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D5.3 First Report on the PID Forum

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Abstract	This document provides an overview of the PID Forum activities and collaborations with major stakeholders within the first year of the FREYA project.
Status	Submitted to EC 5 December 2018

FREYA project summary

The FREYA project iteratively extends a robust environment for Persistent Identifiers (PIDs) into a core component of European and global research e-infrastructures. The resulting FREYA services will cover a wide range of resources in the research and innovation landscape and enhance the links between them so that they can be exploited in many disciplines and research processes. This will provide an essential building block of the European Open Science Cloud (EOSC). Moreover, the FREYA project will establish an open, sustainable, and trusted framework for collaborative self-governance of PIDs and services built on them.

The vision of FREYA is built on three key ideas: the **PID Graph**, **PID Forum** and **PID Commons**. The PID Graph connects and integrates PID systems to create an information map of relationships across PIDs that provides a basis for new services. The PID Forum is a stakeholder community, whose members collectively oversee the development and deployment of new PID types; it will be strongly linked to the Research Data Alliance (RDA). The sustainability of the PID infrastructure resulting from FREYA beyond the lifetime of the project itself is the concern of the PID Commons, defining the roles, responsibilities and structures for good self-governance based on consensual decision-making.

The FREYA project builds on the success of the preceding THOR project and involves twelve partner organisations from across the globe, representing PID infrastructure providers and developers, users of PIDs in a wide range of research fields, and publishers.

For more information, visit www.project-freya.eu or email info@project-freya.eu.

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Executive summary

This public deliverable is FREYA's first report on the PID Forum. The PID Forum forms one of the three key pillars of the project. This deliverable describes how the PID Forum has been established and utilized during the first year of the project. The PID Forum is the platform for engagement, interaction and discussion between FREYA and the PID community. It is strongly linked to the Research Data Alliance (RDA) and will be connected to the European Open Science Cloud (EOSC) and other research infrastructures. The two main goals of the Forum are to foster collaboration with a wide range of stakeholders for co-designing new PID services, and to maximise uptake of services and results by the global community.

This deliverable summarizes the activities that have been carried out to establish the PID Forum and to contribute to its main goals during the first year of FREYA. The deliverable starts with a short introduction of the wider context of the project (section 1), followed by a description of the concept and goals the PID Forum (section 2). Then an overview is given of the PID Forum events as well as virtual means of engagement that have been utilized during FREYA's first year (section 3). The report further discusses how input of diverse international and cross-disciplinary stakeholder groups is incorporated into the PID Forum (section 4). The last section of the report outlines the PID Forum plans for the coming year (section 5).
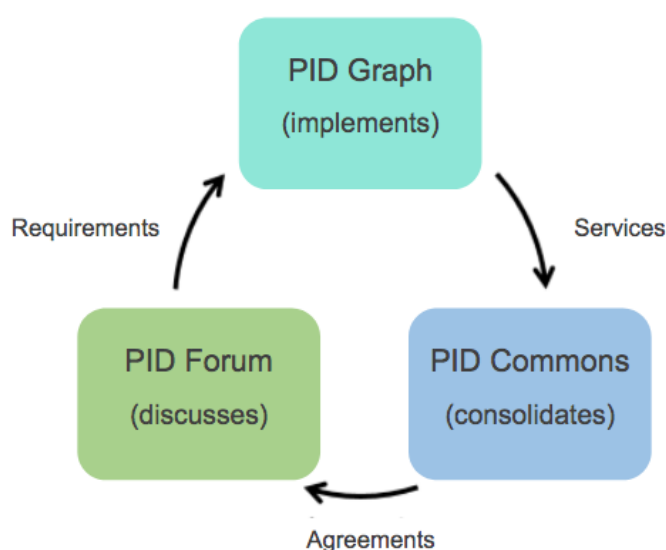
Contents

1   Introduction

1.1   The bases of the FREYA project

The goal of the FREYA project is to extend the infrastructure for persistent identifiers (PIDs) as a core component of open research, in the EU and globally. FREYA aims to improve discovery, navigation, retrieval, and access to research resources. The project's activities are built around three conceptual pillars: the PID Graph, the PID Forum, and the PID Commons (see Figure 1). The construction of the PID Graph, creating relationships across a network of PIDs and serving as a basis for new services, takes centre stage (Work Packages (WP) 2, 3 and 4). The PID Forum engages with the global stakeholder community for consultation and co-design of new PID services, to disseminate the outputs of FREYA and to encourage uptake of the FREYA PID services as an integral part of the overall research infrastructure (WP5). Finally, the PID Commons addresses the sustainability of the PID infrastructure resulting from FREYA beyond the lifetime of the project (WP6).

Figure 1: The three conceptual pillars of the FREYA project: the PID Graph, PID Forum, and PID Commons

1.2   WP5: Iterative engagement through the PID Forum

The primary aim of WP5 is to engage with research infrastructure communities and stakeholders external to FREYA, so that the necessary service extensions and improvements developed and demonstrated by the other WPs will be beneficial to the ecosystem as a whole and will be adopted by a wider audience.

WP5 contains the following specific goals, in which the PID Forum plays a central role:

- Develop and implement FREYA's communication plan, i.e. establish and sustain standard communication tools (via website, activity on social networks and other media) to offer continuous exchange/information/support around PIDs, and to disseminate and exploit the project outputs (task 5.1). This task has resulted in Deliverable D5.2, the Communications and Stakeholder Plan (internal document), which outlines the plans for the PID Forum.
- Plan and execute the PID Forum as part of the RDA to engage infrastructure communities to discuss PID related requirements and standardization/protocols (task 5.2). This task results in the three yearly reports on the PID Forum, including the present report.
- Coordinate with partners in the e-infrastructure realm, e.g. RDA and EOSC to enable co-design of PID innovations (task 5.3). This task will be carried out through the PID Forum.

- Develop and refine training program for a wide range of stakeholder groups to stimulate extensive PID uptake (task 5.4).
- Build on the PID Ambassador Programme to raise awareness and provide training, particularly to reach end users (task 5.5). The FREYA Ambassadors will be actively involved in the PID Forum, including strengthening community-specific engagement (also see section 2.3 of this report).

Based on these tasks, FREYA has established a number of Key Performance Indicators (KPIs) for WP5 that can be used to measure the engagement with the PID Forum. Table 1 shows the relevant KPIs that were identified and provides a summary of the achievements of the first year of the project. The remainder of this report describes these achievement in more detail explaining how the PID Forum was established and what engagement activities were organized.

1.3   Outline of this report

This report provides a detailed discussion of the concept, the goals, and the setup of the PID Forum (section 2). This is followed by an overview of past and future activities and how active engagement with the PID Forum is implemented at events and by means of virtual platforms for discussions (section 3). Furthermore, the report outlines how contributions of the diverse stakeholder groups and disciplines have been incorporated into the PID Forum during the first year of the project (section 4). Finally, we conclude with an overview of the next year of the project and the future plans for engagement with the PID Forum (section 5).

