ATRIUM – Advancing Frontier Research in the Arts and Humanities

Work Package WP7

Report on the 1st Researcher Forum (GoTriple)

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List of Abbreviations

AI   Artificial Intelligence

ATRIUM   Advancing Frontier Research in the Arts and Humanities

BASE   Bielefeld Academic Search Engine

CNRS   Centre National de la Recherche Scientifique (National Centre for Scientific Research)

DNB   Deutsche Nationalbibliothek (German National Library)

DoA   Description of Action

DOAJ   Directory of Open Access Journals

EKT   National Documentation Centre

EU   European Union

FASCA   Facilitating Scholarly Communication Analysis through GoTriple Pipeline

GRAPHIA   Knowledge Graphs, AI Services and Next Generation Instrumentation for R&D in Social Sciences and Humanities

IBL PAN   The Institute of Literary Research of the Polish Academy of Sciences

IT   Information Technology

LLM   Large Language Model

LUMEN   Linked User-driven Multidisciplinary Exploration Network

OBS   Open Broadcaster Software

OPERAS   Open Scholarly Communication in the European Research Area for Social Sciences and Humanities

ORCID   Open Researcher and Contributor ID

PIDs   Persistent Identifiers

PSNC	Poznań Supercomputing and Networking Center
RF	Researcher Forum
RI	Research infrastructure
SSH	Social Sciences and Humanities
TRIPLE	Transforming Research through Innovative Practices for Linked Interdisciplinary Exploration
UX	User Experience

Executive Summary

The first Researcher Forum (RF) organised under the ATRIUM project was held on October 17, 2024, at the Poznań Supercomputing and Networking Center (PSNC) in Poznań, Poland. The forum targeted the GoTriple platform, a multilingual discovery platform for Social Sciences and Humanities (SSH). The purpose of this report is to summarise the results of this first RF in order to guide improvements for GoTriple.

The RF is a workshop format designed to gain a deeper understanding of the needs of the users of Research Infrastructures (RIs) services. The RF focuses on researchers, aiming to strengthen interactions between researchers engaged with and around RIs, their services and tools.

Main Objective

The primary goal of the forum was to gather feedback from users and experts about GoTriple to identify the platform's strengths and areas for improvement. Twelve researchers from Poland took part in the event, divided into two groups: new users and experts.

The new users group participated in a usability test in which they performed tasks on the GoTriple platform while verbalising their thoughts and challenges encountered. They also participated in a follow-up group discussion about their experience with the platform during the test. The experts group engaged in a focus group to evaluate key features of GoTriple and in a panel to discuss potential development directions for the platform.

Key Findings

The Researcher Forum provided valuable insights into the strengths and areas for improvement of the GoTriple platform. Participants appreciated the intuitive interface, useful tools, and the platform's potential to enhance SSH research. However, they also highlighted challenges related to the number and relevance of search results, integration with external tools, multilingualism, and the usability of certain features.

Organisers and GoTriple team identified the following key results:

- GoTriple strengths:

    ⬆️intuitive, user-friendly, easily navigable interface

    ⬆️useful filtering and knowledge map/streamgraph

    ⬆️promising chatbot

- GoTriple's areas for improvement:

    ⬇️limited representation of relevant literature for a given search

    ⬇️extra tools (beyond the search feature) are promising, but need further development and effort to build trust in their results

    ⬇️better integration with external tools such as bibliographic managers is needed

    ⬇️still, the English language yields better results than others

Next Steps

The GoTriple team plans to use the feedback collected during the forum to further develop the platform. These efforts will be supported by GoTriple's participation in four EU-funded projects: [ATRIUM](#), [FASCA](#), LUMEN, and GRAPHIA. These projects will focus on:

- Increasing the quantity and quality of data indexed by GoTriple
- Integrating data science tools
- Offering GoTriple as a "white label" platform customizable for other disciplines
- Transitioning to data-driven knowledge production

Reflections on the RF Format

The organising team derived valuable lessons from the first Researcher Forum that will inform improvements for future events. These lessons include:

- Maintaining a half-day format for each part, with the possibility of extending sessions as needed

- Providing clear and well-defined tasks, topics, and questions for participants
- Ensuring disciplinary diversity among participants
- Securing appropriate facilities with dedicated rooms for different sessions

The Researcher Forum format is a valuable tool for gathering user and expert feedback. Plans are in place to organise additional forums in the future to ensure the continuous improvement of other services from the ATRIUM Catalogue.

1.   What is the Researcher Forum?

The Researcher Forum (RF) is a workshop format designed to gain a deeper understanding of the needs of the users of research infrastructures (RIs) services. The RF focuses on researchers, aiming to strengthen interactions between researchers engaged with and around RIs, their services and tools.

Key Characteristics of the RF Format:

- Researcher-centric: The RF serves as a stakeholder forum where researchers take a central role. A core goal of the RF is to provide a better understanding of researchers' needs.
- Service-oriented: RF should be dedicated to a specific service.
- Collaborative: The RF aims to enhance closer interaction between researchers and service/data providers. It emphasises bidirectional communication as a prerequisite for long-term, effective interactions. The workshop embraces different types of interactions between researchers and service/data providers, depending on the researchers' roles.
- Embraces innovative thinking: The RF recognises the research community not only as users of services and data, but also as an innovative community engaged in research and development of solutions that may interest service and data providers.

The RF format is highly flexible and adaptable to the specific service and its user group. Multiple RF sessions for various services can be organised in parallel or sequentially during a single event day.

2. Selected ATRIUM service: GoTriple

2.1   What is GoTriple?

GoTriple is a multilingual discovery platform for Social Sciences and Humanities (SSH). It was the main outcome of the TRIPLE ("Transforming Research through Innovative Practices for Linked Interdisciplinary Exploration") research project, which received funding from the European Union's Horizon 2020 Research and Innovation action (INFRAEOSC-02-2019 "Prototyping new Innovative Services"). The project ran from October 2019 to March 2023: it was coordinated by CNRS and involved 22 partners from 15 different European countries.

GoTriple provides a central access point that allows users to explore, find, access and reuse materials such as articles, datasets, project descriptions and authors' profiles at a European scale. It is one of the discovery services that are part of the OPERAS Services Catalogue. OPERAS is the Research Infrastructure that supports open scholarly communication in SSH in the European Research Area.

GoTriple is in a crucial stage of its development – it has been sustained by a joint effort of institutions forming the GoTriple Committee and, simultaneously, three recent EU-funded projects dedicate significant resources to its further development. Hence, an RF will provide valuable input into how the platform will evolve in the upcoming months.

2.2   Current features

At its heart, GoTriple has a **search engine** whose indexes are fed by a configurable harvesting and processing pipeline that continuously imports and processes metadata for metadata for publications and projects from multiple sources (about 1,400), including large aggregators (BASE, DOAJ, OpenAire, Isidore) and national repositories alike (Hrčak, Biblioteka Nauki, ZRC Sazu, EKT, Recyt or Pombaline).

