



Success Story of Korea Multipurpose Satellite

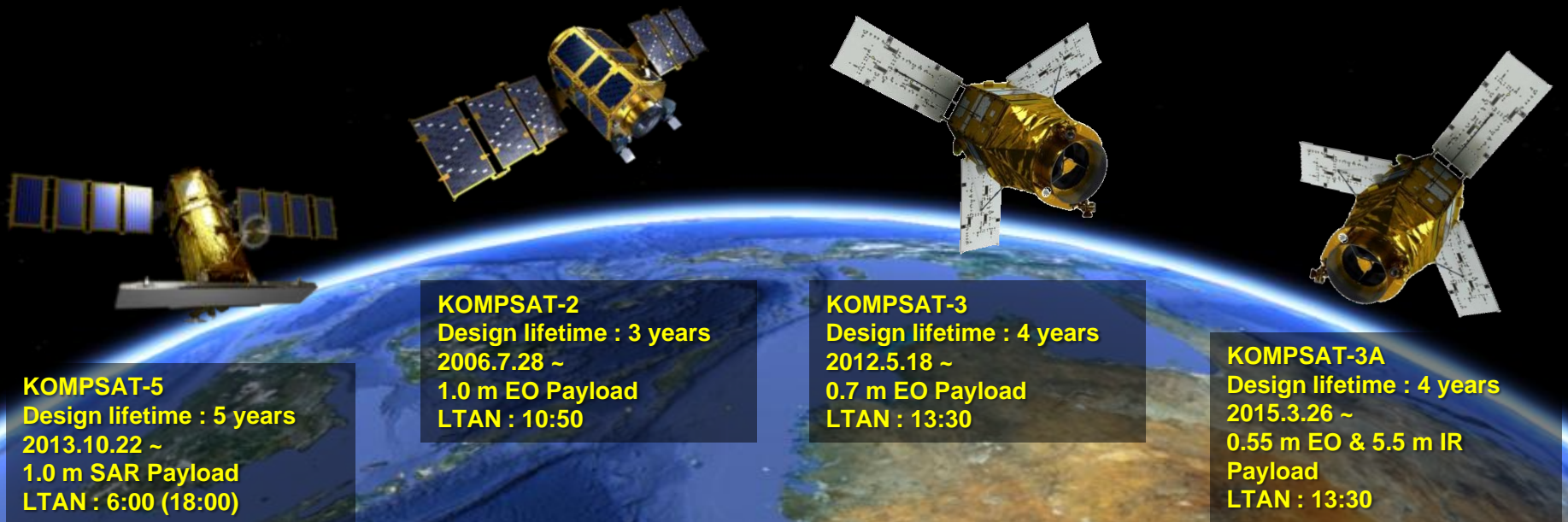
October 2017
SI Imaging Services

PRESENTATION INDEX

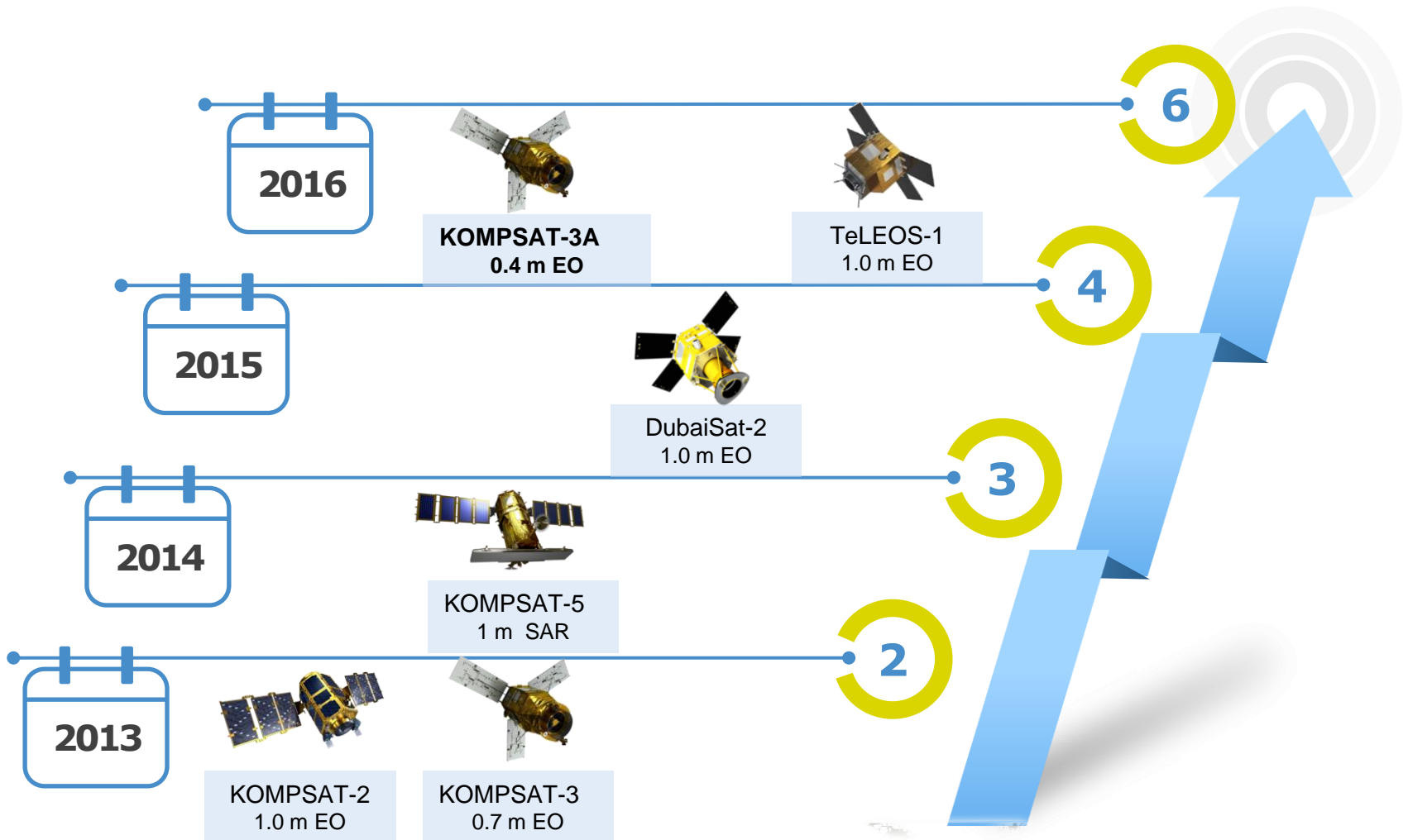
- **01 Successful Operation**
- **02 Guarantee Access**
- **03 Progress of KOMPSAT**
- **04 Success Stories**

KOMPSAT

- **KO**rea **M**ulti-**P**urpose **SAT**ellite
- National space program
- Developed and operated by KARI (Korea Aerospace Research Institute)
- Dual use : Government & commercial
- Worldwide imagery distribution by SI Imaging Services



KOMPSAT Today



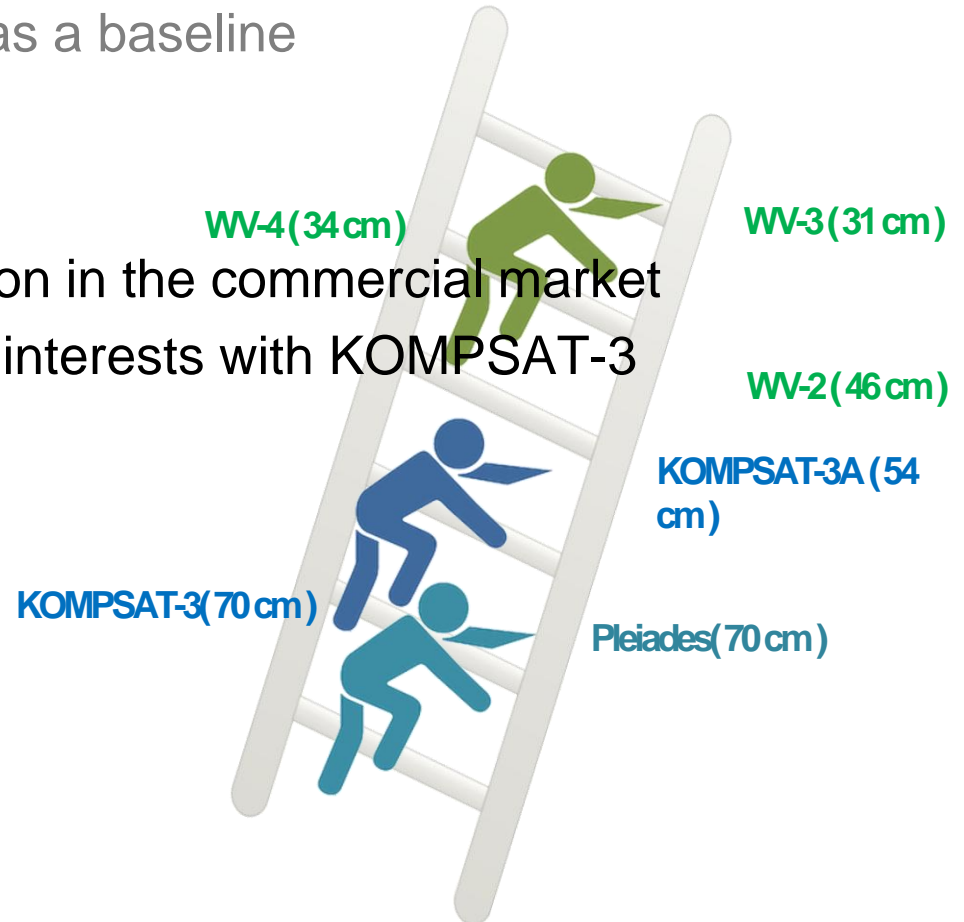
KOMPSAT-3A

- **KOMPSAT-3A commercial service**

- 0.4m product resolution as a baseline

- **Benefits**

- The second best resolution in the commercial market
- Fast coverage of area of interests with KOMPSAT-3



KOMPSAT-3,
Tashkent, Uzbekistan
June 13th, 2015



KOMPSAT-3A,
Sydney, Australia
December 25th, 2016



KOMPSAT-3A,
Bishkek, Kyrgyzstan
April 9th, 2017



Future satellites

- New satellites from KARI
 - **KOMPSAT-6** (VHR SAR) in 2019
 - Part of WorldSAR constellation
 - **CAS-1/2** (VHR EO) in 2019, 2020
 - 50cm VHR Constellation
 - **KOMPSAT-7** (VHR EO) in 2020
 - <35cm
- Virtual constellation of VHR small satellites
 - A market place for the satellites built by Satrec Initiative



Successful Operation

- **Make the best of satellite's capability**
 - While keeping the safety of satellite
- **Meet the end-users' need**
 - Guarantee access
 - Improve timeliness
 - Easy-to-use products
 - Quality control
 - operational and image qualities