KPI	Target	Until November 2018	
Number of participants from different countries in the PID forum	Steady increase throughout the project. 30 | 15 countries at the end of the project.	**Ambassadors**: 22 | 12 countries **PID IG members:** 133	+
Distribution of participants in the PID Forum	Representation of all defined stakeholder groups.	**Website visitors (unique):** On average 263 visitors from 34 different countries each month. **Knowledge Hub views (unique):** On average 68 views each month.	+
PID Forum organization	At least one session on each RDA Plenary and continuous offline activity. At least half of the RDA sessions will be jointly organized with other EOSC-building projects or e-infrastructures.	FREYA contributed to multiple sessions at the 11th RDA plenary in Berlin and to the PID IG session at the 12th RDA plenary in Botswana. Two of the sessions at the 11th RDA were co-organized with EOSC-Hub and OpenAIRE-Advance.	+
Quality of training activities	Training activities receive positive evaluation from the participants.	No training activities have been held so far. A start has been made to extend and revise the knowledge hub which has been integrated into the FREYA website.	+

	Knowledge Hub content will be extended, revised and updated throughout the project.		
Attendance of Events	Workshops and presentations at least at 10 events per year three of which are PID-related events and four service provider events per year.	FREYA partners presented at the project at 27 different events.	+
Organisation of Events	PID Forum: At least one session at each RDA plenary and one FREYA conference at the end of the project.	FREYA contributed to multiple sessions at the 11th RDA plenary in Berlin and to the PID IG session at the 12th RDA plenary in Botswana	+

Table 1: PID Forum Key Performance Indicators (KPIs) and achievements in 2018

2   PID Forum

2.1   Concept and goal of the PID Forum

As one of the three pillars of FREYA (see Figure 1) the PID Forum is the platform via which the project engages and collaborates with stakeholders. This will avoid duplication of efforts and ensure that we build services that meet the needs of the diverse communities. Continuous engagement with stakeholders is required to inform the community about the developments in FREYA regarding standardisation and best practices.

The PID Forum community oversees the development and deployment of the PID Graph, giving feedback and input at various stages of the project. It positions itself as an interactive offline and online form of engagement at workshops, conference presentations and (virtual) meetings. Key events, where the development and use of PID services takes centre stage, are PIDapalooza[1] and the biannually organized RDA Plenaries.[2] The PID Forum also encourages the community to follow the latest developments of the FREYA project through communication channels such as the FREYA website[3], Twitter[4], webinars[5] as well as the online platform of the RDA PID Interest Group (IG)[6], where discussions held during events can be continued and deepened. These activities encourage stakeholders to be involved in the development of PID services and facilitate the uptake of the FREYA outputs as an integral part of the overall research infrastructure. Important is the co-design of the project's tasks including the development of the PID Graph (WP2,4) and the extension of the PID services and assessment of new PID types (WP3). In addition, the PID Forum will build the basis for the PID Commons (WP6), which focuses on the sustainability of the project's results beyond the lifetime of FREYA.

2.2   The PID Forum: engagement with the community

The PID Forum is set up in close collaboration with the Research Data Alliance (RDA) which brings together a wide range of stakeholders in the research data community. By aligning our work with the RDA, FREYA can utilize the large and diverse global network that the RDA has already established, reaching the community beyond Europe. As described in more detail below, engagement is facilitated by attending and organizing events and through online communication activities, during which feedback and input from the community is gathered. FREYA is participating in various RDA Interest Groups (IG) and Working Groups (WG), and interacts with the members through the RDA plenaries as well as other events. In particular, the PID Forum activities are mostly focused around the PID IG, which provides a general forum for RDA scholars interested in PIDs.[7] In addition to the engagement with RDA groups, collaboration with other EOSC projects such as EOSC-Hub and OpenAIRE-Advance further ensures that the services developed in FREYA fit into the service landscape of the European Open Science Cloud (EOSC) and are in line with its policies.

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[1] https://pidapalooza.org/. For an overview of events in which the PID Forum will be involved see section 3.2 below.
[2] https://www.rd-alliance.org/plenaries. For an overview of events in which the PID Forum will be involved see section 3.2 below.
[3] https://www.project-freya.eu/en
[4] https://twitter.com/freya_eu
[5] FREYA webinars can be watched on the YouTube channel: https://www.youtube.com/channel/UCQ5Jp19cvtVLPxUB2WVO5CA
[6] https://www.rd-alliance.org/groups/pid-interest-group.html
[7] For a list of RDA groups on PIDs see section 4.2.1.

A number of approaches are applied in communicating and interacting with the RDA members and other stakeholders during PID Forum events. Interactive sessions during presentations, workshops and other events encourage the audience to take part in discussions, share ideas and give feedback. These interactive sessions are designed with the help of online audience response tools such as Mentimeter[8], allowing for questions and collection of answers in real time. Participants can take part anonymously with their mobile phones, laptops, or other devices. Figure 2 gives an example of questions and results that were collected during a PID Forum session at the DI4R conference (see below for a detailed description of the session).

Figure 2: Two Mentimeter example questions used during an interactive session on PID user stories during the DI4R conference 2018

Answers are saved automatically and can be evaluated according to the needs of the project. Where possible, the audience is divided into groups in order to stimulate discussions between participants. FREYA team members supervise and steer the discussions, collecting and recording input for deliverables and ultimately for the development of services.

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[8] https://www.mentimeter.com/

FREYA aims to make the presentations and discussions at PID Forum events publicly available, for instance by creating video recordings and posting them on our own YouTube channel[9]. Two webinars and a video from the DI4R conference have been published through this channel so far. Making these materials available increases the publicity of FREYA and the PID Forum, and further stimulates discussions between FREYA and the stakeholders. Such discussions can, for instance, take place via the online discussion list of the RDA PID IG [10]. Contributions posted on this web page can be seen by anyone, while posting new content and reactions to posts are limited to subscribed group members. In this way, FREYA can easily and efficiently request feedback and input on deliverables and project outputs from the PID community. Moreover, the PID IG discussion platform enables the community to ask questions and make suggestions to FREYA at a low threshold.

Throughout the duration of the project, briefings on the outcomes of discussions held at PID Forum events and the discussion platform are shared with the community by means of blog posts, webinars, paper publications and posts on the discussion platform itself. In addition, the yearly PID Forum reports (including the current deliverable) will be publicly available as well. The online activities of the PID Forum will be incorporated into the PID Interest Group after the end of the FREYA project.

2.3   Ambassador programme

The FREYA Ambassador Programme complements the PID Forum by regularly engaging with a consistent group of 20–30 committed research data experts around the world. Members of the Ambassador Programme go through an application process and are selected based upon their area of interest, level of expertise, geographical location and capacity to contribute to the project. As of October 2018, the programme included 22 Ambassadors[11] hailing from Australia, Belgium, Canada, France, Germany, Italy, Russia, Spain, Sweden, The Netherlands, UK and USA. Coordinators of the programme are looking to expand its reach into Africa and Asia.

FREYA Ambassadors bring a broad range of expertise in research data management, data repositories, disciplinary research, data science and education. They represent research communities within and beyond Europe. As a group, they provide a reliable vehicle for peer review and consultation that remains in place for the duration of the project. Ambassadors assist with the dissemination of FREYA project results as well as offering input and feedback on FREYA deliverables. They are encouraged to raise awareness and promote uptake of PID services in their diverse research communities, and to ensure that those research communities are represented within each FREYA project phase. In return, they benefit from networking opportunities, professional recognition, support from the FREYA team, direct insight into FREYA activities, and the chance to build PID adoption in their organisations.

