



EXCELERATE Deliverable D13.4

Project Title:	ELIXIR-EXCELERATE	
Project Acronym:	ELIXIR-EXCELERATE	
Grant agreement no.:	676559	
	H2020-INFRADEV-2014-2015/H2020-INFRADEV-1-2015-1	
Deliverable title:	The impact of the Innovation and SME Programme on industry users	
WP No.	13	
Lead Beneficiary:	1 - EMBL (ELIXIR Hub)	
WP Title	Communications, Industry and Community Engagement	
Contractual delivery date:	31 July 2019	
Actual delivery date:	1 August 2019	
WP leader:	Andrew Smith	1 - EMBL (ELIXIR Hub)
Partner(s) contributing to this deliverable:	EMBL (ELIXIR Hub),	

Authors and Contributors:

Katharina Lauer, Andrew Smith.

Reviewers:

(N/A)

1. Table of contents

Table of contents	2
2. Executive Summary	3
3. Project objectives	5
4. Delivery and schedule	5
5. Adjustments made	5
6. Background information	5
7. Appendix 1 - Report on the impact of the Innovation and SME Forum	9
7.1 Introduction to the concept of the Innovation and SME Forum:	9
7.2 Results	10
7.2.1 Quality assessment of each Innovation and SME Forum	10
7.2.2 Long term impact survey and outcomes of Innovation and SME events	13
7.2.3 Equal opportunities / gender balance	23
7.2.4 ELIXIR Industry Newsletter	25
7.2.5 Raising visibility through collaboration with industry clusters	25
7.2.6 Giving visibility to other Research Infrastructures and EU projects	26
7.3 Summary and future of the Innovation and SME programme	28
8. Methods used to evaluate the short- and long-term impact of the Innovation and SME programme:	30
8.1. Data collection/GDPR	30
8.2. Feedback surveys after each event	30
8.3. Long-term impact assessment survey	34
8.4. Collection of statements and quotes from attendees	36

2. Executive Summary

ELIXIR's Industry Strategy sets out the objectives that guide the way in which ELIXIR interacts with and provides support to industry.

It is articulated around five objectives:

- 1) *Increase industry usage of ELIXIR resources and ensure that name is synonymous with quality*
- 2) *Enable Open innovation by Europe's SMEs*
- 3) *Build effective partnerships with key industry stakeholders and initiatives*
- 4) *Ensure effective communication between industry and ELIXIR*
- 5) *Support the bioinformatics training needs of industry*

To deliver Objective 2 - *Enable Open innovation by Europe's SMEs* - ELIXIR operates the Innovation and SME Forum. This Deliverable is an assessment of how effective this programme has been in supporting innovation in SMEs. In the context of EXCELERATE Work Package 13, the activities have been carried out in Subtask 13.2.2: Expand the reach and impact of ELIXIR's Innovation and SME programme.

Figure 1 gives an overview of the diverse ways ELIXIR interacts with industry, with the Innovation and SME events at the core of "We reach out, disseminate and broker".



Figure 1: The different ways ELIXIR engages with industry

Over the course of the ELIXIR-EXCELERATE grant, we organised seven Innovation and SME events with themes ranging from data driven innovation in rare diseases to food and nutrition. In total, we attracted ~600 participants to these events.

The impact assessment was conducted by using qualitative and quantitative methods such as feedback surveys and direct follow up with attendees from ELIXIR’s Industry Officer, Katharina Lauer.

The overall assessment is that the Innovation and SME Forum is considered a flagship activity of ELIXIR. Industry attending the events find the forum incredibly useful, as do ELIXIR Nodes. Such has been the impact of the ELIXIR Innovation and SME Forum, we have been able to secure budget from ELIXIR Members to operate future events after ELIXIR-EXCELERATE project has ended, and to expand the programme through running more events in the context of the IMI-funded FAIRPlus¹ project.

¹<https://fairplus-project.eu/get-involved/#sme>

3. Project objectives

With this deliverable, the project has reached or the deliverable has contributed to the following objectives:

No.	Objective	Yes	No
1	Deliver world-leading data services for academia and industry: Stimulate innovation by supporting industry uptake of ELIXIR resources, particularly in SMEs.	✓	

4. Delivery and schedule

On schedule

5. Adjustments made

None

6. Background information

Background information on this Work Package (WP) as originally indicated in the description of action (DoA) is included here for reference.

Work package number	13	Start date or starting event:	month 1
Work package title	Communications, Industry and Community Engagement		
Lead	Andrew Smith (ELIXIR Hub)		
Participant number and person months per participant			
1 – EMBL 69PM			

Objectives

The overall aim of WP13 is to ensure that a maximum number of scientists and companies are aware of ELIXIR's services, developments, opportunities and events. Reaching out to specific communities, including industry and SMEs, will allow ELIXIR to understand user's needs better, ensuring that the most effective services are developed. This will be achieved by carrying out tasks that address four, complementary objectives:

- Develop a coordinated and user-centric Communications presence for ELIXIR. (Task 13.1)
- Support innovation and usage of ELIXIR from Europe's life-science industries and SMEs. (Task 13.2)
- Create specific outreach channels to key user communities. (Task 13.3)
- Engage potential members across the globe. (Task 13.4)

WP13 will build upon many existing communications resources and channels. The main ELIXIR-Europe website, for example, will house the project website and existing ELIXIR stakeholder mailing lists will help ensure that outcomes from the project are disseminated widely. WP13 will focus on enhancing these existing platforms and optimising them to ensure maximum impact from a relatively modest WP budget.

Description of work and role of partners

WP13 - Communications, Industry and Community Engagement [Months: 1-48]

EMBL

It is estimated by the EC that there are around 500,000 life scientists in the EU alone. The fundamental importance of data-driven research in the life sciences means that many of these scientists are potential users of ELIXIR's services. ELIXIR likely has largest user community of any ESFRI Research Infrastructure. Furthermore, ELIXIR's Preparatory Phase report⁶⁴ highlighted the range of users supported, including: bioinformaticians and computational biologists; bench scientists; biologists; geneticists; biochemists; clinical specialists; and plant, environmental and marine scientists. In addition, industry is a major user of ELIXIR resources from Pharmaceutical and Biotech industries through to crop science and aquaculture companies and SMEs.

Unlike many physical or single-sited infrastructures, where operators can build face to face dialogue with a small number of users, ELIXIR is an Open Data infrastructure where millions users access services via web interfaces. It is vital to create the effective communications and outreach mechanisms to interact with these users in a manner that is effective for users and efficient for ELIXIR partners.

Task 13.1: Develop a coordinated and user-centric Communications presence for ELIXIR (35PM)

The scale of users across the globe requires that ELIXIR uses modern, effective tools to communicate its scientific and operational messages. The distributed nature of ELIXIR, with over 100 institutes involved, also requires that there is a consistency and clarity of messaging between partners. Task 1 comprises three Sub-tasks that will collectively ensure that the internal processes are in place so that ELIXIR can present a single, coordinated interface to its users and that effective communications materials are developed.

Partners: EMBL-ELIXIR

Subtask 13.1.1: Develop and implement an ELIXIR-wide Communications Strategy (17PM)

The ELIXIR Communications Strategy will set the overall strategic direction for ELIXIR's dissemination activities to users in academia, industry policy-makers and funders. The strategy will include scientific communication, social media, web-based resources, newsletters, video and printed materials. It will be reviewed and updated annually to take into account new technologies and developments. Owned by the ELIXIR Hub, it will be developed jointly by the emerging Communication Expert group (Task 13.1.2) and other key strategic bodies, most notably the ELIXIR Heads of Nodes committee and the Work Package leads of ELIXIR-EXCELERATE. It will identify the key scientific conferences that ELIXIR should attend and the suite of materials that will be produced to reach out to user groups (Task 13.1.3). It will also harness the existing social media channels run by ELIXIR Nodes, and build on the distribution channels created during ELIXIR's Preparatory and interim phases.

