

SWOT analysis and roadmap on incentivizing eLTER Site operators and eLTSER Platform Managers

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1 Benchmarking a Sites and Platforms Forum (SPF) for eLTER - Interim status report and SWOT analysis

1.1 Description of the SPF

The Sites and Platforms Forum (SPF) is a pilot body of an anticipated permanent entity of the Integrated Governance structure of the future eLTER RI. The main purposes of the SPF are to provide a stable platform for the community of eLTER Site and eLTER Platform Coordinators (SPCs) and to promote and facilitate the development of joint activities that can benefit the eLTER community. In addition to the enhanced networking and peer support that will cut across all participating countries and local infrastructures in eLTER, the SPF is expected to make it easier to identify potential synergies and provide inputs on the design and implementation of the operation and capabilities, tools and services of the future eLTER RI. From a very early stage in the process of establishing and consolidating eLTER as a European infrastructure, the solicited input and active engagement of SPCs in a forum such as the SPF has been identified as a key element in the eLTER ESFRI process.

1.2 The multifaceted roles of SPCs

Site and Platform Coordinators represent the backbone of eLTER, however they do not represent a homogenous group, but rather differ drastically in their background, job profile and motivation as well as in resources and other constraints. The sizable portion of the multifaceted SPC community is represented by the individuals taking formal or informal responsibility for operating and developing sites and platforms that engage in eLTER, and acquiring funding for them. However, the SPC community also includes scientific leaders, persons with the best overview of sites of platforms and data strategists and key technical staff. Engaging this large group embedded in the various eLTER processes, projects or bodies is key for effective design and implementation of the infrastructure. To review and summarize the variable roles and perspectives of SPCs, their potential future roles in the eLTER RI and how their participation can be promoted and secured, a series of workshops, group discussions and surveys have been conducted within the SPF context as detailed below.

1.3 SPF Activity report

A forum such as the SPF was already in the eLTER PLUS application identified as a critical capability to ensure the active engagement of the SPCs that are to form the backbone of a future eLTER ERIC. As part of WP2 (Networking and Stakeholder engagement), a task (T2.2: Towards an incentivised and forceful eLTER backbone of PIs and site teams) was assigned to design and implement a forum specifically aimed at promoting networking and collaboration among SPCs but also to ensure adequate exchange of information between the SPCs and the leadership of the eLTER projects.

At the start of the eLTER PLUS project, a group consisting of 22 members from 10 Institutions/countries were assigned to work on T2.2 under the leadership of Professor Stefan Bertilsson/SLU (Sweden) and in close collaboration with the WP2 lead (Michael Mirtl/UFZ, Germany) and eLTER PLUS project coordinator (Jaana Bäck, UH, Finland) with decisive scientific, administrative and logistic assistance from Terhi Rasilo (UH, Finland).

Building on (and expanding from) the T2.2 description in the eLTER PLUS grant agreement, the abovementioned group drafted a more elaborate and extended concept note on the rationale, mission and structure of an SPF to be formed as part of the eLTER PLUS project with the long-term goal of maintaining this entity in a future eLTER European Research Infrastructure Consortium (ERIC). The SPF and this 5-page whitepaper was presented and discussed at the first combined eLTER PPP/PLUS project meeting (October 2020) and after revisions based on inputs from meeting participants, the document was finalized and posted on the eLTER website in December that same

year (Appendix 1). It was decided that the SPF should assemble twice each year and that smaller working groups should be formed for specific tasks and issues to be handled.

At the project meeting in October 2020, the inaugural eLTER SPF meeting was also announced and scheduled for January 2021 as a one full day virtual meeting (due to Covid 19 restrictions). This meeting attracted substantive attention with > 250 registered participants from 25 countries and was intended to introduce the SPCs (of which not all are participating in the larger eLTER meetings) to the concept and role of the SPF. A second aim was to use the SPF to directly provide information from the eLTER project leadership and WP leads directly to the SPCs. To promote discussion and networking the meeting also contained an interactive group exercise to illustrate and conceptualize the multifaceted roles of SPCs by describing fictional “personas” with focus on their motivation and opportunities for engaging in eLTER as well as constraints for doing so. A report from the workshop was compiled and later on expanded based on post-workshop feedback (Appendix 2Appendix 2).

As a follow-up to the first SPF meeting, a survey was conducted with the aim of:

- 1) evaluating the SPF meeting format,
- 2) expanding the “personas” description,
- 3) identifying topics and tasks for possible formation of SPF working groups.

Based on the outcome of this survey, four different working groups were identified for prioritized action:

- (i) Governance,
- (ii) Data Management,
- (iii) Information clusters,
- (iv) Training.