Engagement with Ambassadors is maintained with a combination of interactive webinars, discussions via the project's Slack channel[12], email contact with coordinators of the programme, and face to face contact at conferences and events. An initial webinar during which input and feedback from the ambassadors was sought was organized on 15 October 2018 as an addition to the World Café Session held at the DI4R in the first week of October (see section 3.2.2 below). The Ambassadors were asked to discuss which existing PIDs are used in their communities, which new PID types they would like to use and among which digital entities they would like to see connections. Answers were collected through Mentimeter; an in-depth discussion towards the end of the webinar brought aspects of specific needs for PIDs in their respective communities to the fore.[13] More webinars are planned in the upcoming months in accordance with the planned deliverables of the other WPs (see Table 2).

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[9] https://www.youtube.com/channel/UCQ5Jp19cvtVLPxUB2WVO5CA

[10] https://www.rd-alliance.org/group/pid-ig/post/pid-resolution-services-best-practices-and-survey-current-pid-services-landscape

[11] https://www.project-freya.eu/en/ambassadors/our-ambassadors

[12] https://www.slack.com

[13] The webinar was recorded for internal use.

When?	What?	WP	Deliverable
March 2019	PID Graph - a chance to explain and test the concept	WP4	D4.2 Using the PID Graph
September 2019	New PID types - explanation and ideas-gathering for PID types	WP4	D4.4 Organizational IDs in practice
March 2020	Demo of new PID prototypes	WP3	D3.3 Prototype of new PID resources
May 2020	Overview of training materials	WP5	D5.4 Initial training materials

Table 2 Planned webinars for feedback from Ambassadors

FREYA also contributes financially to engagement activities of the Ambassadors. In September 2018, a competition was launched to send one of the Ambassadors to the 2019 PIDapalooza festival in Dublin[14], with entries requested on the broad theme of 'PIDagogy' – proposals or projects designed to build understanding and generate debate about PIDs. The winning ambassador was Nicole Kearney of Melbourne, Australia who is the manager of the Australian branch of the Biodiversity Heritage Library. She will be discussing issue of registering DOIs for historic literature and out-of-copyright content during the FREYA 'PIDagogy' session[15].

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[14] https://www.project-freya.eu/en/news/newsitems/freya-ambassadors-competition
[15] https://www.project-freya.eu/en/blogs/blogs/pidapalooza-competition-winner-1

3   PID Forum activities

3.1   Engagement around project deliverables

An important task of the PID Forum is to contribute to the project's progress and outcomes which are structured around the project deliverables. Gaining feedback from the PID Forum community on the process and distributing the project's public deliverables for feedback continues to be an important aspect of the work of WP5. Among others, activities under the guise of the PID Forum will contribute to a greater use and adoption of the projects' results within the PID community.

Thus far three public deliverables have been created by the project:

- D5.1 Project Website[16]
- D2.1 PID Resolution Services Best Practices[17]
- D3.1 Survey of the current PID Service Landscape[18]

These deliverables have been made available through the FREYA website and are stored sustainably in Zenodo[19]. Moreover, FREYA has used the PID Forum to gather comments on D2.1 and D3.1 through multiple routes, including the RDA PID IG discussion list and Twitter. A similar route will be followed for future deliverables (see Table 6 below) which will also be stored in Zenodo and communicated broadly to the PID Forum and wider community. A list of all project outcomes is maintained on the FREYA website[20].

3.2   PID Forum at events

To achieve iterative engagement with the PID Forum community, FREYA organizes and participates in various national and international events. Since the start of the project, FREYA partners have presented the project, its outcomes and progress at a total of 27 different events. A full list of events can be found in Appendix 1. In this section, we focus on a selection of the events of the first year, which highlight the establishment of and interaction with the PID Forum. As the RDA plays a central role in the PID Forum activities, RDA events are described first, followed by other events at which the PID Forum was present.

3.2.1   RDA Plenaries

11th RDA Plenary in Berlin (Germany) March 2018[21]

The first RDA plenary meeting that took place after the launch of FREYA was the 11th RDA Plenary in Berlin. During this plenary, FREYA, in collaboration with EOSC-Hub and OpenAIRE-Advance, organised two sessions where the three core EOSC projects introduced their work to the public. First, a Birds of a Feather (BoF) session titled '*EOSC-related European Projects getting Global: Engaging with the RDA*'[22] was held to discuss how EOSC-Hub, OpenAIRE-Advance and FREYA can effectively engage with each other and the RDA. Second, the final day of the RDA plenary concluded with a collocated event '*European Open Science Cloud-related projects: liaison with RDA and new contributions*'[23] in which the three EOSC projects presented their plans for collaboration with the RDA to work together towards the realization of the EOSC. This event was attended by more than 50 participants. While FREYA was promoted and the PID Forum was introduced to

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[16] https://www.project-freya.eu/en

[17] https://doi.org/10.5281/zenodo.1324300

[18] https://doi.org/10.5281/zenodo.1324296

[19] https://zenodo.org

[20] https://www.project-freya.eu/en/resources/project-output

[21] https://www.rd-alliance.org/plenaries/rda-eleventh-plenary-meeting-berlin-germany

[22] https://rd-alliance.org/eosc-related-european-projects-getting-global-engaging-rda-rda-11th-plenary-bof-meeting

[23] https://rd-alliance.org/european-open-science-cloud-related-projects-liaison-rda-and-new-contributions

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the audience as one of the three pillars of the project during the RDA plenary in Berlin, more active engagement with the PID Forum through the PID Interest Group (IG PID) was initiated six months later at the following RDA plenary in Gaborone.

12th RDA Plenary in Gaborone (Botswana) November 2018[24]

During the RDA plenary meeting in Botswana, FREYA held a PID Forum session in the context of the PID IG meeting at the RDA plenary 12 - Breakout 1 session: '*IG PID, WG PID Kernel Information, IG Physical Samples and Collections in the Research Data Ecosystem: Persistent Identifiers in Action*'[25]. During this session, the concept of the PID Forum was explained and discussed with the audience. By means of Mentimeter questions, the members of the PID-themed IGs and WGs were asked to give their opinion about the way of engagement with and exchange between the RDA and FREYA. It appeared that updates at plenaries and promotion of deliverables are seen as the most suitable ways of communication. It also became clear that the members of the IG PID would appreciate it if FREYA would (co-)organise workshops and discussions. Helping to increase the outreach of PIDs and community building were also mentioned.

