SWForum.eu

European forum of the software research community

Deliverable D3.7

Fellowship programme, governance structure and business model for SWForum.eu - v2

Editor(s):	Elisabetta Di Nitto, Galia Nedeltcheva
Responsible Partner:	Politecnico di Milano/ PoliMi
Status-Version:	Final - v1.0
Date:	08.03.2022
Distribution level (CO, PU):	Public

Project Number:	GA 957044
Project Title:	SWForum.eu

Title of Deliverable:	Fellowship programme, governance structure and business model for SWForum.eu – v2
Due Date of Delivery to the EC	31.12.2021

Workpackage responsible for the Deliverable:	WP3 - Sustainable SWForum.eu and Research & Innovation Roadmaps
Editor(s):	Politecnico di Milano/ PoliMi
Contributor(s):	TECNALIA, TRUST-IT, CPT
Reviewer(s):	Leire Orue-Echevarria Arrieta
Approved by:	All Partners
Recommended/mandatory readers:	WP2, WP4

| Abstract: | This deliverable is the second of a set of deliverables presenting the results from the work of task T3.3 - Definition and creation of a Governance structure and business model. It provides an overview of the current status of the concrete steps conducted by the SWForum project to develop a long-lasting organization focusing on software engineering and acting as collector and amplifier of the ideas and initiatives emerging from the European software engineering community. Moreover, it presents the plan for the future steps aiming at consolidating the community and finalizing its structure and governance mechanisms (including decision mechanisms, conflict resolution, and membership types).

This second release includes also the exploitation plans of SWForum.eu. |
|---|---|
| Keyword List: | Fellowship programme, organization of the Forum, governance structure |
| Licensing information: | This work is licensed under Creative Commons Attribution-ShareAlike 3.0 Unported (CC BY-SA 3.0) http://creativecommons.org/licenses/by-sa/3.0/ |
| Disclaimer | This document reflects only the author's views and neither Agency nor the Commission are responsible for any use that may be made of the information contained therein |

Document Description

Version	Date	Modifications Introduced	
		Modification Reason	Modified by
v0.1	31.12.2021	First draft version	PoliMi
v0.2	28.02.2022	Comments and suggestions received by consortium partners	ALL
V0.3	06.03.2022	Second draft version	PoliMi
V1.0	08.03.2022	Ready for submission	TECNALIA

Table of Contents

List of Figures

Terms and abbreviations

CSA	Coordination and Support Action
DoA	Description of Action
EC	European Commission
GA	Grant Agreement to the project
KPI	Key Performance Indicator
SE	Software Engineering
SW	Software
SWForum.eu	European forum of the software research community

Executive Summary

This is the second deliverable produced by task T3.3 - Definition and creation of a Governance structure and business model in the context of the SWForum project. The main objective of the task is to define the approach, governance structure and business model for the Forum of researchers that constitutes one of the main results of the project. This Forum will be based on two main ingredients: the participation to the Forum of well-known fellows in the European panorama of software engineering and a governance structure and business model that will set the basis for the self-sustainability of the Forum beyond the lifetime of the project.

This deliverable provides an overview of the status of the concrete steps conducted by the SWForum project to develop a long-lasting organization focusing on software engineering and acting as a collector and amplifier of the ideas and initiatives emerging from the European software engineering community. Moreover, it presents the plan steps aiming at consolidating the community and finalizing its structure and governance mechanisms (including decision mechanisms, conflict resolution, and membership types).

This second release includes also the exploitation plans of SWForum.eu.

1   Introduction

SWForum.eu aims to produce a self-sustainable forum with real time commitment of experts and young people both from academia and from the community of talented software developers. This deliverable is aiming at defining the steps toward this objective. One of the major challenges of the SWForum.eu project is to identify a clear scope for this forum that makes it distinct from the variety of organizations already in place (an overview of these is available in the D3.6 [1]) and, at the same time, shows its added value for our stakeholders.

