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Executive Summary

The main objective of task T7.5 is to create and explore touch points between the STAR market platform and the AI4EU platform. In the following sections, the deliverable presents the action plan to reach this objective, identify, and put in place the proper interfaces to realise this purpose. As part of the task, the action plan presented has the aim to interconnect the two projects/communities with the purpose to collaborate closely in fine-tuning the integration, but also in community and ecosystem building activities.

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Definitions, Acronyms and Abbreviations

Acronym/ Abbreviation	Title
AI	Artificial Intelligence
ML	Machine Learning
WP	Work Package

1 Introduction

This deliverable presents the work carried out by Task 7.5, a task that is expected to feed the Work Package 7 in STAR exploring the collaboration with the AI4EU ecosystem and the now called AIoD (AI on Demand) platform, for a mutual benefit.

This introduction chapter has the aim to address the context in order to understand the global picture of the activities of T 7.5 and its purpose in the scope of WP7. The relationship depicted in Figure 1 establishes the link with the task in charge to develop the STAR Market Platform for gathering content, information and initiative to share both of STAR and AIoD (formerly AI4EU) platform.



Figure 1 - Relationship between T7.5 and WP7 tasks

The survey performed across T7.1 encouraged the plan to investigate the collaboration axis between AIoD and the STAR market platform under the point of view of sharing resources, as Datasets, AI Libraries, Jupiter Notebooks and Docker Containers enabling a better understanding of the opportunities that these assets could open up for the application of AI deployment in the manufacturing domain.

2 Action Plan enabling Collaboration with AIoD

As part of Task 7.5 "Integration and Continuous Collaboration with AI4EU" continuous collaboration and joint dissemination activities were planned to be organised with the AI4Europe project (formerly AI4EU project). The two projects/communities started to collaborate in fine-tuning the integration, but also in community and ecosystem building activities. STAR project partners joined the activities of AI4Europe and participated in AI4Europe workshops.

The action plan is articulated in three main phases as depicted in Figure 2:

1. Phase 1: Workshop participation to establish a link between the two project consortia and start to learn the two project initiatives. This first round started in November 2021 and is presented in Chapter 3.
2. Phase 2: Learn the capabilities of the AIoD platform in order to have the range of possibilities to exploit for a mutual benefit. The aim is to elucidate the AIoD platform components and their features to the STAR partners. This part started also in November 2021 and in this same period, a document was delivered to WP7 & WP8 partner to summarize the main AIoD functionalities. Chapter 4 discloses the analysis of the features collected.
3. Phase 3: Inquiry and defining the integration which is supporting STAR project. This includes the availability of tools for Manufacturing and the definition of the link with the STAR market place. This last phase started in May 2022 and it is still ongoing. It is presented in Chapter 5.

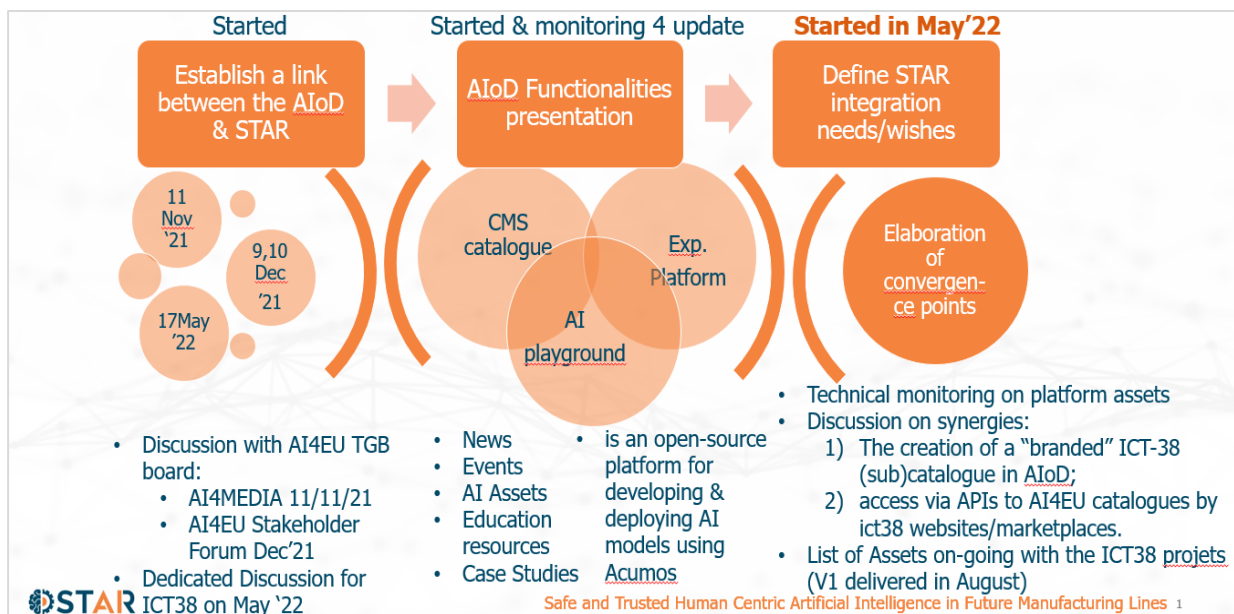


Figure 2 - Action plan to enable AIoD - STAR collaboration

In more detail, this action plan for creating a collaborative and mutually beneficial action for disseminating AI assets between AIoD platform and the STAR market place includes activities devoted to:

- **Capability assessment:** to understand both AIoD platform and the STAR market place features, including their functionalities, services, target audience and competition.
- **Identify common goals:** Identify the common goals and objectives of both AIoD platform and the STAR market place. This will help to establish a shared vision for the project.
- **Identify target audience:** Identify the target audience for the project, including potential customers, investors, and stakeholders.
- **Define the value proposition:** Define the value proposition for the target audience, including the benefits of using the AI asset on both platforms.
- **Investigate the key performance indicators (KPIs) set up in both projects:** Investigate the key performance indicators (KPIs) in order to create a beneficial collaboration that will not interfere with the strategies of AIoD and STAR. In particular, this item has the aim to create a harmonious marketing strategy.
- **Plan the integration:** Plan the integration of the AI asset into the AIOD platform and the STAR market place. This includes technical considerations, such as compatibility, security, and scalability.
- **Implement and test:** Implement the plan and test the AI asset on both platforms to ensure that it is functioning as expected.
- **Launch:** Launch the AI asset on both platforms, making it available to the target audience.
- **Monitor and evaluate:** Continuously monitor and evaluate the performance of the AI asset, using the KPIs of step 5 and make adjustments as needed to ensure its success.

3 Workshop Participation

As a follow-up project of AI4EU, AI4Media collaborates closely with the AIoD platform with the aim to disseminate the AI4EU project's outputs such as modules, services and algorithms.

To this purpose, many workshops and Web Cafés were organized to establish a strong community around the AI4EU project. STAR partners were involved in some of them. These activities are presented in the following sections.

3.1 STAR participation to the first event AI4Media

On 11 November 2021¹, AI4Media organized a workshop on the European AI-on-demand platform: this was the first major event that gave to the STAR partners the visibility of the main components of the AIoD platform.

The workshop started with a general introduction to the platform, highlighting the involved organizations and projects as well as its different parts such as the AI Catalogue and the Web Cafés. The cooperation between European AI networks on the AI-on-demand platform, with special emphasis on digital innovation hubs, were also presented.

The second part focused on AI4EU Experiments, an open-source platform for the development, training, sharing, and deployment of AI models, which constitutes the technical part of the AI-on-Demand platform. We present the general features including the AI4EU Experiments, the Design Studio as well as some example pipelines.

3.2 STAR participation to AI4EU Stakeholder Forum

On 9 and 10 of December 2021², STAR partners were invited to join remotely the final AI4EU event, which showcased outcomes from the project. The event was set up also to bring together AI experts and SMEs to explore the next steps of the European AI on demand strategy.

Pipelines devoted to specific use cases, namely AI4Pilot, were showcased using AIoD functionalities.

A devoted session on the AI Uptake for SMEs where presented, the challenges and the strategy to boost AI were analysed.

3.3 STAR participation to joint ICT38-AI4EU Board call

On 17 of May 2022 the STAR consortium led a first meeting with the AI4EU board to establish joint activities with other ICT38 projects and AI4EU platform.

This discussion initiated a first identification of AI assets that will be integrated on the AIoD platform. Table 1 below listed all the items that have been identified as candidates to initiate a branded sub-catalogue hosted by the platform under the brand of the ICT-38 cluster (i.e., a dedicated catalogue for AI in Manufacturing assets).

¹ [AI4media project](#)

² [AI4EU Stakeholder Forum | AI4EU \(ai4europe.eu\)](#)

Table 1 AI Assets belonging to ICT-38 project (including STAR) identified to reach the AI4Manufacturing sub-catalogue on the AIoD platform.