The potential workgroup leaders were approached by the task lead with due consideration to geographical distribution and gender. For each workgroup, two conveners were appointed and the scope and mission of each working group was discussed and defined in a series of smaller virtual meetings with the respective task leader.

The working groups were presented and announced to the broader eLTER community at the project meeting in April 2021. Following this meeting, each working group convened separately (average attendance 10 participants) after a repeated invitation had been sent to all SPCs. The SPCs then engaged in various actions such as online surveys to the SPCs, information dissemination and smaller workgroup meetings to define the scope and priorities for the respective group.

The working groups were then charged with preparing a session each for the second SPF meeting organized over zoom in September 2021. The SPF2 took place during two days and also included presentation of information from the eLTER leadership and relevant WP leads in eLTER PLUS and PPP, site presentations and a training session on information management within eLTER. SPF2 was attended by 140 participants from 21 countries. A recording of the training session is available on the eLTER YouTube channel:

<https://www.youtube.com/watch?v=TnOqpuGCyYQ&list=PLrd-B-OSwd9fG8FrFqbu58b9V-Au1YIHm>

Besides advertising the working groups to the SPCs at this meeting for broadened engagement and involvement, an additional specific output from one of the working groups (iv-Training) was the design and implementation of a concrete training event as identified in

the survey sent out earlier. This training event in “Time series analysis for ecologists” was organized by one of the workgroup leaders (Ulrike Obertegger, FEM-CRI, Italy), who also gave the comprehensive lecture based on comprehensive R scripts provided to the participants beforehand. It attracted considerable attention with close to 800 registered participants from an impressive 73 countries (also beyond Europe) for the two training sessions scheduled in early December 2021 and January 2022. This clearly shows the effectiveness of the direct communication with the SPC community to identify prioritised and preferred eLTER services, initiatives and needs. The training slides, presented R-script and training datasets are available on the eLTER website:

<https://elter-ri.eu/events/elter-spf-time-series-analysis-workshop>

The third SPF was organized as a virtual event in late spring 2022. The meeting format established at SPF2 guided the planning of SPF3 which was also distributed across two half days on April 28 and May 3. The meeting gathered 122 registered participants and contained both up-to-date central information from the eLTER PLUS and PPP projects, site presentations, training activities and content developed by the 4 working groups. The meeting also included feedback sessions on ongoing activities such as site categorisation, standard observations and the service portfolio.

<https://elter-ri.eu/events/elter-spf-time-series-analysis-workshop>

2 SWOT analysis for SPC participation in eLTER

After summarizing the SPF activities and the progress as well as the challenges in building an SPC community and establish the SPF, we now take a further look at the SPCs and summarize the **Strengths, Weaknesses, Opportunities and Threats** associated with active participation of SPCs in the eLTER projects and a future eLTER RI. The SWOT was mainly performed from the SPC perspective but also assess on the possible impacts on the eLTER projects and RI. As material for this analysis of the pressing technical, operational and cultural issues, we first of all used amalgamated information continuously collected by the task and WP leadership, and from multifold bilater and small group communication. In addition, we collected direct inputs from various sources: from SPCs in online and meeting surveys, working group meetings, National Coordinators meetings, and – most importantly – from the SPF workshop where the different fictional “SPC personas” were discussed. This work was of direct SWOT relevance, because the participants identified “expectations, fears and frustrations” that they have been experiencing in their role and are likely to be relevant in participating as SPCs in eLTER projects and in a future RI.

Given the group’s heterogeneity, the SWOT cannot cover all possible aspects quantitatively. However, given the broad participation across countries we can be sure that major aspects are covered, and can be assessed and thoroughly considered within the framework of the SPF aims and expectations outlined in the eLTER PLUS grant agreement:

“We will establish the eLTER Site and Platforms Forum (eLTER SPF) targeted at: (1) identifying priority actions for better organising and training the site PIs and LTSEER Platform managers; (2) investigating experiences and best practices in collaboration with peer RIs in Europe and globally, (3) deriving suggestions for eLTER PLUS training activities, communication strategies and service provisioning, and (4) addressing the organisational setting and tools for co-location at site/platform level. A SWOT

analysis of the most pressing technical, operational, HR and cultural issues will be performed. The eLTER SPF will be the predecessor of a related permanent body in the formal eLTER RI.”

Accordingly (and because of the multifaceted and quite different roles of SPCs and the variable nature/capacities of sites and platforms) individual points below will likely apply to a subset of SPCs, but a set of points will be common for each “persona” identified and documented as part of the SPF work.