In general, the SWForum.eu project is developing several initiatives aiming at offering several services to its stakeholders. Among the others, we cite here the development of tools and methods to support the assessment of software projects and their market readiness, the definition of a research roadmap that aims at highlighting the current research directions in software technology and the possible gaps to be explored, and, finally, the organization of cross-fertilization workshops aiming at promoting the discussion and exchange of ideas on specific topics. The first of such workshops has been organized in collaboration with Task 2.2 around the problem of building trustworthy open source projects. The workshop has received the interest of a good number of researchers and called the attention of the community on the prominent topic of how to reconcile the concept of trustworthiness with the idea of open-source software. Given the attention received by this theme, we consider it as one of those around which to build the Forum and its self-sustaining mechanisms. As we will discuss in this deliverable, other areas have been identified in the second project year and our goal is to organise the forum around these areas that will become the pillars of our activities. We are confident that if the forum can interpret the needs and interests of the community, its self-sustainability will naturally emerge.

The self-sustainability of such Forum beyond this project lifetime is a critical and challenging aspect that we would like to tackle. Based on the observations, SWForum.eu is proposing the following steps:

1. Define a self-sustaining governance mechanism for the software community that enables their evolution as an autonomous entity, beyond the termination of SWForum.eu. In doing so, SWForum.eu can take inspiration from the governance of interest groups as part of organizations such as ACM, IEEE, and IFIP. In the case of ACM, for instance, so called SIGs6

(Special Interest Groups) are created around the main disciplines of computing. Each SIG is fostering opportunities for networking, dissemination, and learning in a specific field by organizing conferences, publishing journals and newsletters, and organizing excellence recognition programs. Each SIG is governed by an executive committee which is elected every two years. The executive committee steers and execute the SIG activities. Members of executive committees are volunteers and are rewarded in terms of viability within their reference community, but not in monetary terms (possibly, excluding refunds for travels when needed). SIGs are supported and coordinated by ACM, which offers services concerning budget management, basic conference management facilities, a digital library, and periodical meetings and reporting mechanisms to ensure communication across different SIGs. ACM itself is sustained by its association fees and by the activities triggered by the SIGs (mainly, organizing conferences and editing journals). In the cases of IEEE and IFIP the structure is similar, with a few staff employees supporting several sub-communities driven by elected volunteers. In the case of SWForum.eu, the identification of a business model to ensure a small but continuous income could be the enabler for the creation of a similar community-oriented organization.

2. Involve on a voluntary basis in meetings and consultancy, key people driving the research activities in the field of software technologies, digital infrastructure and cybersecurity technologies beyond the ones involved in the on-going actions. With the definition of clear and completely open governance mechanisms for the Forum (see point above), SWForum.eu counts on being able to ensure the presence of authoritative researchers and practitioners interested in taking part in the development of European research and innovation initiatives, thanks to this, a broad visibility at the European and International level.

3. Stimulate interest in participation in consultancy and knowledge transfer activities through the dissemination of results in papers visible in scientific or commercial communities, as well as in webinars and other means.

4. Organize regular meetings, initially as part of the cross-fertilization workshops but later on, collocated with important scientific and industrial events, as well as in the future concertation events.

5. Strengthen involvement of strong European industrial players and focus more on community members to ensure actual impact on European commercial software development.

6. Collaborate with existing open-source initiatives, many driven by European players (e.g., Linux Foundation). A multitude of open-source related activities are underway competing for the attention of the same developers. We are planning to collaborate with some, to gain access to their community and achieve greater efficiency. Specifically, industry specific tracks (e.g., Linux Foundation Anuket) would be a good way to gain easy traction with industry players.

1.1 About this deliverable

Consistently with the project objectives, the purpose of this deliverable is to discuss the fellowship programme, governance structure and business model for the SWForum.

1.2 Document structure

This document is organized as follows:

- Section 1 introduction part where the scope and objectives are set up.
- Section 2 gives the status of the SWForum.eu and the self-sustainability initiatives.
- Section 3 presents the first sustainability workshop focusing on its preparation and execution.
- Section 4 outlines the plan for future steps towards self-sustainable SWForum.eu.

- Section 5 assesses the current SWForum.eu impact.
- Section 6 draws conclusions and defines a plan for the next steps within Task 3.3 and for the new version of this deliverable due in M30.

