
1. Executive Summary

- Full title of the Community Activity: **Earth Observation Industrial Innovative Platform for sustainable development** (Acronym: **EO-IIP**)
- Proposed category: **Community Activity**
- Overview:

The increasingly advanced Earth Observation (EO) technologies are driving explosive growth in EO data. However, the operational application solutions tend to lag behind the emerging techniques and EO data available. It turns out that the capacity of integrating all resources available to form solutions is very significant to EO industry, and there is a great need for a platform to accommodate solution development and also to facilitate capacity building, in particular for developing countries.

In order to enhance the integration capacity of EO industry and enable prototyping of a cooperative platform for the development of application solutions, based on cloud computing technology, an Earth Observation Industrial Innovative Platform for sustainable development (EO-IIP) is presented to incorporate the advantages of various practitioners and promote better application of EO products and services, as well to foster the adoption of the innovative technologies. EO-IIP will enable easy accessing and sharing of a wide range of EO resources and also create an attractive and transparent forum for practitioners and stakeholders to release their concerns and interests to form a virtuous circle for the sustainable development of EO industry.

EO-IIP will also establish an operational application solutions pool for EO community and serve as a media for industrial social networking to improve the efficiency of cooperation and integration, the platform is also open to academic communities and will jointly contribute to operational technologies and real-world problem solving. It will benefit industrial and academic communities, and also the local governments, international organizations, enterprises, capacity building stakeholders etc, thus the project can continuously serve and inform a wide range of areas for sustainable development, climate change and disaster risk reduction as well.

- Planned activities and expected outputs:

The key activities are generally planned in three categories: Firstly, to organize and manage the systems of project in order to design the plans and maintain the development agenda on key issues; Secondly, to build forum to activate interactions with various stakeholders and review the needs and trends, and as well to organize high quality technical exhibitions and expert panels to attract practitioners; Thirdly, to prepare guidelines on the use and contribution of best practices and project resources, to pay efforts for capacity-building, to facilitate international collaboration and support appropriate GEO activities by providing industrial expertise.

The expected outputs are specified as the follows:

- An open guideline, which will summarize the experiences resulted in EO-IIP, describe the plans and system design of platform, provide assessment and analysis on technical and business perspective of the project's progress with focus on stakeholder's interests, further showcase the implementation of project and the best practices. The guideline is expected to contribute to construction of large solution sharing hub and the like.
- An open prototype platform, which on one hand attracts and hosts the best practices of industrial application solutions over cloud, on the other hand facilitates users to approach the latest EO applications via local internet connection.
- An open demo solution, which is considered to bridge the gaps of the cutting-edge technologies and the conventional applications, for example combination of EO and IoT through EO-IIP to support implementation of precision farming and the like in the developing countries under intergovernmental agreements.

● Points of Contact:

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- Mr. Haitao WANG, wanghaitao@supermap.com

2. Purpose

The increasingly advanced Earth Observation (EO) technologies are driving explosive growth

in EO data. In order to fully utilize the huge amount of data and effectively solve real-world problems, a wide range of scientific programmes have been carried out to improve the techniques for data processing, analysis, presentation etc. However, the operational application solutions tend to lag behind the emerging techniques and EO data available for access. This is mainly because the development of application solutions requires not only fusion of scientific methods and engineering technologies, but also combination of practitioner's expertise and stakeholder's interests, and it turns out that the capacity of integrating all resources available to form solutions plays a very significant role to get the EO technologies landed smoothly on the ground of applications. In the meantime, there is a great need for a platform to accommodate solution development and also to facilitate capacity building, in particular for developing countries.