Recently, the support of MARC21 XML data sources has been implemented in GoTriple, which allowed the ingestion of over 1.7 million documents metadata from the German National Library (DNB). Currently, the total number of documents indexed in GoTriple is nearly 17 million.

Innovative services are integrated into the platform to improve the user experience with personalised **recommendations**, interactive **visualisations**, and the possibility to use a **web annotation tool** to take notes on material found in GoTriple. Finally, users can register to the platform to create a **personal profile**, claim ownership of the documents published in the indexes, and find and connect with other SSH authors and researchers.

2.3   New features in development

The GoTriple team has been developing a specialised **AI Chatbot** designed to enhance the discovery and reuse of academic resources indexed in GoTriple. The AI Chatbot provides an alternative and efficient paradigm for information retrieval in GoTriple by enabling users to easily find answers to their research questions through direct interaction with the platform's content collection. Users start by posing a general question. By exploiting AI services, the Chatbot analyses the text of relevant publications, selects the most suitable parts, and uses them to produce a pertinent answer. The links to the selected source documents used in this process are also returned to allow the user to explore further.

At the same time, an "anti-hallucination" mechanism guarantees that only pertinent answers are presented to the users. Furthermore, the system includes an integrated feedback mechanism, allowing the users to indicate the quality of the generated answer.

The Chatbot has been implemented as a proof of concept to validate this new paradigm for accessing GoTriple's content. At present, it features only a limited number of documents (currently around 4,000) in four different languages, all concerning a common list of topics. This prototype is used by a limited group of SSH researchers to gather feedback. The RF provided another opportunity to showcase and test the tool. As the tool received positive feedback, plans are in place to build on this initial experiment to design and implement new AI-powered features in GoTriple starting in 2025, as indicated in section 6.

3. Designing the Researcher Forum

The RF about GoTriple was designed in two parts, with different audiences and methods chosen for each part.

The aim of the first part was to gather feedback from **new users**: researchers who had not used GoTriple before. For this purpose, we decided to organise a **usability test** for individual participants using the **"thinking aloud" method** and a **group discussion** with all participants at the end.

For the second part, researchers with expertise in platforms similar to GoTriple were invited, i.e. science information and scientific communication experts. The aim was to gain insights into specific features and possible future improvements. The method chosen for this expert review was a **focus group** followed by a **panel discussion**.

Event's agenda

Part 1 – New users group: Usability Test

9h   Welcoming

9h15 Initial speeches

- *What is the Researcher Forum* by Tomasz Umerle (IBL PAN) and Carol Delmazo (OPERAS)
- *What is GoTriple* by Luca De Santis (Net7)

9h30 Usability Test - led by Kinga Rychlik and Maksymilian Mikulski (PSNC)
        Note takers: Cezary Rosinski (IBL- PAN) and Julia Domagata (PSNC)

11h30 Coffee- break

11h45 Guided discussion after the Usability Test | Moderator: Carol Delmazo (OPERAS)
        Note takers: Cezary Rosinski (IBL- PAN) and Tiziana Lombardo (Net7)

12h45 End

Part 2 - Expert Review

14h   Welcoming

14h15 Initial speeches

- What is the RF and why we are doing it by Tomasz Umerle (IBL PAN) and Carol (OPERAS)
- Service introduction: What is GoTriple by Luca De Santis (Net7)

14h30 Focus Group Discussion | Moderator: Carol Delmazo (OPERAS)

Topics' introduction: Julien Homo (FoxCub)
Doubts/clarification: Luca De Santis (Net7), Julien Homo (FoxCub)
Note takers: Julien Homo (FoxCub) and Tiziana Lombardo (Net7)

16h   Coffee-break

16h15 Panel discussion | Moderator: Carol Delmazo (OPERAS)

Topics' introduction: Julien Homo (FoxCub)
Wrap-up and next steps presentation - Luca De Santis (Net7)
Note takers: Cezary Rosinski (IBL PAN) and Tiziana Lombardo (Net7)

17h45 End

3.1 New users group: usability test

A group of six researchers living in Poland were invited to participate in the usability test and provide feedback on GoTriple's interface, navigation flow and evaluate the quality of the search resultsWe used the think-aloud method to gather insights from the participants.To gather this information, we chose the "think-aloud" method to gather insights from the participants. In this method, participants use the system while continuously verbalising their thoughts as they move through the user interface. It allows users to reveal what they really

think about the design, especially regarding any confusing or misleading aspects.[1]

Special attention was paid to the selection of participants. The event was targeted towards the Polish scientific community, with different criteria applied to the Usability testing and Expert Review parts.

- **Number of Participants**: 6 new users, divided into 2 subgroups (Polish and English-speaking).

  Speaking thoughts out loud can be challenging in a language other than one's mother tongue. For this reason, the new users group was divided into two sub-groups: sub-group A performing the tasks in English and sub-group B performing the same tasks in Polish. Sub-group A consisted of one researcher who is not a native speaker of Polish and two native speakers of Polish who are comfortable with English. Sub-group B was formed by native Polish speakers who understand English, but are less comfortable speaking and expressing their thoughts in English. Another meaningful reason for this decision is the importance given to multilingualism in the ATRIUM project.

- **Selection Criteria**:
  - New users of the GoTriple platform.
  - Representation from diverse academic disciplines (e.g., theology, Polish philology, law, philosophy, archaeology).
  - Proficiency in either Polish or English
  - Everyday use of other languages (e.g. French, Spanish).
  - Inclusion of participants across different age groups and varying levels of digital competence to capture a broad spectrum of user experiences.
- **Additional Information**:
  - Participants were asked to register on the GoTriple platform prior to the test.

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[1] Thinking Aloud: The #1 Usability Tool

3.1.1 Defining the tasks

The definition of the tasks for the usability test took place in three phases. The first phase was an internal collection of feedback within the OPERAS Coordination Team on the main features of GoTriple and the perceived strengths and weaknesses. Based on the responses, the first version of four tasks was designed. The second phase was to review and refine the tasks with the RF organising team, which included representatives from the Italian IT company Net7, one of the main developers and maintainers of GoTriple, and Foxcub, a French company specialised in data and AI, which also participated in the development of the platform. In this phase, Net7 proposed the creation of a fifth task, only for the Polish-speaking participants, to test the experimental version of the AI Chatbot currently being developed for GoTriple. The third phase was to test the tasks in a pilot session. The final list of tasks included:

Task 1: You are doing research on the Polish language as a second language in Eastern European Countries. Use the search engine of GoTriple to research about it. Describe step by step how you are doing the search and describe/evaluate what you find: type of results, variety, usefulness of the results.

Task 2: Search about Disinformation in Poland. You want only results from the last 10 years, only the content produced in Polish. Describe step by step how you are doing the search and describe/evaluate what you find: type of results, variety, usefulness of the results.