Subtask 13.1.2: Create and operate an ELIXIR Communications Expert group (9PM)

In order to implement the most effective Communications Strategy, a tightly-coordinated network of communications and outreach experts from ELIXIR Nodes is required. Harnessing the local communication channels that ELIXIR Nodes already have with their own respective national bioinformatics communities will provide efficiencies of scale at the European-level. We will create an information exchange network of Node experts that adopts the latest software and web-based applications. Annual face-to-face meetings of all Communications experts and bilateral meetings between members will be critical to cement relationships within the network, and will be supplemented by video/telephone conferencing and use of the ELIXIR intranet (WP12).

Subtask 13.1.3 Develop suite of high-quality communications materials (9PM)

To effectively communicate ELIXIR's services to various stakeholder communities, a suite of high-quality promotional materials will be produced. A short ELIXIR video will feature interviews with scientists and industry users and will set out the structure of ELIXIR, the range of services offered and how these can be accessed. Printed materials, posters and banners will be printed and distributed to all ELIXIR Nodes to support their local dissemination activities. Annual scientific reports will capture the scientific and operational output of ELIXIR- EXCELERATE.

Additional resources required: Video and printed materials subcontracting costs €45,000

Task 13.2: Support innovation and usage of ELIXIR by Europe's life-science industries and SMEs (17.3PM)

Industrial use of Europe's bioinformatics resources is high. These industries are major employers globally, generating wealth and supporting transformation to a knowledge-based economy. Industry sees added value in ELIXIR65 in terms of reduced costs and decreased duplication of effort for them, higher scalability, access to common data and interface standards and much better public-private data integration. Many of

these requirements will be addressed by the general implementation of ELIXIR and are as relevant for academia as for industry. Additionally, Task 13.2 will ensure that industry and SMEs are offered direct, bespoke support and engagement.

Partners: EMBL-ELIXIR

Subtask 13.2.1: Build lasting partnerships with industry initiatives, bodies and SME associations (9PM)

In order to understand the needs of Europe's industry and SME sector, it is necessary to forge close links with industry and SME association bodies, particularly EFPIA, local EENs, the European

Biotechnology Network, the BioBasedIndustries Consortium and regional bioclusters. A scoping exercise and face-to-face meetings will map these organisations and establish dissemination channels. This will ensure that a maximum number of companies are aware of ELIXIR's services and that the content of ELIXIR's Innovation and SME programme (Task 13.2.2) is relevant to the needs of Europe's SMEs. The Innovative Medicine Initiative (IMI) - and many of its current projects - is considered as a priority for closer engagement. ELIXIR will seek to conclude formal collaboration agreements with key IMI projects such as OpenPHACTS.

Subtask 13.2.2: Expand the reach and impact of ELIXIR's Innovation and SME programme (8.3PM)

Expanding ELIXIR's emerging Innovation and SME programme⁶⁶ will allow partners to disseminate the results, services, tools and outcomes to a large number of companies across Europe. Building on a successful start to this programme, we will fund 8 dedicated events across the duration of the project. With around 50 delegates attending

each event, hundreds of Europe's SMEs will be directly supported across the duration of the grant. Individual events will be themed to address the outcomes from ELIXIR-EXCELERATE Use Cases (WPs 6 to 9) so will include health and rare diseases, marine sciences and plant sciences. We will work through the key bioclusters and industry organisations identified within Task 13.2.1.

Additional resources required: €120,000 for Innovation and SME events (€15,000 per event)

Task 13.3: Create specific outreach channels across the globe to key user communities and potential member states (11.5PM)

No infrastructure is effective over the long-term unless it offers services that meet the needs of users. The Preparatory Phase showed that ELIXIR is perhaps unique in the size and variety of its respective user communities. Task 13.3.1 will ensure that ELIXIR engages effectively with users through attendance at scientific conferences. Task and 13.3.2 will allow ELIXIR to forge lasting relations with the key bioinformatics community-driven initiatives such as GOBLET for training and proteomics standards initiatives. In addition, for ELIXIR to realise its potential on the world stage and drive global bioinformatics collaboration, regular interaction, and ultimately direct membership from countries outside Europe, is required. Equally, collaboration with other major global data initiatives is necessary. Task 13.3.3 will ensure that ELIXIR works strategically with key countries outside Europe and the major international infrastructure initiatives that are of relevance.

Partners: EMBL-ELIXIR; IMIM.

Subtask 13.3.1. ELIXIR representation at key scientific events and conferences (6PM)

Scientific conferences provide an effective way of communicating ELIXIR's services to its large and diverse user base. ELIXIR will attend, display booths and run tech track sessions at a number of key scientific conferences within Europe and beyond. Conference participation will focus primarily on showcasing ELIXIR to scientific conferences at which ELIXIR's users attend. However, some conferences will have policy-makers and funders as the target audience. The exact conferences to attend will be defined in the ELIXIR Communication's Strategy but major events are summarised in Part B section 2.2.5.

Additional resources required: Conference costs of €60,000

Subtask 13.3.2: Forge lasting relations with bioinformatics community initiatives (5.5PM)

In the life sciences, many users, developers and operators that share a common interest are organised into 'communities'. Many of these are very well established taking the form of initiatives, networks, societies or consortia. I.e. the "HUPO Proteomics Standards Initiative" for

the development of standards in proteomics. Such communities provide fora for knowledge exchange and collaboration and platforms for driving common agreements and community development. ELIXIR recognises the contribution of these and will interact with them strategically. We will not duplicate their efforts but rather engage with them to support and promote their, adding value at the European level. This Task will ensure that ELIXIR identifies and collaborates with the key initiatives.

Task 13.4: Develop ELIXIR's International strategy (6PM)

ELIXIR is considered by the G20 countries to be of global significance and with great potential for membership by countries outside of Europe. Task 13.4 will facilitate the process of countries joining ELIXIR as members, thus addressing the Call requirement of increasing membership. The International Strategy will have a two-fold purpose: 1) support the membership of countries outside of Europe, particularly G20 countries; 2) and foster collaboration between ELIXIR and global science initiatives, such as the Global Alliance for Genomics and Health and INCF. The International Strategy will primarily serve as an internal document and will be subject to annual updates following review by ELIXIR Board and the SAB.

Partners: EMBL-ELIXIR

7. Appendix 1 - Report on the impact of the Innovation and SME Forum

ELIXIR has significantly extended the reach of its Innovation and SME programme through the ELIXIR-EXCELERATE grant. This Deliverable summarises the long-term impact of the programme over the last five years. It will be used to inform the planning of future Innovation and SME Forum events post-EXCELERATE, and will feed in to the update of ELIXIR's Industry Strategy.

7.1 Introduction to the concept of the Innovation and SME Forum:

Innovation is at the core of every R&D process and has been a constant driver of scientific progress in academia and industry. The open services provided by ELIXIR Members are a foundation for innovation and lead to the creation of new companies, breakthroughs in scientific research and ultimately bring value to society, for example, through job opportunities or the development of novel medicines.

To facilitate this process, ELIXIR created the "Innovation and SME programme", a series of specialist events, hosted by ELIXIR Nodes, with the goal of communicating ELIXIR's services to

innovators in academia and industry, providing networking spaces for researchers from both sectors to discuss new developments, bottlenecks and potentially set up collaborations.

- Each Innovation and SME Forum is a two day event organised jointly by the ELIXIR Hub and an ELIXIR Node with collaboration from external partners in companies and industry clusters.
- The theme of the event is built around a topic of interest to ELIXIR and industry, and showcases the services that have been developed through the ELIXIR-EXCELERATE Work Packages (ie Human Data Use Case, Rare Diseases Use Case and Marine Metagenomics Use Case).
- The event programme consists of a mixture of speakers from academia, industry, policy makers, and non-governmental/intergovernmental organisations (such as other research infrastructures). Whenever possible the achievement of gender balance on the programme is considered.
- At each Innovation and SME Forum, SMEs are provided with the opportunity to present their research/products to the audience in a dedicated “Flash Talk Session”.
- The target audience for Innovation and SME events are academic researchers in ELIXIR and beyond, as well as researchers in industry, healthcare workers with an interest in data driven innovations, policy makers, people working in other research infrastructures, the publishing industry, industry clusters, or funding agencies.

