

ANNEX 1: Results of the Project

- 1-1 List of Dispatched Experts
- 1-2 List of Counterparts
- 1-3 List of Training
- 1-4 List of Equipment provided by the Project
- 1-5 List of Manuals for Donated Equipment
- 1-6 Cost of Operation

Annex 1-1 List of Dispatched Experts

No.	Group	Designation	Name	Period
1	Disaster Management	Group leader	Kimiro Meguro	17/09/2015 - 20/09/2015 11/12/2015 - 14/12/2015 11/03/2016 - 14/03/2016 02/04/2016 - 07/04/2016 10/09/2016 - 16/09/2016 09/12/2016 - 16/12/2016 19/02/2017 - 24/02/2017 01/04/2017 - 06/04/2017 27/07/2017 - 01/08/2017 22/10/2017 - 30/10/2017 06/12/2017 - 14/12/2017 19/02/2018 - 24/02/2018 28/04/2018 - 05/03/2018 01/07/2018 - 06/07/2018 06/08/2018 - 11/08/2018 26/10/2018 - 31/10/2018 08/12/2018 - 15/12/2018 27/03/2019 - 31/03/2019 16/07/2019 - 24/07/2019 25/09/2019 - 02/10/2019 07/12/2019 - 14/12/2019
2	Disaster Management	Sub-group leader	Muneyoshi Numada	09/12/2015 - 13/12/2015 12/01/2016 - 15/01/2016 10/03/2016 - 13/03/2016 03/04/2016 - 06/04/2016 15/08/2016 - 18/08/2016 11/09/2016 - 15/09/2016 08/12/2016 - 12/12/2016 25/12/2016 - 28/12/2016 19/02/2017 - 23/02/2017 30/07/2017 - 02/08/2017 11/09/2017 - 14/09/2017 24/10/2017 - 26/10/2017 06/03/2018 - 10/03/2018 11/05/2018 - 20/05/2018 09/10/2018 - 13/10/2018 28/10/2018 - 31/10/2018 22/01/2019 - 26/01/2019 05/02/2019 - 07/02/2019 27/03/2019 - 30/03/2019 12/05/2019 - 16/05/2019 05/08/2019 - 09/08/2019 29/09/2019 - 02/10/2019 02/12/2019 - 04/12/2019 09/02/2020 - 12/02/2020
3	Disaster Management	Member	ITO Testsuro	17/09/2015 - 20/09/2015 10/12/2015 - 14/12/2015

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4	Earthquake-Related Disaster & Urban Planning Team	Member Team leader	KATO Takaaki	09/12/2015 - 14/12/2015 02/04/2016 - 07/04/2016 03/07/2016 - 07/07/2016 07/09/2016 - 12/09/2016 05/12/2016 - 07/12/2016 21/09/2017 - 26/09/2017
5	Earthquake-Related Disaster & Disaster Management	Sub-group Leader Member	GOKON Hideomi	15/09/2015 - 24/09/2015 09/12/2015 - 13/12/2015 10/02/2016 - 15/02/2016 10/03/2016 - 13/03/2016 02/04/2016 - 07/04/2016 18/05/2016 - 22/05/2016 15/07/2016 - 19/07/2016 11/09/2016 - 24/11/2016 09/12/2016 - 15/12/2016 19/02/1017 - 21/02/2017 02/04/2017 - 06/04/2017 14/06/2017 - 01/08/2017 10/10/2017 - 14/10/2017 22/10/2017 - 31/10/2017 05/12/2017 - 15/12/2017 16/03/2018 - 21/03/2018 28/04/2018 - 03/05/2018 20/05/2018 - 23/05/2018 16/06/2018 - 23/06/2018 30/06/2018 - 07/07/2018 06/08/2018 - 11/08/2018 18/09/2018 - 21/09/2018 26/10/2018 - 01/11/2018 14/11/2018 - 23/11/2018 23/01/2019 - 27/01/2019 25/02/2019 - 04/03/2019 12/03/2019 - 16/03/2019 02/12/2020 - 10/12/2020

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6	Earthquake-Related Disaster & Disaster Management	Member	MATSUSHITA Tomoko	13/08/2015 - 20/08/2015 15/09/2015 - 23/09/2015 07/12/2015 - 17/12/2015 11/01/2016 - 23/01/2016 07/02/2016 - 15/02/2016 08/03/2016 - 17/03/2016 02/04/2016 - 08/04/2016 15/05/2016 - 25/05/2016 30/06/2016 - 07/07/2016 26/07/2016 - 30/07/2016 06/09/2016 - 19/09/2016 24/11/2016 - 17/12/2016 29/01/2016 - 12/02/2016 01/04/2017 - 10/04/2017 30/04/2017 - 09/05/2017 21/05/2017 - 30/05/2017 12/07/2017 - 01/08/2017 09/08/2017 - 18/08/2017 20/09/2017 - 28/09/2017 22/10/2017 - 31/10/2017 05/12/2017 - 15/12/2017 10/01/2018 - 23/01/2018 07/02/2018 - 23/02/2018 05/05/2018 - 17/05/2018 18/06/2018 - 06/07/2018 02/08/2018 - 20/08/2018 18/10/2018 - 09/11/2018 06/12/2018 - 19/12/2018 22/01/2019 - 15/02/2019 24/02/2019 - 04/03/2019 12/03/2019 - 24/03/2019 12/05/2019 - 23/05/2019 16/07/2019 - 26/07/2019 22/09/2019 - 06/10/2019 04/12/2019 - 17/12/2019 10/02/2020 - 18/02/2020
7	Water related-disaster	Group leader	KAWASAKI Akiyuki	28/06/2015 - 04/07/2015 17/08/2015 - 25/08/2015 17/09/2015 - 21/09/2015 27/10/2015 - 01/11/2015 21/11/2015 - 25/11/2015 11/12/2015 - 15/12/2015 20/02/2016 - 24/02/2016 07/03/2016 - 11/03/2016 21/03/2016 - 24/03/2016 21/05/2016 - 26/05/2016 07/07/2016 - 12/07/2016 19/08/2016 - 26/08/2016 21/09/2016 - 26/09/2016 21/10/2016 - 26/10/2016 07/12/2016 - 13/12/2016 17/02/2017 - 25/02/2017 01/05/2017 - 11/05/2017 09/08/2017 - 14/08/2017

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				06/10/2017 - 10/10/2017 25/10/2017 - 02/11/2017 08/12/2017 - 14/12/2017 15/02/2018 - 23/02/2018 31/03/2018 - 05/04/2018 13/08/2018 - 21/08/2018 11/09/2018 - 18/09/2018 05/12/2018 - 10/12/2018 23/02/2019 - 28/02/2019 16/03/2019 - 24/03/2019 26/05/2019 - 28/05/2019 12/06/2019 - 18/06/2019 07/07/2019 - 10/07/2019 09/11/2019 - 12/11/2019 23/02/2020 - 29/02/2020
8	Water related-disaster	Member	KOIKE Toshio	21/11/2015 - 21/11/2015 06/05/2017 - 10/05/2017 30/10/2017 - 02/11/2017
9	Water related-disaster	Sub-group Leader	Acierto Ralph Allen	27/10/2015 - 01/11/2015 21/11/2015 - 25/11/2015 20/02/2016 - 25/02/2016 18/03/2016 - 24/03/2016 01/05/2016 - 26/05/2016 07/07/2016 - 12/07/2016 18/08/2016 - 23/08/2016 20/10/2016 - 26/10/2016 04/11/2016 - 12/11/2016 10/12/2016 - 16/12/2016 16/01/2017 - 22/01/2017 15/02/2017 - 23/02/2017 04/03/2017 - 12/03/2017 04/05/2017 - 12/05/2017 09/08/2017 - 14/08/2017 24/10/2017 - 02/11/2017 15/02/2018 - 23/02/2018 25/03/2018 - 31/03/2018 27/10/2018 - 03/11/2018 28/01/2019 - 03/02/2019 23/02/2019 - 28/02/2019 01/04/2019 - 11/04/2019
10	Water related-disaster	Member	TAJIMA Yoshimitsu	28/06/2015 - 02/07/2015 27/10/2015 - 31/10/2015 19/08/2016 - 03/08/2016 29/10/2017 - 01/11/2017
11	Water related-disaster	Member	SHIMOZONO Takenori	28/06/2015 - 02/07/2015 27/10/2015 - 31/10/2015 20/02/2016 - 24/02/2016 18/08/2016 - 23/08/2016 07/05/2017 - 11/05/2017 28/10/2017 - 01/11/2017 15/02/2018 - 19/02/2018
12	Water related-disaster	Member	Bhagabati Seemanta Sharma	28/01/2018 - 03/02/2018 23/02/2019 - 28/02/2019 01/04/2019 - 11/04/2019

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				06/07/2019 - 10/07/2019 25/09/2019 - 02/10/2019 08/12/2019 - 19/12/2019 20/02/2020 - 28/02/2020
13	Water related-disaster	Member	KODAKA Akira	07/05/2015 - 11/05/2015 16/08/2015 - 25/08/2015 16/09/2015 - 23/09/2015 18/03/2016 - 24/03/2016 01/04/2018 - 05/04/2018 19/03/2019 - 23/03/2019
14	Water related-disaster	Member	KOMORI Daisuke	20/11/2015 - 24/11/2015 20/03/2016 - 24/03/2016 20/10/2016 - 26/10/2016 16/02/2017 - 20/02/2017 01/10/2017 - 10/10/2017 13/08/2018 - 20/08/2018 06/12/2018 - 12/12/2018 20/03/2019 - 24/03/2019 06/07/2019 - 09/07/2019
15	Water related-disaster	Member	KOTAKE Naohiko	28/06/2015 - 03/07/2015 17/08/2015 - 20/08/2015 07/03/2016 - 11/03/2016 19/08/2016 - 23/08/2016 16/01/2017 - 20/01/2017
16	Infrastructure Management	Group leader	NAGAI Kohei	03/08/2015 - 06/08/2015 06/09/2015 - 12/09/2015 17/09/2015 - 19/09/2015 29/10/2015 - 30/10/2015 25/11/2015 - 27/11/2015 11/12/2015 - 14/12/2015 15/02/2016 - 21/02/2016 06/04/2016 - 09/04/2016 17/05/2016 - 21/05/2016 05/07/2016 - 09/07/2016 21/08/2016 - 24/08/2016 11/09/2016 - 15/09/2016 08/12/2016 - 13/12/2016 21/02/2017 - 26/02/2017 13/03/2017 - 17/03/2017 03/04/2017 - 06/04/2017 14/06/2017 - 18/06/2017 17/08/2017 - 20/08/2017 19/11/2017 - 22/11/2017 10/12/2017 - 10/12/2017 19/02/2018 - 23/02/2018 04/04/2018 - 08/04/2018 07/05/2018 - 13/05/2018 20/06/2018 - 26/06/2018 04/07/2018 - 07/07/2018 08/08/2018 - 11/08/2018 21/09/2018 - 26/09/2018 29/10/2018 - 01/11/2018 12/11/2018 - 16/11/2018 13/01/2019 - 17/01/2019

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				09/04/2019 - 13/04/2019
17	Infrastructure Management	Group Sub-leader	MATSUMOTO Koji	06/09/2015 -12/09/2015 21/08/2016 - 24/08/2016 11/09/2016 - 16/09/2016 09/12/2016 - 15/12/2016 06/02/2017 - 10/02/2017 21/02/2017 - 25/02/2017 13/03/2017 - 17/03/2017 02/04/2017 - 06/04/2017 14/06/2017 - 18/06/2017 25/07/2017 - 02/08/2017 25/10/2017 - 30/10/2017 05/11/2017 - 10/11/2017 09/12/2017 - 14/12/2017 08/02/2018 - 16/02/2018 27/03/2018 - 01/04/2018 04/04/2018 - 08/04/2018 22/04/2018 - 26/04/2018 07/05/2018 - 13/05/2018 20/06/2018 - 24/06/2018 07/08/2018 - 11/08/2018 28/10/2018 - 01/11/2018 12/11/2018 - 17/11/2018 13/01/2019 - 18/01/2019 12/02/2019 - 15/02/2019 18/08/2019 - 22/08/2019 24/07/2019 - 27/07/2019 29/09/2019 - 02/10/2019
18	Infrastructure Management	Member	KUWANO Reiko	11/12/2015 - 14/12/2015 27/06/2017 - 30/06/2017
19	Infrastructure Management	Member	Liyanto Eddy	11/12/2015 - 14/12/2015 16/02/2016 - 21/02/2016
20	Infrastructure Management	Member	MIYASHITA Takeshi	06/09/2015 - 10/09/2015 15/02/2016 - 21/02/2016
21	Infrastructure Management	Member	IWASAKI Eiji	17/05/2016 - 22/05/2016
22	Infrastructure Management	Member	YOKOTA Hiroshi	08/09/2015 - 12/09/2015
23	Infrastructure Management	Member	Michel Henry Ward	06/09/2015 - 12/09/2015 15/02/2016 - 21/02/2016 11/09/2016 - 16/09/2016 09/12/2016 - 15/12/2016 17/06/2017 - 21/06/2017 20/11/2017 - 22/11/2017 29/10/2018 - 01/11/2018
24	Infrastructure Management	Member	MIZUTANI Tukasa	05/11/2017 - 10/11/2017 08/02/2018 - 11/02/2018
25	Infrastructure Management	Member	Jiradok Punyawut	28/10/2018 - 01/11/2018 18/03/2018 - 22/03/2018 24/07/2019 - 27/07/2019 25/09/2019 - 29/09/2019 05/11/2019 - 09/11/2019 08/12/2019 - 13/12/2019