2.1 STRENGTHS (POINTS OF MUTUAL BENEFIT FOR SPCs AND eLTER)

- SPCs are dedicated to sites and/or platform development.
- Many SPCs bring in additional (non-eLTER) resources to sites or platforms and thereby play a pivotal role in equipping, developing and maintaining the local site or platform. eLTER will clearly benefit from this.
- SPCs bring extensive informal national and international networks with potential to reach and engage new infrastructure users, broaden the national engagement and secure political support. From the eLTER perspective, this will broaden the user base and attract new stakeholders.
- SPCs often have strong and trusted relationships with both local site/platform staff and decision makers within the hosting organization and can thereby function as ambassadors for eLTER. This role is of critical importance for local site and platform staff to embrace and support the process of developing eLTER.
- SPCs in some cases cooperate with water management authorities and the environmental monitoring system providing a set framework for standard operating procedures, data management and time series analysis (also limits the degrees of freedom for changes of those).
- SPCs in some cases cooperate with water management authorities conducting environmental analysis on commission, providing societal value and connection with policy makers.
- Many SPCs gain prestige and recognition from being an eLTER site or platform coordinator, with improved opportunities for collaboration and access to primary data for research.
- SPCs by definition, have extensive knowledge about the special conditions that apply to their own site or platform and are thus in a unique position to inform the eLTER leadership about prioritized support, tools and actions to be implemented in eLTER.

2.2 WEAKNESSES THAT SHOULD BE ADDRESSED

- Many SPCs experience a lack of stable long-term funding for operating and maintaining sites/platforms and this hinders long term planning and major investments.
- SPCs are often confronted with a mismatch between the full responsibility for sites/platforms (in many respects and in the long term), while funding intervals are usually years or only few years. This causes personal tension and unpaid efforts.
- There is a general lack of time for engaging in eLTER activities (such as the SPF and its working groups) due to pressing operational matters and multiple other constraints.

- Many SPCs experience a general shortage of resources and time to adjust and adapt the local site or platform operations, processes and observation programs to adhere to the requirements in a future eLTER RI.
- There can be missing or insufficient local peer support for organizing data management and training local staff in performing such tasks.
- There is often local/national prioritization of research over long-term infrastructure capacity building and this also applies to SPCs aiming for a career in science.
- Many SPCs lack solutions for persistent data storage/archiving according to FAIR principles.
- Some SPCs have only weak motivation to develop the infrastructure, but rather see the job as a way to cover costs for part of their salary or simply to handle the task merely upon request from superiors without having any real interest themselves.
- A general dilemma to overcome: Large differences in biotopes studied impose different interests in methodology, data handling and evaluation techniques. Meetings need to provide issues of general interest across biotopes or be organized in smaller groups with similar interest in specific issues.

2.3 OPPORTUNITIES FOR SPCs ENGAGING IN eLTER

- By participating in the eLTER project and RI there will be strong arguments and political support for expanding and developing sites/platforms and increasing the operational standards. This can be supported or initiated centrally and further enhanced through collective action of the many sites/platforms engaged in eLTER.
- Engagement in eLTER projects and the future RI provides access to centralized support for data management, networking and training to run the site/platform more efficiently and develop the quality and reach of the infrastructure. Doing so already in the buildup phase (as part of the eLTER projects) also allows sites or platforms to meet criteria for participating in the future RI. This may also relieve the SPCs from some duties and allow them time to become more involved in eLTER.
- SPCs would also benefit from enhanced funding opportunities to attract research projects to the site/platform and thereby broaden the scope, develop services and increase the relevance of the sites in an emerging European infrastructure landscape.
- From an eLTER point of view the scientific value is the creation of long ecological time series with reliable quality and proper metadata information. This should be accompanied by ready and open access to the data by web portals. Another value is the possibility to join with data sampling and do field experiments with a solid availability of background scientific data.
- eLTER can be a platform that promotes and enables shared/joint cost-effective development of practical tools for data management and data sharing. This also applies to joint technology development, establishing best practices and other types of mutual support.
- the above is true, provided resources allow staffing with relevant competences. However, proper data management and -flow should ideally be internationally harmonized, set promptly and be maintained in the long term. Data sharing is to a large extent governed by requests and principles for Open and FAIR data.
- By engaging in eLTER there is potential for SPCs to increase their visibility, funding stability and prestige and coupled to this also provide non-traditional career opportunities in infrastructure capacity building.

