The Narcissist and Artificial Intelligence: A Dance Forever?

Digital Innovation Hub
Blockchain for Trusted Data Ecosystems

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.. and a Very Brief Overview of our Lab's projects

Humans and the Human Centred Internet

Sensations – that is, the context

Emotions – that is, our likes and dislikes

Ratio – that is, capability for exploring positive and negative hypotheses

Feelings based on the above – our decision-making capability based on most complex problems we face

The Narcissist

Mythology

Sigmund Freud & Carl Yung

Salvador Dalí (figure right)

Emotions fully suppressed

Idealized images projected on real subjects

Attempt to adapt a subject based on an idealized image of them

Inability to integrate the positives and negatives

The Kurt Gödel's theorems

The two theorems demonstrate that:

- no open axiomatic system can be consistent, that is, open axiomatic systems necessarily allow for contradictions
- nor a closed axiomatic system can be complete, that is, closed axiomatic systems cannot contain all the truth

Consequently, systems based on rationality have capacity to influence our emotions and feelings, that is, our likes and dislikes.

A Debate: Who knows things? The brain or the heart?

Our brain has the capacity to logically explore potentially conflicting hypothesis:

- Many people disregard “obviously rational choices”, and they are right to do so!

Our emotions and feelings have the capacity of liking or disliking:

- For many people, their hearts know *everything*

Expecting users to make only rational decisions may be too hard push for humanity!

The Touring Machine and the Entscheidungsproblem

Deterministic ~ P – humans accept the assistance of computers

Non-deterministic ~ NP ~ e.g. Artificial Intelligence – this usually involves reduction of complexity disregarding the human emotions and feelings, our likes and dislikes

➔Allow humans to explore computer results as options, not as computer generated facts.

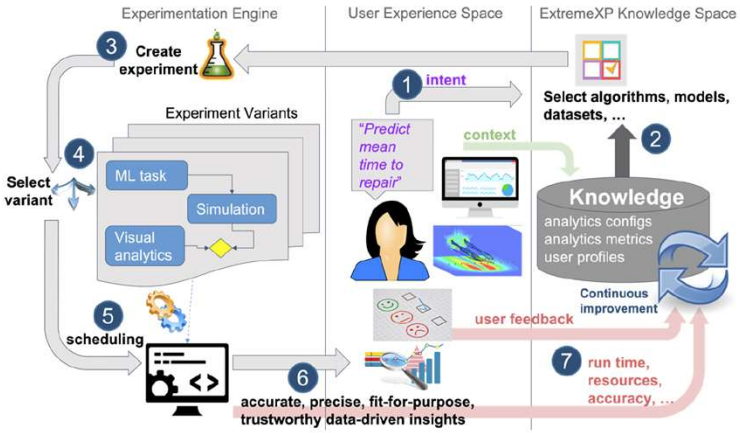
➔Important to realise: most human problems cannot be solved by computers

“The real problem of humanity is the following: We have Paleolithic emotions, medieval institutions and godlike technology. And it is terrifically dangerous, and it is now approaching a point of crisis overall.”

— Edward O. Wilson

->Consider our human nature when designing Digital Twins.

ExtremeXP (2023-2025)



- Meta-model of Complex Analytic Workflows (CAWs)
- Human-in-the-loop, fit-for-purpose
- Stochastic models (Markov Decision Process, Bayesian Networks etc.) for accuracy and precision
- Blockchain for access-control and knowledge management
- 20 partners, 10 M+ EUR funding