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26	Geospatial Technology	Group Leader	TAKEUCHI Wataru	11/12/2015 - 16/12/2015 03/04/2016 - 06/04/2016 12/09/2016 - 16/09/2016 25/10/2017 - 29/10/2017 19/02/2018 - 23/02/2018 03/07/2018 - 08/07/2018 02/10/2018 - 06/10/2018 28/10/2018 - 02/11/2018 10/06/2019 - 15/06/2019 25/06/2019 - 28/06/2019 16/07/2019 - 22/07/2019 26/09/2019 - 03/10/2019 05/11/2019 - 09/11/2019 10/12/2019 - 11/12/2019 09/02/2020 - 14/02/2020
27	Earthquake-Related Disaster	Group Leader	MURAO Osamu	15/09/2015 - 18/09/2015 11/12/2015 - 14/12/2015 31/03/2016 - 06/04/2016 18/05/2016 - 22/05/2016 15/07/2016 - 19/07/2016 07/12/2016 - 12/12/2016 11/07/2017 - 17/07/2017 25/10/2017 - 29/10/2017 07/12/2017 - 10/12/2017 19/02/2018 - 25/02/2018 27/04/2018 - 02/05/2018 16/06/2018 - 20/06/2018 01/07/2018 - 07/07/2018 27/10/2018 - 31/10/2018 14/11/2018 - 19/11/2018 23/01/2019 - 27/01/2019 28/03/2019 - 31/03/2019 09/12/2019 - 13/12/2019 14/02/2020 - 18/02/2020
28	Earthquake-Related Disaster & Heritage Team	Member Team Leader	KOSHIHARA Mikio	13/12/2015 - 15/12/2015 02/04/2016 - 07/04/2016 26/07/2016 - 30/07/2016 24/11/2016 - 27/11/2016 02/04/2017 - 05/04/2017 09/08/2017 - 13/08/2017 25/10/2017 - 28/10/2017 08/02/2018 - 15/02/2018 18/06/2018 - 23/06/2018 04/11/2018 - 08/11/2018 24/02/2019 - 02/03/2019 14/05/2019 - 18/05/2019
29	Earthquake-Related Disaster	Member	SATO Hiromi	15/09/2015 - 24/09/2015 10/12/2015 - 14/12/2015 02/04/2016 - 08/04/2016 15/05/2016 - 21/05/2016 26/07/2016 - 30/07/2016 07/02/2017 - 13/02/2017
30	Earthquake-Related Disaster	Member	NAKANO Yosuke	09/12/2015 - 14/12/2015

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31	Earthquake-Related Disaster	Member	Bhattacharya Yasmin	03/07/2016 - 08/07/2016 06/09/2016 - 12/09/2016 22/01/2019 - 29/01/2019
32	Earthquake-Related Disaster	Member	Chaitanya Krishana	17/07/2019 - 23/07/2019 03/12/2019 - 16/12/2019
33	Earthquake-Related Disaster & Geology Team	Member Team Leader	IKEDA Takaaki	27/06/2017 - 30/06/2017 15/03/2018 - 21/03/2018 20/05/2018 - 23/05/2018 18/09/2018 - 21/09/2018 14/11/2018 - 23/11/2018 19/05/2019 - 27/05/2019 02/12/2019 - 10/12/2019
34	Transportation and Mobility	Group Leader	SEKIMOTO Yoshihide	16/07/2015 - 18/07/2015 15/09/2015 - 19/09/2015 09/12/2015 - 13/12/2015 15/02/2016 - 17/02/2016 01/05/2016 - 04/05/2016 02/08/2016 - 05/08/2016 04/09/2016 - 06/09/2016 09/12/2016 - 11/12/2016 24/01/2017 - 28/01/2017 02/04/2017 - 05/04/2017 13/06/2017 - 17/06/2017 30/07/2017 - 03/08/2017 24/10/2017 - 28/10/2017 21/01/2018 - 24/01/2018 11/07/2018 - 14/07/2018 16/09/2018 - 19/09/2018 28/10/2018 - 01/11/2018 01/05/2019 - 04/05/2019 07/08/2019 - 10/08/2019 25/09/2019 - 28/09/2019 13/01/2020 - 14/01/2020
35	Transportation and Mobility	Member	FUKUSHIMA Yuki	16/07/2015 - 22/07/2015 16/09/2015 - 22/09/2015 09/12/2015 - 16/12/2015 15/02/2016 - 21/02/2016 01/05/2016 - 05/05/2016
36	Transportation and Mobility & Geospatial Technology	Member	Ko Ko Lwin	01/05/2016 - 05/05/2016 04/09/2016 - 16/09/2016 07/12/2016 - 12/12/2016 22/01/2017 - 04/02/2017 09/06/2017 - 24/06/2017 20/10/2017 - 17/11/2017 17/01/2018 - 26/01/2018 22/06/2018 - 02/07/2018 04/09/2018 - 09/09/2018 15/07/2019 - 25/07/2019 13/09/2019 - 05/10/2019 04/11/2019 - 12/11/2019 11/01/2020 - 24/01/2020
37	Transportation and Mobility	Member	SATO Kenji	01/05/2016 - 05/05/2016 01/08/2016 - 05/08/2016 28/09/2016 - 01/10/2016

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38	Transportation and Mobility	Member	KATO Hironori	22/01/2018 - 24/01/2018
39	Transportation and Mobility	Member	KASHIYAMA Kakehiro	07/08/2019 - 11/08/2019
40	Transportation and Mobility	Member	MORIKAWA So	09/12/2018 - 13/12/2018
41	Water related-disaster	Member	Badri Bhakta Shrestha	21/10/2019 - 04/11/2019 08/12/2019 - 13/12/2019 24/02/2020 - 01/03/2020

Annex 1-2 List of Counterparts

(1) Members of Joint Coordination Committee

Chairperson / Project Director: Director General, Department of Higher Education, Ministry of Education (MoE)

Members:

1) Myanmar side

- Rector, Yangon Technological University (YTU)
- Pro- Rector, YTU
- Department of Disaster Management (DDM), Ministry of Social Welfare, Relief and Resettlement (MoSWRR)
- Dept. of Meteorology and Hydrology (DMH), Ministry of Transport and Communication (MOTC)
- Public Works (PW), Ministry of Construction (MOC)
- Irrigation and Water Utilization Management Department, Ministry of Agriculture, Livestock and Irrigation (MOALI)
- Directorate of Water Resources and Improvement of River Systems (DWIR), MOTC
- Dept. of Human Settlement and Housing Development (DHSHD), MOC
- Yangon City Development Committee (YCDC)
- Federation of Myanmar Engineering Society (MES)
- Myanmar Earthquake Committee (MEC)
- Myanmar Geo-science Society (MGS)

2) Japanese side

- Resident Representative of JICA Myanmar Office
- JICA Experts
 - International Center for Urban Safety Engineering (ICUS), Institute of Industrial Science (IIS), The University of Tokyo (UTokyo)
 - School of Engineering, The University of Tokyo
 - Hokkaido University
 - Tohoku University
 - Keio University
 - Other personnel concerned
- Observers
 - Official(s) of the Japanese Embassy in Myanmar

(2) Counterparts

1) Disaster Management Group

Title	Organization	Name	Note
Rector	YTU	Myint Thein	
Pro-Rector (-April 2019) / Advisor	YTU	Khin Than Yu	
Professor / Head of Dept.	YTU, Dept. of Civil Engineering	Nyan Myint Kyaw	
Professor / Head of Dept.	YTU, Dept. of Engineering Geology	Tun Naing	

Professor / Director	YTU, Dept. of Electronics / RS/GIS Research Center	Sao Hone Pha	
Professor / Head of Dept.	YTU, Dept. of Architecture	Theingi Shwe	
Professor	YTU, Dept. of Civil Engineering	Win Win Zin	
Associate Professor	YTU, Dept. of Civil Engineering	Htay Win	
Associate Professor	YTU, Dept. of Civil Engineering	Khin Maung Zaw	
Associate Professor	YTU, Dept. of Civil Engineering	Kyaing	
Professor	YTU, Dept. of Architecture	Pwint	~02/2020
Associate Professor	YTU, Dept. of Architecture	San San Moe	
Lecturer	YTU, Dept. of Architecture	Tin Tin Aye	
Lecturer	YTU, Dept. of Engineering Geology	Kyaw Zin Latt	
President	Federation of Myanmar Engineering Society (Fed. of MES)	Aung Myint	
Vice President	Federation of Myanmar Engineering Society (Fed. of MES)	Ko Ko Gyi	
Assistant Director	Dept., of Disaster Management	U San Kung	
M.S Student	YTU, Dept. of Engineering Geology	May Myat Mon	

2) Water-related Disaster Group

Title	Organization	Name	Note
Professor	YTU, Dept. of Civil Engineering	Win Win Zin	
Professor	YTU, Dept. of Civil Engineering	Zin Marlar Tin San	
Director	Dept. of Meteorology and Hydrology (DMH)	Aye Aye Nyein	
Deputy Director General	Directorate of Water Resources and Improvement of River Systems (DWIR)	U Kyaing La Ja	
Director	DWIR	Thaung Lwin	~03/2019
Director	DMH	Htay Htay Than	
Director	DWIR	Aung Myo Khaing	
Assistant Engineer	DWIR	Saw Sandar Win	
Advisor	Irrigation and Water Utilization Management Department (IWUMD), Ministry of Agriculture, Livestock and Irrigation (MoALI)	Khon Ra	
Director	IWUMD, MoALI	Kyaw Lin Oo	
Assistant Director	IWUMD, MoALI	Aung Than Oo	
Ph D Student	YTU, Dept. of Civil Engineering	Sann Win Maung	
Ph D Student	YTU, Dept. of Civil Engineering	Jue Jue	
Ph D Student	YTU, Dept. of Civil Engineering	Wai Toe	
Ph D Student	YTU, Dept. of Civil Engineering	Kyu Kyu Thin	
Ph D Student	YTU, Dept. of Civil Engineering	Shelly Win	
M.E Student	YTU, Dept. of Civil Engineering	Khin Yadanar Tun	
M.E Student	YTU, Dept. of Civil Engineering	Hsu Myat Pwint Phyu	
M.E Student	YTU, Dept. of Civil Engineering	Htet Htet Lin	
M.E Student	YTU, Dept. of Civil Engineering	Chit Bo Bo Win	~03/2018
M.E Student	YTU, Dept. of Civil Engineering	Aye Myat Thu	

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M.S Student	YTU, Dept. of Civil Engineering	Thein Zaw Tun	
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3) Infrastructure Group

Title	Organization	Name	Note
Associate Professor	YTU, Dept. of Civil Engineering	Khin Maung Zaw	
Associate Professor	YTU, Dept. of Civil Engineering	Htay Win	
DG	MOC	Shwe Lay	
Chief Engineer	Ministry of Construction (MOC)	Thein Nu	~09/2019
Chief Engineer	MOC	U Thein Aung	
Director	Dept. of Bridge, MOC	Yin Yin Swe	
Assistant Director	Dept. of Bridge, MOC	Tin Maung Htwe	
Ph D Student	Mandalay Technological University	Yi Yi Mon	~12/2017
Ph D Student	YTU, Dept. of Civil Engineering	Win Bo	~03/2018
M. E Student	YTU, Dept. of Civil Engineering	Maung Mouk	
M.S. Student	YTU, Dept. of Civil Engineering	Amy Aung	~07/2019

