

# living planet symposium

BONN  
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TAKING THE PULSE  
OF OUR PLANET FROM SPACE



## Earth Observation from space - new business paradigms looking to a green, sustainable digital future for the planet

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# The new space race for a sustainable Earth

- ... always regarded as highly strategic, beyond what its economic and industrial dimension, the space technologies represent today the frontier to build a sustainable future and to feed our ambition on planetary exploration path in the coming future
- In the last decade an incredible richness of new sensors and satellites in all the domains allow to globally communicate and to reach remote areas with full connectivity, to observe the earth from space with unprecedented resolution and revisit time, to know exactly where we are on earth through navigation satellite
- Space technology is evolving rapidly with improvements in launch systems, sensors, new architectures and constellations. It make possible to move towards “user driven” from “technology push” paradigms, emphasis to applications and service development. An increasing portion of our everyday life activities relies today on space infrastructures and services as well as challenge for the sustainability of the planet and for a digital society.



# Space Democratization

## Global connectivity



## Global geospatial



## PNT



## Exploration



Converging forces could create new opportunities for low-Earth-orbit constellations.

Constellations will account for 70% of the future demand

Smallsat demand is experiencing an increase **x7**

2021-2030 TRENDS FOR THE SATELLITE INDUSTRY

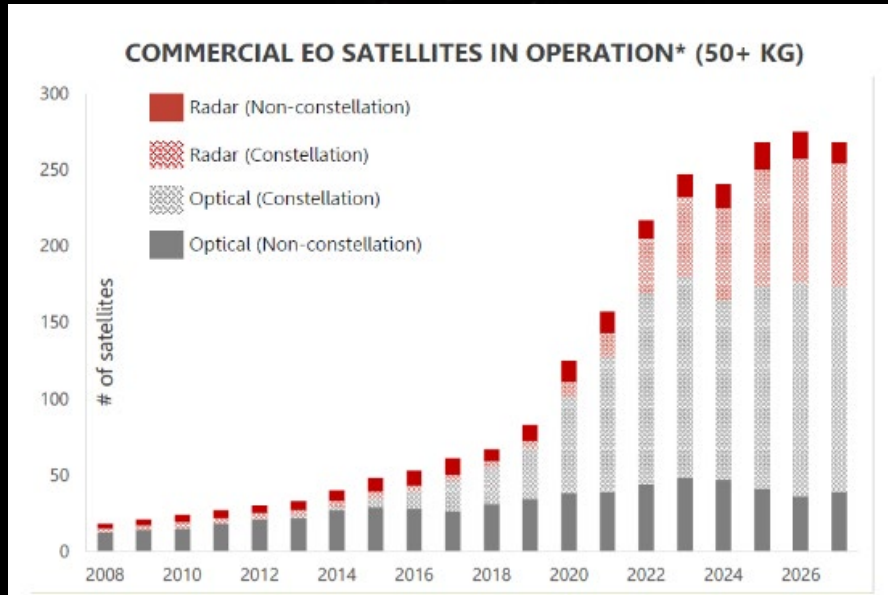
<b>1</b> Technological advances in antennas, ground stations, and other areas	<b>2</b> New business models
<b>3</b> More funding available from tech companies and investors	<b>4</b> Greater demand for high bandwidth and lower latency

Greater opportunities for constellation providers—if they can bring costs down

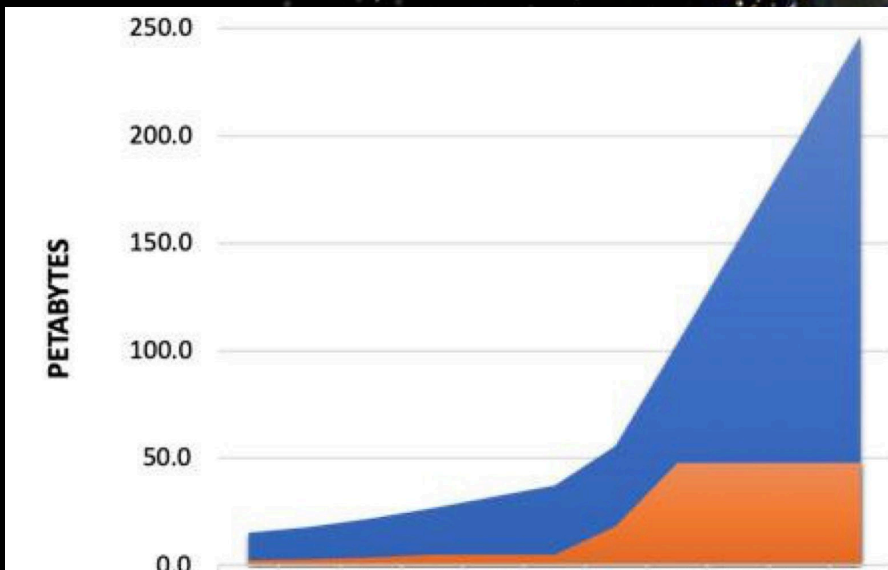


- **We don't have a planet B**
- **We need to address a number of challenges to build up a sustainable Earth using the best of today's technologies including space, to address this fundamental challenge for the humanity and the future generations.**
- **We need to act now**

