2nd ICT-48 Community event

Brussels, 19 October 2022

Second ICT-48 Community Workshop: Towards a Shared European AI Map and Strategic Research Agenda

(Draft) report

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Date	**2-12-2022**
Participants	**40 people**

Executive Summary

Almost 40 people from the AI research community and policy ecosystem gathered on October 19th, 2022 in Brussels in a community workshop organized by the VISION project. Representatives from VISION, the ICT-48 Networks of Excellence (NoE) HumanE-AI-Net, ELISE, TAILOR, AI4Media, ELSA, euROBIN, Adra-e and the European Commission spent a day discussing how to collaborate with each other, leverage on each other results and what a mapping the European AI ecosystem and a European AI Strategic Research Agenda could look like. The morning part of the programme featured 6 roundtables, where participants could discuss and exchange ideas on topics like: cross-network scientific challenges, educational activities, collaboration with Digital Innovation Hubs (DIH) and with industry, and cross-network communication. The sessions may be summarised as follows:

- *Collaboration on education:* Collect the courses that are already out there and meaningfully organize them, rather than developing new courses. Learn from each other and from other networks which have had similar experiences (e.g. HPC). The goal is to make EU studies attractive, attracting *and* retaining students.

- *Collaboration with Digital Innovation Hubs:* This happens, but not structurally. A VISION survey from 2022 concludes there is "a general lack of strategic interest from NoEs towards DIHs", while there are clear opportunities for collaboration. TEFs could bridge the gap between NoEs and DIHs, and the NoE's need to connect better to Digital Europe initiatives. Who is the right interlocutor for catalyzing the collaboration between NoEs and DIHs?

- *Collaboration with Industry:* All NoEs are in some way supporting the connection with industry with their ecosystems and that is already a big portion of the work. Industry finds it difficult to navigate all networks (and some are part of many), so at least a minimal level of creating a landscape and then possible coordination is needed to help industry. There is a need to identify the needs of industry but also good practices on how to involve them.

- *Common visual identity:* This is a joint commitment towards excellence in AI while preserving the identities of the various NoE and friends. The common brand can also be connected to other networks like the AI-on-demand (AIoD) Platform, but also create a sense of being proud to be part of the network (e.g. also with researchers). The first audience to reach is the AI networks and then the general public. The ICT-48 task force and AIoD to come together in a task force and involve EC.

- *Cross- and beyond network communication:* Think on how to reflect on the myths on AI through scientific arguments, connecting to partners, showcase the scientific results of the NoE and connect with AIoD and other networks to align dissemination but also to connect events.

- *Cross-network scientific challenges:* Do not replicate scientific conferences but create shared focused workshops and curated lists to find each other. A lightweight mechanism per theme, but realistic. In scientific topics, besides the familiar challenges, we also think about social systems perspective or transferability. Find a way to bridge across themes through a cross-network content creation team, but we need to organize it efficiently!

The European Commission, represented by Cécile Huet, kicked-off the afternoon sessions outlining a vision of a vibrant network and ecosystem of AI excellence centres working together as a way to develop Europe's position in AI (research) and support industry and society with AI application "from the lab to the market".

In a session on collective mapping, the participants - led by Maurits Butter (TNO) and Iddo Bante (ADRA-e) - discussed 1) who are the most important users of such mapping, 2) how to engage the target audience and 3) efficient organisation of a collective mapping. Discussions revolved around whether there is a need for such mapping, recognizing the importance of creating a common understanding of what is mapped and what is understood by excellence, and the need to connect any topic with actual application. The enormity of the topic and effort was recognized, and it was decided that further alignment and discussions might be needed.

Another key topic of discussion revolved around the idea of a European AI Strategic Research Agenda that complements the individual SRAs of the AI networks of excellence. Moderated by Fredrik Heintz (TAILOR), the session featured presentations from each of the NoEs on the key points of their SRAs. The discussion then turned to how these diverse topics and application areas can be connected and draw higher level conclusions. A first start to come up with a potential structure connecting the various topics in a categorization (also to initiatives like Adra SRA) was presented by Freek Bomhof (TNO) with a discussion on how this categorization connects to the research communities and how to introduce dependencies. The starting point for the common SRA is a Joint Editorial Board (JEB) with representatives of all NoEs, led by TAILOR and ELISE, supported by VISION. The goal of the common SRA is not necessarily for the NoEs to agree, but to position themselves within certain topics. This leaves room for analysis and drawing higher level conclusions. The form of the common SRA was envisioned to be more high level than the NoEs SRAS. It may be more mission-oriented, such as the 5 mission areas of the Horizon programme, or also contain academic long-term challenges.

A group of representatives from the networks will further continue the work started. Further, a session in the Big Data Value Forum in November will aim to collect further insights from the AI community on the presented categorization.

The overall conclusion of the workshop was that the AI ecosystem is developing and open discussions among the various communities to enhance collaboration and peer learning. Reflecting on all the sessions, the NoEs came together, connected and identified synergies from collaboration on education to a European AI Strategic Research Agenda.

Introduction

The ICT-48 project *Value and Impact through Synergy, Interaction and coOperation of Networks of AI Excellence Centres (*VISION) is the Coordination and Support Action (CSA) project that coordinates and supports the four Networks of Excellence that have been set up within the ICT48 call on Trustworthy AI:

- HumanE-AI-Net
- ELISE
- TAILOR
- AI4Media

This report outlines a summary of the main topics discussed at the community event that the VISION project has organized to foster cross-network collaboration and identification of common topics. This event is the follow-up of an earlier community event that had to be organized online (because of Covid-related restrictions), but for the second ICT-48 Community Workshop it was desirable to organize a full day event in a physical location, Brussels.

Around 40 people from the AI research, innovation and policy ecosystem participated in the workshop (see Annex A). Representatives of the European Commission, the four NoEs, and other networks who have been invited across the AI, Data and Robotics community – in particular ELSA, AI4Europe, euROBIN and Adra-e.

The morning sessions (10:00-12:00) consisted of roundtables focused on topics. These topics were selected through a vote, as the participants could select three topics during registration. The roundtables were facilitated by VISION and aimed to create discussion across the participants. In the afternoon (13:00-17:30) two strategic topics were opened for discussion among the broader AI, Data & Robotics community: Mapping the AI ecosystem, and a European AI SRA.

Agenda

Venue: Neth-ER, Brussels

Date: October 19th, 2022

10:00 Welcome by VISION
Holger Hoos, project coordinator VISION
10:10 Programme and household
Claudio Lazo, event chair
10:20 ICT-48 Community roundtables
12:10 Lunch break
13:00 Welcome by the European Commission
Cécile Huet, Head of Unit, DG CNECT A.1, EC
13:15 Afternoon session A: AI information infrastructure & ecosystem mapping
Maurits Butter (RODIN), Iddo Bante (Adra-e)
14:20 Break
14:40 Afternoon session B: Towards a European AI Strategic Research Agenda
Fredrik Heintz (TAILOR), Freek Bomhof (VISION, TAILOR)
17:00 Wrap-up
17:30 Social gathering and dinner

Welcome

The event was kicked off with a welcoming address by Holger Hoos, the project coordinator of VISION, emphasising the goals of the collaboration between the NoEs ánd the goals of the event. Holger highlighted that the goal the NoEs have in common is that we are all doing our best for AI research & innovation excellence, and Holger presented a vision for AI. It is the key to better science through advanced computation. In 15 years many areas are to be connected to AI so we need scientific excellence in AI, and we need to invest in human-centered AI that meets European values. Connecting across groups is the way to make progress in science and is considered the EU way. The following years are a great opportunity for the NoEs to do that.

This was followed by some short words of welcome by Cécile Huet, the Head of the Robotics & AI Excellence and Innovation Unit (DG CNECT A.1), who was glad to see the networks together and stressed that it is important to work together to maximise impact – that her team joined the event because they gladly brainstorm with the NoEs and contribute to the impact and success of the projects.

After that, Claudio Lazo, the VISION chair of the event took the participants through the programme and suggested some process requirements – open, collaborative, connecting and curious. While VISION was responsible for note taking during sessions, people were encouraged to add to the live documents.

Roundtables

The roundtable sessions have addressed topics of common interest to the whole community. The choice of topics has been made after consultation of the networks. Some roundtable discussions were held in parallel. For reference, the used slides are in Annex B.

Collaboration on Educational activities

An introductory presentation by Fredrik Heintz (coordinator of TAILOR) addressed the AIDA doctoral community, now containing 26 universities and courses, summer schools, sponsored events and excellence lecture series. There is a focus on learning outcomes - content, skills, methods, transferable skills, and integration with corresponding topics.

Discussion

There are challenges to get the students. Also mobility and recruitment is an issue. AIDA as a curriculum: it can be very rich but it is limited to the number of courses the university provides. The right approach is to collect existing courses and to meaningfully organize them. Developing courses is time consuming, and you say ‘let’s use H2020 funding to develop courses. There is a risk to overburden such a system. How do you do it in such a way that you’re not eating from the wrong pot?

Other networks have tried similar things (HPC), and we should engage with them and learn from them. There is a positive impact from the AI ecosystem collaborating and then learning lessons from other areas, such as HPC (students winning prices) SEF calls. Another possibility is to set up strategic partnerships with those ecosystems.

