Pre-PAI Deliverable D2.2 – Gap analysis	
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ABSTRACT

D2.2 “gap analysis” provides a comprehensive mapping of the functionalities already available on the AI-on-Demand platform and those that are missing in relation to the stakeholders’ requirements gathered through D2.1 "stakeholders’ requirements". Organised by the type of functionalities to be implemented according to their category and the type and AI maturity *of* the stakeholders concerned, it highlights the functionalities that already exist and can be reused, those that need to be implemented, and provides recommendations on how to implement them on the future platform.

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1 EXECUTIVE SUMMARY

To inform the future roadmap for deploying the AIoD (AI-On-Demand) platform, Work Package 2 has focused on the collection and analysis of stakeholders' needs and requirements. D2.1 "stakeholders' requirements" described the results of a survey executed to elicit these needs; while this deliverable D2.2 "gap analysis" analyzes the gaps in the existing functionalities in the current AIoD platform with respect to all the functionalities listed in the survey of D2.1. This gap analysis should serve as the basis for a roadmap to adapt the AIoD platform to stakeholders' needs.

For contacts (all functionalities absent in AIoD): AI unaware SMEs are only interested in Solution Providers, while AI aware SMEs want all listed contact sources, except VCs (marginally). Public bodies want access to contacts to a large extent (except VCs). TEFs want to have access and be introduced to AI solutions providers, like-minded companies, TEFs and DIHs, funding and sponsors. (E)DIHs are interested in all contact sources, except VCs.

For content (3 functionalities in AIoD, 6 more in the survey): stakeholders are not interested in accessing content on AI from the general press; their interest in academic research papers is limited (except for AI aware SMEs and DIHs); they want success stories, best practices and guidelines documents, papers on AI applications. In addition, AI aware TEFs and DIHs want access to practical content such as AI prototypes, feasibility frameworks, cost examples and quality assurance methods.

For data (2 functionalities in AIoD, 2 more in the survey; all only displayed for AI awares): all functionalities were of interest to all stakeholders, acknowledging the importance of data.

For training (all functionalities in AIoD): autonomous training facilities are considered as important by all stakeholders, except TEFs (only 1 out of 3). AI unawares (SMEs, public bodies and DIHs) are not interested in advanced training, while in addition AI unaware public bodies do not want training on trustworthy AI or regulation.

For services (1 functionality in AIoD, 11 more in the survey): the functionality in AIoD (guidelines for trustworthiness) is considered important for all except AI aware public bodies and TEFs. AI aware SMEs and TEFs are not interested in coaching, training and data services. Public bodies are not interested in ethical services (which is problematic). DIHs want services around testing, but for GDPR and AI act, AI aware DIHs are aware of their importance, while AI unawares are not.

For funding programs (3 functionalities in AIoD, 1 more in the survey): all stakeholders except AI aware public bodies are interested in a funding opportunity map. For the other three functionalities coming from AIoD, all stakeholders are interested.

For jobs (all 2 functionalities absent in AIoD): all stakeholders find these functionalities useless, except TEFs.

For events (3 functionalities in AIoD, 2 more in the survey): AI aware SMEs and DIHs want all functionalities. AI unaware DIHs are only interested in professional fairs. All stakeholders want information on EC events. Regulation updates are of interest to AI awares only (except TEFs).

For support (all 3 functionalities absent in AIoD only addressed to AI Aware public bodies): no significant interest for these functionalities.

For technical tools (4 functionalities in AIoD, 5 more in the survey; only addressed to AI awares): all functionalities were of interest to all stakeholders, except the search functionality for public bodies.

For infrastructure (all functionalities absent in AIoD): all stakeholders have used clouds, none edge (except AI aware TEFs and DIHs), all HPC (except AI unaware SMEs and public bodies); all stakeholders recognize the need for cloud, both for training and inference, but not so for edge. HPC is still not required (except for AI aware DIHs and AI unaware public bodies).

This gap analysis shows that the existing functionalities on the present AI-on-Demand platform are certainly not sufficient. From the survey executed in D2.1, we have identified many more functionalities, which have been found of interest by various segments of the stakeholders. These functionalities will have to be considered in designing the future AIoD platform.

2 LIST OF ABBREVIATIONS

Abbreviations	Definition
AIoD platform	AI-on-Demand platform
(E)DIHs	(European) Digital Innovation Hubs
GDPR	General Data Protection Regulation
HPC	High Performance Computing
IaaS	Infrastructure as a Service
PaaS	Platform as a Service
SaaS	Software as a Service
SMEs	Small and Medium-sized Enterprises
TEFs	Testing and Experimentation Facilities
WP	Work Package

3 INTRODUCTION

3.1 Context and overview

The gap analysis is the second deliverable (D2.2) that WP2 is responsible for delivering.

This deliverable is built on:

- The existing functionalities on the current AI-on-Demand platform
- The needs expressed by the various stakeholders consulted as part of the WP2 work were summarized in the first WP2 deliverable which is the **stakeholders' requirements** (D2.1) (It is recommended to read deliverable D2.1 first in order to better understand the key elements in the present deliverable)

The aim of the present document is to provide a clear and easily interpretable vision of the gap between the functionalities already implemented on the current AIoD platform, potentially re-usable and the needs of the stakeholders, future users of the new version of the platform.

In chapter 6 of this document, WP2 has issued recommendations regarding the design of the future platform, based on the results aggregated in the two WP2 deliverables (D2.1 and D2.2). This last chapter can be considered as the final recommendation of WP2 addressed to the EC and all parties involved in the implementation of the future platform.

It is worth highlighting that the work of Pre-PAI task T5.3 (WP5) is closely linked to the WP2 outcomes from the gap analysis. Indeed, T5.3 should not only provide a train-the-trainer programme for EDIHs to enable them to support the digital transformation of their stakeholders with AI, but also propose appropriate matchmaking where the findings of WP2 are essential.

