Sentinel Asia

Strategic Plan 2017-2027

Version 1.4

October 2018

1. Purpose of the document

This document is the strategic plan proposed by the Sentinel Asia Steering Committee based on the discussion of 2nd Steering Committee meeting.

Sentinel Asia has contributed to 233 emergency observation as of April 1, 2017 from disaster management organizations since its establishment. Through these activities, Sentinel Asia has responded to many requests and proposals from disaster management organizations. It is very important for Sentinel Asia to reflect those knowledge and experience to improve and enhance its future operations. The goal of the strategic plan is to develop procedures for the improvements and for operations to achieve the vision of Sentinel Asia for the next 10 years.

It is expected that the activities of the strategic plan and the expected role of the steering committee will make the Sentinel Asia an autonomous body within few years for sustainable operation and management of Sentinel Asia.

The document will be reviewed and updated by the comments, advices and discussion from the members of Steering Committee. It will be aimed to receive the endorsement for the strategic plan at APRSAF 25 held in November 2018.

2. Background

The Sentinel Asia is an initiative to share space based data and information such as earth observation satellite images through partnerships network and through a dedicated website, aiming at contributing to more practical and effective disaster management activities in the Asia-Pacific region. This initiative was established as a project at the Asia-Pacific Regional Space Agency Forum (APRSAF) held in October 2005. The Joint Project Team (JPT) was formed in February 2006 composed of space agencies, disaster management organizations and research institutes in Asia and the Pacific, and Sentinel Asia has been launched. Currently Sentinel Asia has 104 JPT members; 89 organizations from 26 countries and 15 international organizations as of April 1, 2017. The Sentinel Asia carried out 229 emergency observations for over 10 years from 2006 through 2016, contributing to many disaster management activities.

A step-by-step approach was adopted for the implementation of Sentinel Asia. In the STEP 1, Sentinel Asia was operated as a pilot project, the data dissemination system was demonstrated to identify operational mechanism and to evaluate technical

requirements. In STEP 2, as the outcome of STEP 1, the flow of emergency observation was demonstrated from observation request, emergency observation, data analysis and provision to end-users. In the current step, the STEP 3, it is expected to implement not only emergency observation but activities covering entire disaster management cycle including mitigation/preparedness and recovery phase after a disaster so that the space-based technology would contribute to more activities for mitigation/prevention of natural disasters in Asia and the Pacific. The Step 3 is quite challenging evolvement for Sentinel Asia due to many reasons including the satellite data provisions for monitoring aftermath of a disaster and to use in the preparedness stage. These two areas need support and acceptance by the data provider nodes with their kind commitment to full cycle of DRR cycle.

At the Third UN World Conference on Disaster Risk Reduction (WCDRR) in Sendai, Japan in 2015, a substantial reduction of disaster risk and losses in lives, livelihoods in all aspects over the next fifteen years was adopted. Extending Sentinel Asia current focus, to cover entire disaster cycle including "Mitigation/Preparedness Phase" is in line with the Sendai Frame work primary target. Therefore, evolving Sentinel Asia to Step 3 will commit enhance the risk assessment and to establish disaster prediction/alert systems for floods, landslide, wildfire, tsunami and other potential disasters using satellite images and products including GSMaP and hot spot data through number of initiatives such as capacity building, success story development, performing mini projects and establishing relevant working groups.

An overview of the steering committee discussed and accepted during the proposal for involvement is depicted in Figure 1. Sentinel Asia will continue within the APRSAF framework for regional and international coordination and JPTM community is the main body in deciding activities and the road-map of Sentinel Asia. Steering Committee is a voluntary group of experts meet frequently to discuss about operation activities of Sentinel Asia and the evolvement of Sentinel Asia and make suggestions and where necessary to involve in the coordination with necessary national/regional/global agencies/initiatives to improve the benefit of Sentinel Asia to the JPTM community.