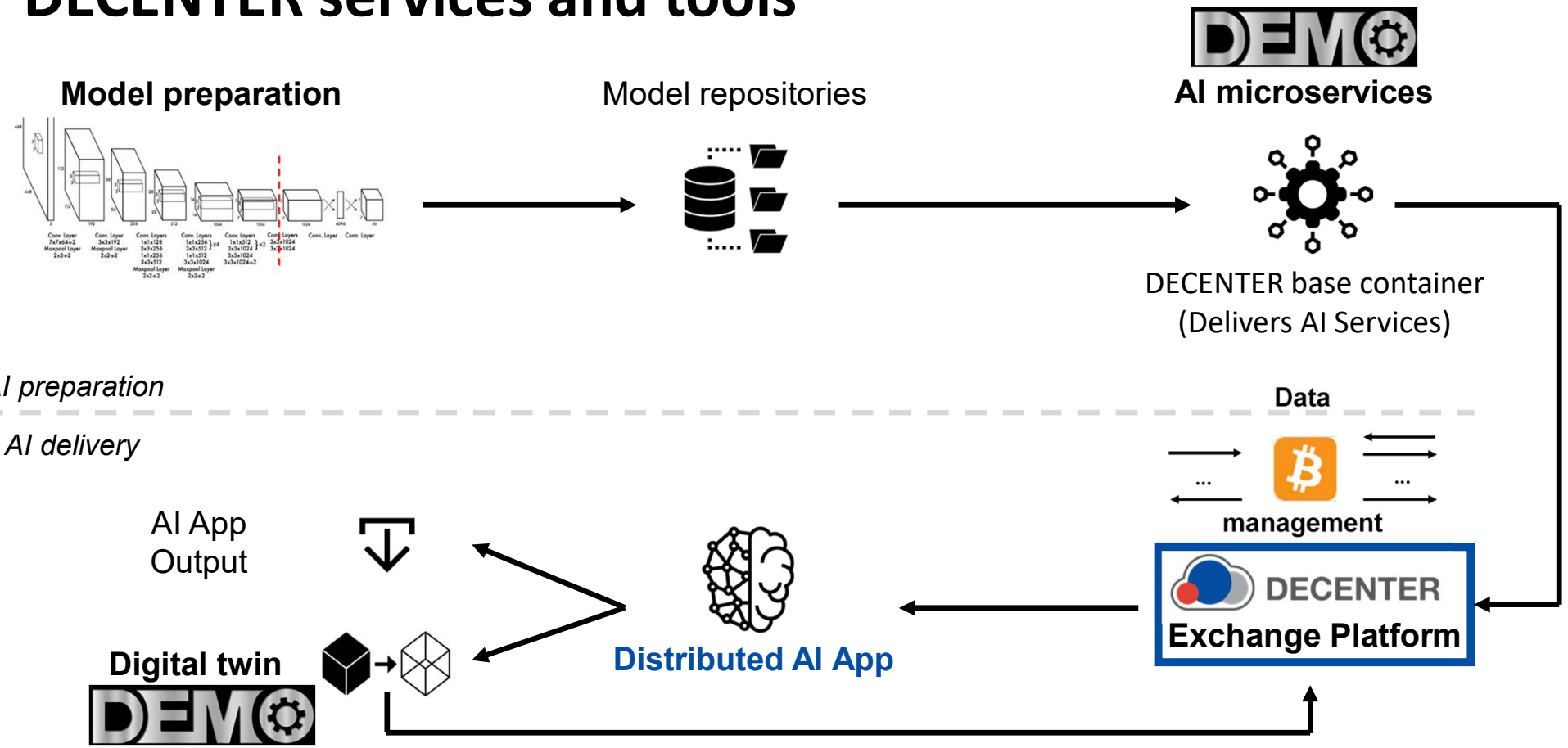
- Closed world assumption, multiple agents with different context may work on one CAW
- CAWs are modelled as a sequence of complex decision-making steps – variability points
- CAWs start from zero to full specification
- CAWs capture the context

The DECENTER project

- **Fog Computing Platform** to orchestrate **Cloud-to-Edge** resources
  - QoS-aware orchestration of resources and provisioning of microservices for AI applications based on their specific requirements
- **Blockchain**-based framework fostering cross-border dynamic binding of resources
  - Blockchain-based offer and demand management of resources
- Smarter **Internet of Things fabric, Digital Twins**
  - Deluge data coming from multiple data sources including devices with built-in AI algorithms for feature extraction, data filtering and reducing impact on the use of the network
- Hybrid decentralized **Artificial Intelligence** models exploiting DECENTER's novel infrastructure
  - Decentralized AI models that become possible with a more reactive and flexible resources infrastructure, unlocking a huge potential for innovative applications
- Cca. 12 partners, cca 4 M+ EUR funding