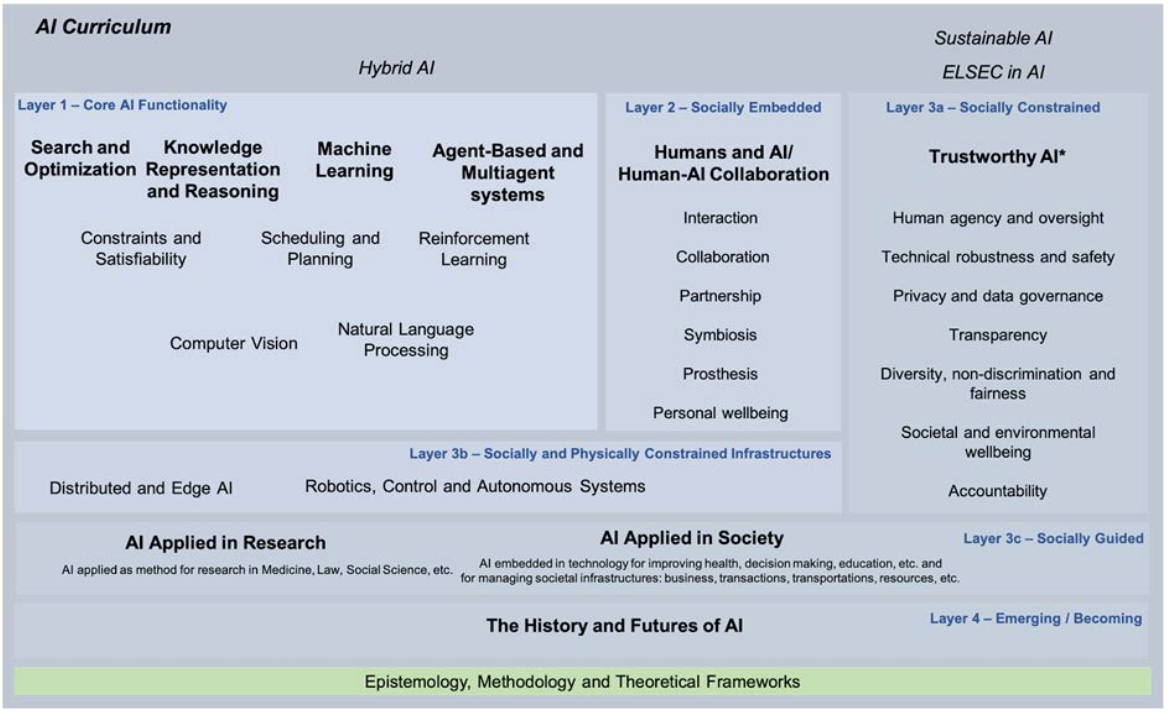


Figure: WASP-ED AI Curriculum (draft)

The question is whether we can claim a 'European flavour' to education and how to make universities attractive and create an environment for startups/companies ("Is the EU cool enough?"). Talented people want to have challenges and create impact. If we're out there as Europe as a whole, we can beat the 'Tesla's'.

Wrap up:

- Collect the courses that are already out there and meaningfully organize them, rather than developing new courses.
- Learn from each other and from other networks
- The goal is to make EU studies attractive, attracting and retaining students.

Collaboration with Digital Innovation Hubs

Giovanna Galasso and Beatrice Bozzao (VISION) introduced the topic of collaboration between ICT-48 and Digital Innovation Hubs, and the goals for the session: exploring opportunities to collaborate, and to discuss how to effectively implement and foster the collaboration.

Interella Consulting performed two surveys to understand the state of the art in collaborating with DIHs. ELISE and TAILOR responded. They concluded that while collaboration between single CoEs and DIHs happens (even if not frequently), there are very few activities planned among NoEs and DIHs within the project plans, despite the input of their call for proposal. What emerged from the analysis was "a general lack of strategic interest between NoEs towards DIHs", potentially because they are mainly researchers in the NoEs and non-researchers in the DIHs. However, DIHs and CoEs can work together on skills and training, data and facilities sharing, AI regulation and standards, and exchange of information on funding and collaborative programs.

Testing and experimentation facilities (TEFs) are more on the supply side, while the DIHs are more on the demand-side. It was suggested that the TEFS could bridge the gap between NoE and EDIH. Most

of the NoEs look at HEU, but we need to connect it better to Digital Europe (they should not be so separate).

There are now multiple 'central' platforms, the DTA, the AI-on-demand platform, but who is in charge of collaboration between DIHs and AI NoE? Some of the DIHs won't need AI, in some places they will really need it. We need to find the right interlocutor to make things efficient, as the 'project' cannot talk to the DIHs. The ecosystem mapping effort may help this forward.

Wrap-up:

- Collaboration with DIHs happens, but not structurally. There is a "general lack of strategic interest from NoEs towards DIHs"
- TEFs could bridge the gap between NoEs and DIHs, and the NoE's need to connect better to Digital Europe initiatives.
- Who is the right interlocutor for catalyzing the collaboration between NoEs and DIHs?

Collaboration with industry

The session was chaired by Philipp Slusallek of DFKI. One of VISIONs overall objectives is to foster strong connections between academia and industry. This is done through industry panels, trend radars, theme development workshops, collaboration with DIHs and industrial visibility. TDWs bring together academia and industry, as they are cross-cutting and at the end of day at least a draft document on selected topics. ICT-48 should be one voice talking to the industry, rather than each network separately. Philipp went around the room to give the NoEs a chance to describe their industry efforts.

TAILOR provided an overview of their industry, innovation and transfer activities which consists of industry perspective on trustworthy AI, industrial use cases and an innovation program. Six themes with industrial partners: Smart industry, IT services & software, Public services, Mobility & transportation, Energy, Healthcare. They choose a sector, and invite AI people that work in this sector, but they could do it the other way around: AI topic and invite industry people for that. TAILOR balances strategic vision with activities to be done now (hackathons, workshops, to dos), and as a result, industry is now investing, which is a good outcome.

AI4Media performs several actions to collaborate with (media) industry. They have an Associate Membership framework to include industry representatives and an AIDA research and industry board. They provide research exchanges with industry, and funding to SMEs through open calls. Moreover, AI4Media publishes use cases that explore the use of AI in the industry, white papers based on real-life industrial needs, and engage with stakeholders in media sectors. They have SME partners but also an FSTP and connection with the young talent programme with academia and industrial board.

ELISE is active in industry, their fellows have lot of affiliations with companies (1 out of 2 ELISE fellows are startup founders, e.g. latticeflow.ai, Ellogon, spectacularAI), and they have open call funding for SMEs (16 projects selected from 391 applications in the first call -> success rate 4%). In the ELISE governance, there is an ELISE industry board, providing input and feedback to ELISE activities, and there are research program leaders with double affiliations (Siemens, Qualcomm, Vodafone, Microsoft, NVIDIA, etc.). Moreover, they have a PhD & Postdoc that includes an Industry track (research at a European industrial lab, min. 6 months). A core goal for the programme is to

strengthen the talent pool for European knowledge institutions and industry, and retain young talent in Europe during and beyond their degree. These participants can join multiple events with industry: ELLIS PhD & Postdoc Summit, (this year 19 companies participated) and the Career Symposium.

ELSA is building on ELISE's industry activities. They are just starting but they are trying to connect to the academics, industry and the community.

EuROBIN has an advisory board with industry and hubs; and they define the use cases and part of the FSTP is used for that; they maintain repositories of codes and repositories of companies which used the algorithms. For use cases they are implementing a set of challenges to support benchmarking and certification of AI algorithms relevant to the EU industry.

HumanE-AI-Net contributes to the Theme Development Workshops and engages industry in close synergy with TAILOR.

Discussion

The question was raised whether we should do something **across the networks**? or are the industry activities so separate that it doesn't make sense? And if so, where to collaborate? Do we want a common interface to the European interface? A portal (for lack of a better word). If an industry partner wants to talk to the networks, where and how should they connect?

Each network is now doing similar things with industry involvement and the overlapping part can be shared (maybe professionally) while the network-specific part can stay with the networks. Common challenges are: collecting different open calls, publishing the successful industry collaborations, visible for the community, clearly advertising success stories. Helping industry finding solutions; they might also find it difficult to find out which networks are interested in them and how to connect; first steps to get an overview of what is going on – mapping the ecosystem and then we can try to cluster.

As there are 6 networks it is hard for industry to find out what they are doing and to navigate the networks. It would be better to start from market segments (e.g. the six TAILOR focus areas) and find out what networks do on that particular topic, while showing what networks are offering to industry. A single point of contact is important for industry.

The networks must know or find out the industry needs, and the Commission points to both Adra and the AI-on-demand platform as places to bring them together. Moreover, interaction with industry is very different from interaction between universities. They might not even have a research department, and need the expertise and the surrounding facilities. Here, Adra can help too. As some companies are involved in multiple networks, it would be interesting to find out their perspective. There are a lot of different types of industry involvements, and most interactions are with applied research, close to engineering. Adra should be the driver.

