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## EGI Strategy towards AI

### *How AI contributes to the Digital Transformation in Research*

4.11.2020

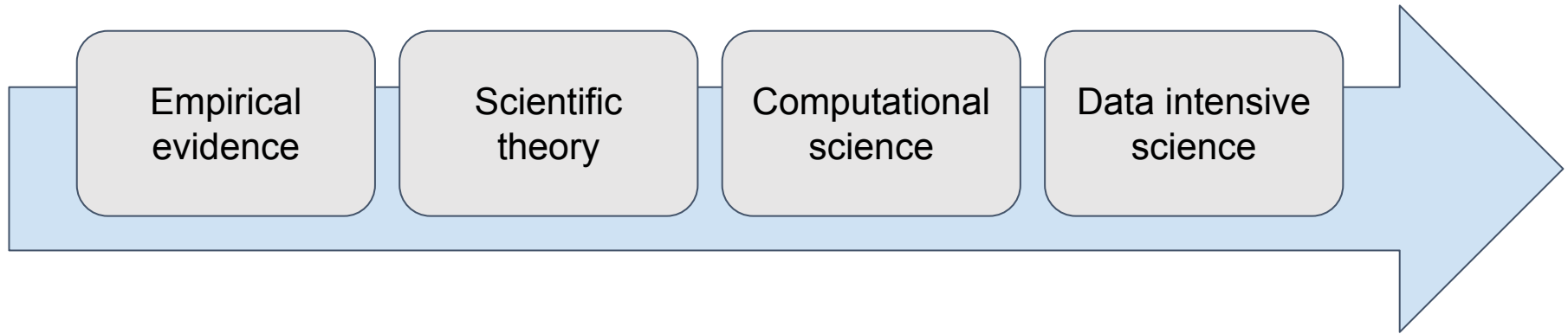
*Ville Tenhunen, EGI Foundation*



**The work of the EGI Foundation**  
is partly funded by the European Commission  
under H2020 Framework Programme

# Digital transformation in science

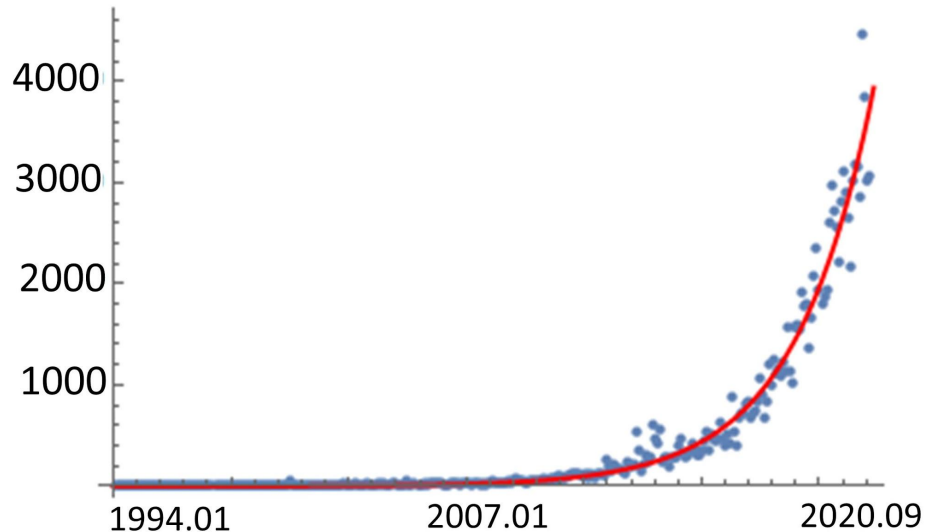
*Four paradigms of science*



*'I wanted to point out that almost everything about science is changing because of the impact of information technology. Experimental, theoretical, and computational science are all being affected by the data deluge, and a fourth, "data-intensive" science paradigm is emerging.'*

(Turing Award winner Jim Gray in Tony Hey et. al (ed.); The Fourth Paradigm: Data-intensive Scientific Discovery, 2009)

