AI on-demand platform for regional interoperable DIHs Network

DIH4AI Coordination Team (Sergio Gusmeroli) https://www.dih4ai.eu/

AI on Demand Community Forum: the ICT49 Cluster
November 14th 2023

H2020 Innovation Action - This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement N. 101017057
The DIH4AI Innovation Action

DURATION: 36 months (January 2021 – ongoing)
COORDINATOR: Politecnico di Milano
FUNDING: € 4,999,863 (2M Open Calls)
CONSORTIUM: 12 Partners from 6 countries
OPEN CALLS: 10+10 new DIH-driven SME-oriented
DIHs: 5 AI DIHs selected from AI DIH Network
EXPERIMENTS: 20+ AI Best Services implementations

https://www.dih4ai.eu/
The Consortium

12 partners from 6 EU countries. covering 3 key dimensions:

• Regional specialization
• Methodological
• AI tech providers

- POLIMI – Project Coordinator
- PwC (Intellera Consulting)
- EKA
- ETA Consulting
- TNO (representing the South NL Hub)
- Fraunhofer IFF (representing the DIH Saxony-Anhalt Hub)
- CIIRC CTU (representing the Czech Innovation Hub)
- CEA (representing the DIGIHALI Hub)
- IMT Transfert
- INNOVALIA
- ATOS

DIH EC – AI
Regionalizing the AIoD: DIH Catalogue AI (E)DIH (434, 126)

1. Be part of a **regional**, national or European policy initiative to digitise the industry;
2. Be a **non-profit** organisation;
3. Have a **physical presence** in the region and present an **updated website** clearly explaining the DIHs’ services
4. Have at least **3 examples** of how the DIH has helped a company with their digital transformation
EDIH Catalogue AI EDIH (169 / 228, 100+ / 177)
DIH4AI network of (E)DIHs specialized in AI

32 DIHs in DIH4AI Innovation Action (147 applications)

The 5 DIHs in the initial project are extended with further 13 DIHs coming from the first Open Call. In the second Open Call 14 new DIHs

DISTRIBUTION BY VERTICAL

- Agri-Food, 2
- Earth Observation, 2
- Energy, 2
- Public Administration, 2
- Manufacturing, 4
- Finance and Insurance, 0
Set of methods and frameworks defined to create common standards among DIHs, to support them in service exchange and provisioning.
The BioSense accelerator was officially launched by the DIH. The red line in the graph follows the services intended for tech providers. It starts from dedicated human upskilling and reskilling trainings. First a gap analysis is conducted to organise courses with mentors for every team in the accelerator program. **Startups** with innovative digital solutions in the field of agriculture have shown great interest in this support program. At the end of the journey **Online product demonstration and Events** where products are presented in front of clients will support the «go to market» step.
AloD & DIH4AI: Regionalise & Servitise

Developed an L-BEST 3-levels taxonomy of Services

Legal

Business

Ecosystem

Skills

Technology

Open Calls
Explore Open Calls to find funding and supports SMEs and more

Explore Open Calls

Open space for AI developers that offers visual and intuitive design methods. Facilitates the creation of human-centered AI solutions, building modular structures and using hybrid AI technologies. Discover our resources, develop your own solutions, collaborate and share your ideas and solutions with the AI community.

Access the service now!

Education

Access to AI courses and materials for up-skilling, learning about AI and career development.
AGENDA of the SESSION

- **DIH4AI Introduction and the L BEST Service Portfolio Analysis**
  - Sergio Gusmeroli POLIMI

- **DIH4AI Technical Interoperability with the AI on Demand Platform**
  - Tomas Pariente Lobo ATOS

- **DIH4AI Portal Interoperability with the AI on Demand Platform**
  - Barbara Grottoli EKA

- **The DIH4AI Regional / inter-Regional Experiments**
  - Jaime Codagnone
  - Noemi Luna INTELLERA

- **The DIH4AI FSTP Program the two waves of Open Calls**
  - Jaime Codagnone
  - Noemi Luna INTELLERA
# WP3 - Summary of main results