Wrap-up:

- All NoEs are in some way supporting the connection with industry with their ecosystems and that is already a big portion of the work
- Industry finds it difficult to navigate all networks (and some are part of many), so at least minimal level of creating a landscape and then possible coordination needed to help industry (overview is good start here)

- There is a need to identify the needs of industry but also good practices on how to involve them

Common visual identity

As introduction to the topic, Holger Hoos presented the perceived challenges to visual identity and branding – to define a visual branding for AI made in Europe that clearly indicates joint commitment to European AI, preserves identities of NoEs, is easily recognizable and can be adapted beyond ICT-48. It is found similar to the challenge of designing the common Euro currency, which embraces the diversity and commonality.

The proposed approach is to take inspiration from the CE Certification mark, as an add-on to existing branding, so not to replace but complement when appropriate. It is a suggested design and does not need to be the one but a first proposal that we think is very good already; colours to work well on both white and black, these of colours (green and blue), different sizes, black and white background design should be rationalized (by designers) geometry and associated meaning. For instance, it uses circles and bridges, symbolizing building together (typically European). The use is voluntary and could be used as an addition. As a test, we have applied the Mark as a modifier to existing logos, is this the right approach?

Discussion

Another goal for the common visual identity is that we use this to create a sense of pride to be part of it, and that researchers can add this logo to their name or the networks. For the EC it is important that it is recognizable that represents the connection between the EU and AI. But all networks need to be involved. The logo may be used broader (data, robotics), but it should be linked to AI NoEs and the AI-on-demand platform. Moreover, the AI-on-demand platform (being developed in 8 projects) is also dealing with this question of a common visual identity, so it is good to connect and find out where we differ and where we see synergies - The Platform is the community, not one network.

Beyond ICT-48: many other things contribute to European Excellence in AI, this should be captured beyond the networks. It should be something beyond the ICT-48 but also be used by the EC and the MS, etc. to create a recognizable identity. And ICT-48 is one piece that contributes to the overall idea of excellence in AI in Europe. For instance, we should also think of how ICT-49 could connect, with the caveat that it might be difficult to connect all existing parts and the different approaches to AI (e.g. Adra is connected to robotics).

About the Logo design: The AI-on-Demand platform is also developing a logo for branding. This (circular) logo was also shown and some synergy can be found probably to work together. Both AI and Europe should be clearly identified, and the possibility of aligning with the Commission colors should be explored. A discussion was held on putting the letters 'AI' in it: Something like this is being done in the high-level expert group (I.e. european stars around the letters 'AI'). According to professional designers it may be somewhat crude, you should not need to use the letters 'AI' to indicate it is about AI. Designers input is that we can go a bit more subtle than including the AI sign but this is of course up to debate. Moreover, AI comes with a lot of cultural baggage, people have expectations, associations, preconceptions etc.

Finally, it was suggested to organize a dedicated workshop, do user testing and see what people think. The target audience is the community of funded programmes first (building networks), and the general public second. For this, we should have a contact person from each network, and someone from the EC, and there is a tight deadline because the 40+ new projects should also use this branding.

Wrap-up:

- A common visual identity is a joint commitment towards excellence in AI while preserving the identities of the various NoE and friends
- The common brand can also be connected to other networks like the AIoD Platform, but also create a sense of being proud to be part of the network (e.g. also with researchers)
- The first group to reach is the AI networks and then the general public
- The ICT48 task force and AIoD to come together in a task force and involve EC

Cross- and beyond network communication

We started off with an introduction of the topic by Eva Dolezalova. The EC focused on synergies and also to align to the public so they are not confused; Currently the community is quite diverse and while we in ICT-48 have 2 more years, in the meantime new networks have emerged as well and it is important to connect. There are expectations for our communication of the results and outcomes. So far we have set up a communication club, shared repository, newsletter, Mattermost community (4137 users since March 2021), events & TDW, and some international outreach. Based on discussions with NoEs, exchange of talent is a first point.

Social media: For the NoE's, Mattermost is there, it's free and some groups are working very well with it, but some people would use Skype no matter what. Twitter is nice but making an impact and getting inputs from various projects might be difficult. A newsletter would benefit from automatic compilation and allowing people to subscribe.

Synchronized communication: We want to foster the communication of the outcomes across the NoE's and beyond, but the challenge is how to bring the communication of 44 projects together.

Suggested is a joint task force, sharing good practices, and moving responsibility towards the communication teams of the individual projects.

What to communicate: A suggestion is to publish level-headed commentary on the many articles on AI that are nonsense. Many professors would be willing to contribute, but this needs organization; a lot of people are in thousands of projects and that also has a threshold on what brand to promote - we need something more permanent; this could be the AIoD platform or in the case of Elise, through their own community. Blog posts 'debunking AI myths' are one way to go but this blog needs authority, and it might be slow in comparison to Twitter - making the connection with a professor working on the topic. Another aspect to the communication of the NoEs is overview of scientific results, as the NoEs are doing great things and this deserves attention.

AI-on-demand: In the session, two aspects of the AI-on-demand platform were highlighted: 1) Synchronize events with the AIoD Platform, a timeline of events is also expected in the AIoD which can also be used by the NoEs; 2) AIoD is working on automatic sharing of results.

Wrap-up:

- Think on how to reflect with scientific arguments to the myths on AI and connect to partners
- Showcase the scientific results of the NoE
- Connection with AIoD and other networks to align dissemination but also to connect events

Cross-network scientific challenges

Tjerk Timan and Freek Bomhof introduced the topic of scientific challenges across the networks, distinguishing between challenges that are *common to all networks*, and challenges that *emerge among the networks*. To get the group started, they used example topics from their own experience in the Theme Development Workshops. They distinguish between: breakthroughs in AI, breakthroughs with AI, key future capabilities and skills, key future assets and building blocks.

Quantifying or operationalizing values: The question 'how can we quantify trustworthiness and explainability?' induced from the participants a number of abstract concepts that are important scientific challenges across the networks: 'robustness', 'accuracy', 'human oversight', 'transferability', 'privacy'. Robustness is a dimension in 'trustworthiness' in the AI high-level expert group definition, and it appears that particularly 'explainability' stands out. Furthermore, it is both a challenge to measure these dimensions, and actually come up with the right dimensions. The level of abstraction determines how to activate what kind of research, for instance, the systems perspective which does not focus on individual AI components but where the main challenge is how to integrate into systems, e.g. healthcare practice, integrate into business processes.

Mechanisms: The participants used the rest of the session to brainstorm on mechanisms to stay up to date on challenges across networks. First, there are already a few mechanisms already in place to bring together people working on common themes: Mattermost, will also be extended to the new networks, Microprojects (TAILOR) or the connectivity funds. Second, events are a second way to organize this. Suggested events were the Theme Development Workshops, Dachstuhl sessions, more events like the ICT-48 Community Workshop, and AI4Media had open workshops on these themes which could be scaled up with all networks. It was advised against to start yet another forum, as the real challenge is priority and attention – getting more focused events. Thus, do not replicate scientific conferences as you want people who attend these conferences to dominate this.

Information sharing: Third, it comes down to a mapping of information (Afternoon session A) and identifying where people work on similar topics, identify commonalities and complementarities (learn from *portfolio management* in industry). To achieve this, a mechanism is necessary to identify what the networks do, so other networks can recognize this (to flag new SOTA/topics across the networks to the interested people). This is closely related to the development of the common SRA and ecosystem mapping and needs:

1) A common lexicon so that people know they talk about the same thing (*AI categorization*).

2) *Curation* of the material. For instance via the AI-on-Demand platform. Approach to curation would be to start a content creation group(s), e.g. with one person from each network. For this to be successful, it is important to make curation easy: make it part of already ongoing efforts, don't start with sifting through everything. There is broad support among the participants for curation where a link to papers comes out to the networks that the authors feel are relevant: one or two sentences.

Wrap-up:

- Do not replicate scientific conferences, but create shared focused workshops and curated lists to find each other. A lightweight mechanism per theme, but realistic.
- In scientific topics, besides the familiar challenges also think about social systems perspective, transferability
- A cross-network content creation team - find a way to bridge across themes. But we need to organize it efficiently!

Welcome by the EC

Cécile Huet spoke to the participants on behalf of the Commission. She outlined the NoEs roles in the ecosystem of Excellence, and suggested steps for creating a vibrant network of AI excellence centres together with ICT-48 and new NoEs.

The EC views the Ecosystem of Excellence as a way "From the lab to the market", and NoEs are urged to become an active member of the AI Data Robotics Association (Adra), and to use the AI-on-demand platform for accessing and contributing public AI resources.

The role of the NoEs are to make Europe a research powerhouse for AI; increase Europe's attractiveness for scientists; ensure Europe's leadership in key strategic research topics; strengthen the AI-on-Demand platform with algorithms and tools; and to bring all European teams to the highest level of excellence. ICT-48 should become a virtual center of excellence, offering access to knowledge and serve as a reference in their chosen specific field, including activities to ensure visibility. The projects are required to demonstrate progress and allocate tasks to cohesion activities with Adra, Adra-e and AI4Europe.

The EC suggests maximizing visibility through ADR project exhibitions, mapping the competencies in the "distributed lighthouse" of ICT-48 and highlighting; creating a common visual identity 'EU AI Excellence Inside', developing a sense of belonging to these lighthouses.

Maximize impact and sustainability through combining forces. Through a joint SRA for European AI; the use, deliver and share results via AI-on-demand platform; Becoming active within Adra and contributing to their SRIDA; sharing good practices and collaborating. Moreover, it is important to

think about long-term sustainability: cooperating on making actions & lighthouses survive after the end of the project.