- Involvement in eLTER opens the door for sites, platforms and SPCs to be invited and become involved in larger scale international flagship projects with potentially high impact.
- The expanded eLTER network will facilitate strategic recruitments, collaboration and other types of peer to peer interactions.
- eLTER provides multiple opportunities and centralized support from eLTER to increase quality and interoperability of observations and data according to FAIR principles.
- eLTER enabled funding for transnational access (TA) can enhance the local activities and increase the scientific relevance of the sites/platforms.
- eLTER participation can be a strong argument for long-term support and operation of a site or platform within host organizations.
- Some sites are already members of EU-projects and research infrastructures that provide similar opportunities and complementing networks, all already integrated in practical activities at our platform. Our vision is to merge complementing networks in the future for efficient and economic service to the scientific community and society.
- By being part of eLTER, a wide range of experts in other research domains use the LTSEr platform for their research and I both learn personally but also the local stakeholders learn more about their place.

2.4 THREATS AND SOME SUGGESTED RISK MANAGEMENT

- Long-term operation and survival of sites/platforms may depend on the continued engagement of a single key individual. If such a key person leaves, the entire station may collapse and the future participation of the station/platform in eLTER may be at risk with detrimental impacts on both the investments made by the host organization and the eLTER infrastructure. Broadened local leadership is therefore recommended to build a stable and resilient infrastructure.
- There are valid concerns about unrealistic expectations from local leadership/station owners and station staff with regards to immediate positive outcomes from eLTER participation. If such expectations are not met (or only partially met) the motivation and attitude towards eLTER participation may deteriorate, which may in turn lead to declining local funding and support. Efficient communication about the long-term goals and timeline for the eLTER implementation and expected outcomes is key to avoid this threat.
- SPCs may also lose interest and motivation for participating in eLTER if their expectations are not met and/or if they feel that they have no influence over how this infrastructure (and by extension also their sites or platforms) develops. This may have detrimental effects for continued engagement of the site/platform in eLTER. In this regard, the SPF can play an important role and possibly prevent this from happening. However, this requires that the central eLTER leadership duly recognizes the importance of the SPF and harness the ideas/concerns/expectations expressed by the SPCs.
- The owners of the sites and platforms may change their priorities over time. Most infrastructures require substantial host-organization co-funding and in times of financial hardship these host organizations may decide to prioritize other needs, jeopardizing the operation of the site/platform and possibly wasting the investments made to date. It is therefore critical to clarify and strengthen the local relevance of

sites/platforms within the respective host organization and if possible to obtain guarantees of long-term support.

3 Summary and conclusions

The SWOT analysis suggests that the engagement of SPCs is key for developing and establishing eLTER as a persistent and relevant infrastructure that broadly caters to the needs in ecosystem science and adjacent fields. They have important roles both as ambassadors and links to local stakeholders and site/platform staff. Moreover, they are also well-positioned to provide strategic advice on prioritized needs and effective measures to enhance the quality, coordination and synergies between the variable sites and platforms that participate in eLTER. There are already now many such needs articulated related to e.g. training, governance and data management, as well as centralized support for coordinated development of tools and how to include the socioeconomic dimensions in the local operations. SPCs are the true local experts and their voice needs to be strong in eLTER, else their commitment may decline over time with likely repercussions for long-term station and stakeholder engagement. For many SPCs, the value of liaising with water management authorities and environmental monitoring is recognized as a means to secure long-term funding for one thing. Also, the occurrence and value of cooperating with complementing EU-projects and research infrastructures is an aspect that affects the work of SPCs.

Both now and in a future eLTER ERIC, the SPF can be a key important instrument for harnessing the considerable experience and commitment of SPCs. A strong and well coordinated SPF will also increase the prospect of having long-term stable support from national stakeholders and local host organizations.

Potential future activities the SPF would like to see include:

- method harmonization by adopting standard operating procedures
- established intercalibration exercises for applied methods to secure data quality and comparability
- A group harmonizing and keeping time series analysis up-to-date
- efficient and quality controlled entry of data, quality assurance of data, storage of data and data extraction techniques (all in the Open data and FAIR frameworks)
- Survey feedback after SPF2 clearly showed that the SPCs prefer to meet twice a year and if possible spread out the meetings over two days for some unstructured ad hoc time for discussions in smaller groups. Physical meetings are clearly a good option, but they do not allow all SPCs to participate, and therefore also virtual events will need to continue.
- There was a wish to intermittently broadcast SPF webinars as a complement to the physical/interactive meetings, and this has already been tested in spring 2022.