Figure 3: Eliane Fankhauser introducing the PID Forum at the 12th RDA Plenary in Gaborone, Botswana

3.2.2   Other events

PIDapalooza in Girona (Spain) January 2018

The second PIDapalooza Festival, co-organised by the California Digital Library, and the FREYA partners Crossref, DataCite, and ORCID, took place from 23-24 January 2018 in Girona, Spain, with 180+ participants from 23 countries and six continents. The main themes and questions of the meeting programme included:

- PIDs for emerging uses
- Additional use cases that need PIDs
- How the usage of old identifier systems in the modern data citation ecosystem can be managed

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[24] https://rd-alliance.org/plenaries/rdas-12th-plenary-meeting-part-international-data-week-2018-gaborone-botswana
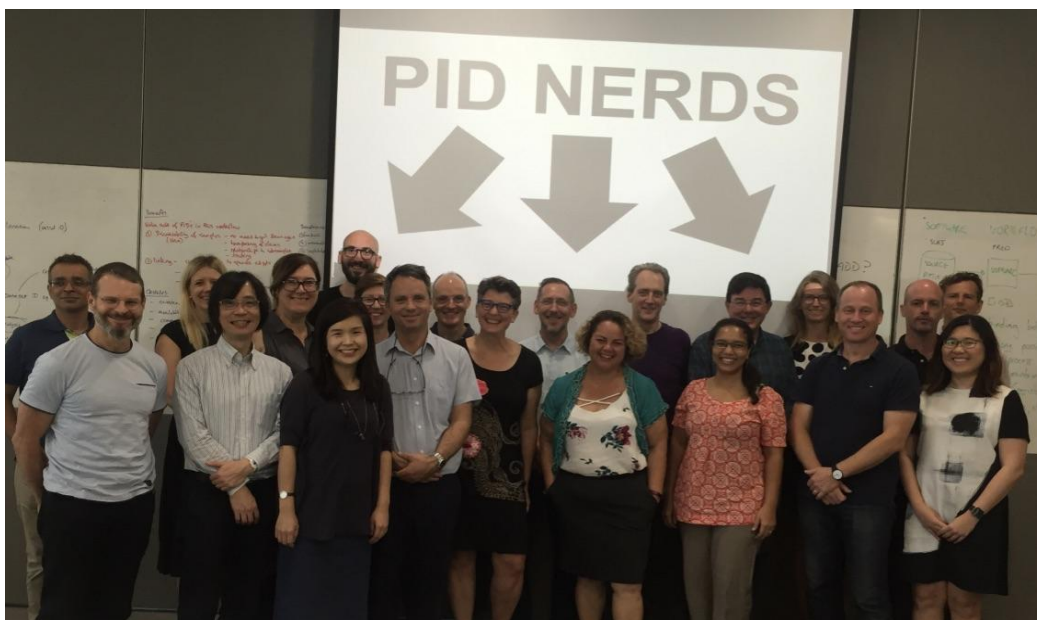[25] https://www.rd-alliance.org/joint-meeting-ig-pid-wg-pid-kernel-information-ig-physical-samples-and-collections-research-data

- How interoperability of heterogeneous PID systems can be optimized
- How we can engage with the wider community to improve PID adoption

As the project had only recently started before the meeting, the event was mainly used to introduce the project to the community. FREYA's Jo McEntyre (EBI-EMBL) gave the plenary on the first day, examining the challenges around building a0020coherent and functional PID infrastructure in the midst of a complex biological research ecosystem that is constantly growing in scale and diversity. At the end of her talk, she introduced the FREYA project and its partners, mission and goals. FREYA's Twitter was launched at the start of PIDapalooza, announcing the project and reporting highlights of the talks, with tweets gaining more than 10K impressions during the meeting according to Twitter's analytics.

International workshop on PIDs for research in Singapore August 2018

A two-day workshop was held in Singapore at the end of August 2018. Initiated by ARDC (Australian Research Data Commons; formerly ANDS, RDS and Nectar) and ORCID, both FREYA partners, this workshop aimed at discussing a possible global strategy for PID innovation and implementation and with that a joint strategy for PID communication.

Figure 4: the participants taking part in the International workshop on PIDs for research in Singapore

The invitation-only event brought together around 30 PID providers, experts and advocates (see Figure 3) from various countries including Singapore, Japan, the UK, Switzerland, the Netherlands, USA and Australia. The participants laid the groundwork for a workshop series to follow in Europe (November 2018, see 3.2.3) and in the US (2019). This workshop series is complementary to PIDapalooza as it focuses on the mid- and long-term strategy to ensure a viable and sustainable PID environment. It is envisioned that the final output will be an agreement on sustainable and trusted PIDs, as well as clear tasks to move the implementation of existing and forthcoming PIDs forward on a global scale.

Digital Infrastructures for Research (DI4R) in Lisbon (Portugal) October 2018[26]

The Digital Infrastructure for Research (DI4R) 2018 conference was an event jointly organized by EOSC-Hub, GÉANT, OpenAIRE and PRACE. Attendees come from various scientific disciplines and backgrounds including researchers, developers and service providers. FREYA was present at the conference to receive input from different disciplines on work that has been performed within WP3 through the PID Forum. In

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[26] https://www.digitalinfrastructures.eu/

particular, during an interactive World Café Session titled *Persistent Identifiers in use: Exchanging ideas about new developments in the field of PID services*[27] user stories were collected which helped significantly in gaining insight into the needs of the community and in detecting gaps in the current PID landscape. Sub-divided into five smaller groups, the participants discussed and answered three questions:

1. What is a PID?
2. How do you use PIDs in your working life?
3. Which new PIDs could help you alleviate challenges in your work?

Figure 5: Group work during the World Café Session at DI4R 2018
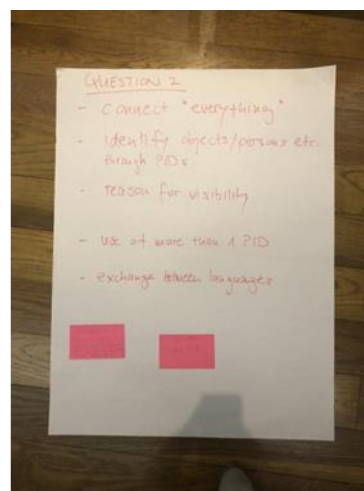
Figure 6: One of the flip chart pages resulting from the group discussions.

Each group wrote down its answers and discussion points on flip charts. The flip chart pages were photographed in order to analyse their content at a later stage (see Figure 6). Moreover, a set of questions posed in a Mentimeter presentation during the second half of the session led to more input from the community on questions such as "Where would you likely want to use PID Services?" or "Which are the research entities that interest you most in your work?".[28] The information collected at the DI4R World Café Session will be analysed and will feed directly into deliverable *D3.2 Requirements for Selected New PID Services,* which will be finalized and published in the first quarter of 2019.

EOSC Stakeholders Forum in Vienna (Austria) November 2018

The EOSC Stakeholder Forum (Vienna, 21–22 November 2018) is organised by the EOSCpilot project and was a major event in the development of the European Open Science Cloud. There was an emphasis on the science demonstrators conducted within EOSCpilot, and the policies, governance and the rules of participation of the EOSC. FREYA was presented by its coordinator Simon Lambert in the session 'EOSC in Practice' along with other projects building the EOSC, namely EOSC-Hub, OpenAIRE Advance, eInfraCentral and RDA Europe. The attendees at the Stakeholder Forum represented many groups involved in EOSC, and although the formal and strictly organised nature of the event meant there was no specific session for two-way communication with FREYA, there were opportunities for informal feedback and to assess the latest thinking on the development of the EOSC, which of course has implications for FREYA's PID Commons.

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[27] https://indico.egi.eu/indico/event/3973/timetable/#20181009
[28] See Appendix 2.