As a hard core of application solution development, the technological capacity of industrial sectors need further improvement as well. Though a number of enterprises can provide EO products and services globally, the conventional ways for cooperation may be restricted by some factors, such as geographic location, business systems etc, and have limitations in the participation of various enterprises and then result in less effective in interaction. In order to enhance the integration capacity of EO industry and enable prototyping of a cooperative platform for the development of application solutions, based on cloud computing technology, an Earth Observation Industrial Innovative Platform for sustainable development (EO-IIP) is presented to incorporate the advantages of various practitioners and promote better application of EO products and services, as well to foster the adoption of the innovative technologies relevant to 5G communication, Artificial Intelligence (AI), cloud computing, IoT etc. EO-IIP will enable easy accessing and sharing of a wide range of EO resources and also create an attractive and transparent forum for practitioner and stakeholders to release their concerns and interests. Furthermore, technology providers are offered chances to discover application demands and development trends through platform. Thus, there can be a virtuous circle for the sustainable development of EO industry.

EO-IIP will also serve as a media for industrial social networking. Solution developers can showcase their applications easily on the platform with the powerful cloud computing resources. On the other hand, users will be able to directly communicate with the technology providers to be jointly engaged with the development of regional best practices at early stage. The efficiency of cooperation and integration will be significantly improved. Enterprises will also be able to provide training programmes over cloud for users to help improve their

capacity building and upgrade the technological capacity of industrial sectors especially for the developing countries. Meanwhile, enterprises can perform better in considering the potential direction of development and deployment with the indication of user demands and market trend information on the platform. In addition, the platform is certainly open to global academic communities and will encourage the joint efforts to tackle technical challenges and contribute more to operational technologies and real-world problem solving. Accordingly, the EO-IIP will also establish an operational application solutions pool for EO industry, which drives the industrial upgrading, fosters innovation, and realizes the sustainable development of multiple EO related industries.

The EO-IIP is going to provide products and services for global users, especially the ones from developing countries. It will benefit not only participants of enterprises and academic communities, but also target users, including the local governments, international organizations, information enterprises, leading providers of technology and services, educational institutions and capacity building stakeholders, to name but a few. Therefore, the project can continuously serve and inform a wide range of areas, such as sustainable development, climate change and disaster risk reduction.

3. Key Activities

As described in the previous sections, the objectives of presented proposal are expected to be monitored and achieved during the three year term of 2020-2022. The key activities listed below are intended to assist project leaders and working groups of the operational plans.

Key Activities:

- Coordinate the project participants to plan, design and conduct the development for EO-IIP.
- Organize project management committee and working group meetings to maintain the project development agenda on key issues.
- Build fora to activate interactions with various stakeholders and review the needs and trends for EO-IIP in order to keep it operational and innovative.

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- Organize workshops on business and technology innovation related to EO-IIP.
 - Organize high quality technical exhibitions and expert panels during the conferences to attract practitioners to participate and exchange ideas.
 - Provide guidelines on the use and contribution of best practices and resources on EO-IIP.
 - Plan and develop pilot projects on EO-IIP to promote publicity and facilitate innovation.
 - Increase efforts directed to capacity-building by providing access to data, soft-hardware tools, computational resources etc, especially to developing countries.
 - Facilitate international collaboration on regional issues of environment and sustainable development with availability of EO-IIP resources.
 - Where requested, support appropriate GEO activities by providing industrial expertise.

4. Governance

Governance structure of EO-IIP is initially formed as a flat model for more efficient decision making. The project management committee owns, manages the systems of project and makes the project level decisions. The project management committee is comprised of representatives from the following 6 industrial companies (listed in no particular order), which are the founding and core members of EO-IIP, and also the leading practitioners across main segments of EO industry in China.

- Beijing Piesat Information Technology Co.,Ltd.
- SuperMap Software Co.,Ltd.
- SpaceWill Information Co.,Ltd.
- DFH Satellite Co., Ltd.
- South Surveying and Mapping Technology Co.,Ltd.
- Ping An Technology

Accordingly Working Groups (WGs) are built up to organize and maintain the project

development agenda on key technical and business issues. Senior experts, leaders and executives from academic societies, organizations, and business sectors are invited to form the advisory and steering teams to support project level decision making, for instance, identify additional stakeholder groups and ensure they are included in the necessary communication distributions, articulate a vision for the products and services, acquires and quantifies high-level customer requirements in order to manage customer expectations.