DIGITAL programme call for proposals

After Cécile's welcome, her colleague Arthur Tréguier (DG CNECT.F4) presented the latest call for proposals under the Digital Europe Programme. The topic is Masters & Bachelors programmes in digital technologies, and the call closes on **24 january 2023**. The call aims to increase the offer of EU masters & bachelors programmes, addressing a need for more ICT specialists and digital professionals in Europe.

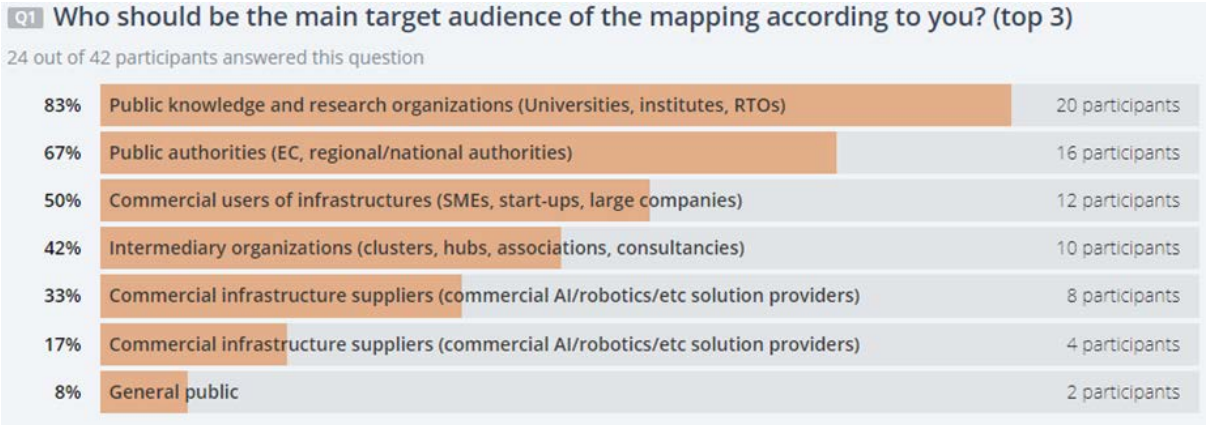
Digital programmes in key technologies such as AI, blockchain, cloud computing, cybersecurity, data, extended reality, Internet of Things, microelectronics, photonics, quantum and robotics. Read the full call for proposals here: DIGITAL-2022-SKILLS-03 (V 1.0)

Session A: AI Information infrastructure & ecosystem mapping

This plenary session addressed the activity to map the AI information infrastructure and ecosystem.

Maurits Butter (RODIN) and Iddo Bante (Adra-e) presented the workshop titled 'A view on collective mapping: Challenges of infrastructure and ecosystem mapping'. In this session they aimed to initiate joint thinking on why mapping, for whom and what purpose it shall have (starting point), to identify strategies to develop an effective mapping approach for AI community (approach and content and to identify existing mappings initiatives to connect to. During the presentation, the participants divided into smaller groups for their assignments and came together again for plenary discussions of the outcomes.

There are three challenges for mapping initiatives: 1) Mismatch between the information and the user needs; 2) Engaging the target audience; 3) Efficient organisation of a collective mapping. The audience was asked who the main target audience should be, resulting in the following ranking (see the poll). There is a clear focus on academia and RTOs (83%), and on public authorities (67%).

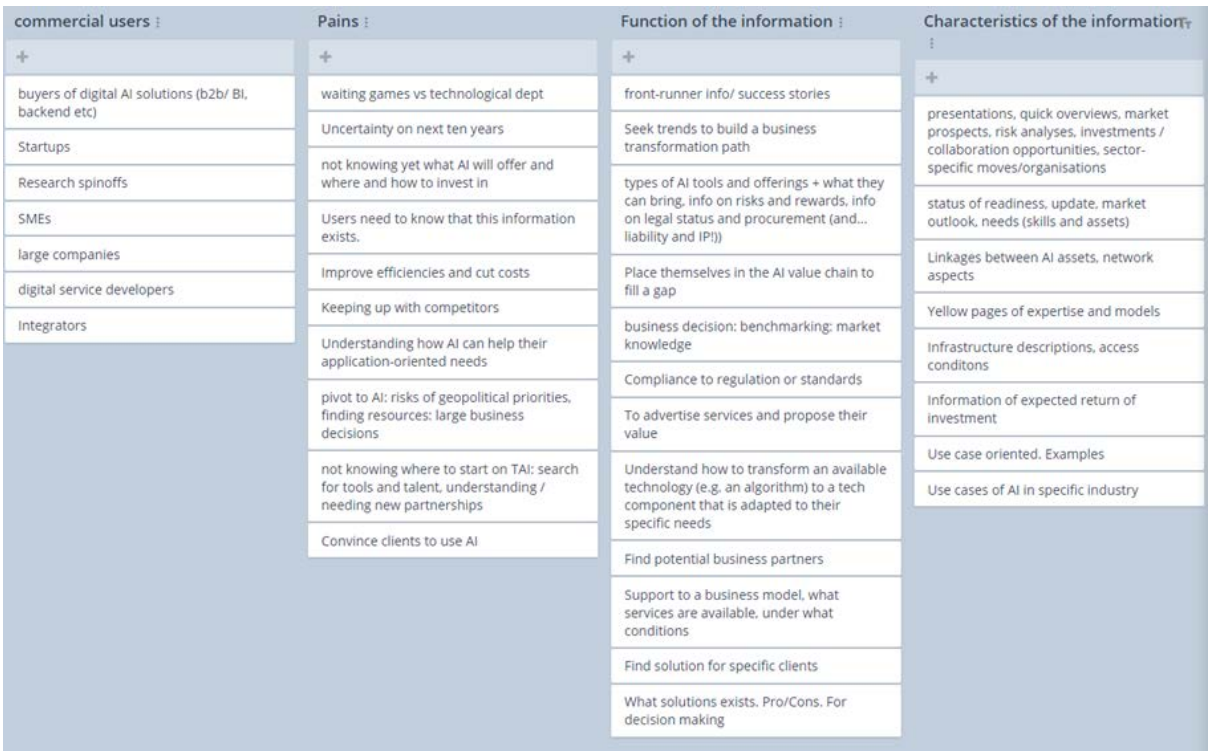


Different stakeholders have different information needs, so it is important to think from the user needs to the data characteristics – what kind of indicator is necessary as input for their decision-making process?

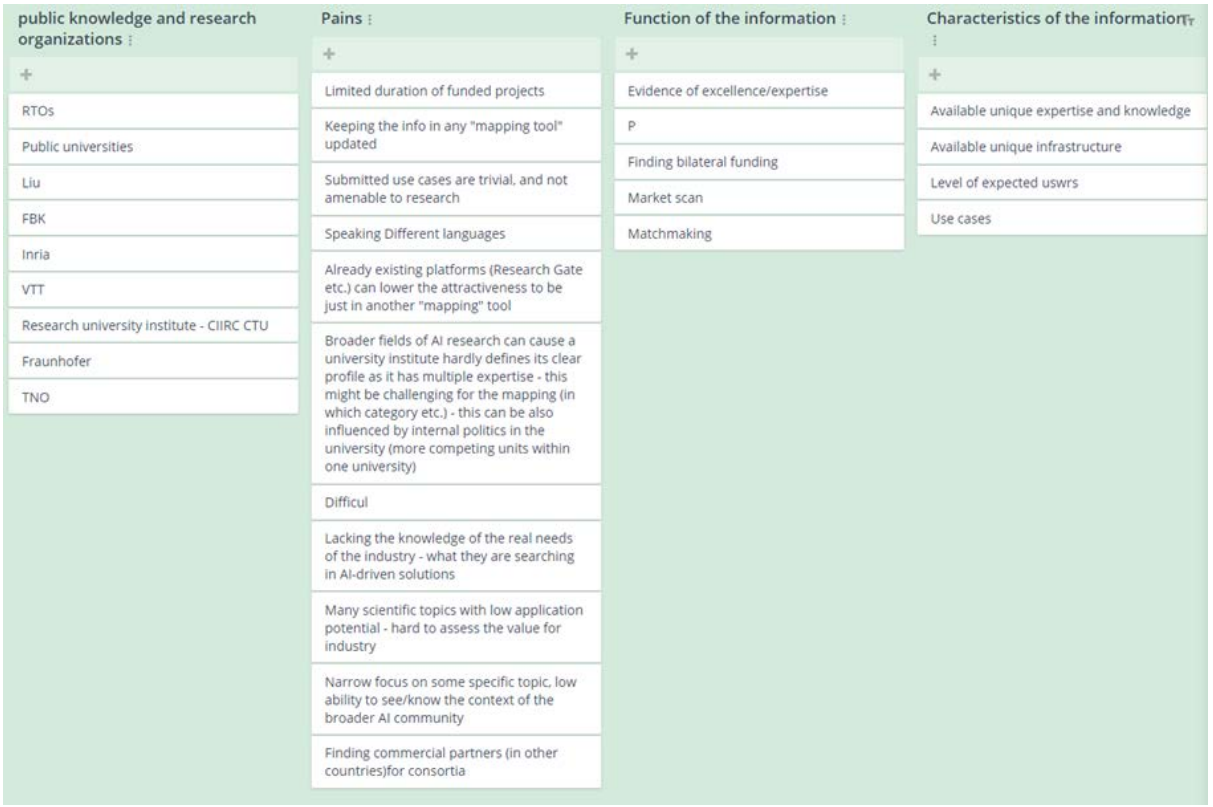
The participants split into four groups (Intermediaries, Commercial users, Knowledge and research institutes, Public authorities) and discussed the pains, functions and necessary data for these types of target audiences. This generated an interesting list of pains and information to provide. One of the main conclusions was that any information provision needs to have a clear function responding to a need.