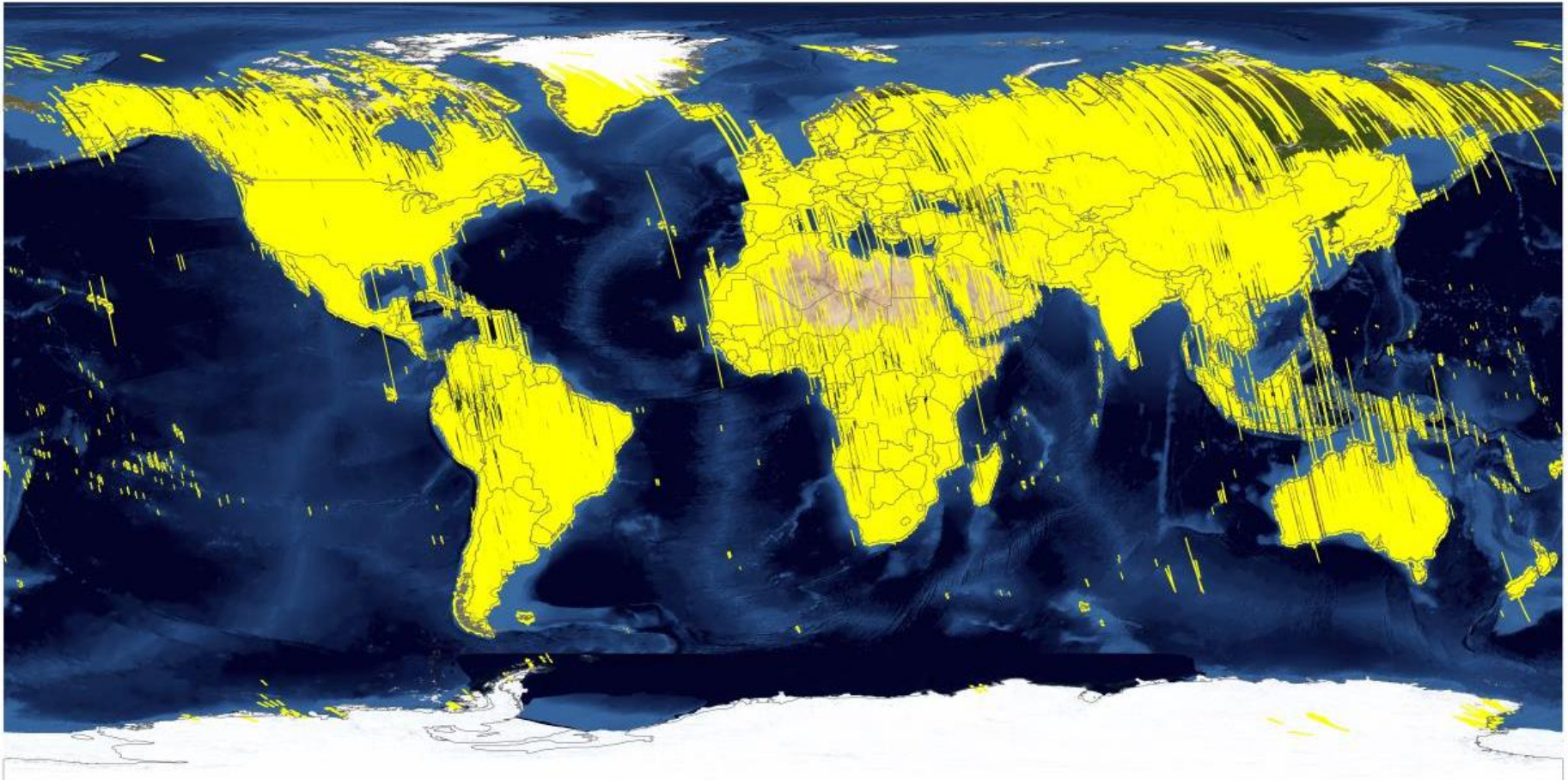
The Best of Satellite's Capability



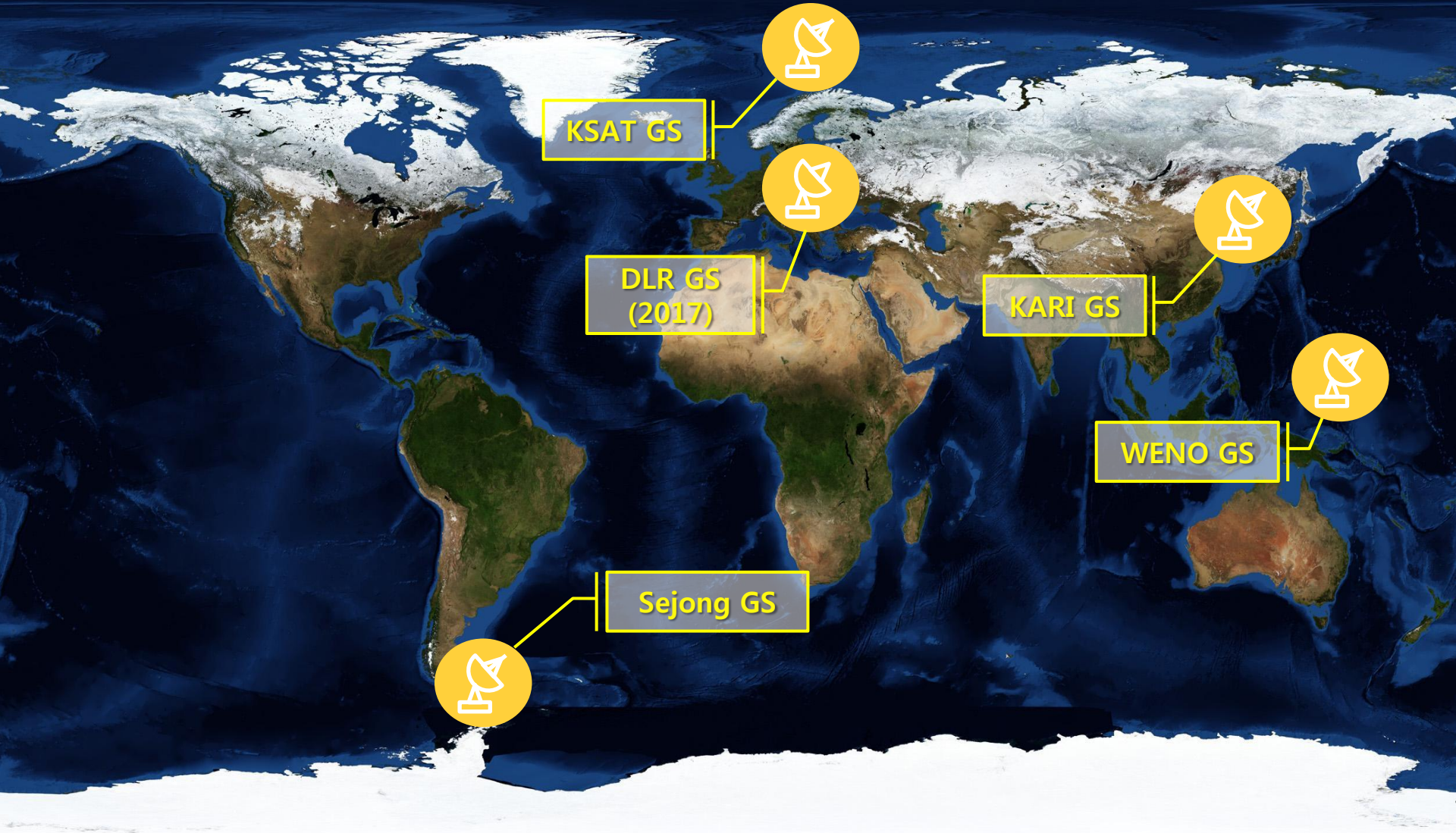
- **Maximize the capacity**
 - Use of polar station to increase download time
- **Increase cloud free data (optic only)**
 - Need to use the most recent weather forecast
 - Twice a day programming considering weather forecast
 - 7 days a week programming

KOMPSAT Archiving

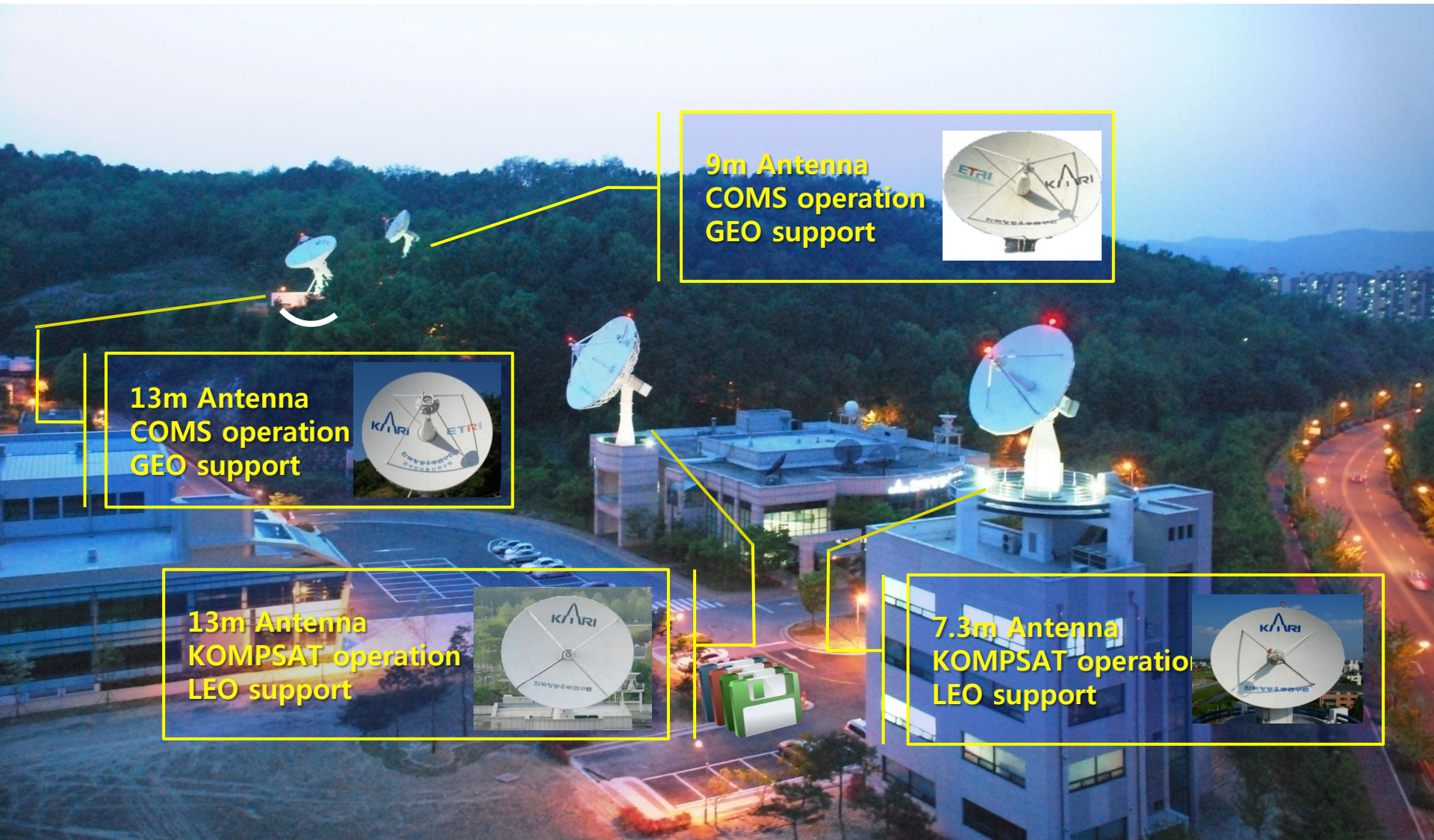
- More than 2.5M scenes (~April 30, 2016)