2 Status of the Forum: self-sustainability initiatives

Creating self-sustainability mechanisms for a community requires the following ingredients:

1.   A definition of self-sustainability that could constitute the driving principle for the actions to be undertaken.

2.   The analysis of the self-sustainability mechanisms put in place in other cases.

3.   The establishment of a community to be self-sustained.

4.   The customization of the available self-sustainability mechanisms to such community.

5.   The instantiation of the mechanisms and their monitoring and evolution, if needed.

In deliverable D3.6 [1] we have started our endeavour from the implicit definition of self-sustainability of an organization (point 1) as the capability of the organization to grow up and develop itself after the end of the specific short-term initiative that has created it (SWForum.eu in our case).

We have then analysed the existing long-living organizations (point 2) in the areas related to software and we have identified as basic characteristics of these organization the following:

- Most of the associations have been founded as a legal entity, typical a non-profit organization.
- Some associations aggregate individual members while many others have organizations of various kinds (enterprises, academic organizations, standardization bodies, etc.) as affiliates.
- Most of associations do identify multiple types of fees for different stakeholders.
- Besides the membership fees, some associations self-sustain offering other services (e.g., publication services, conference management, the execution of specific projects).
- From the governance perspective, almost all associations we have analysed are managed by a board constituted of voluntary members either elected or selected by affiliates.
- Some of the considered associations have been created by a CSA like SWForum.eu around some specific high priority subject for Europe.

In the following phase of the project, we have continued working around the other points and, in particular on point 3. In more detail, we split point 1 into the following sub-points:

3.1 Identification of the areas of interest for the community.

3.2 Identification of the goals to be pursued by the SWForum.eu in the context of the areas of interest.

3.3 Definition of a working group including those who manifest their explicit interest in the defined areas, working toward the goals.

3.4 Activation of a working group per specific themes.

As for point 3.1 we ran two cross-fertilization workshops that have allowed us to identify some areas of interest for the community – these are reported in deliverable D2.1 [2]. Moreover, we have recently organized a workshop openly devoted to discuss with our stakeholders about our intention to bootstrap a Forum for the community and to receive declarations of interest and ideas about themes and objectives to be considered as part of the SWForum.eu (points 3.2 and 3.3).

This workshop has produced significant results in terms of the identification of important goals for the Forum and in terms of the commitment of the participants that have all shown a significant interest in the initiatives. A detailed description of the workshop and of the outcomes we have achieved is reported in the next section 3.

In short, we can conclude that the basis for the establishment of the community has been laid out.

We are currently activating the three working groups (point 3.4) that have emerged from the discussion at the last workshop. In particular, we plan to get in touch with the various national organizations focusing on software engineering to propose a federation at the European level. Moreover, in countries like Italy where such organizations do not exist, we will activate interested researchers to create them. The identification and analysis of such national organizations will be also included in our next Landscape Report – v2 (Deliverable D3.2). Furthermore, we plan to get in touch with OW2 for what concerns the possibility to support their work on open source, in particular, with regards to training activities. Having SWForum.eu a good network of academic partners, these could be interested in educational activities useful for OW2. We are aiming at collecting the first results of this activation phase by M24 of the SWForum.eu project. These will concern:

- Concrete contacts with the national associations and the execution of at least one planning meeting with them as well as the identification of a common short-term objective which will result in the writing of a white paper
- Meetings with OW2 and definition of a joint plan for training
- Defining the sustainability dimension, how to measure sustainability with specific KPIs

After M24 and before the end of the SWForum.eu project, we will focus on the above-mentioned points 4 and 5 with the aim of actuating the planned self-sustainability mechanisms on an organization which is already alive and with clear objectives.

3 The sustainability SWForum Workshop: agreeing on a common mission

3.1 The workshop preparation

The first sustainability SWForum "Developing a vibrant and self-sustainable European community on Software Engineering" was held on 19 Jan. 2022 from 3 pm to 5 pm (CET), and it was a virtual event. The meeting has gathered researchers, innovators, renowned academia, and industrial experts in the Software Engineering field from relevant initiatives and related projects. This workshop was trying to help in a Software Engineering (SE) context.