7.2 Results

7.2.1 Quality assessment of each Innovation and SME Forum

During the course of the ELIXIR-EXCELERATE grant, a total of ~600 participants attended the Innovation and SME events, of which 47% came from the public sector and 53% from industry. Figure 2 gives an overview of attendee numbers at each of the Innovation and SME events held between 2017-2019.

An essential part of each Innovation and SME event is to facilitate networking between the attendees. On average, 85% of the respondents of the post-event feedback thought that the agenda left enough time for them to network.

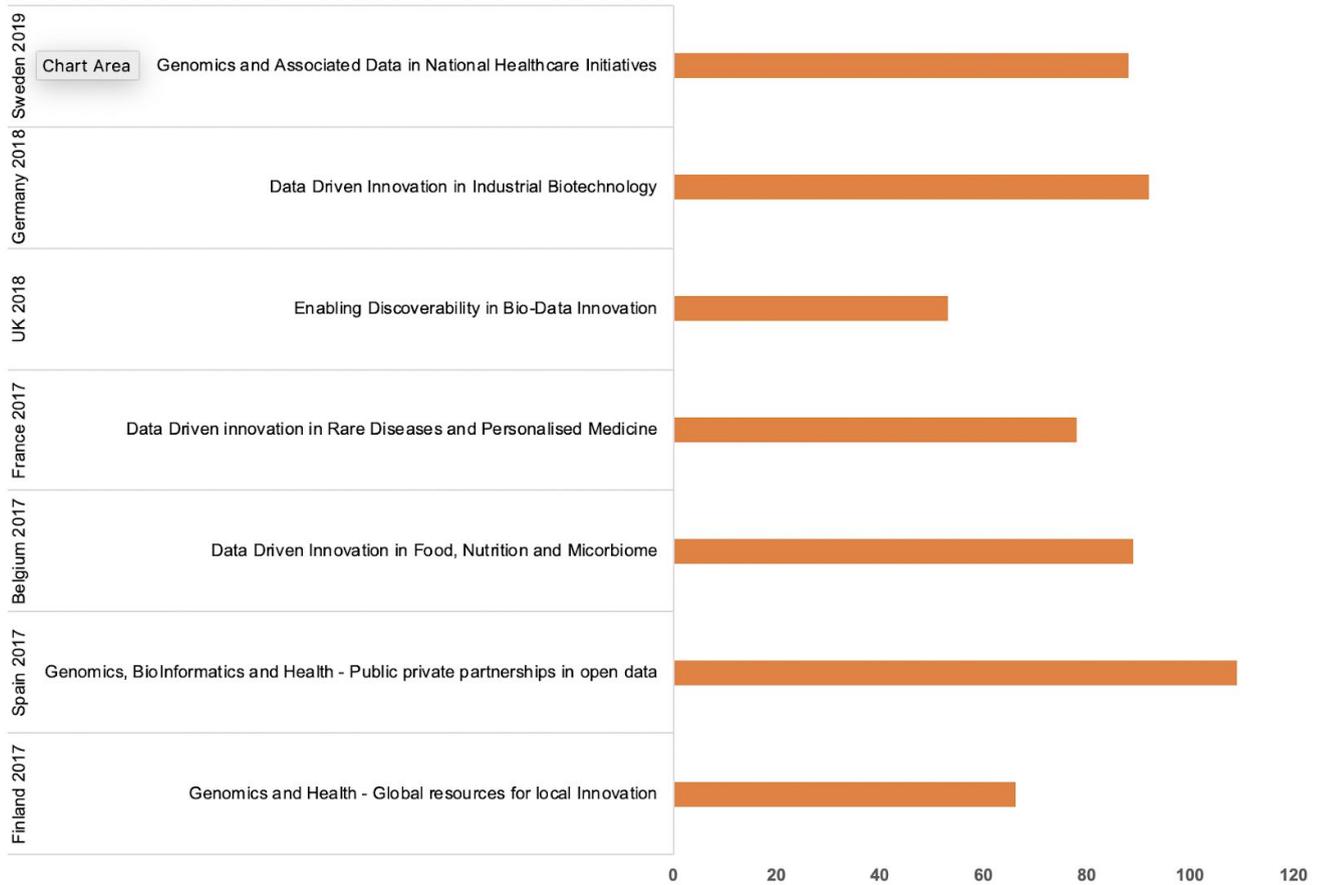


Figure 2: Overview of the total number of attendees at each Innovation and SME Forum (2017-2019)

To assess the quality of each of the Innovation and SME Forums we further ask participants to rate how well the event met their needs and if they would recommend the event to a colleague. Both are indicators of the overall quality of speakers, content, networking opportunities, and the location and its facilities. On average, across all events held in the course of the EXCELERATE grant, 96% of the survey respondents reported that the event met their needs 'somewhat well', 'very well', or 'extremely well'. We also asked participants to rate the likelihood of recommending the Innovation and SME event series to a colleague with 76% of the respondents indicating that there is a high likelihood (rating 4 or 5) of recommending the event (see figure 3).

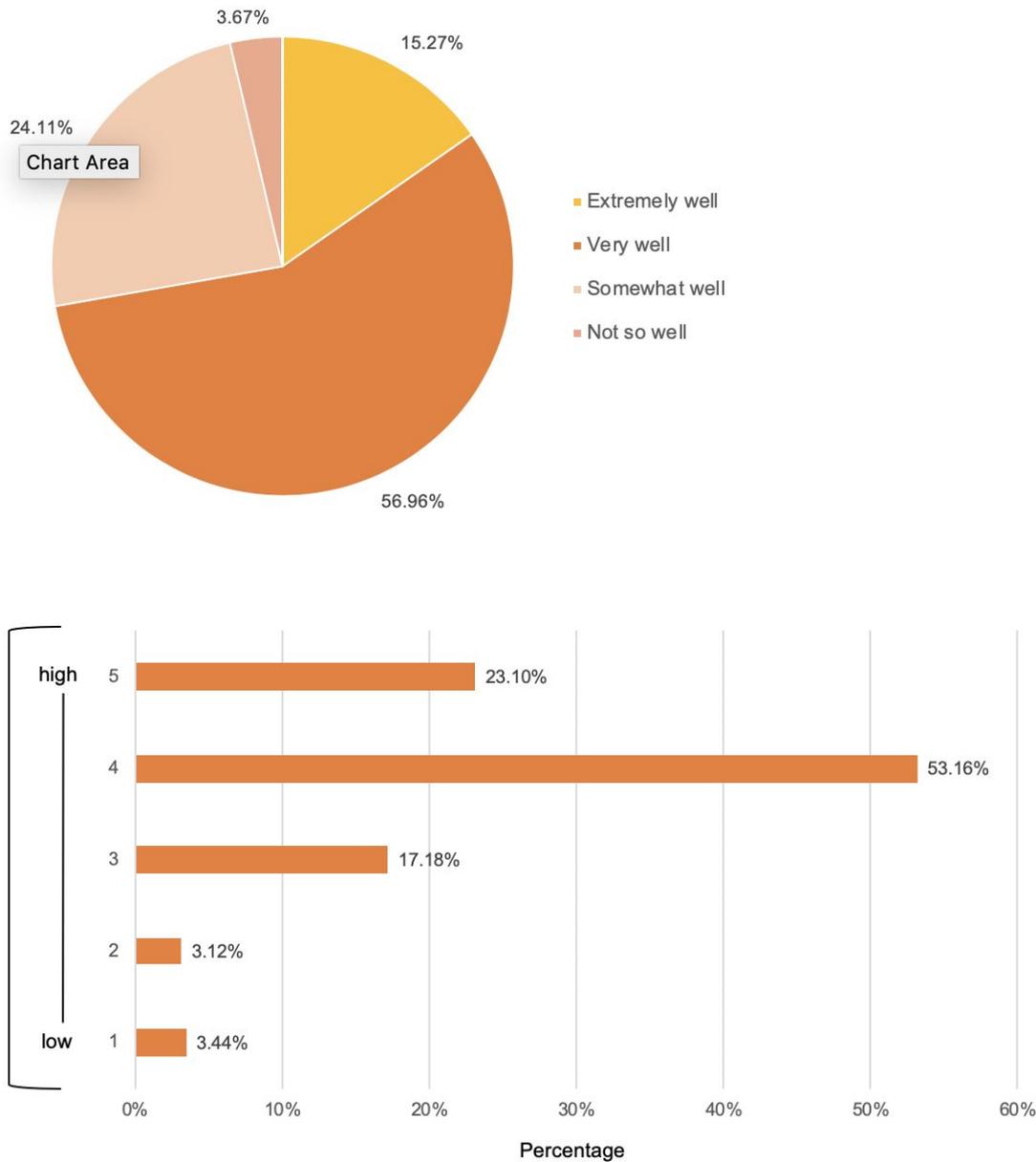


Figure 3: Overview of the quality rating of all Innovation and SME Forums (2017-2019). Top: How well did the conference meet your needs. Bottom: How likely is it that you would recommend the conference to a colleague?