## Portal interoperability
- Integration of the EU Login from the DIH4AI Portal and OpenID Connect
- Automatic interoperability to populate resources in the DIH4AI L2 Resource Catalog to other compatible portals (e.g., DIH4Industry)
- Manual interoperability with the AIoD AI catalog (based on similar previous data model)
- Local tests with AIoD API for automatic interoperability between the DIH4AI L2 Portal and the AIoD AI catalog

## Data interoperability
- TNO TSG components OS release (Connector, Broker, DAPS) and documentation
- Released IDS-based FL framework with manual AIoD support
- Started process of external evaluation of IDS components for IDS certification
- Alignment meetings with Data Space Business Alliance (DSBA), the collaboration between the BDVA, FIWARE, Gaia-X, and IDSA
- Compliance and contributions to standards related to data spaces

## Cloud interoperability
- AIoD AI Experiments compatible Playground for experimentation (onboarding, downloading solutions)
- The AIoD Solutions catalog is integrated in the TeraLab marketplace, where solutions can be executed
- Presented to the AIoD TCD in September 2023 meeting
- Running in a development environment: In Teralab cloud
• IDS-based
  • Released open-source TNO TSG components (Connector, Broker, DAPS).
  • Released public easily readable documentation.
  • Released Federated Learning framework with manual AIoD support.
• Started process of external evaluation of IDS components for IDS certification.
• Alignment meetings with Data Space Business Alliance (DSBA), the collaboration between the BDVA, Fiware, Gaia-X, and IDSA.

• https://gitlab.com/tno-tsg/
• https://tno-tsg.gitlab.io/
• https://gitlab.com/tno-tsg/data-apps/federated-learning
• https://www.ai4europe.eu/research/ai-catalog/platform-service-accountable-evidential-transactions
• https://aiexp.ai4europe.eu/index.html#marketSolutions?solutionId=a90b4145-51ec-4345-be5f-21d2c8e9a214&revisionId=c4624a34-affb-417b-b004-d30809697b49&parentUrl=marketplace#md-model-detail-template
**IMT – Teralab: last features**

The AIoD Solutions catalog is integrated to in the Teralab marketplace, where solutions can be executed.

Pushing executable resources from the Teralab catalog to the AIoD catalog.

**Playground Current environment**

Running in a development environment.

In Teralab cloud.
Onboarding resources to AI Experiments

From the Teralab Marketplace Catalog, we select docker containers to onboard.
The container is prepared (Protobuf, gRPC,..). We proceed with the onboarding.
Onboarding resources to AI Experiments

The model (in this case a model and a DB) is now in the AI Experiments ready to be used.
Onboarding resources to AI Experiments

In AI Experiments, now we can create a pipeline and package it as a solution.
And now we can test the solution in the playground.

Downloading the solution to our Playground Kubernetes cluster and executing it.
AloD Contributions

• IMT Playground
• TNO data space resources, FL, examples in AI Experiments
• DIH4AI Portal resource catalog. Compatibility with resources from DIHs to be shared at EU level in the AloD portal
DIH4AI Portal Interoperability with the AI on Demand Platform

Barbara Grottioli EKA
Success stories of DIHs collaboration across EU

Noemi Luna Carmeno, Intellera Consulting
Jaime Alessandro Codagnone, Intellera Consulting
How can DIHs collaboration happen?

Collaboration with other DIHs offers the possibility to upgrade their respective technological capacities, service offerings and in-house skills. It can happen in different ways.

Thanks to structured collaboration, Hubs can respond more effectively to specific client needs and provide better services. For example, through the:

1. Partnership to provide service jointly:
   - DIHs can deliver services in cooperation with other partners with complementing competences

2. Development of a new service:
   - DIHs can enlarge their offering by leveraging on the skills and capabilities available within the network

3. Matchmaking:
   - DIH supports clients in identifying potential partners in another ecosystem (e.g. technological, business or financial partners)
## DIH4AI cross-regional collaborative experiments

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<th>1. Partnership to provide service jointly</th>
<th>2. Development of a new service</th>
<th>3. Matchmaking</th>
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<td><strong>Ecosystem</strong></td>
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<td>Catalog of experiments at crossDIH level</td>
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<td>Al Awareness Raising Skills for DIH</td>
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<td><strong>Technology</strong></td>
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<td>AI Testing and Experimental Facility in Manufacturing</td>
<td>Quick Check –Maturity Assessments</td>
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<td>Platform-as-a service for accountable evidential transactions</td>
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<td>Partner: TNO</td>
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A Success Story for cross-DIH Collaboration: AI awareness raising skills for DIHs

The experiment brought together three DIHs to develop and deliver AI awareness raising skills by exploring the challenges and opportunities of building a cross-regional demonstrator.

