



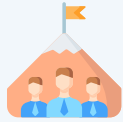
Meeting all Demands of
Earth Observation from
Satellites

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UNITED NATIONS Space Economy: Africa in Focus

30 June 2021



Private space company founded in 2007

- Headquarter in **Beijing**
- Subsidiaries in **Hong Kong, France and Netherlands**
- Business development teams in **Brazil, Dubai, Kazakhstan, Morocco, Singapore, South Africa, UK**



Earth Observation (EO) Business Unit:

+ 100 distributors worldwide market satellite images from **40+ commercial and government EO satellites**



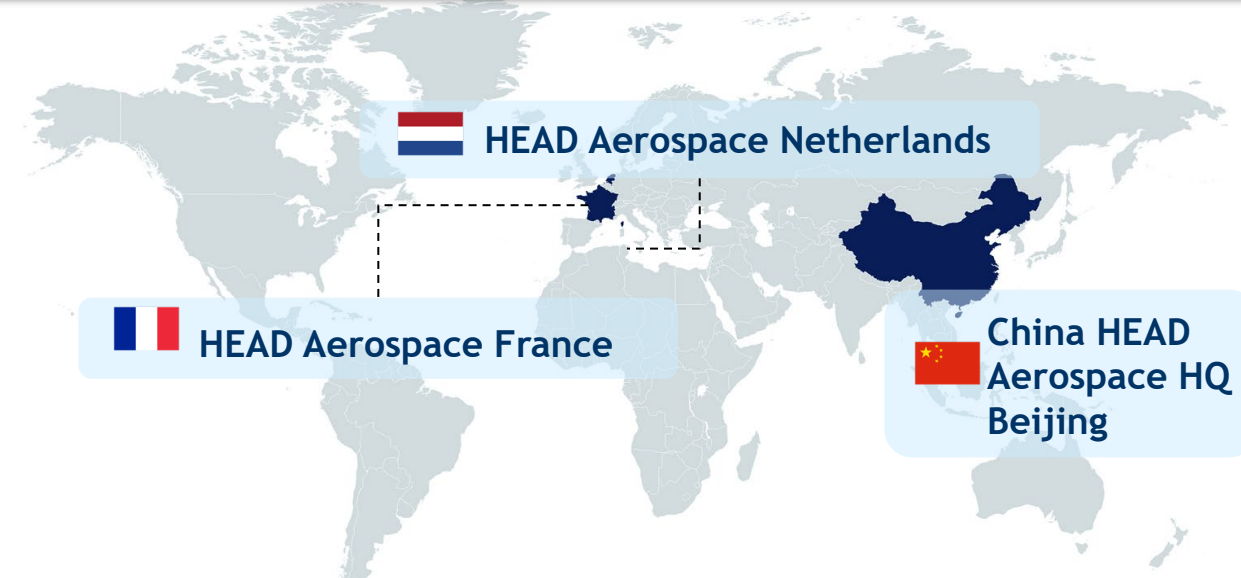
Internet of Things (IoT) Business Unit:

Operating our **own satellite Skywalker constellation** to provide IoT network and solutions through global local distributors; Combined satellite remote sensing & IoT solution



Space Component Engineering Business Unit:

Traditional activities in providing **space component engineering** since 2007 – mainly piloted at HQ



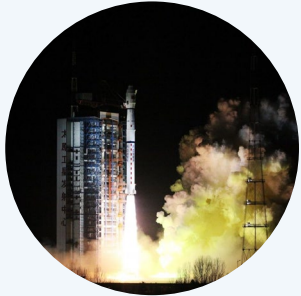
Located in all time zones speaking all major languages working with 100 worldwide distributors/partners