After each Innovation and SME Forum, all presentations and photographs of the event are made available on the ELIXIR website. Further, we provide attendees with a contact list of all participants who have agreed for their information to be shared, helping to facilitate post-event collaboration building.

The links to all Innovation and SME event websites including slides, photographs and programme can be found below:

- ELIXIR Innovation and SME Forum: Genomics and Health - Global resources for local Innovation² (Helsinki, 2017)
- ELIXIR Innovation and SME Forum: Genomics, bioinformatics and health - Public-private partnerships in open data³ (Barcelona, 2017)
- ELIXIR Innovation and SME Forum: Data-Driven Innovation in Food, Nutrition and Microbiome⁴ (Brussels, 2017)
- ELIXIR Innovation and SME Forum: Data Driven Innovation in Rare Diseases and Personalised Medicine⁵ (Paris, 2017)
- ELIXIR Innovation and SME Forum: Enabling Discoverability in Bio-Data Innovation⁶ (Cambridge, 2018)
- ELIXIR Innovation and SME Forum: Data Driven Innovation in Industrial Biotechnology⁷ (Frankfurt, 2018)
- ELIXIR Innovation and SME Forum: Genomics and Associated Data in National Healthcare Initiatives⁸ (Stockholm, 2019)

7.2.2 Long term impact survey and outcomes of Innovation and SME events

Long term impact of the Innovation and SME Forum Survey

To assess the long-term impact of the Innovation and SME Forum, a survey was designed in June 2019 and sent to all previous attendees of the Innovation and SME events. The total number of respondents was extremely limited and the long-term survey did not provide the anticipated results (only 3% response rate) in comparison to the post event feedback survey where we normally achieve a response rate of 25-30%. We find that it is a general challenge to gather feedback through surveys after the event has taken place. In this case, the time between attending an event and receiving the survey could be as long as 2.5 years, which decreases the likelihood of people to respond. Although we only received 21 responses to our survey, we compiled the information and focussed more on a qualitative assessment of the events e.g. through assessing the individual

²<https://elixir-europe.org/events/elixir-innovation-and-sme-forum-genomics-and-health-global-resources-local-innovation-o>

³<https://elixir-europe.org/events/elixir-innovation-and-sme-forum-genomics-bioinformatics-and-health-public-private>

⁴<https://elixir-europe.org/events/elixir-innovation-and-sme-forum-data-driven-innovation-food-nutrition-and-microbiome>

⁵<https://elixir-europe.org/events/elixir-innovation-and-sme-forum-data-driven-innovation-rare-diseases-and-personalised>

⁶<https://elixir-europe.org/events/elixir-innovation-and-sme-forum-enabling-discoverability-bio-data-innovation>

⁷<https://elixir-europe.org/events/sme-event-frankfurt>

⁸<https://elixir-europe.org/events/elixir-sme-forum-sweden>

success stories of those attending the events that went on to build collaborations with other companies or ELIXIR Nodes.

The respondents of the long-term impact survey came from seven different countries as depicted below (figure 4).

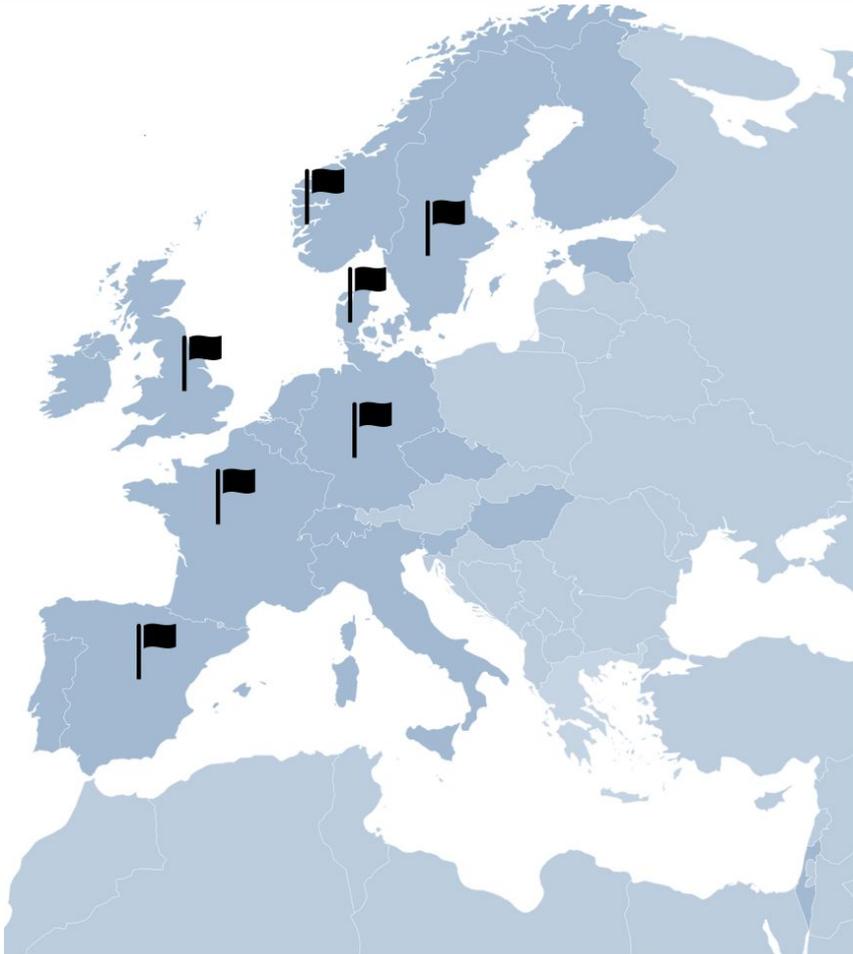


Figure 4: Graphical overview of the geographical distribution of survey responses to the long term impact survey.

Survey responses were received for five out of seven Innovation and SME events:

Innovation and SME events attended by respondents:

- ELIXIR Innovation and SME Forum: Genomics, bioinformatics and health - Public-private partnerships in open data (Barcelona, 2017)
- ELIXIR Innovation and SME Forum: Data-Driven Innovation in Food, Nutrition and Microbiome (Brussels, 2017)

- ELIXIR Innovation and SME Forum: Data Driven Innovation in Rare Diseases and Personalised Medicine (Paris, 2017)
- ELIXIR Innovation and SME Forum: Data Driven Innovation in Industrial Biotechnology (Frankfurt, 2018)
- ELIXIR Innovation and SME Forum: Genomics and Associated Data in National Healthcare Initiatives (Stockholm, 2019)

None of the survey respondents attended the following events:

- ELIXIR Innovation and SME Forum: Genomics and Health - Global resources for local Innovation (Helsinki, 2017)
- ELIXIR Innovation and SME Forum: Enabling Discoverability in Bio-Data Innovation (Cambridge, 2018)

Figure 5 gives an overview of the sectors respondents worked in at the time of attending an Innovation and SME event. The split roughly replicates the overall split of attendees from the public and private sector.