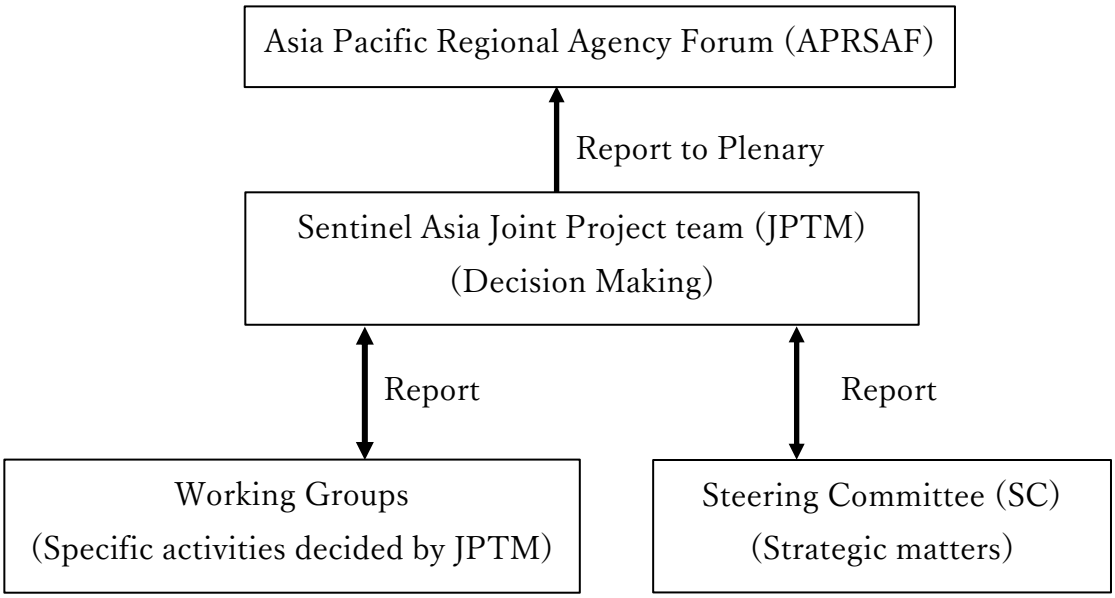

Fig. 1. Coordination Hierarchy of Sentinel Asia under APRSAF

To achieve these goals of STEP 3, Steering Committee will review previous activities, identify problems, propose solutions and lead to implement those suggested ideas and proposals to enhance the contribution of space based technology to DRR by closely working with technical agencies as well as end user agencies related to DRR.

3. Introduction of Strategic Plan

This section describes potential input for Sentinel Asia Strategic Plan 2017-2027 based on the issues and opportunities discussed and identified at the 2nd Steering Committee meeting successfully held on January 2017. During the face-to-face meetings and number of web-meetings conducted, Steering Committee members gave various constructive ideas and proposals to improve the effective use of Sentinel Asia initiative for DRR. These ideas can be categorized into five “main challenges” as described bellow.

I. Satellite Data Provisions and Systems
II. Value Added Product (VAP)
III. End-user Enhancement
IV. Step-3 Activities (address the complete DRR cycle)

V. Communication, Collaboration and Cooperation

These challenges can be further discussed as below;

I. Satellite Data Provisions and Systems

Sentinel Asia has effectively supported many emergency observation requests, provided observed data and assisted and provided analyzed products through Sentinel Asia Step-2 system. End-users are requesting improvement of the system to enhance its services, for example, rapid data provision immediately after observation to use products much effectively in their operation. In order to realize their requests, improvements to Sentinel Asia system has to be done. In addition, new data policy and data sharing guidelines should be in place to satisfy various user needs. These data/sharing policies need to be established in parallel to the development of an improved new system to make use of a system effectively addressing user needs. Some of the key points addressed by the Steering Committee members are given bellow;

- Improvement for the Emergency Observation Request (EOR) System Depicting User Needs
- Consider using OPTEMIS, the satellite observation management system developed by GISTDA for optimize observation and minimize data delivery delays etc.
- Consider sharing plans of Observations, Data Provisions, Data Analysis Plan by DAN and Products Availability Plan. Also, improvements to satellite data and VAP sharing using Data Services
- Develop Policy Guidelines and agreements with DPN for pre/post satellite data usage, use of archived satellite data covering all the activities under Sentinel Asia

II. Value Added Products (VAP)

For the end-users, value added products are more useful and practical than satellite observation data, since they are directly related to their DRR operation. Therefore, it is important to review the activities of Sentinel Asia operation for

the past 10 years to make it more end-user friendly system in the next 10 years. The Steering Committee proposed the following items for the improvement of Sentinel Asia operation based on their abundant experience.

