6	928	Plantation	Open	1	15	78	133	30	NA	14.3366	1	0.07069	0.5067	7.16829	0.4189	5.92618	
7	928	Plantation	Open	1	15	78	133	45.6	NA	15.5589	1	0.07069	1.27048	17.9737	1.02742	14.535	
8	928	Plantation	Open	1	15	78	133	33.1	18	18	0	0.07069	0.77444	10.9561	0.63376	8.96589	
9	928	Plantation	Open	1	15	78	133	42.5	NA	15.3799	1	0.07069	1.09092	15.4333	0.88544	12.5264	
10	928	Plantation	Open	1	15	78	133	46.5	NA	15.6068	1	0.07069	1.3252	18.7477	1.07058	15.1456	
11	928	Plantation	Open	1	15	78	133	40.3	NA	15.238	1	0.07069	0.97185	13.7489	0.79099	11.1902	
12	928	Plantation	Open	1	15	78	133	30.9	NA	14.4359	1	0.07069	0.54128	7.65754	0.44678	6.32063	91.6855
13	929	Plantation	Open	1	15	78	133	57.5	NA	16.6192	1	0.07069	2.15777	30.5262	1.72291	24.3742	
14	929	Plantation	Open	1	15	78	133	21	NA	13.4384	1	0.07069	0.23273	3.29242	0.19603	2.77321	
15	929	Plantation	Open	1	15	78	133	29	14.2	14.2	0	0.07069	0.46897	6.63456	0.38843	5.49512	
16	929	Plantation	Open	1	15	78	133	21	NA	13.4384	1	0.07069	0.23273	3.29242	0.19603	2.77321	
17	929	Plantation	Open	1	15	78	133	37.7	NA	15.5686	1	0.07069	0.86894	12.2931	0.70914	10.0322	

JICA Tree data.xlsx - Excel

ファイル ホーム 挿入 ページレイアウト 数式 データ 検閲 表示 開発 アドイン ナーム 実行元データを書き込んでください...

SEMO Akimori 共有

S17	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	cluster	Forest type	Canopy	ccplot_info	rplot_rad	species	veg_type	d(cm)	h(m)	est_h(m)	est_h_type	rplot_exp	vol	m3ha	abovegrou	above_biomass_tonha	
2	914	Plantation	Open	3	15	214	133	67	37	37	0	0.07069	6.52246	92.2739	5.07152	71.7474	
3	914	Plantation	Open	3	15	214	133	72.1	NA	23.7891	1	0.07069	4.85634	68.7032	3.80288	53.7995	
4	914	Plantation	Open	3	15	214	133	78.7	46.5	46.5	0	0.07069	11.16004	68.7865	122.778		
5	914	Plantation	Open	3	15	214	133	88.9	NA	24.6039	1	0.07069	7.63603	108.028	5.91496	83.6796	429.008
6	928	Plantation	Open	1	15	78	133	30	NA	14.3366	1	0.07069	0.5067	7.16829	0.4189	5.92818	
7	928	Plantation	Open	1	15	78	133	45.6	NA	15.5589	1	0.07069	1.27048	17.9737	1.02742	14.535	
8	928	Plantation	Open	1	15	78	133	33.1	18	18	0	0.07069	0.77444	10.9561	0.63376	8.96589	
9	928	Plantation	Open	1	15	78	133	42.5	NA	15.3799	1	0.07069	1.09092	15.4333	0.88544	12.5264	
10	928	Plantation	Open	1	15	78	133	46.5	NA	15.6088	1	0.07069	1.3252	18.7477	1.07058	15.1456	
11	928	Plantation	Open	1	15	78	133	40.3	NA	15.238	1	0.07069	0.97185	13.7489	0.79099	11.1902	
12	928	Plantation	Open	1	15	78	133	30.9	NA	14.4359	1	0.07069	0.54128	7.65754	0.44678	6.32063	91.6855
13	929	Plantation	Open	1	15	78	133	57.5	NA	16.6192	1	0.07069	2.15777	30.5262	1.72291	24.3742	
14	929	Plantation	Open	1	15	78	133	21	NA	13.4384	1	0.07069	0.23273	3.29242	0.19603	2.77321	
15	929	Plantation	Open	1	15	78	133	29	14.2	14.2	0	0.07069	0.46897	6.63456	0.38843	5.49512	
16	929	Plantation	Open	1	15	78	133	21	NA	13.4384	1	0.07069	0.23273	3.29242	0.19603	2.77321	
17	929	Plantation	Open	1	15	78	133	37.7	NA	15.5686	1	0.07069	0.86894	12.9231	0.70914	10.0322	

Current version of this tool handle the DBH unit as millimeter (mm). When this value is stored as other unit in original file, need to convert the value as millimeter scale.