Global GS Network



KARI Ground Station



9m Antenna
COMS operation
GEO support



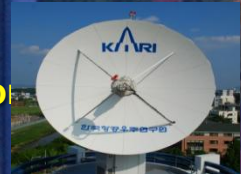
13m Antenna
COMS operation
GEO support



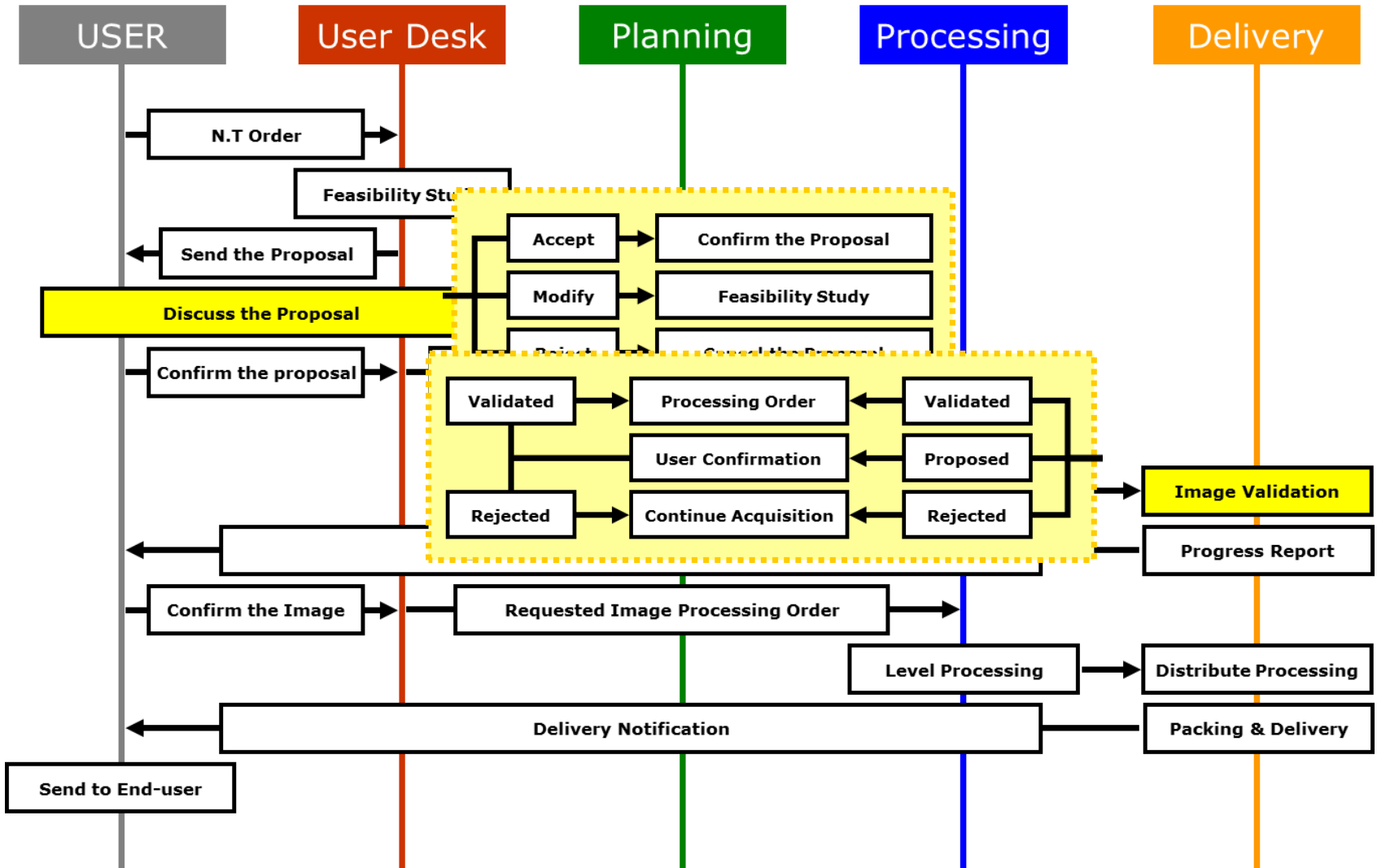
13m Antenna
KOMPSAT operation
LEO support



7.3m Antenna
KOMPSAT operation
LEO support

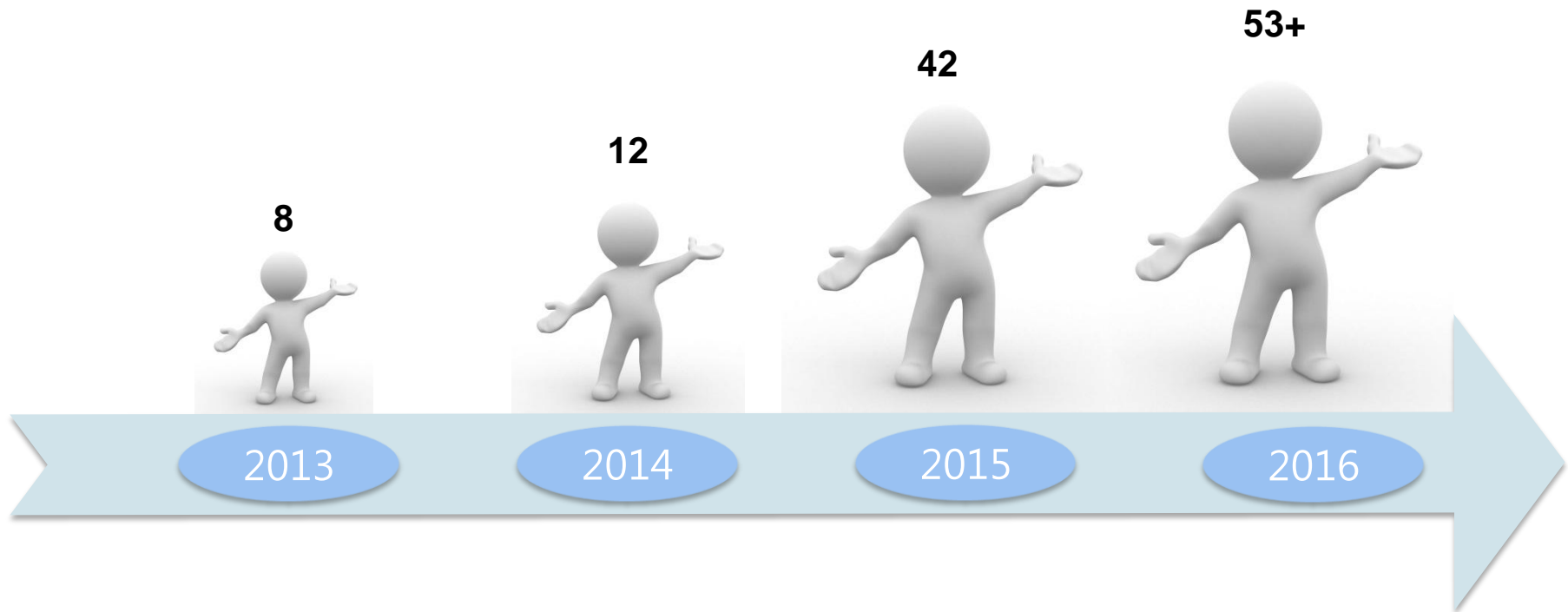


Operation Procedure



KOMPSAT operation

- Human resources by SIIS



KOMPSAT Operation

- **Mission Control Team**
 - Mission planning & uploading
 - Orbit maintenance
 - Satellite safety
 - 30+ human resources

KOMPSAT Operation

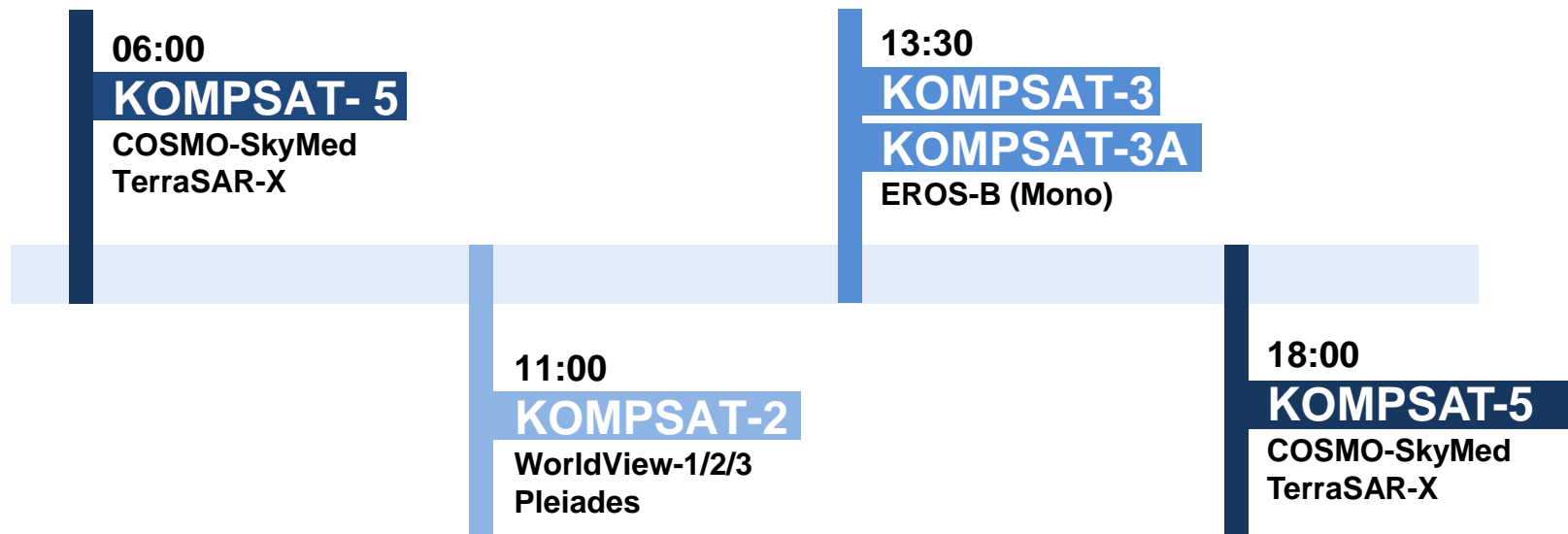
- **Image Receiving & Processing Team**
 - Order handling
 - Image acquisition planning
 - Data reception
 - Products generation
 - Delivery
 - 30+ human resources