The sustainability SWForum was planned well in advance. We had pre-workshop discussions agreeing on a common mission, as well as a month and a half before we prepared the list of people to invite both from industry and academia. Afterward, we prepared an invitation letter (see Fig. 1) and sent it to 47 experts. Most of the invited people were present at the workshop and some of them took very active participation in the discussion, providing valuable feedback to us.

Invitation to the SwForum Sustainability Workshop

Dear ......,

The SWForum.eu coordination and support action (CSA) is aiming at facilitating the exchange of ideas between projects and with the European Commission, and at developing a vibrant and active community of projects. Please check our website (https://swforum.eu/) for further information on our current and past activities.

While we, as CSA, are being funded to support these activities for the next 18 months, we would like to set the stage for the longer-term self-sustainability of the community. We think that a simple organization and the dedication of a small amount of time by some volunteers could keep the community alive and able to produce good results in terms of the possibility to have an impact on the European research agenda and to facilitate the interaction between projects. For this reason, we think that a core group of supporters shall be created together with a governance and sustainability model.

To discuss about these points and identify the organizational structure that is most suitable given our goals, we are pleased to invite you to an online discussion workshop on January 19th 2022 from 3 pm to 5 pm (CET).

We really hope you can accept this invitation.

Looking forward to hearing from you and receiving your positive answer.

Yours sincerely,

Figure 1. Invitation to the SWForum Sustainability Workshop

The SWForum.eu workshop main objectives were to:
- Raise awareness
- Strengthen the competitiveness
- To align the European Software Research and Industry

While as CSA, we are funded to support these activities for the next 18 months, we would like to set the stage for the longer-term self-sustainability of the community. We think that a simple organization and the dedication of a small amount of time by some volunteers could keep the community alive and be able to produce good results in terms of the possibility to have an impact on the European research agenda and to facilitate the interaction between projects. For this reason, we think that a core group of supporters shall be created together following a governance and sustainability model.

We are aware that the CSA per se has a short lifecycle. We feel that at this point we must put some effort into supporting the community into creating an organization that can survive

beyond the life cycle of this CSA, now we are in the second year of the project, but it will end in March 2023.

So, the objective of the workshop was to start really talking about the possibility of creating such community and we would like to understand what the opinion of the other experts on this question is, what this community could be, and what basic mechanism and organizational model we can apply that can allow this community to grow up beyond the lifecycle of the CSA.

The agenda of the workshop was officially set as follows (see Fig. 2):
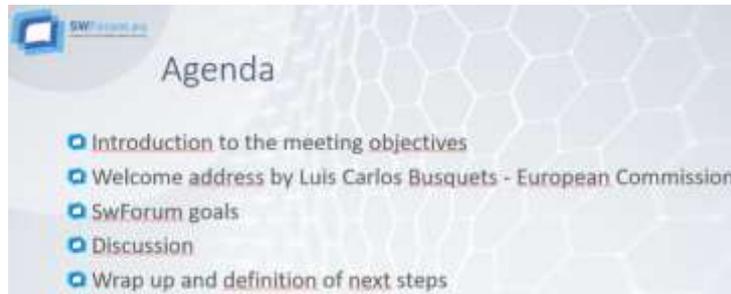
Figure 2 Agenda of the workshop

3.2 The workshop execution

3.2.1 Participants

The first sustainability SWForum.eu workshop had a total of 34 participants (only 6 women), made up of 11 from academia, 5 from big industries, 3 from small industries and 4 projects representatives from different European funded software, cybersecurity and digital infrastructure projects. Besides, we have invited the Project Officer from the EC as well as 10 members of the SWForum.eu participated.

3.2.2 Summary of the discussion and ideas

Introduction by the Project Officer

Dr. Busquets Pérez, the project officer (PO), was invited to the workshop and he gave a brief introduction providing his viewpoint. This was the starting point of the session and then we proceeded with a presentation and discussion to understand whether there are common goals, hoping that we could find some ideas for collaboration and creation of such a community.