5. Data Policy

The purpose of this data policy is to establish guidelines and agreements that govern data submission, access to and usage of data stored in the EO-IIP, and it is expected to facilitate the widest possible accessibility to EO-IIP relevant data while protecting the data from unauthorized access and use, and maintaining a desirable level of data quality. Data custodian will be appointed and overseen by the project management committee to further define the details of data policy, including agreements about confidentiality, compliance with standards (storage, metadata etc.), and methods for data submission and access.

Data stored in the EO-IIP are classified into three categories based on permitted level of data access:

- (a) Public data – accessible without needing permission from the data custodian;
- (b) Community data – limited to access by EO-IIP community member only (project management committee and data custodian must be acknowledged in any publications or documentation of use);
- (c) Private data – limited to access by data custodian and custodian-authorized users only.

Users are supposed to do registration at the first time they enter the EO-IIP, to gain access. Except community and private data, which are mostly relevant to the information security of system's operation, public data will be open and subject to free usage for noncommercial purposes. Specifically public data refer to the data and their derived products such as remote sensing images, maps, attribute information, results and etc. presented in the EO-IIP, which provide complete inputs necessary for the prototypes of application solutions as well as fact checking of best practices. Data users are expected to acknowledge data custodian in any and all documentation and publications. Community data and private data users are required to acknowledge the project management committee and data custodian in any documentation and/or publications, and are encouraged to inform the data custodian of any data use and publication plans. Users having access to private data are not permitted to provide these data to any other party without explicit documentation in the form of written consent from the project management committee.

Annex

I. Brief CV of Project Leaders (listed in no particular order)

- **Dr. Tao GUO** (guotao@piesat.cn), Vice president of *Beijing Piesat Information Technology Co.,Ltd.*, Dr. Tao Guo received his doctorate from the University of Tokyo and has been working as a research scientist in the Geo-spatial information industry for more than 25 years. He has published about 40 academic papers and is the inventor of about 20 international patents. Dr. Tao Guo is an active advocate for applying technologies for ecological environment protection and has been long engaged in many eco-environment related projects across China, Thailand, Japan, EU and others countries, he joined *Beijing Piesat Information Technology Co.,Ltd.* as a vice president from ETH Zurich in 2017 and now dedicates his efforts to bridge the industrial community with the society for eco-environmental protection and sustainable development with a special focus on decision-making supports.

Beijing Piesat Information Technology Co., Ltd. is a leading Geo-spatial information enterprise in China specializing in research and development of satellite technology applications (Remote sensing and navigation satellite) and provides professional services including software systems R&D, technical consulting, system design and integrated geospatial solutions for various applications, such as meteorology, marine, water, land, forestry, agriculture, environment, emergency and disaster response, surveying and mapping, navigation, to name a few. Piesat has ISO9001, CMMI L3 certification and AAA credit rating.

- **Mr. Ricky OU** (RickyOu@pingan.com.cn), Chief product officer of *Ping An Technology* & general manager of *Ping An Cloud BU.*, Mr. Ricky Ou received his MBA degree from Carnegie Mellon University and BAsC degree from University of British Columbia. Ricky is a seasoned business executive with 20 years of experience across multiple functional areas. He started his Asian experience with McKinsey, helping top companies like Microsoft, Huawei, China Mobile, Lenovo with their product strategy. He later

joined Microsoft for the next 9 years leading the Office business for Greater Asia, and Microsoft Azure business for China. Ricky joined *Ping An Technology* in 2016 as their Chief Product Officer, leading the overall product commercialization and all of business development with external customers and partners. He also leads the AI Cognitive technology development and commercialization. Under his leadership, PingAn Tech facial recognition achieved a world leading accuracy of 99.8% (LFW) and with over 300 million financial transactions in 2016.