Intermediary organisations

Commercial users

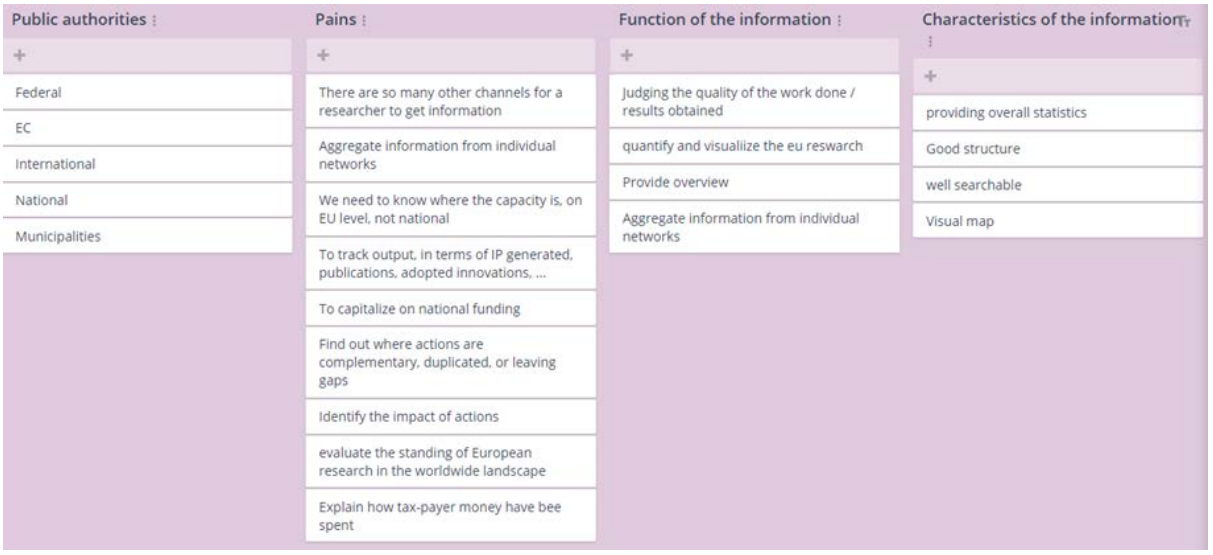


Public knowledge and research institutes



public knowledge and research organizations	Pains	Function of the information	Characteristics of the information
RTOs	Limited duration of funded projects	Evidence of excellence/expertise	Available unique expertise and knowledge
Public universities	Keeping the info in any "mapping tool" updated	P	Available unique infrastructure
Liu	Submitted use cases are trivial, and not amenable to research	Finding bilateral funding	Level of expected uswrs
FBK	Speaking Different languages	Market scan	Use cases
Inria	Already existing platforms (Research Gate etc.) can lower the attractiveness to be just in another "mapping" tool	Matchmaking	
VTT	Broader fields of AI research can cause a university institute hardly defines its clear profile as it has multiple expertise - this might be challenging for the mapping (in which category etc.) - this can be also influenced by internal politics in the university (more competing units within one university)		
Research university institute - CIIRC CTU	Difficul		
Fraunhofer	Lacking the knowledge of the real needs of the industry - what they are searching in AI-driven solutions		
TNO	Many scientific topics with low application potential - hard to assess the value for industry		
	Narrow focus on some specific topic, low ability to see/know the context of the broader AI community		
	Finding commercial partners (in other countries)for consortia		

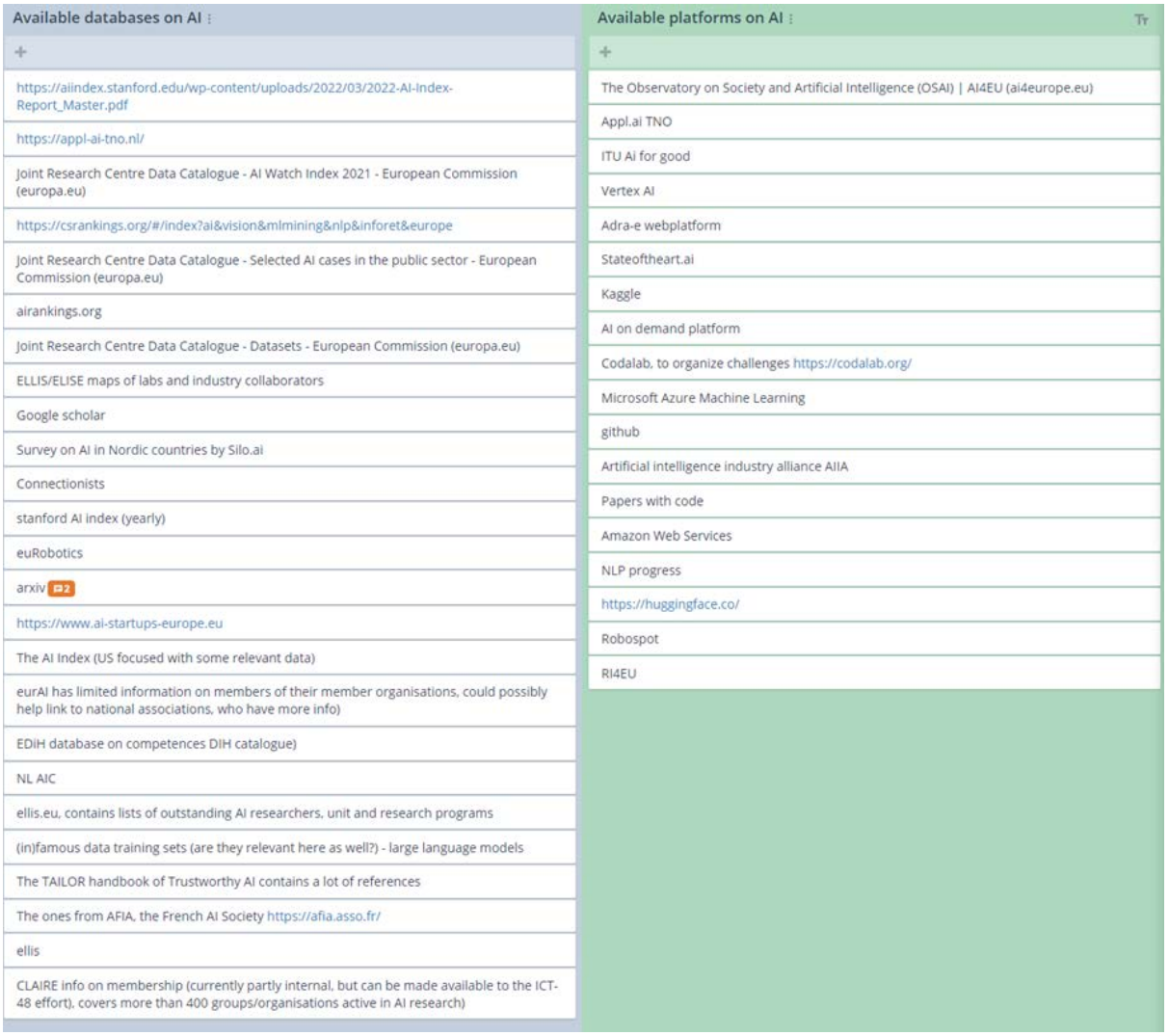
Public authorities



Public authorities	Pains	Function of the information	Characteristics of the information
Federal	There are so many other channels for a researcher to get information	Judging the quality of the work done / results obtained	providing overall statistics
EC	Aggregate information from individual networks	quantify and visualiize the eu reswarch	Good structure
International	We need to know where the capacity is, on EU level, not national	Provide overview	well searchable
National	To track output, in terms of IP generated, publications, adopted innovations, ...	Aggregate information from individual networks	Visual map
Municipalities	To capitalize on national funding		
	Find out where actions are complementary, duplicated, or leaving gaps		
	Identify the impact of actions		
	evaluate the standing of European research in the worldwide landscape		
	Explain how tax-payer money have bee spent		

In order to get the customers attention presentation must be effective; branding is relevant for the audience – sending the right message, so focus is essential; and the distribution channel is essential – It cannot be done alone and requires connections to many other organizations; and finally, it should be very easy for the others to forward it to their own audience as a trusted information provider. Maintenance and updating are very important.