4 Appendixes

4.1 Appendix 1

The eLTER Sites and Platforms Forum (SPF)

Concept note elaborated by the eLTER PLUS WP2.2 team and the National LTER Coordinators

Most important acronyms (for detailed definitions see dedicated section of the document):

NC – National Coordinator: national LTER network and ESFRI process coordinator, representative of a country in LTER Europe

SPC – Site and Platform Coordinators

1. Introduction

The eLTER Sites and LTER Platforms distributed across Europe make up the backbone of the foreseen eLTER Research Infrastructure (RI). Historically, the European LTER process has been promoted and governed by bottom-up initiatives, where the focus has been on establishing and coordinating national networks. In spite of their crucial roles in this process, the LTER Site and Platform Coordinators (SPCs) have not had a specific forum or platform for communication and exchange or for establishing joint activities (e.g. training), at least not as a peer group across countries.

The recent inclusion of eLTER in the ESFRI Roadmap (European Strategy Forum for Research Infrastructures) provides a historical chance for implementing centralized and top-down components of eLTER with organizational support by the Preparatory Phase Project ([eLTER PPP](#)). This urgently calls for efficient information exchange with the SPCs. Besides the general need for better networking, the **Sites and Platforms do have the opportunity to design and co-create their future working environment at the national and European scales, - including the services and tools eLTER should provide.**

Besides from the critically important role as the eLTER National Research Infrastructure components (NRIs), the SPCs' prioritized requirements, experiences and expertise are key in the "eLTER ESFRI process".

To support such an inclusive process, the networking Work Package of [eLTER PLUS Advanced Community project](#) has collaborated with the national LTER coordinators to initiate a **Sites and Platforms Forum**, the **SPF**.

What will the SPF bring to the SPCs:

- a forum and platform for peer networking
- new perspectives and visions for sustainable operations of Sites and Platforms
- sharing of experiences, expertise and success stories
- a strong voice in developing the eLTER (nationally, internationally) and mandate for
- initiating joint activities and thereby shape the emerging infrastructure
- inputs on desired specifications and prioritization services including e.g., IT-resources and support
- joint planning of activities that are more efficiently organized in a collective manner or through
- central services than at the site or country level
- increased visibility and profiles of Sites and Platforms
- clarifying and broadly promoting the professional identity and competences of SPCs

2. Who are invited to SPF?

The significance and mandate of the Site and Platform Coordinators (SPCs) is well recognized, even considering the many synonyms we historically have been using: Primary investigators (PIs), site managers, site coordinators, LTSER Platform managers, etc. The diversity of synonyms indicate that SPCs have roles beyond management and infrastructure leadership, specifically reaching into the science domain, and also highlight that their job profiles and terms are not necessarily very well defined. The roles may also vary across countries and institutions. In the eLTER process, the persons having following tasks or roles are welcome to participate in the SPF:

- persons taking responsibility for sites and platforms
- persons having the best overview of a local site or a platform
- persons seen as the right one to “speak for or represent the site or the platform”
- other key persons that keep sites or platforms up and running and contribute to their
- development, in all or several of the following indicative ways:
 - lobbying and profiling, internal/external fundraising
 - scientific leadership
 - connecting disciplinary work and teams
 - coordination of site/platform data and metadata
 - experts in charge for site specific contributions in synthesis papers
 - those in charge of administration and organization related to the site
 - those deciding on observational design, instrumentation or other forms of development at the sites
 - individuals mandated to handle questions of site involvements in European scale RIs

The seemingly wide variety of roles and functions of SPCs imply involvement in numerous situations, networks, and expert groups relevant for eLTER. SPCs do not necessarily need to have a formalized job description designed to deal with this broad combination of responsibilities while this more clearly is the case for some nationally coordinated infrastructures.

3. What is the purpose of SPF?

The SPF will have two parallel goals:

- Specify what framework and services the SPCs need
- Plan how the SPF can contribute to meeting these needs

The European eLTER process aims to implement an operative research infrastructure with both centralised and distributed components, primarily to enable top-level science. For this reason, it is very important that the SPC are aware that the Sites and Platforms they are coordinating are a core operational part of the future eLTER RI. Equally importantly, the SPCs also represent the main internal user group benefiting from Central Services. Thus, during the eLTER preparation phase the SPCs are invited to clearly specify and prioritize support services needed by the Sites and Platforms.

Examples of topics the SPF will address:

- identify relevant technology developments and emerging tools to ensure continued technical state of the art,

- identify and co-organise training on e.g. eLTER Standard Observation variables (essential ecosystem variables), new methods and workflows, site management, visualisation, data analysis, stakeholder engagement, whole system approach, and outreach
- create certificates through training and professional performance in order to elevate the career appreciation and task descriptions of staff engaged in running eLTER sites
- address and point out emerging scientific questions relevant for the RI operations or harmonisation and design of protocols
- promote site activities and celebrate the 'eLTER champions' (exemplary solutions, findings and successes)
- coordinate co-authorships of e.g. data papers
- facilitate the launch of new projects and stimulate joint funding initiatives and cross-site projects
- facilitate and promote joint procurements and shared instrumentation
- collect promising ideas for broad eLTER implementation, innovative actions and links to SMEs
- investigate experiences and best practices in collaboration with peer RIs in Europe and globally.