KOMPSAT Operation

- **Cal / Val Team**
 - Image quality control
 - Geometric calibration
 - Radiometric calibration
 - 17+ human resources

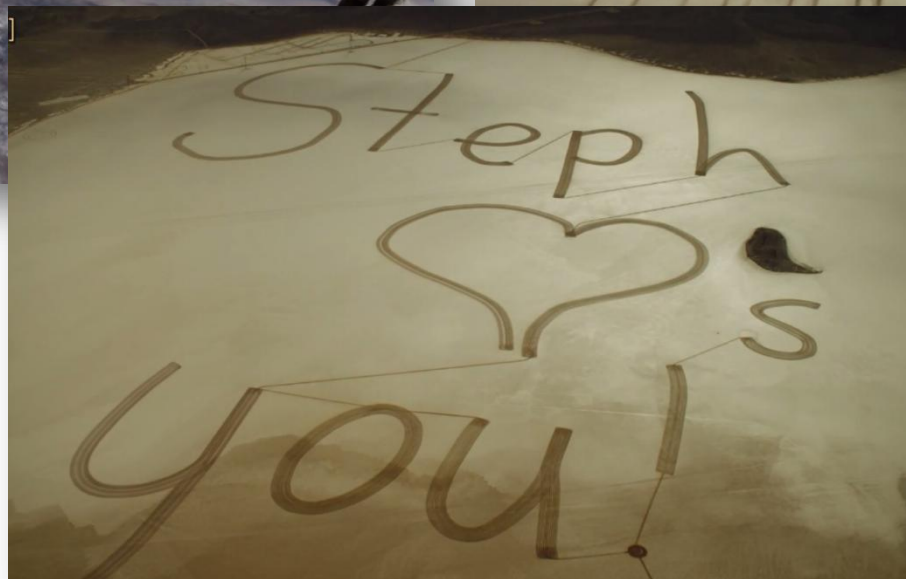
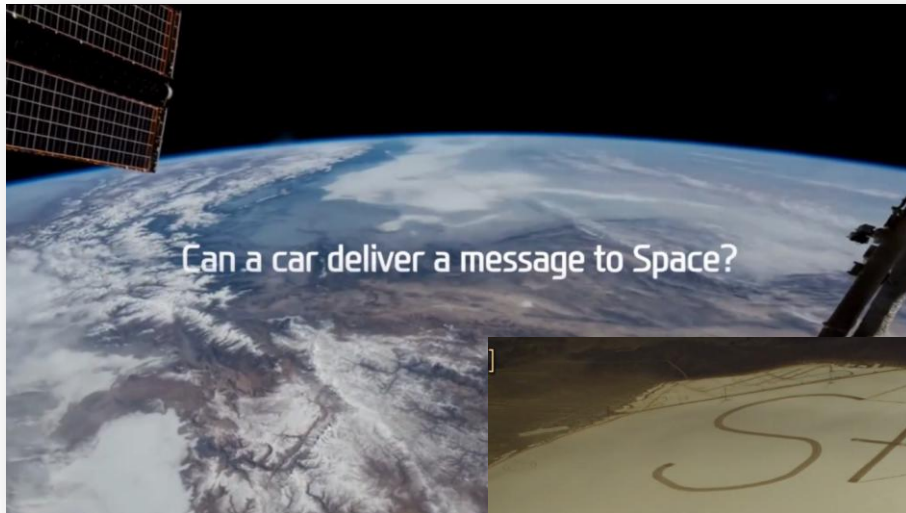
Guarantee Access

- Integrated solution for optical and radar to increase the visibility
- Unique combination for imaging time (10:50, 13:30, 06:00/18:00)
- Sole VHR sensor with multispectral in the afternoon
- Change detection even within a day is possible



Guarantee Access

- Designated imaging






Steph
❤️
you!



Steph
♥s
you!

A white plastic bag is shown floating in a dark, textured liquid, likely a lava flow. The bag has handwritten text and a heart symbol. The text reads "Steph" in a large, cursive font, followed by a heart symbol, then "s" and "you!" in a smaller, cursive font. The bag is secured to a dark, rocky surface by several thin wires or cables. The background is a dark, textured surface, possibly a lava flow, with some lighter-colored, irregular shapes scattered throughout.

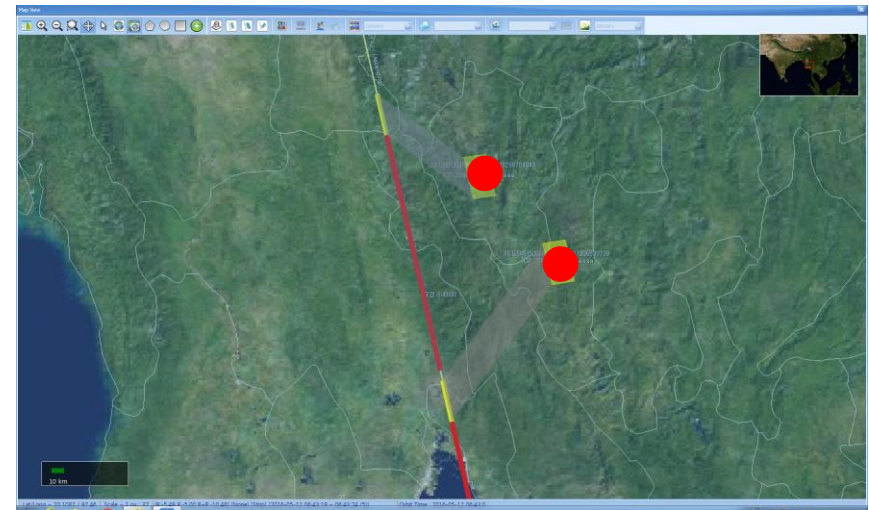
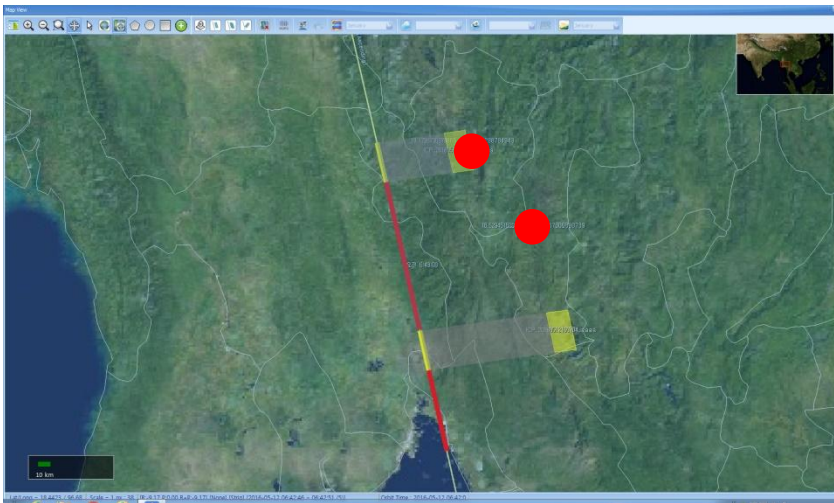
Steph
❤️
s
you!



Dubaisat-2 Imagery Jan 21, 2015

Guarantee Access

- **Solve the order conflicts**
 - Higher priority first
 - using agility of satellite
 - First come, first served



Improve Timeliness

- **End-user wants 24/7 & NRT services**
- **Keep working to improve**
 - Use of polar station
 - German ground station is available from this year
 - 7 days a week planning
 - OrderDesk is available
 - Special service is available via contract

Polar Station & German Station

- **Ground station network**
 - KOMPSAT constellation is utilizing polar station to shorten the delay from acquisition to downlink
 - The ground station in German is available for commercial services
- **Benefits**
 - NRT delivery is possible for European customers (German GS)

7 Days a Week Planning

- **7 Days a Week Planning**
 - Daily planning for 7 days a week basis
 - Task uploads twice a day

- **Benefits**
 - Improved responses for urgent new tasking orders
 - Better performance for the acquisition in terms of cloud cover rate

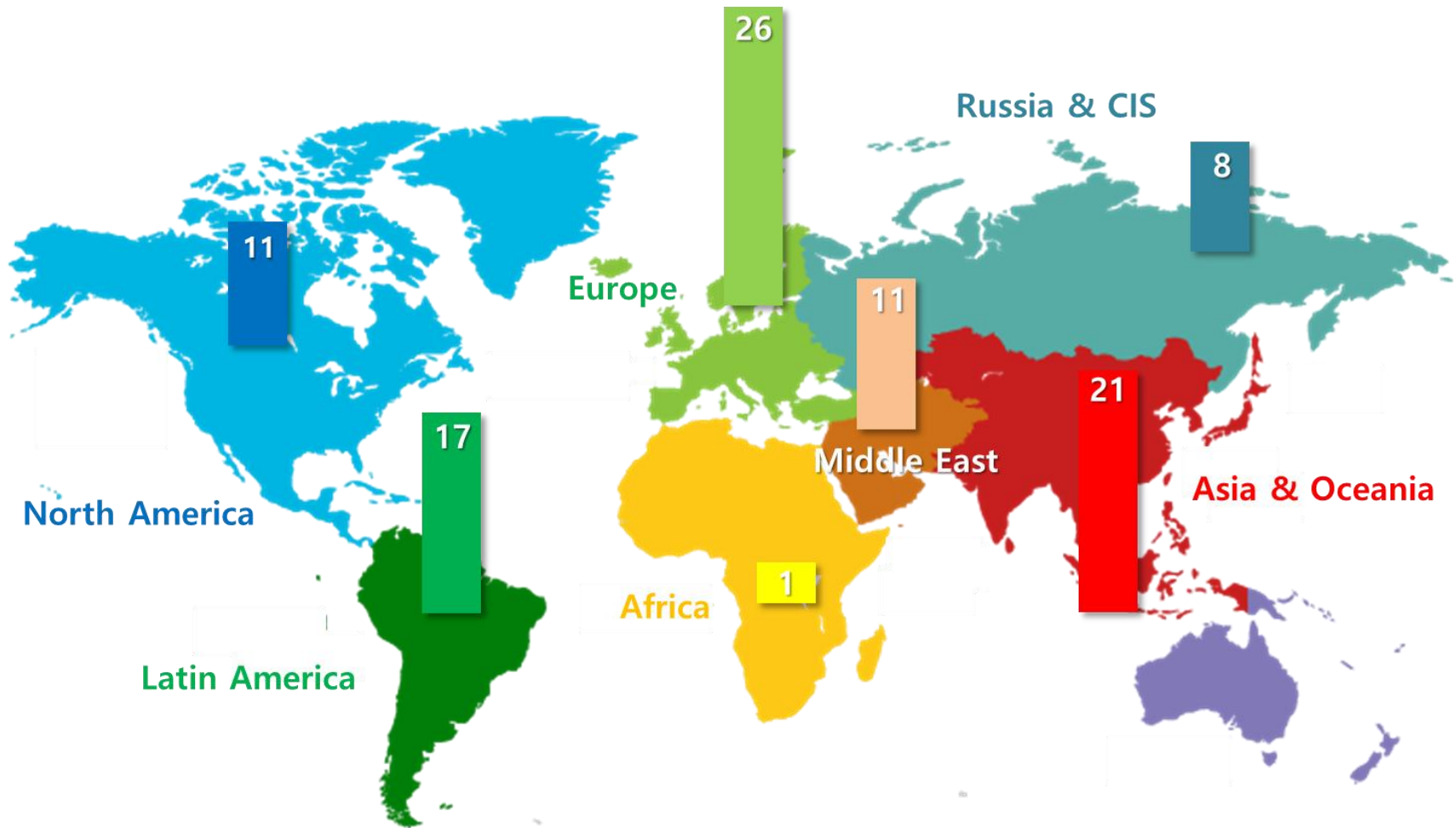
Quality Control

- **Seamless efforts to improve and keep the image quality**
- **Product QA before delivery**
 - Image quality
 - Product format