4) Transportation mobility Group

Title	Organization	Name	Note
Associate Professor	YTU, Dept. of Civil Engineering	Kyaing	
Ph. D Student	YTU, Dept. of Civil Engineering	Thiri Aung	
M.E Student	YTU, Dept. of Civil Engineering	Moe Myint Mo	~12/2017
M.E Student	YTU, Dept. of Civil Engineering	Thein Aye Zin	~12/2017
M.E Student	YTU, Dept. of Civil Engineering	Nan Thazin Kyaing Oo	~03/2019
M.E Student	YTU, Dept. of Civil Engineering	Lin Zar Ni Win	~03/2019
M.E Student	YTU, Dept. of Civil Engineering	Maung Thet Tun Aung	~03/2019

5) Earthquake-related Disaster Group

Title	Organization	Name	Note
Professor	YTU, Dept. of Civil Engineering	Kyaw Kyaw	
Head of Dept., / Professor	YTU, Dept. of Engineering Geology	Tun Naing	
Head of Dept. / Professor	YTU, Dept., of Architecture	Theingi Shwe	
Professor	YTU, Dept. of Architecture	Pwint	
Associate Professor	YTU, Dept. of Civil Engineering	Htay Win	
Associate Professor	YTU, Dept. of Architecture	San San Moe	
Lecturer	YTU, Dept. of Architecture	Tin Tin Aye	
Lecturer	YTU, Dept. of Engineering Geology	Kyaw Zin Latt	
Assistant Lecturer	YTU, Dept. of Engineering Geology	Su Thinzar	
Director	YCDC, Urban Planning Division	Tin Tin Kyi	
Assistant Engineer	YCDC, Building Dept	Htut Khaung Win	
Assistant Engineer	YCDC, Building Dept	Nweni Myint	
Ph D Student	YTU, Dept. of Engineering Geology	Zarli Tint	~03/2018
Research Fellow	YTU, Dept. of Architecture	Ei Ei Tun	~03/2018

M. S Student	YTU, Dept. of Civil Engineering	Wai Yar Soe	
M. E Student	YTU, Dept. of Engineering Geology	Hnin Wai Phyoe	~03/2018
M. E Student	YTU, Dept. of Engineering Geology	Su Thinzar	~03/2018
M. E Student	YTU, Dept. of Engineering Geology	Hnin Wai Phyoe	~03/2018
M. S Student	YTU, Dept. of Engineering Geology	Su Su Win	~12/2018
M. S Student	YTU, Dept. of Engineering Geology	Sann Hnin Wai	~12/2018

6) Remote Sensing / GIS Group

Title	Organization	Name	Note
Professor	RS/GIS Research Center	Sao Hone Pha	
Professor	RS/GIS Research Center	Kyaw Zaya Htun	
Lecturer	YTU, Dept. of Architecture	Tin Tin Aye	
Associate Professor	YTU, Dept. of Electronics	Hein Thura Aung	

Annex 1-3 List of Training

No.	Name of Trainings	Period	No. of participants	Objectives and contents
1	Attending the summer program at U Tokyo and ICHARM	25/07/2015 – 11/08/2015	5	To exchange idea regarding sustainable water management
2	Discussing about progress and future plan of the Project	08/11/2015 – 15/11/2015	4	To Discuss about progress and future plan of the Project as well as site visit
3	Attending the Asia Water Cycle Symposium	27/02/2016 – 04/03/2016	3	To attend the workshop at U Tokyo as well as Asia Water Cycle Symposium
4	Training course “Establishment of database for Disaster Management Platform”	01/06/2016 – 21/06/2016	4	To improve and enhance knowledge about database for Disaster Management Platform
5	Programming training and observing transport system/situation in Japan	09/05/2016 – 29/05/2016	4	To learn about the analysis of QGIS regarding vehicle and human movement
6	Training course “Establishment of Water and Energy Budget-based Distributed Hydrological Model (WEB-DHM) in Myanmar	16/10/2016 – 23/12/2016	4	To improve skill of Water and Energy Budget-based Distributed Hydrological Model (WEB-DHM) in Myanmar
7	Discussing about progress and future plan of the Project	06/03/2017 – 10/03/2017	3	To Discuss about progress and future plan of the Project as well as site visit
8	Training course “Development of a disaster vulnerability assessment system using GIS/RIS technology”	02/06/2017 – 20/06/2017	2	To learn about the establishment of fragility evaluation system in Yangon
9	Training course “Investigation of residual structural performance of damaged bridge in Myanmar and its monitoring”	03/10/2017 – 29/10/2017	2	To review the evaluation and monitoring of the damaged bridges in Myanmar
10	Practical Course for Establishment of Water and Energy Budget-based Distributed Hydrological Model (WEB-DHM) in Myanmar	07/05/2018 – 01/06/2018	3	To practice Water and Energy Budget-based Distributed Hydrological Model (WEB-DHM) in Myanmar

Annex 1-4 List of Equipment provided by the Project

(See Separate Volume - Annex 1-4_List of Equipment photos)

No	Code No.	Items	Manufacturer / Model no.	Qty.	Sub Total price (JPY)	Purchased year	Hand-over date	Condition	Manual
1 (J)	A-1~ A-3	Database system (computer, web server, etc)	Archsystems, Japan	1	1,296,972	2016	29/07 /2016	Good	O
2 (J)	A-4	DIAS system development expenditure	Infoserve Design, Inc.	1	6,046,040	2019	09/07 /2019	Good	O
3 (J)	A-5	Integrated disaster response system	Mierune Inc.	1	8,994,000	2019	06/02 /2019	Good	O
4 (M)	A-6	Monitor	LG 29WL50S- B.AEK	1	24,773	2020	24/02 /2020	Good	O
5 (M)	A-7-1	Hard Drive Storage	YOTTAMAST ER PS500RU3	1	32,739	2020	11/03 /2020	Good	X
6 (M)	A-7-2	Hard Disk	Seagate ZYD25G39 ZYD2NB2R ZYD2NF40 ZYD2Q0CN ZYD2X411 ZYD30DTC ZYD31CEJ	7	109,239	2020	11/03 /2020	Good	X
7 (M)	B-1	Touch Panel Monitor	SAMSUNG LH65QBHRT BC/XT	1	467,892	2018	06/09 /2018	Good	X
8 (J)	B-2	3D Scanner	FARO Focus 3Dx330 LLS 071609084	1	4,847,110	2016	29/09 /2016	Good	O
9 (M)	B-3	Unmanned Aerial Vehicles	Dji PHANTOM 4 Pro	1	181,685	2016	18/03 /2020	Good	O
10 (M)	B-5	Printer	KONICA MINOLTA	1	325,138	2016	17/08 /2016	Good	O
11 (J)	C-1	Acceleration measurement system	JAE	1	6,998,400	2018	13/06 /2018	Good	O
12 (J)	C-2	Dynamic Strain Measurement System	Tokyo Sokki Kenkyujo co.ltd	1	9,180,000	2016	12/09 /2018	Good	O
13 (J)	C-3	Magnetic particle inspection unit	Tokyo Sokki Kenkyujo co.ltd & Keiyu NDT supply company MPXL 35DUV	2	NA	2018	13/06 /2018	Good	O

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14 (J)	C-4	Portable digital ultrasonic flaw detector	STARMANs DIO-1000SFE	2	1,818,720	2018	13/06 /2018	Good	O
15 (J)	C-5	Portable Dynamic Strain Measurement System	Tokyo Sokki Kenkyujo co.ltd	3	1,650,000	2016	11/09 /2016	Good	O
16 (J)	C-6	Air-permeability tester for concrete	Permea TORR	1	NA	2017	06/01 /2017	Good	O
17 (J)	C-7	Reinforcement bar-detecting machine	Proceq proformeter 650	1	NA	2016	12/09 /2018	Good	O
18 (J)	C-8	Electric resistance meter for concrete	Resipod Proceq	1	NA	2016	12/09 /2018	Good	O
19 (J)	C-9	Ultrasonic tester	Pundit PL-200 Ultrasonic Pulse Velocity Tester (Proceq) UTC-3060	1	NA	2016	12/09 /2018	Good	O
20 (J)	C-10	Schmidt hammer	Original Schmidt Test Hammer Type L (Proceq) UTR-0563	5	8,100,000	2016	12/09 /2018	Good	O
21 (J)	C-11	Portable equipment for surface analysis	DKK-TOA corporation 805193	1	317,520	2018	13/06 /2018	Good	O
22 (J)	C-12	Infrared thermal camera	InfRec R300SR-SD	1	2,122,200	2016	12/09 /2018	Good	O
23 (J)	C-13	Optical strain sensor	Nippon Avionics Co.ltd	1	92,880	2016	06/01 /2016	Good	O
2 (J)	C-14	iPhone	Apple	5	235,812	2016	16/08 /2016	Good	X
25 (J)	C-16	IRI calculation	-	1	240,948	2016	12/09 /2016	Good	X
26 (J)	D-1	Contactless Vibration Measuring system	Polytec PDV 100	1	6,583,298	2018	13/06 /2018	Good	O
27 (J)	D-2	Micro-tremor meter	ANET	3	4,019,850	2016	29/09 /2016	Good	O
28 (M)	D-3	Total station	Kolida Kts-442L	1	321,476	2020	20/02 /2020	Good	O
29 (M)	D-4	GeoStudio Basic standalone license (Activation)	Geoslope	1	187,159	2020	03/03 /2020	Good	X
30 (J)	E-1-1	CD-BGB-M	IP-front LTD. Mierune LTD.	1	7,728,000	2018	20/3/ 2020	Good	O

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31 (M)	E-1-2	GPS Device Smart Phone	Lenovo	50	1,136,847	2015	02/12 /2015	Good	X
32 (J)	E-3	Transportation/ crowd operational system	Mierune Inc.	1	11,851,743	2019	14/01 /2020	Good	O
33 (J)	F-1~ F-8	Hydro/meteorologi cal sensors	Campbell Scientific Inc	8	12,571,933	2016	18/03 /2016 28/09 /2016 03/03 /2020	Good	O
34 (M)	F-10	Water Level Station	Onset RX3004	1	993,086	2020	03/03 /2020	Good	O
35 (M)	F-11	Weather station for rain gage and temperature	Onset RX3003	1	253,576	2020	03/03 /2020	Good	O
36 (M)	F-12~ F-13	Weather station	Onset RX3004	2	982,173	2020	17/02 /2020	Good	O
37 (M)	F-14	Weather station for rain gage	Onset RX3003	1	211,313	2020	03/03 /2020	Good	O
38 (M)	F-15	Ground water level measurement	Ejikamp WL500-500	1	258,858	2020	03/03 /2020	Good	O
39 (M)	F-16	Ground water level measurement	Ejikamp WL500-300	1	201,891	2020	13/03 /2020	Good	O
40 (M)	F-17	Soil moisture sensor	Onset SSMD-M005	1	38,196	2020	03/03 /2020	Good	O
41 (M)	F-18	Echo Sounder	AQUAMAP 1052xs	1	250,672	2020	21/02 /2020	Good	O
42 (M)	F-19 ~F-20	GPS	GARMIN Montana 680	2	139,032	2020	13/03 /2020	Good	O
43 (M)	F-21	Salinity portable meter	Horiba LAQUA EC210	1	59,349	2020	13/03 /2020	Good	O
44 (M)	G-1	Desktop PC (with UPS & 2TB HD)	DELL	20	2,457,322	2016	20/08 /2016	Good	X
45 (M)	G-2	Microsoft Office	Microsoft	20	Included in No.14	2016	20/08 /2016	Good	X
46 (M)	G-3	Antivirus Software	Avast	16	6,971	2016	20/08 /2016	Good	X
47 (M)	G-4	Projector	SONY VPL-EX255	1	65,245	2016	16/08 /2016	Good	X
48 (M)	G-5	Video camera	SONY HDR-PJ410	1	48,471	2016	16/08 /2016	Good	X
49 (M)	-	Safety Box	330AB Gudbank	1	910	2017	18/03 /2020	Good	X
50 (M)	-	Server PC Rack	SYNTAX27U	1	7,088	2016	18/03 /2020	Good	X
51 (M)	-	High Spec Desktop PC	i7-7820,RGB 64 GB	1	429,833	2018	18/03 /2020	Good	X

Annex 1-5 List of Manuals for Donated Equipment

(See Separate Volume - Annex 1-5 Folder)