These topics and the means needed to make progress will be further discussed and elaborated as the SPF convenes. A first brainstorming on topics such as data, observations, stakeholders, management and careers can be found in the annex.

4. Organisation and activities

The SPF is challenged to find the best possible way of actively interacting with the National Coordinators (NC), the eLTER ESFRI process coordination and ongoing eLTER projects (currently eLTER PPP and eLTER PLUS), which can support these activities. There are first ideas developed by the SPCs networking team of eLTER PLUS, led by Stefan Bertilsson, and by the National Coordinators. These ideas shall be presented and discussed at the first SPF meeting.

The SPF is envisaged to be a platform for networking and coordination of the SPCs peer group ("a strong community of highly interactive and scientifically coherent but geographically dispersed teams"). Still, communication and interactions over the past months have given evidence that the SPCs are not a homogeneous group. Strengths, interests and needs differ according to the situation of the sites (organisation, funding etc.), the composition of the site teams. The organisation, overall scope and range of activities of the SPF will strongly depend on the identified clusters of interests and requirements. The SPF may ad hoc appoint sub-groups (e.g. habitat specific or other topical or geographically -related working groups) and contribute to bodies and structures of the eLTER process to secure proper consideration of interests and experiences from the SPCs peer group. Working groups could e.g. be asked to provide solicited inputs on infrastructure design and instrumentation from an SPCs perspective or prioritize future activities and capacity building within the eLTER RI.

Irrespective of these first thoughts and without anticipating any detail we envisage that the SPF will have regular meetings:

- physical meetings (general and targeted)
- virtual meetings (general and targeted to specific groups/topics)
- webinars

If considered useful and desirable, the work of the SPF could be centrally supported with virtual tools to maintain and increase synergies, coordination and collaboration, for example:

- virtual platform for FAQs, chat and anonymous feedback on process and events
- open forum for bottom-up initiatives, calls for collaboration and assistance
- access to information about tools and data to visualize and analyse the eLTER RI development
- production of promotional and educational materials such as instructional videos, an updated site catalog, “who’s who in eLTER” and a labelling process for identification of high-quality eLTER sites.
- a dedicated webpage under the eLTER website umbrella.

The meetings of the SPF could be organised back to back with concurrent eLTER project meetings or organised so that participating institutions would take turns in hosting the events. The meetings should have a chair and an agenda. Both currently running projects and the central eLTER coordination office could support the chairs in their work.

Annex

First brainstorming on potential issues in the future SPF agenda (eLTER PLUS, WP2 team)

Data

One of the key issues is data interoperability and management. This includes common practices, principles for sharing, process, and tools. The SPF could discuss and provide input on how to enhance usage of DEIMS with regards to the design and user interface, but also with regards to developing cross-site data products, that may involve standard protocols for data curation and validation of data quality, conversion to common standards and data transfer services. This would also entail inputs and feedback on standardized vocabulary and metadata structure proposed top-down.

Observations

Observations present their own unique challenges. These include e.g. harmonisation and quality management for observations, Essential Ecosystem Variables, piloting new methods, brokering cutting-edge research, filling gaps in observations and methods, ground-truthing and testbeds for big data, cost-efficient observational methods, and partnerships with private sector and innovation organizations for use of new sensor & observation technology. The SPCs are in a unique position to provide advice on valuable advances, rational implementation, priorities and could act as contact points for SMEs and other stakeholders.

Stakeholders

The SPCs are firmly anchored in the stations and in this capacity are suitable brokers for exchanging experiences and knowledge about how to effectively engage local and regional stakeholders and e.g., explore the possibilities to expand classical LTER sites to eLTSER platforms. SPF can discuss and increase the awareness of the societal impact of the sites and platforms, and how we could monitor and report on that to the funding agencies and hosting institutions. Other valuable inputs could be strategies for citizen science projects and improvement of socio-ecological science tools.

Management

The SPF could substantially increase the efficiency of site management, thereby saving resources. This could be done by sharing and creating best practices and document and share valuable lessons learned in practical work of site management and operations, e.g. how to deal with the co-localization issues,

budget cuts and what makes a site successful. The SPCs also has a valuable role in locally promoting eLTER initiatives and opportunities for research.