JICA Tree data.xlsx - Excel

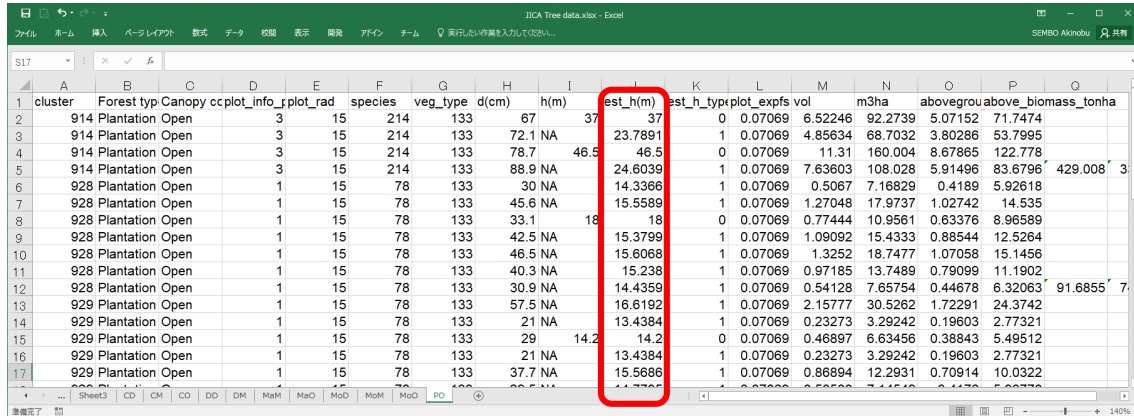
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
	cluster	Forest type	Canopy	ccplot_info	tplot_rad	species	veg_type	d(cm)	h(m)	est_h(m)	est_h_tpy	plot_exps vol	m3ha	aboveground	biomass_tonha		
1	914	Plantation	Open	3	15	214	133	67	37	23.7891	0	0.07069	6.52246	92.2739	5.07152	71.7474	
2	914	Plantation	Open	3	15	214	133	72.1	NA	23.7891	1	0.07069	4.85634	68.7032	3.80288	53.7995	
3	914	Plantation	Open	3	15	214	133	78.7	46.5	23.7891	0	0.07069	11.31	160.004	8.67865	122.778	
4	914	Plantation	Open	3	15	214	133	88.9	NA	24.6039	1	0.07069	7.63603	108.028	5.91496	83.6796	429.008
5	928	Plantation	Open	1	15	78	133	30	NA	14.3366	1	0.07069	0.5067	7.16829	0.4189	5.92618	
6	928	Plantation	Open	1	15	78	133	45.6	NA	15.5589	1	0.07069	1.27048	7.19737	1.02742	14.535	
7	928	Plantation	Open	1	15	78	133	33.1	18	15.5589	0	0.07069	0.77444	10.9561	0.63376	8.96589	
8	928	Plantation	Open	1	15	78	133	42.5	NA	15.3799	1	0.07069	1.09092	15.4333	0.88544	12.5264	
9	928	Plantation	Open	1	15	78	133	46.5	NA	15.6088	1	0.07069	1.3252	18.7477	1.07058	15.1456	
10	928	Plantation	Open	1	15	78	133	40.3	NA	15.238	1	0.07069	0.97185	13.7489	0.79099	11.1902	
11	928	Plantation	Open	1	15	78	133	30.9	NA	14.4359	1	0.07069	0.54128	7.65754	0.44678	6.32063	91.6855
12	929	Plantation	Open	1	15	78	133	57.5	NA	16.6192	1	0.07069	2.15777	30.5262	1.72291	24.3742	
13	929	Plantation	Open	1	15	78	133	21	NA	13.4384	1	0.07069	0.23273	3.29242	0.19603	2.73231	
14	929	Plantation	Open	1	15	78	133	29	14.2	13.4384	0	0.07069	0.46897	6.63456	0.38843	5.49512	
15	929	Plantation	Open	1	15	78	133	21	NA	13.4384	1	0.07069	0.23273	3.29242	0.19603	2.73231	
16	929	Plantation	Open	1	15	78	133	37.7	NA	15.5686	1	0.07069	0.86894	12.2931	0.70914	10.0322	

Keep this field blank (or not figure value or -1) for not surveyed trees.