No	Asset Title	Short Description (100 words max)	Type of Integration	Project
1	STAR Human Digital Twin (Clawdite Platform)	Clawdite is an extensible and flexible IIoT - industrial internet of things - based platform supporting the creation of customised data representations of production systems and their entities, including humans. Clawdite features a modular infrastructure with interchangeable components, which ease the digital twin instantiation and ramp-up. More info at https://gitlab-core.supsi.ch/dti-isteps/spslab/public/clawdite .	Portal Catalogue	STAR
2	STAR Fatigue Monitoring System	The Fatigue Monitoring System adopts artificial intelligence models to estimate exertion level of subjects (e.g., workers) based on static data (e.g. age, weight, etc.) and dynamic data (e.g. HR, EDA, skin temperature).	Portal Catalogue	STAR
3	Active Learning Module	A human-robot collaboration modules that accelerates robot learning by letting it consult an authoritative source	Portal Catalogue	STAR
4	Speech2Text module	A module to perform Speech2Text conversion, optimizing results of existing models/algorithms	Portal Catalogue	AI-PROFICIENT
5	OCR module	A module to perform Optical Character Recognition in Industrial environment and Use Cases	Portal Catalogue	AI-PROFICIENT
6	Anomaly Detection - Root Cause analysis module	A module to detect anomalies based on historical data, perform root-cause analysis and provide a graphic interface (tag-cloud technique) to the operator, to confirm the cause of the problem and also provide reinforcement learning feedback to the algorithm.	Portal Catalogue	AI-PROFICIENT
7	COALA voice training dataset	A public dataset of voice samples and transcriptions to extend a speech-to-text language model (e.g., Coqui).	Portal Catalogue	COALA
8	XAI Algorithms	A collection of eXplainable AI algorithm trained with generic open data	Portal Catalogue	XMANAI
9	Dynamic Knowledge Graph Engine	A module to adapt KG embeddings to dynamic changes to the KG itself	Portal Catalogue	Teaming.AI
10	Ergonomic Risk Monitoring System	A module to perform Ergonomic risk assessment on human postures collected by a camera system	Portal Catalogue	Teaming.AI
11	Manufacturing OpenML Ontology extension	An AI for manufacturing ontology, designed as an extension of the OpenML ontology for ML processes	Portal Catalogue	knowlEdge
12	Dairy manufacturing dataset	dataset containing production process data from a dairy factory	Portal Catalogue	knowlEdge
13	Paint Shop Scheduling Agent	Schedule optimization agent capable of sorting and combining orders within the painting line environment of an industry	Portal Catalogue	MAS4AI

STAR Human Digital Twin Core Infrastructure (Clawdite platform) is an extensible and flexible IIoT based platform with a dual benefit: On the one hand, it supports the creation of customised data representations of production systems and their entities, including humans; on the other hand, it provides a modular infrastructure with interchangeable components for easy instantiation and commissioning of digital twins. Clawdite's design is suitable for applications with different purposes and supports data flows with different volume, speed and variety.

STAR Fatigue Monitoring System (FaMS) uses artificial intelligence (AI) models relying on machine learning to estimate fatigue exertion level and mental stress of subjects based on static data (e.g., age, weight, etc.) as well as dynamic data (e.g., HR, EDA, skin temperature).

Active Learning implements and API exposing several active learning strategies and enables the interacting system select unlabelled data instances based on certain criteria, to maximize the learning of a machine learning algorithm during training time.

STAR has been joining several of the regular (bi-weekly) calls for AI4Europe stakeholders, notably of organizations in charge of maintaining and expanding the AI4EU platform. As part of these calls STAR has contributed various presentations and shaped the agenda of the tele-meetings to discuss the following topics:

- The identification of the ICT-38 cluster assets that will be integrated in the platform, including the ways AI4Europe could support cluster members in the integration process. Table 1 provides an initial list of identified assets, which will be regularly updated and tracked as part of the cluster collaboration activities.
- The requirement for developing a branded catalogue of AI in manufacturing assets. The assets of the ICT-38 (AI4Manufacturing) cluster members are to be classified under this catalogue.
- The possibility of accessing AI4Europe resources metadata from other AI-related marketplaces and catalogues, such as the IoT Catalogue and the STAR marketplace. To this direction, STAR partners have prepared the STAR Market API that is presented later in this deliverable

4 AIoD Feature presentation

AIoD is a platform for the development and deployment of Artificial Intelligence (AI) in Europe. It aims to provide a comprehensive ecosystem for AI research, development, and innovation in the region, by connecting AI researchers, developers, and businesses with each other, as well as with data, resources, and funding. The platform is supported by the European Union and is part of the EU's efforts to promote the development and use of AI in Europe.

In order to create a convergence between the AIoD platform and STAR, the starting point was to explain the AI4EU components and their features. This investigation started at late November 2021 when a visibility of the main components was disclosed. This analysis was updated during the STAR project till to the submission of this document in M25.

The following section described respectively the following elements:

- The AIoD portal
- The AI4EU experimental platform
- The AIoD playground

4.1 The AI4EU project: the initial picture

The AI4EU project were funded under the ICT-26-2018-2020 call, and it has run from January 2019 to December 2021. As the call focused to democratize Artificial Intelligence via the development of an Ecosystem around this highly emergent technology, the AI4EU platform aim was to develop across Europe a platform that

- serves as a central point to gather and provide access to AI-related knowledge, algorithms, and tools;
- supports potential users of AI to facilitate the integration of AI into applications;
- facilitates the interaction with existing data portals needed for AI algorithms, and resources, such as HPC or cloud computing, and support interoperability.