- **Mr. Haitao WANG** (wanghaitao@supermap.com) Vice president of *SuperMap Software Co., Ltd.*, Mr. Haitao Wang has been working as a senior executive in IT and geographic information industry for more than 20 years. He joined *SuperMap Software Co., Ltd.* as a vice president in charge of international business in 2016, leading the company to develop the global business network, and now he is focusing on bringing Chinese advanced GIS technology to all over the world.

SuperMap Software Co., Ltd. is an innovative GIS platform software and service provider focusing on the research, development and application services of GIS related software technology Nowadays, SuperMap GIS has successfully entered Asia, Europe, Africa and South America and other countries and regions. SuperMap will keep growing and working with its partners to fulfil its mission: Innovating IT Value with Geo-Intelligence and will strive to become a leading GIS brand in the world.

- **Mr. Yaxin DONG** (dongyx@southsurvey.com), General manager of Beijing branch of *South Surveying and Mapping Co., Ltd.*, Mr. Yaxin Dong received his Master degree from the Communication University of China and Bachelor degree from the North China University of Technology. Mr. Yaxin Dong is an experienced business manager in the survey and mapping industry and has been working in both private and public sectors for more than ten years, he was involved with the projects of big data applications in environmental study in Southeast Asia countries. Mr. Yaxin Dong joined *South Surveying and Mapping Co., Ltd.* in 2007 and is now the general manager of Beijing Branch, he leads the business development as well as provides software and hardware technical supports for surveying and mapping.

Established in Guangzhou in 1989, the *South Surveying and Mapping Co., Ltd.* has been developed as a provider for GIS solutions, which integrated with R&D, production, sales and services over the past decades. *South Group* always puts efforts on industry informatization and the increasing value for GIS applications, its service fully covers the survey equipment, precise measurement system, data process project, GIS system and smart city application, etc.

- **Mr. Zhibin SU**, Director of commercial satellite marketing department of *DFH Satellite Co.,Ltd*, Mr. Zhibin Su received his master degree from China Academy of Space Technology (CAST) and took in charge of R&D management and technology breakthrough in Xi'an academy attached to CAST. During that period, he has actively participated in a wide range of satellite projects, which were rewarded with Progress Prizes of National defense Science and Technology. Mr. Zhibin Su joined Beijing R&D center from Xi'an academy of CAST as a senior manager, as well as the chief executive officer of Beijing SATL Technology Development Co.,Ltd., leading projects to design and analyze the infrastructure in space and its application including Hong Yan constellation, the results from their work have been widely applied for subsequent studies and works. Mr. Zhibin Su took charge in the propagandizing & popularizing and system analysis of commercial satellite marketing department in DFH in 2018, and he co-founded the China Commercial Small Satellite Industry Innovation Alliance (CSIA) supported by Investment Promotion Bureau of Commerce Ministry, CSIA is now playing an important role in China commercial satellite industry.

- **Mr. Ming WANG** (ming.wang@spacewillinfo.com) Vice Manager, Project Management Department of *SpaceWill Info. Co., Ltd.*, Mr. Ming Wang graduated from the College of Surveying and Mapping, PLA Information Engineering University, and has many years of experience in remote sensing image processing and integrated application of geographic information system. He has led the team to accomplish many important tasks. Now he is committed to the application of ecological environment, agriculture, water conservancy and other projects, providing users with integrated application solutions.

SpaceWill Info. Co., Ltd. is a leading enterprise of remote sensing integrated application service in China. The company is committed to providing multi-source and multi-scale remote sensing satellite images and services for global users. SpaceWill has more than 30

leading remote sensing satellite data resources, with high-resolution satellite image technology as the leading technology, integrating remote sensing (RS), global positioning system (GPS) and geographic information system (GIS) technology, providing satellite remote sensing data, application of massive high-resolution satellite images based on the Internet, remote sensing data products, management and publication of massive spatial data, visualization and analysis of geographical data and other products. Provide users with comprehensive application solutions of multi-source remote sensing data based on high resolution satellites.