HEAD Experienced Multicultural Commercial & Technical Team

Milestones



2007 – HEAD China founded



Nov 2017 – Launch of HEAD-1 satellite



2018 – HEAD France founded

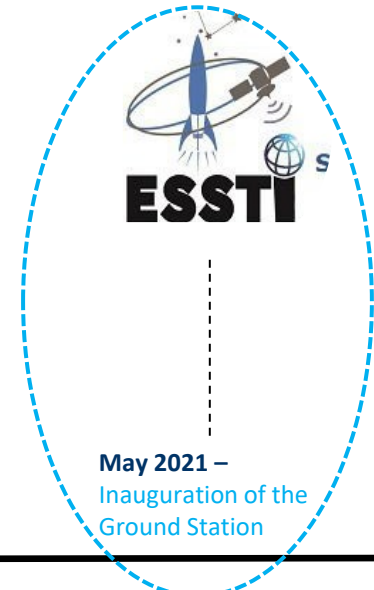
2019 Q1- successfully leveraged 12 million Euro investment



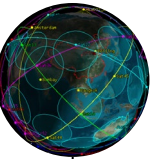
Mar 2019 – Multi-million Euro contract signed with NSO – NL space agency VHR IMAGE PROVISION FOR FULL COUNTRY COVERAGE (4 YEARS)



May 2020 - HEAD 4 satellite launched



May 2021 – Inauguration of the Ground Station



2023 - Full HEAD Skywalker constellation #48sat

2016 – HEAD Netherlands founded



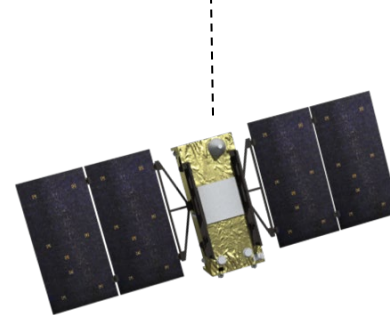
2018 – Strategic partnership with the Chinese satellite operator - commercialization of EO data



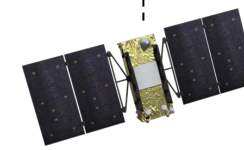
Feb 2019 – Multi-million Euro contract signed with ESSTI – Ethiopia space agency
REMOTE SENSING GROUND RECEIVING STATION & VHR OPTIC/RADAR IMAGE PROVISION