No.	No.	Item	Group	Lang	Contents
1	B-2	3D Scanner	RS/GIS	ENG	Ch.1: Introduction Ch.2: Equipment Ch.3: Safety Precautions and Maintenance Ch.4: Parts and their Functions Ch.5: Getting Started Ch.6: The Focus3D X 330 Controller Software Ch.7: Technical Data Ch.8: Appendix Ch.9: Product Environmental Information -Technical Support -Software License Agreement -Purchase Conditions -Industrial Products Service Policy -Industrial Service Policy -Expert Opinion - Classification of the Focus3D X 330 according to IEC 60825-1 Ed. 2.0 -Implementation Notes -Trademarks FCC Compliance Statement (Applicable in the U.S.) -CE Conformity
2	B-3	Drone	All	ENG	-Quick Start Guide
3	B-5	Printer	All	ENG	Information for parts guide manual
4	C-2-1-1	TML Displacement Transducer	Infrastructure	ENG	1.Dimension 2.Installation 3.Measurement 4.Causion 5.Check and Storage 6.Supplied Accessories
5	C-2-1-5	TML Temperature Gauge	Infrastructure	ENG	1.General 2.Dimension 3.Installation 4.Measurement 5.Calculation 6.Caution 7. Check and Storage 8.Supplied Accessories
6	C-2-2-1	TML Inclinometer	Infrastructure	ENG /JP	1.Outline 2.Installation 3. .Measurement 4.Causion 5.Check and Storing 6.Supplied Accessories
7	C-2-4-1	TML Portable Data Logger	Infrastructure	ENG /JP	1.Overview 2.Preparation 3.Sesnsor Connection 4.Monitor Display and Measurement

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					<ul style="list-style-type: none"> 5.Measurement Setting 6.Record Setting 7.Interface Setting 8.Other Setting 9.Strain Compensation 10.Specification 11.Error Message
8	C-2-7-1	TML Multi Recorder Control Unit	Infrastructure	ENG /JP	<ul style="list-style-type: none"> 1.General Description 2.Preparation 3.Operation with Display Unit 4.Frequency Analysis Library (option) 5.CAN/Voice/GPS unit 6.Specifications
9	C-2-7-2	TML Multi Recorder Full Bridge Unit	Infrastructure	ENG	<ul style="list-style-type: none"> 1.General Description 2.Name of each parts 3.Conneting measuring unit 4.Specifications 5.Standard Accessories 6.External drawings
10	C-2-7-5	TML Multi Recorder Voltage/Therm ocouple Unit	Infrastructure	ENG	<ul style="list-style-type: none"> 1.General Description 2.Name of each parts 3.Conneting measuring unit 4.Specifications 5.Standard Accessories 6.External drawings
11	C-2-7-6	TML Dynamic Measurement Software	Infrastructure	ENG /JP	<ul style="list-style-type: none"> Ch.1-Setup Ch.2-Overview Ch.3-Startup Ch.4-Exit Ch.5-Setting of measurement project Ch.6-Measurement Ch.7-Chart and blank form Ch.8-Data processing Ch.9-Print Ch.10-Menu Overview Ch.11-Function
12	C-2-7-7	TML FFT Analysis Software	Infrastructure	ENG	<ul style="list-style-type: none"> 1. Introduction 2. Operation environment and setup procedures 3. Starting up and exiting 4. Displaying data files 5. Displaying and setting up the window 6. Data processing 7. Occurrence frequency analysis 8. Estimation of fatigue life (S/N analysis) 9. CSV files 10. Printing 11. Utility 12. Window 13. Help
13	C-2-9	TML Acceleration Transducer	Infrastructure	ENG	<ul style="list-style-type: none"> 1.Dimension 2.Installation 3.Measurement 4.Cautions

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					5.Check and Storage 6.Supplied Accessories
14	C-2-10	3D Supersonic Anemometer	Infrastructure	ENG	-Observation Purpose -Features -Specification -Configuration Items -Dimensions
15	C-2-13	Power Signal Converter	Infrastructure	ENG /JP	1.Outline 2.Specification 3.Installation 4.Cautions for installation and wiring 5.Instruction for use 6.Caution for use 7.Name of each parts of power supply and signal converter 8.Components
16	C-4	Ultrasonic Flaw Detector	Infrastructure	ENG /JP	1. DIO 1000 2. Specifications 3. Keyboard Description 4. Menu Description 5. Functions of Gates 6. Functions of Analog Output 7. Applications 8. Phased Array (PA) Mode 9. Management of Configuration Files (Setups) 10. USB Functions 11. Index
17	C-5-1	Portable Dynamic Strain Measurement System (Switch Box)	Infrastructure	ENG	Ch.1-Overview Ch.2-Variou Setting Ch.3-Setting Ch.4-Specification
18	C-5-2	Portable Dynamic Strain Measurement System (Data Logger)	Infrastructure	ENG /JP	Ch.1-Overview Ch.2-Preparation Ch.3-Sensor Connection Ch.4-Monitor Display and Measurement Ch.5-Measurement Setting Ch.6-Record Setting Ch.7-Interface Setting Ch.8-Other Setting Ch.9-Increase of the Number of Measurement Points Ch.10-Strain Compensation Ch.11-Specification Ch.12-Error Message
19	C-6	Air Permeability Tester for Concrete	Infrastructure	ENG /JP	-Why measure the Air-Permeability of the Cover Concrete? -How is the Air-Permeability kT measured? -What is new with the PermeaTORR AC (Active Cell)? -Application Examples -What else is required?

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20	C-7-1	Reinforcement Bar Detection Machine	Infrastructure	ENG	<ol style="list-style-type: none"> 1. Safety and Liability 2. General Operation 3. Profometer 6 Cover Meter 4. Profometer Corrosion 5. Explorer Document Handling 6. Ordering Information 7. Technical Specifications 8. Maintenance and Support 9. Profometer Link Software 10. Appendices
21	C-8-2	Resistivity Meter Resipod	Infrastructure	ENG	<ol style="list-style-type: none"> 1. Safety and Liability 2. Getting started 3. Measuring Resistivity with Resipod7 4. Resistivity Measurements on Site 5. Quality Control Applications 6. Units, Parts and Accessories 7. Technical Specifications 8. Maintenance and Support 9. ResipodLink Software
22	C-9-1	Ultrasonic Tester	Infrastructure	ENG	<ol style="list-style-type: none"> 1. Safety and Liability 2. Technical Specifications 3. Operation 4. Explorer Document Handling 5. Ordering Information 6. Maintenance and Support 7. PL-Link Software
23	C-10	Schmidt Hammer	Infrastructure	ENG	<ol style="list-style-type: none"> 1 Safety 2 Measurement 3 Maintenance 4 Data
24	C-11	Portable Equipment for Surface Analysis	Infrastructure	ENG /JP	Simple Operating Instructions
25	C-12	Infrared Thermal Camera	Infrastructure	ENG	<ul style="list-style-type: none"> -Preface - Measure for Safety - Product Details -Overall Consturction -Function Explanation of Each Button - Icon Displays and names <ol style="list-style-type: none"> 1. Preparation 2. Basic 3. Shortcut Menu 4. Advanced 5. Maintenance 6. Limited Warranty 7. Specification 8. Option 9. Appendix
26	C-13	Optical Strain Sensor	Infrastructure	ENG	<ol style="list-style-type: none"> 1.Package configuration 2.Performance specifications 3.Connection diagram 4.Communication Specifications 5.Operation procedure of application

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					software 6.Method of assembling the fixture
27	D-1	U Doppler –II Vibrometer	Earthquake	ENG /JP	-Installation of English version of U Doppler II software 1.Safety Information 2.Introduction 3.First Steps 4.Making Measurements 5.Operating the PDV 6.Fault Diagnosis 7.Technical Specifications Appendix A: Optional Accessories Appendix B: Declaration of Conformity
28	D-2	Micro-tremor	Earthquake	ENG /JP	-User's Manual of GEODAS Hardware -User's Manual for the Operation of the GEODAS(Geonet.exe)
29	D-3	Total Station	EQ-related Disaster G	ENG	FOREWORD 1. Features 2.Precautions 3.Nomenclature 4. Key functions 5. Charger entry 6. Display symbol 7. Mode Configuration PART 1 -PREPARATION FOR MEASUREMENT PART 2 -BASIC MEASUREMENTS PART 3 -ADVANCED MEASUREMENT PART 4 -DATA RECORDING PART 5 -MEASUREMENT OPTIONS SELECTION APPENDIX A -BIDIRECTIONAL COMMUNICATION APPENDIX-B -CALCULATE ROAD ALIGNMENT
30	F1~8	See Annex 2-3			
31	F-10	Telemetry Water Level Monitoring System for River Water Level	Water	ENG	Ultrasonic Controllers Operating Instructions -Introduction -Safety Notes -Description -Installing and Mounting -Connecting -Commissioning -General Operation -Remote operation -Parameter reference (LUI) -Service and Maintenance -Diagnosing and Troubleshooting -Technical Data -Dimension Drawings -Appendix A - Technical Reference -Appendix B - Certificates and Support -List of Abbreviations

					<ul style="list-style-type: none"> -LCD Menu Structure -Glossary -Index HOBOLink® User's Guide Ch.1 Getting Started Ch.2 Configuring Stations Ch.3 Monitoring Devices Ch.4 Managing and Sharing Data Ch.5 Reference HOBOWare User's Guide Ch.1: Introduction Time Saving Options Ch.2: Launching Ch.3: Using HOBOWare to Plot & Analyze Data Ch.5: Working with Devices Ch.6: HOBOWare Reference Ch.7: HOBOnode Manager & Wireless Data Node Networks
32	F-11-13	Telemetry Automatic Weather Station For Analysis and Research	Water	ENG	<ul style="list-style-type: none"> -Components -Assembling the Smart Sensor -Mounting -Maintenance -Verifying Sensor Accuracy
33	F-14	Telemetry Rain Monitoring System for analysis and research purposes	Water	ENG	<ul style="list-style-type: none"> Rain Gauge Smart Sensor (S-RGx-M002) Manual -Specifications -Mounting -Connecting the Sensor to a Station -Operation -Maintenance -Field Calibration Temperature/RH Smart Sensor (S-THB-M00x) Manual -Specifications -Mounting -Connecting the Sensor to a Station or Logger -Replacing the RH Sensor -Maintenance
34	F-15-16	Ground Water Level Meter (300ft) &(500ft)	Water	ENG	<ul style="list-style-type: none"> PART I – OVERVIEW -Introduction -Important Information -System Description -Things You Need to Know About the Water Level Meter -System Components -Water Level Meter Components -Quick Guide to Using a Water Level Meter PART II - PROBE SENSITIVITY ADJUSTMENT & BATTERY REPLACEMENT GUIDE -Probe Sensitivity Adjustment

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					-Battery Replacement PART III – APPENDICES
35	F-17	10HS Soil Moisture Smart Sensor	Water	ENG	-Specifications -Installation -Connection the Sensor to a Station -Operating Environment -Operation -Maintenance -Calibration -Verifying Sensor Performance
36	F-18	Echo Sounder	Water	ENG	-Introduction -Customizing AQUAMAP -Charts and 3D Chart Views -Navigation with AQUAMAP -Sailing Features -Sonar Fishfinder -Radar -Nav Info -Gauges and Graphs -Media Player -Viewing Video -Autopilot -Communication with Wireless Devices -Device Configuration -Appendix
37	F-19-20	GPS	Water	ENG	-Introduction -Getting Started -Waypoints -Tracks -Navigation -Camera and Photos -Geocaches -Applications -ANT+ Sensors -Customizing the Device -Device Maintenance -Device Information -Troubleshooting -Appendix -Index
38	F-21	Salinity meter	Water	ENG	- Product Overview - Basic operations - Calibration - Data - Setup - Maintenance and storage - Error messages and trouble shooting - Appendix

Annex 1-6 Cost of operation

(JPY)

No	Category	JFY2015 4/2015- 3/2016	JFY2016 4/2016- 3/2017	JFY2017 4/2017- 3/2018	JFY2018 4/2018- 3/2019	JFY2019 4/2019- 3/2020	Total
1	General operational expenses*1	2,415,578	4,236,614	4,914,007	6,012,678	8,178,865	25,757,742
2	Airfare	963,600	1,765,201	1,665,662	1,273,854	943,476	6,611,793
3	Travel expense	1,739,587	1,192,763	1,487,759	1,726,332	848,193	6,994,633
4	Compensation and honorarium	882	131,724	414	168,451	224,262	525,732
5	Meeting expenses*2	366,785	644,414	523,550	875,114	1,758,278	4,168,142
6	Total	5,486,432	7,970,718	8,591,391	10,056,429	11,953,073	44,058,042
	Yearly average*3 1USD=¥		108.9	111.0	110.5	109.1	
	Yearly average*3 1MMK=¥		0.088	0.082	0.075	0.073	

*1 including observation equipment, field office set-up, car rental

*2 including seminar, workshop

*3 yearly average is used for currency rate

ANNEX 2: List of Products Produced by the Project

- 2-1 List of Research Papers
- 2-2 List of Policy Related Documents (See Separate Volume)
- 2-3 List of Systems (See Separate Volume)
- 2-4 List of Persons acquired degrees
- 2-5 List of Other Products (See Separate Volume)

Annex 2-1 List of Research Papers

1)-a Research papers submitted by mainly YTU and accepted by International journals