4.1.1 The AI4EU Ecosystem

The AI4EU had as a first aim to create an ecosystem in Europe around AI merging as depicted in Figure 3:

- The **AI community** as Association, Centre, Company, Education and Research Institution dealing with AI topics, as well as projects and Working Groups;
- The **Business & Industry** European actors in different Industrial Vertical and covering many Case Studies ranging from the IoT, Cyber Security, Robotics etc...
- The **Digital Innovation Hubs** making the bridge with regional activities;
- The **SMEs** supporting them in their digitalization by providing Case Studies, access to Open Calls, an Ethics Guide about trustworthy AI, the catalog of AI courses and the catalog of AI on-demand services;
- The **Technology providers** offering an environment to showcase where it is possible to share assets, access to Open Calls, Ethics Guide about trustworthy AI, the catalog of AI courses and the catalog of AI on-demand services;

- The **Academies and Researchers** supporting researcher in the domain of Artificial Intelligence, providing several appealing topics to be explored. In particular, the focus is on Collaborative, Explainable, Integrative, Physical, and Verifiable AI, as the 5 AI pillars proposed by the AI4EU project.



Figure 3 - A screenshot of the forecasted users

4.2 AIoD portal

AIoD platform acts as a one-stop-shop of European AI resources accessible through the <https://www.ai4europe.eu/> domain and underlying CMS System. Here one can find the latest news on cutting-edge AI applications, development trends, research, ethics and social impact.

The essential subsystems of this CMS are connected through encrypted *HTTPS/443 gateways*, even within the same hosting provider.

Single-sign-on is realised through the widely adopted EU Login (*ECAS from EU portal*), the authentication service of the European Commission.

During the AI4EU project, all services were dockerised and deployed on Kubernetes. The latter element was supported by an open-source container-orchestration system for automating computer application deployment, scaling, and management, providing high-availability configurations.

Execution spaces were at Künstliche Intelligenz Nordrhein-Westfalen (KI.NRW) and Barcelona Super Computing (BSC), CINECA.

A master-slave setup for databases were put in place. A development team led by a dev lead were responsible for planning and carrying out the development work for each subsystem.

This CMS platform offers a range of predefined content types, such as:

- The **Research** section contains the **AI catalog of assets**, related to the already mentioned AI pillar as Collaborative, Explainable, Integrative, Physical and Verifiable AI. This asset appears as AI As a Service, Datasets, Docker containers, Executables, Jupyter Notebooks, Libraries, ML Models, Tutorials. This section offers also the **Research Bundles** (as micro-project in human-AI-Net, Ph.D. projects and student projects);
- The **Education** section contains the **catalog of AI courses** (Education catalog from leading institutions, European Education Initiatives, Education related news);

- The **Ethics** section provides access to the **Ethics Guide** (Articles, Reports, Centres, Networks, Assessment Tools) and informs about the **Ethics Working Group**, about **Workshops** related to AI Ethics and to **OSAI initiative**;
- The **Service** section providing access to a number of **AI on-demand services** (Open space for AI developers, Matchmaking [coming soon], Planning [coming soon], Cyber Physical Systems (AI as a Service for Deep Edge) [coming soon], Digital Innovation Hubs [coming soon], Copernicus datasets [coming soon] and applications using Satellite images, Energy Analytics Application and Digital Twin [coming soon]); Most of this service will be developed with the support of the project funded under ICT-48 and ICT-49 calls.
- **News** and **Event** including AI4EU café, Webinars...
- Announcement of **funding opportunities** through **Open Calls**

This link has a focus on the Research content: AI Resources Catalogue ([AI Assets | AI4EU \(ai4europe.eu\)](#))

For each of these content types, templates or input forms are available to start the publication process. It is important to specify that beside the technical specification of the assets, it is possible to declare the License type, the GDPR information and other info.

The content is moderated before the publication and one can see its status from the account profile of the user.

To start the publication process, it is mandatory to have an account on the ECAS portal.

More information on the publication procedure is presented here. [Publishing contents on the AI-on-demand platform | AI4EU \(ai4europe.eu\)](#)

As an important feature of the platform is important to stress that it is possible to link different assets published (i.e. AI asset, educational content, datasets, etc..) in a “research bundle” item.