# Geospatial paradigms and Business Models are fast changing



despite delay in some announced programs the number of EO satellites in orbit and the corresponding amount of generated data grows fast ....



use of EO data is exponentially growing and large potential through analytics exists to feed new information driven services

# FROM SPACE TO DIGITAL INFORMATION ERA



- amount of data new systems will generate, and the related archives, will give a unique capability to monitor changes on Earth over time and to study the effectiveness of remedies to fight global challenges
- The exponentially increased capability to process space big data is fundamental to extract whatever information the user and scientific communities require.
- Space and Digital technologies are the fuel of the powerful transformation digital engine in geospatial sector.
- Advanced algorithms and Cloud-based large computational capabilities represent a real game changer. Cloud technology at the same is essential to promptly distributed data and the make possible the best exploitation of digital base application platforms.



# GEO SPATIAL BUSINESS MODELS ARE FAST CHANGING

## EO Space Big Data are changing the game

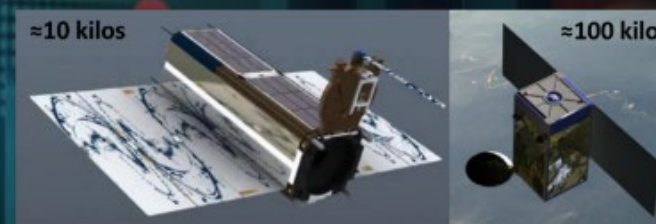
- High temporal resolution to complement high and very high spatial resolution sensors
- Federation of space assets through smart multi missions tasking platforms

EO data definitive entered in the wider Big Data Analytics & IoT game with a quick convergence in the data analytics business to feed information driven user communities

Advanced algorithms, ML/DL/AI techniques are essential to address the Information driven market asking for timely delivery of reports/insights as well as to feed scientific community demands



emerging constellations (low end sensors/many sats)



daily monitor  
global coverage



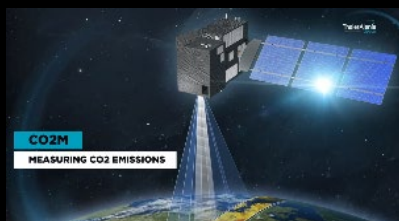
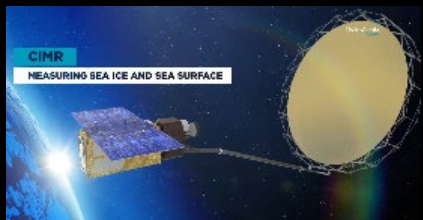
discover  
trends



easy access  
deliver insight & reports



- Space is the best place from where we can learn the most about the status of our planet
- The EU-funded Copernicus program is the largest environmental monitoring program in the world, complementary sensors generating specific open and free data with an incredible impact already in place and in perspective in terms of stimulus to scientific and private organizations research, concept of new operational services
- Thanks to this evolution we are much better placed to understand the complexities of our planet on its global scale. A unique capability to cover EO across space and time, globally and gradually with much more data revisit and lower latency.





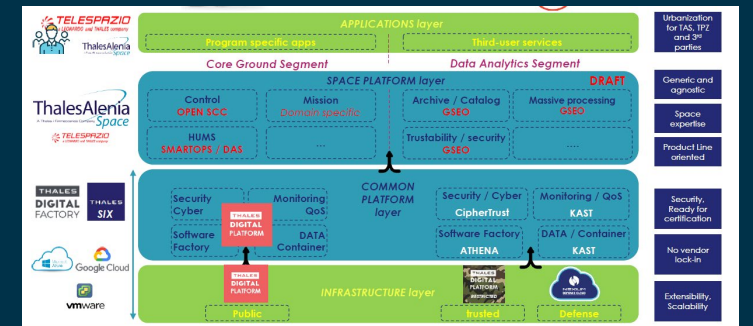
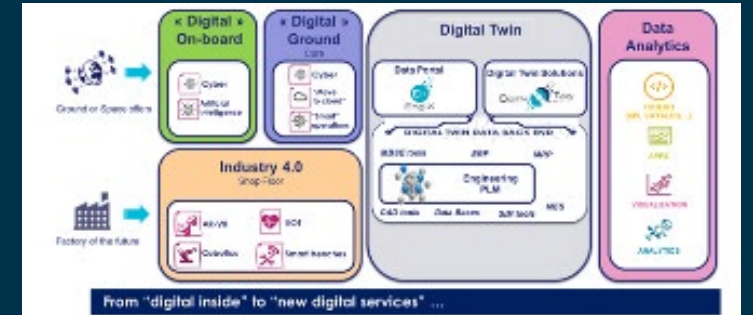
# Earth Observation Business Model is Changing