DECENTER

DECENTER services and tools



ONTOCHAIN

Marries the Semantic Web & Blockchain

30 technologies developed

6 M EUR funding S&T co-ordination

Clickable map with technology demonstrations

TRUSTCHAIN (2023-2025)

Enable human-centric online data governance for all stakeholders

Ensure individuals self-sovereign identity and virtual identity management

Ensure secure and resilient data pathways for privacy

Promote online trust, democratic organization, and citizen empowerment

Promote decentralized data sharing and online services with open-source models

Ensure green and energy-efficient

12 M EUR funding
Over 70 technology development projects
S&T co-ordination

- Digital identity: SSI & eIDAS2
- Human-rights
- Sustainability
- Energy-efficiency
- Interledger
- Welcome to our 3rd Open Call!

BUILDCHAIN (2023-2025)

Life cycle analysis and carbon footprint

Managing large populations of buildings

AI-based Structural Health Monitoring (SHM)

Precipitation monitoring for flood control

Optimized 'self-attentive' sensing

Post-catastrophic interventions

Earthquake and climate-proofing with digital twinning

SHM for cultural heritage buildings

Bayesian updating for design processes

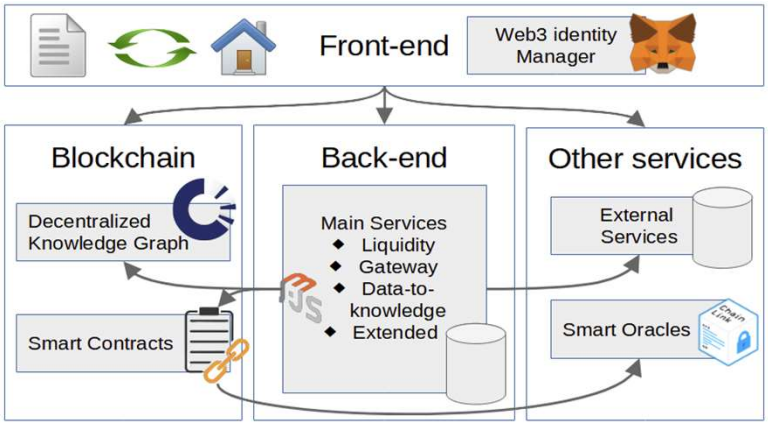
Construction economics