Task 3: You found an interesting article about Disinformation in Polish. You want to save the reference of the article in a suitable format (.ris or .bib or another format you are used to working with in a tool such as Zotero, EndNote or Mendeley). Describe/evaluate the process from the moment you selected the article until you export it from GoTriple.

Task 4: Create a knowledge map to visualise the most relevant topics under discussion about Disinformation in Poland in the last 10 years. Describe the process from the beginning: what do you do to create the knowledge map and also describe/evaluate the result (usefulness).

Task 5 (using a special url, because it is still an experimental tool): You are writing an article about gender issues in Poland. Formulate a question that can

guide your research in GoTriple: instead of using the search tool, use the ChatBot. Ask the same question in English and Polish. Evaluate the results in both languages. You can create your own question or use one of the examples below: "What are the legal implications of gender-based violence?"; "What is the current number of female researchers in the field of science?".

3.1.2 Organisation of the usability test

No prior knowledge or preparation was required other than registering on the platform. Instructions for registration were sent to participants in advance. Before the study began, participants were informed about the procedure. Each participant assigned to a sub-group (A or B) took part in an individual test with no time limit. Participants were informed that their participation was voluntary, that they could resign from further participation at any time, and that their answers would not be assessed, because the organisers wanted to gain as much knowledge as possible about using the GoTriple Platform. Each participant completed the tasks in a designated room (Room 1) at a desk on a computer belonging to the Poznan Supercomputing and Networking Center (PSNC), assisted by a UX expert from PSNC who acted as a moderator.

From the start of the test, the tasks were recorded (audio and video – computer screen) by the free Open Broadcaster Software (OBS) software installed on the PSNC computers used for the tests. For sub-group A, audio and video (computer screen) were also made available via the Google Meet tool so that the RF participants could follow it in the conference room. An observer followed the sub-group A tasks from there and actively took notes.
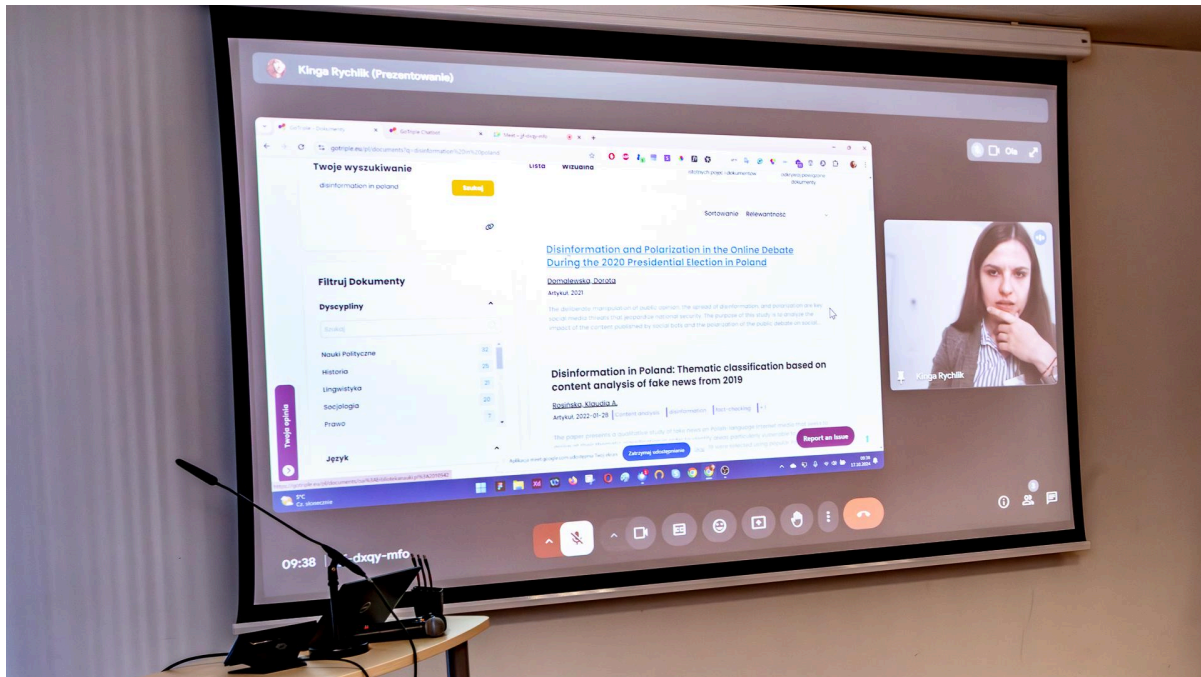
The Usability test from sub-group A being streamed via Google Meet to the conference room. Photo: Maciej Rutkowski (PSNC)

At the same time, an analogous study was conducted in room 2 with participants from sub-group B. The Google Meet tool was also used to allow another observer, who was not present in the test room, to actively take notes while participants performed the tasks. However, sub-group B tests were not broadcasted in the conference room. This was the main difference in terms of procedures.

At the beginning, participants were asked to log in. The moderator read each task aloud and passed a piece of paper with the printed task to the participant, so that they could read the content of the task at any time. If the participant felt that they had already completed the task or did not want to do it, they said "we can move on", which was a clear signal for the moderator to continue with the next tasks. After completing the last task, the moderator asked the participant to return to the conference room and ask another person from the subgroup to take part in the test.

The average time of the research session for a single person was about half an hour. Each participant in sub-group A was asked to complete the tasks on the GoTriple platform (exception made for the non-Polish speaking participant who

did not perform the fifth task). The moderator did not interfere with how the tasks were performed, nor did the moderator suggest how the participant should perform the task. While performing the task, the participant described the process out loud, of how they step by step completed the task and the difficulties encountered.

The other participants in the sub-groups A and B waited in a separate room. When the test was completed in each group, the next participant was asked to join the other RF participants in the conference room.

3.1.3 Guided discussion

At the end of the study, all participants took part in a final guided discussion in English, a closing moment in which they shared their thoughts on the study with the whole group. The discussion was led by the OPERAS representative and focused on the following questions:

- Overall, how do you feel about being part of this usability test?
- Did you find the tasks hard to perform? Would you like to comment on some specific challenges you faced?
- After this first experience, what are your initial impressions of GoTriple?
- Could GoTriple be useful in your own research? Are there any specific features or functionalities that you found particularly helpful or lacking?
- Are there more thoughts you would like to share with us?

The researchers who had more difficulty expressing themselves in English were helped by two of the RF organisers to translate their thoughts. Two observers actively took notes. The summary of the discussion is described in section 4.

3.2 Expert Review: focus group and panel discussion

A group of six researchers from Poland was invited to participate in part two of the RF, named the Expert Review. As explained above, this group was formed by researchers with previous experience using GoTriple or with expertise in similar platforms. Throughout the preparatory sessions, ideas on the structure of this part of the workshop gradually evolved. Various approaches were considered, such as individual interviews, but discussions ultimately refocused the method toward a more collective dynamic, seen as better suited for in-depth exchanges.