## ML+AI arXiv papers per month

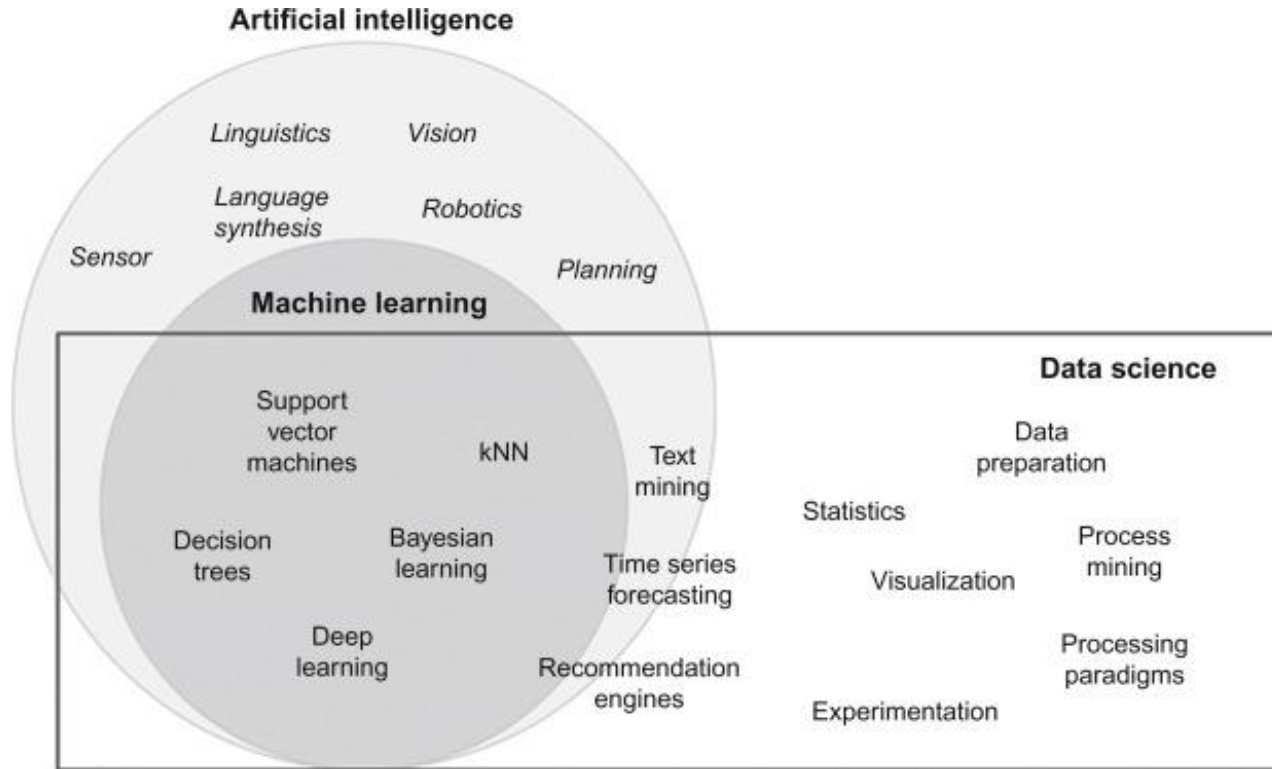


<https://twitter.com/MarioKrenn6240/status/1314622995139264517?s=20>

“Neural Information Processing Systems Conference (7th - 12th December 2020) received 12115 abstract submissions, which resulted in 9467 full paper submissions. They have accepted exactly 1900 papers (acceptance rate was about 20 %).”

<https://medium.com/@NeurIPSCConf/what-we-learned-from-neurips-2020-reviewing-process-e24549eea38f>