PID Strategy Workshop London (United Kingdom) November 2018

Following the Singapore workshop on PIDs for research (see 3.2.2), the FREYA project convened a corresponding workshop in Europe. Located on JISC's premises in London (UK), around 25 international experts from various countries including the UK, Switzerland, the Netherlands and Australia attended the meeting. This two-day workshop aimed to discuss various PID-topics, including the features of good PID systems, efficient workflows enabled by PIDs, and the value of PIDs and how it can be communicated. It will be followed by a workshop in the US in 2019 which will be the final workshop of the series.

3.2.3   Upcoming events

ICT 2018: Imagine Digital - Connect Europe in Vienna (Austria) December 2018[29]

FREYA will be present at this exhibition and will share a stand with the other core EOSC-projects OpenAIRE-Advance, EOSC-Hub and RDA-Europe 4.0. FREYA will take the opportunity for two-way interaction with exhibition attendees, presenting the vision and results to date but also learning about awareness of PIDs, perceptions of the importance of PIDs and opportunities for their exploitation. FREYA will present the ideas and concrete illustrations of the PID Graph.

PIDapalooza in Dublin (Ireland) January 2019[30]

FREYA will be present at the PIDapalooza festival 2019 with two sessions. One session focuses on interaction with the PID Forum discussing the developments of the PID Graph (WP2) and the collected user stories (WP3). The second session focuses on the training programme and Ambassador network (WP5) that FREYA is establishing. The winning Ambassador of the FREYA PIDapalooza competition (see 2.3) Nicole Kearney[31] will be accompanying FREYA and present issues of registering DOIs for historic literature and out-of-copyright content during this session.

13th RDA plenary in Philadelphia (United States) April 2019[32]

Although concrete session proposals are still in development, FREYA will continue its active involvement in the RDA plenaries at this meeting. FREYA will be participate in the PID IG meeting where we can consult the PID Forum community and present the most recent developments of the project.

3.3   PID Forum beyond events

In addition to active face-to-face engagement, FREYA also consults the PID Forum through virtual interaction with the community. The main channels used are the discussion list of the RDA PID IG, webinars and FREYA's social media accounts.

PID IG Discussion List

The RDA PID IG comprises of a large group of members from various research data backgrounds and FREYA is using this platform to engage with the PID Forum community. As all RDA groups, the PID IG has an online mailing and discussion list on the RDA website[33] where members can exchange information and react to each other's posts. FREYA has used this discussion list for instance to announce the publication of new

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[29] https://ec.europa.eu/digital-single-market/en/events/ict-2018-imagine-digital-connect-europe
[30] https://pidapalooza.org/
[31] https://www.project-freya.eu/en/blogs/blogs/pidapalooza-competition-winner
[32] https://www.rd-alliance.org/plenaries/rda-thirteenth-plenary-meeting-philadelphia-us
[33] https://www.rd-alliance.org/groups/pid-interest-group.html

public deliverables (D2.1 on PID Resolution Services Best Practices and D3.1 Survey of Current PID Services Landscape) and ask for feedback on these documents.

Webinars

FREYA has also made use of webinars to gather feedback from the PID Forum. One example is a webinar held for FREYA Ambassadors to explain how FREYA partners are utilising user stories to inform the work that is to be carried out by WP3 and WP4. The webinar was held in October 2018. It provided an opportunity for Ambassadors to ask general questions about FREYA's approaches and to contribute user stories that reflect the challenges faced by the communities & disciplines they represent (digital collections in humanities, social sciences, biodiversity heritage).

Social Media

Social media is also an important means to engage with the PID Forum community. As FREYA already uses social media, and in particular the project website[34], Twitter[35] and the Youtube channel for communication and dissemination of results, these channels are also employed to reach out to the PID Forum community and give information about specific topics FREYA would like to receive feedback on. FREYA had set a number of KPIs for social media communication activities which are shown below in table 3, in comparison with the achievements of FREYA's predecessor project THOR[36]. As can be seen in Table 3, FREYA has reached a large number of Twitter followers and utilizes the YouTube channel as planned during the first year. Blog posts and tweet frequencies will need to be increased next year to achieve the KPIs at the end of the project.

Communication activity	Achievements THOR	Target FREYA	Until November 2018	
Blog posts	66	70 [23 per year]	13	-
Twitter Followers	724	1000 [in total]	944	+
Tweets	485	500 [167 per year]	110	-
YouTube videos	7	10 [3-4 per year]	3	+

Table 3: Overview of planned social media communication activities and achievements in 2018

Knowledge Hub

FREYA is also developing the PID Knowledge Hub[37], continuing the work of the THOR project. The Knowledge Hub is a catalogue of information on PIDs that will be used to organise and curate project outputs as well as providing access to relevant external resources, including guides and webinars. The hub will provide extensive documentation of the FREYA project as well as its preceding projects and forms an essential source of information for the PID Forum community and other stakeholders.

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[34] https://www.project-freya.eu
[35] https://twitter.com/freya_eu
[36] https://project-thor.eu
[37] https://project-freya.readme.io/docs

4   Stakeholder representation and reach

In the project proposal and FREYA's Communication and Stakeholder Plan (D5.2, internal document), FREYA has specified the stakeholder groups relevant to the project. The stakeholders can be categorised into five groups: Service Providers, Research stakeholders, Users, Structural stakeholders, and Commercial stakeholders. Of these stakeholders, there are two groups that are particularly relevant for the PID Forum, namely Service Providers and Research stakeholders (see Table 4). These two stakeholder groups are outlined in more detail below.

Main stakeholder groups targeted by PID Forum engagement		
Stakeholder categories and groups		**Examples of stakeholders**
Service Provider	(PID) Service providers	- ORCID members - National connections
	E-infrastructures, VREs and H2020 projects	- EOSC-Hub - OpenAIRE-Advance
Research	Research data communities	- RDA - WDS - National communities
	Research infrastructures	- CESSDA - DARIAH - EHRI - ELIXIR - FORCE

Table 4: Overview of the two main FREYA stakeholder groups targeted by PID Forum engagement

4.1   Service provider stakeholders

Service provider stakeholders play a crucial role for FREYA, as they serve the research community and need to be involved in order to realize co-design and wide adoption of PID services that are being developed in FREYA. Several of the FREYA partners are PID Service providers themselves and engage nationally or internationally with their communities and customers. While it is beyond the scope of this report to summarize all these interactions, an overview of all FREYA activities including Service Provider events is provided in Appendix 1. In the following section, we will further outline FREYA's connection with the two most relevant research infrastructure projects: EOSC-Hub and OpenAIRE-Advance.

4.1.1   EOSC-Hub and OpenAIRE-Advance

FREYA, EOSC-Hub and OpenAIRE-Advance share the common goal of contributing tools and services for the European Open Science Cloud. Therefore, FREYA seeks collaboration and interaction with these projects. The three projects first jointly presented their shared goals during the RDA Plenary in Berlin (see 3.2.1). Moreover, FREYA was present at the EOSC Summit in June and at the EOSC stakeholder Forum in

November (see 3.2.3) to exchange and engage with EOSC-Hub, OpenAIRE-Advance and the rest of the EOSC-community.