This preparatory phase also helped clarify priorities and identify specific aspects of the GoTriple platform that required thorough analysis.

Thus, the Expert Review ended up being divided into two parts: first, **features already available in GoTriple would be analysed in a focus group**, followed by a **panel discussion with the goal to explore possible future developments**.

As with the usability test part, participants were carefully selected.

- **Number of Participants**: 6 experts.
- **Selection Criteria**:
    - Specialists in fields such as information science, IT, and digital humanities.
    - Consideration of English proficiency (with leniency).

The inclusion of participants with diverse language skills, age ranges, and levels of digital expertise was a strategic decision, reflecting the multilingual nature of the GoTriple platform and its aim to serve a broad and inclusive research community.

3.2.1 Focus group: current features

The focus group method was used to analyse the current features of the GoTriple platform. According to Krueger and Casey (2014), the ideal size for a non-commercial focus group is five to eight people, and the goal is not to generalise or make statements, but to provide insights, and gather opinions.[2] The expectation from the organisation team was to identify strengths and areas for improvement based on the insights collected.

The OPERAS representative acted as moderator for the focus group, which discussed three key features of GoTriple. These topics were chosen to cover key areas where user feedback could directly inform adjustments and improvements.

Each topic lasted 30 minutes in the focus group. For each topic, the FoxCub representative gave a brief introduction of five minutes and guided the

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[2] Krueger, R. A., & Casey, M. A. (2014). Focus groups: A practical guide for applied research. Sage Publications.

participants in navigating GoTriple. The researchers then had five minutes to explore the topic. If participants had any doubts or questions, the Net7 and FoxCub representatives provided guidance or the necessary explanations. After this initial exploration, participants were encouraged to share their thoughts on the topics. The facilitator only acted as a guide to the conversation and did not interfere with the expression of opinions. The topics discussed were those listed below:

Topic 1: User Profiles: Effectiveness of the profile search functionality

Guided discussion:

- How intuitive is the current search system for user profiles?
- Are users able to find relevant profiles easily?
- How can the search functionality be improved to enhance user satisfaction?
- Does the current profile display (e.g., information and sections) meet the expectations of researchers?

Topic 2: "Your GoTriple" Section: Evaluating the user experience and publication listings

Guided discussion:

- Is the automatically generated publication list accurate? Are any publications missing or wrongly attributed?
- Does "Are you the author?" tab display relevant publications? Is the process of claiming authorship simple and effective?
- How well does the "Your GoTriple" section help users manage their profiles and publications?
- What improvements could enhance user satisfaction and the functionality of this section?

Topic 3: Visualisation Tools: Usefulness and clarity of knowledge map and streamgraph

Guided discussion:

- Do users clearly understand the difference between a knowledge map and streamgraph?
- Would you use these visualisation tools in your research routine? Are there any challenges or confusing aspects when using either of these tools?
- What improvements or features could enhance the effectiveness of these visualisation tools?

3.2.2 Panel discussion: future developments

For the second part of the Expert Review, a panel discussion was organised to explore future directions for GoTriple, focusing on innovations that could address the evolving needs of researchers. An initial list of 10 potential topics was developed and then refined based on strategic priorities identified during the preparatory sessions. This process led to the selection of three key topics for discussion.

The difference between this and the focus group is that we did not aim to gain insights into specific features, but rather to have a more open discussion. Although still guided by some key questions for each topic, the moderator encouraged an interactive discussion between the researchers and the service providers (OPERAS, Net7, FoxCub).

Each topic included a brief presentation followed by a guided discussion to generate ideas and identify challenges. The topics were the ones below:

Topic 1: Providing data science services and support for enhanced research capabilities

Guided discussion:

- How can GoTriple best integrate data science tools to support researchers?
- What features (e.g. Jupyter notebooks, graph tools) would be most useful for SSH researchers?
- How can the platform promote data-driven research while keeping it easy for non-technical users?

- What should be the fundamental nature of these capabilities in terms of services, tools, and software to effectively empower researchers?

Topic 2: Towards a collaborative & community-driven platform

Guided discussion:

- How can we foster greater community engagement on GoTriple?
- What incentives can we offer to encourage active participation?
- Which obstacles do you see preventing the community from actively engaging / participating?
- What tools would help researchers curate content, like voting on themes or sharing datasets?

Topic 3: An AI-powered, multilingual chatbot for GoTriple

Guided discussion:

- What is your expectation of the use of AI in a discovery platform such as GoTriple?
- How can a multilingual chatbot improve research efficiency on GoTriple?
- How can we ensure the chatbot remains accurate and useful across disciplines?
- What are the key challenges in maintaining such a tool, especially in a multilingual setting?

After the discussion, the panel concluded with a presentation by a representative of Net7 to clarify the guaranteed funding opportunities and the context for development in the coming years, when the possible avenues discussed can be explored.

3.3 Piloting

A **usability test pilot** was organised prior to the RF. It was an online session where one Polish researcher from PSNC was invited to perform the tasks using the same method (thinking-aloud) and procedures planned for the RF. It allowed the RF organising team to fine-tune details on the procedures and clarify the task descriptions to the test participants.

Regarding the preparation on the day of the RF, each participant read out the exact test procedure instructions before taking the test. After each task was read out, the participants were able to return to the content with the help of printed cards with the content of each task. In the test rooms of subgroups A and B, connected computer workstations awaited the participants. The participants used only the Google Chrome web browser to navigate the GoTriple platform. No additional software was needed (apart from the software used to record the computer screen).

For each task, based on the test scenario, the participants were asked to comment on everything they encountered, raise their doubts and predictions about the performance of the different functionalities of the platform. During the test, the instructor was able to focus strictly on conducting the session and following the participant's actions, as an additional observer was creating notes and writing down all important observations and comments made by the participant.

Similarly, **a pilot of the expert review** was designed prior to the RF to test the timing and the questions that would guide each topic discussion in both the focus group and the panel discussion. Two researchers from IBL PAN were the invited participants, while the moderation and introduction of the topics were conducted in the same way as planned for the RF. The pilot led the organising team to simplify the guided questions (originally longer sentences).

3.4 Logistics

The event took place on October 17, 2024, at the Poznań Supercomputing and Networking Center (PSNC) in Poznań, Poland. Communication with participants began over a month in advance to ensure they were fully informed and prepared.

This communication was primarily conducted via email in English, though some details were discussed in Polish for specific cases.

To provide participants with clear and comprehensive information, two separate informational brochures were prepared: one for the Usability Test group and another for the Expert Review attendees. Both brochures, developed in English, included the following details:

- An overview of the Researcher Forum
- A description of the ATRIUM project
- Information about the GoTriple platform
- Details of either the Usability Test or Expert Review (tailored to the target audience)
- Instructions for registering on the GoTriple platform
- Directions to the event venue, including guidance for reaching it from the airport and train station
- Accommodation suggestions
- Information about reimbursement procedures and the necessary documentation
- Contact details for communication representatives.