Outcomes and lessons learned

Agreement into the development of a collaboration plan for the joint demonstrator.

Onsite collaboration allowed to outline the specialisms of the DIHs, identifying synergies, and taking concrete steps towards a joint demonstrator.

Highlighted the value of cross-DIH collaboration in AI awareness raising and capacity building for SMEs, and the potential of smart industries in smart connected value networks.
A Success Story for cross-DIH Collaboration:
Platform-as-a-service for accountable evidential transactions

PIANA platform provides technical means for the definition of verifiable claims regarding the design, deployment, and consumption of a trustworthy AI service using federated learning techniques.

From a local to a collaborative experiment:

Intra-DIH experiment - development and testing of the platform on 4 Use Cases:

- **Aerospace** - platform for the decentralized management of drones
- **Manufacturing** - decentralized dataspace and smart services for knowledge engineering
- **Public Administration** – digital personal assistant for online public services in German PA
- **Retail** – verifiable product information

Cross DIH experiment - alignment with the TNO AI Manufacturing Testbed in regard to International Data Spaces (IDS), GAIA-X, and federated learning and integration.
Lessons Learned from cross-DIH collaboration

Thanks to DIH4AI-enabled cross-DIH collaborative experiments, we were able to gather useful insights for future DIHs collaborations:

Key tools for successful collaboration

- Inspirational collaboration scenarios, examples and lessons learned
- Online recurring meetings and ad hoc physical meetings
- Knowledge exchanges and shared workspaces

Challenges & lesson learnt

- Difficulties in engaging SMEs
  - Clear value proposals to SMEs and success stories
  - Awareness raising on DIHs and AIoD platform value offering for SMEs

- Misalignments
  - Meet in person and adopt flexible teams to overcome misalignments and increase contamination

- Language barrier
  - Engage local communities and promote local events in national languages
DIH4AI Open Calls

Noemi Luna Carmeno, Intellera Consulting
Jaime Alessandro Codagnone, Intellera Consulting
First Open Call Results

**Expanding DIH Network**
- 80 Proposals: 73 type A; 7 type B
- 20 Countries

**5 Areas**
- Agrifood: 13
- Earth Observation: 11
- Finance and Insurance: 11
- Manufacturing: 33
- Public Administration: 12
Type A Winner Mini Consortia

004-AUTOMAINT
- 'Intellia
- Bdeo
- cidiHub

005-CAVA4FITS
- EYES
- INNOVATE

006-ControlEye

007-EO4NOWCAST
- STAM
- PASEC HUB

008-GrAlpe
- ARTSHARE
- UNINNOVA

009-SAPI-X
- CROPT
- BioSense

010-SCALE
- HOLISUN

Leader SME  DIH
Type B Winner Mini Consortia

001-AI4CLEARANCE

002-AI4OPTIMAPS

003-DIH:Okai

Leader SME  DIH
Second Open Call Results

**Expanding DIH Network**
- 67 Proposals: 59 type A; 8 type B
- 19 Countries

**5 Areas**
- Agrifood: 18
- Earth Observation: 8
- Finance & Insurance: 6
- Manufacturing: 4
- Public Admin: 22
- Energy: 9
Type A Winner Mini Consortia

005 – COG4SOL

006 – PREDICAI

007 – AIM2ASSIST

008 – FRESHSATELLITES

009 – ALBEESYSTEM

010 – UOLD

Leader SME  DIH
Type B Winner Mini Consortia

001 - FABCOD

002 - DIH4TAKing

003 - RAY-DEEP

004 - RAY-DEEP
THANKS

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