Discussions with RDA Europe 4.0 and OpenAIRE-Advance took place at the DI4R conference in Lisbon in October 2018 (see 3.2.2) and led to concrete proposals for follow-up. In the case of RDA Europe 4.0, the emphasis was on identifying and making full use of the outputs of RDA Working Groups of relevance to FREYA, plus specific joint activities such as webinars. In the case of OpenAIRE-Advance, both projects are developing graph-like resources as a basis for information services (though with distinct approaches and priorities), and a focus of cooperation will be the points of contact between these and how to coordinate the work to take advantage of the synergies.

4.2   Research stakeholders

The most important stakeholder within this category is the RDA community (see 4.2.1) which plays a central role in the PID Forum. The first section of this part of the report outlines our interaction with the RDA. In addition, FREYA is engaging with other research (data and infrastructure) communities to receive their input and feedback, and FREYA is active during many events (see Appendix 1) to reach these communities. The second section of this chapter (4.2.2) gives an overview of our activities targeting two large research infrastructure communities: CESSDA (Consortium of European Social Sciences Data Archives) and FORCE11 (a community of scholars, librarians, archivists, publishers and research funders that aims to facilitate the change toward improved knowledge creation and sharing[38]).

4.2.1   RDA

The RDA forms one of the key stakeholder communities of FREYA as many professionals working with PIDs come together in RDA Working (WGs) and Interest Groups (IGs) and during the biannual RDA plenaries. FREYA interacts with the RDA in multiple ways to ensure exchange and integration of the project work with ongoing RDA initiatives. FREYA is especially active in the PID Interest Group (PID IG) which brings together many RDA members interested in PIDs. This group, currently counting 133 members, thus forms an essential part of the PID Forum. FREYA aims to contribute to the PID IG meetings during the RDA plenaries (see 3.2.1) and uses the PID IG online discussion list for online engagement with group members.

In addition to the PID IG, FREYA is also represented within other RDA groups working on PID-related topics (see Table 5). FREYA is thereby actively contributing to the PID-work performed in the RDA as well as staying informed about the ongoing developments. Through this interaction FREYA aims to establish connections and exchange with these RDA groups wherever possible. In the beginning of the project, we conducted an analysis of all relevant RDA groups focusing on PID-related topics. This analysis identified nine IGs and 12 WGs that were considered relevant for FREYA. Table 5 gives an overview of the identified groups, and indicates which FREYA partners are members of these groups. Involvement of FREYA partners can vary from group leadership and active involvement in the group's work, to group membership in order to stay informed. As shown in the table, FREYA partners are involved in many of the identified groups providing a solid basis to stay informed and build bridges between FREYA's work and the work performed within the RDA. In addition, FREYA may initiate the creation of new RDA IGs and WGs to tackle specific PID-issues that arise through the work of the project. Potentially, such new groups will be initiated in collaboration with the other EOSC projects, EOSC-Hub and OpenAIRE-Advance.

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[38] https://www.force11.org/about

RDA Groups	FREYA representation
Data Discovery Paradigms IG	DANS
Data Fabric IG	[no FREYA representative yet]
Metadata IG	STFC
PID IG	CERN, DANS, DataCite, STFC
RDA/WDS Publishing Data IG	STFC
Research data needs of the Photon/Neutron Science IG	STFC
Research Data Provenance IG	CERN, STFC
Software Source Code IG	STFC
Vocabulary Services IG	STFC
Data Citation WG [Completed]	[no FREYA representative yet]
Data Description Interoperability (DDRI) WG [Completed]	[no FREYA representative yet]
Data Type Registries WG	DANS
Data Usage Metrics WG	DataCite
Data Versioning WG	[no FREYA representative yet]
Metadata Standards Catalogue WG	[no FREYA representative yet]
Persistent Identification of Instruments WG	CERN, PANGAEA, STFC
PID Information Types WG	DANS
PID Kernel Information WG	DANS
RDA/WDS Scholarly Link Exchange WG	Crossref, DataCite

Research Data Collections WG	[no FREYA representative yet]
Research Data Repository Interoperability WG	DANS

Table 5: Overview of the RDA Groups and FREYA representatives

4.2.2   CESSDA and FORCE11

CESSDA

Through interaction with CESSDA, the Consortium of European Social Science Data Archives, FREYA is engaging with the social science research data community. FREYA partner DANS contributes to the work of the PID working group of CESSDA and encourages collaboration between CESSDA and FREYA. The CESSDA PID working group has compiled basic principles for the usage of PIDs for social science data sets as well as a best-practice guide[39]. The FREYA project has contributed content to these. During the 11th RDA plenary, FREYA members organised and attended the collocated event organised by CESSDA on the use of Persistent Identifiers in the CESSDA ERIC (see Appendix 1)[40]. The workshop gave an overview of how CESSDA service providers apply PIDs for their holdings. In addition, information on the FREYA project was presented. The CESSDA community also provides a FREYA Ambassador, strengthening further cooperation.

FORCE11

FORCE11 is a community of scholars, librarians, archivists, publishers and research funders that aims to facilitate the change toward improved knowledge creation and sharing[41]. FORCE11 is therefore an interesting community for FREYA to engage with. To explain and discuss the concept of the PID Forum with the FORCE11 community, a poster on the PID Forum was presented during the FORCE2018 conference in Montreal (see Appendix 1).

4.3   Disciplinary and geographical reach

The infrastructure that FREYA is building is of importance for a broad international audience and is relevant for all disciplines. Therefore, FREYA's activities aim to reach international scholars from various research areas to establish a global and cross-disciplinary PID Forum community. To accomplish this ambition, FREYA makes use of the wide network that the funded and unfunded FREYA partners have already established. As discussed above, FREYA also actively participates at various national and international conferences and events (see Annex A) and outreach and engagement targets global cross-disciplinary organisations, such as the RDA. Through collaboration with discipline-specific infrastructures (like CESSDA), and by encouraging scholars to become FREYA ambassadors for their research field, FREYA specifically aims to target all major disciplinary areas, and in particular those that are often underrepresented in the generic e-infrastructures, such as the social sciences and humanities. This part of the report will first describe FREYA's efforts to engage with the global and international community, followed by a section explaining our efforts to engage across multiple disciplines.

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[39] CESSDA ERIC Persistent Identifier Policy http://dx.doi.org/10.18448/16.0040 ; CESSDA ERIC Persistent Identifier Best Practice Guidelines http://dx.doi.org/10.18448/16.0041
[40] https://rd-alliance.org/use-persistent-identifiers-cessda-eric
[41] https://www.force11.org/about

Global PID Community

FREYA holds a close link to the RDA which is an global organization with members from more than 137 countries. FREYA's PID Forum activities are in particular promoted through the RDA PID IG which currently has 133 members. FREYA also aims to reach an international public through other events, like the PID workshop series. This series featured two workshops held in Singapore and London (see 3.2) and will finish with a third workshop held in the US. The FREYA Ambassador Programme encourages scholars interested in PIDs from all over the world and from various disciplines to help promote the use of PIDs. FREYA currently has 22 Ambassadors from 12 different countries.

FREYA also aims to reach the global community through its social media activities, including Twitter which currently counts more than 900 followers, and the project website which has attracted more than 2900 visitors from 69 distinct countries since its launch in February 2018.