No.	FY	Author(s), Title, Journal title, Year, page
1	2015	Win, W.Z., Kawasaki, A., Win, S., River Flood Inundation Mapping in the Bago River Basin, Myanmar, Hydrological Research Letters, 2015, 9 (4), 97-102.
2	2017	Thein Aye Zin, Kyaing, Ko Ko Lwin, Yoshihide Sekimoto: Estimation of Origin-Destination Trips by Using Big Data Source in Yangon, Journal of Disaster Research, Vol.13 No.1 Feb. 2018, pp. 6-13
3	2017	Win Win Zin, Akiyuki Kawasaki, Wataru Takeuchi, Zin Mar Lar Tin San, Kyaw Zaya Htun, Thet Hnin aye and Shelly Win : Flood Hazard Assessment of the Bago River Basin, Myanmar, Journal of Disaster Research, Vol.13 No.1 Feb. 2018, pp. 14-21
4	2017	Kyaing, Yoshide SEKIMOTO, Ko Ko Lwin: Estimation of Trip Generation in Yangon City by Using CDRs Data, On-line Journal of the Eastern Asia Society for Transportation Studies
5	2018	Win, S., Win, W.Z.,Kawasaki, A., San, Z.M.L.T. : Establishment of flood damage function models: a case study in the Bago River Basin, Myanmar, International Journal of Disaster Risk Reduction, 28, 688-700. doi.org/10.1016/j.ijdrr.2018.01.030, Jun.2018
6	2019	Kyaing, D., Lwin, K.K., Sekimoto, Y. (2019). Identification of Transportation Mode and Transit Behaviour from Mobile CDRs Data: A Case of Yangon City. Journal of the Eastern Asia Society for Transportation Studies, 13, 841-860.
7	2019	Nan, T.Z.K.O., Kyaing, D., Lwin, K.K., Sekimoto, Y. (2019). Estimation of Intercity Travel Pattern and Impact on Yangon-Pathayin Road between Ayeyarwady Region and Yangon Region Using Call Detail Record. Journal of the Eastern Asia Society for Transportation Studies, 13, 277-297.
8	2019	Thiri, A., Kyaing, D., Lwin, K.K., Sekimoto, Y. (2019). Identification and Classification of Land Use Types in Yangon City by Using Mobile Call Detail Records (CDRs) Data. Journal of the Eastern Asia Society for Transportation Studies, 13, 1114-1133.
9	2019	Tun Naing, Su Thinzar, Muneyoshi Numada, Khin Than Yu, Kimiro Meguro: Acquisition of ground information in downtown Yangon for Bosai Operation Support system. Journal of Disaster Research, Dr15-3-10301,Mar. 2020
10	2019	Thiri Aung, Kyaing, Ko Ko Lwin, Yoshihide Sekimoto: An Investigation of socioeconomic and land use influence on car ownership in Yangon City. Journal of Disaster Research, Dr15-3-10308, Mar. 2020
11	2019	Kyaing, Ko Ko Lwin, Yoshihide Sekimoto: Analysis of trip distributions of human mobility patterns and their transit behaviours using mobile call detail records. Journal of Disaster Research, Dr15-3-10315, Mar. 2020
12	2019	Win Win Zin, Akiyuki Kawasaki, Georg Hormann, Ralph allen Acierto, Zin Marlar Tin San, Aye Myat Thu: Multivariate flood loss estimation of the 2018 Bago flood in Myanmar. Journal of Disaster Research, Dr15-3-10317, Mar. 2020
13	2019	Lin Zarni Win, Kyaing, Ko Ko Lwin, Yoshihide Sekimoto: Traffic conditions and route choice of road users between two roundabouts. Journal of Disaster Research, Dr15-3-10346, Mar. 2020
14	2019	Zin Mar Lar Tin San, Win Win Zin, Akiyuki Kawasaki, Ralf Allen Acierto and Tin Zar Oo: Developing Flood Inundation Map using RRI and SOBEK models: A Case Study of the Bago River Basin, Myanmar, Journal of Disaster Research, Dr15-3-10313, Mar. 2020
15	2019	Hein Thura Aung, Kazuki Inoue, Sao Hone Pha, and Wataru Takeuchi: Condition Monitoring of Yangon Circular Railway and Yangon-Mandalay Railway based on Car-Body Acceleration Response using Portable Device. Journal of Disaster Research, Dr15-3-10305, Mar. 2020
16	2019	Thet Htun Aung, Kyaing, Ko Ko Lwin, Yoshihide Sekimoto:Analysis of bus operation at peak hours using bus GPS data: a case study of YBS – 36 . Journal of Disaster Research, Dr15-3-10314, Mar. 2020
17	2019	Kyu Kyu Thin, Win Win Zin, Zin Mar Lar Tin San, Akiyuki Kawasaki, Abdul Moiz and

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Annex 2: List of Products Produced by the Project

		Seemanta Sharma Bhagabati: Estimation of Run-of-River Hydropower Potential in Myitnge River Basin. Journal of Disaster Research,, Dr15-3-10312, Mar. 2020
18	2019	Shelly Win, Win Win Zin, and Akiyuki Kawasaki: Development of Flood Damage Estimation Model for Agriculture – Case Study in the Bago Floodplain, Myanmar. Journal of Disaster Research, Dr15-3-10283, Mar. 2020
19	2019	Hein Thura Aung, Sao Hone Pha, and Wataru Takeuchi: Building footprint extraction in Yangon city from monocular optical satellite image using deep learning. Geocarto International, https://doi.org/10.1080/10106049.2020.1740949 , Mar. 2020

1)-b Research papers submitted by mainly YTU and accepted by International journals as Survey report / Note

1	2017	May Myat Mon, Tun Naing, Muneyoshi Numada, Khin Than Yu, Kimiro Meguro, and Kyaw Zin Latt: Analysis of Disaster Response during Landslide Disaster in Hakha, Chin State of Myanmar, Journal of Disaster Research, Feb. 2018, Vol.13 No.1 pp. 99-115
2	2019	Hnin Thiri Myo, Win Win Zin, Kyi Pyar Shwe, Zin Mar Lar Tin San, Akiyuki Kawasaki and Ralph Allen Acierto: Projecting the Impact of Climate Change on Temperature, Precipitation, and Discharge in the Bago River Basin. Journal of Disaster Research, Dr15-3-10310, Mar. 2020
3	2019	Moe Myint Mo, Kyaing, Ko Ko Lwin, Yoshihide Sekimoto: Measuring Traffic Congestion Based on the Taxi Operations of Traditional and On-Demand Taxis in Yangon, Journal of Disaster Research, Dr15-3-10311, Mar. 2020
4	2019	Sann Win Maung, Zin Mar Lar Tin San, Win Win Zin, Akiyuki Kawasaki, Kyu Kyu Thin: Application and Flood Discharge Analysis with Hydrological Model (WEB-DHM) in Bago River Basin. Journal of Disaster Research, Dr15-3-10356, Mar. 2020

2)-a Research papers submitted by mainly Japanese side and accepted by International journals

No.	FY	Author(s), Title, Journal title, Year, page
1	2016	Hiroshi YOKOTA, Kohei NAGAI, Koji MATSUMOTO, Yi Yi Mon: Prospect for Implementation of Road Infrastructure Asset Management, Advanced Engineering Forum, 2017, Vol. 21, pp. 366-371
2	2017	Kawasaki, A., Ichihara, N., Ochii, Y., Acierto, R.A., Kodaka, A., Win, W.Z. Disaster response and river infrastructure management during the 2015 Myanmar floods: a case in the Bago River Basin. International Journal of Disaster Risk Reduction, 2017, 24, 151–159
3	2017	Tanakorn SRITARAPIPAT, Wataru TAKEUCHI, "Buildmg classification in Yangon City, Myanmar using Stereo GeoEye images, Landsat image and night-time light data" Remote Sensing Applications: Society and Environment 6 (2017) pp 46-51
4	2017	Kawasaki, A., Yamamoto, A., Koudelova, P., Acierto, R.A., Nemoto, T., Kitsuregawa, M., Koike, T. Data Integration and Analysis System (DIAS) Contributing to Climate Change Analysis and Disaster Risk Reduction. Data Science Journal, 2017,
5	2017	Bhagabati, S.S., Kawasaki, A. Consideration of the rainfall-runoff-inundation (RRI) model for flood mapping in a deltaic area of Myanmar. Hydrological Research Letters, 2017, 11(3), 155–160.
6	2017	Carlos Arturo Linan PANTING, Kohei NAGAI, Eiji IWASAKI, Thein NU: Verification of Structural Performance of a Main Tower Inclined Suspension Bridge by Simple Monitoring and FE Analysis, Journal of Disaster Research, Vol.12, No.3, pp.406-414, 2017,
7	2017	Muhammad Mohsan, Ralph Allen Acierto, Akiyuki Kawasaki, and Win Win Zin: Preliminary Assessment of GPM satellite rainfall over Myanmar, Journal of Disaster Research, Vol.13 No.1 Feb. 2018, pp. 22-30
8	2017	Chaitanya Krishna Gadagamma, Aung Ko Min, Hideomi Gokon, Kimiro Meguro, Khin Than Yu: Development of Fragility Functions of RC Buildings in Yangon City using Push Over Analysis, Journal of Disaster Research, Vol.13 No.1 Feb. 2018, pp. 31-39

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9	2017	Rena Kikuchi, Muneyoshi Nunada, May Myat Mon, Tun Naing, Khin Than Yu, and Kimiro Meguro: Comparison of disaster management plan both Japan and Myanmar, <i>Journal of Disaster Research</i> , Vol.13 No.1 Feb. 2018, pp. 62-69
10	2017	Naruhiko Shirai, Seemanta Bhagabati, Akira Kodaka, Naohiko Kohtake, Akiyuki Kawasaki, Ralph Allen Acierto, and Win Win Zin: Data Communication for Efficient Water Resource Management Among Multi Stakeholders - A case study in Bago basin, Myanmar -, <i>Journal of Disaster Research</i> , Vol.13 No.1 Feb. 2018, pp. 70-79
11	2017	Liyanto Eddy, Takeshi Miyashita, Koji Matsumoto, Kohei Nagai, and Win Bo: A Simple Monitoring System for Damaged Bridges in Myanmar, <i>Journal of Disaster Research</i> , Vol.13 No.1 Feb. 2018, pp. 80-87
12	2017	Nuntikorn Kitratporn, Wataru Takeuchi, Koji Matsumoto, Kohei Nagai: Structure Deformation Measurement with Terrestrial Laser Scanner at Pathein Bridge in Myanmar, <i>Journal of Disaster Research</i> , Feb. 2018, Vol.13 No.1 pp. 40-49
13	2017	Tanakorn Sritarapipat, Wataru Takeuchi: Land cover change simulations in Yangon under several scenarios of flood and earthquake vulnerabilities with master plan, <i>Journal of Disaster Research</i> , Feb. 2018, Vol.13 No.1 pp. 50-61
14	2017	Michael Henry, Chika Yamasaki, Kohei Nagai, Koji Matsumoto, and Hiroshi Yokota: Technology transfer for safe and sustainable road bridge life cycle management in Myanmar, <i>Journal of Disaster Research</i> , Feb. 2018, Vol.13 No.1pp. 88-98
15	2017	Ko Ko Lwin, Yoshihede Sekimoto, and Wataru Takeuchi: Development of GIS integrated Big Data research toolbox for mobile CDR data processing in disaster management, <i>Journal of Disaster Research</i> , Mar. 2018, Vol.13 No2. 380-386
16	2018	Ko Ko Lwin, Yoshihede Sekimoto, and Wataru Takeuchi: Estimation of Hourly Link Population and Flow Directions from Mobile CDR, <i>IJGI (International Journal of Geo-Information)</i> , doi: 10.3390/ijgi7110449, Vol.7, Issue 11,17th Nov. 2018
17	2018	Prakhar Misra, Ram Avtar and Wataru Takeuchi: Comparison of Digital Building Height Models Extracted from AW3D, TanDEM-X, ASTER, and SRTM Digital Surface Models over Yangon City. <i>Remote Sens.</i> 2018, 10(12), 2008;
18	2018	Koji MATSUMOTO, Carlos Arturo Linan PANTING, Nuntikorn KITRATPORN, Wataru TAKEUCHI, Kohei NAGAI, Eiji IWASAKI: Performance Assessment of Damaged Suspension Bridge by Structural Analysis and Spatial Measurement - A case Study of Twantay Bridge, Myanmar, <i>Journal of Bridge Engineering, ASCE</i> , 2018, V. 23, Issue 10
19	2019	Kawasaki, A., Kawamura, G., Win, W.Z. (2020) A local level relationship between floods and poverty: A case in Myanmar. <i>International Journal of Disaster Risk Reduction</i> , 42, 101348. doi.org/10.1016/j.ijdr.2019.101348
20	2019	Ralph Allen E. Acierto, Akiyuki Kawasaki, and Win Win Zin: Impact of Bias-correction Methods in Assessing the Potential Flood Frequency Change in Bago River. <i>Journal of Disaster Research</i> , Dr15-3-10316, Mar. 2020
21	2019	Akira KODAKA, Akiyuki KAWASAKI, Naruhiko SHIRAI, Ralph Allen Acierto, Win Win ZIN, and Naohiko KOHTAKE: User Stories-Based Requirement Elicitation for Data Visualization to Support Decision Making in Water Resource Management at Bago River Basin. <i>Journal of Disaster Research</i> , Dr15-3-10393, Mar. 2020
22	2019	Osamu Murao, Tomohiro Tanaka: Earthquake Building Collapse Risk Estimation for 2040 in Yangon, Myanmar, <i>Journal of Disaster Research</i> , Dr15-3-10309, Mar. 2020
23	2019	Daisuke Komori, Akiyuki Kawasaki, Nanami Sakai, Natsuna Shimomura, Akira Harada, Kohei Okuda, Chit Bo Bo Win, Aye Mya Thu, Khin Yadanar Htun, Wae Toe, Win Win Zin: Characteristic of the 2018 Bago River Flood of Myanmar. <i>Journal of Disaster Research</i> , Dr15-3-10306, Mar. 2020
24	2019	T.shimozono, Y.Tajima, S.Akamatsu, Y. Matsuba, A. Kawasaki: Large-Scale Channel Migration in the Sittang River Estuary, <i>Scientific Reports</i> , 9(1), 9862.
25	2019	Khin Myat Kyaw, Chaitanya Krishna, Kyaw Kyaw, Hideomi Gokon, Osamu Murao and Kimiro Meguro: Seismic Fragility Analysis of Poor Timber Buildings in Yangon Slum Areas. <i>Journal of Disaster Research</i> , Dr15-3-10535, Mar. 2020