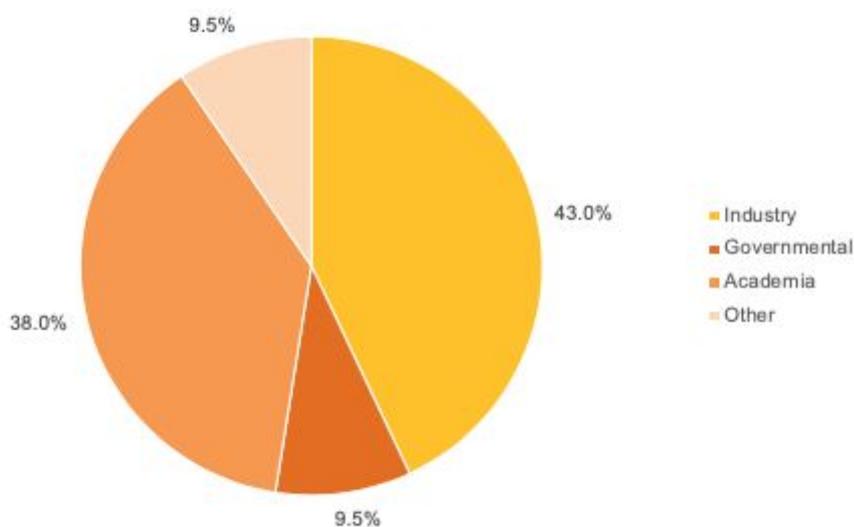


Figure 5: Overview of the job sector respondents worked at the time of attending the Innovation and SME Forum.

One of the survey questions tried to evaluate if attending the Innovation and SME Forum had any impact on the respondents work.

“Please share any impact you feel attending the Innovation and SME Forum has had on your work and/or the work of others in your organisation (e.g. a success story of a collaboration that started during the networking session at the event)?”

Examples of responses:

- Discovering speakers for internal talks on digital transformation. Filling a list of interesting startups in the topic area. Discovering ELIXIR functionalities useful internally (trainings, phenotyping projects, FAIR projects...)
- Starting new project proposals through networking at event
- Networking with contacts and potential customers. Difficult to say if ELIXIR was a trigger of a specific contract, but it was an excellent opportunity to promote our company and meet relevant contacts.
- Greatly increased awareness good for networking led to ELIXIR presentation in house which was received well
- I met several founders and initiated conversations that helped me in my studies. In addition, I was able to help two founders with advice on how to build products and a company.

We further asked previous attendees to "Name the ELIXIR services, tools, training, or resources you have used as a result of attending the Innovation and SME Forum."

Examples of responses:

- ELIXIR Training Portal
- We keep track of ELIXIR services and evaluate them and others for use in our pipeline. E.g. the metabolights database is highly useful
- Using majority of EMBL-EBI plant/agriculture related data resources. Now also including Embassy cloud
- We are mainly users of the Core Data Resources Ensembl Genomes and SILVA which we however have also used before.
- EBI tools, ChEMBL

Another survey question aimed to collect information on the influence that attending the Innovation and SME Forum had on a participants career, work, product development etc. "Attending the Innovation and SME event led to/facilitated:"

Respondents to the survey indicated that attending the event lead to the following outcomes:

- Collaboration(s) with other participants/speakers (With 82% of respondents indicating that attending the event led to collaborations with other participants)
- Publication of my work
- Change in career
- Increased business leads or sales
- Enhance product development

Through the long-term impact survey we further tried to evaluate possible snowball effect of information relating to ELIXIR after the event. For this reason we asked participants to indicate the number of people with whom they had shared information, e.g. about ELIXIR services, after the Innovation and SME event. All respondents to the survey reported that they shared information about the event at least with one person, 15.4% even stated that they shared information with more than ten people.

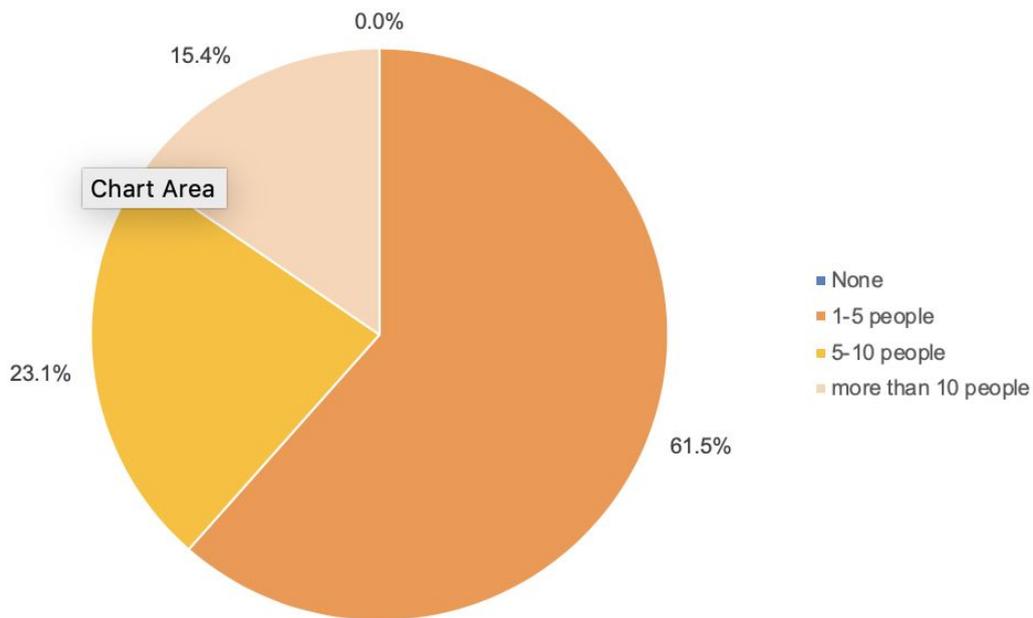


Figure 6: Graphical overview to the survey question “With how many people have you shared information that you acquired at the event”.

Personal statements from attendees on the value of the event

To assess the quality and impact to industry of the Innovation and SME programme, in addition to the long-term impact survey, we also collected statements from attendees at our events. These statements provide insight into how useful industry participants rate the Innovation and SME Forum, for example, to establish collaborations, advertise their products, or discuss cross-sectoral bottlenecks.



Figure 7: Abel Ureta-Vidal (CEO and Founder, Eagle Genomics) at the Innovation and SME Forum in Paris, 2017.

"Being able to hear from both innovative SMEs at the same time as bigger players in a specific market makes the ELIXIR SME Forum a great place to get a sense of the coming trends and challenges in a particular Life Science industry sector" — **Abel Ureta Vidal, Eagle Genomics, UK**

"The ELIXIR Innovation and SME Forum was a great opportunity for us to better understand how ELIXIR is targeting the entire life sciences community, including the commercial field, from small companies to global corporations. We experienced an open-minded atmosphere with the synergies of the public and the private sector always brought into focus" — **Jörg Peplies, Ribocon, Germany**



Figure 8: Henrik Plym-Forshell (Sales Director, BC Platforms) at the Innovation and SME Forum in Stockholm, 2019.

The ELIXIR Innovation and SME Forum was a great opportunity for us to interact with ELIXIR and also other SME organisations to share ideas and better understand how ELIXIR together with small and large companies can help bridging the "digital islands" of information and provide true value for life science stakeholders, researchers and in the end, the patients." - **Henrik Plym-Forshell, BC Platforms, Sweden**

"I really enjoyed the ELIXIR Innovation and SME Forum in Frankfurt! Learning about ELIXIR's services as enablers for innovation opened the mind to new research questions!" **Catherine Sirven, Bayer Crop Sciences**

"ELIXIR is a very interesting initiative for companies like HPE because the members are top notch in their field. The Innovation and SME events help us to understand user requirements and challenges. After participating in the ELIXIR Innovation and SME event we are now in contact with two companies that have a huge demand in faster, but affordable compute platforms to discuss next steps of engagement. They have a problem and we have the tools to support them." **Andreas Hausmann, HPE Aruba**

Case study reports on successful outcomes emanating from Innovation and SME Forum

All case studies were collected and compiled through personal contacts of the ELIXIR Industry Officer.