4 METHODOLOGY

4.1 Design of the gap analysis

The design of the gap analysis has been the subject of several iterations by the WP2 partners to offer the best experience to readers in terms of overview and ease of interpretation of the large volume of results analyzed and consolidated in the stakeholders' requirements (D2.1), compared with the existing functionalities of the platform.

The following stakeholders were consulted:

- SMEs and large industries
- Public bodies
- DIHs (Digital Innovation Hubs)
- TEFs (Testing and Experimentation Facilities)

Stakeholders are divided into **2 levels of AI maturity** in this present deliverable:

- AI aware stakeholders
- AI unaware stakeholders

Their level of AI maturity depends on their answers to the AI maturity assessment which they completed in the questionnaire (to find out more about the details of the calculation, please refer to chapter 4.2.2.4 AI maturity assessment page of the D2.1 stakeholders' requirements deliverable).

4.2 Sources

4.2.1 D2.1 Stakeholders requirements

The results reported in the cells of the gap analysis tables (see chapter 5) are based on the results consolidated in the stakeholders' requirements (D2.1), which were frozen on 19/06/2023.

The ranges indicated in the color code are aligned with the threshold requirements indicated in the stakeholders' requirements. In other words, if more than 60% of respondents indicate that the question (future functionality) is important to them, then the functionality is considered to be a requirement in the future platform and will be indicated by a green cell.

As a reminder, here are the different sections of the questionnaire to which the stakeholders submitted answers:

- Welcome page
- General information page
- Organization information page
- AI maturity assessment
- Useful functionalities
    - Contacts questions
    - Content questions
    - Data questions (only for AI aware stakeholders)
    - Training questions
    - Services questions
    - Funding programs questions
    - Jobs questions
    - Events questions
    - Technical tools questions (only for AI aware stakeholders)
- End page

4.2.2 Existing functionalities on the AIoD platform

The names of the existing functionalities on the current AI-on-Demand platform are highlighted in green in the rows of the gap analysis tables (see chapter 5). The mapping of the existing functionalities was carried out using the following sources:

- The requirements associated with the current version of the AI-on-Demand platform, which were made available to WP2 by the Pre-PAI partners who had been involved in the previous AI4EU project.
- The analysis and manual mapping of functionalities directly from the AI-on-Demand platform

5 GAP ANALYSIS

Please consider the following key elements of the gap analysis tables when reading this chapter:

- Table title: category of questions from stakeholders' questionnaires
- Rows: questions linked to the category of questions
- Column: distribution of stakeholders, divided into two levels of AI maturity (see AI maturity assessment in the stakeholders' requirements (D2.1))
- Last row: number of respondents by type of stakeholder and AI maturity level
- Cells: the results of the gap analysis
- Color code: see legend below each table

As indicated in the tables legend, grey cells mean that:

- The question was not answered by the respondent category. This is because answer to some questions is optional.
- Or the question was not displayed, given that
    - some questions are specific to a certain level of AI maturity (see chapters 4.1 and 4.2.1)
    - some questions are specific to certain types of stakeholders

It should also be noted that, there were no responses from AI unaware TEFs, since all TEFs who answered the questionnaire were categorised as AI aware following the AI maturity assessment they completed. Consequently, the cells in the AI aware TEFs columns in all the gap analysis tables below are systematically grey.

5.1 Contacts

Features	SMEs & LI AI Aware	SMEs & LI AI Unaware	Public Bodies AI Aware	Public Bodies AI Unaware	TEFs AI Aware	TEFs AI Unaware	DIHs AI aware	DIHs AI Unaware
Contacts								
Have access to AI solutions providers								
Have access to VCs								
Be introduced to AI solutions providers								
Be introduced to like-minded companies								
Be introduced to researchers fitted to your needs								
Participate in the AI community through forums								
Have access to a TEF								
Have access to a DIH								
Find suitable AI experts to provide solutions								
Have access to a networking space to find funding and sponsors								
Have access to a networking space with DIHs / Regional authorities or TEFs								
Have access to an ecosystem of researchers, industries and AI experts								
Number of respondents	101	87	21	44	3	0	42	21

Important for more than 60% of respondents
Important for more than 30% and less than 60% of respondents
Important for less than 30% of respondents
Not answered or question not displayed
Existing functionalities on the AIoD platform

SMEs & LI AI aware recognize the importance of collaboration and partnerships in the AI ecosystem. The contacts that they find the most interesting are researchers and other like-minded companies or experts they can reach through forums. Access to relevant contacts via the AI-on-Demand platform can facilitate potential collaborations with industry experts, research institutions, AI startups, or other companies with complementary expertise. By connecting with these contacts, companies can explore collaborative projects, share knowledge and resources, and accelerate their AI initiatives.

SMEs & LI AI unaware prioritize collaboration with solution providers who can assist them in preparing customized solutions. This indicates that these respondents acknowledge their lack of expertise or familiarity with AI technologies and are seeking external support to address their specific needs.

Public bodies would like to have access to contacts to a large extent. AI aware and unaware public bodies mostly share the same needs, and the only contact type they have no preference for is to have access to Venture Capitalists. As expected, AI unaware public bodies value to a lesser extent to be introduced to AI solutions providers and like-minded companies.

TEFs would like to have access and be introduced to AI solutions providers, be introduced to like-minded companies and have access to TEFs and DIHs, showcasing the importance of an interconnected AI ecosystem (although it seems that they see less value in connecting with researchers). A need to access funding and sponsors is also expressed, highlighting that sustainability is something that TEFs have in mind since the beginning of their operation.