KOMPSAT Partner Network



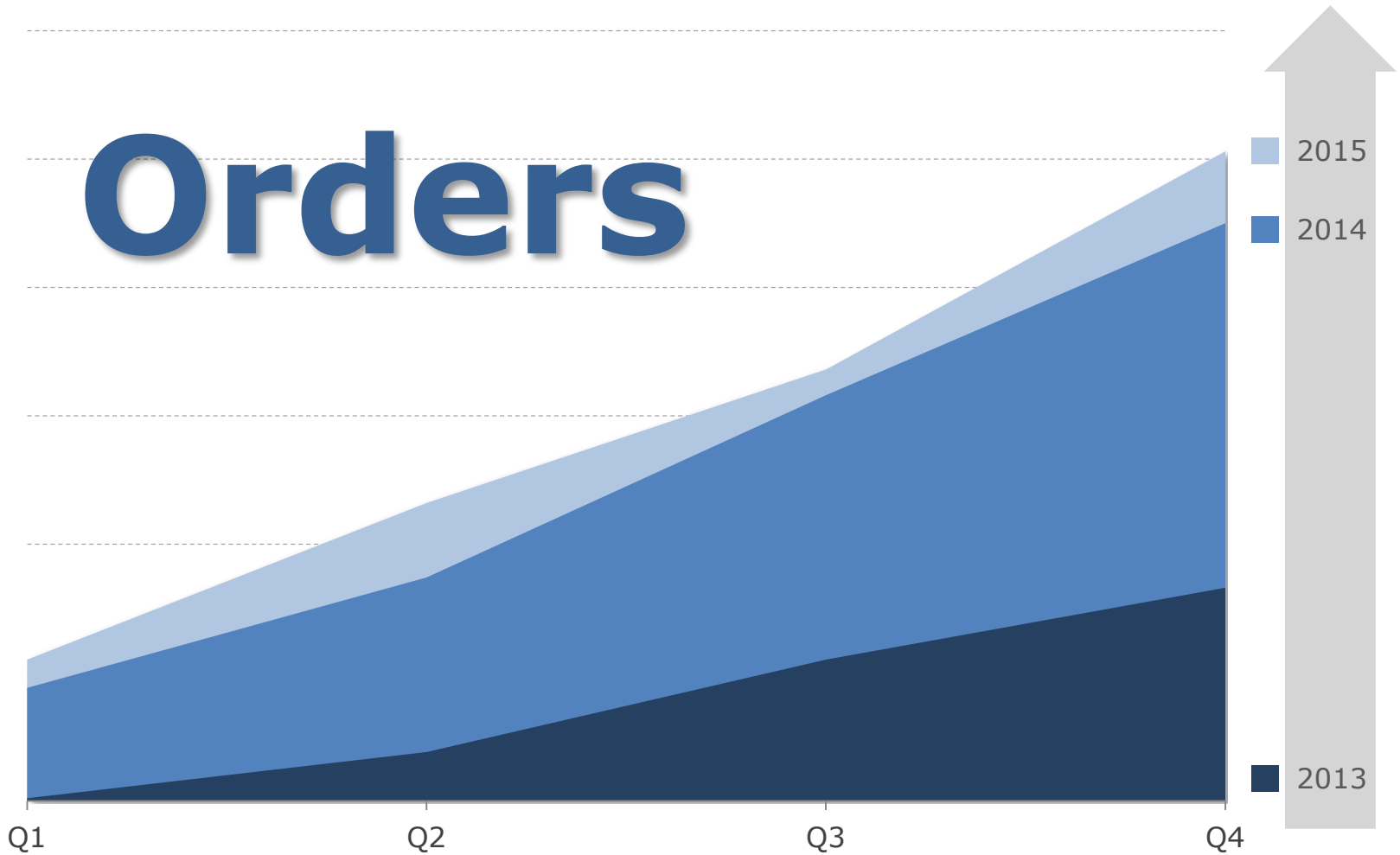
KOMPSAT Partner Network



Progress of KOMPSAT

305%

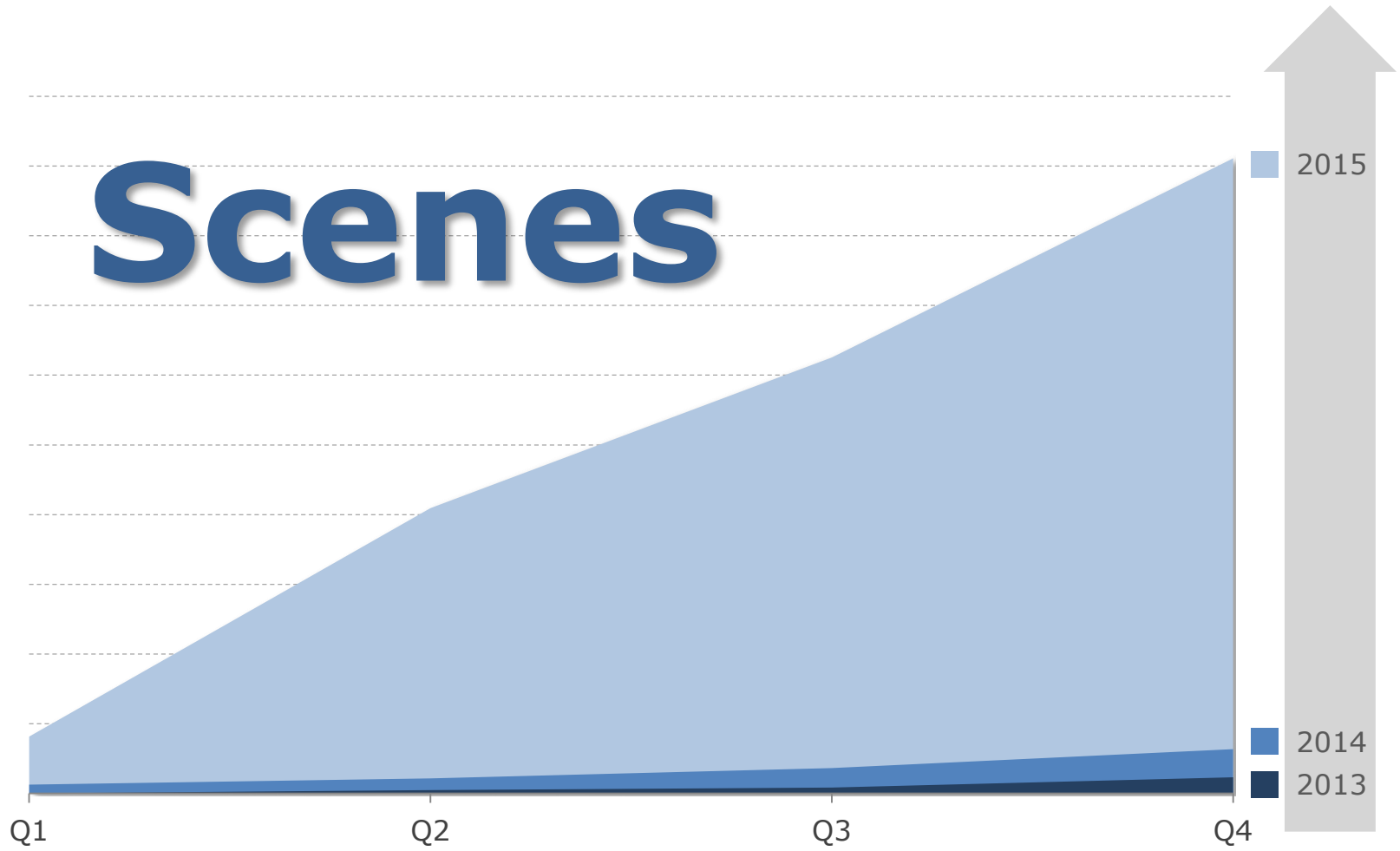
Orders



Progress of KOMPSAT

3935%

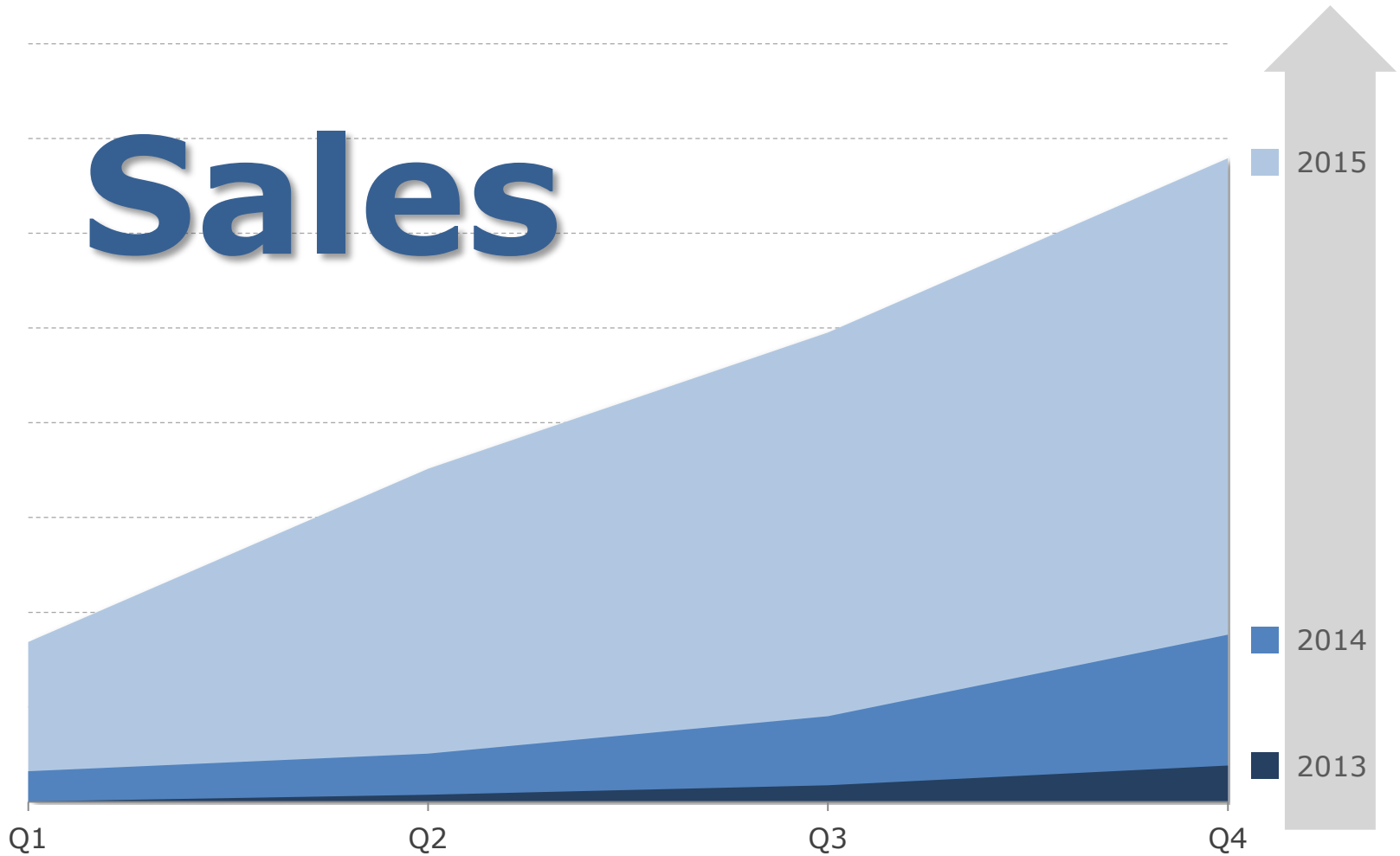
Scenes



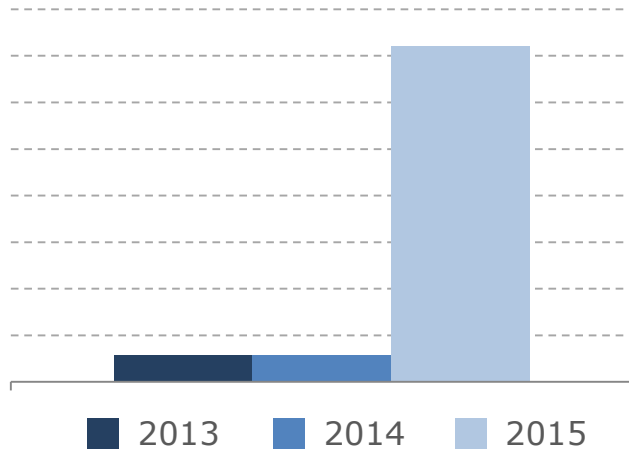
Progress of KOMPSAT

1776%

Sales



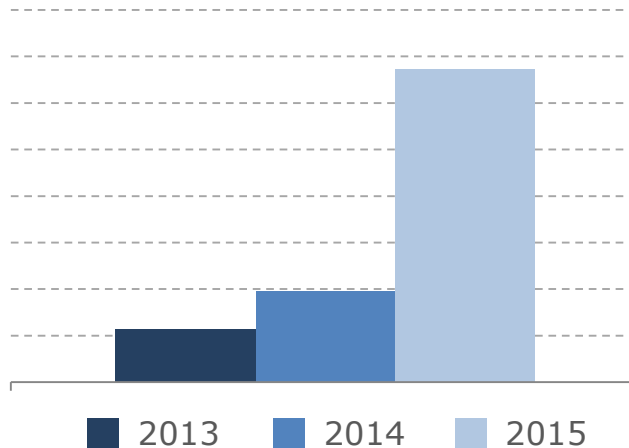
Progress of KOMPSAT