Dec 2019 - HEAD 2a & 2b satellites launched



June 2020 - HEAD 5 satellite launched

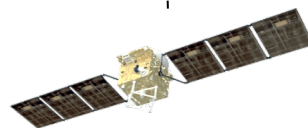


2021 Q1- €35 million investment expected

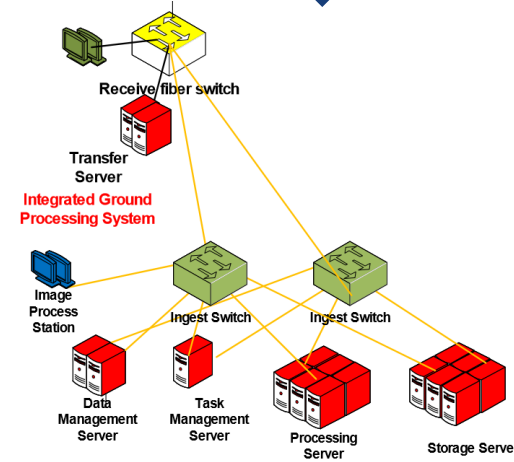
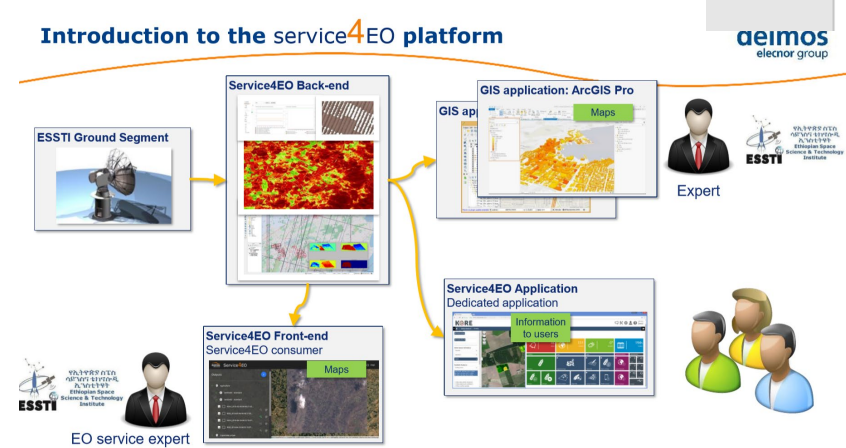
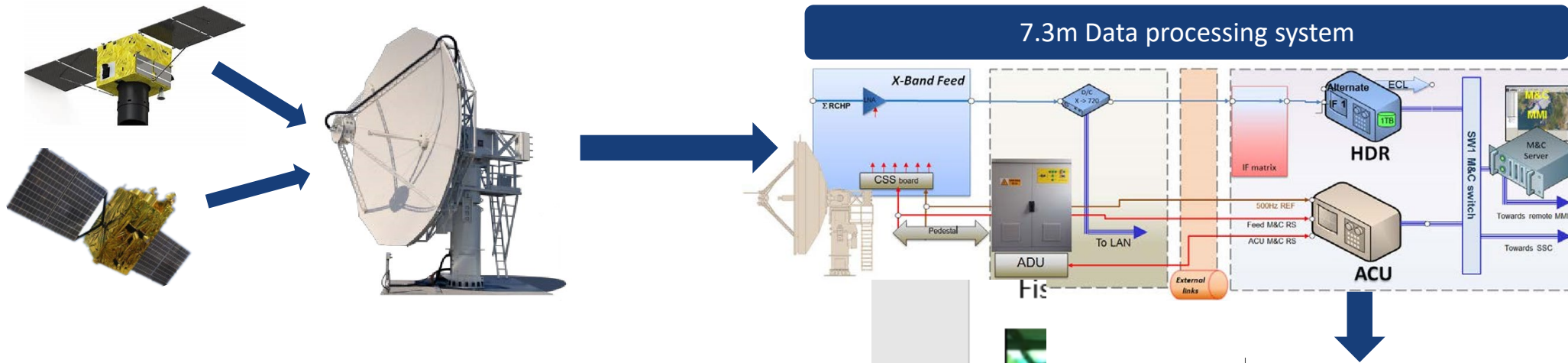
2021 Q1: EO online archive search with 40 satellites



2021 – 16 HEAD satellites to be launched



Ground Station System delivered by HEAD



Remote sensing application software

Multi-satellites data processing system

Ethiopia Ground Station including antenna system, data processing system and data application software delivered to Ethiopia.

First commercial GRS in Sub-Saharan Africa to receive imagery collected by Chinese Remote sensing satellites