- Develop Standard Operation Procedure (SOP) and product standards for creation of VAP and for the use of VAP for each disaster type,
- Explore the potential use of data analysis through a university network to augment current DAN and in-situ data collection to expedite VAP generation.
- Promote in-situ data collection through GNSS system
- Develop a pre-disaster image repository and access to DAN members to use in VAP creation to reduce analysis time and improve accuracy
- Promote researches on advanced data processing and automation systems for VAP creation and provide these information and know-how to end-use agencies.

III. End User Enhancement

It is important to enhance the capacity of end-users for effective contribution for disaster relief operations in each user agency through Sentinel Asia. Sentinel Asia system has been evolving and the system is yet to provide all its potentials to effective end-use operations, specifically developing end-users application abilities. It was suggested in the Sentinel Asia Steering Committee that the capacity of the end-users on the use of Sentinel Asia system and VAPs for disaster management operations should be enhanced. Some of the suggested areas for improvements are given below;

- Train DRR agencies about activating the Sentinel Asia,
- Empower local disaster management agencies on the use of Sentinel Asia products by improving knowledge of space-based applications and simple tools and if possible using Open Source products and systems.
- Enhance the local level usage of VAP combining local data in evidence based decision making to emergency response and disaster mitigation,
- Create a reporting mechanism to report the ways VAPs are applied for DRR operations and feedback their needs, helping to identify the gaps limiting the effective use of VAP

- Develop an e-learning system for end-user training, capacity building and fostering space-based information culture.
- Develop long-term space-based application through university network
- Use Sentinel Asia Website to provide e-tools, documents on case studies, research, applications and etc.

IV. Step-3 Activities (for covering entire DRR cycle)

The Sendai Framework for Disaster Risk Reduction 2015-2030 was adopted in Sendai by global leaders with specific suggestion to use more and more space based data and GIS for Risk identification and for risk mitigation and reduction. Therefore, Sentinel Asia could consider the commitment of the initiative to the Sendai Framework by enhancing Sentinel Asia capacities for the risk assessment and establishing disaster prediction/alert systems for flooding, landslide, wildfire and tsunami and other necessary disasters using satellite images. Given this important direction for global recognition, kind support of all DPN and DAN is utmost important. In this regard, Steering Committee presented some proposals in the bellow.

- Identify risk elements using Sentinel Asia Data (mapping risk elements)
- Promote disaster monitoring, post disaster monitoring and damage assessment with Sentinel Asia data
- Promote knowledge, experience and practical knowledge development through networks; user, DAN and university network
- Align with Sendai Framework to link Sentinel Asia with global forum
- Use Sentinel Asia Working Group activities to develop necessary support for Sentinel Asia activities to cover entire disaster phase.
- Promote research on QZSS (Quasi Zenith Satellite System) application to early warning information platform.

V. Communication, collaboration and cooperation

In order to receive the potential partner support as well as effective use of Sentinel Asia, alliance and communications among disaster management organizations, Data Provider Nodes and Data Analysis Nodes is essential. One of the activity in this regard is the Joint Project Team Meeting held every year

inviting both space agencies and DRR agencies to one stage. However, since the number of organization in Sentinel Asia is over 100, it is difficult to discuss and communicate with all members in a single meeting organized for a short period of time. Therefore, it needs to improve the communication with members in Sentinel Asia through many other means. Steering Committee discussed some ideas to improve the communication as given bellow.