The PO started his speech by making clear what is the real vision of the EC. So, the EC as a public institution has as stakeholders the EU citizens, and this is the reason why they act so, to increase the possibility and freedom that every citizen in the EU has got. In this sense, DG Connect is working in the Digital Economy, because nowadays in our society, digital is changing everything from what we saw 20 years ago, what is happening today was like science fiction before. That is the reason why the EC decided to fund a CSA in the field of software, because digital nowadays means software. In the past, the majority was implemented in HW.

In this sense, for Europe to become competitive in Global Economy, in terms of labor, development, entrepreneurability, means that we must make sure that Europe keeps its steps in the Software Economy, i.e., we have software enterprises, software companies, working software ecosystems. It would not be fair if we had just spoken about software if we were 20 years ago.

Nowadays things have evolved quite a lot and it would not be fair to mention just software without mentioning Open Source (OS). Now we see how OS is occupying a big part of the world, not because someone else has to go out, but just because somebody else is free to do more

things for the citizens, because the OS landscape actually is allowing more things to happen, we could see it in a number of applications, in changing of products, brands that actually advanced and change with complete stacks that brings millions to development and every new startup is there to develop for free now, which is what we would like to achieve.

The EC is also having very important political initiatives like the green Economy, green emissions, and we are also looking forward to seeing how the open-source (OS), the software in general, is contributing to greening the Economy. From an engineering perspective, this might be difficult for just the software, but it is not so for the OS. Specifically, when we speak about the modularity, possibilities to update things, the fact that a device is no longer obsolete because we can change the software inside it and show that we have a new device with a longer life and reduce the electronic waste, in this way Greening the Europe Economy, which is namely what we would like to achieve.

So, the PO pointed out that one of the main goals of the SWForum.eu community could be around the OS and discussion on how to address this general aspect, and some other goals coming out from that discussion ahead.

Presentation of the workshop objectives

The chair of the workshop, Prof. Elisabetta Di Nitto (Politecnico di Milano), described where we are now within the CSA project, clarifying the fact that this project has a work plan in which one of the objectives was to create a community within this context. We aimed mainly to discuss at this workshop how the participants in this SWForum could help in the creation of such a community.

So, the main topic of this workshop was to work toward a community or a sustainable forum for researchers, suppliers, developers, operators, and policymakers. We are also aiming at other aspects, such as creating a space for engagement. We have organized a couple of workshops and webinars around multiple topics (see Fig. 3), we got a good number of participants in them and high interest. Certainly, that kind of initiative is very useful for identifying common interests, and creating a community.

Figure 3 Past workshops and webinairs

Also, we are progressing with the 1st version of the Research and Innovation Roadmap on software technologies (see Fig. 4). Even though we are adopting in a simplified way the typical protocols of SLR, we are trying to come up with a good classification of the field.

Figure 4 First research and innovation roadmap

Furthermore, we are trying to give higher visibility to projects funded by the EC as well as other institutions. We have created a Project Hub on our project website (www.SWForum.eu) where we have allowed each project to have like a "shopping" window which serves basically as:

- A key element in providing visibility to European projects in the software technology field
- Input data for the Project Radar

Projects may manage their own mini-sites, adding information and outreach independently. Currently there are over 20 projects in the Hub, with planned expansion.

We also have other mechanisms to measure the project's readiness based on their results and to help the project, on the one hand, to characterize itself, and potential users could understand the maturity of various projects, on the other hand.

Also, we have an online forum, and we are trying to keep it alive, which could be useful for other projects and people. Now we have identified topics of interest (listed here below) to the broad EU software community, and we are trying to communicate to the Forum anything interesting that comes to our attention.

So, during the online forum:

- A discussion was provided to promote topics of interest to the broad European software community.
- Numerous topics have been identified to date, such as:
  - Software Engineering
  - Cybersecurity
  - Digital infrastructures
  - Open-source software
  - AI-enabled software
  - Ethical software
  - Green software

As this CSA project will end in March 2023, we would like to prepare the field for sustainability that can continue beyond our project's lifecycle. So, we have studied the main characteristics of the long-lasting organizations (see Fig. 5), and we are aware that there should be a community with well-defined goals.