The screenshot shows an Excel spreadsheet titled "JICA Tree data.xlsx - Excel". The spreadsheet contains a table with 17 rows of data. The columns are labeled as follows: cluster, Forest type, Canopy, ccplot_info, rplot_rad, species, veg_type, d(c/m), h(m), st_h(m), est_h_t, h_t, plot_exp, vol, m3ha, above_gro, above_biomass, ton/ha. The data is organized into groups by forest type and canopy status. A red box highlights the 'h(m)' column, which contains values such as 37, 46.5, 18, and 14.2. The 'above_biomass' column shows values like 429.008 and 91.6855.

10. Estimation height column

Estimated height value will be stored in this column.



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
	cluster	Forest type	Canopy	ccplot_info	plot_rad	species	veg_type	d(cm)	h(m)	est_h(m)	est_h_type	plot_expfs	vol	m3ha	abovegrou	above_biomass_tonha	
1	914	Plantation	Open	3	15	214	133	67	37	23.7891	0	0.07069	6.52246	92.2739	5.07152	71.7474	
2	914	Plantation	Open	3	15	214	133	72.1	NA	46.5	1	0.07069	4.85634	68.7032	3.80286	53.7995	
3	914	Plantation	Open	3	15	214	133	78.7	46.5	46.5	0	0.07069	11.31	160.004	8.67865	122.778	
4	914	Plantation	Open	3	15	214	133	88.9	NA	24.6039	1	0.07069	7.63603	108.028	5.91496	83.6796	429.008
5	928	Plantation	Open	1	15	78	133	30	NA	14.3366	1	0.07069	0.5067	7.16829	0.4189	5.92618	
6	928	Plantation	Open	1	15	78	133	45.6	NA	15.5589	1	0.07069	1.27048	17.9737	1.02742	14.535	
7	928	Plantation	Open	1	15	78	133	33.1	18	18	0	0.07069	0.77444	10.9561	0.63376	8.96589	
8	928	Plantation	Open	1	15	78	133	42.5	NA	15.3799	1	0.07069	1.09092	15.4333	0.88544	12.5264	
9	928	Plantation	Open	1	15	78	133	46.5	NA	15.6068	1	0.07069	1.3252	18.7477	1.07058	15.1456	
10	928	Plantation	Open	1	15	78	133	40.3	NA	15.238	1	0.07069	0.97185	13.7489	0.79099	11.1902	
11	928	Plantation	Open	1	15	78	133	30.9	NA	14.4359	1	0.07069	0.54128	7.65754	0.44678	6.32063	91.6855
12	929	Plantation	Open	1	15	78	133	57.5	NA	16.6192	1	0.07069	2.15777	30.5262	1.72291	24.3742	
13	929	Plantation	Open	1	15	78	133	21	NA	13.4384	1	0.07069	0.23273	3.29242	0.19603	2.77321	
14	929	Plantation	Open	1	15	78	133	29	14.2	14.2	0	0.07069	0.46897	6.63456	0.38843	5.49512	
15	929	Plantation	Open	1	15	78	133	21	NA	13.4384	1	0.07069	0.23273	3.29242	0.19603	2.77321	
16	929	Plantation	Open	1	15	78	133	37.7	NA	15.5686	1	0.07069	0.86894	12.2931	0.70914	10.0322	
17	929	Plantation	Open	1	15	78	133										

[Extra Step] Formula modification

When need to modify the formula of calculation, please change the python code directory.

The list written in [Step 1] shows the relationship of formula and python code (*.R).