The AIoD Portal offers:

- For researchers an opportunity to make their results visible to industry, society and other researchers and we foster collaboration across different sectors and disciplines.
- For industry to understand if and how human-centred AI can be relevant to their problems, and we help them to find the relevant AI expertise and assets to solve these problems.
- For students a window to top level groups and the most advanced results in human-centred AI.
- It provides networking opportunities for AI researchers interested in cross-sector collaboration



[Home](#) > [Research](#) > [AI Assets](#) > [Human Digital Twin Core Infrastructure \(HDT\)](#)

Human Digital Twin Core Infrastructure (HDT)

Most of the available solutions for creating digital twins force industry solution architects to resort to ad hoc implementations and models. These solutions lack reusability, scalability, and extensibility, which prevents the introduction of a human digital representation into existing twins, thus hindering the full shift to the new Industry 5.0 paradigm. The Human Digital Twin Core Infrastructure (Clawdite platform) is an extensible and flexible IIoT based platform with a dual benefit: On the one hand, it supports the creation of customised data representations of production systems and their entities, including humans; on the other hand, it provides a modular infrastructure with interchangeable components for easy instantiation and commissioning of digital twins. Clawdite's design is suitable for applications with different purposes and supports data flows with different volume, speed and variety.

As a Service

STAR Marketplace



Developed by

[SUPSI](#)

License

Apache License 2.0 (Apache-2.0)

Main Characteristic

- Human-Robot Collaboration and Adaptive Automation
- Worker Well-being Monitoring
- Production Planning and Allocation

Research areas

Physical AI

Technical Categories

Knowledge Representation

Business Categories

Manufacturing

Keywords

#Artificial Intelligence #Platform

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Related Projects

STAR

Figure 4 – STAR asset in the AIOD Portal

STAR and the AI4Manufacturing cluster (i.e., the ICT-38 projects cluster) are enhancing the AI4Europe in the following directions:

- Sub-catalogue development: STAR and AI4Manufacturing will establish a sub-catalogue for AI assets for manufacturing and digital industry. This will establish the cluster's presence in the AI4EU platform. Linking to other AI in manufacturing assets will be considered.
- Taxonomy: STAR and AI4Manufacturing will propose to AI4EU a taxonomy of manufacturing assets that considers the characteristics and structured of AI for Industry 4.0 and Industry 5.0 applications. STAR can propose and promote this taxonomy, yet it cannot be enforced on AI4EU.
- API access to AI4EU resources: STAR and AI4Manufacturing are collaborating with AI4EU for the development of an API that would enable third-party marketplaces (including the STAR marketplace) to access the metadata of the assets of the AI4EU platform. This will facilitate cross-marketing and cross-dissemination actions between STAR and AI4EU towards mutual benefit.

4.3 STAR Market API

STAR Market is implemented with Wordpress, which provides an interface for applications to interact with it. This REST API (standing for Representational State Transfer) offers a set of tools to access data as objects or collections by providing REST endpoints that can represent virtually any data type from your Wordpress website. It can range from full post content to custom post types or taxonomies.

The API relies on JSON to structure the data and works with or without a well-defined structure schema. It benefits from being human readable while preserving a JavaScript object-like structure. It is compatible with any programming language that can handle HTTP requests and interpret JSON formatted data.

4.3.1 Endpoints

A REST endpoint links a certain URL and the respective HTTP method. The specific URLs depend on what data you're trying to access and how it is organized inside the website. For example, <https://www.market.star-ai.eu/wp-json/wp/v2/posts> will call an HTTP GET method and retrieve all the website posts which the request maker has access to. The retrieved data is displayed as a JSON object. Bellow, you can find an example of the JSON structure when requesting all the assets from STAR Market.

```

{
  "id":2630,
  "date":"2023-02-14T17:31:46",
  "date_gmt":"2023-02-14T17:31:46",
  "guid":{"
    "rendered":"https://www.market.star-ai.eu/assets/active-learning-ai/"
  },
  "modified":"2023-03-01T16:14:00",
  "modified_gmt":"2023-03-01T16:14:00",
  "slug":"active-learning-ai",
  "status":"publish",
  "type":"iotcat_component",
  "link":"https://www.market.star-ai.eu/assets/active-learning-ai/",
  "title":{"
    "rendered":"Active Learning (AL)"
  },
  "content":{"  },
  "excerpt":{"  },
  "author":1,
  "featured_media":0,
  "comment_status":"closed",
  "ping_status":"closed",
  "template":"",
  "tags":[
    9,
    47,
    10
  ],
  "_links":{"  }
},

```

Another advantage of REST API is the ability to filter the data by type, ID, taxonomy and many other identifiers. More information about request filtering through endpoints is available at the Wordpress documentation page: <https://developer.wordpress.org/rest-api/reference/>.

Even though most examples consist of data requests, REST endpoints may represent any CRUD (Create, Read, Update, Delete) operation (e.g. edit or delete a post).