Case study 1:

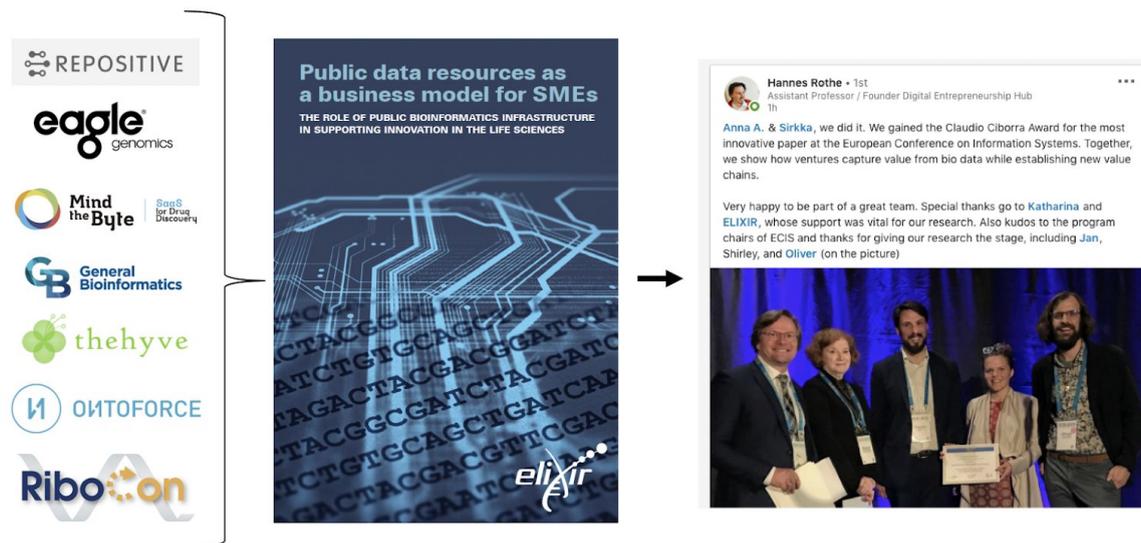


Figure 9: Graphical overview of the development of the ELIXIR report on 'Public data resources as a business model for SMEs' and follow up.

Open access to research data and applications stimulate entrepreneurial activities by enabling new forms of data-intensive value creation. Particularly in healthcare, access to research data and highly specialized applications are a major driver of innovation. Since all database services provided by ELIXIR are freely available, we started a project exploring the impact of public data resources as a business model for SMEs⁹. The Innovation and SME events were crucial in the identification process of companies that operate in this ecosystem. The outcomes of this exploratory study were compiled in a qualitative report including case studies of seven SMEs that self-declared they wouldn't be able to operate if the open data resources provided by ELIXIR did not exist. All seven companies have been involved in one or more of our events and since then even joined committees such as the ELIXIR Industry Advisory Committee or collaborate with ELIXIR in multi-stakeholder projects such as the IMI FAIRPlus project.

Following up from the publication of our 2018 report we have set up a collaboration with Prof. Hannes Rothe, an expert in digital entrepreneurship at the Freie Universitaet Berlin, to investigate the entrepreneurial ecosystem of open bio data on a European scale. This collaboration has already led to the Claudio Ciborra Award for the most innovative research paper at the 27th European

⁹<https://f1000research.com/documents/7-590>

Conference on Information Systems (How do entrepreneurial firms appropriate value in bio data infrastructures: an exploratory study²⁰).

Case study 2:



Figure 10: Graphical overview of case study involving BC Platforms and ELIXIR Finland.

In 2017, at the Innovation and SME Forum on Genomics and Health in Helsinki, Finland, the COO of BC Platforms, Anita Eliasson, was invited to present a keynote lecture on 'Using ELIXIR's Data and Compute Platforms for Genomic Research'. Following up from the event ELIXIR Finland (CSC - IT Center for Science, Finland) engaged in a collaboration with BC Platforms.

BC Platforms is currently developing a platform that will allow researchers to perform a range of analyses combining clinical and genome data from different sources, and without compromising patient privacy. The platform will work together with the cloud and compute services of ELIXIR Finland: the databases used by researchers are located on virtual servers in CSC's environment, which allows for automated processing and combination without having to worry about data conversions or data formats.

This successful partnership was subsequently presented with a talk at the Innovation and SME Forum in Stockholm on 'genomics and associated data in national healthcare initiatives' in March 2019 and is also featured in the first edition of the ELIXIR Industry Engagement Report¹¹, which describes different way ELIXIR interacts with industry. The Innovation and SME Forum is an essential instrument to kick-start collaborations and highlight the outcomes of these to a wide audience.

²⁰https://aisel.aisnet.org/ecis2019_rp/140/

¹¹<https://f1000research.com/documents/8-1136>

Case study 3:


Figure 11: Graphical overview of case study 3 involving Christophe Roos from Euformatics.

Christophe Roos was working in academia before creating his start-up Euformatics, which was initially based on large public data resources, such as those provided through ELIXIR. He presented his company through a Flash Talk at the Innovation and SME Forum in Helsinki in 2017. Christophe kept in contact with ELIXIR through subscribing to the ELIXIR Industry Newsletter¹², which featured in the latest edition (July 2019) an open call for the newly developed ELIXIR Knowledge Exchange Scheme¹³. The Knowledge Exchange Scheme was designed to support academics in ELIXIR to kick-start collaborations with industry. Prompted by this newsletter, Christophe reached out to the ELIXIR Industry Officer to enquire about the new scheme and is now considering submitting a proposal together with an ELIXIR member.

Case study 4:


Figure 12: Graphical overview of case study 4 involving ELIXIR Germany and the creation of the de.NBI Industrial Forum.

In October 2018, the German ELIXIR Node (de.NBI) hosted an Innovation and SME Forum on data driven innovation in industrial biotechnology. The event was used to present the newly established de.NBI Industrial Forum¹⁴ with the aim of offering companies assistance in solving bioinformatic

¹²<https://mailchi.mp/elixir-europe/elixir-industry-update-september2018-1293533>

¹³<https://elixir-europe.org/industry/knowledge-exchange-scheme>

¹⁴<https://www.denbi.de/de-nbi-industrial-forum>

questions. Industry members of the de.NBI Industrial Forum get access to training courses and receive tailored information about engagement opportunities. Over the course of the year the Forum has grown to 20 companies that are now engaging with the German ELIXIR Node on a regular basis. By hosting an Innovation and SME event, ELIXIR Germany was able to present their services to a wide audience of industry members. The event was a key outreach opportunity for the German ELIXIR Node to recruit companies to their newly established Industry engagement programme.

7.2.3 Equal opportunities / gender balance

It is widely known that women are underrepresented in STEM disciplines. Computational Biology, Computer Sciences and Bioinformatics are no exception (Reference 1). For example, only 18%¹⁵ of the computer sciences undergraduates in the United States are female and less than 20%¹⁶ of the PhD recipients. Through the Innovation and SME events we try to give female scientists (in academia and industry) the opportunity to participate actively in the events, either on the steering committee of the programme or as speakers. Due to the underrepresentation of females in this sector, it is a challenge to identify qualified individuals to guarantee gender balance in every aspect of the event. For each event we have tried to achieve at least a gender ratio that is better than the overall ratio of the sector (See also the ELIXIR Equal Opportunities Strategy¹⁷).

Event attendees	Female: 34%	Male: 64%
Speakers	Female: 26%	Male: 74%
Programme committee	Female: 37.5%	Male: 62.5%

Figure 13 shows Kristina Lagerstedt (founder and CEO of 1928 Diagnostic) giving a keynote at the Innovation and SME Forum in Stockholm (March 2019) on using big data to tackle antimicrobial resistance and the digitisation of infection control.

¹⁵<https://www.computerscience.org/resources/women-in-computer-science/>

¹⁶<https://nces.nsf.gov/pubs/nsf19304/>

¹⁷<https://f1000research.com/documents/7-1234>



Figure 13: Kristina Lagerstedt (founder and CEO of 1928 Diagnostic)

Figure 14 shows Carole Goble (Head of Node ELIXIR UK; Professor in Computer Sciences, University of Manchester) as part of a panel at the Innovation and SME Forum in Cambridge (January 2019) discussing the challenges in developing and implementing standards in the life sciences.