- Organize regular meeting where possible combining various other meeting opportunities;
- Consider developing annual reports of achievements and share through websites and user forums
- Rotate major activities among the members; organizing JPTM meetings, organizing Steering Committee meetings, and other similar main functions;
- Develop various success stories and share
- Promote coordination mechanism of DANs to improve product generation and sharing
- Publish and circulate bulletin to policy makers and share in the region

3. Strategic Plan (2017-2030)

It is essential to receive positive contribution and continuous involvement of the members of Steering Committee to over come the challenges discussed and many of the detailed activities discussed above. This chapter, discusses the way the steering committee members can be involved and where they can get involved the SA community and other contributors who can help to realize the challenges discussed. Co-chairs of the Steering Committee and the Sentinel Asia Secretariat will share the proposals to all the Steering Committee members for their inputs, comments, and acceptance. This document will be a dynamic document updated by the Steering Committee as per requirements of improving Sentinel Asia and will be presented at APRSAF meetings for endorsement.

Leading agencies of the five main themes were suggested and consensus was received by the committee. The leading agencies need to communicate and collaborate among them and also with DPN, DAN and other user agencies in the SA community to achieve the best possible solution for theme under their leadership.

I. Satellite Data Provisions and Systems: JAXA with GISTDA
II. Value Added Product (VAP): Yamaguchi University
III. End-user Enhancement: GIC-AIT
IV. Step-3 Activities (Complete DRR cycle): NIED and IWMI
V. Communication, Collaboration and Cooperation: ADRC

Note:

Classification of items in the implementation phase is categorized as short-term (S), mid-term(M) and log-term(L).

Short-term (S): Short-term action plans are those that can be accomplished within one year. The Steering Committee within its capacity should support those accomplishments as much as possible.

Mid-term (M): Mid-term action plans are those that can be accomplished in a period from one year to three years. The Steering Committee is expected to make steady progress in the development with their best effort.

Long-term (L): Long-term action plans include those items that can be accomplished in a period from three to ten years. These plans need to examine, study and review continuously with changing situations of DRR and development in earth observations to achieve these goals. Steering Committee should clarify the issued and describe ideas at first.

For example, a mid-term item is noted as 4.1.1-2 M

These action plans should not be enough to achieve our vision. It would be great if the Steering Committee members could propose your ideas and contribute to them.

4.1 Action Item 1: Satellite Data Provision and Systems

4.1.1 Improvement of Emergency Observation Request Procedure

4.1.1-1-S New EOR document (JAXA and ADRC)

EOR document must include necessary information to implement the emergency observation by DPNs, and to produce appropriate VAPs by DANs. It may be useful for both DPN and DAN to receive more information with respect to the information content expected by the requesting agency to make correct decision on satellite observation, observation plan and producing VAP. Therefore, there is a need to update the EOR including more specific information reflecting user needs.

Goal: Updating new EOR including necessary information from users.

4.1.1-2-M EOR Supporting Tool (JAXA with GISTDA)

DPNs develop their operation plans right after emergency observation activation. However, their plans are not shared with end-users and DANs in the current Sentinel Asia system. The observation plans, available satellites, and possible products are vital for end-users to make their plans to use those satellite data and VAPs for disaster relief operation. Satellite operation supporting tool is one way to show their plan to them, since it can be described the observation opportunities by DPNs for end-users.

Goal: User supporting tool (SA-OPTEMIS) for EOR in new Sentinel Asia system in operation.

4.1.1-3-M Satellite Observation Scenario in Each Type of Disaster for EOR order desk and Users (JAXA leading and DPNs)

End-users do not know what sensors or satellites are suitable and responsible to each disaster. Sometimes, many data were delivered to end-users confusing effective use in their relief operation. As such, satellite observation scenarios are useful to not only support their activities, also effectively operate satellite observations. The manuals and guidance are essential to make EOR document from users, and request DPNs to conduct emergency observation from EOR order desk of Sentinel Asia (ADRC).

Goal: Establishing the document of satellite observation scenario. The document can help users to make an EOR.