6 JJ FAST data retrieval tool (JJFastTool: ArcGIS Pro python tool box)

Install and operation manual

Install the JJFastTool

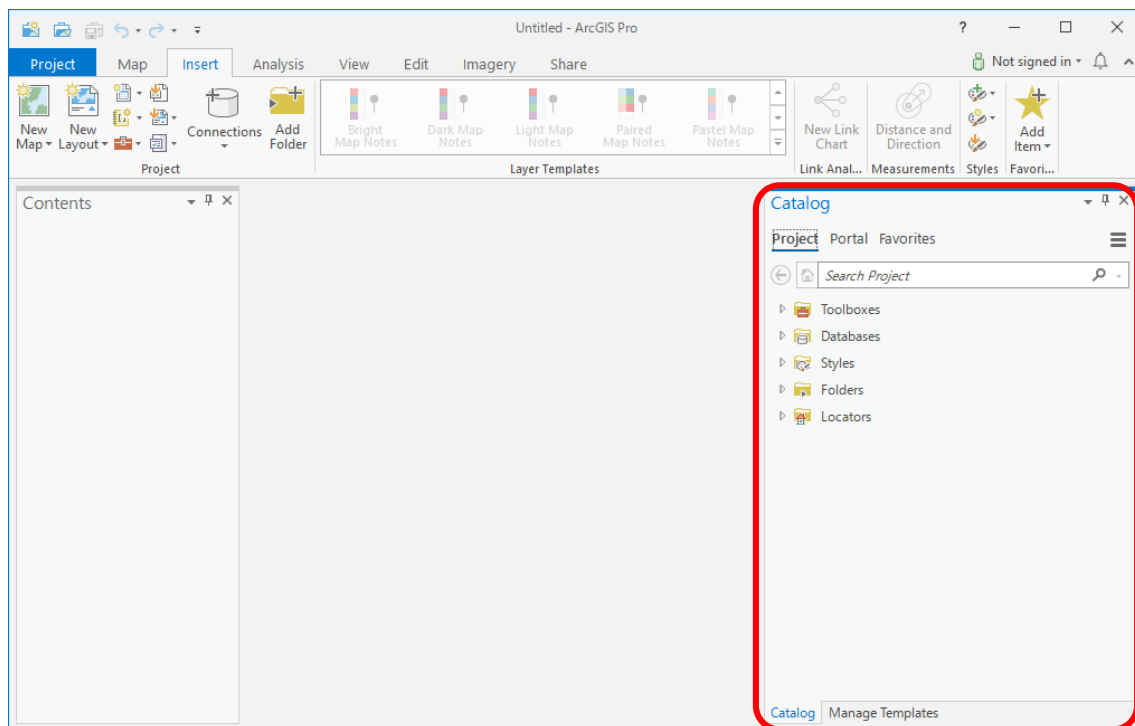
[Step 1] Copy the tool and base data

1. Copy the “Toolbox” folder to any place. This folder contains the Python tool box for ArcGIS.
2. Copy the “EmptyShape” folder to anyplace. This folder includes the base shape file (jjfastkenya.*) for appending the JJ FAST data.
3. Start ArcGIS and copy the base shape (jjfastkenya.shp) to data collection folder. Import the shape file as GeoDatabase (instead of shape file) is also fine.