(E)DIHs AI aware and unaware are interested in connecting with the AI ecosystem at large. Namely, they want to expand their connections to other (E)DIHs, showing the need to offer spaces to collaborate on specific technologies or areas. Here there is space to build bridges between TEFs and (E)DIHs. We believe that the newly created (E)DIHs will be key to bring AI technologies closer to SMEs. However, it is of utmost importance to facilitate collaboration opportunities between AI aware and unaware (E)DIHs to avoid increasing the digital divide that Europe is facing. Both types of (E)DIHs, AI aware and unaware, do not see the need to connect with VCs through the AIoD platform.

5.2 Content

Features	SMEs & LI AI Aware	SMEs & LI AI Unaware	Public Bodies AI Aware	Public Bodies AI Unaware	TEFs AI Aware	TEFs AI Unaware	DIHs AI aware	DIHs AI Unaware
Content								
Have access to success stories on AI project								
Have access to best practices and guidelines documents								
Have access to a selection of articles on AI in the press								
Have access to a selection of papers on AI applications								
Have access to a selection of academic research papers								
Have access to AI prototypes								
Have access to feasibility frameworks								
Have access to cost examples								
Have access to quality assurance methodologies								
Number of respondents	101	87	21	44	3	0	42	21

Important for more than 60% of respondents
Important for more than 30% and less than 60% of respondents
Important for less than 30% of respondents
Not answered or question not displayed
Existing functionalities on the AIoD platform

The results underscore the shared importance of practical guidance and research-based knowledge for **AI aware companies** in their pursuit of AI adoption and development. Best practices, guidelines and papers on AI applications offer valuable knowledge and insights into the latest advancements and real-world use cases, allowing companies to stay updated and leverage cutting-edge techniques.

In the case of content, AI aware and unaware **public bodies** share the same needs. They mostly value having access to success stories on AI projects, best practices and guidelines documents and a selection of papers on AI applications. Among these functionalities, the only one not already present on the platform is “have access to best practices and guidelines documents”.

The **TEFs** would like to see features such as success stories, best practices and guidelines documents. However, they do not seem to be interested in AI articles or papers (academic or application-oriented). They would also like to find AI prototypes, feasibility frameworks, cost examples and quality assurance methods, highlighting the need for more practical, implementation- and business-oriented content, which is mostly not available at the moment on the platform.

In the case of **(E)DIHs** the current existing functionalities such as finding research papers on AI and articles in the press, seem less attractive, especially for AI unaware hubs. Most of the respondents agree that having access to success stories on the use of AI, guidelines, best practices, cost examples and access to qualitative assurance methodologies would be of interest to them. During the interviews (E)DIHs agreed that a selection of best practices, together with guidelines on how (E)DIHs could support similar examples, should be promoted. Additionally, they agreed that toolkits or information targeting specific countries and sectors would be as well valuable.

5.3 Data

Features	SMEs & LI AI Aware	SMEs & LI AI Unaware	Public Bodies AI Aware	Public Bodies AI Unaware	TEFs AI Aware	TEFs AI Unaware	DIHs AI aware	DIHs AI Unaware
Data								
Have access to existing datasets								
Know about existing data spaces in your domain								
Know about existing initiatives for data sharing								
Have access to methods to assess your data quality								
Number of respondents	101	0	21	0	3	0	42	0

Important for more than 60% of respondents
Important for more than 30% and less than 60% of respondents
Important for less than 30% of respondents
Not answered or question not displayed
Existing functionalities on the AIoD platform

Note that the “data” questions were only displayed in the questionnaire for AI aware stakeholders.

The high percentage of **AI aware companies** that are interested in all proposed functionalities related to data signifies their recognition of the need to harness and leverage data effectively for AI-driven applications. This indicates a strong desire among AI aware companies to access and utilize comprehensive data resources, suggesting their intention to employ data-driven approaches to enhance the performance and outcomes of their AI systems. It also demonstrates a proactive approach towards staying informed about advancements in data-related technologies and techniques, highlighting their commitment to staying at the forefront of AI innovation and ensuring the quality and reliability of their AI solutions.

The data functionalities were displayed only to AI aware **public bodies,** and they expressed a strong preference for all of the functionalities.

All **TEFs** would like to have access to datasets, to know about data spaces in their domain and existing initiatives for data sharing and methods to assess data quality. More awareness and guidance on data issues was also mentioned as important in the online interviews conducted. One of the TEFs requirements for AI testing is providing relevant data sets to users.

Regarding the features preferred by AI aware **(E)DIHs,** in terms of access to data, there is consensus in finding current features of interest, access to existing datasets and data spaces in their domain. They also agree that it would be relevant to know about existing initiatives on data sharing and methods to assess data quality. Some of the interviewed experts agreed that access to reliable data is a major challenge. They also expressed that both access to TEFs and the common Data Spaces at EU level will be useful for providing support to AIoD platform users in developing AI services and tools.

5.4 Training

Features	SMEs & LI AI Aware	SMEs & LI AI Unaware	Public Bodies AI Aware	Public Bodies AI Unaware	TEFs AI Aware	TEFs AI Unaware	DIHs AI aware	DIHs AI Unaware
Training (autonomous learning)								
Have autonomous access to basic training modules on AI								
Have autonomous access to basic training modules on applications of AI to your domain								
Have autonomous access to advanced training modules on AI								
Have autonomous access to training on trustworthy AI, including AI regulation								
Have autonomous access to a catalogue of best practices for learning AI skills								
Number of respondents	101	87	21	44	3	0	42	21

Important for more than 60% of respondents

Important for more than 30% and less than 60% of respondents

Important for less than 30% of respondents

Not answered or question not displayed

Existing functionalities on the AIoD platform

The analysis of training requirements highlights a strong demand among **AI aware companies** for autonomous access to resources that enhance their AI skills and knowledge. A significant majority (76%) of AI aware companies express the need for a catalogue of best practices, demonstrating their desire to stay updated with the latest industry standards and advancements. Furthermore, AI aware companies (74%) emphasize the importance of autonomous training on trustworthy AI and AI regulation, indicating their commitment to responsible and compliant AI practices. On the other hand, **AI unaware companies** also show interest in autonomous access to AI resources, with a focus on basic training modules (70%) and best practices (67%), suggesting their willingness to explore and adopt AI technologies in their specific domain with the necessary foundational knowledge.