For the last part of the workshop, the presenters focused on reuse of existing initiatives such as AI-on-Demand platform, ADRA-e, CLAIRE, ELLIS, DTA community platform, NL AI coalition, NL EDIH network repository, DIH-HERO, S3 DIH catalogue, EU hubs for data, DIH4AI. The participants brainstormed to find available databases and platforms (Available databases | GroupMap), and provided a long list of potential sources for information:



Available databases on AI
+
https://aiindex.stanford.edu/wp-content/uploads/2022/03/2022-AI-Index-Report_Master.pdf
https://appl-ai-tno.nl/
Joint Research Centre Data Catalogue - AI Watch Index 2021 - European Commission (europa.eu)
https://csrankings.org/#/index?ai&vision&mlmining&nlp&inforet&europe
Joint Research Centre Data Catalogue - Selected AI cases in the public sector - European Commission (europa.eu)
airankings.org
Joint Research Centre Data Catalogue - Datasets - European Commission (europa.eu)
ELLIS/ELISE maps of labs and industry collaborators
Google scholar
Survey on AI in Nordic countries by Silo.ai
Connectionists
stanford AI index (yearly)
euRobotics
arxiv 2
https://www.ai-startups-europe.eu
The AI Index (US focused with some relevant data)
eurAI has limited information on members of their member organisations, could possibly help link to national associations, who have more info)
EDiH database on competences DIH catalogue)
NL AIC
ellis.eu, contains lists of outstanding AI researchers, unit and research programs
(in)famous data training sets (are they relevant here as well?) - large language models
The TAILOR handbook of Trustworthy AI contains a lot of references
The ones from AFIA, the French AI Society https://afia.asso.fr/
ellis
CLAIRE info on membership (currently partly internal, but can be made available to the ICT-48 effort), covers more than 400 groups/organisations active in AI research)

Available platforms on AI
+
The Observatory on Society and Artificial Intelligence (OSAI) | AI4EU (ai4europe.eu)
Appl.ai TNO
ITU Ai for good
Vertex AI
Adra-e webplatform
Stateoftheart.ai
Kaggle
AI on demand platform
Codalab, to organize challenges https://codalab.org/
Microsoft Azure Machine Learning
github
Artificial intelligence industry alliance AIIA
Papers with code
Amazon Web Services
NLP progress
https://huggingface.co/
Robospot
RI4EU

In conclusion:

1. Get the target audience and their needs clear
2. Make sure that the target audience WILL use it
3. Do not do it all yourself, but collectively. But distribute through different channels

Discussion

In order to map ‘excellence’, it is important to define a set of commonly understood indicators. In academia, there is a debate on who is ‘excellent’ and who is not. Indicators could encompass ‘membership in a NoE’, for instance.

One interesting line in the discussion was that - as researchers already have their network and their own overview of the field - for that purpose there is less necessity. However, in that case

benchmarking would still be an interesting use of such a map. That would also have a good return-on-investment. The map should also not just provide topics (from a categorization) but also the experience in certain application domains.

It is an enormous amount of work and coordination and it is hard to keep everything up to date, so it requires efficient collection of information and overlapping mappings – where the overlap is minimized.

Session B: Towards a European AI Strategic Research Agenda

This plenary session addressed the steps to be taken to create a European AI Strategic Research Agenda. Fredrik Heintz, project coordinator of TAILOR chaired this session. First, Fredrik presented a suggestion for the joint SRA process, Freek Bomhof, from VISION, presented the preliminary work that TNO has already done on developing a categorization for a shared language, and representatives on behalf of ELISE, AI4Media, HumanE-AI-Net and TAILOR presented their SRAs.

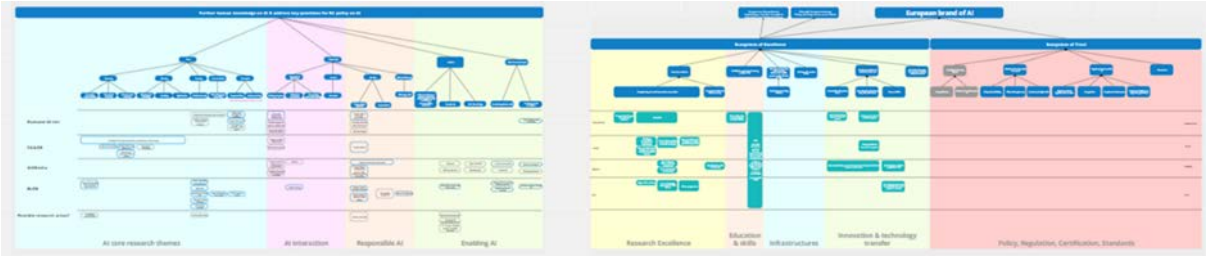
Fredrik started off by highlighting that each NoE already has their own strategic research agenda (SRA) and that the EC has asked us to develop a joint SRA. Moreover, VISION has developed the first version of an AI categorization that can be leveraged for this joint SRA. The proposed plan is to form a Joint Editorial Board (JEB) with one representative per NoE, supported by VISION, engaging both the NoEs and the wider AI community.

Discussion

ELSA and euROBIN are happy to connect with the joint SRA and explore this. Moreover, it is suggested to involve Adra partners and connections. Fredrik is in both exercises to make a connection, but Adra does have a broader scope than research. Furthermore, it is unclear whether the joint SRA will have a curiosity-driven research vs. application-driven research focus.

AI categorization

Next, Freek Bomhof presented the AI categorization work that TNO did in the past year and how it ties into the planned work on joint SRA and ecosystem mapping.



The categorization may be found here or as a PDF version (A0) here. Freek and his team created an first version for the structure using strategic documents (EU policy documents, Roadmaps and SRAs) and the AI WATCH report 'defining AI'. Next, they looked for concrete actions by the networks in available project plans, NoE websites. Through their own effort and a workshop with VISION people they mapped the concrete actions of NoEs to the categorization structure. The result is a categorization that acts as a shared language, which is useful for: positioning your NoE, exploring

strategic directions, finding others within a certain topic, comparing work within a certain topic, easier to describe pathways to impact in future proposals.

In order to test the categorization, they mapped some more recent SRA's (e.g. TAILOR, AI4Media) to the categorization and from that they drew the following lessons:

1. Most elements of current SRAs could be mapped without too much effort!
2. categorization is sometimes too coarse: For instance, 'Trustworthy & ethical AI' is too broad and should be further specified
3. Not all SRA content could be mapped: For instance, institutions or agencies that independently assess AI; Services (algorithm register) informing on usage of AI in the public sector; Controllability of AI.

Finally, Freek emphasised that a categorization does not yet make a roadmap. Compared to an actual map, the categorization gives the names and borders, but in order to plan a route, we need dependencies, priorities, timings etc. However, a good categorization is a major step for a common SRA. Also, it was identified that this approach would be featured on the EBDVF22 conference as well so that feedback from that part of the wider community can be incorporated.

Discussion

A major discussion point was the difference between this and the taxonomies that are used in the research communities. It should however rely on what the scientific community uses, and ensure that keywords from different AI communities are represented, researchers from other networks find their own topics in there and people from outside of the EU relate to the terms in the categorization. The JRC AI watch report uses AAAI and ICAJ keywords, to create a set of topics that is suitable for AI policy monitoring.

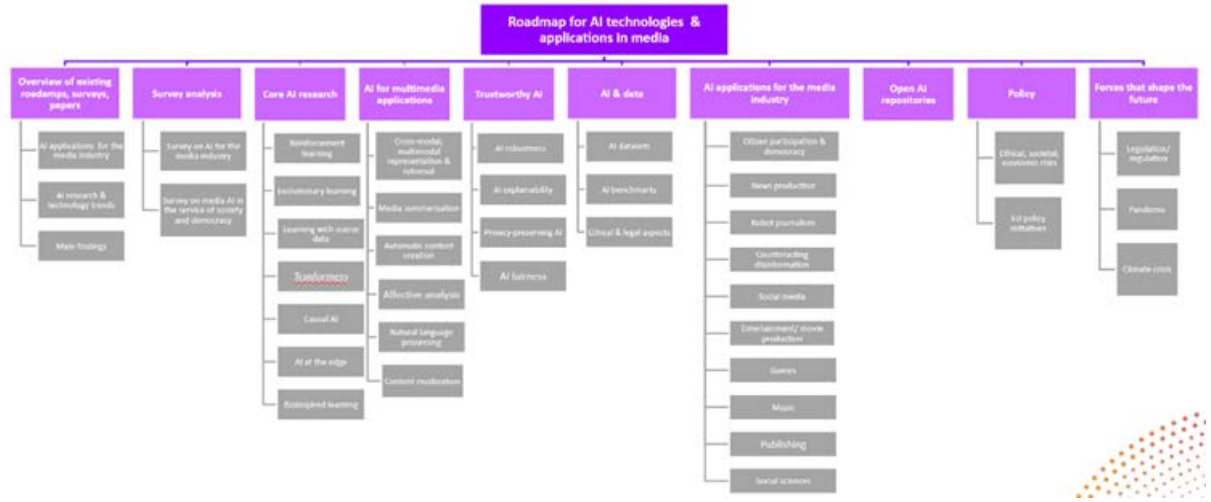
AAAI categories are relevant, but you don't find them because people are more elaborate in their text. These categories can be used in the same way as they are used in scientific papers: several are valid at the same time and they indicate the 'technical' AI domains that are involved. While the AAAI is good on technical topics, there is much more beyond the technical part and it is very challenging. Currently the community is heavily biased towards the tech push and development but AI has a broader application, so we need to not forget the social sciences and other fields. We should try to broaden the technical perspective and to include social sciences as well.