Email communication was continuous, with reminders and reattachment of the brochures sent multiple times. To streamline and expedite interactions, WhatsApp channels were also created, and participants were invited to join.

In the lead-up to the event, participants received an *Information on Data Processing and Declaration of Consent* document, with a request to review and accept its content.

During the event, catering services were provided. Additionally, essential reimbursement documentation was collected.

4. Summary of the event

In this section, we provide a summary of both parts of the Researcher Forum. It includes the description of task performances in the Usability Test and the highlights of participants feedback in the group discussion. For the Expert Review, we present the main insights from the focus group and the panel discussion.

Participant of the usability test performing one of the tasks under the supervision of the PSNC expert.
Photo: Maciej Rutkowski (PSNC)

4.1 New users group

4.1.1 Usability test

Summary of task performance by both groups

Task 1 – Searching for publications on the Polish language as a second language

Each participant presented a completely different approach in the way they searched, ranging from very long, complex queries to targeting only keywords. The participants were mainly used to using Google and Google Scholar search engines and therefore expected similar possibilities and presentation of results. All participants individually tested the search engine, exploring with different phrases how it behaves. In common, the group found too few results and these did not seem to be relevant to the search phrase.

Task 2 – Searching for publications about Disinformation in Poland using filters

Again, participants in both groups used their own approach while searching - some entered general keywords and then narrowed down the results, others entered more specific phrases. Only after reviewing the search results page did the participants perceive that they could limit the material they received with dedicated filters. This phenomenon occurred in both language groups. All participants eventually managed to find the filters on the site and use them.

Task 3 – Saving an article's reference in a suitable format

The group which completed the test in English did better in this task, as all individuals found the 'export' button and linked it to the ability to save the reference in the correct format. In the Polish group, only one person completed this task. All participants shared a degree of uncertainty regarding the name of the button: "export" might not be the most suitable term when creating a reference for later use in other software, e.g. Zotero.

Task 4 – Creating a knowledge map

The possibility of creating knowledge maps from the available search results was quite an innovative feature for the participants. Most participants did not find it on their own (the English task group did better in this task – 2/3 of the people found this tool on their own and used it). Researchers in both groups were used to creating similar knowledge maps manually, so many thought at first that they were expected to perform the task this way (download citations and group them thematically into knowledge areas). The problem was finding this possibility on the page and predicting what would happen when they clicked on this function. The participants who proceeded to create a knowledge map from the available results linked the long waiting time for the generation of the map to the number of records being processed. The visual aspect of the knowledge map

was viewed positively – it was easy for users to understand, and the ability to navigate to the content of specific articles was also appreciated, although finding direct links was not immediately straightforward. Participants would have liked to know how the knowledge map was generated, e.g., which data it is based on.

Task 5 – Using the chatbot

The experimental chatbot was repeatedly compared to ChatGPT, which some of the participants use daily. The participants had no difficulty with the service – logging in or searching for content. Understandably, since the chatbot is in an alpha test phase and runs only on around 4000 documents, participants from both groups noticed that the article database on which they received an answer was very limited, making the content too general and consequently unhelpful (it would be necessary to continue asking the chatbot until more detailed information was obtained).

The participants pointed out that they receive slightly better results when the same query is asked in English, and that the results are not identical. Another notable limitation was that the chatbot does not reference previous threads in the conversation, treating each query as a new search from the beginning. Furthermore, in several cases, the participants received different answers by asking the same question twice. Participants in both groups were positively surprised to receive references under the answers that the chatbot provided. Although they found the information very useful, the relationship between the chatbot answer and the sources was not clear. The tool itself, based on AI, was nevertheless endorsed as groundbreaking and likely to improve scientific work in the future significantly.

In summary, **usability issues** with the GoTriple platform were discovered in both groups, regardless of the language in which the participants performed the tasks. In some tasks (related to finding a particular function on the page, e.g., a button to save references to a specific format, moving to the knowledge map), the **participants in the group taking the test in English did better** than those who solved the tasks in Polish. The participants in both groups widely shared their experience and thoughts during the process, and performing the tasks in their native language for the Polish group did not prove easier compared to the ones who performed in English. However, the problem in working with

non-Polish language materials is when the researcher does not have a basic proficiency of English.

The **user interface was generally evaluated positively**, although in several cases the participants encountered the same problems with finding some information, regardless of the group. Respondents highlighted features they felt were currently missing on the platform, such as information about the journal in which an article was published, open access to full articles rather than just bibliographic information, and additional filtering options. The most **commonly mentioned challenge** among participants was the **limited quantity of search results** found for their search terms.

4.1.2 Guided discussion

In the concluding discussion of the Usability Test, participants shared their opinions on the platform's ease of use, the functionality of individual features, and their overall impression of using GoTriple. Test participants commented on the search, knowledge map and chat functions, pointing out the platform's positive and negative aspects.

Question 1 – Overall, how do you feel about being part of this usability test?

Participants appreciated the clearly defined tasks and prepared questions, which made it easier for them to understand the expectations and functions of the platform. Noteworthy was the voice of a participant who started his research career during the analogue era. From his point of view, the usability test was a complex and, in a way, difficult experience that required digital competence, but at the same time showed new possibilities for searching for the information needed for the research.

Discussion then went beyond the topic of the test itself where participants were eager to continue commenting on GoTriple and its features. They considered the GoTriple service user-friendly. The knowledge map functionality was positively received, which was seen as a highlight of the platform and a tool with great potential. Participants also showed interest in further exploring the service and using GoTriple in their research queries. Participants also appreciated the

chatbot functionality based on verified scientific sources and the usefulness of the references provided.

Question 2 - Did you find the tasks hard to perform? Would you like to comment on some specific challenges you faced?

Initial difficulties were pointed out, in terms of handling of searches, the use of the knowledge map, and the non-intuitive operation of the site when keywords were clicked on: instead of narrowing down the search, results took you to general results. Again, the impact of the language used on the effectiveness of keyword searches was noted, with higher performance for English compared to other languages.

They highlighted that their search habits are shaped by the Google search engine. The GoTriple one was seen as less convenient and requiring more precision in formulating queries.

Question 3 - After this first experience, what are your initial impressions of GoTriple?

The platform's user-friendly interface and filter performance were evaluated positively, data visualisations with a particular emphasis on the knowledge map and the ability to work in multiple languages were considered useful, which is important for researchers who engage in comparative analysis. Some noted that they were able to find content not available in other resources, and the ability to filter texts in Open Access. The profile section for the signed-up users was also viewed positively, especially the bibliography attached and an easy-to-navigate layout.

The inability to download articles from the platform and the malfunctioning of the algorithm linking users to their texts were found to be problematic. It was considered unfavourable that the search engine does not always handle wide terms effectively and does not respond to the use of typical keywords that usually appear in many papers. The lack of information about the source from

which the published article comes was assessed, as this is an important factor for researchers indicating prestige and building trust in the text.