While there are a lot of predefined REST endpoints for the Wordpress standard data types, the advantages of this API come from the ability to register new endpoints to your custom data types. When registering an endpoint, you can specify which data is provided as well as how it is structured in the REST response. You can add or omit fields

4.3.2 Authentication

Wordpress provides two authentication methods. The first uses cookies for web browser access and the second one, suited for third-party application access, requires the request to include the username and password. Also, third-party authentication plugins may be used to allow additional methods.

One can control who has access to what by requesting authentication. By default, REST API access follows the website permissions. This means that any registered and logged in user has the same REST permissions as defined in the Wordpress settings. One can allow or deny access to specific users by their username or IP address using the white and blacklisting. Any public post data is accessible to any unregistered user unless their IP is on the blacklists.

Upon login, cookies are set so that users have access to the authorized data without providing their credentials until their session times out.

4.4 AI4EU Experimental platform

The AI4EU experimental platform is a component of the larger AIoD platform, which is focused on the development and testing of AI-based systems and applications. The experimental platform provides access to a range of resources and tools for AI research and development, including data sets, computing resources, and software development tools. It also facilitates collaboration and knowledge-sharing among researchers and developers working on AI projects.

AI4EU Experiments tool is an open-source platform for developing, training, sharing, and deploying AI models to build pipelines with available resources. The functionalities are depicted in Figure 5. The heart of AI4EU Experiments is the AI collaboration ecosystem, where models are trained and graded on their ability to successfully analyse datasets that they are fed, selecting the best model for the job. The experiments platform is modelling language, toolkit and run-time Infrastructure or cloud service agnostic. It is a complete system to package, share, license and deploy AI models in the form of portable, containerised microservices. AI4EU Experiments Design Studio can be used to chain together multiple models, along with data translation tools, filters and output adapters into a full end-to-end solution which can then be saved as a composite solution.

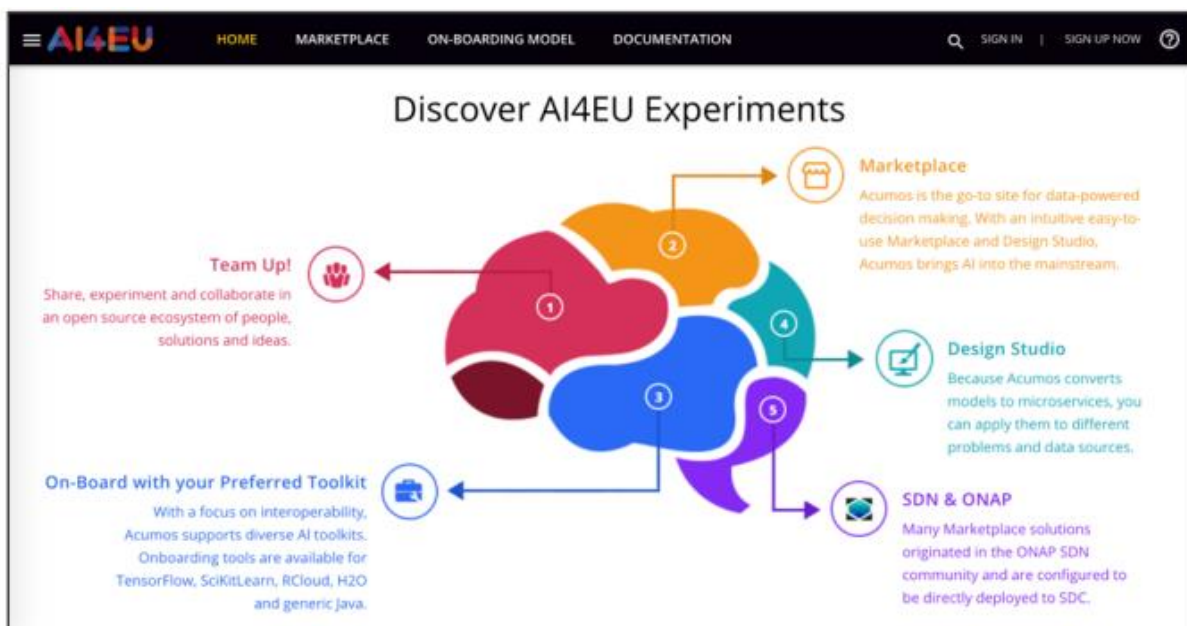


Figure 5 - AI4Experiment presentation

The AI4EU Experiments Marketplace catalogue contains information on the licensing and execution requirements of both reusable AI models and fully integrated solutions and this can be easily searched to make model selection a simple process. The source code of the AI4EU Experiments platform itself, is available under an OSI-approved open-source license so that any aspect can be readily adapted to new development toolkits, private data source and data streams and custom run-time environments.