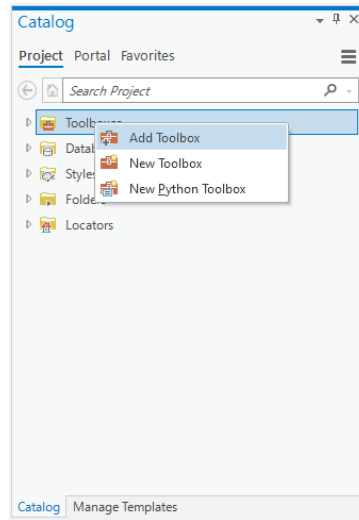
Using the JJFastTool with ArcGIS Pro

[Step 1] Load the co2CalcTool

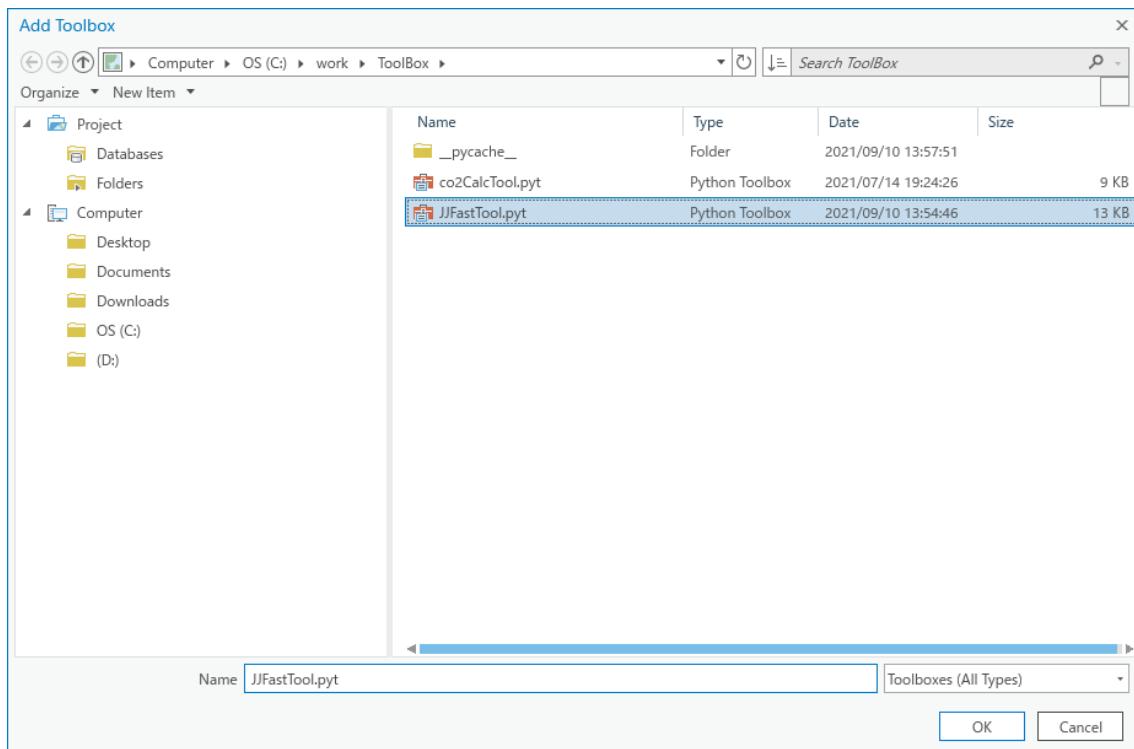
1. In the ArcGIS Pro, open the “Catalog” window. Usually it will be shown in the right side.



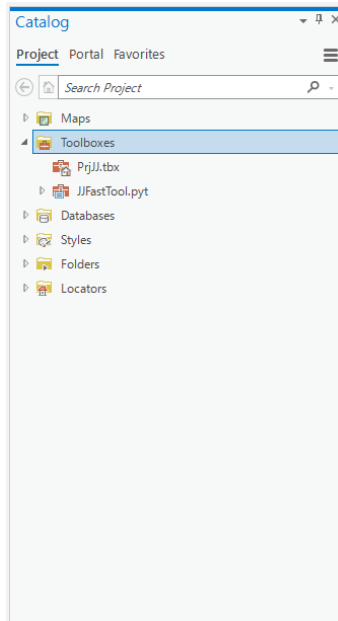
2. Right click the “Toolbox” and select “Add Toolbox”.