Question 4 - Could GoTriple be useful in your own research? Are there any specific features or functionalities that you found particularly helpful or lacking?

Many participants noted GoTriple's potential for their research, especially when building bibliographies — which is a very useful feature especially for students beginning their research path and helps with exploring new topics as well as scholarly networking. The knowledge map was found to be useful for linking concepts to researchers. While it was appreciated that the GoTriple chatbot uses verified scientific sources, which increases its credibility compared to other similar AI tools, such as ChatGPT, there were suggestions for improving its performance, particularly in the conversation flow. The possibility of adding researcher-provided bibliographies to the chatbot and integration with bibliography managers was suggested.

Some participants reported that the number of search results was insufficient, especially when searching for information on very specific topics. In the context of finding researchers to collaborate with, it was noted that there is a lack of functionality to follow other researchers and receive notifications about their activity, along the lines of the social network ResearchGate.

Question 5 - Are there more thoughts you would like to share with us?

The final statements expressed interest in accessing the chatbot to test its functionality and a desire to explore the platform further.

4.2 Expert Review

4.2.1 Focus group

During the focus group session, experts shared their insights on GoTriple's current features, discussing areas such as profile search, the "My GoTriple" section, and visualisation tools. Their feedback highlighted several challenges and provided valuable observations on the user experience.

Profile Search Functionality

The effectiveness of the profile search feature was a key point of discussion. Some participants encountered challenges with the process of claiming publications from various sources. They noted issues with duplicated entries and the inability to merge documents from the same source, leading to inflated publication lists. The appearance of multiple profiles for the same author, with variations in names or identifiers, added to the confusion. Some experts also encountered unexpected results in profile searches, such as profiles of dead and historical figures (e.g. Franz Kafka). Participants suggested clearer links to external platforms like ORCID for more seamless publication import and improved control over profile settings to minimise duplicates.

Another recurring issue was the mismatch between disciplines and keywords. Participants noted that the assigned disciplines did not always correspond with the focus of their publications, resulting in irrelevant search results and a less intuitive navigation experience. One participant found the order of search results unclear and suggested implementing a ranking or sorting mechanism for disciplines associated with each profile. One suggestion was to allow users to add publications from external sources directly to their profiles to expand and customise their publication lists.

"My GoTriple" Section

The "My GoTriple" section, intended to centralise user profiles and publication listings, received mixed feedback. While some participants found it useful,

others noted issues with the clarity and organisation of the interface. Some expressed confusion over the term "suggested profile" and questioned the criteria used to generate these suggestions. This lack of clarity sometimes led to frustration, with several experts noting that the suggestions did not always align with their academic interests. Inconsistencies in publication listings were also mentioned. One participant observed discrepancies between the number of publications shown on his profile and the actual number indexed. This issue was especially noticeable when titles appeared in different languages; for instance, Polish titles were sometimes presented in English, leading to confusion. Another participant highlighted that notifications and suggestions would disappear after being clicked, making it difficult to navigate back to previously viewed items. This inconsistency in organisation made managing profiles challenging. Participants also suggested improvements to Mattermost integration, with calls for a more intuitive setup and clearer instructions for linking accounts.

Visualisation Tools (knowledge map and streamgraph)

The visualisation tools, specifically the knowledge map and streamgraph, prompted varied responses from the participants. While some saw potential in the knowledge map, many found its design confusing. One participant raised questions about the meaning of distances between bubbles and the lack of connections, expecting a clearer representation of relationships. Other participants noted that the knowledge map could benefit from a more structured visualisation of research connections. One expert mentioned that while the knowledge map might be useful for beginners, it was less relevant for more experienced researchers. The streamgraph, however, was generally better received. Participants appreciated its functionality for tracking research trends over time, finding it effective for displaying connections between keywords and publication dates. One expert noted the clarity of the timeline and keyword associations, although they felt that the term "graph" might be misleading, as it suggests a different type of visualisation. The aesthetic appeal of the streamgraph was remarked, considered useful for visualising research trends. However, a drop in publications for 2023 was observed, which might be due to indexing delays. Overall, while the streamgraph was easier to interpret than the knowledge map, some participants suggested adding guidance to help users understand its layout and functionality.

Expert discussing current features and potential developments for GoTriple. Photo: Maciej Rutkowski (PSNC)

4.2.2 Panel discussion

During the Panel Discussion, experts explored potential improvements and future directions for GoTriple, focusing on three main areas: data science support, a collaborative platform, and a multilingual AI chatbot. Each topic revealed insights into the needs and expectations of users, as well as considerations for enhancing GoTriple's role as a research tool.

Data Science Services and Support

The first topic centred on the integration of data science services within GoTriple to enhance research capabilities. One participant initiated the discussion questioning whether GoTriple would aggregate raw datasets in addition to metadata, emphasising the value of accessing primary data for research. The complexity of managing multiple versions of the same publication was noted, which could distort publication counts and affect the reliability of

research data. Another expert shared similar views, stressing that direct access to raw data through APIs would be more valuable than relying solely on GoTriple's built-in tools. Many users prefer the flexibility of writing custom scripts for data analysis, making APIs and data access critical for advanced research tasks. One participant suggested that integration with popular bibliographic tools, like Zotero, would allow researchers to export metadata directly from GoTriple, simplifying data management. Other participants agreed, highlighting the importance of trust and specificity in data science tools, especially within the diverse landscape of Social Sciences and Humanities (SSH). It was suggested that GoTriple could focus on targeted use cases that address specific research challenges, such as citation analysis or metadata visualisation, rather than attempting to create universal tools. One participant expressed interest in potential integration with dLibra, a digital library platform, to streamline workflows for users in digital archives.

A Collaborative and Community-Driven Platform

The experts then discussed ways to enhance collaboration and user engagement on GoTriple. One participant proposed that GoTriple should incorporate an internal messaging system, allowing users to connect directly without needing external platforms like Mattermost. The recommendation is to display keywords provided by authors in a tag cloud format, enabling users to identify relevant research fields more intuitively. Another participant suggested enhancing user profiles with explicit options to specify collaboration preferences, such as skills offered and types of projects they are open to joining. One participant raised the idea of integrating VERA[3], a collaborative platform for citizen science, within GoTriple to help researchers identify gaps and emerging trends in literature. This led to a broader discussion on creating a space within GoTriple where users could publicly note missing information or gaps in the literature, fostering community-driven support for research. One expert explored the potential for peer-developed knowledge systems within GoTriple, suggesting a structure similar to Wikipedia, where community members could contribute to and refine research topics and disciplines. It was also proposed to

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[3] https://vera.operas-eu.org

incorporate gamification elements to motivate repositories to participate more actively in GoTriple's ecosystem, such as ranking repositories by quality or volume of contributions.