The AIoD platform already offers training functionalities, AI aware **public bodies** have expressed a strong preference for all of them, while AI unaware public bodies do not seem to value much to have autonomous access to advanced training modules on AI and training on trustworthy AI, including AI regulation.

Training does not seem as a valuable feature for **TEFs** as only 1 out of 3 would like to find relevant modules on the AIoD platform. This can be explained perhaps by the fact that TEFs are run by highly skilled organisations that will provide specific test-at-scale services or that since they are just starting to operate have not yet identified such needs.

Training is one of the features that **(E)DIHs** value as an important tool to them. It is evident that the interest in advanced training is lower for AI unaware **EDIHs**. Offering tools and resources or networking opportunities for (E)DIHs to learn from each other is considered of key interest. Peer-learning has proved to be one the learning methodology with higher impact for (E)DIHs. There is also a good interest in training on trustworthy AI and AI regulation, understanding the existence of requirements at EU level for the use and deployment of AI.

5.5 Services

Features	SMEs & LI AI Aware	SMEs & LI AI Unaware	Public Bodies AI Aware	Public Bodies AI Unaware	TEFs AI Aware	TEFs AI Unaware	DIHs AI aware	DIHs AI Unaware
Services								
Have access to coaching services								
Benefit from training services								
Benefit from advanced training services								
Have access to support in assisting with data acquisition, data processing and data analysis								
Have access to guidelines or checklist to assess and document the trustworthiness of your AI solution								
Have access to services that help you to assess the quality of the AI model								
Benefit from legal services to adress the trustworthiness of AI applications, including AI regulation (AI Act)								
Benefit from ethical services to address the trustworthiness of AI applications								
Receive assistance with GDPR								
Receive assistance with AI Act								
Receive assistance with Test-before-invest								
Receive assistance with Test at scale								
Number of respondents	101	87	21	44	3	0	42	21

Important for more than 60% of respondents
Important for more than 30% and less than 60% of respondents
Important for less than 30% of respondents
Not answered or question not displayed
Existing functionalities on the AIoD platform

The analysis suggests that **AI unaware companies** stand to benefit significantly from the introduction of new potential services offered by the AI-on-Demand platform, particularly in the area of training services. These services can provide valuable support and guidance to AI unaware companies, helping them bridge the gap in their AI knowledge and skills.

On the other hand, **SMEs & LI AI aware companies** extract the most value from the existing service of the platform, namely access to guidelines or checklists to assess and document the trustworthiness of their AI solution. Regarding potential new services, the analysis reveals a strong emphasis among AI aware companies on the need for resources and services that address the trustworthiness of AI solutions. This includes guidelines, legal solutions, ethical services, and assessments of AI model quality. The findings indicate a growing recognition of the ethical, legal, and technical challenges associated with AI, and companies are actively seeking support and frameworks to ensure the trustworthiness of their AI applications.

AI unaware **public bodies** have expressed a stronger preference for services compared to AI aware **public bodies,** with almost every functionality ranked as important for around 60% of respondents. AI aware public bodies have expressed a strong preference for training services (including advanced), support in assisting with data acquisition, processing and analysis and services that help them assess the quality of the model. The existing functionality (have access to guidelines to assess and document the trustworthiness of the model) is considered important to a lesser extent.

TEFs would like to have access to services that assess the quality of an AI model as well as legal (trustworthiness and AI Act), ethical and GDPR, which are vital for industrial applications. They would also like assistance with Test at scale, which is their main function.

(E)DIHs consider of interest any service that can support them in developing a technology adoption roadmap for SMEs interested in adopting AI. Most of the respondents would be interested in receiving support for implementing their test before investing activities. AI unaware hubs are less prone to receive services related to legislation, including GDPR and AI Act, or the trustworthiness AI applications that require advanced knowledge of AI. Both groups agree that the current feature that grants access to guidelines and checklists to assess and document the trustworthiness of AI solutions is very relevant. Again, practical content with real application in their daily activities is the type of content that is more attractive.

5.6 Funding programs

Features	SMEs & LI AI Aware	SMEs & LI AI Unaware	Public Bodies AI Aware	Public Bodies AI Unaware	TEFs AI Aware	TEFs AI Unaware	DIHs AI aware	DIHs AI Unaware
Funding programs								
Have access to a map of funding sources								
Be informed of project proposals								
Be informed of AI challenges								
Be informed of current and future public funding or cascade funding opportunities								
Number of respondents	101	87	21	44	3	0	42	21

Important for more than 60% of respondents
Important for more than 30% and less than 60% of respondents
Important for less than 30% of respondents
Not answered or question not displayed
Existing functionalities on the AIoD platform

The survey results indicate that both **AI aware and AI unaware companies** acknowledge the value of a funding opportunity map but highlight the need for additional functionalities beyond direct funding**.** The findings emphasize the importance of fostering collaboration between companies – especially AI aware ones - which can bring not only financial resources but also knowledge and expertise through joint ventures on new projects. This includes participation in AI challenges and access to information on project proposals, enabling companies to leverage collaborative opportunities and tap into a broader network for innovation and knowledge exchange.

Being informed of funding programs is considered important by both AI aware and unaware **public bodies**, and all the existing functionalities on the platform are valued by the majority of the respondents.

Funding seems a crucial topic for **TEFs**, thus they would like to have access to relevant information and opportunities.

