



Trans-continuum

Barcelona

3 December 2019



Discussion items

- 175 ZB in 2025 (src: IDC)
 - $175 \times 10^6 \text{ PB} \times 20 \times 10^3 \text{ € P/Y} \rightarrow 3.5 \times 10^{12} \text{ €}$ (~long-term storage)
 - HPC market $45 \times 10^9 \text{ €}$
- Resource limitation and environmental concerns
 - Sustainable HPC delivery
- Cyber-security is a roadblock for deploying the “continuum”
- Monitoring of the “continuum”
- Meta-data
- Available compute resources for AI & HPC

Sustainable HPC delivery

- Resilient systems
 - Software / hardware
- Reconfigurable
 - Adapt overtime
- Energy efficiency
 - AI learning
- Modular
 - Reusable
 - Update / maintenance by parts

Cyber-security

- Ultra-large systems
 - Holistic cyber-security approach
- Trusted communications
- Authentication / tasks insulation, etc.
- Privacy

Monitoring the continuum

- Understand what is happening with complex workflows
- Detect cyber attacks

Meta-data

- Need to be shared all over the continuum
 - Provenance, etc.
- ...

Available resources for AI & HPC

- AI training runs needs growth
 - from Marc D.: needs double every 3.5 month
 - Shortage of resources may become a very strong bottleneck
 - Compute
 - Storage & archiving
- ➔ New algorithms and technologies to decrease the resources used are needed