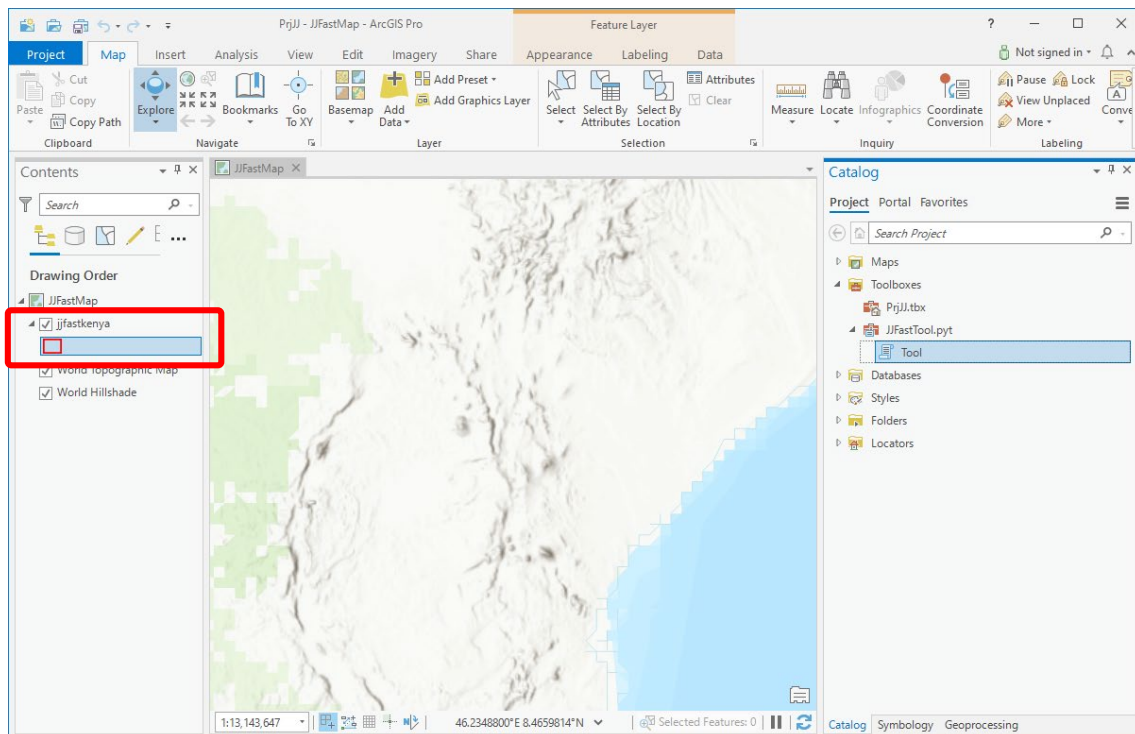
3. Select and open the “JJFastTool.pyt”



4. “JJFastTool” will be added to the catalog.

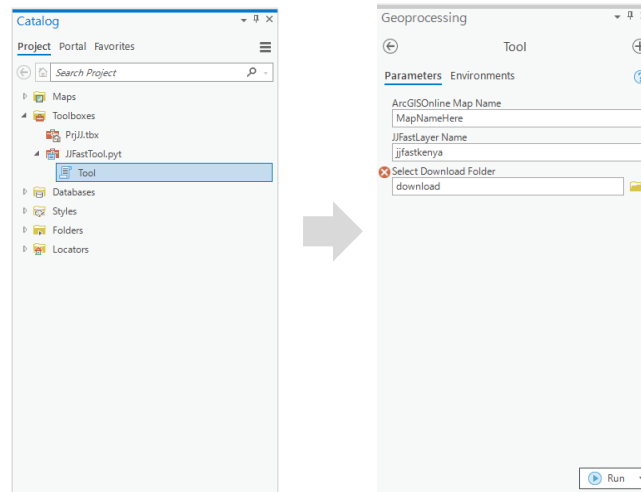


[Step 2] Add the “jjfastkenya.shp” (or the file/geodatabase which are copied in [Step 1] 3.) to the map.

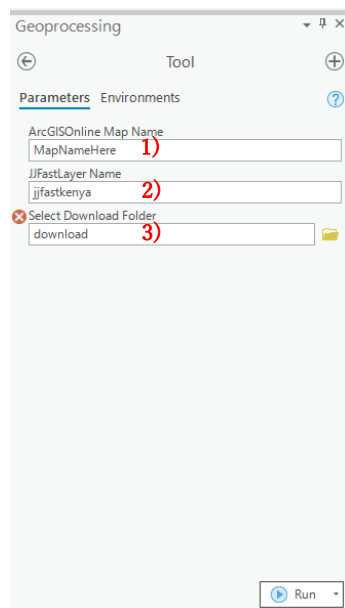


[Step 3] Load & use the tool

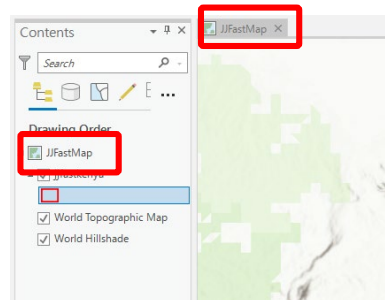
1. Click the “co2CalcTool” > “Tool” and start the tool.



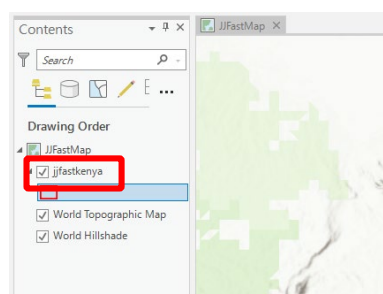
2. Set the parameters to the tool window.