EDIHs, like most of the stakeholders, are highly keen to receive information on funding opportunities, including cascade funds, and AI challenges. A new feature that is proposed in the survey is mapping funding sources, but we think it is equally important to offer information on the type of actions that each of the funding programmes can support SMEs with. Additional value could be added if those funding programmes would showcase real examples. Envisioning how funds can support the different innovation cycles could offer a guide and new knowledge to EDIHs.

5.7 Jobs

Features	SMEs & LI AI Aware	SMEs & LI AI Unaware	Public Bodies AI Aware	Public Bodies AI Unaware	TEFs AI Aware	TEFs AI Unaware	DIHs AI aware	DIHs AI Unaware
Jobs								
Be informed of open job offers								
Post job offers								
Number of respondents	101	87	21	44	3	0	42	21

Important for more than 60% of respondents Important for more than 30% and less than 60% of respondents Important for less than 30% of respondents

Not answered or question not displayed Existing functionalities on the AIoD platform

The analysis suggests that there is a moderate level of interest among both **AI aware and AI unaware companies** in utilizing the job offer functionality of the AI-on-Demand platform.

Neither AI aware nor AI unaware **public bodies** consider it relevant to be informed of open job offers or post job offers.

Interestingly it appears that all **TEFs** would like to be able to get information about job offers as well as publish ones. This could be related to the high-level expertise needed at these facilities and the scarcity of such professionals.

(E)DIHs do not find it relevant to have access to job offerings or be able to post them, since it may be a service they are not offering to their users.

5.8 Events

Features	SMEs & LI AI Aware	SMEs & LI AI Unaware	Public Bodies AI Aware	Public Bodies AI Unaware	TEFs AI Aware	TEFs AI Unaware	DIHs AI aware	DIHs AI Unaware
Events								
Be informed of research events								
Be informed of professional fairs								
Be informed of EC-organized events								
Be informed of related initiatives launched								
Be informed of regulation updates								
Number of respondents	101	87	21	44	3	0	42	21

Important for more than 60% of respondents
Important for more than 30% and less than 60% of respondents
Important for less than 30% of respondents
Not answered or question not displayed
Existing functionalities on the AIoD platform

In general, there is a certain disparity between the level of interest exhibited by **AI aware and AI unaware companies** when it comes to being informed about events. The majority of AI aware companies demonstrate a higher inclination towards engaging in events, particularly those focused on regulation updates, closely followed by interest in research events and events organized by the European Commission. While AI unaware companies display a comparatively lower interest in being informed about events, it is noteworthy that, despite their relatively lower enthusiasm, they still exhibit a preference for events organized by the European Commission and those centered around regulation updates.

Among the existing functionalities on the platform, **public bodies** consider it important to be informed of EC-organized events and related initiatives launched, the latter considered more important by AI unaware public bodies. Being informed of regulation updates would be interesting for AI aware public bodies.

TEFs are particularly interested in the existing functionalities regarding events, such as getting information about professional fairs, EC-organized events and related initiatives launched. They are less interested in research events (as it has been already highlighted) and regulation updates.

Regarding the features related to events, **(E)DIHs** consider professional fairs as a type of event that should be included. As per the information currently available, research events and regulation updates, only AI aware **(E)DIHs** feel those are relevant. Additionally, there are discrepancies related to EC-organized events and getting information on related initiatives, both features are important for more than 60% of the AI aware respondents. Whereas AI unaware hubs do not consider it as a priority. This is aligned with the interest in direct applications and best practices: AI unaware hubs need tailored services or tools and would not expect to develop technologies nor join research projects.

5.9 Support

Features	SMEs & LI AI Aware	SMEs & LI AI Unaware	Public Bodies AI Aware	Public Bodies AI Unaware	TEFs AI Aware	TEFs AI Unaware	DIHs AI aware	DIHs AI Unaware
Support								
Get support for improving the internal efficiency of public administration processes								
Get support for improving public administration decision making								
Get support for improving citizen-government relations								
Number of respondents	0	0	21	0	0	0	0	0

Important for more than 60% of respondents Important for more than 30% and less than 60% of respondents Important for less than 30% of respondents

Not answered or question not displayed Existing functionalities on the AIoD platform

Note: this set of questions was only addressed to **AI Aware public bodies**.

AI aware **public bodies** consider receiving support on the platform for improving the internal efficiency of public administration processes or public administration decision making to a moderate extent.

5.10 Technical tools

Features	SMEs & LI AI Aware	SMEs & LI AI Unaware	Public Bodies AI Aware	Public Bodies AI Unaware	TEFs AI Aware	TEFs AI Unaware	DIHs AI aware	DIHs AI Unaware
Technical tools								
Have access to tools that could aid with AI solution development								
Have access to tools that could aid with technical challenges								
Have access to tools that could aid with testing and validation								
Have access to AI librairies								
Have access to data cleaning tools								
Have access to AI bricks ready-to-use / packaged models								
Have access to tools to help you comply with AI regulation								
Have access to regulatory sandboxes								
Search contents through a search engine								
Number of respondents	101	0	21	0	3	0	42	0

Important for more than 60% of respondents

Important for more than 30% and less than 60% of respondents

Important for less than 30% of respondents

Not answered or question not displayed

Existing functionalities on the AIoD platform

Note that the “technical tools” questions were only displayed in the questionnaire for AI aware stakeholders.

The analysis indicates that **SMEs and large-scale AI aware companies** exhibit a strong interest in the proposed functionalities of the AI-on-Demand platform, including both existing and proposed ones. They show a particularly high interest in the proposed new functionalities, with a notable emphasis on tools to assist with AI regulation compliance. This indicates their recognition of the importance of adhering to regulatory frameworks and guidelines when implementing AI solutions. Additionally, they demonstrate a keen interest in AI bricks, which are ready-to-use or packaged models, and AI libraries that facilitate the development of AI models. This signifies their need to leverage pre-existing resources and infrastructure to support the AI development process.

