TRANSFORMATIVE TECHNOLOGIES for SPACE

Session Chair: Bianca Hoersch, ESA Chief Digital Officer

Speakers:
Alison Lowndes, NVIDIA
Heike Riel, IBM IoT
Damian Borth, University St Gallen
Claire Melamed, Data4SDG
Marino Fragnito, Arianespace
Wind of change

Technological advances

Data dependent global economy

Space as transformative for humanity

Increased private sector investment
Key Technologies

Digital Transformation

Cybersecurity-related Technologies

Quantum technologies

Advanced optics & detector technologies

In-orbit robotics

Artificial intelligence on-board & on-ground

In-orbit manufacturing and assembly
TRANSFORMATIVE TECHNOLOGIES for SPACE
Lead not follow.
Seed Questions

1. Where do you expect the most disruptive technology based changes in ESA and the space sector in Europe?

2. Where do you see ESA to support you in future?

   - Data?
   - Technology Development - TRL advance?
   - Seed funding?
   - Partner?
   - Provider of Space safety&Security?
Which technology will be THE one with the most impact in coming 5 years for Space, seen from your domain? And why?

• ML/AI
• Quantum computing/encryption
• Blockchain
• Autonomous things
• Augmented analytics
• Additive manufacturing
• Nanomaterials
• Digital Engineering – Digital twins
• Others?
Gartner predicts that in 2021, AI augmentation will generate $2.9 trillion in business value and recover 6.2 billion hours of worker productivity.

- How will our traditional Space jobs change?
- What is your recommendation for the young generation to prepare for the job market?
Gartner predictions indicates that in 2020 there will be more citizen data scientists that professional data scientists and growing.

- How can an organisation like ESA contribute in practical ways to help and to leverage those citizen data scientists?
- How do your companies involve the citizen data scientists?
- How shall we combine AI and people in 2030?
Seed Questions

Look beyond Industry 4.0/Space4.0 era:

What will be the key components of Space5.0?