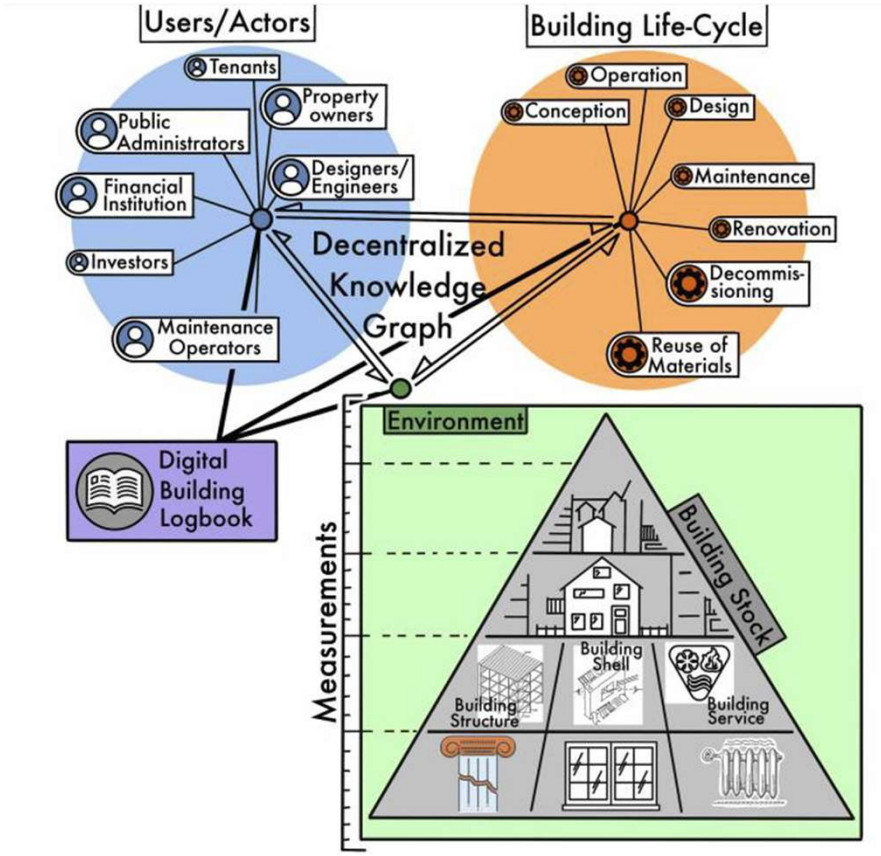
Deep renovation workflow management

Improving energy efficiency in buildings

BUILDCHAIN (2023-2025)

- 5 M EUR funding
- Decentralized Knowledge Graphs
- Tokenomics principles
- Digital Building Logbook





Autopoietic Cognitive Edge-Cloud Services (2023-2025)

The term autopoiesis (self-creation) is a neologism coined in 1972 by Varela and Maturana, Chilean cellular biologists and systems theorists, to describe the capacity of living cells to reproduce and organise themselves.

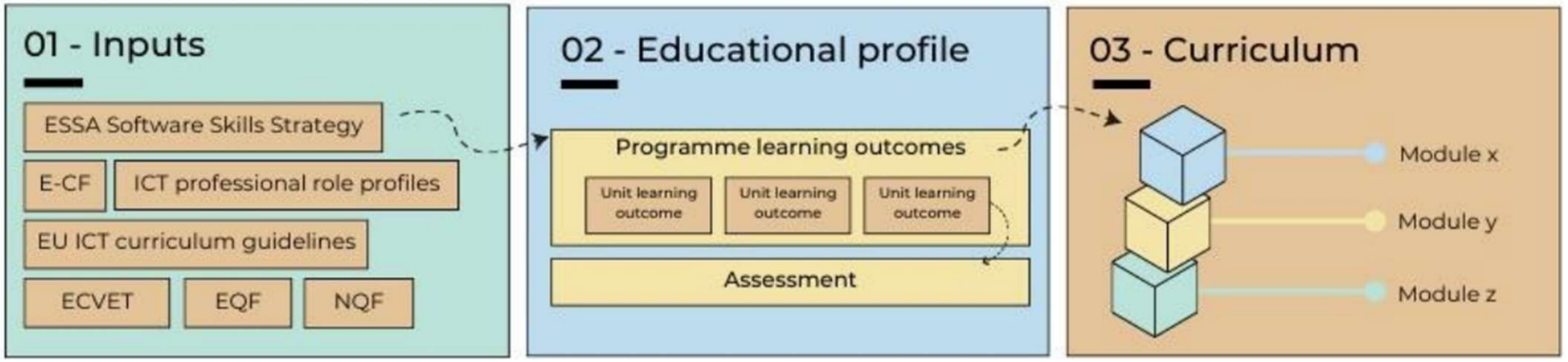
Autopoietic Cognitive Edge-Cloud Servic (2023-2025)

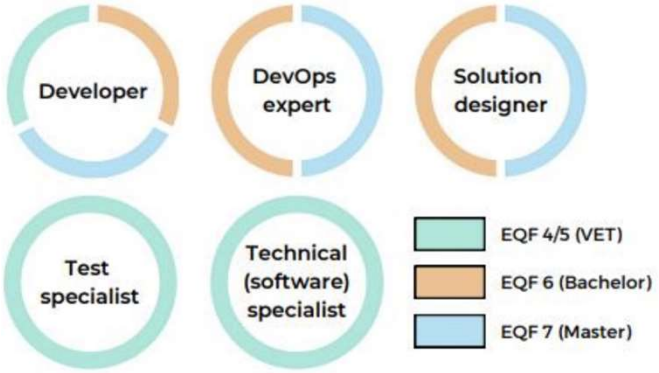
ACES

- Autopoietic edge-cloud data and application service platform
- Management agents and tools for awareness; AI and M-L enabled tools to handle workload, service and resource management, data and policy management, telemetry and monitoring
- Autopoietic agents for service and throughput stability in challenging service scenarios in terms of workload placement, service and resource management, data and policy handling
- Swarm technology-based solutions for orchestration of resources in the edge
- Edge-wide workload placement and optimization service
- App store for ACES AI models classification, storage, sharing and rating