Installation of Ethiopian GRS



Inauguration of GRS (Ethiopia) - 15 May 2021



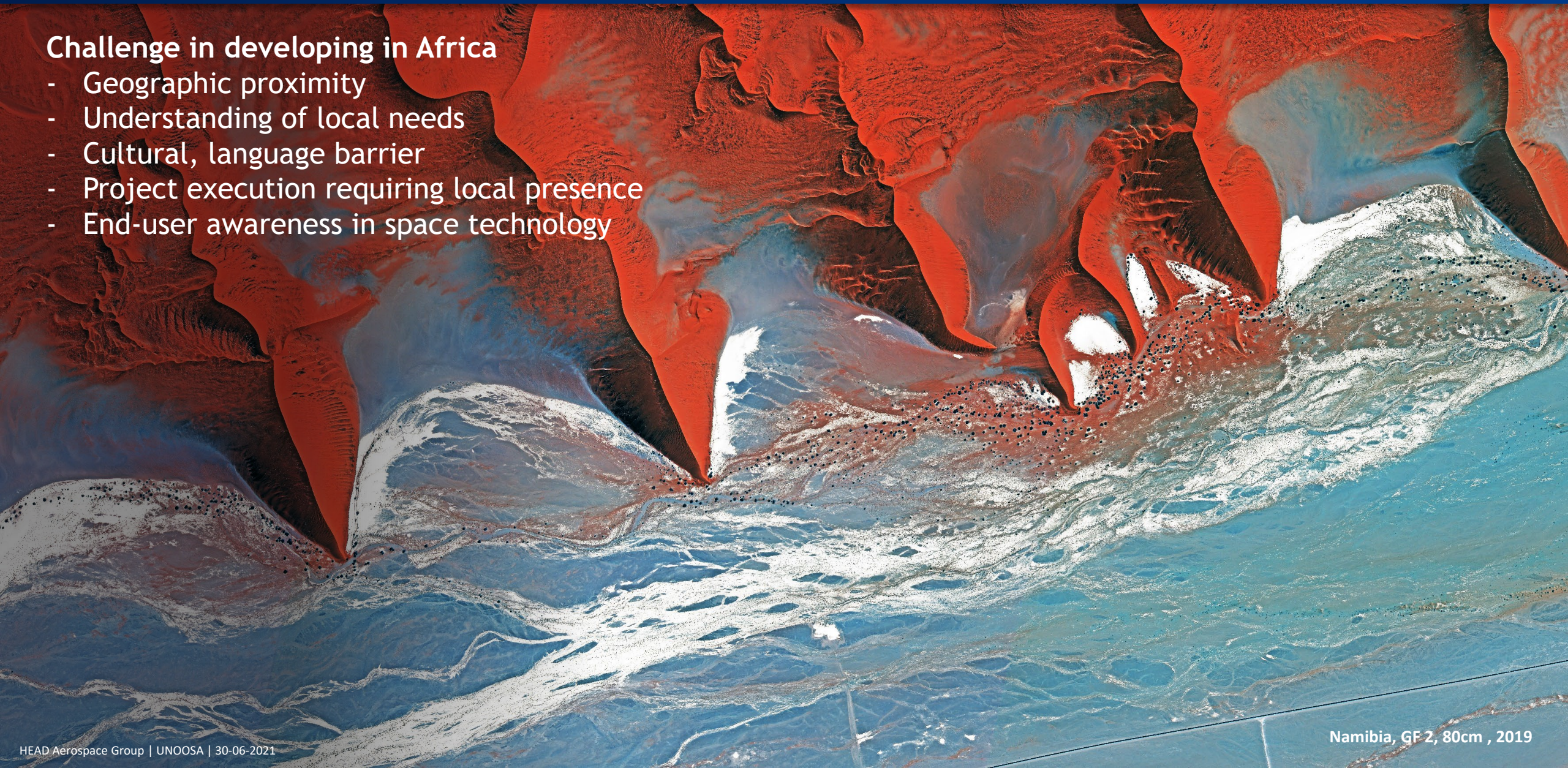
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Ethiopian Space
Science & Technology
Institute



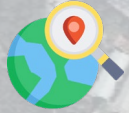
Challenge in developing in Africa

Challenge in developing in Africa

- Geographic proximity
- Understanding of local needs
- Cultural, language barrier
- Project execution requiring local presence
- End-user awareness in space technology



Social Economic Benefits : Ethiopia



Space Technology can be used for government decision making with social economic benefits

- Defense & Security
- Infrastructure monitoring
- Cadastral mapping ...

Social Economic Benefits : Ethiopia



Agriculture and urbanism are directly linked

90% of the world's population growth will occur in third world countries, and 60% will be in cities.

Ethiopia agricultural land

~380,000km²

33 % of the land area of the country

40 % of the GDP

80 % of exports

75 % of the country's workforce.



Yield prediction and **precision farming** are undeniably one of the top priorities of the Ethiopian government.

This circular economy will bring Ethiopia better management of their stocks and better sustainability on their food consumption.