AI aware **public bodies** consider it important to have access to AI libraries (already on the platform), data cleaning tools, AI bricks ready to use/packaged models, tools that help them comply with regulation and regulatory sandboxes.

TEFs would like to have access to all kinds of technical tools that were listed in the survey (existing and suggested), which is justified by their technical nature and orientation.

When we look at the technical tools that are currently available, AI aware **(E)DIHs** agree on their relevance. But the results show also that they would like to see other tools to deal with technical challenges and comply with AI regulations. They also see as an important feature to be added, the access to regulatory sandboxes and access to AI-bricks ready to use. The search engine is very helpful, but examples of how different tools or resources can be found should be provided.

5.11 Infrastructure

Features	SMEs & LI AI Aware	SMEs & LI AI Unaware	Public Bodies AI Aware	Public Bodies AI Unaware	TEFs AI Aware	TEFs AI Unaware	DIHs AI aware	DIHs AI Unaware
Infrastructure: Have you used Cloud infrastructure, and on which platform?								
Cloud infrastructure – Have used, using or having an intent to use it								
Number of respondents	98	48	20	29	3	0	42	15

Features	SMEs & LI AI Aware	SMEs & LI AI Unaware	Public Bodies AI Aware	Public Bodies AI Unaware	TEFs AI Aware	TEFs AI Unaware	DIHs AI aware	DIHs AI Unaware
Infrastructure: Are you using Edge infrastructure for AI/ML purposes, or consider using it in the future?								
Edge infrastructure – Using or having an intent to use it								
Number of respondents	98	48	20	29	3	0	42	15

Features	SMEs & LI AI Aware	SMEs & LI AI Unaware	Public Bodies AI Aware	Public Bodies AI Unaware	TEFs AI Aware	TEFs AI Unaware	DIHs AI aware	DIHs AI Unaware
Infrastructure: Have you used HPC, and on which platform?								
HPC infrastructure – Have used, using or having an intent to use it								
Number of respondents	98	48	20	29	3	0	42	15

Features	SMEs & LI AI Aware	SMEs & LI AI Unaware	Public Bodies AI Aware	Public Bodies AI Unaware	TEFs AI Aware	TEFs AI Unaware	DIHs AI aware	DIHs AI Unaware
Infrastructure: What is your perceived importance of AI/ML for								
Training on Edge infrastructure								
Training on Cloud infrastructure								
Training on HPC infrastructure								
Inference on Edge infrastructure								
Inference on Cloud infrastructure								
Inference on HPC infrastructure								
Number of respondents	101	48	20	29	0	0	42	15

Important for more than 60% of respondents

Important for more than 30% and less than 60% of respondents

Important for less than 30% of respondents

Not answered or question not displayed

Existing functionalities on the AIoD platform

AI applications heavily rely on the availability of large datasets, which has led to an increased demand for data centers capable of storing and processing this vast amount of information. Depending on the specific field of AI research and application, different infrastructures such as edge, cloud, and HPC may be required depending on various factors, including the nature of the AI tasks, the scale of data processing, real-time requirements, and the computational resources needed.

For certain AI applications, edge infrastructures might be necessary to enable real-time processing and decision-making at the edge of the network, reducing latency and enhancing privacy and security. Cloud infrastructures, on the other hand, provide scalability, flexibility, and access to a wide range of resources, making it suitable for large-scale data processing and storage. In cases where highly intensive computational tasks or complex modelling are involved, HPC infrastructure may be essential to achieve high performance and processing capabilities.

In many instances, a mixed approach that combines edge, cloud, and HPC infrastructures can be utilized to leverage the advantages of each. This allows for a distributed architecture that optimizes resource utilization, addresses specific requirements, and achieves an optimal balance between computation, storage, and communication. The choice of infrastructure is therefore highly dependent on the specific needs and goals of AI research and application.

SMEs and large industries acknowledge the importance of cloud infrastructure for training. When it comes to inference, both cloud and edge are considered essential. The infrastructure cost/value ratio is considered high. Security stands out as one of the most important factors.

Public bodies acknowledge the importance of cloud infrastructure for both training and inference. The infrastructure cost/value ratio is considered high. When it comes to edge computing, the most important factors are security, privacy, and low latency. AI unaware may lack the necessary technology partners or skills to effectively utilize HPC infrastructure.

E(DIH)s consider important all three infrastructures (edge, cloud and HPC) for both training and inference. The infrastructure cost/value ratio is considered high. When it comes to edge computing, the most important factors are security, privacy as well as access to data from multiple sensors. The main barrier to using HPC infrastructure, as perceived by (E)DIHs, is the financial aspect. Security stands out as one of the most important factors for clouds.

TEFs are still in their early stages, while the questionnaire did not capture their responses, it can be assumed that all three infrastructures (edge, cloud, and HPC) hold relevance for TEFs.

The need to establish public research facilities dedicated to providing compute resources for AI is indeed growing, and initiatives such as ELLIS (European Laboratory for Learning and Intelligent Systems) and LAION (Large-scale Artificial Intelligence Open Network) have explicitly addressed this need. (https://ellis.eu/news/ai-foundation-models-a-roadmap-for-europe, https://laion.ai/documents/open-letter-to-eu-parliament.pdf).

Today, the AIoD platform does not include any infrastructure offering to its users. The survey has shown that HPC, Cloud and Edge infrastructure for training of AI/ML models and for inference (serving AI/ML models or AI/ML based services and applications) are important for all stakeholders. Training on the Edge is more important than we anticipated, and one rational explanation is that federated, split and distributed training is increasing in popularity due to privacy preserving mechanisms that these types of training bring forward. The AIoD platform should include infrastructure offerings specifically targeting training and inference of AI/ML models.