AI-Powered Multilingual Chatbot

The final discussion focused on a multilingual chatbot powered by artificial intelligence, designed to support research across different languages. One participant emphasised the importance of multilingual capabilities, particularly for engaging a broader audience, including citizen scientists. Another participant suggested that GoTriple's chatbot should be specialised in scholarly language and tailored to research-specific queries, distinguishing it from general-purpose chatbots. The recommendation is to use a curated dataset to ensure that the chatbot's responses are relevant and reliable for academic contexts. One participant noted the importance of communicating that the chatbot relies on trusted GoTriple data, reinforcing user confidence in its outputs. Another suggestion is that ethical handling of data should be prioritised, which can foster user trust.

5. Key Results

In this section, we point out the key results of the event. The feedback gathered during the Researcher Forum led to the identification of both strengths and areas for improvement of the GoTriple platform. Participants' insights underscore GoTriple's potential to enhance research practices while also identifying key challenges to address.

Strengths:

The **intuitive interface** and **user-friendly design** were widely appreciated, with users praising the **simplicity of navigation** and the **accessibility of its features**. **Filters and knowledge map/streamgraph** stood out as particularly useful tools for organising and exploring information efficiently. Among the platform's innovative tools, the knowledge map emerged as an interesting visual resource to connect concepts and publications, though some users noted the need for initial guidance to fully understand its functionality.

Similarly, the **chatbot** was recognised as a significant advancement for social sciences and humanities research, with participants valuing the references provided alongside its answers.

GoTriple was also appreciated for its attempts to satisfy diverse research needs. Participants from various disciplines highlighted, for instance, the platform's ability to **support thematic and multilingual exploration**, demonstrating its appeal across the humanities and social sciences.

Areas for Improvement:

One of the most common critiques was the **low volume and relevance of search results**, which often required users to reformulate their queries multiple times to obtain meaningful outcomes. This issue, coupled with **difficulties in locating and understanding specific tools** such as knowledge map/streamgraph or the reference export feature, highlighted usability challenges. The labelling of features, such as the "export" button, was also noted as unclear, leading to confusion among users.

Another key area for improvement was the integration with external tools. Participants suggested that **compatibility with reference management software** like Zotero or EndNote would significantly streamline the process of exporting and organising bibliographic data, making the platform more efficient for academic use. Additionally, users expressed a need for clearer and **more detailed information about the sources of articles**, including their journal of origin and open access status. Such transparency would build trust and help researchers better evaluate the reliability of the results.

The "My GoTriple" section was not received as intuitive and its content was **not always seen as clear or well-organised**. Concerning the profile search features, **challenges around the author's publications list led to trust issues**. More attention needs to be put into improving these capabilities, knowing that the data provided through these spaces depends on the GoTriple's content in general (cf. the weak point related to the limited representation of relevant literature).

Lastly, **linguistic barriers** presented a notable challenge, as the performance of searches varied greatly depending on the language used. **English queries consistently yielded more relevant and abundant results** compared to other languages, such as Polish. This disparity underscored the importance of improving the platform's multilingual inclusivity to ensure equitable access and usability for all users.

Summary

The following tables sums up the main strengths and weaknesses of the GoTriple platform in the eyes of the participants of the RF and how these points are expected to be explored in the near future.

GoTriple's strengths	
⬆️intuitive, user-friendly, easily navigable interface ⬆️useful filtering and knowledge map/streamgraph	Exploit through new applications of the GoTriple platform for different communities (LUMEN project)

⬆️promising chatbot	Emphasise development in upcoming projects, deploy more mature versions and innovate further (Projects: FASCA, LUMEN, GRAPHIA)
GoTriple's areas for improvement	
⬇️limited representation of relevant literature for a given search	Aggregate more resources and improve metadata quality (Projects: ATRIUM, GRAPHIA)
⬇️extra tools (beyond the search feature) are promising, but need further development and effort to build trust in their results	Provide more community-friendly services, connect and exploit existing community tools, offer support actions (FASCA project)
⬇️still, the English language yields better results than others	Working on multilingual metadata for GoTriple documents.
⬇️better integration with external tools such as bibliographic managers is needed	[Zotero integration implemented after the RF]().

This will further inform future development of the platform in a way which, on the one hand, takes advantage and exploits storing points of the platform and aims to improve the weaknesses. At this point main pathways for GoTriple's improvement are new projects (starting in 2024 and 2025): ATRIUM, FASCA, LUMEN and GRAPHIA. In the following section, we align the results of the RF with the work planned in these projects.

6.   GoTriple: pathways for improvement

In this section we present the pathways for GoTriple's improvement to address some of the results of the Researcher Forum. This work will be made possible mainly thanks to the involvement of GoTriple in four different EU-funded projects starting in 2024 and 2025: ATRIUM, FASCA, LUMEN and GRAPHIA.

6.1 ATRIUM and GoTriple: expanding GoTriple's Indexes in Quantity and Quality

Targeting: ⬇️limited representation of relevant literature for a given search

There are three areas of work in the ATRIUM project that will particularly target improving GoTriple's data quantity and quality:

- **New Connectors and Expanded Sources**: To increase the breadth of available SSH content, GoTriple is integrating new connectors to databases and repositories such as Crossref, OApen, and MARC 21 standards, thereby allowing for broader data ingestion.
- **Refinement of Metadata Handling:** To improve relevance and reliability of GoTriple's content, ATRIUM will improve the persistent identifiers (PIDs) coverage, author identification and translation (reducing authorship attribution errors) and keyword multilinguality by exploiting AI for translation allowing easier access for non-English users.
- **Ontology Refinement**: The TRIPLE ontology is being fine-tuned to better align with the expanding SSH content and facilitate improved interoperability with other research frameworks.
- **Performance and Scalability Improvements**: Through the ATRIUM project, we are optimizing GoTriple's back-end infrastructure, enabling faster data processing and smoother user experiences.

6.2 Data Science Support through the FASCA project

Targeting: ⬇️extra tools (beyond the search feature) are promising, but need further development and effort to build trust in their results

GoTriple aims to be a hub for data-driven research by providing a data science environment coupled with data science support services. Our objectives in this area include:

- **Environment** for Data-Driven SSH Research: GoTriple is developing a space for researchers to access data science tools that support multilingual, data-driven inquiries. To streamline the research workflow, GoTriple is constructing a pipeline of services for the discovery, extraction, processing, and publication of datasets. Researchers will be able to directly leverage GoTriple's indexes to find relevant data, facilitating a comprehensive research process. A number of tools will be used to build this environment such as the GoTriple Chatbot, Pundit annotation tool, Jupyter Notebooks and Neo4J or Github.
- **Support**: researchers eager to perform data-based research will be able to take advantage of data science support services, with two pilot research projects available through FASCA.