Capacity building in Ethiopia by using space technology

Education / research program in space technology

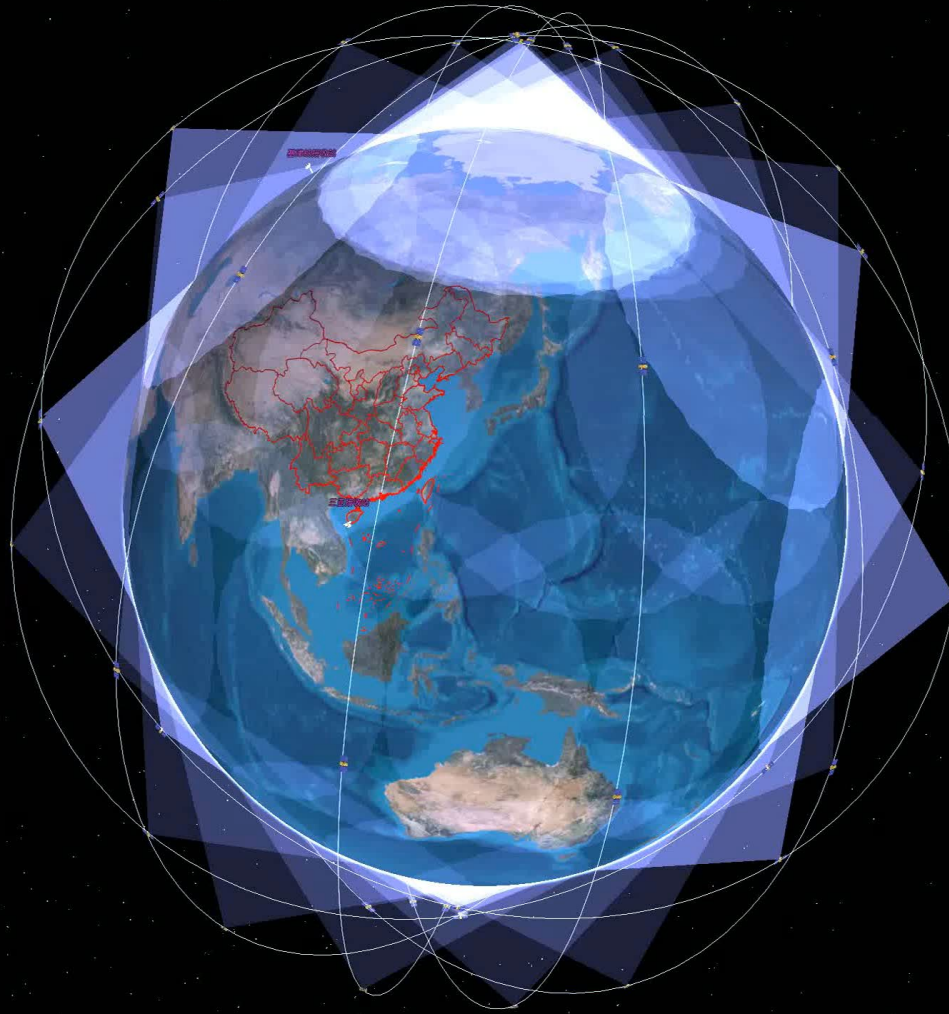
Using space products to maximize productivity