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26	2019	Punyawut Jiradilok, Kohei Nagai, Koji Matsumoto, Takeshi Yoshida, Tetsuro Goda, Eiji Iwasaki: Analysis of Seismic Performance of Suspension Bridge in Myanmar. Journal of Disaster Research, Dr15-3-10382, Mar. 2020
27	2019	Michael Henry, Kohei Nagai, Koji Matsumoto, and Hiroshi Yokota: Expectations for training transfer after a capacity development project on road and bridge technology in Myanmar. Journal of Disaster Research, Dr15-3-10396, Mar. 2020
28	2019	Yudai HONMA and Kimiro MEGURO: Traffic Impacts of Street Parking Cars on Secondary North-South Streets in Downtown Yangon. Journal of Disaster Research, Dr15-4-10522, Apr. 2020 (accepted in March, 2020, to be published in April 2020)

2)-b Research papers submitted by mainly Japanese side and accepted by International journals as Survey report / Note

1	2017	Ralph Allen Acierto, Akiyuki Kawasaki, WinWin Zin, Aung Than Oo, Khon Ra, Daisuke Komori : Development of a Hydrological Telemetry System in Bago River, Journal of Disaster Research, Feb. 2018, Vol.13 No.1 pp. 116-124
2	2017	Osamu Murao, Takuma Usuda, Hideomi Gokon, Kimiro Meguro, Wataru Takeuchi, Kazuya Sugiyasu, and Khin Than Yu: Understanding of Regional Building Characteristics in Yangon Based on Digital Building Model, Journal of Disaster Research, Feb. 2018, Vol.13 No.1 pp. 125-137
3	2017	Yasmin Bhattacharya, Takaaki Kato, Tomoko Matsushita, Ei Ei Tun and Tin Tin Aye: Response Demand Analysis of Urban Systems to Support Emergency and Disaster Response in a Developing City —the Case of Yangon, Myanmar, Journal of Disaster Research, Feb. 2018, Vol.13 No.1 pp. 138-151
4	2019	Seemanta Sharma Bhagabati, Akiyuki Kawasaki, Wataru Takeuchi and Win Win Zin: Improving River Bathymetry and Topography Representation of a Low-Lying Flat River Basin by Integrating Multiple Sourced Datasets. Journal of Disaster Research, Dr15-3-10325, Mar. 2020

2)-c Research papers submitted by mainly Japanese side and accepted by Domestic (Japanese) journals

No.	FY	Author(s), Title, Journal title, Year, page
1	2015	川崎昭如, 市原裕之, 落井康裕, 小高暁, 2015年ミャンマー水害に対する政府の対応と河川管理施設および水路の洪水対策機能. 地域安全学会論文集, 2016, 28, 31-40
2	2016	瀬戸祥太, 下園武範, 田島芳満, 川崎昭如, ヤンゴン川合流域における潮流特性に関する研究. 土木学会論文集 B2(海岸工学), 2016, 72(2), 1669-1674
3	2016	田平由希子, 川崎昭如, 東南アジアの洪水常襲地帯における住民の災害対応と支援の関係: タイとミャンマーの比較分析から. 水文・水資源学会誌, 2017, 30(1), 269-278
4	2016	米原慎, 川崎昭如, 竹内渉, 将来の土地利用変化が洪水氾濫域に及ぼす影響の評価: ミャンマー・バゴー川流域におけるケーススタディ. GIS—理論と応用, 2017, 25(1), 23-32
5	2017	川村元輝, 川崎昭如 開発途上国の洪水と貧困の関係性に関する研究: ミャンマーでの地区レベルにおけるケーススタディ. 地域安全学会論文集, 2017.11, No.31, 187-193,
6	2017	Tanakorn Sritarapipat and Wataru Takeuchi, Urban Growth Modeling based on the Multi-centers of the Urban Areas and Land Cover Change in Yangon, Myanmar, Journal of The Remote Sensing Society of Japan Vol.37 No.3 July 2017 pp.248-260
7	2017	川村元輝, 川崎昭如 貧困層を考慮した洪水常襲地帯の開発支援策の検討: ミャンマーでのケーススタディ. 水文・水資源学会誌, Mar. 2018, Vol. 31, No2, pp83-93
8	2018	田島雅己, 本間裕大: 複数経路の空間的關係に着目した交通ネットワークの頑健性評価、公益社団法人日本都市計画学会 都市計画論文集 Vol. 53 No.2, Oct., 2018, PP199-205
9	2019	奥田康平, 川崎昭如, 濱口竜平 (2019) 衛星画像と世帯調査データを用いた建物ごとの収入レベルの推定. GIS—理論と応用, 27(2), 9-18.
10	2019	松下朋子, 窪田亜矢, ミャンマー国ヤンゴンにおける背割り排水用空間の再生に関する研究 社会的企業と住民による協働プロジェクトとその効果に着目して、日本建築学会計画系論文集 第85巻 第769号 pp567-577, 2020, 3月

Annex 2-2 List of Policy Related Documents

(See Separate Volume - Annex 2-2 Policy Reports)

Name of document	Group	Submitted to	when	Title, volume, authors
(1)-1 Reports of the investigation of the collapse of Myaung Mya Bridge	Infra G (Dr. Nagai & Dr. Matsumoto)	MOC	2018	1) "Investigation on the Collapse Accident of Myaungmya Bridge, Myanmar" (22 slides) By SATREPS Infra Group
			5-7 April 2018	2) "Report of Investigation of Myaung Mya Bridge etc., Myanmar" (24 pages) By Dr. Nagai, Dr. Matsumoto (UTokyo), Mr. Sorimachi, Mr. Kaifuku, Mr. Tanaka (I&H Infrastructure System Co., Ltd, Japan), Mr. Tonegawa, Mr. Nishi, Mr. Kanto (I&H Engineering Co., Ltd, Myanmar)
(1)-2 Reports of the safety investigation of cable-type suspension bridges	Infra G (Dr. Nagai & Dr. Matsumoto)	MOC	9 May 2018	1) "Report of Myanmar Suspension Bridges" (14 pages) By Japanese Northern Team A (JFE Engineering, J&M Steel Solutions)
			29 May 2018	2) "Inspection Sheets of 4 Suspension Bridges" (19 pages) By Japanese Northern Team B
			8-12 May 2018	3) Report of investigation of bridges in Myanmar (493 pages) By the team of The University of Tokyo, ICUS, IIS, UTokyo
			8-12 May 2018	4) Summary of Report of investigation of bridges in Myanmar (12 pages) By the team of The University of Tokyo, ICUS, IIS, UTokyo
(1)-3 Policy Recommendations for establishment of a regulation for cable-type bridges such as periodical inspection	Infra G (Dr. Nagai & Dr. Matsumoto)	MOC	Aug 2018	1) Investigation on the Collapse Accident of Myaungmya Bridge, Myanmar (21 slides)
				2) Short Report and Recommendations in Bridges Investigation by Japan (Team of Univ. of Tokyo) (35 slides)
				3) Basis of the inspection of cable-type bridges (21 slides)
				4) Damages of Structures and Utilization of Bridge Database (87 slides)
(2)-1 A flood-control plan and urban development plan	Water G (Dr. Kawasaki, Prof. Win Win Zin)	DMN, DWIR, IWUMD and DDM	3 Aug 2018	"Outline of 2018 Myanmar floods – Initial data collection as of August 3 rd , 2018" (57 slides) By Dr. Kawasaki, Prof. Win Win Zin, Komori, Acierto, Ochi, Kawakita, Haga, Okuda, Shimomura, Chit Bo Bo Win, Tin Aye, Yasukawa, Takeuchi, Makabe, Nakamura
(2)-2 A summary report of the 2018 Myanmar flood response including data analysis	Water G (Dr. Kawasaki, Prof. Win Win Zin)	DMH, DWIR, IWUMD, DHPI and DDM	13 Aug 2018	"Outline of 2018 Myanmar floods – Report #2 focusing in Bago as of August 13 th 2018" (52 slides) By Dr. Kawasaki, Prof. Win Win Zin, Komori, Sakai, Chang, Acierto, Shimozono, Haga, Okuda, Shimomura, Chit Bo Bo Win, Tin Aye, Yasukawa, Takeuchi, Makabe, Nakamura

Annex 2-3 List of Systems

(See Separate Volume - Annex 2-3 List of Systems)

Name	Contents & manual			
(1) Near-real time floor inundation simulation system	Group	Water-related Disaster Group		
	Developed by	Infoserve Design, Inc. (http://www.jyoho-s.com/)		
	Supervised by	UTokyo (Prof. Kawasaki) & YTU		
	URL	http://myanmar.diasjp.net/		
	Username	[REDACTED]		
	Password	[REDACTED]		
	Manual:	No.	Lang.	Contents
1) Near Real Time Inundation Analysis System Equipment	A-4	ENG	About the System How to use the System How to download the data from System Contact	
2) Manual for Bago River Telemetry Stations	F1-F8	ENG/MM	Overview / Telemetry Connection System Chapter 1:Host and Site Communication Chapter 2: Stations of Telemetry System Chapter 3:Equipment Installation Procedures Chapter 4:Server Installation Procedures -Chapter 5:Station Maintenance	
(2)-1 City Geospatial Dashboard	Group	Human Mobility and Transportation Group		
	Developed by	UTokyo (Dr. Ko Ko Lwin)		
	Supervised by	UTokyo (Dr. Ko Ko Lwin) & YTU		
	URL	https://harmony-geospatial-analytics.com/city_geospatial_dashboard/		
	Manual	No.	Lang.	Contents
City Geospatial Dashboard	E-3	ENG	1) Aims 2) System Components 3) Geospatial Data Collection 4) Geospatial Data sharing 5) Geovisualization and Spatial Analysis	
(2)-2 Myanmar G- Spatial Information Dashboard	Group	Human Mobility and Transportation Group		
	Developed by	Mierune Inc. (https://mierune.co.jp/#ja)		
	Supervised by	UTokyo (Dr.Sekimoto) & YTU		
	URL	https://myanmar.geospatial.jp/ckan/		
	Manual	No.	Lang.	Contents
Myanmar G-Spatial Information Dashboard	E-3	ENG	1) Myanmar G-Spatial Information Dashboard 2) CCTV Based Traffic Counting System	
(3) Disaster Response Support System	Group	Disaster Management Group		
	Developed by	Mierune Inc. (https://mierune.co.jp/#ja)		
	Supervised by	UTokyo (Dr. Numada) & YTU (Prof. Tun Naing)		
	URL	http://www.disasterinfo.jp/bs/mmr/		
	URL	http://eng.iis-boss.com (Work Flow Chart)		
	Username	Myanmar_admin		
	Password	kumamon		
	Manual	No.	Lang.	Contents
Workbook "How We Can Overcome a Disaster"	A-5	ENG/MM	- System entrance - Work flow chart system - overview - Earthquake simulation - Situation visualize - Damage situation mapping	