4.1.2 Develop a Data and Product Sharing System

4.1.2-1-M Data Sharing System through Cloud Server (JAXA leading)

APRSAF-11 in 2007 recommended that the Sentinel Asia would develop additional functions on the system to be capable to transmit data with communication satellites like WINDS in the Sentinel Asia Step 2 activity. JAXA has operated the regional servers and the utilization of WINDS to transmit the observation data and the analyzed products on these systems since 2009.

The need is changed and the internet capacity in each region has been improved, and almost all users have been downloading data from the central server of JAXA.

Therefore, JAXA has decided to end this transmission service. Joint Project Team Members can download necessary data from JAXA's central server.

However, the system requires specific functions, dedicated bandwidths and large servers to handle a large size of data observed by future satellites (including ALOS-2 satellite). A cloud server is one of the solution that can solve most of these critical issues and also to serve as a platform to automatically analyze observation data if needed by a JPT member.

Goal: New Sentinel Asia data provision system with cloud server in operation.

4.1.2-2-M Web-GIS for supporting the operation of users (JAXA leading)

Users need more fruitful information to make a decision. VAPs produced by DANs, usually printed as maps are useful for them. However, it occasionally does not satisfy their requirements because they need more information to effectively use in an emergency situation, for preparation or monitoring in the recover stage. Web-GIS, for example ArcGIS online developed by ESRI, is a tool that could help to solve this issue. Users and requesters can verify the affected area on the web. Additionally, the information can be easily shared with end-users as well as Sentinel Asia members.

Goal: A new Web-GIS system for SA users to support their operation effectively.

4.1.2-3-M Portal Web Site for sharing observations and activities (JAXA leading)

Many members who are using Sentinel Asia WEB system have complained against the current web portal of Sentinel Asia. It is requested to consider the website and the portal as the pivotal for all the users, DPN, DAN and end-users for effective use of Sentinel Asia system. Therefore, there is a need to improve the functionalities including information sharing, knowledge database functionalities, access to success stories, SOP and guidelines etc. on the SA website. The target of new web site should be considered requirements of "End-Users" and the service for end-users.

Goal: New Sentinel Asia Portal site in operation for users to recognize the current status of their request, and promote SA.

4.1.3 Develop Sentinel Asia Data Policy Documentation

4.1.3-1-M Procedure of DPN and DAN (Revise), Particularly to Realize Step-3 (by

New Frame) (SC members)

The current documents of DPN and DAN are contributed to the emergency response phase in disaster management. In order to realize Step-3, the document should be revised, or built new framework corresponds to entire disaster management phases.

Goal: Establishing the document with data provision policy for entire disaster management phases by DPNs.

4.2 Action Item 2: Value Added Products

4.2.1 Research and Development (R&D)

4.2.1-1-S Standard Operation Procedure (SOP). (YU, UT, AIT, other universities)

DANs can support the operation of users through VAP produced by themselves. However, all DANs cannot make any kind of emergency maps. The procedure to create VAPs for each disaster is necessary for DANs as well as users.

Goal: Everybody can create VAP for quick disaster response.

4.2.1-2-S Standardization of VAP. (YU, UT, AIT, other universities)

Currently, the format of analyzed products is decided by DANs. These formats, templates, legends of maps, colors of maps, copyright descriptions, etc. are sometime not standardized confusing users. Therefore, the standardization of format (and/or analyzing method) corresponding to each disaster is investigated by referring to the IWG-SEM (International Working Group on Satellite-based Emergency Map) activity. Development of SOP for each kind of disaster and share with DANs and user-agencies is targeted.

Goal: Common understanding for quality and meaning of VAP.

4.2.1-3-L Researches on Urban Flood Mapping (YU, UT, AIT, other universities)

A SAR sensor can provide data in all weather and during day and night collecting both amplitude and phase data compared to an optical sensor. Particularly, it can be used to obtain satellite-based emergency map, such as flood inundation map during cloudy condition that could directly contribute to flood relief operation. However, it is found that improvements to data analysis should be conducted and researched to make use of SAR data effectively, specifically in an urban environment. Also, it is necessary

to make evaluation of VAP in urban areas using field surveys etc.