Figure 14: Panel discussion at the Innovation and SME Forum in Cambridge 2018.

Reference:

1. Kevin S. Bonham, and Melanie I. Stefan. Women are underrepresented in computational biology: An analysis of the scholarly literature in biology, computer science and computational biology. *PLoS Comput Biol.* 2017 Oct; 13(10): e1005134. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5638210>

7.2.4 ELIXIR Industry Newsletter

The ELIXIR Industry Newsletter¹⁸ is the primary means of communicating information about events, such as the Innovation and SME Forum, opportunities for engagement, training etc. to external stakeholders with a focus on industry. After each Innovation and SME Forum (indicated through a * under the diagram) the number of subscribers increased. This increase can be seen as an indirect measurement of the quality of each event. In May 2018 we lost many of the subscribers due to the introduction of GDPR, which required all those registered on the mailing list to re-subscribe. In line with industry norms, the mailing list saw a major reduction in users - since then, however, we have seen a steady and positive increase in subscribers again. Innovation and SME events are a crucial instrument in recruiting subscribers to this mailing list.

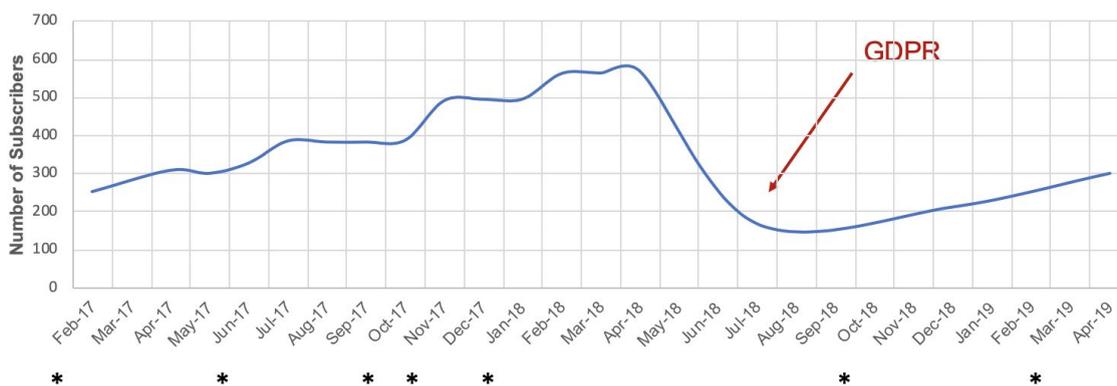


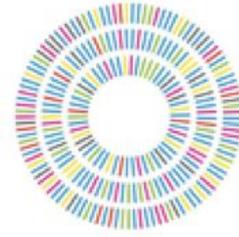
Figure 15: Graphical representation of the number of subscribers to the ELIXIR Industry Newsletter.

7.2.5 Raising visibility through collaboration with industry clusters

To increase visibility of the events and provide content that is of interest to local industry, we worked to include industry clusters in the programme committee of the Innovation and SME Forum. The outcome of this collaborative approach meant that we were able to exploit the clusters' own media channels as well as their industry networks to advertise the events. Even after the event we cultivated good relations with many of those clusters to advertise future events or services of interest to the local industries. Moreover, the interaction with industry clusters has led to invitations to present ELIXIR at conferences or meetings (e.g. On Helix conference, July 2019, Cambridge).

The illustration below gives an overview of the industry clusters involved in the past Innovation and SME events.

¹⁸<https://elixir-europe.org/industry/updates>



GENOPOLE
INNOVATION TODAY, EVERY DAY

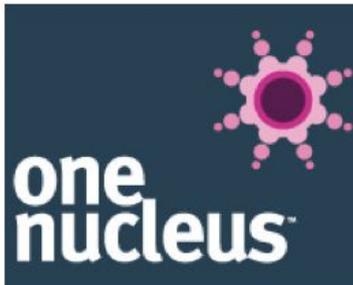


Figure 16: Graphical overview of the industry clusters that participated in an Innovation and SME Forum.

7.2.6 Giving visibility to other Research Infrastructures and EU projects

In addition to highlighting the ELIXIR services to industry we also try to give relevant research infrastructures or multi-stakeholder and pan-European initiatives the opportunity to present or collaborate at the Innovation and SME Forum when appropriate. Data generation is an essential part of research in any life science discipline. For this reason we try to link our services and make them available to other initiatives to avoid wasting resources and duplication. The Innovation and SME events are a great starting point to find out about these areas of mutual interest.

A list of speakers can be found below:

- Magali Poinot (Innovative Medicines Initiative), Paris 2017
- Mathieu Boudes (eRARE), Paris 2017
- Niclas Jareborg (Declaration on Access to 1 Million Genomes -), Stockholm 2019
- Reinhard Schneider (eTRIKS), Barcelona 2017
- Nick Lynch (OpenPhacts), Barcelona 2017
- Phillip Gribbon (New Drugs for Bad Bugs), Barcelona 2017
- Wim Haentjens (DG Research & Innovation, Agri-food unit, EC)

The three pictures below (figure 17) demonstrate how important the collaboration between infrastructures is in giving visibility and sharing information. Having speakers from other RIs and European initiatives such as the IMI on the programme helps to reach out to a wider audience and might even help to gain visibility with people who would not engage with ELIXIR under normal circumstances.



Following

Meet CORBEL at #ELIXIR4Innovation! We offer funding/support to advance R&D projects by access to biomedical research infrastructures.

6:27 AM - 15 Oct 2018

4 Retweets 7 Likes





Figure 17: Overview of social media posts from other research infrastructures that participated in an Innovation and SME Forum.

7.3 Summary and future of the Innovation and SME programme

In summary, we found the Innovation and SME programme a successful and practical way of bringing together stakeholders from ELIXIR and industry, and highlighting the services provided through ELIXIR and how these could be applied in different life science areas to advance science and their application for societal benefit (e.g. better health, food security).

As demonstrated above, the events did not just provide an opportunity for participants to network but also increase the overall visibility of ELIXIR, identify cross sectoral bottlenecks and gain insight into the entrepreneurial ecosystem of open data resources. The events further present an effective setting to gather feedback on ELIXIR services from a broad audience of users and help the technical people affiliated with ELIXIR to keep in touch with the latest developments in the bioinformatics sector.

Looking ahead, the main learning gained from the last seven Innovation and SME events is that a survey carried out a long time after the event has finished is not the optimal way for gathering long-term feedback on the impact of our events. This is a phenomenon not just observed in ELIXIR but widely known. A successful survey relies on an extremely active and engaged group of people - this level of engagement is difficult to achieve and the challenge only increases the more time passes between attending an event and the date of the survey. Moving ahead we will keep the post-event survey after each Innovation and SME Forum but also try to engage more with people at

the event to assess the quality and build a relation with an individual that allows for later follow up (even 1-2 years down the line) about potential outcomes from the event.

As mentioned above, the Innovation and SME events are ideal opportunities to gather information from both the public and private sectors on schemes and initiatives that would be useful to both to drive innovation in the data driven life sciences. Building on the Innovation and SME programme ELIXIR established two new initiatives the ELIXIR Bioinformatics Supplier Forum¹⁹ (EBSF) and the ELIXIR Knowledge Exchange Scheme²⁰ (EKES), both piloted in 2019 for the first time.

ELIXIR Bioinformatics Suppliers Forum:

Through conversations at the Innovation and SME events and internal discussions within ELIXIR a gap with industry engagement was discovered. The Innovation and SME events have a strong focus on consumers of bioinformatics services and neglect the suppliers of bioinformatics services, such as cloud or HPC etc. For this reason, ELIXIR established a novel Forum, the ELIXIR Bioinformatics Suppliers Forum.

The EBSF brings together consumers and suppliers of bioinformatics services, providing an open forum where technical advances and bioinformatics challenges can be presented and discussed. The inaugural EBSF²¹ was held on the 8th of May 2019 in London was attended by over 80 experts from 45 different organisations attended including representatives of ELIXIR Nodes, large IT companies and Small to Medium Sized Enterprises (SMEs).