# It is all about data and science



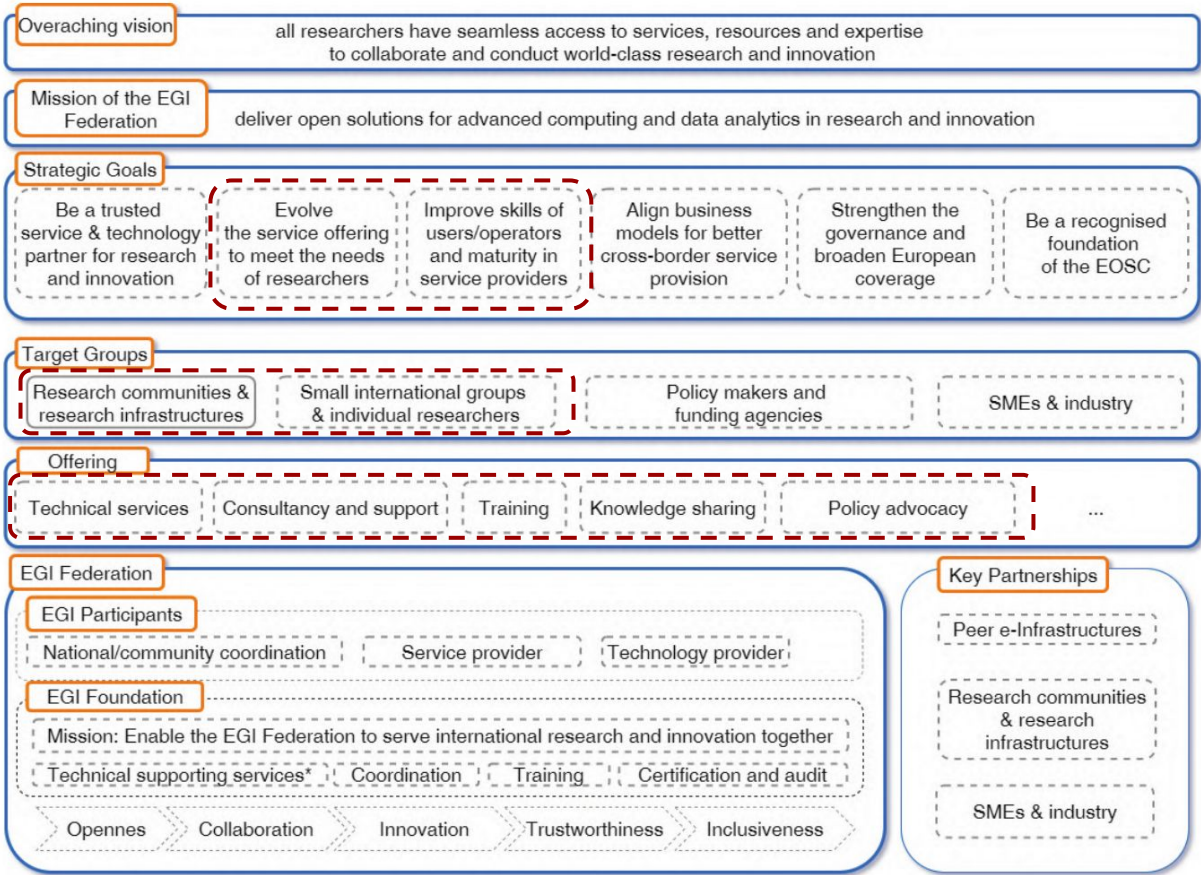
## **Vision:**

The EGI Federation believes that all researchers should have seamless access to **services, resources and expertise** to collaborate and conduct world-class research and innovation.

## **Mission:**

The federation's mission is to deliver open solutions for **advanced computing and data analytics in research and innovation**.

# Strategy at a glance



- **Provide adequate resources** to deploy ML/AI algorithms and platforms (storage, computing, CPU, GPGPU etc.)
- **Offer relevant datasets** as a service for ML/AI platforms and algorithms
- **Operate relevant ML/AI platform** for researchers
- Offer a wide **library of ML/AI analytics** for researchers (models, algorithms)
- **AI/ML Competence Center** and training

## Compute



### Cloud Compute

Run virtual machines on demand with complete control over computing resources



### Cloud Container Compute

Run Docker containers in a lightweight virtualised environment



### High-Throughput Compute

Execute thousands of computational tasks to analyse large datasets



### Workload Manager

Manage computing workloads in an efficient way

## Storage and Data



### Online Storage

Store, share and access your files and their metadata on a global scale



### Archive Storage

Back-up your data for the long term and future use in a secure environment



### Data Transfer

Transfer large sets of data from one place to another

## Training



### FitSM Training

Learn how to manage IT services with a pragmatic and lightweight standard



### ISO 27001 Training

Learn how to manage and secure information assets



### Training Infrastructure

Dedicated computing and storage for training and education

## Applications



### Applications on Demand

Use online applications for your data & compute intensive research



### Notebooks

Create interactive documents with live code, visualisations and text

## Security



### Check-in

Login with your own credentials

# Vote on the prioritisation of following actions

*Which direction should EGI go more aggressively?*

URL: <https://www.menti.com/zyyen2ezib> or <https://menti.com>, code **18 65 66 0**

Please, prioritise following options:

1. Offering a wide library of ML/AI analytics for researchers (datasets, models, algorithms)
2. Providing adequate resources to deploy ML/AI algorithms and platforms (storage, computing, CPU, GPGPU etc.)
3. Supporting the development of new ML/AI based services for researchers (“ready-to-use” ML/AI platforms, technical consultancy & training)
4. Facilitate the uptake of ML/AI services within the federation (collaborating with AI initiatives, develop ML/AI expertise within the federation)
5. Create a team of experts (a Competence Centre) on AI/ML in EGI
6. Onboarding industry/SME services within the federation
7. Something else



# Projects using ML/AI where the EGI Foundation is involved

## AI4PublicPolicy

The platform will provide policy development and management functionalities based on AI, ML, DL, NLP and chatbots.

## Big Data for Next generation energy\*

Modular big data analytics & AI technologies to improve decision making

## DIGITbrain

Concept of digital twin to implement the smart business model and Manufacturing as a Service

## EGI-ACE

Collaboration in data- and compute-intensive research across borders; integration the DEEPaaS training facility in the EGI infrastructure

## EOSC Future

Integrate AI/ML algorithms in the EOSC Portal to make easier for scientists finding the best services

## EUHubs4Data

An instrument for data-driven cross-border experimentation and innovation

## SoBigData++

Multi-disciplinary research infrastructure for big social data analytics

## StairwAI

The Artificial Intelligence on-demand platform

\*) More about BD4NRG in the session “AI and Machine Learning experiences” today 11:15

- AI/ML is becoming day after day more important
- Supporting the uptaking of the AI/ML in the researcher world is a natural action for EGI according to its strategy
- Plan to extended the EGI service offer accordingly are starting to be drafted
  - we want to involve NGIs & researchers
  - a Technology Coordination Board WG on AI/ML will be setup in 2021
- EGI is already involved in a series of AI/ML projects that would facilitate the uptake and the support of AI/ML within the EGI infrastructure



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## Thank you!

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