Goal: Development of new flood mapping techniques for urban area.

4.2.2 Product Development

4.2.2-1-M VAP through University Network (Yamaguchi University)

The network of universities in Asian region is organized by Sentinel Asia network. University students study remote sensing technology through actual case studies and create new technologies to contribute to disaster relief operation through Sentinel Asia. The satellite observing imagery from DPNs are provided to those academic activities to develop new mapping technologies for effective use of satellite images.

Goal: Establish a network of University students who can join data analysis activity for emergency case.

4.2.2-2-M Review Data Policy and Data for R&D (YU, UT, AIT and others)

Satellite data which provide through Sentinel Asia data provision system are available for R&D purpose. However, it is necessary to discuss about copyright issue with DPNs. Only Sentinel Asia member can use those satellite data and need to add acknowledgement for research publication. Also, DPNs provide sample satellite data for preparation of for quick disaster response.

Goal: Identify and list up available satellite data to use for R&D and define the copyright.

4.2.2-3-M Identify the potential use case of VAPs in disaster (YU)

It is necessary to discuss with actual end users, such as local government and its residence the above matter. Here the factors like quick response, by using AI technology, combination with UAV, utilization of open public data are evaluated and studied.

Goal: Create a repository of success cases of the use of of VAPs and make available for SA community.

4.2.2-4-M In-situ data collection through GNSS (YU, UT, AIT and others)

In-situ data is collected with GNSS. Currently, there are various in-situ data is opened to public. Those data can be utilized for evaluation of VAP.

Goal: List up and collection of in-situ data and make available for SA community.

4.2.2-5-M Pre-disaster image repository and access (YU, UT, AIT and others)

Pre-disaster image is prepared and DANs can request images to DPNs. It is necessary to explain about importance of pre-disaster images by disaster historical data, hazard map, information about disaster prone area, etc. when DANs request to DNSs. If DPNs agree, pre-disaster image is provided.

Goal: Preparation of pre-disaster images and data for SA community.

４．３ Action Item 3: End User Enhancement

4.3.1 Training or Demonstration

4.3.1-1-M Assessment of User Needs and Requirements (GIC-AIT with ADRC)

Sentinel Asia has produced satellite imagery and analyzed products for the users in disaster management organizations since its establishment. With the increase of satellite data usage in emergency response as well as for the use of mitigation and preparedness usages, many agencies are started to request data and products and additional information such as observation plans etc. to get the full benefit of satellite observations effectively. Sentinel Asia is making effort to collect user requirements to improve the quality and information content that should be provided through VAPs by conducting series of meeting with End Users to identify the needs and requirements.

Goal: A reporting mechanism to understand the ways VAPs are applied for DRR operations in specific country; getting feedback to their needs and identify the gaps limiting the effective use of VAPs.

4.3.1-2-M Empower Local Agencies through Improving Knowledge and Providing user friendly Tools (GIS-AIT)

Local agencies may not have enough capacity to use satellite imagery and analyzed products for their disaster relief operation. Also, they may not have specific tools to handle VAP and other data in a GIS environment. Therefore, development will be done to provide open-source software tools to empower local agencies to create own maps and carryout simple analysis for emergency planning and response.

Goal: Assist local agencies with easy and open source tools for promoting and

facilitating better usage of VAPs at local level.

4.3.1-3-M DRR Agencies to the Use of VAP (GIC-AIT, YU and JAXA)

Effective usage of VAP among disaster management agencies for planning and emergency response will be demonstrated, and provide assistance through training programs to develop skills to make use of VAP and simple tools (4.3.1-2) by themselves. The target is to increase the practical usage of satellite products by integrating local data in GIS format to create better maps for local needs. Empower local agencies to use local data and VAPs to address local needs. It is envisaged that through this activity Sentinel Asia will make the best effort to assist national disaster management agencies achieving their commitment to Sendai Framework.

Goal: Developing manual or handbook to the use of VAP and simple tools (QGIS-plugin, ArcGIS online) related with 4.2.1. The manual or handbook will be shared to SA community through the Sentinel Asia web portal.