HEAD Skywalker IoT constellation

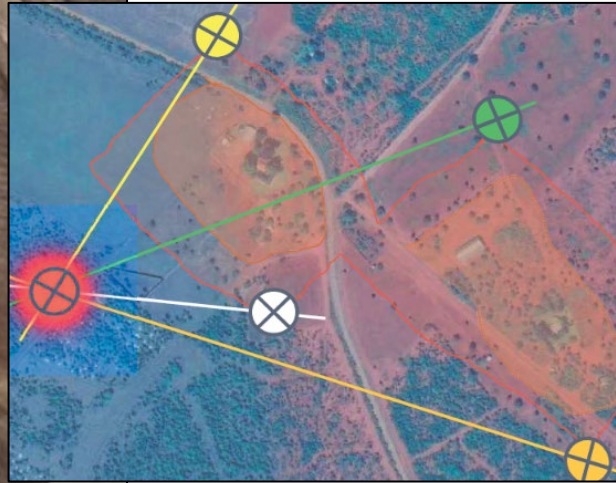
Five HEAD satellites on-orbit

Full constellation: 48 Satellites



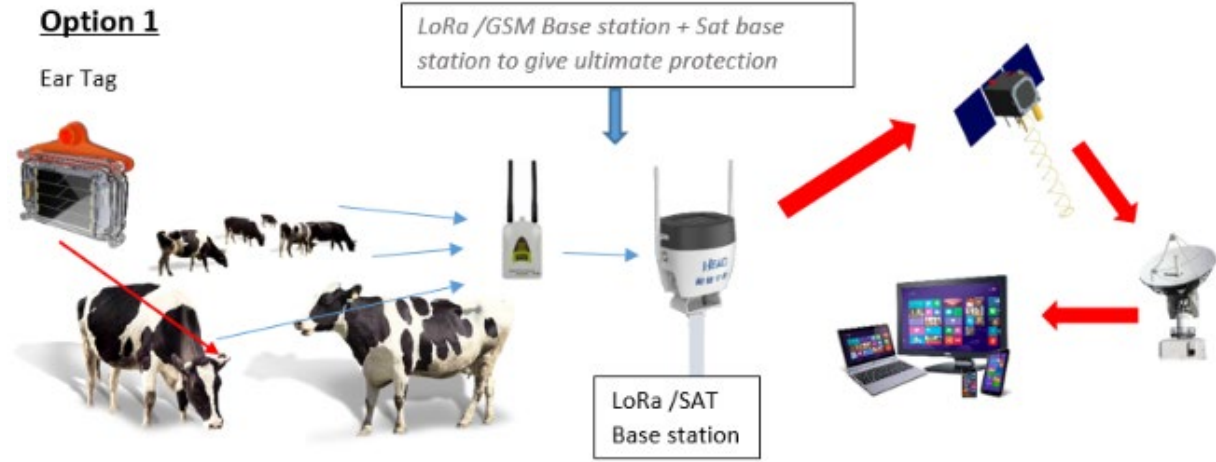
Current pilot projects in Africa
Kenya
South Africa
Uganda

IoT Skywalker constellation – South Africa use case



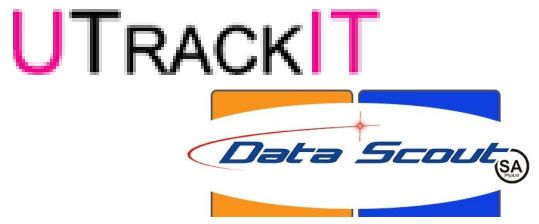
Option 1

Ear Tag



Option 2

Collar around the neck



HEAD Works with two South Africa local companies

IoT Skywalker constellation – South Africa use case

Applications Agriculture

Equipment Monitoring

Skywalker IoT sensors enable farming equipment and vehicles to be monitored and maintained according to production rates, labour effectiveness and failure prediction.

Predictive Analysis

Skywalker's sensors collect data from the farm and provide analysis on parameters such as soil acidity (pH level), moisture, and chemical components (phosphorous). Farmers can use this data to take quick and intelligent decisions to improve operational efficiency.