More info about the platform is available here: [AI4EU Experiments \(ai4europe.eu\)](https://ai4europe.eu). The tutorial to upload models are available here: [AI4EU Experiments – New Release Summer 2021 | AI4EU \(ai4europe.eu\)](https://ai4europe.eu)

STAR assets to be included are the **STAR Human Digital Twin Core Infrastructure (Clawdite platform)** an extensible and flexible IIoT based platform with a dual benefit: On the one hand, it supports the creation of customised data representations of production systems and their entities, including humans; on the other hand, it provides a modular infrastructure with interchangeable components for easy instantiation and commissioning of digital twins. Clawdite's design is suitable for applications with different purposes and supports data flows with different volume, speed and variety. More information on the asset is also available under STAR deliverables D5.1 "[Digital Models for Human Centric AI-based Production Processes-Initial version](#)" and D5.2 "Digital Models for Human Centric AI-based Production Processes-Final version".

Active Learning implements and API exposing several active learning strategies and enables the interacting system select unlabelled data instances based on certain criteria, to maximize the learning of a machine learning algorithm during training time. More information is available under STAR deliverables D4.4 "[Active Learning Systems and Techniques-Initial version](#)" and D4.5 "Active Learning Systems and Techniques-Final version".

4.5 AI4EU Playground

The architecture of AI4EU Experiments is designed to support the integration of many different deployment services for execution environments. Each deployment service is a separate microservice running inside the AI4EU Experiments cluster transforming the pipeline definition into deployment artifacts. There is for example the standard deployer for local Kubernetes (called internally kubernetes-client). It generates several kubernetes service.yaml and deployments.yaml files from the pipeline definition and creates a zip file for download containing them and adding a python script to finish the deployment on the target kuberntes cluster. If the deployment is not a single model but a pipeline, it adds automatically the orchestrator to the deployments and handles the shared folder node.

In contrast to the kubernetes deployer, the playground deployer does not offer the solution.zip for download, but instead sends it to the playground server which handles then the further steps of local deployment on the playground kubernetes cluster.