4.3.1-4-M Capacity Building through e-Learning System (GIC-AIT)

An e-Learning is a practical and effective tool to educate end-users the best and appropriate ways to implement the emergency observation request, analyze the data and apply to their disaster relief operation. Under this action item, materials for e-learning with the collaboration of all DANs is planned. The end product will be shared with disaster management organizations, mapping organization and with general public through the new website/portal.

Goal: Contribution material for capacity building through e-learning system. The system will be linked with new Sentinel Asia web portal and will be open to SA community.

4.3.2 Promotion of VAP usage

4.3.2-1-L Extracting Possibilities of Satellite Data Utilization in Disaster Prevention Operation (ADRC)

To make more practical use of the satellite data and VAPs in the disaster management operations by disaster management organizations, discussions and coordination with Sentinel Asia and disaster management organizations be facilitated to identify the opportunities to apply those data and products. The disaster

management organizations are expected to make SOPs to stipulate how they apply satellite data and VAPs to their disaster management operations and document it.

Goal: Establishment of SOP in Sentinel Asia member country and share though the SA web-portal.

4.4 Action Item 4: Step-3, covering all the DRR Activities

4.4.1-1-M Coordinate a activities to Realize Step-3 from Working Groups and Users) (IWMI and ADRC)

Step-3 of Sentinel Asia requires to cover entire disaster management phases, preparedness/mitigation, emergency and recovery phase. Coordination will be carried out to develop a implementation strategy with the support of Sentinel Asia working groups, which are consisted of water-related disaster, tsunami, wildfire and GLOF, and other initiatives like GNSS etc. and report to the Steering Committee.

Goal: Proposal to achieve Step-3 mission from working group and users.

(note: QZSS application to early warning information platform proposed by ADRC)

4.4.1-2-L Align with Sendai Framework to Link Sentinel Asia with Global Forum Supported by ADB, JICA, WB etc.（AIT and IWMI）

Sentinel Asia is required to make cooperation with donor agencies, such as ADB, JICA, WB etc., to coordinate various donor driven DRM projects and activities to realize Sendai Frame work. Evaluation of the Sendai Statement and map the SA activities are required to highlight the contribution and identify the way forward.

Goal: Documentation (ex. Global Assessment Report) for UNISDR appealing and demonstration the contribution to Sendai-framework from Sentinel Asia.

4.5 Action Item 5: Communication, Collaboration and Cooperation (ADRC)

4.5.1-S SC (DPN) Meeting (JAXA leading)

Since the Steering Committee is composed of all DPNs, it becomes the substitution of DPN meeting. The latest status and improvement proposal from DPNs will be reported and discussed in Steering Committee meetings.

Comment (Shiro of JAXA): Steering committee is one of the opportunities to share their work with DPNs. But, it is necessary to report DPN work for Sentinel Asia

members. I supposed that this item should be removed from the plan.

Note: This item must be needed to update or delete.

4.5.2-M DAN Meeting (TBD)

Products analyzed by DANs are very important for disaster management organizations to apply to their emergency operation. Since DANs have been established in almost all the countries in Asia, the products could be analyzed by their own DAN members at a time of a disaster in their countries. However, some of the DAN members are not able to produce suitable products, because they do not have enough the ability to do so. Or some cases, their infrastructure could be affected during a disaster leaving them to seek support from other countries. Therefore, it is necessary to support the DAN by other DAN members in certain cases including creating specific products or analysis. It is also needed to design the framework to communicate among all DAN members by P-DANs. DAN or PDAN meetings will be one solution to make a good cooperation among DANs. Also, it would be important to consider DAN meetings to be coupled with end-use meetings and one option would be to meet at ACDR.

Goal: DAN meeting will be held every two years on the web-meeting (idea).