6 WP2 RECOMMENDATIONS

6.1 SMEs and large Industries

Being one of the stakeholders' segments that would benefit the most from the information and resources provided by the AI-on-Demand platform, the consultation activities carried out with **SMEs and large Industries** representatives offered important insights for identifying the existing gaps and barriers to the adoption of AI for SMEs and large industry (AI user companies). These insights play a pivotal role in informing strategies aimed at addressing these barriers and facilitating the broader integration of AI technologies within the targeted sectors facilitated by the AI-on-Demand platform.

In terms of **access to contacts**, it is encouraged that the AI-on-Demand platform focuses on providing access to relevant contacts such as researchers, like-minded companies, and experts (including via forums of discussion), enabling users to connect with potential collaborators and leverage their expertise for joint projects and knowledge sharing (AI aware). Additionally, for SMEs and large industry (AI unaware) users, the platform should prioritize connecting them with solution providers who can offer customized AI solutions and support to address their specific needs, acknowledging SMEs' limited AI expertise.

Regarding the **content** promoted, it is recommended that the AI-on-Demand platform prioritizes the provision of practical guidance, best practices, guidelines, and research-based knowledge (only for AI aware companies) to cater to the needs of both AI aware and AI unaware companies. Offering access to papers on AI applications and academic research can enable companies to stay informed about the latest advancements and real-world use cases, fostering continuous learning and improvement in their AI initiatives. By leveraging these resources, companies can make informed decisions, stay up-to-date with industry trends, and effectively harness the latest techniques to drive successful AI adoption and development.

The results suggest that the AI-on-Demand platform should place a significant emphasis on **facilitating access to comprehensive and diverse data resources (e.g., through access to common European data spaces)**, catering to the high demand expressed by AI aware companies. This entails providing robust functionalities and tools that enable effective data harnessing and utilization, fostering data-driven approaches for AI applications. The platform should also prioritize keeping AI aware companies informed about the latest advancements in data-related technologies and techniques to support their continuous innovation and ensure the high quality and reliability of their AI solutions.

Regarding **training** options, it is recommended to prioritize autonomous access to resources aimed at enhancing AI skills and knowledge for both AI aware and AI unaware companies. This includes providing a comprehensive catalogue of best practices to keep AI aware companies updated with industry standards and advancements.

When it comes to **services** offered through the AI-on-Demand platform, it is recommended to expand on existing services, particularly in the area of trustworthiness assessment, by offering guidelines, legal solutions, ethical services, and AI model quality assessments solutions. This will address the increasing recognition of ethical, legal, and technical challenges in AI and assist companies in ensuring the trustworthiness of their AI applications.

It is recommended to enhance the AI-on-Demand platform by providing not only a map of **funding opportunities**, but also additional functionalities that foster collaboration between companies. This should include opportunities for joint ventures on new AI projects and participation in AI challenges. By facilitating such collaborations, especially for AI aware companies, the platform can effectively connect companies, enabling them to pool financial resources, exchange knowledge, and leverage expertise for innovative AI projects.

Based on the feedback received, it is recommended to prioritize the implementation of proposed/newly identified **functionalities and technical tools (see functionalities in black text in the gap analysis tables)** on the platform, as SMEs and large-scale AI aware companies display a strong interest in these offerings. Specifically, providing robust tools to aid in AI regulation compliance is crucial, as it aligns with their acknowledgment of the significance of adhering to regulatory frameworks. Additionally, focusing on the provision of AI bricks and libraries will enable them to leverage existing

resources and infrastructure, streamlining the AI development process and enhancing overall efficiency.

6.2 Public bodies

The analysis of the consultation activities carried out with **public bodies** informed the gap analysis. Below, the recommendations tailored to address the expressed needs of the stakeholders. As a general remark, many of the stakeholders interviewed already knew the AIoD platform and were keen to contribute to its further development.

In general, **contacts** are deemed very useful by the majority of respondents with all categories (with the only exception of being put in contact with Venture Capitalists) of contacts ranked between 30% and 60%, regardless of their AI maturity. During all the interviews and focus groups conducted, this need was confirmed, and public bodies stressed the importance of **being able to talk to other administrations,** sharing their experiences with AI and know-how to compare success/failure stories. Most importantly, knowing what a similar, comparable, administration is implementing can serve as an example and provide guidance. AI aware public bodies also valued the possibility of interacting with AI solutions providers or researchers fitted to their needs.

The importance of success stories on AI projects was strengthened by the survey results in the **content** category. Both AI aware and unaware public bodies ranked above 80% the content types “have access to success stories” and “have access to best practices and guidelines documents”. The AIoD platform should definitely integrate this type of content, prioritizing it over academic research papers or articles in the press, which are already covered by many other channels (platforms, newsletters, etc.). The one-to-one interviews conducted further highlighted the strong demand for access to **pre-validated and high-quality content**.

The AI aware respondents considered **having access to data on the AIoD platform as important to a very large extent.** The need for data emerging from survey results was confirmed by consultation with stakeholders, many of whom identified lack of data quality and accessibility to data as the main challenges in adopting AI. Indeed, representatives of European ministries are worried about the quality of data fed to the AI system, stressing that the benefits granted by the use of AI, must be balanced against its risks and an emphasis must be placed on reducing discriminatory, historical, racial, and gender bias from AI decision-making.

The **public sector** is aware of the ethical risks of AI (however, the need to have access to ethical services to mitigate them on the platform did not reach the requirement threshold) and regarding **training**, AI aware respondents have expressed the following two needs as a priority: have autonomous access to a catalogue of best practices for learning AI skills and have autonomous access to **training on trustworthy AI.** AI-unaware respondents place more importance on basic training modules. Interviews confirmed this need as for civil servants who lack even the most basic competencies, purely technical courses would be hardly beneficial for the same reasons. In this sense, information is more valuable than training. Moreover, our recommendation is that the market has already plenty of trainings offered. Public bodies would find most useful if the AI-on-Demand platform would curate a repository based on quality.