The graphs in Figure 7 below show the geographical distribution of our website visitors as well as the number of distinct countries from the website visitors over time. While most of the website visitors come from Europe and North America, all other continents are also represented and the number of distinct countries has increased steadily throughout the past year, suggesting that FREYA is extending its reach globally.
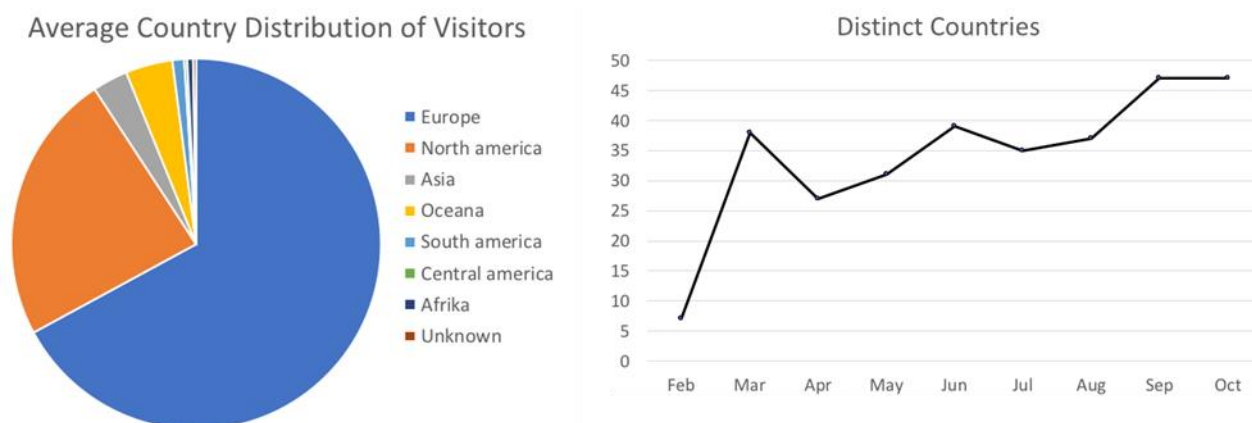

Figure 7: Overview of the geographical distribution of FREYA website visitors per month (left) and the number of distinct countries that visited the FREYA website during the first year of the project

Cross-Disciplinary PID Community

The FREYA partners are involved in a wide range of disciplines, including high-energy physics (CERN), life sciences (EMBL-EBI), earth and environmental sciences (PANGAEA) and social sciences and humanities (DANS, British Library). FREYA therefore has direct connections for engagement with all major disciplinary fields via the partners. An overview of all the events in which FREYA partners have participated is included in Appendix 1. Interaction with specific disciplines was for instance achieved through an RDA collocated event organized by CESSDA focussing on PIDs within the social sciences.

5   Future plans

In the first year of the project WP5 has created a communication plan (task 5.1), launched the PID Forum, and made a start with promoting the project and engaging with the PID Forum community (task 5.2). The second year of FREYA will feature many of the core deliverables of the project (see

Table 6). The input from the PID Forum community will be crucial in the development of these deliverables and to help co-design PID services during the upcoming years. To facilitate this co-design of PID innovations, FREYA will continue with the initiated PID Forum activities and in particular coordinate with partners in the e-infrastructure realm such as the RDA and EOSC (task 5.3). The following paragraph highlights planned events as well as specific aspects of the project that will be the focus of the PID Forum activities in the second year of FREYA.

Public Deliverables (D) (still to be) released in 2018		Public Deliverables (D) to be released in 2019	
D2.1	PID Resolution Services Best Practices [Report][42]	D3.2	Requirements for Selected New PID Services [Report]
D3.1	Survey of Current PID Services Landscape [Report][43]	D2.2	PID Metadata Provenance [Other]
D4.1	Integrate Mature PID Types [Report]	D4.2	Using the PID Graph: Provenance in Disciplinary Systems [Report]
D5.3	The PID Forum [Report]	D4.3	Using advanced PID Graph Functionality in Pilot Applications [Report]
D6.1	The PID Commons and Sustainability [Report]	D4.4	Organizational IDs in Practice [Report]
		D5.4	Initial Training Materials [Report]
		D5.5	The PID Forum [Report]
		D6.3	The PID Commons and Sustainability [Report]

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[42] Deliverable 2.1 is available at https://doi.org/10.5281/zenodo.1324300
[43] Deliverable 3.1 is available at https://doi.org/10.5281/zenodo.1324296

Table 6: Overview of the public deliverables of the project in 2018 and 2019

PID Forum events

Following our activities from 2018, we will continue to actively participate in events, giving presentations as well as hosting workshops and discussion sessions to gather feedback and input from the PID Forum community. As discussed in section 3.2.3, several upcoming events are already planned and the WP5 team is monitoring events of possible interest to the project continuously. In addition to live interactions, we will continue to interact with the PID Forum online via the online PID IG discussion list, and organise webinars that will shared via the project's YouTube channel. We will also continue the cooperation with the EOSC projects EOSC-Hub, OpenAIRE-Advance and RDA-Europe 4.0 to collaborate on and harmonize project results and make use of each other's expertise. In addition, FREYA is committed to extend the geographical and disciplinary reach and will continue to invest in the Ambassadors programme and the contact with domain-specific infrastructures throughout the upcoming year.

Co-designing new PID services

The importance of the PID Forum for FREYA will increase during the second year of the project where many of the project's key outputs will be further specified and developed. While five public deliverables were planned in the first year of the project, eight deliverables are scheduled for the upcoming year (see Table 6). Therefore, more engagement with the PID Forum will be taking place during this period for input from the community into the work of FREYA. WP5 will collaborate with the other WPs and utilize different ways of gathering feedback (e.g. workshops, webinars, surveys) depending on the nature of the deliverables and the requirements of the partners. During the first year, WP5 and WP3 collaborated on several occasions to consult the PID Forum for user stories on new PID types that WP3 was collecting for deliverable D3.2. A similar approach will be taken in the upcoming year for the development of the PID Graph and the PID Commons. These three examples are described below in more detail.

User stories

One project result for which the PID forum was and will be consulted concerns the development of new PID types and services. A webinar was held for Ambassadors (see 3.2) to gain their input and during the DI4R conference in Lisbon, an interactive session was organised to collect feedback on user stories from the PID Forum community (see 3.2.2). This input will be taken into account for deliverable D3.2 and to inform FREYA on the most relevant user stories and new PID services to be developed.

PID Graph

The development of the PID Graph is one of the key aims of FREYA. WP5 will collaborate with the other WPs to consult the PID Forum in the development of the PID Graph and its associated deliverables (see Table 6). Plans are in the making for an interactive PID Forum session that will include the PID Graph during PIDapalooza 2019 (see 3.2.3). To discuss specific topics in more detail and to reach various audiences, webinars will be organized and the FREYA Ambassadors will be involved to obtain feedback from different communities.

PID Commons

The PID Commons addresses the sustainability of the PID infrastructure resulting from FREYA beyond the lifetime of the project. The development of the PID Commons will be a focus of FREYA WP6 during the upcoming year. Both the PID Forum and PID Commons require involvement from the broader community and the Forum activities should be sustained in the Commons after the end of FREYA. Therefore close collaboration between these two pillars of FREYA and between WP5 and WP6 is required. Sustainability plans will be discussed with the PID Forum community and in particular with the RDA during PID IG meetings. As sustainability is an important issue for the other EU projects contributing to the EOSC, we aim

to carry out the development of the PID Commons in collaboration with EOSC-Hub, RDA Europe 4.0 and OpenAIRE-Advance.