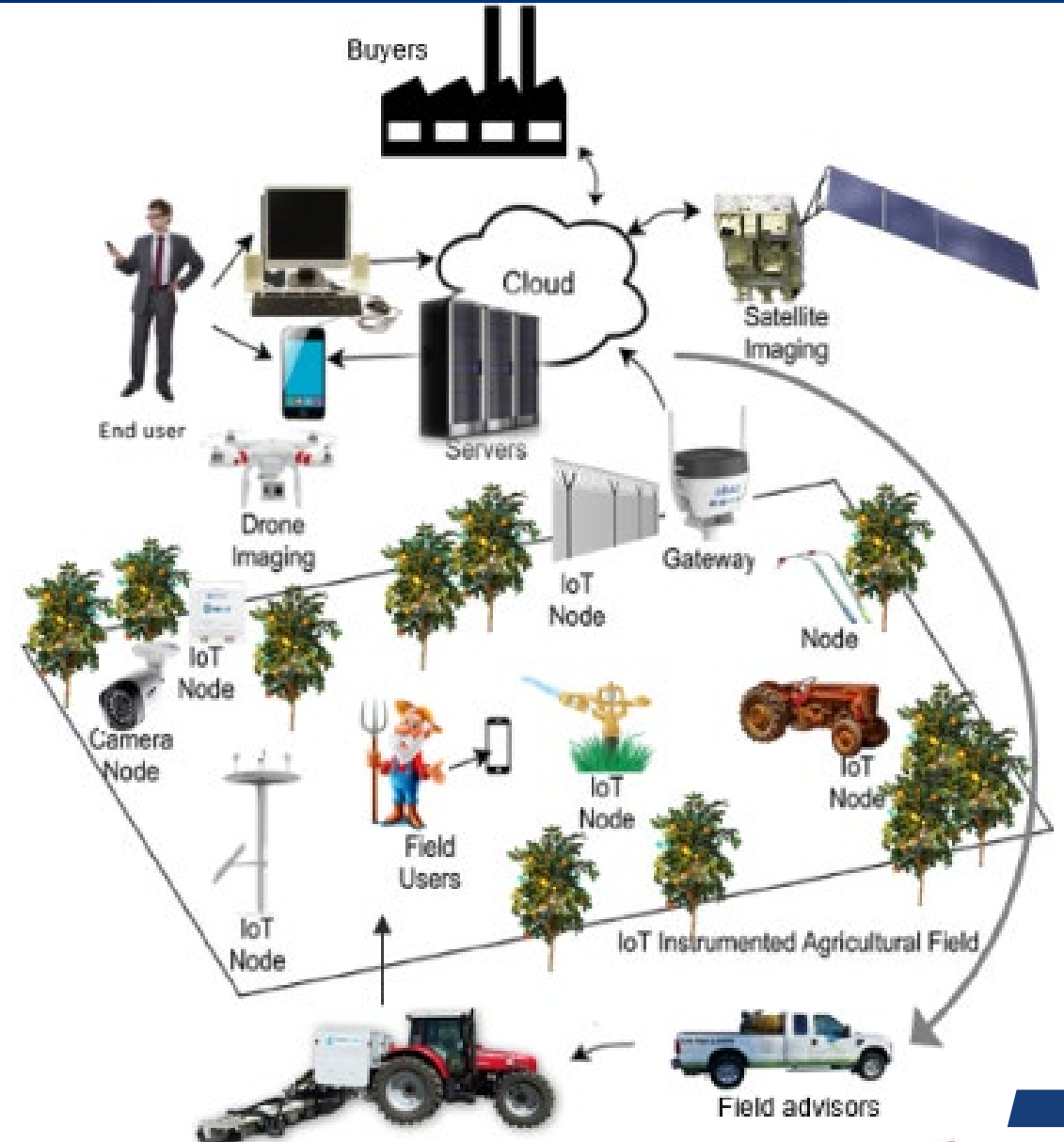
Livestock Tracking and Geofencing*

Skywalker's terminals allow farm owners to collect data regarding the location, well-being, and health of their cattle. This information helps to prevent the spread of disease and also lowers labor costs.

Greenhouse Automation

Skywalker IoT sensors measure the environmental parameters according to the plant requirement inside the greenhouse, the cloud server enables data processing and applies a control action. This design provides cost-effective and optimal solutions for farmers with minimal manual intervention.

Current project under construction and testing



IoT Skywalker constellation – Kenya use case



The biggest threat for fish farming is change in water temperature and Ph levels, water flow

Poor internet, lack of Cellphone coverage is a huge issue. Space-based IoT

Challenge: end-user awareness of benefits by space technology
HEAD works with local fish farming industry & local service providers



Several instruments can now link to the HEAD terminal for sending data

Sustainable development in Africa

Opportunities space technology can bring social economic value

China's the Belt & the Road initiative investment, technology transfer...

Keys successful factors

Collaboration with local governmental stakeholders

Work with local industry/HEAD's 40 local partners in Africa

HEAD's local presence

Pilot project to increase end-user awareness in benefits bringing by space technology



THANK YOU

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