The ethical risks of AI were considered also when expressing the need for **services**, in this category also AI unaware respondents expressed the need to have access to guidelines or checklists to assess the trustworthiness of the solution. Access to support in assisting with data acquisition, data processing and data analysis is considered valuable by both AI-aware and unaware public bodies.

During the consultations with stakeholders, having access to **funding programs** and relevant news on the AIoD platform emerged as a more important need compared to survey results. This was particularly relevant for the regions participating in the regional focus group, considering the fulfilment of this need as crucial for growing and keeping evolving in the AI sector.

In general, being informed about open **job offers** or being able to post job offers does not seem something the public sector would consider valuable to have on the AIoD platform; both functionalities did not reach the requirement threshold nor for AI aware nor unaware respondents. Consultation activities confirmed the survey results. Having access to **events** is not a priority either and from the

review of relevant projects it emerged that events are already disseminated through several other platforms, having them on the AIoD platform as well would be a repetition.

As expected, AI aware public sector bodies expect to find **support** in the platform in improving the internal efficiency of public administration processes. They would also value support in improving public administration decision making, and, to a lesser extent, in improving citizen-government relations.

Among **technical tools**, the most relevant tools AI-aware public bodies would like to have access to are: AI libraries, data cleaning tools, AI bricks ready to use/packaged models, tools that help them comply with AI regulation and regulatory sandboxes.

6.3 TEFs

The survey results, where 3 out of the 5 **TEFs** participated, as well as the feedback collected during the online meetings with the remaining 2 TEFs have provided some insights regarding what they would expect or need from the AIoD platform. It has to be stated again that most TEFs had just started their respective projects when the survey was conducted and that their input was premature.

The results indicated that **TEFs** would like to access the AI ecosystem, especially the non-research communities and initiatives. During the focus group, it was suggested that a working group on the relationships between EDIHs, TEFs and the AIoD platform would be useful, as the boundaries and expectations among and from them are not clear.

The content that **TEFs** would like to see on the platform is focused on practical aspects (applied technology, i.e., best practices, prototypes, feasibility frameworks, quality assurance methodologies or business, i.e., success stories and cost examples) that would enable them to enhance their service offering rather than articles or papers. Data issues are quite critical for all TEFs, thus relevant information, initiatives and methodologies would act as enablers.

The interviews indicated that the **TEFs** see the AIoD platform as an opportunity for additional coverage, visibility and coordination of services, but there is still a long way to convince them that this will not add bureaucracy to their operations and that it will not be a replica of the AI4EU project. The survey results also highlighted that the TEFs would exploit any technical tool that would be available from the platform and thus they could act as good test users for them.

The survey results, the interviews and the fact that the **TEFs** were at a premature phase during the Pre-PAI project, suggest that it would be beneficial for the DIGITAL AIoD project to follow up on them for updated input and further insights.

6.4 (E)DIHs

Based on the results gathered and the feedback from the **(E)DIHs** offering spaces for networking, especially with other (E)DIHs, and contact with the AI ecosystem is a key priority. Activities to favour peer-learning and the exchange of lessons learned related to the use of AI would be very much welcomed.

(E)DIHs prefer content and tools that have a practical application in their daily activities. Even if the resources included currently in the platform are seen as relevant, hubs agree that guidelines and examples or best practices should be added. Moving from a catalogue of tools and information to a platform that allows the creation of tailor-made roadmaps for SMEs or to find inspiration with real cases of (E)DIHs having supported local companies.

There are different perceptions between AI aware and unaware (E)DIHs in terms of importance given to regulation and trustworthiness. There is a need to enhance awareness around ethical AAI. Actions to support (E)DIHs in this domain should target both groups of (E)DIHs. The support in this domain should range from raise awareness activities to checklists and guidelines to avoid potential risks.

Some of the interviewed **(E)DIHs** also mentioned their interest in co-creating joint projects with other (E)DIHs. Additionally, they highlighted the possibility of offering their service through the platform to support SMEs jointly with other hubs across Europe. In this regard, it has been suggested in several

conversations that it will be important for the innovation ecosystems (EDIHs, Centres of Excellence, TEFs) supported by the European Commission, to define their boundary conditions and competences to be able to interact with one another without overlaps.

Finally, all **(E)DIHs** concur with the need of organizing training activities and events to widespread the use of the AIoD platform. The creation of toolkits or communication materials in local languages would be considered an asset to foster AI adoption in Europe through the resources available.

6.5 HPC, Cloud and Edge Infrastructure

The AIoD platform should consider offering at least IaaS (Infrastructure as a Service) and possibly PaaS (Platform as a Service) and SaaS (Software as a Service) relevant for the data cleaning, data analysis and AI/ML domain. Offerings should be available on HPC, Cloud and Edge infrastructure and the availability should be possible to detect for the AIoD platform. The needed offerings will vary over time and should adjust accordingly. This implies that monitoring “state of art” in this area is a continuous process.

When providing infrastructure, based on the survey results, the following factors will be important: i) security aspects, ii) cost for infrastructure (a clear cost model should be provided, possibly with comparison to the main commercial competitors), and iii) intelligent assistance for selecting tools and set-up as well as optimizing usage of the infrastructure across the edge, cloud, HPC continuum.

7 CONCLUSION

By asking stakeholders their opinions about the usefulness for them of a wide range of functionalities we have collected and analyzed the needs and requirements of stakeholders, using a survey disseminated among consortium members’ networks or through interviews and workshops. Then we analyzed the gaps in the existing functionalities in the current AIoD platform with respect to all the functionalities listed in the survey: this demonstrated that the functionalities in the present AIoD platform are by no means sufficient. This gap analysis should serve as the basis for a roadmap to adapt the AIoD platform to actual stakeholders’ needs.