Scenes per Order



1,290%



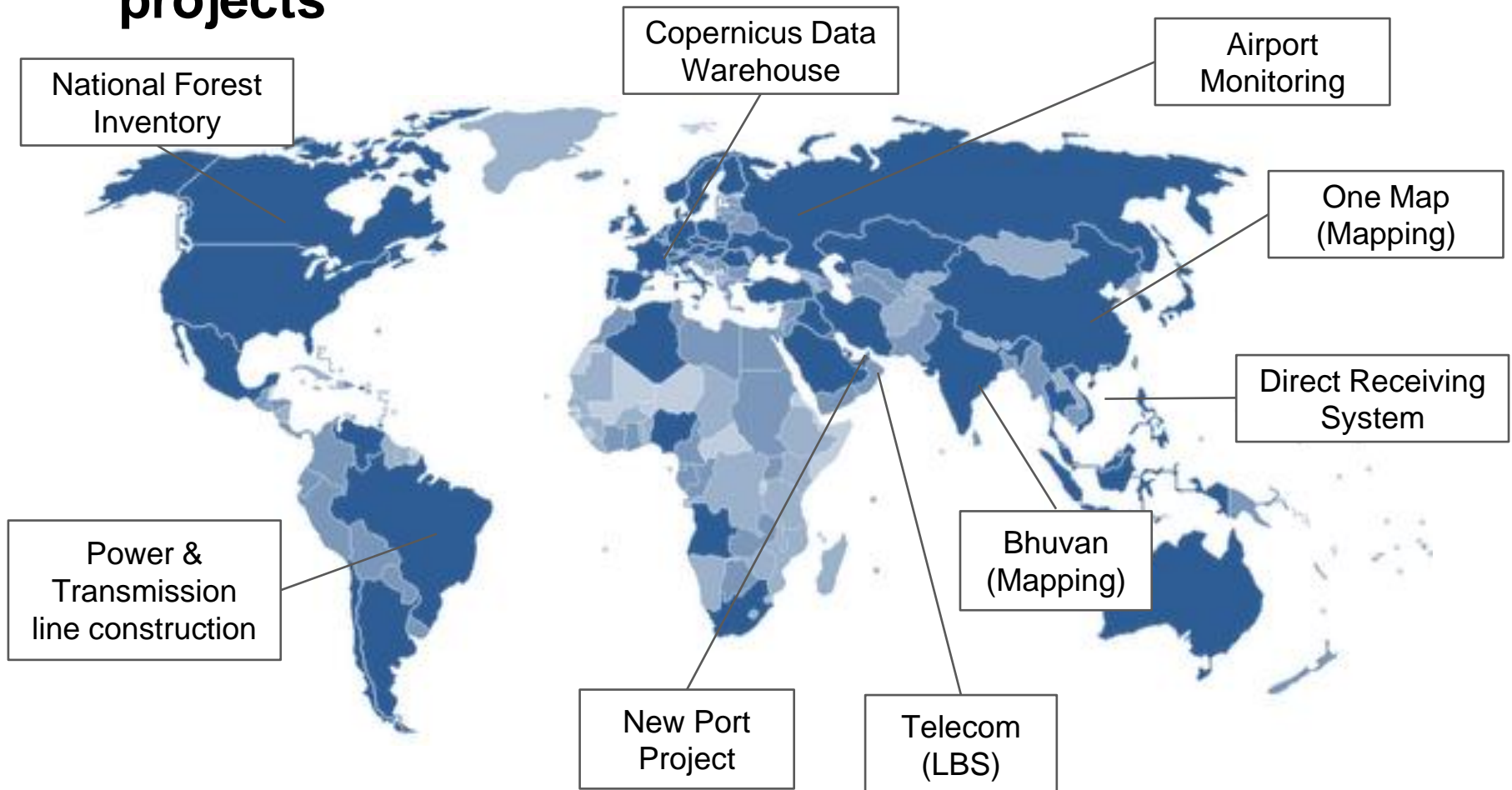
Sales per Order



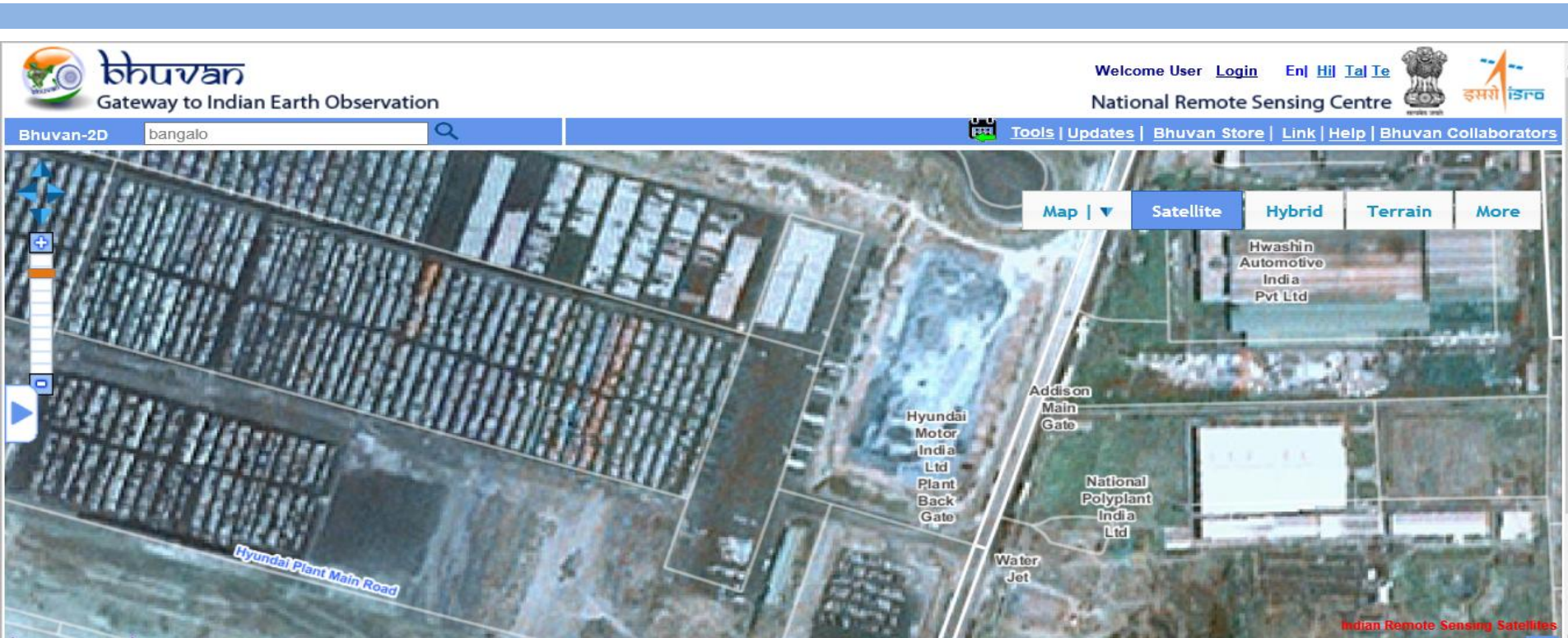
580%

Using KOMPSAT imagery

- **KOMPSAT helps to achieve success in many global projects**



Success Story



Mapping

Bhuvan

- NRSC (National Remote Sensing Center) / India
- Geo-Portal. India version of Google
- Providing 1m resolution base map with KOMPSAT-2