6.3 LUMEN Project: Making GoTriple a "White Label" Platform

Expanding on: ⬆️intuitive, user-friendly, easily navigable interface

Targeting: ⬇️extra tools (beyond the search feature) are promising, but need further development and effort to build trust in their results

LUMEN exploits some interdisciplinary features of GoTriple, applying them to other disciplines, while also developing new functionalities such as the AI Chatbot. With a "white label" approach, GoTriple will be developed as a general-purpose discovery platform that institutions and organizations can adapt to other disciplines. Platform improvements will also include:

- **GoTriple Chatbot official release**: the tool will become an integral part of the GoTriple interface, available for all users.
- **Enhanced Visualisation and Recommender System:** improved visual tools and recommender algorithms will increase content discoverability and user engagement.
- **Advanced User Profiles and Collaboration Options:** user profiles will gain functionality for sharing work and fostering collaboration, making GoTriple a more interactive and connected community for researchers.

6.4 GRAPHIA Project: Transitioning to Data-Centric Knowledge Production

Targeting: ⬆️promising chatbot; ⬇️extra tools (beyond the search feature) are promising, but need further development and effort to build trust in their results; ⬇️ limited representation of relevant literature for a given search

The GRAPHIA project aims to advance GoTriple's data handling capabilities by shifting from a text-based to a data-centric approach. This will improve the scalability of the platform to handle larger volumes of data and new data sources:

- **SSH Knowledge Graph:** GoTriple will develop an SSH Knowledge Graph, which will not simply represent bibliographic data but also include key insights and facts extracted from article text. GoTriple will become part of a larger network of knowledge graphs, enriching SSH research with interdisciplinary data and enabling complex analyses across research domains.
- **LLM4SSH**: The development and release of an open source Large Language Model (LLM) with a focus on multilinguality and SSH-specific terminology will support the complex linguistic needs of the SSH community. This model will assist in automated translations, summarization, and concept extraction tailored specifically to SSH disciplines.

7. Reflections on the RF format

7.1 Analysis of the participants' feedback form

After the event, participants were asked to fill in an evaluation form that was answered by 7 out of 12 participants. In this section, we summarise the results. Overall, the event format was considered **very satisfactory** by 6 of the respondents.

Usability Test

The duration of the usability test and the related discussion have been considered appropriate by most, while one participant would have preferred a longer session. The usability test was considered overall engaging and informative by all respondents who also considered the location suitable for the event. Participants are interested in receiving more details on GoTriple future development.

Expert review

Similarly, the duration of the expert review and the related discussion have been considered appropriate by most, while one respondent considered it too short. All considered the topics discussed in the event relevant. Overall, the experts considered their expertise useful for the improvement of the GoTriple platform. For future events, participants suggested including use case scenarios would be interesting. They also would have preferred to get access to the AI Chatbot in advance to test it before participating in the discussion.

7.2 Lessons learned

In this section we summarise the main lessons learned in organising the first Researcher Forum that will be useful for future similar events:
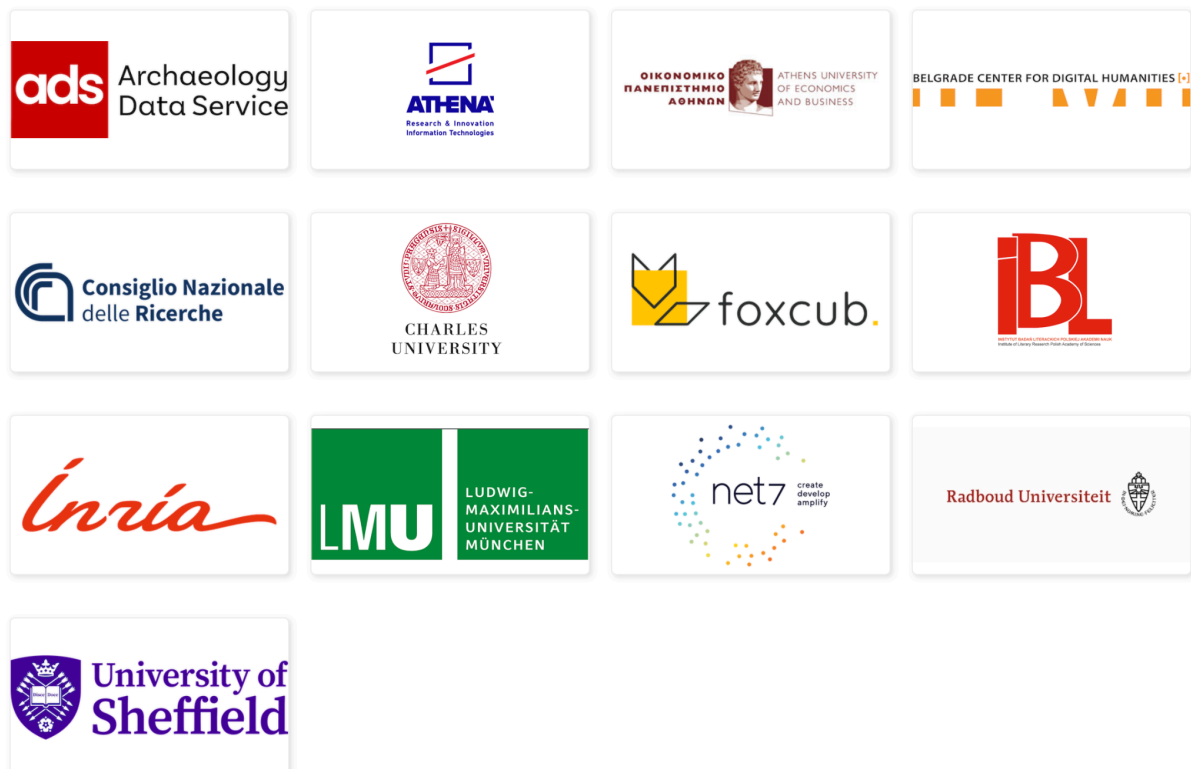
- **Format:** A half-day duration for each focus group works well. It provides sufficient time for individual sessions (e.g. the actual user testing) and roundtable discussions without being excessively long. This duration helps participants stay focused and engaged throughout the activities. However, longer sessions may be considered, in line with participants' feedback. This decision might depend on characteristics of the service which is the focus of each forum.
- **Topics:** It is essential to pose clear and well-defined tasks, topics and questions to participants. Providing specific information or tools to the experts in advance can be highly beneficial.
- **Participants:** A multidisciplinary audience is critical to gaining insights from diverse perspectives. For user testing, it is important to engage participants who are unfamiliar with the platform or tool. Conversely, expert discussions can be more effective if the experts have prior access to the platform or tools, enabling them to reflect deeply and provide detailed feedback.
- **Venue:** The selected venue and available rooms were suitable for the format of the event. Future events should keep these requirements: a bigger room for the plenary and roundtable discussions, and smaller rooms for individual user tests. Main catering services should be in a separate room to avoid that the setup interferes with the activities. However, it is advisable to keep an area with coffee/tea etc available in the plenary room for the participants.

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