1) Input the map name which are using with ArcGIS Pro.

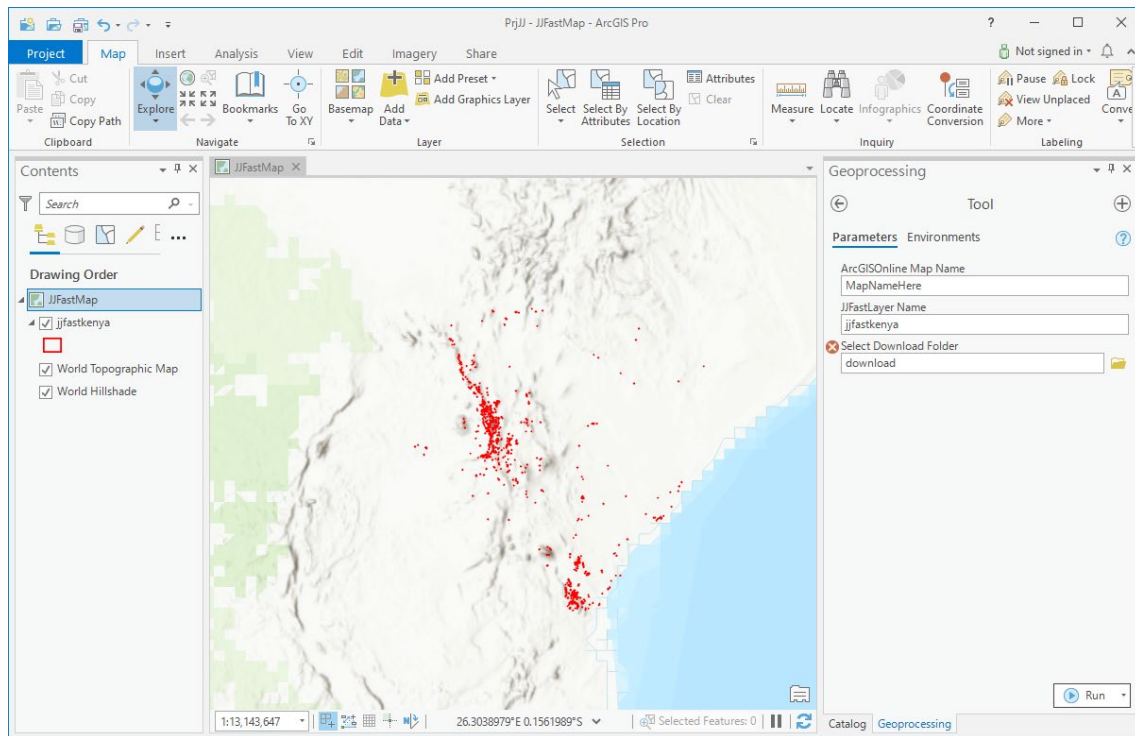


2) Input the map layer name of target shape which are added in [Step 2].



3) Select the download folder. All data stored in JJ FAST web site will be download here as ZIP and expanded file.

3. Click “Run” for download. All JJ FAST data will be downloaded to under the [Step 3] 2. 3) folder. In addition, all data will be append to the shape file which are defined in [Step 3] 2. 2).



* It will takes a time for first execution. Because tools try to download the all files stored in JJ Fast web site.

4. The information of start and end date (for deforestation analysis) are added to the dataset. Users can find the latest area of deforestation from these information.

Field:	thm	AlgoVer	Thresh	Startdate	Enddate
				2019/03/26	2019/05/07
				2019/03/26	2019/05/07
				2019/03/26	2019/05/07
		Ver.3.0	Area1	2020/08/25	2020/10/06
		Ver.3.0	Area1	2020/11/17	2020/12/29
		Ver.3.0	Area1	2020/11/17	2020/12/29
		Ver.3.0	Area1	2020/11/17	2020/12/29
		Ver.3.0	Area1	2020/11/17	2020/12/29
		Ver.3.0	Area1	2020/12/29	2021/02/09
		Ver.3.0	Area1	2020/12/29	2021/02/09
		Ver.3.0	Area1	2020/12/29	2021/02/09
		Ver.3.0	Area1	2020/12/29	2021/02/09