2-4 List of Persons who acquired degrees during the Project

1) Persons from Myanmar side who acquired degree during the Project

Nr.	Research G	year	Name	Degree	Dept.	University
1	Infra	2018	Yi Yi Mon	PhD	Eng.	MTU
2	RS/GIS	2020	Hein Thura Aung	PhD	Electric Eng.	YTU
3	Transportation	2019	Thiri Aung	PhD	Eng.	YTU
4	Transportation	2020	Kyaing	PhD	Eng.	YTU
5	Transportation	2018	Thein Aye Zin	M	Eng.	YTU
6	Transportation	2018	Moe Myint Moe	M	Eng.	YTU
7	Transportation	2019	Thet Htun Aung	M	Eng.	YTU
8	Transportation	2019	Lin Zarni Win	M	Eng.	YTU
9	Transportation	2019	Nan Thazin Khine Oo	M	Eng.	YTU
10	Water	2020	Kyu Kyu Thin	PhD	Civil Eng.	YTU
11	Water	2020	Hnin Thiri Myo	PhD	Civil Eng.	YTU
12	Water	2018	Shelly Win	PhD	Civil Eng.	YTU
13	Water	2017	Thet Hnin Aye	PhD	Civil Eng.	YTU
14	Water	2019	Su Myat Pwint Phyu	M	Civil Eng.	YTU
15	Water	2019	Wai Toe	M	Civil Eng.	YTU
16	Water	2019	Aye Myat Thu	M	Civil Eng.	YTU
17	Water	2018	Tin Zar Oo	M	Civil Eng.	YTU
18	Water	2018	Chit Bo Bo Win	M	Civil Eng.	YTU
19	Water	2017	Su Wae Thin	M	Civil Eng.	YTU
20	DM	2019	May Myat Mon	M	Eng. Geology	YTU

2) Persons from Japan side who acquired degree during the Project

Nr.	Research G	year	Name	degree	Dept.	University
1	Infra	2018	May Thazin Tun	M	Eng.	UTokyo
2	Infra	2018	Osama Abdelfattah Hegeir	M	Eng.	UTokyo
3	RS/GIS	2018	Tanakorn Sritarapipat	PhD	Civil Eng.	UTokyo
4	RS/GIS	2018	Nuntikorn Kitratporn	M	Civil Eng.	UTokyo
5	RS/GIS	2018	Kazuki Inoue	M	Civil Eng.	UTokyo
6	RS/GIS	2020	Takashi Misumi	M	Civil Eng.	UTokyo
7	Earthquake	2016	Takuma Usuda	M	Eng.	Tohoku U.
8	Earthquake	2018	Tomohiro Tanaka	M	Eng.	Tohoku U.
9	Earthquake	2019	Saki Uchida	M	Eng.	UTokyo
10	Earthquake	2018	Natsumi Hara	M	Civil Eng.	UTokyo
11	Earthquake	2020	Takumi Matsumoto	M	Civil Eng.	Nagaoka IoT
12	Earthquake	2017	Kotone Shimizu	B	Eng.	Tohoku U.
13	Earthquake	2018	Yuto Yamada	B	Eng.	Tohoku U.
14	Earthquake	2019	Gaku Kitazawa	B	Eng.	Tohoku U.
15	Earthquake	2019	Yusuke Kawano	B	Civil Eng.	UTokyo
16	Water	2018	Bhagabati Seemanta Sharma	PhD	Civil Eng.	UTokyo
17	Water	2020	Chinami Yamagami	M	Civil Eng.	UTokyo
18	Water	2020	Natsumi Shimomura	M	Civil Eng.	UTokyo
19	Water	2019	Sorayuki Akamatsu	M	Civil Eng.	UTokyo

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20	Water	2019	Taihei Haga	M	Civil Eng.	UTokyo
21	Water	2018	Shin Yonehara	M	Civil Eng.	UTokyo
22	Water	2018	Yuya Taiki	M	Civil Eng.	UTokyo
23	Water	2018	Chang Yi-Chia	M	Civil Eng.	UTokyo
24	Water	2018	Naruhiko Shirai	M	System Design	Keio U.
25	Water	2017	Genki Kawamura	M	Civil Eng.	UTokyo
26	Water	2017	Masahiro Kambara	M	Civil Eng.	UTokyo
27	Water	2019	Kohei Okuda	B	Civil Eng.	UTokyo
28	Water	2018	Yukimasa Higaki	B	Civil Eng.	UTokyo
29	Water	2016	Shin Yonehara	B	Civil Eng.	UTokyo
30	Water	2016	Shota Seto	B	Civil Eng.	UTokyo
31	DM	2018	Rena Kikuchi	M	Civil Eng.	UTokyo

2-5 List of Other Products

(See Separate Volume - Annex 2-5 List of Other Products)

No.	Code no.	Item	Group	Lang.	Contents
1		Vulnerability Map	EQG	ENG	<ul style="list-style-type: none"> - Version 1 - Version 2 - Version 3
2		Manual for microtremor measurement using GEODAQS	EQG	ENG	<ul style="list-style-type: none"> - Common setting - Individual setting - Software setting (1) & (2)
3		Evaluation of Site Amplification Factor in Yangon City	Geotechnical G (EQG)	ENG	<ul style="list-style-type: none"> - Objective & method - Simplified evaluation - Update using the detailed analysis - Update and verification
4		Demonstration of Non-Destructive test equipment	Infra G	ENG	<ul style="list-style-type: none"> - Non-destructive test (NDT) - Specimens Preparation - Objective - Non-destructive testing - Nondestructive testing of concrete - NDT equipment that will be transferred to YTU - Introduction of the using of NDT
5		Automatic Building Footprint Extraction method using Deep learning	RS/GIS G	ENG	Shape File of Building map for Latha Township (data saved at YTU server)
6		Ground Information Maps	Geotechnical (EQG)	ENG	Map of Fundamental Frequency Map of Predominant Period Map of Potential Soil Amplification Map of Soil Thickness Map of Vs 30 For <ul style="list-style-type: none"> - Latha Township - Lanmataw Township - Kyauktada Township - Pazundaung Township - Botahtaung Township - Pabedan Township
7		Ground Motion Parameter Maps	Geotechnical G (EQG)	ENG	Map of Spectral Response Acceleration at 2.0s Map of Spectral Response Acceleration at 1s Map of Peak Ground Acceleration PGA Map of Peak Ground Velocity PGV For <ul style="list-style-type: none"> - Latha Township - Lanmataw Township - Kyauktada Township - Pazundaung Township - Botahtaung Township - Pabedan Township
8	E-1	GPS	Transp G	ENG	<ul style="list-style-type: none"> - GPS Tracker Sample Installation and Configuration Guide - Product Summary

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					<ul style="list-style-type: none"> - Product Specification - Overview - Installation and Configuration (Sample)
9	C-1	Manual for Acceleration Measurement System	Infra G	ENG	<ol style="list-style-type: none"> 1.Specification 2.Configuration 3.Connection Procedure 4.Measurement Procedure
10	C-3	Manual for Magnetic Particle Inspection Unit	Infra G	ENG	Operation of the equipment
11		Lecture materials	RS/GIS G	ENG	Estimation of land use change and building heights from 1966 to 2015 in Yangon by Corona, Landsat and Geoeeye images (2015.12)
12		Lecture materials	RS/GIS G	ENG	Advanced remote sensing technology and research opportunity on quality of life (2018.10)
13		Lecture materials	RS/GIS G	ENG	<p>Application of geo-spatial database for infrastructure monitoring</p> <ul style="list-style-type: none"> - Remote sensing of air pollution and human health - Hands-on training for mapping regional inundation with spaceborne L-band SAR - Advanced remote sensing technology and research opportunity on quality of life - 3D modeling from UAV images - Building feature extraction from high resolution stereo Geoeeye images in yangon - Principle and application of 3D laser scanner measurements for civil infrastructures - Principle of geometric correction and application to Corona imagery - 3D terrain and building mapping of Yangon by remote sensing - Estimation of land use change and building heights from 1966-2013 in yangon by Corona, Landsat and Geoeeye images - LULC mapping of Yangon by remote sensing
14		Lecture materials	EQG	ENG	Operational Modal Anaysis
15		Lecture materials	EQG	ENG	Earthquake Resistant Design and Condition Assessment of Reinforced Concrete Buildings
16		Training materials	EQG	ENG	Planning-Team_Hands-on workshop for road blockage analysis
17		Survey Manual	EQG	ENG	"How to survey historical buildings"
18		Article of Association for Consortium for Urban Safety Implementation (CUSI)	All	ENG/MM	<ol style="list-style-type: none"> 1. Name 2. Location 3. Objectives 4. Activities 5. Structure 6. Membership 7. Approval of membership

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					<ul style="list-style-type: none"> 8. Membership fee and Annual Fee 9. Termination, dismissal and resignation as member 10. Structure of Consortium 11. Basic principles for electing Member of BoD 12. Members of BoD and EBoD 13. Duties and power of members of BoD and EBoD 14. Consultation Board 15. Research Committees 16. Operation Committees 17. Meetings 18. Appointment of Staff 19. Formation and Termination of CUSI 20. Internal Audit 21. Fund 22. Confidentiality and Intellectual Property Rights 23. Compliance with the providing laws and Regulation 24. Amendment of Articles and Association Dispute Resolution
19		Annual Report of SATREPS Project	All	MM	Project progress report submitted to MOE in 2018
20		SATREPS Newsletter	All	ENG	SATREPS Newsletter vol.1-10

ANNEX 3: PDM

- 3-1 PDM Version 0 (Approved in April 2015)
- 3-2 PDM Version 1 (Approved in November 2017)

Project Name: Development of a Comprehensive Disaster Resilience System and Collaboration Platform in Myanmar

Project site: Republic of the Union of Myanmar (Bago River Basin and Yangon) Duration of the project: 5 years

Target Group: Direct: 13 faculty members of Yangon Technological University (YTU), Indirect: Ministries in charge of disaster management and, local governments, major infrastructure and residents in target area

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumption
<p>[Overall goal] YTU further develops the scenario analysis systems by its Research Centre for Urban Safety</p>	<p>At least 1 suggestion based on the result of the updated scenario analysis is submitted to relevant governmental departments mainly by YTU's Research Centre for Urban Safety</p>	<p>1. Updated and improved database 2. Documents submitted</p>	<p>Budget and personnel of YTU is maintained</p>
<p>[Project purpose] YTU understands in use of scenario analysis systems to assess Myanmar's future disaster vulnerability</p>	<p>1 At least 20 research papers related to the project, which are submitted by mainly YTU during the project period, are accepted by international journals. 2 Suggestions based on the result of the scenario analysis are submitted to relevant governmental departments</p>	<p>1 Papers submitted to journal papers 2 Suggestion documents submitted</p>	
<p>[Outputs]</p>			
<p>1. Development of physics model to evaluate disaster vulnerability</p>	<p>1-1 Recent flood events simulated by the developed hydrological and hydraulic model 1-2 Building damage grade estimated at certain earthquake 1-3 Daily people movement simulated by the model</p>	<p>1-1 Database: hydro-climate, water, and river environment 1-2 Database: infrastructures, buildings, and topographical information 1-3 Database: traffic and crowd flow</p>	
<p>2. Development of scenario analysis system for assessing future disaster vulnerability</p>	<p>2-1 Assessment of water-related disaster vulnerability 2-2 Assessment of earthquake vulnerability</p>	<p>2-1 Flood inundation map 2-2 Earthquake vulnerability map</p>	
<p>3. Support to establish Research Centre for Urban Safety in YTU to sustain and enhance research activities and human resource development</p>	<p>3-1 Establishment of Research Centre for Urban Safety in YTU 3-2 Educational program to foster specialists 3-3 Establishment of consortium among government, academia, and industry</p>	<p>3-1 Approval document 3-2 Data / record kept in relevant organizations 3-3 Articles of incorporation</p>	
<p>4. Development of integrated disaster response system including infrastructure maintenance management with adequate technologies</p>	<p>4-1 Tutorial for integrated disaster response system 4-2 Guideline proposed on improved infrastructure management and maintenance system</p>	<p>4-1 Contents of the tutorial 4-2 Proposal documents</p>	
<p>Activities</p>		<p>Input</p>	<p>Important Assumption</p>
<p>(1-1) Develop hydrological and flood inundation model of study area (1-1-1) Gather information and data in river, hydro-climate and water resource management and build integrated database</p>	<p>as written in the R/D</p>	<p>as written in the R/D</p>	