Careers

The SPF could contribute to the currently highlighted topic of careers and career development for individuals working at the interface of technical site and platform operations, research and management. For such research infrastructure professionals, there is typically no clear job profile or career path, and as a result many SPCs are not well acknowledged or recognized, neither within their institutions, nor beyond within the scientific community at large. The SPF could enable training certificates, propose and promote the broader use of job profiles with widely acknowledged descriptions that should ideally be interoperable with other distributed environmental research infrastructures (RIs). This development would over time be highly beneficial, particularly for young researchers looking for positions and careers rather within the RI operation than in more widely recognized academic career tracks. In eLTER, it is possible to advance and promote their careers and enhance the appreciation of site and platform managers to a higher level.

4.2 Appendix 2

Persona work report

Francine

Francine is a trained scientist but most interested in integrated assessments. She did the inquiry of research and other projects and available data, when the site was started 8 years ago. In doing this she got aware of the potential of the site and was mandated by the institution for landscape ecology to organize research team meetings.



SITE

The site is a quite big university driven platform. Some socio-ecological projects were already hosted, mainly on management practices in agro-forestry. The studies are a loose cluster of activities around a core site with plots in managed forest, agro-forestry areas and nature reserves. A second project has started using parts of it since a couple of years.

ROLE

Francine is supposed to “keep the site together”. She is willing to sacrifice more than she is paid for to keep the site up and running (drawing resources from other projects). Her informal network helps keeping the site alive.

TEAM

A wide range of disciplines and sub-teams were active at the site, but only a small core team works permanently at three plots.

Expectations

Francine hopes that clear criteria for sites will give her good arguments to expand the site and reach consistent standards. She is curious about LTSER and expects an elaborated concept and design to see, if becoming an LTSER platform is an option.

Fears and frustrations

She is worried that the site cannot survive without her. She constantly needs to convince superiors for need of new funding.

Monitoring duties feels annoying and sometimes she suffers from the selfishness of colleagues. She would rather spend time doing research.

Talking to Francine



Offer her support with

- creating impact and prestige for the platform, with things like
 - marketing
 - facilitation in lobbying
 - finding funding
- organising work
 - data sharing processes
 - management training and networking
 - lean processes for reporting

Give her

- visibility and impact for her site, research and data by
 - open data policy
 - involvement in large scale analysis
 - tools for stakeholder engagement
- shared user friendly tools and platforms for data management, processing and sharing
- a community platform and activities for peer support and knowledge sharing

Fred

Fred is a scientist and was nominated to station manager a few years ago. His task is to increase the scientific level of operations and build connections to similar sites across Europe and globally. Due to heavy administrative and teaching duties he has not been able to continue the scientific ambition as much as he was hoping for (and hired to do), but he is somehow managing with the collaborators' help.



SITE

A University field site providing regular field courses but also maintaining long-term observations of biodiversity, hydrology and biogeochemical cycles. It is an original LTER site in a national network. The site is rather well equipped and can host >50 persons in events and courses, but is constantly lacking skilled technical staff for maintaining and developing the scientific instrumentation.

TEAM

Some networking is originating from early times, some has been also starting lately with project funding obtained by Fred. Collaborators work mostly rather independently and just use the facility to do some lab analyses or store samples. Their data does not currently stay at the station.

ROLE

Fred is motivated and mandated to develop the site he is responsible for. He develops international cooperation and works hard to get funding.

Expectations

Fred would like to get support from eLTER in developing the operational side of the site so that it releases him to do the more scientific work. There is also need for training the staff in data management and do data management planning.

Fears and frustrations

Fred recognizes that standards and harmonization are good, but if they entail a lot of extra work and investments, he will be struggling to justify the costs to his superiors. The extra workload is not fully covered with the project funding. He is afraid of unrealistic expectations from his superiors of immediate outcomes from the projects and networks like LTER.

Talking to Fred



Offer him support with

- visibility, prestige and impact by being eLTER site
- creating respect and prestige for being a eLTER site coordinator
- finding staff and resources (network)
- marketing the eLTER services/visibility and data publication to researchers
- Opportunity to enhance data quality and interoperability

Give him

- training in site and data management
- shared protocols, harmonised standards, evaluation and
- quality control methods help in creating interoperable data and services (not only eLTER but across RIs)
 - cost efficiency with help of efficient work-flows and user friendly tools
- funding for international, cross-site etc projects

Frank



Frank stands in the center of well known experts in their field, which - to some extent - have all chosen his site as one of their long-term sites of interest. Frank has a strong research background and still publishes a lot (H-index > 30). The site provides him with guaranteed early access to primary data and the synthesis science he is very much interested in.