European Software Skills Alliance

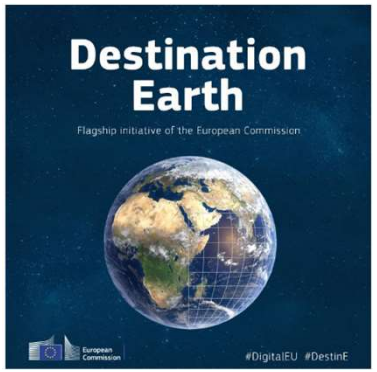
essa. European Software Skills Alliance





- Microcredentials for microcompetences

Indian Charter on Planet Earth



- DestinE – a flagship initiative of the European Commission
- Technological revolutions
- Philosophical concepts of indigenous populations
- Chief Seattle Speech

- Restore our link with Planet Earth!

The Field Museum in Chicago

https://suquamish.nsn.us/home/about-us/chief-seattle-speech/

European Blockchain Services Infrastructure

- *EBSI-VECTOR* project – over 60 partners from across Europe
- *Microcredentials for Education, social security, digital legal entities*
- Based on EU regulations, interoperability solutions for eIADAS2, the European digital wallet open source implementation
- The self-sovereign digital identity
- Building an ecosystem of stakeholders

University *of Ljubljana*
Faculty *of Computer and Information Science*

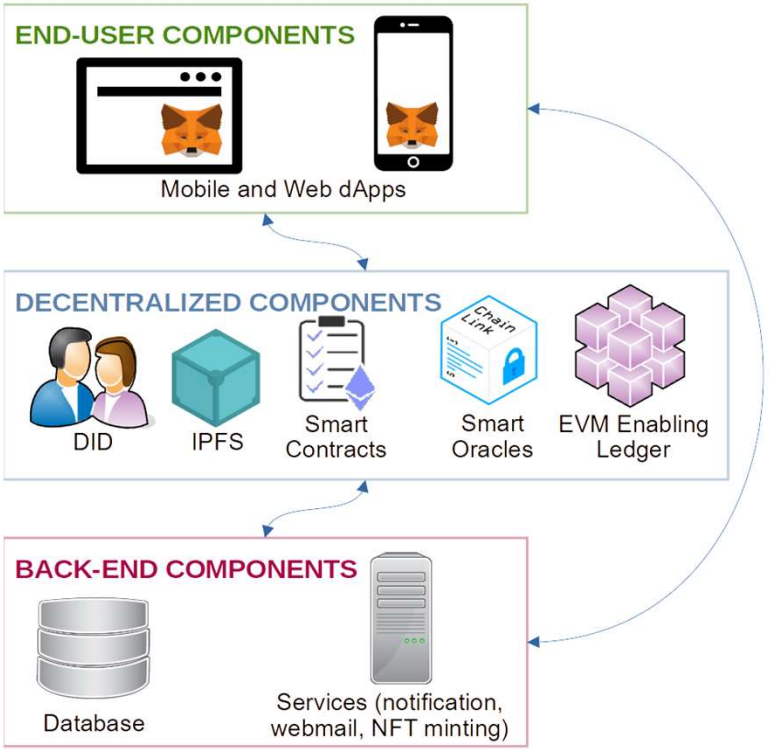
Piloting on ebsi European Blockchain

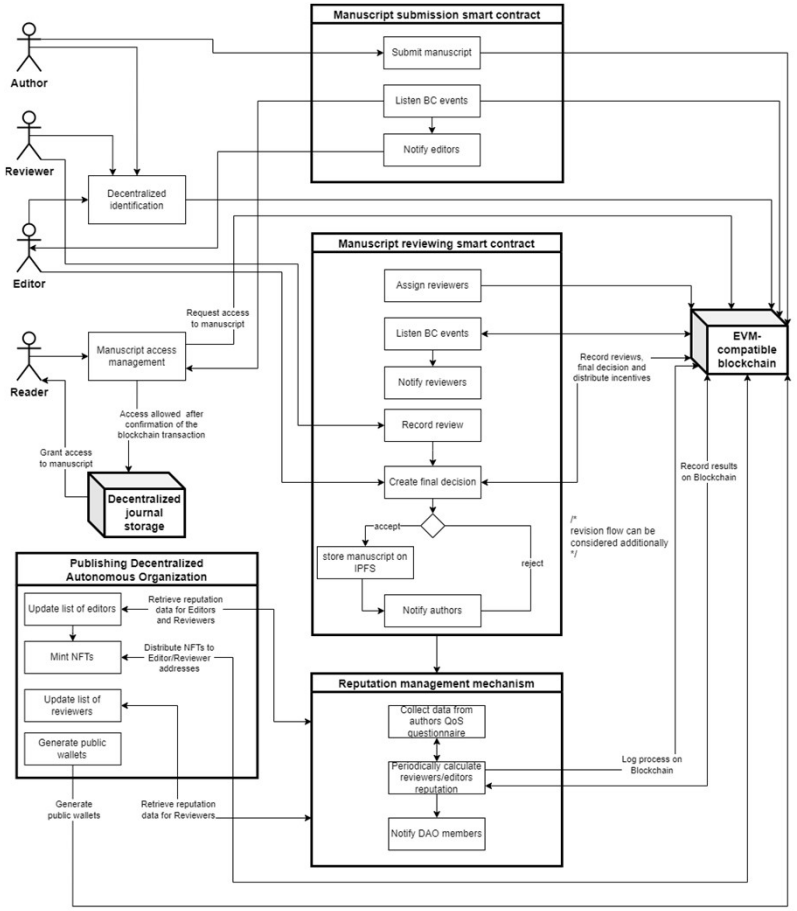
Electronic Transcript of Records (e-ToR)

Platform for students and universities to:

- Manage students' information and verify students' identity
- Manage study programmes
- Manage students' attendance
- Record grades and reputation management
- Organize workshops, seminars and
- Issue certificates
- Student work offers
- Subsidized Food

Decentralized Journal DAO project with DPI Chicago

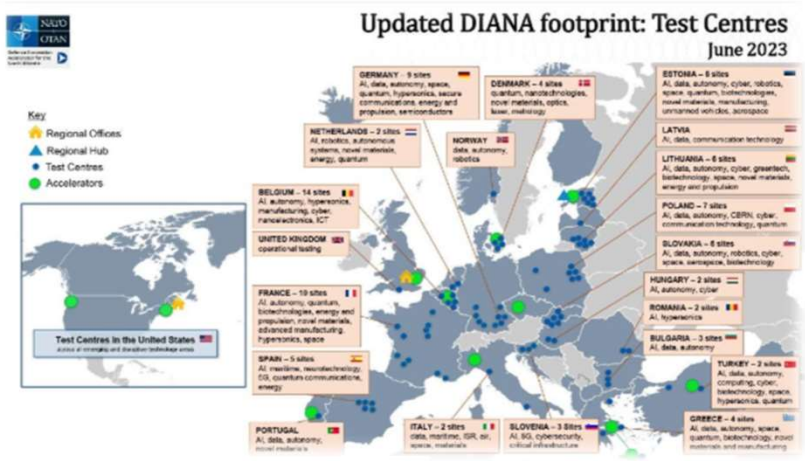




Innovation Management at University of Ljubljana

Akademija FRI:
https://akademijafri.si/

NATO Diana:
https://www.diana.nato.int/test-centres.html



Digital Innovation Hub: Blockchain for Trusted Data Ecosystems:
https://datatrust.fri.uni-lj.si/

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Thank you!