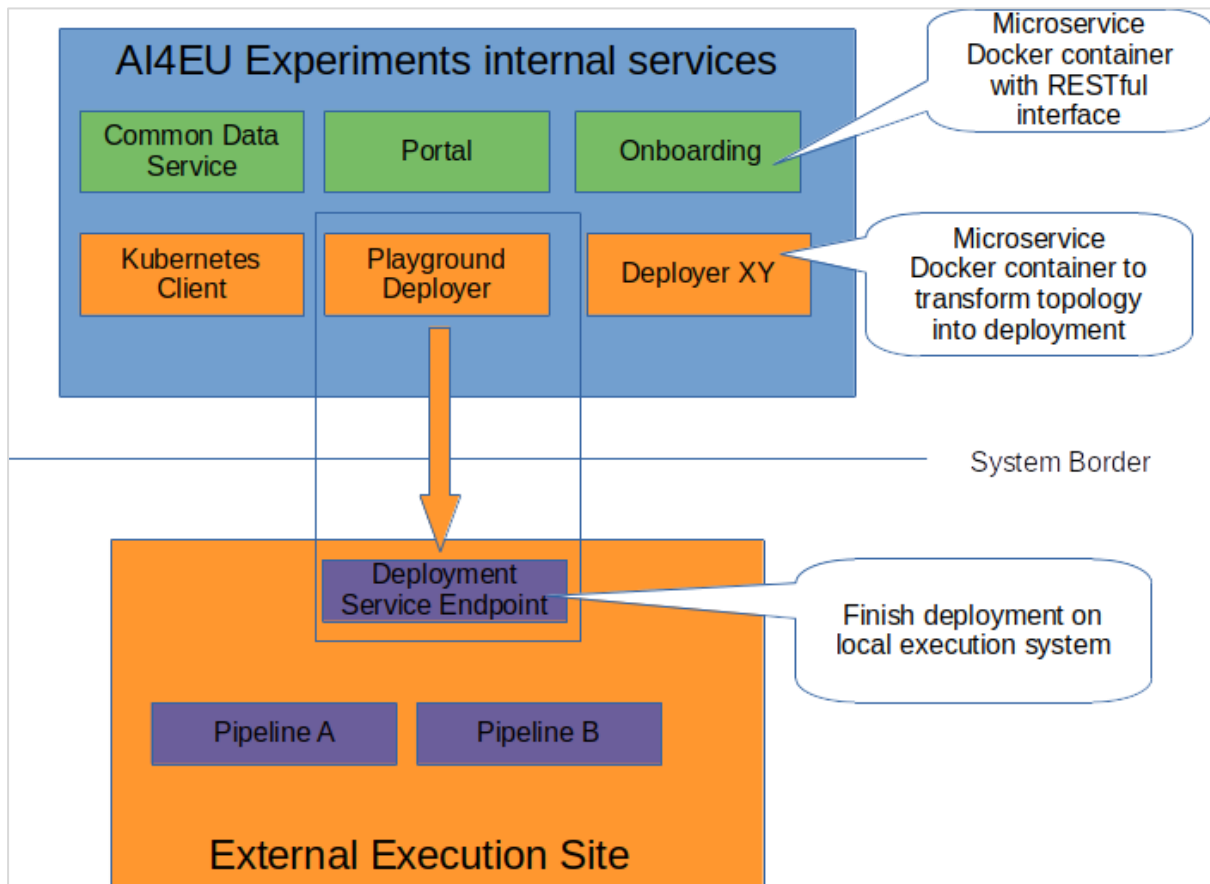


Figure 6 - Schema of the deployment of the AI4EU playground. From: [GitHub - ai4eu/playground-deployer](https://github.com/ai4eu/playground-deployer)

A deployment service can be composed of two parts: the first running internally in the AI4EU Experiments cluster and the second part runs on the target execution system to finish the deployment and start the actual execution.

5 Coordination Analysis

The first integration analysis has a double objective, namely:

- I. Explore and thus clarify the integrations wishes/expectation of the STAR project.
- II. deliver a set of question could be raised to enable the integration according to the section 2 answers.

The first item of the previous list allow to make a point on the STAR project in order to establish a convergence between the two projects, considering the wishes of the STAR consortium to integrate with AI4EU platform

Here a list of question about the STAR project to identify the integration needs and investigate them.

1. *Indicate what are the reusable resources has/will STAR implemented/implement that could be added to the AI4EU CMS /platform (those assets could be data sets, methods, apps, SW components and libraries, API's, etc.)*
2. *Indicate what are the reusable resources has/will STAR implemented/implement that could be added to the AI4EU experiment platform (apps, SW components, API's, etc.)*
3. *How is implemented the marketplace planned into the STAR project? There is a documentation?*
4. *What are the features and the interfaces of marketplace from a technical point of view?*
5. *What are the details on the STAR integration strategy within the DIH or other ecosystems?*

The second item allows to clarify what it could be necessary during the discussion with the AIoD team to realize the concrete integration. Typically, what are the technical docs needed as inputs and enabler for the integration of STAR components with the AI4EU platform?

Below is presented a list of the insights/questions that could be enable the links between the two projects.

Globally, the information could be needed to integrate concerns:

1. *Documentation listing of the available elements and what they do: detailed forms to describe the elements, how they are packaged, are the elements containerized or not...?*
2. *The documentation necessary to upload assets into the AI4EU platform*
3. *Questions on the SSO to authenticate users:*
 - *how a user (that wants to upload assets) have to be registered on the platform and with which rights?*
 - *What about a low tech users?*

- *Is there a documentation with a procedure to follow for different kinds of users such as user of the platform as experimenter, upload didactical material (courses,...), consultation of resources or events, publish news etc...?*
- *How the assets have to be packaged in order to upload them?*
- *What about data description (data model) of assets?*
- *What's the GDPR impacts and consents for sharing users' data on the platform?*

3. *What's the access protocol to integrate with AI4EU experiments?*

4. *How the assets have to be packaged to be uploaded and thus available in order to deploy them in the AI4EU experimentation platform (on Acumos)? Is there a preferential format to load them (docker Image, Jupiter notebook etc...)*

5. *Needs of detailed information from AI4EU platform on the standardized interface for AI4EU experiments and the standardized interfaces to exploit all the available resources.*

To answer to this first set of questions, the joint ICT38-AI4EU Board call presented in section 3.3 was very useful. Indeed, several tutorial was presented by the AI4EU team and Q&A round were set up.

During this discussion, it was also defined to propose to AI4EU Board a list of assets from ICT-38 cluster. The integration that is currently under discussion is mostly targeting the Portal Catalogue described in section 4.2.

To create a link to the AIoD platform and Star as an ICT-38 project it was also stated to

- create a specific “branded” ICT-38 (sub)catalogue in AIoD devoted to AI asset for the manufacturing domain.
- Define a practical access (e.g., via APIs) to the metadata or to the AIoD catalogues for integration in the ICT-38 projects websites & marketplaces, including the STAR Market Place.

This last item has a double positive impact on AIoD, as it will increase the visibility and findability of the assets through other web access points, and at the same time allows the other ICT-38 to showcase their own marketplace and assets.

References

Reference	Name of document
[REF-01]	STAR D4.4: Active Learning Systems and Techniques-Initial version
[REF-02]	STAR D4.5: Active Learning Systems and Techniques-Final version
[REF-03]	STAR D5.1: Digital Models for Human Centric AI-based Production Processes-Initial version
[REF-04]	STAR D5.2: Digital Models for Human Centric AI-based Production Processes-Final version