SITE

The site is quite well equipped and has been running for >10 years. It is established, both nationally and internationally and has good hope to form part of ESFRI. The University site receives some basic funding, but is largely operated on the basis of project resources that don't provide a guarantee beyond the 2-4 years of their runtime.

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ROLE

Frank has a mandate to coordinate the site, but his superiors are strongly interested in research products, publications. Frank is a scientific visionary fully understanding the necessity of holistic ecosystem research

TEAM

Many have collaborated scientifically and also shared infrastructure and instrumentation at the site. Science is well covered.

Expectations

The recognition of the site in eLTER RI must have tangible benefits, e.g. for securing long-term operation. Bringing top experts to the site has already happened through Franks and his teams personal scientific network, but this is seen as an option.

Fears and frustrations

Data are primarily dealt with by the scientists, who are very suspicious about open data. Frank does not want to sacrifice his scientific work entirely to support others through an excellent site. He is well aware of this dilemma, neither does he want to be "just a data provider", because co-publishing with dozens of other authors is not very attractive.

Talking to Frank



Offer him support with

- a stable status as eLTER site
- prestige around being a site manager/coordinator
 - a strong and good professional network
 - relevant opportunities for cooperation that create clear added value
- best practices, knowledge transfer around data management, instruments, tools
- efficient communication from eLTER

Give him

- possibilities to visit and move sites (TNA) and have cross-site experiments
- Site management guidelines, best practices, valuable extra information via eLTER
 - Shared practices and policies
 - Shared tools for sharing data, information etc
- Really large scale studies, cross domain research, new things in research
- automated workflows

Maria

Maria grew into the national park team through her own PhD thesis. She's hydrologist by training and co-developed the hydrological model of the NP. Drinking water is one of the region's top Ecosystem. Most of research projects are linked to nature protection and protected areas management of the NP Services and are of high relevance for a nearby big cities supply.



TEAM

The team has seen many turnovers, growing, shrinking etc. with research being higher up or down in the agenda according to the respective director's background and preferences. Since a couple of years it was inspired by an increasing number of national and international collaborations.

Expectations

Maria would like to see the research component of the site strengthened, but is afraid that it might not meet the high standards of eLTER. But there is a strong will to use the existing resources and good science relations to join eLTER.

Fears and frustrations

Though having good relations to research Maria is lacking peer support in organizing the research data management at the park. She finds it difficult to plan, manage and develop her skills in the area. There are many practical questions she really would like to discuss with her colleagues, but there is rarely time to discuss data and protocols.

SITE

The site is actually a national park with some long-term operated plots, where basic monitoring has been carried out since 30 years. There is sufficient trained staff and logistical infrastructure (incl. a small lab) to operate the measurements. Given the wealth of data that have accumulated over time the park is currently often invited to participate in cross-site comparative studies.

ROLE

Maria is in charge of research within the National Park. Many small research projects are carried out.

Talking to Maria



Offer her support with

- taking into account legacy data and formats
- ways to join scientific publications and be visible
- promoting data citation
- offering eLTER prestige to her site

Give her

- online tools for publishing interoperable versions of legacy data
- training and support in planning and making data assessment and publication
- credit and attribution for data (data citation, Credit taxonomy etc)

Fiona

Fiona is a trained data specialist and works as a data manager for a national LTER network. She is responsible for liaison with site managers, data quality checking, data management and making data available to users. She has experience in publishing datasets and data papers.



Network

Fiona deals with a number of sites making up the national LTER network. These sites have been operating for over 30 years. Data preparation is done by the site staff and Fiona quality controls and manages in a central database. Data are collected on a variety of biological, chemical and physical measurements so she has a very heterogeneous data resource to manage.

TEAM

The site managers have remained relatively stable, with only occasional changes in personnel so Fiona has developed good relationships with the site teams. There is a smaller central team which has been shrinking due to funding cuts. Site research has been prioritised over data management, leaving Fiona with fewer resources.

ROLE

Fiona is responsible for data management in a national LTER network. She manages data and makes it accessible for researchers.

Expectations

Fiona is excited by the possibilities that eLTER can bring. In particular the data services that eLTER offers should relieve some of the pressure on her in developing her own tools to manage and make data available to users.

Fears and frustrations

As she is the only data specialist in the network, Fiona lacks peer support in her work. She is frustrated by the lack of funding for her work, and the prioritisation of site research over data management within the national network. She is also concerned that she may not have the resources or skills to contribute to eLTER in the way that she would like.