Annex A: Overview of all events in which FREYA participated [until November 2018]

Date	Event	Type	Place	Description
24-01-2018	EUDAT conference	Presentation	Porto	Presentation by Simon Lambert
20-02-2018	CESSDA PID Workshop (RDA collocated event)	Presentation / Workshop	Berlin	The use of Persistent Identifiers in the CESSDA ERIC
21-03-2018	RDA Plenary	Presentation / Discussion	Berlin	The aim of the meeting is to have a first discussion between FREYA, EOSC-Hub and OpenAIRE-Advance in the RDA context, to identify existing activities and possible future collaborations.
21-03-2018	RDA Plenary	Presentation/ Workshop	Berlin	PIDs in CERN Analysis Preservation
23-03-2018	RDA Plenary	Presentation / discussion	Berlin	This event is meant as a starting point for engagement of FREYA with RDA members and WGs/IGs with an interest in Persistent Identifiers, and to present the project in the context of the European Open Science Cloud.
23-03-2018	RDA Plenary	Presentation/ workshop	Berlin	Making PIDs work - FREYA
16-04-2018	EARMA	Presentation	Brussels	Presentation by Josh Brown
29-05-2018	ORCID Nordic workshop	Presentation/ Workshop	Helsinki	Event with ORCID members from DK, FI, NO, SE
04-06-2018	INORMS	Workshop	Edinburgh	Workshop by Josh Brown and Tom Demeranville
11-06-2018	EOSC Summit	Presentation	Brussels	Represent FREYA at the event
13-06-2018	EuroCRIS 2018 conference	Presentations	Umeå	Paper "CRISs and persistent identifiers: how do they work together?"
25-06-2018	RECONNECT 2018	Presentation	Glasgow	Presentation on organisation IDs including basics of FREYA
04-07-2018	LIBER pre-conference workshop	Workshop	Lille	Presentation as part of a panel on libraries, funders and research infrastructure
27-08-2018	International workshop on persistent identifiers (PIDs) for research	Presentations	Singapore	Trusted PIDs - a FREYA perspective
03-09-2018	Workshop on Open Citation	Presentations	Bologna	Presentation by Martin covering FREYA and the PID graph as relating to open citations. Ginny Hendricks (Crossref) and Catriona MacCallum (Hindawi) also mentioned FREYA;
06-09-2018	Australian National ORCID	Presentations	Canberra	Meeting of Australian ORCID consortium members

Date	Event	Type	Place	Description
	Forum			
11-09-2018	Working with national bibliographic databases for research output	Presentation	Antwerpen	Presentation about Research in context. NARCIS PID-Graph and Freya
11-09-2018	ICSTI Annual meeting	Presentation	London	British Library Data Strategy and FREYA
17-09-2018	COASP 2018 Conference on OA scholarly publishing	Presentation	Vienna	Presentation by Christine Ferguson
18-09-2018	PresQT Workshop	Presentation	Notre Dame US (remote)	Tools for preservation and reuse of research materials at CERN
26-09-2018	GEDE Workshop on digital objects	Flyers and participation	Brussels	Several topics in relation to Digital Objects
09-10-2018	Digital Infrastructures for Research (DI4R)	Workshop	Lisbon	Workshop by Eliane Fankhauser with speakers Christine Ferguson, Brian Matthews and Simon Lambert
09-10-2018	DAMDID 2018 (Data Analytics and Management in Data Intensive Domains conference)	Presentation	Moscow	Paper "Persistent identifiers for facilities research: current practices and opportunities"
11-10-2018	FORCE2018	Poster	Montreal	Poster presentation on the PID Forum
26-10-2018	MTSR 2018 (Metadata and Semantic Research conference)	Presentation	Limassol	Paper "Metadata for large-scale research instruments"
05-11-2018	RDA 12th Plenary	Presentation in the PID IG	Gaborone	Eliane Fankhauser gives an update on the FREYA project and presents the PID Forum to the community during the IG PID meeting
14-11-2018	Crossref LIVE18	Presentation	Toronto	Trisha Cruse as keynote plenary speaker

Annex B: Some of the results of the Mentimeter session held at DI4R 2018

What do you expect from this session? 🔲 Mentimeter

Ideas	Learn what people are looking for from PID services	new insights
Info on where PIDs are going and how are they doing.	Nothing	To know more about the project and PIDs
understand user needs	know more answer specific questions	To learn what PIDs are and what they do.

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What do you expect from this session? 🔲 Mentimeter

What will I be able to use (now and in the future)?	Nice varied user stories for PIDs	Progress about missing PIDs (Org IDs, RI, Research Services)
PIDs for software	Understand expected future of PID for authentication	Overview of PID in general, what are the benefits, how researchers and infrastructures will benefit.
To learn where we ar with the PID solutions	Learn PID structure, equipment-PIDs, forthcoming PID's	How to start with PID's

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What do you expect from this session? 🔲 Mentimeter

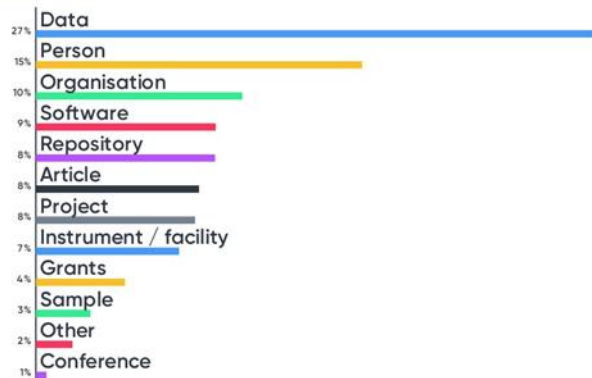| Find out what its about	get more involved	Learn more about PID initiatives
Information Contacts	Network with PID colleagues	To know what PIDs are and where we can use them.
Ideas & updates on trends	learn more about PIDs in EOSC	gain deeper insights

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What do you expect from this session?   Mentimeter

Pid for research datasets. How It works?	directions for PID in EOSC	To get a better understanding of the PID scene.
innovative service ideas where are gaps?	Awareness of EU efforts in PID services.	Get ideas
Learn best practices; success stories from the community; understand the challenges.	Checking the PID landscape	New insights

👤 61

Which are the research entities that interest you most in your work?   Mentimeter

👤 37
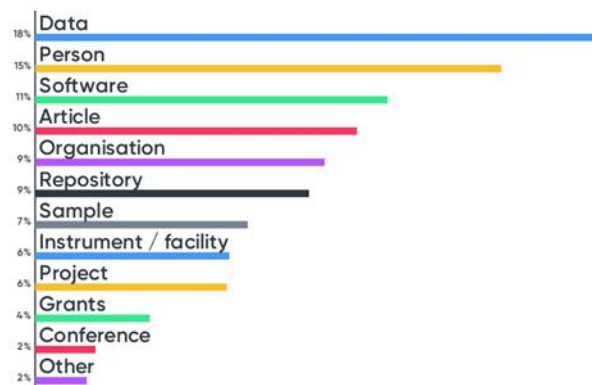
Where would you likely want to use PID services?   Mentimeter

👤 41