Success Story

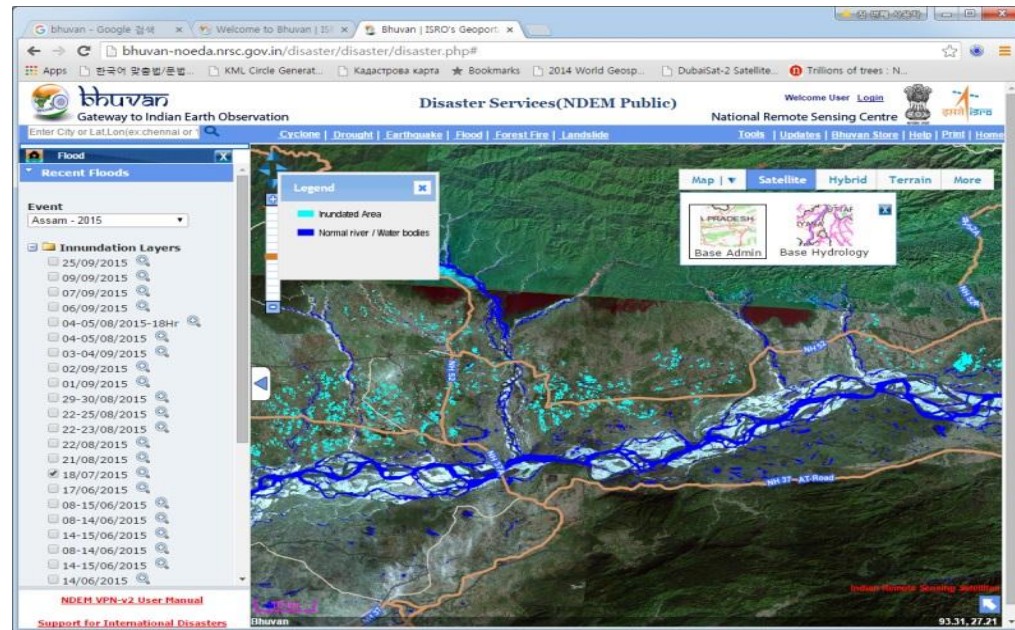
Disaster

NDEM

- NRSC / India
- National Database for Emergency Management
- Centralized national GIS database for the management of natural and man-made / technological disasters
- KOMPSAT-2 and 3 are being serviced through Bhuvan



The screenshot shows the Bhuvan National Remote Sensing Centre homepage. The header includes the Bhuvan logo and the text "National Remote Sensing Centre" and "Gateway to Indian Earth Observation". The main content area is divided into several sections: "Visualization & Free Download" with options for Bhuvan-2D, Bhuvan-3D, Open Archive, Data, and Climate Environment; "Maps & OGC services" with options for Thematic Services, Disaster Services, and Ocean Services; "Governance/Central Ministries" with icons for various government departments; "Application Sectors" with icons for Agriculture, Forestry, E-Governance, Water, Tourism, Urban, and Rural; "E-Governance" with a Decentralised Planning icon; and "Special Applications" with icons for Data Discovery, Hydrological Products, International Disasters, IRS Pass Quick Looks, MANU, Online Shapefile Creation, OSCAT-3D, and Smart Tracking. A "State Portals/Applications" section is also visible, showing a map of India and a dropdown menu for "State" set to "ANDHRA PRADESH".



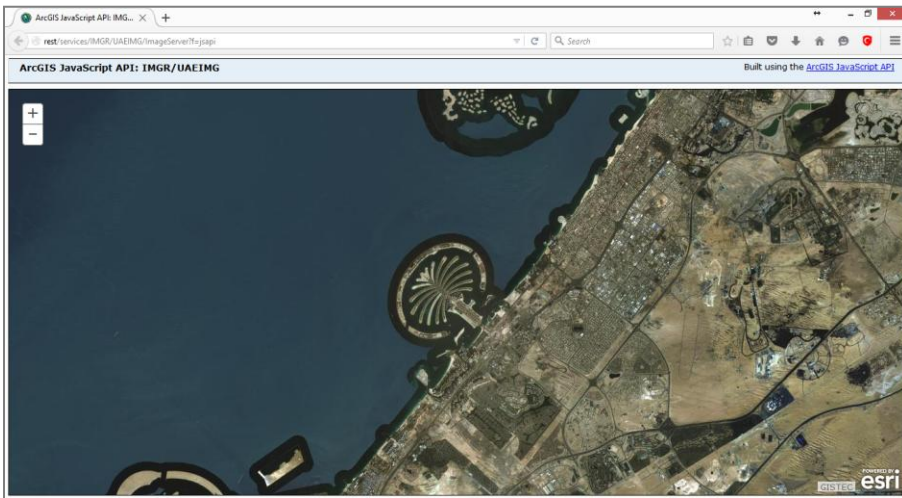
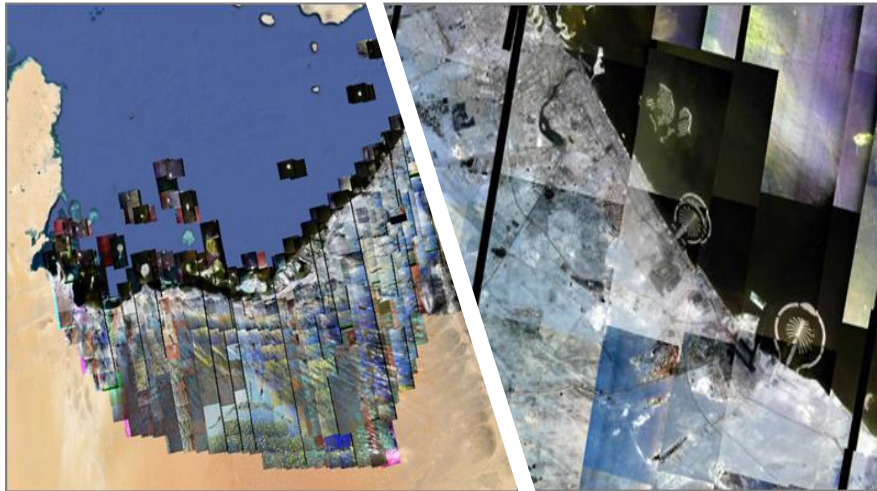
The screenshot shows the Bhuvan Disaster Services (NDEM Public) interface. The header includes the Bhuvan logo and the text "Disaster Services(NDEM Public)" and "National Remote Sensing Centre". The main content area is divided into several sections: "Recent Floods" with a dropdown menu for "Assam - 2015"; "Inundation Layers" with a list of dates from 25/09/2015 to 14/06/2015; "Legend" with options for "Inundated Area" and "Normal river / Water bodies"; and a map showing the inundated area in Assam. The map is overlaid on a satellite image and includes a legend, a scale bar, and a "Map" dropdown menu. The footer includes the text "© Bhuvan: ISRO:NRSC:2014" and "Last Updated: 28-October-2015".

Success Story

LBS



- Big Telecom Operator / UAE
- Providing map based services for the field engineers
- Utility management
- Covering the entire UAE and refresh annually
- KOMPSAT-2 and 3 are being serviced through ESRI ArcGIS Server



Success Story

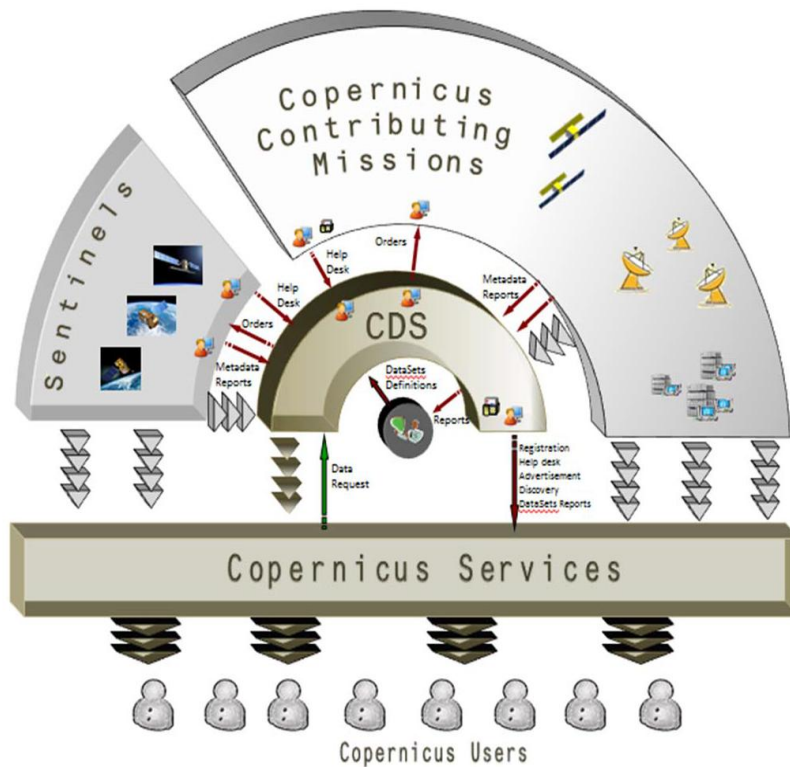
Construction

New Port Project

- Dar Al Handasah / Lebanon
- Port construction site monitoring
- Around 10 (ten) New Tasking of each KOMPSAT-2 and 3 have been guaranteed with the priority
- Monthly monitoring from 2014 to present