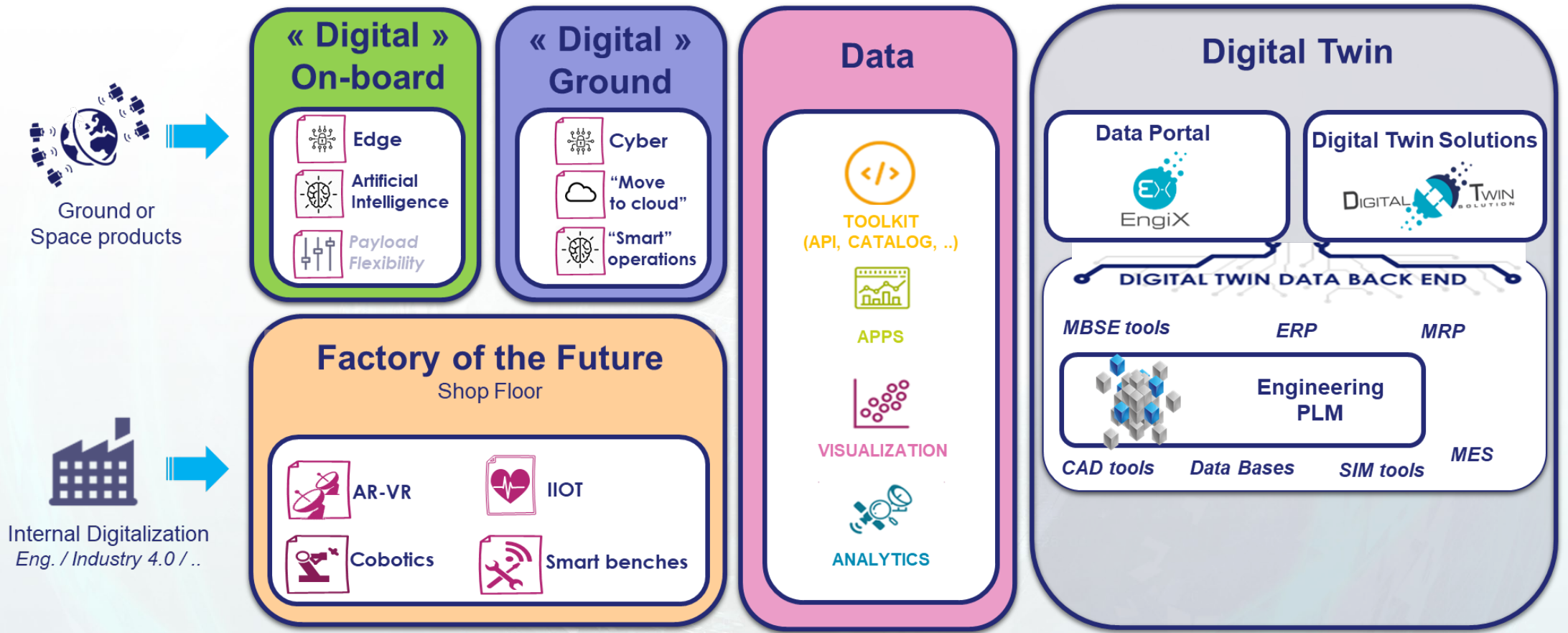


- Cloud-based secured platform infrastructure
- Big data for processing / advanced analytics functions to support information driven products
- AI & deep learning for predictive patterns request
- Open API to scale platform reach and feed platform economy