<p>(1-1-2) Build hydrological and flood inundation model in the target river basin for flood vulnerability assessment</p> <p>(1-2) Build earthquake vulnerability evaluation method and earthquake vulnerability map of study area</p> <p>(1-2-1) Collect land use, population, buildings, infrastructures, and topographical information in study area</p> <p>(1-2-2) Investigate damage by past earthquakes in Myanmar</p> <p>(1-3) Develop study area's urban development model</p> <p>(1-3-1) Analyse collected data</p> <p>(1-3-2) Collect and accumulate aggregated mobile phone base station usage data and probe vehicle GPS data</p> <p>(1-3-3) Project traffic and people movement with people activity model</p> <p>(2-1) Assess characteristics of water-related disaster vulnerability</p> <p>(2-1-1) Conduct climate change analysis in local scale</p> <p>(2-1-2) Investigate land use change in the target river basin</p> <p>(2-1-3) Assess river runoff and vulnerability to water-related disasters based on scenarios with climate change and urban development</p> <p>(2-2) Assess characteristics of earthquake disaster vulnerability</p> <p>(2-2-1) Examine possible scenario patterns with proper input and algorithm</p> <p>(2-2-2) Assess vulnerability to earthquake based on scenarios</p> <p>(3-1) Support establishment of Research Centre for Urban Safety in YTU</p> <p>(3-2) Develop educational program to foster experts</p> <p>(3-2-1) Observe current education program at YTU and MTU and examine a trial of YTU's educational program</p> <p>(3-2-2) Introduce YTU's education program</p> <p>(3-3) Establish consortium among government, academia, and industry</p> <p>(3-3-1) Coordinate functions with MES</p> <p>(3-3-2) Identify expected role of consortium</p> <p>(4-1) Develop disaster response system</p> <p>(4-1-1) Analyse disaster management plan of central government and investigate needs on the system</p> <p>(4-1-2) Analyse disaster management plan of local government and investigate citizens' needs on disaster information</p> <p>(4-2) Propose improved infrastructure management and maintenance system, and technology for Myanmar</p> <p>(4-2-1) Review management and maintenance system, and technology of infrastructures, especially road and bridges, in Myanmar</p> <p>(4-2-2) Propose improved management and maintenance system</p> <p>(4-2-3) Apply and propose inspection and monitoring method for infrastructures and buildings with adequate retrofit technology for damaged infrastructure</p> <p>(4-2-4) Disseminate technology information</p>		
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Project Design Matrix

Project Title: Development of a Comprehensive Disaster Resilience System and Collaboration Platform in Myanmar
Target Group: Direct: faculty members of Yangon Technological University (YTU), Indirect: Ministries in charge of disaster management and local governments, major infrastructure and residents in target area
Period of Project: 5 years
Project Site: Republic of the Union of Myanmar (Bago River Basin and Yangon)
Version 1
Dated November, 2017

Narrative Summary		Objectively Verifiable Indicators	Means of Verification	Important Assumption
Overall Goal YTU further utilizes the Collaboration Platform to contribute to the urban safety in Yangon and Bago	<ol style="list-style-type: none"> At least 4 policy proposals on the result of the Comprehensive Disaster Resilience System are made for relevant governments by YTU team At least 20 specialized persons in urban safety sector are trained at YTU 	<ol style="list-style-type: none"> Number of proposals made by YTU team Number of certified specialized persons trained by YTU 	<ol style="list-style-type: none"> 1 Papers submitted to journal papers 2 Relevant documents submitted 3 Operations records 	Budget and personnel of YTU is maintained
Project Purpose YTU understands and develops a Comprehensive Disaster Resilience System and a Collaboration Platform for urban safety in Yangon and Bago	<ol style="list-style-type: none"> At least 20 research papers related to the project, which are submitted by mainly YTU academics during the project period, are accepted by international journals Some suggestions, advises and policy proposals by using the Comprehensive Disaster Resilience System are submitted to relevant governments. The Comprehensive Disaster Resilience System is developed and under operations by YTU 	<ol style="list-style-type: none"> 1-1 Use of equipment, observation data and operation/maintenance system of equipment, Database: temperature, water, and river environment 1-3 Database: infrastructures, buildings, and topographical information 1-4 Database: traffic and crowd flow 2-1 Flood inundation map 2-2 Earthquake vulnerability map 3-1 Approval document, Proposal document 3-2 Curriculum, syllabus, record of training courses 3-3 Activity records 4-1 Proposal documents 4-2 Software and operation manual for integrated disaster response support system, record of trainings, recommendation for sustainability 	<ol style="list-style-type: none"> 1-1 Meteorological and hydrological observation of target areas, performance evaluation of structures, and capacity of people / traffic monitoring are improved and Hydrology and flood inundation model in research area is developed 1-2 Earthquake vulnerability assessment method is established Yangon digital map database is created 1-3 Urban development model in survey area is developed 2-1 Water-related disaster vulnerability is assessed 2-2 Earthquake-related disaster vulnerability is assessed Earthquake vulnerability map is created 3-1 Framework of research centre for urban safety is developed in YTU 3-2 Educational program to foster specialized persons is developed 3-3 Basic concept of consortium among government, academia, and industry is developed in YTU through trial activities 4-1 Improved infrastructure management and maintenance system, and technology for securing disaster mitigation function in Myanmar is proposed 4-2 Integrated disaster response support system is developed 	Research center for urban safety is officially established under the responsibility of YTU during the cooperation period.
Outputs				
1 Development of physics model to evaluate disaster vulnerability				
2 Development of scenario analysis system for assessing future disaster vulnerability				
3 Development of main roles and activities of research centre for urban safety in YTU to sustain and enhance research activities and human resource development				
4 Development of integrated disaster response support system including infrastructure maintenance management with adequate technologies				

	Activities	The Japanese Side	Input	The Myanmar Side	Important Assumption
(1-1)	<p>Develop hydrological and flood inundation model of study area (1-1-1) Collect information and data in meteorology, hydrology, and water resource management and build database (1-1-2) Build hydrological and flood inundation model in the target river basin for flood vulnerability assessment</p>	<p>1. Dispatch of Experts Water-related Disaster Earthquake-related Disaster Geospatial Technology Infrastructure Management Transport and Mobility Disaster Management Project Coordinator</p>	<p>1. Assignment of Project members 2. Project space with necessary Equipment/Internet facilities - Project Office - Mini Lecture Room - Researchers' Office</p>		
(1-2)	<p>Establish Earthquake vulnerability assessment method and create Yangon digital map database (1-2-1) Investigate damage by past earthquakes in Myanmar (1-2-2) Develop an earthquake vulnerability evaluation model (understanding building characteristics and developing of seismic fragility function) from the viewpoint of building characteristics in Yangon</p>	<p>(1-2-3) Construct vulnerability assessment model based on the ground characteristics (including topographic information) in Yangon (1-2-4) Establish disaster vulnerability assessment model from Yangon's regional urban functions based on the performance and distribution survey of important facilities in case of disaster</p>	<p>2. Conduct training course in Japan</p>		
(1-3)	<p>Development of urban development model in survey area (1-3-1) Collect and analyze geo-spatial data and develop urban expansion simulation (1-3-2) Collect data and predict traffic and people movement with people activity model</p>	<p>(1-2-5) Survey on distribution and characteristics of historic buildings in Yangon (1-2-6) Create integrated digital map database</p>	<p>3. Machinery and Equipment - As listed on A4 document</p>		
(2-1)	<p>Assess characteristics of water-related disaster vulnerability (2-1-1) Analyze climate change impact in local scale (2-1-2) Investigate land-use change in the target river basin (2-1-3) Assess river runoff and inundation hazard considering tidal effect (2-1-4) Generate flood inundation map considering tidal effect (2-1-5) Evaluate water-related disaster vulnerability based on scenarios with climate change and urban development</p>	<p>Assess characteristics of earthquake disaster vulnerability and create earthquake vulnerability map (2-2-1) Examine possible scenario patterns with proper input and algorithm (2-2-2) Assess vulnerability based on earthquake scenarios (2-2-3) Create earthquake ground motion map based on ground property evaluation (2-2-4) Create building damage prediction map (2-2-5) Create evaluation map of disaster response of urban function (2-2-6) Assess earthquake resistance of historic building for preservation and create distribution map (2-2-7) Evaluate earthquake disaster vulnerability and create integrated earthquake vulnerability map</p>	<p>4. Local cost for the activity of Japanese experts</p>	<p>4. Expenses necessary for transportation within Myanmar for received equipment</p>	
(3-1)	<p>Develop activities in research centre for urban safety in YTU (3-1-1) Make proposal and road map of research center (3-1-2) Take necessary procedures for establishing research center (3-1-3) Manage and operate research center before and after official launch (3-1-4) Install integrated digital map database at research center (3-1-5) Conduct seminars, workshops and meetings for research activities and further development of research center</p>	<p>(2-2-8) Examine possible scenario patterns with proper input and algorithm (2-2-9) Assess vulnerability based on earthquake scenarios (2-2-10) Create earthquake ground motion map based on ground property evaluation (2-2-11) Create building damage prediction map (2-2-12) Create evaluation map of disaster response of urban function (2-2-13) Assess earthquake resistance of historic building for preservation and create distribution map (2-2-14) Evaluate earthquake disaster vulnerability and create integrated earthquake vulnerability map</p>	<p>5. Necessary arrangements and permissions for inputs from Japanese side listed in 1 to 5 in left</p>		
(3-2)	<p>Develop educational program for government officials and graduate students as specialist of urban safety (3-2-1) Observe current education program at YTU and MTU (3-2-2) Propose trial lectures and curriculums to YTU education program (3-2-3) Implement and verify educational program jointly by Japanese and YTU faculty members (3-2-4) Implement educational program mainly by YTU faculty members and support revision of education program</p>	<p>(2-2-15) Examine possible scenario patterns with proper input and algorithm (2-2-16) Assess vulnerability based on earthquake scenarios (2-2-17) Create earthquake ground motion map based on ground property evaluation (2-2-18) Create building damage prediction map (2-2-19) Create evaluation map of disaster response of urban function (2-2-20) Assess earthquake resistance of historic building for preservation and create distribution map (2-2-21) Evaluate earthquake disaster vulnerability and create integrated earthquake vulnerability map</p>			
(3-3)	<p>Develop consortium among government, academia, and industry (3-3-1) Identify expected roles and activities of consortium and formulating road map (3-3-2) Study research output and potential external partners (3-3-3) Prepare main tasks for operation (3-3-4) Conduct a couple of trial collaborative research activities for improvement of management/operation capacity</p>	<p>(2-2-22) Examine possible scenario patterns with proper input and algorithm (2-2-23) Assess vulnerability based on earthquake scenarios (2-2-24) Create earthquake ground motion map based on ground property evaluation (2-2-25) Create building damage prediction map (2-2-26) Create evaluation map of disaster response of urban function (2-2-27) Assess earthquake resistance of historic building for preservation and create distribution map (2-2-28) Evaluate earthquake disaster vulnerability and create integrated earthquake vulnerability map</p>			
(4-1)	<p>Propose improved infrastructure management and maintenance system, and technology for securing disaster mitigation function in Myanmar (4-1-1) Collect data, review management and maintenance system, and technology of infrastructures, especially bridges, in Myanmar (4-1-2) Propose improved management and maintenance system (4-1-3) Apply and propose inspection and monitoring method for infrastructures and buildings with adequate retrofit technology for damaged infrastructure</p>	<p>(2-2-29) Examine possible scenario patterns with proper input and algorithm (2-2-30) Assess vulnerability based on earthquake scenarios (2-2-31) Create earthquake ground motion map based on ground property evaluation (2-2-32) Create building damage prediction map (2-2-33) Create evaluation map of disaster response of urban function (2-2-34) Assess earthquake resistance of historic building for preservation and create distribution map (2-2-35) Evaluate earthquake disaster vulnerability and create integrated earthquake vulnerability map</p>			
(4-2)	<p>Develop integrated disaster response support system for Earthquake and Water-related disaster (4-2-1) Survey and analyze disaster management plan of local & central government (4-2-2) Analyze requirement of functions and needs of users for disaster response system (4-2-3) Develop a prototype of support system for hazard assessment (4-2-4) Introduce support system to research center in YTU and conduct training for YTU faculty members and potential users</p>	<p>(2-2-36) Examine possible scenario patterns with proper input and algorithm (2-2-37) Assess vulnerability based on earthquake scenarios (2-2-38) Create earthquake ground motion map based on ground property evaluation (2-2-39) Create building damage prediction map (2-2-40) Create evaluation map of disaster response of urban function (2-2-41) Assess earthquake resistance of historic building for preservation and create distribution map (2-2-42) Evaluate earthquake disaster vulnerability and create integrated earthquake vulnerability map</p>			