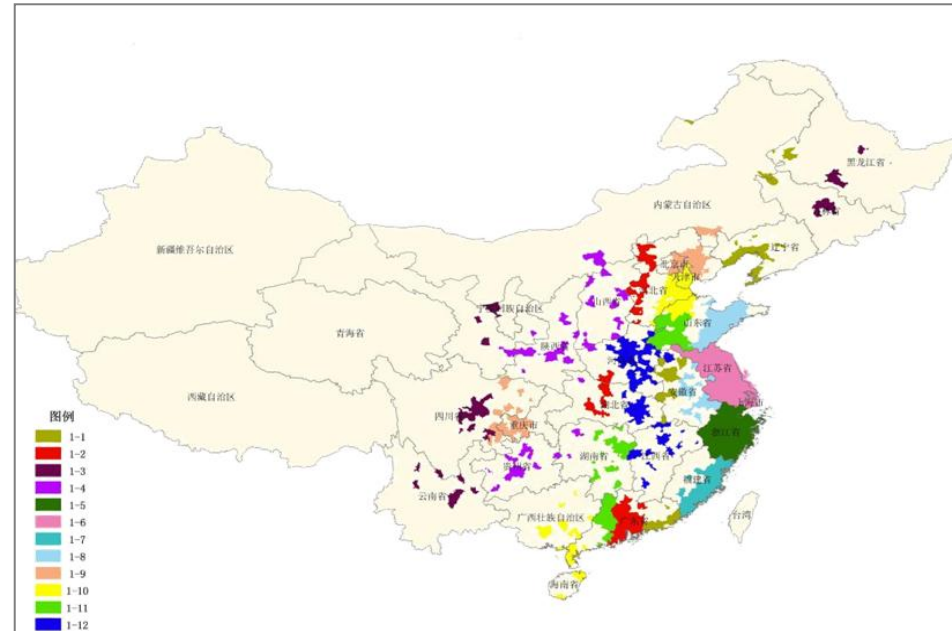
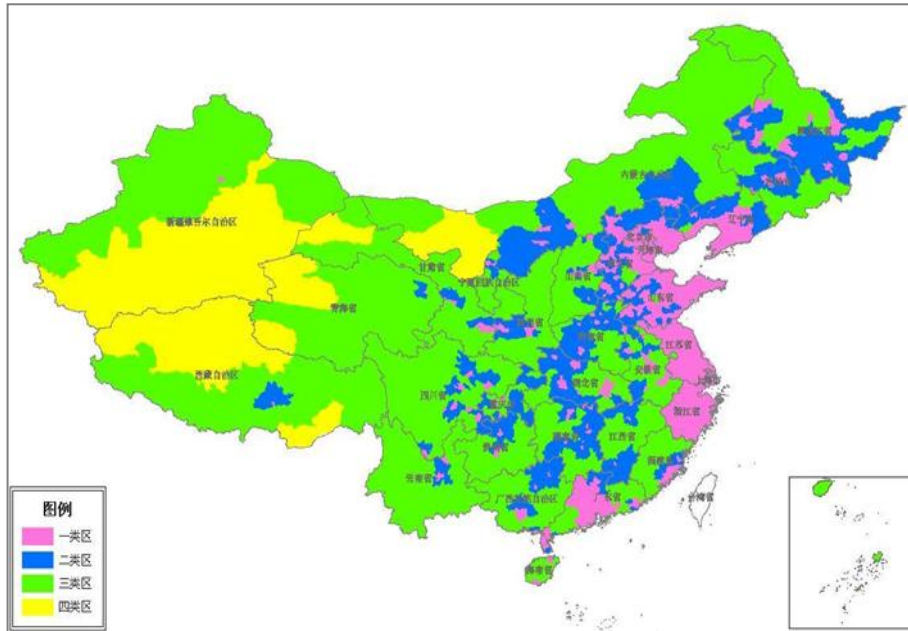
Success Story



Copernicus

- ESA, EEA, Member states
- European system for monitoring the Earth
- Land, marine, atmosphere, climate change, emergency management and security
- KOMPSAT-2, 3 and 5 have been applied

Success Story



Land Use

One Map

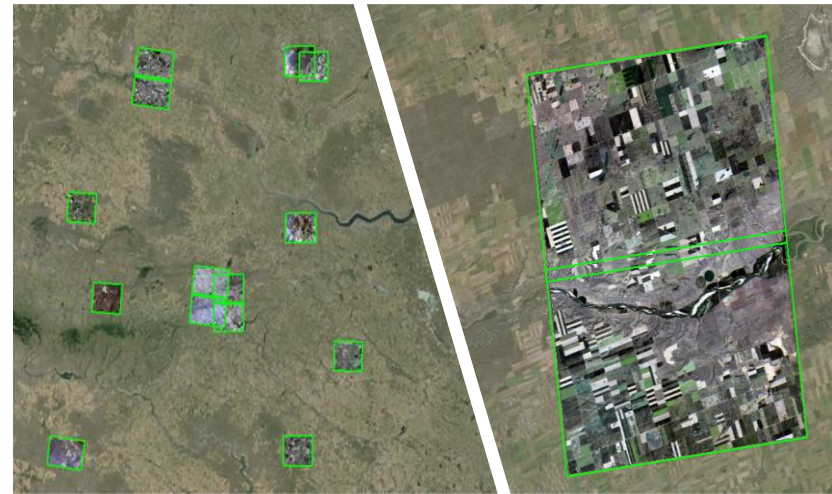
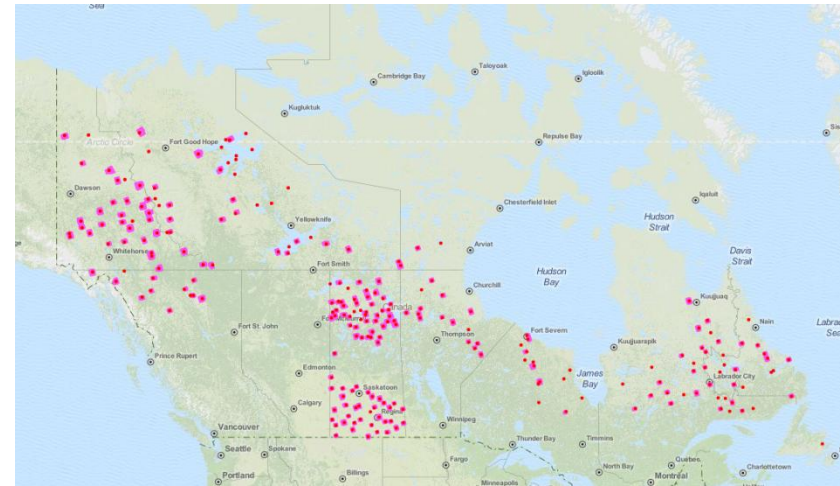
- MLR (Ministry of Land Resources), China
- Managing & monitoring all Chinese national land use
- KOMPSAT-2 and 3 have been provided

Success Story

Forestry

NFI

- National Forest Inventory
- Canadian Forestry Service for NRCan (Natural Resource Canada)
- Monitoring the Sustainability of Canada's Forests
- 400 ~ 500 widely spread AOI
- KOMPSAT-3 covered around half in 2015 as a speculative tasking

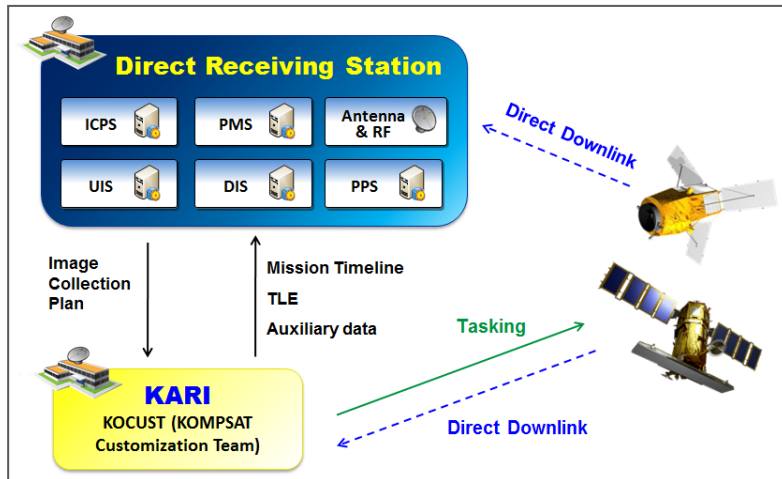


Success Story

DRS

MMSGGS

- DOST (Department of Science and Technology) – ASTI (Advanced Science and Technology Institute), Philippines
- Multi-Mission Satellite Ground Station
- Tum Key system including KOMPSAT-3 & 5 telemetry, Antenna & RF system, Ground System Terminal, Post Processing System (PCI GXL)

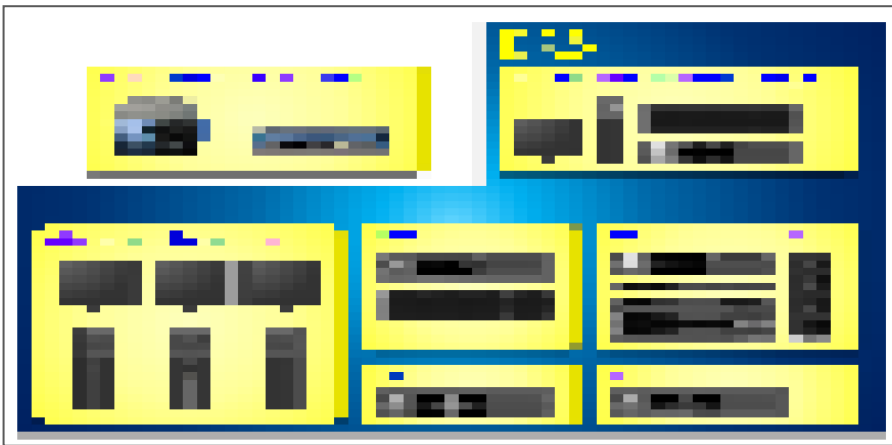
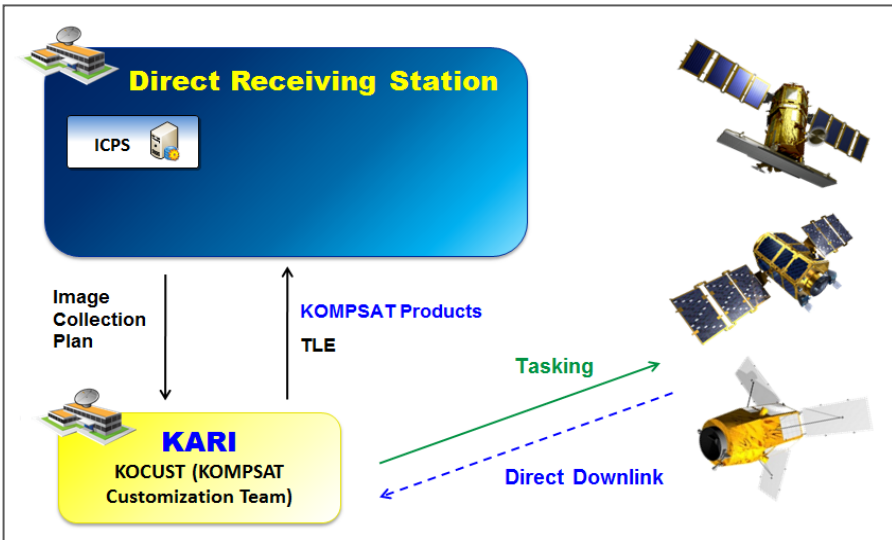


Success Story

D&I



- Asia
- Direct Product Service
- Reconnaissance & etc.,





Thank You