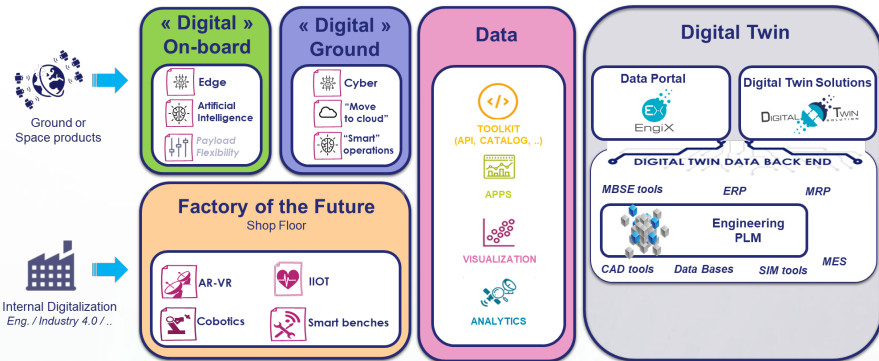
# FROM SPACE TO DIGITAL TWIN EARTH

- The potential of analytics to derive useful information for existing and new vertical markets will open plenty of new opportunities in the coming years.
- We need migration of portfolio of solutions to information-driven solutions and Big Data analytics, integration of complementary space assets.
- federated cloud-based modelling and simulation digital platform, providing access to data, advanced computing infrastructure, AI driven algorithms and analytics.
- It will integrate digital twins giving users access to thematic information, services, models, scenarios, simulations, forecasts, and visualisations.

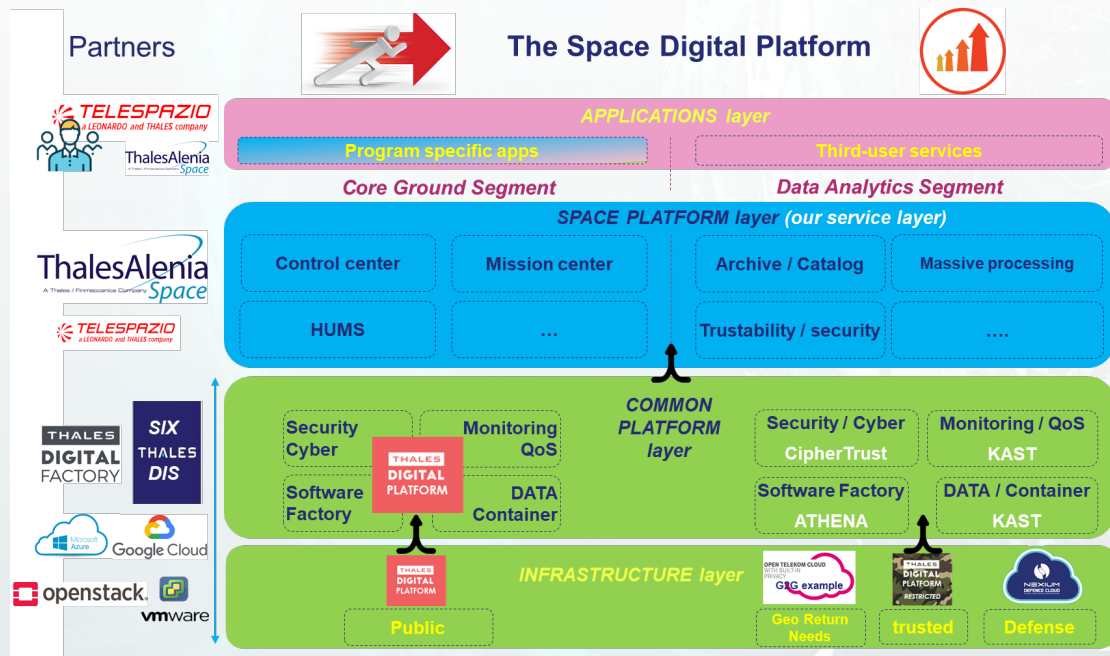




From "digital inside" to "new digital services" ...



- Accelerate transition to “Infrastructure as-a-Service” business model
- Enable Digital “on-board” with Edge capabilities
- “Move-to-Cloud” for a full digital Ground
- Strong partnerships to move faster and to leverage “best in class” digital assets
- Develop as part of the Space Alliance multi-domains Digital Platforms to base our end-to-end offers on common, competitive and differentiator assets from space to service delivery





# SPACE FOR LIFE

WE BELIEVE IN SPACE AS HUMANKIND'S  
NEW HORIZON TO BUILD A BETTER,  
SUSTAINABLE LIFE ON EARTH

**We believe in Space as humankind's new horizon to build a better, sustainable Life on Earth.**

**In Space, governments, institutions and companies rely on us to design, operate and deliver satellite-based systems that help them position and connect anyone or anything, everywhere, to observe our planet and to optimize the use of the resources offered by the Earth.**