4.5.3-M User Communication Meeting （JAXA and ADRC organizing）

It is essential to continuously communicate with disaster management organizations to contribute to their disaster relief operation effectively with satellite data and analyzed products. End-users give their feedbacks to Sentinel Asia in Joint Project Meeting every year. However, it is impossible for all members to attend the meeting, because there are more than 100 Sentinel Asia members. Asia Conference on Disaster Reduction (ACDR) meeting hosted by ADRC is held every year in Asia. This conference is reported the activity and status of disaster management from disaster management organizations. It gives an opportunity to make good communication among Sentinel Asia users and take some feedbacks to improve Sentinel Asia system.

Goal: Improve communication using social media and other best approached.

(Note: Sentinel Asia facebook has started)

4. Schedule

Strategic plan has been conducted for the next 10 years since 2017. Table 1 shows the schedule of each item in section 4.

Table 1. Schedule of Strategic Plan

Number	Category	Item Number	Item	Leading Agency	Output/Service	Plan
1	New Sentinel Asia Data provisin and System	4.1.1-1-S	New EOR document	JAXA with ADRC	Document	Done
		4.1.1-2-M	EOR suppoting too with OPTEMIS	JAXA cooperated with GISTDA	System	Apr-19
		4.1.1-3-M	Satellite observation scenario in each type of disaster for EOR order desk and users	JAXA and DPNs	Document	Mar-19
		4.1.2-1-M	Data Sharing through Cloud Server	JAXA cooperated with NSPO	System	Oct-19
		4.1.2.2-2-M	Web-GIS for supporting the operation of users.	JAXA	Service on web	Apr-19
		4.1.2-3-M	New Sentinel Asia Web Portal	JAXA	System	Apr-19
		4.2.1-1-M	Procedure of Data Uses to Realize Step-3 by New Frame	JAXA and DPNs	Document	lined to Category 4 Step3 activates
2	Value Added Products (VAP)	4.2.1-1-S	Standard Operation Procedure	YU	Document	Mar-19
		4.2.1-2-S	Standarization of VAP	YU	Document	Mar-19
		4.2.1-3-L	Reserches on urban flood mapping	YU and related Universities	Procedure or Method	Mar-20
		4.2.2.1-M	VAP through a UNIVERSITY NETWORK	YU	Procedure	Mar-19
		4.2.2-2-M	Review data policy and data for R&D	YU	Document	Mar-20
		4.2.2-3-M	Identify the potential use of VAPs in disaster	YU	Procedure or Method	Mar-20
		4.2.2-4-M	In-situ data collection through GNSS and SNS	YU	Procedure or Method	Mar-20
		4.2.2-5-M	Pre-disaster image repository and access	YU	Procedure or Method	Mar-20
3	End User Enhancement	4.3.1-1-M	Assesment of User Needs and Requirements	GIC-AIT with ADRC	Product	Event-based
		4.3.1-2-M	Empower local agencies throgh improving knowledg and providing user friedly tools	GIC-AIT with ADRC	Tool	Mar-19
		4.3.1-3-M	DRR Agencies to the Use of VAP	GIC-AIT, YU and JAXA	Tool	Mar-19
		4.3.1-4-M	Capacity building through e-learning sysytem	GIC-AIT	Document or Materials	Mar-19
		4.3.2-1-L	Extracting possibilities of satellite data utilization in disaster prevention operation	ADRC	Document	Mar-22
4	Step-3 Activities	4.4.1-1-M	Consideration of Coverage of Step-3	IWMI and ADRC	Document	Mar-19
		4.4.1-2-L	Alighn with Sendai Frame work to link Sentinel Asia with Global Forum supported by ADB, JICA, WB etc.	GIC-AIT and IWMI	Document	Mar-19
5	Communication, Collaboration and Cooperation	4.5.1-S	SC (DPN) Meeting	JAXA leading	Tool	Done
		4.5.2-M	DAN Meeting	TBD	Event	Mar-19
		4.5.3-M	User Communication Meeting	ADRC	Tool	Done

5. Conclusion

This document is aimed at giving an overview of the main challenges and proposes some input for the Sentinel Asia Strategic Plan 2017-2027. The plan is needed further discussion to ensure its continuity.