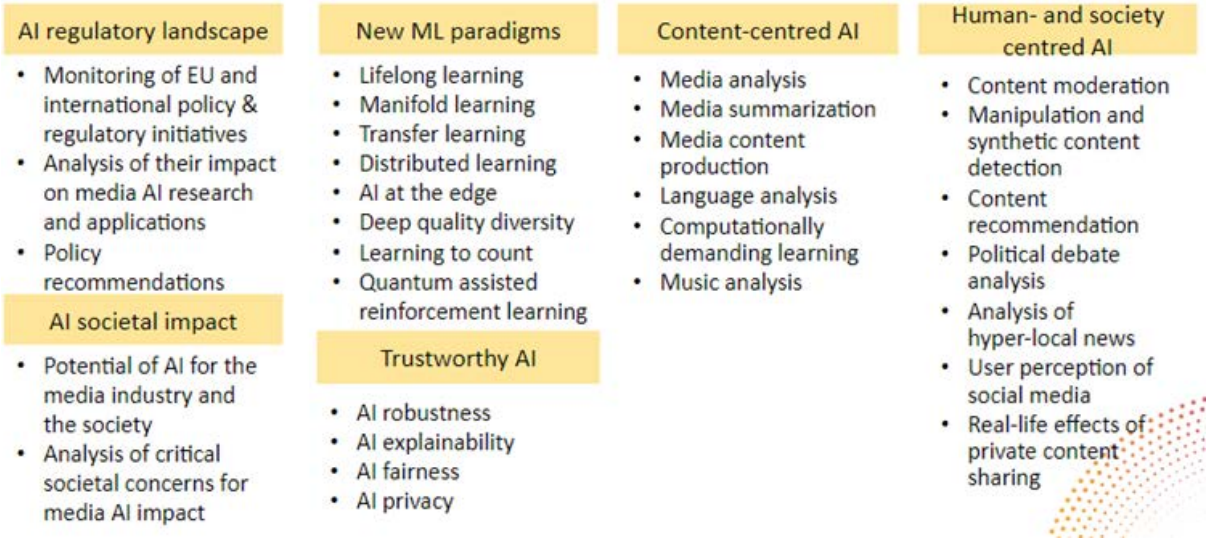
There were several comments to this initiative. First, the question whether you want to introduce dependencies (thereby making it an ontology) and increasing the complexity?; Second, that the AI-on-demand platform has done some similar work in the past, and that in Sweden there has been a similar exercise to come up with a categorization - we can combine and unify this. Finally, the question was raised whether this categorization can also be used for the mapping exercise. The answer is 'if possible, yes', as it is beneficial to have one common language.

AI4Media SRA (Vasileios Mezaris, CERTH)

The main objective of AI4Media - A European Excellence Centre for Media, Society and Democracy is to deliver the next generation of AI technologies for the Media Industry. Reimagine AI as a human-centered, trusted and beneficial enabling technology for media and society.

The foundations of the SRA are twofold: 1) A description of AI4Media's actions and 2) roadmap on media AI. The AI4Media SRA contains a lot of strategic information on different topics, an overview of the state of the art, a survey analysis, is available online, and connected to 35 white papers that explore the state of the art.



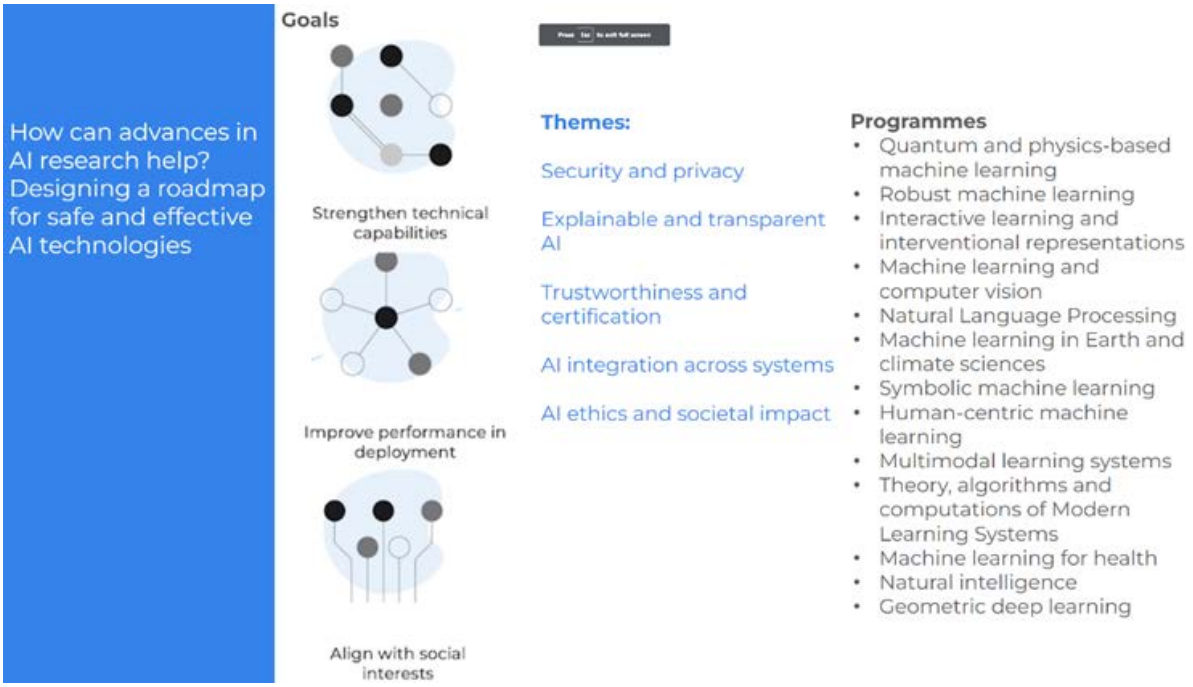


The first draft is expected on Nov 20, the final version is released on Dec 20. More on the AI4Media roadmap can be found here: https://www.ai4media.eu/roadmap-ai-for-media/

ELISE SRA (Jessica Montgomery, University of Cambridge)

AI as part of the EU objectives can help in achieving a healthier, greener, more digital, efficient society but there are also a number of AI failures; so how to bridge these aspirations and current status quo. The main focus for ELISE is how advances in AI research can help, and that a roadmap for safe and effective AI technologies.

The ELISE SRA has three goals: strengthening technical capabilities, improving performance in deployment and aligning with social interests. It is structured in themes and in programmes:

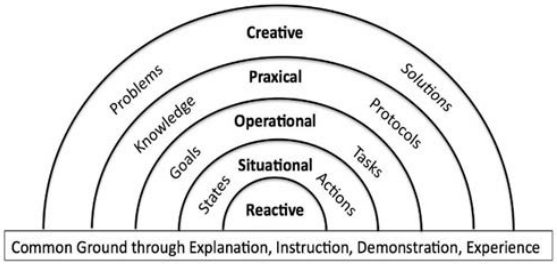


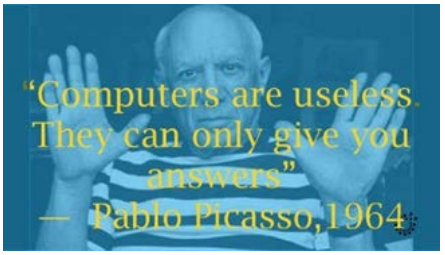
The aim of ELISE is enhancing research-policy connections: deepen the discussions with policy makers and imagine what the world could be with the help of AI and what it means to translate these results in practice. Progressing research, policy and practice is achieved by looking ahead to see emerging topics and issues that need to be on the policy agenda. Finally, Jessica suggested we use the contribution of AI towards societal objectives as a joined agenda.

The ELISE SRA can be found here: [ELISE agenda and programs (elise-ai.eu)]

HumanE-AI-Net (Paul Lukowicz, DFKI)

Paul starts with a thought-provoking quote from Picasso, to support their focus on human-centric AI which will help *asking* the right question, *find* answers and do things that you would *otherwise not be able* to do. Their USPs are: focus on AI that enhances human capabilities and empowers citizens; they consider both the individual and the society as a whole; they do dedicated research in ethical and fundamental rights. They bring together a unique community of people from HCI, social sciences, law etc., and notable achievements are a collaboration network of 60+ projects, and microprojects, which is a core instrument.





The HumanE-AI-Net SRA can be found here: [HAI-Net-Deliverable-D6.1.pdf (humane-ai.eu)]

TAILOR (Fredrik Heintz, Linköping University)

The vision of TAILOR is to develop the scientific foundations for Trustworthy AI integrating learning, optimisation and reasoning to realise the European vision of human-centered Trustworthy AI.

1. **Trustworthy AI:** Explainable AI Systems; Safety and Robustness; Fairness, equity, and justice; Accountability and reproducibility; Respect for privacy; Sustainability; Towards Trustworthy AI
2. **Learning, optimisation and reasoning**: Integration of AI paradigms and representations; Deciding and learning how to act; Learning and reasoning in social contexts; Automated AI; Foundational models
3. **Impact and Innovation**: Theme development workshops; AI in the Public sector; AI for Future mobility; AI for Future Healthcare

They identify 14 short-term and long-term scientific challenges, and develop measures and dimensions to assess trustworthiness in AI.