ELIXIR Knowledge Exchange Scheme:

The EKES is a novel scheme which will cover travel and accommodation expenses for ELIXIR Nodes staff members so that they can work on a collaborative project with industry and organise workshops either at an academic institute or an industry workplace. A call²² for applications is currently open with a deadline in October 2019.

Based on the success of the previous Innovation and SME events we have now incorporated the programme as an essential part of the ELIXIR Industry Strategy in our next five year ELIXIR-wide operational plan, as well as committed to fund three FAIR themed Innovation and SME events in the course of the IMI project FAIRPlus (Inaugural FAIRPLUS Innovation and SME Forum²³, 29th Jan. 2020, Hinxton, UK).

The planning for three Innovation and SME events in 2019/2020 is already on its way:

¹⁹<https://elixir-europe.org/industry/suppliers-forum>

²⁰<https://elixir-europe.org/industry/knowledge-exchange-scheme>

²¹<https://elixir-europe.org/news/ekes-launch-2019>

²²<https://elixir-europe.org/industry/knowledge-exchange-scheme>

²³<https://fairplus-project.eu/get-involved/>

- Innovation and SME Forum: Distributed data analysis - the (health) data train²⁴, 9-10th October 2019, Utrecht, Netherlands
- Innovation and SME Forum: Data management in the life sciences - a driver for innovation²⁵, 27-28th November 2019, Milan, Italy
- Innovation and SME Forum: Data driven innovation in the agritech sector²⁶, 24-25th March 2020, Lyon, France

8. Methods used to evaluate the short- and long-term impact of the Innovation and SME programme:

8.1. Data collection/GDPR

All data collected in the remit of the Innovation and SME Forums adheres to ELIXIR's Privacy Policy²⁷, which has been developed in order to adhere to the General Data Protection Regulations.

8.2. Feedback surveys after each event

Immediately after each Innovation and SME Forum, all attendees are asked to fill in a feedback survey to evaluate the quality of the particular event.

To be able to compare between events the survey questions were kept consistent. For some events additional questions were added to the survey to collect specific data of relevance to the particular event. The survey was created using SurveyMonkey (www.surveymonkey.com).

The survey was disseminated to all attendees of the event at the end of the second day of the Innovation and SME Forum. A reminder email was sent a week after the end of the event (on average a quarter of the attendees from each event participated in the survey).

All surveys carried out in the ELIXIR industry programme are aligned with the [ELIXIR Training - Quality and Impact Assessment](#) and adapted to fit the framework of the Innovation and SME Forum.

A list of the survey questions can be found below:

Question

How well did the conference meet your needs?

Answer (single choice)

²⁴<https://elixir-europe.org/events/sme-2019-utrecht>

²⁵<https://elixir-europe.org/events/sme-2019-milan>

²⁶<https://elixir-europe.org/events/sme-2020-lyon>

²⁷<https://elixir-europe.org/legal/privacy>

Rating:

- Extremely well
- Very well
- Somewhat well
- Not so well
- Not at all well
- I'm not sure

A text box allowed for additional comments

Question

How likely is it that you would recommend this event to your colleague?

Answer (single choice)

Rating from 5 to 1 with 5 = high and 1 = low

Question

How would you rate the quality of the speakers?

Answer (single choice)

Rating:

- Very high quality
 - High quality
 - Neither high nor low quality
 - Low quality
 - Very low quality
-

Question

Was there a talk which stood out as being particularly useful

Answer (multiple choice)

List of Talks at the respective event

Question

Did the sessions full-fill your expectations

Answer (single choice)

List of sessions at the respective event

Rating:

- Very satisfied
- Satisfied

- Neither satisfied nor dissatisfied
- Dissatisfied
- Very dissatisfied

A text box allowed for additional comments

Question

Did the agenda allow you enough time to network with other participants?

Answer

Yes / No

A text box allowed for additional comments

Question

Do you think the networking at the event will lead to future collaborative projects?

Answer

Yes / No / Maybe

Question

Overall, were you satisfied with the venue and were you able to see and hear the presentations clearly?

Answer

Yes / No

Question

Did you encounter any issues at the venue?

Answer

Yes / No

A text box allowed for additional comments

Question

Did you get all the necessary information before the event (travel, logistics etc.)?

Answer

Yes / No

A text box allowed for additional comments

Question

Where did you find out about the event?

Answer (single choice)

- Twitter
- LinkedIn
- ELIXIR website
- ELIXIR Industry Newsletter
- Colleague
- Other

A text box allowed for additional comments

Question

Finally, do you have any comments, or recommendations that can help us to improve the next event

Answer

Free text box

Examples of event specific questions:

Data driven innovation in industrial biotechnology, Frankfurt, October 2018

Question

Would you be interested in participating in a de.NBI Industry Forum (Regular information an the de.NBI Network and bilateral cooperation)

Answer

Yes / No

Question

Are you interested in learning more about de.NBI services? Tick those that apply.

Answer (multiple choice)

Training

Services and Tools
Cloud resources and Applications

8.3. Long-term impact assessment survey

To assess the long-term impact of the Innovation and SME programme, a follow-up survey was also sent to all attendees of the events that took place within the remit of the EXCELERATE grant (2015-2019). The survey was created using SurveyMonkey (www.surveymonkey.com).

The survey was disseminated on 26th June to all attendees of previous Innovation and SME events. The survey was also disseminated through social media channels (LinkedIn, Twitter) and the ELIXIR Industry Newsletter.

The questions in the follow-on survey included:

Data collection (optional)

Name
Company
Country
E-mail Address

Question

In which sector did you work at the time of attendance?

Answer (single choice)

- Industry
 - Academia
 - NGO
 - Governmental
 - Other
-

Question

Which of the ELIXIR Innovation and SME Forums did you attend?

Answer (multiple choice)

- ELIXIR Innovation and SME Forum: Genomics and Health - Global resources for local Innovation (Helsinki, 2017)
- ELIXIR Innovation and SME Forum: Genomics, bioinformatics and health - Public-private partnerships in open data (Barcelona, 2017)
- ELIXIR Innovation and SME Forum: Data-Driven Innovation in Food, Nutrition and Microbiome (Brussels, 2017)

- ELIXIR Innovation and SME Forum: Data Driven Innovation in Rare Diseases and Personalised Medicine (Paris, 2017)
 - ELIXIR Innovation and SME Forum: Enabling Discoverability in Bio-Data Innovation (Cambridge, 2018)
 - ELIXIR Innovation and SME Forum: Data Driven Innovation in Industrial Biotechnology (Frankfurt, 2018)
 - ELIXIR Innovation and SME Forum: Genomics and Associated Data in National Healthcare Initiatives (Stockholm, 2019)
-

Question

Please share any impact you feel attending the Innovation and SME Forum has had on your work and/or the work of others in your organisation (e.g. a success story of a collaboration that started during the networking session at the event)?

Answer

Free text box

Question

Name the ELIXIR services, tools, training, or resources you have used as a result of attending the Innovation and SME Forum.

Answer

Free text box

Question

How often do you use the ELIXIR tools, resources, or services presented in the event programme?

Answer

- Never
 - Occasionally
 - Frequently / on a regular basis
-

Question

Attending the Innovation and SME event led to/facilitated: [select all that apply]

Answer (multiple choice)

- Collaboration(s) with other participants/speakers
- Enhanced product development
- Increased business leads or sales
- Submission of a joint grant application
- Publication of my work

- Authoring of software
 - Change of career
 - Recruitment of new employees
-

Question

With how many people have you shared information that you acquired at the event (e.g. about a specific service, or product of a company etc.)

Answer (single choice)

0

1-5

More than 10

Question

How do you feel the ELIXIR Innovation and SME Forum can be further developed to meet your needs?

Answer

Free text box

Question

Would you be happy for ELIXIR's Industry Officer to contact you and discuss any of this further?

Answer (single choice)

Yes / No

8.4. Collection of statements and quotes from attendees

After each event, participants who had agreed to be contacted were approached for statements about the respective Innovation and SME Forum they had attended either in person or via e-mail.