The TAILOR SRA aims to boost research on trustworthy AI by: 1) Aiming to boost research on Trustworthy AI by providing guidelines for strengthening and enlarging the pan-European network of research excellence centres on the foundations of trustworthy AI; 2) defining paths for advancing the scientific foundations for trustworthy AI and translating them into technical requirements to be adopted broadly by industry; 3) identifying directions for fostering collaborations between academic, industrial, governmental, and community stakeholders on the foundations of trustworthy AI. The full version can be found here: D2.1-SRIR-ver-1.0.pdf (tailor-network.eu)

Discussion

On the goal and process of the SRA: Many differences between the SRAs, a starting point is to analyze what they have in common and the differences and from there it is good that two networks (TAILOR, ELISE) offer to lead and that VISION is dedicated to facilitating the process, but available time is a condition. It is not required that the NoEs are agreeing on topics as it is also useful to learn what the different communities think of different topics. More nuanced, the networks do not necessarily disagree on topics but they express different positions (‘flavours’) towards those topics. Analyze and draw higher level conclusions, leaving room for the NoEs to position themselves.

On what should be in the SRA: A major theme in the discussion was the value of the common SRA to connect the NoE SRA's to missions, showing how the NoEs contribute to policy making as a lot of things that we are looking for are already embedded in policy documents such as policy briefs of the Commission (which go beyond the Horizon missions). One way of doing this is by focusing on ‘moonshots’ or ‘deep dives’ - more long-term questions (*where do we want to be in 10-15 years? what does it take from the community to make that work?*), with the side note that it cannot be exhaustive – but several bigger challenges should be fine.

On the relation to Adra: The Commission emphasized connecting to Adra and their SRIDA. Adra considers focusing more on the 5 mission areas of Horizon, so that the focus on societal benefits is clearer. If they do this, that could provide structure and support for our joint SRA as well. Within Adra the question is, how to bring industry into the missions?

Attracting talent: Missions will also enable us to build up talent. Students want to do good and not just make money. For students, e.g. a 'digital twin of the earth' is very challenging and engaging, so this type of challenge is very relevant.

Academic challenges beyond missions: Purely academic long-term challenges are also useful – there is also value in non-industry-driven challenges. The goals are quite broad but concrete goals also have value to make it very tangible; You might also think of broader goals that are super-ambitions.

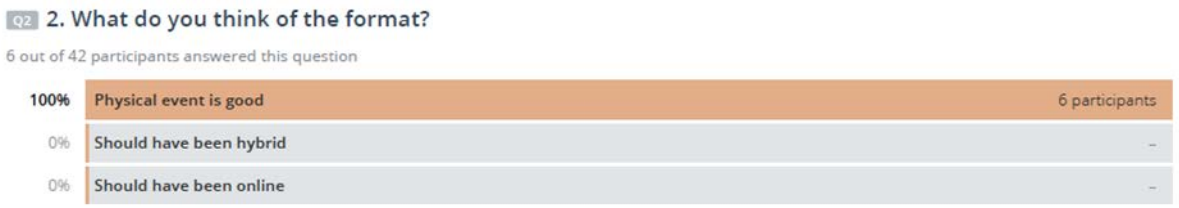
Wrap-up and feedback

To close the event, we asked the participants to summarise their experience in one sentence. Here are some of the comments:

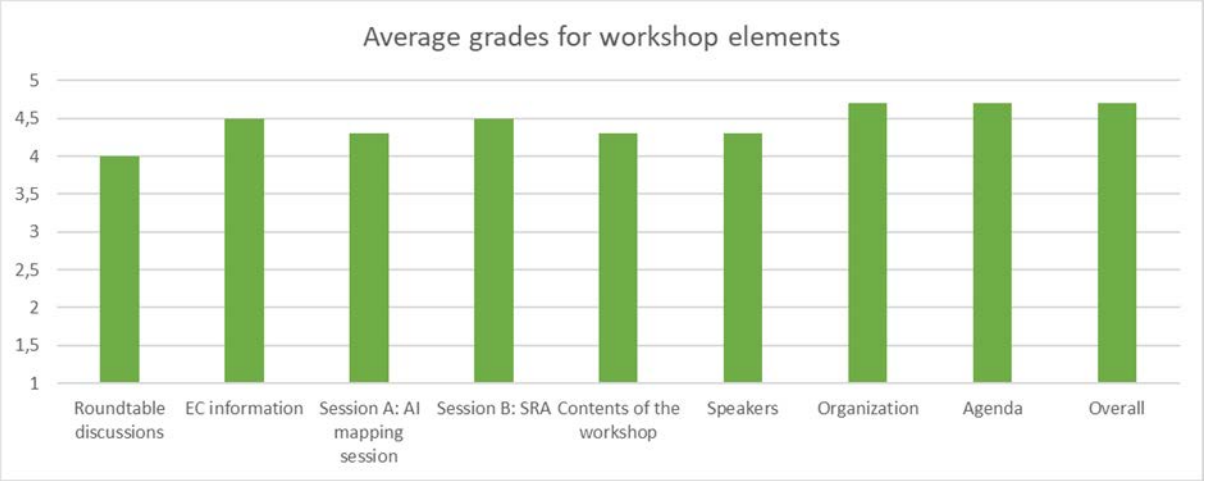
- Morning discussions were not long enough, they should have their own full-day workshops
- Brilliant, but be bolder and allow for more informal sessions
- Today felt like a reunion
- People are made of molecules, not pixels
- Getting people in the same room helps with making progress, but now make it happen
- ICT-48 networks are getting more and more of a community
- There's a trade-off between exploring and exploiting, after mainly exploring, it's time to exploit
- Good to see the various stakeholders face to face. More in-depth exchange, also during break, social gathering
- Meeting in person is excellent and makes a huge difference!
- The most important aspect was that we met in person. The interactions were invaluable. The content was also good.
- Strong community with many joint interests.

Feedback on the workshop

A limited number of people (6) gave feedback on the Community Workshop via the form. All of them were happy with the physicality of the event.



We have asked the respondents to rate separate elements of the event (sessions, agenda, organization, speakers) on a scale from 1 (not at all satisfied) to 5 (very satisfied). All the respondents voted 3 or higher, with on average very high scores. The roundtables have a slightly lower score, and the points of improvement suggest that they were too short for meaningful exchange.



The format of the workshop could improve in the following ways:

- Preparation time to make sessions more effective, and more targeted sessions, working together in small groups
- Roundtables having enough opportunity to exchange. Shorter presentations and more time for discussions. Better to have less topics but more time for each topic, so there is more time for the discussions around the topics.
- Discussions having action points, and more detailed actions for the next steps

The facilities (VISION / venue) could be improved as such:

- More diverse, inclusive facilitation
- More coffee in the afternoon
- The facilities were completely inaccessible for handicapped participants

Next steps:

The inputs from the different sessions will be processed by the respective responsible partners in VISION working on the topics. Several concrete steps and distribution of tasks have already emerged as part of the discussion on strategic research agenda for instance. There is also good will and several pointers for further connection and collaboration among all the initiatives present (Vision, the Networks of Excellence, as well as other connected projects like Adra-e and AI4Europe).

The categorization developed will also be discussed in a session in Big Data Value Forum (on 22 November 2022 at 11:00 CET) to gather ideas and feedback from the broader community.

Annexes

Annex A: Attendees

1. Mitra Baratchi (TAILOR)
2. Beatrice Bozzao (VISION)
3. Rebecca Schedl-Warpup (euROBIN)
4. Alin Albu-Schaeffer (euROBIN)
5. Roberta Calegari (TAILOR)
6. Philipp Slusallek (TAILOR)
7. Samuel Kaski (ELISE)
8. Petri Myllymäki (ELISE)
9. Caj Södergård (Adra-e)
10. Giovanna Galasso (VISION)
11. Christoph Hebermehl (ELSA)
12. Jessica Montgomery (ELISE)
13. Emine Ozge Yildirim (AI4Media)
14. Mario Fritz (ELSA)
15. Marc Schoenauer (TAILOR, VISION, Adra-e)
16. Micael Frideros (TAILOR)
17. Vasileios Mezaris (AI4Media)
18. Katerina Makrogamvraki (ELISE)
19. Irene Facchin (VISION)
20. Gabriel Gonzalez (HumanE-AI-Net, TAILOR, VISION, AI4Europe)
21. Miguel Rubio (EC)
22. Cécile Huet (EC)
23. Evangelia Markidou (EC)
24. Iddo Bante (Adra-e)
25. Anna Tahovská (VISION)
26. Eva Doležalová (VISION)
27. Cem Gulec (EC)
28. David Dowey (EC)
29. Fredrik Heintz (TAILOR, VISION)
30. Paul Lukowicz (HumanE-AI-Net)
31. Jan Huckmann (EC)
32. Holger Hoos (VISION, TAILOR, HumanE-AI-Net)
33. Trine Vikinge (TAILOR)
34. Jozef Geurts (VISION, Adra-e)
35. Claudio Lazo (VISION)
36. Joachim de Greeff (VISION)
37. Freek Bomhof (VISION, TAILOR)
38. Kristina Karanikolova (VISION)
39. Tjerk Timan (VISION)
40. Maurits Butter (VISION, RODIN)

Annex B: references

The set of detailed notes is found here: Notes ICT-48 community workshop

The presentations are found here: Shared