Figure 5 Main characteristics of a long-lasting organizations

At this workshop we would like to give the first definition of such an organization. We are aware that there should be some mechanism that ensures this community gets renewed and always has participants who are steering the community and making sure that it stays alive. Moreover, we should have elected members that can take leadership and rotate periodically. Also, there should be a bylaw defining the governance of the community, and in some cases, but not in our case, there could be a limited number of paid members taking care of routine tasks. At the present workshop we wanted to see if we could start by identifying the common goals, whether there is an interest from everybody's side in contributing somehow to the creation of such an organization.

Online survey during the workshop (mentimeter)

Once presented the SWForum's goals, we started the discussion with the participants. One of the questions that the chair raised to the audience was what they think the goals of the community should be. As we were online, it was suggested to us to try playing with the mentimeter either from the computer or from the mobile phone, on the proposed site: www.menti.com, giving everyone the possibility to write what he thinks.

The participants emphasized that there are also other researchers in Europe who have started to promote initially the SE agenda in Europe, because it has been recognized that SE is not taken as an important field per se. We have too many goals to possibly pursue together. So, we needed to classify all the proposed objectives, but there were also other aspects that were orthogonal to SE like the gender balance, for instance. Meanwhile, the sustainability was growing its importance in the mentimeter chart as a topic of interest, but there were also other aspects mentioned related to awareness, SW agenda, OS, increased budget for SE, strengthen competitiveness, and increased impact. The important thing was to cluster all those proposed topics and to identify a bigger topic to start working on. (See Fig. 6)

Figure 6 The mentimeter chart with the proposed goals by the community

Discussion

At the beginning of the workshop the chair raised the question of what the community could offer to its members. It was supposed that it could act as a place where we share ideas as well as inspire researchers and experts in the SE field.

One of the participants also saw that the biggest topic out there is Open Source. As there are already organizations in the EU dealing with Open Source, he expressed his opinion that it is not necessary to build a new community, but we could share the experience with them, they could also provide us with guidelines, synergy, leadership so we could leverage what has already existed. There is a need to create a working group on SE, but we must study first the existing communities, continuing with the analysis already performed in D3.1 [3] and D3.6 [1].

Difference between the existing initiatives and our prospective community

The chair pointed out that the organization Informatics Europe is independent over a specific topic, it is representing European Departments in Informatics, but it does not want to focus on a specific research area, anyway, it will broaden the context of the computer science field. In that respect, Informatics Europe will not be able to support more focused initiatives on a specific topic as proposed during our discussion. Creating a critical mass is something that requires time and, in this respect, joining an existing community also could be an option, but there should be an alignment though. First, we must think about topics, goals, etc., and then we should find a proper community for us if it exists out there.

Some of the existing organizations that have participated at the workshop stated that they would be happy to help, and they also considered SW sustainability and better translation between research and industry as very important topics. A lot could be done in improving training and giving more visibility to some successful patterns, thus ensuring the sustainability of research projects. There are several very successful projects on OS with sustainable results, and it could be potentially interesting to identify what are the key decisions that make them successful. For instance, is it the fact that they decided to go together with Eclipse or else? Another aspect discussed was that it is well to work with a mid-term plan in mind. Walking together has been found really challenging and would be potentially better. Organizations such as OW2 and Software Heritage are having a special focus on supporting OS projects and helping software projects. However, in our community, we would possibly be focusing on SE problems, and we would better try to think about the research challenges in this area. So, we could try to imagine a subgroup of existing organizations that are focusing on some specific aspects, rather than creating a new organization per se. Other than that, we could discover the specific aspects

within the existing community that have already been discussed, in this case, we could bring new people into the existing community.

Another participant expressed his opinion that he is less triggered by the idea of creating a new organization like Eclipse and OW2, because they have already created an archive and research data set and they would be happy to collaborate with whoever, either on the archive service or the access to the research data. So, what they could contribute here is certainly trying to identify what are the needs of the various SW organizations that exist in Europe but are not addressed yet.

Another important idea that was pointed out was matchmaking for research projects. That could be either in the sense of the usual European calls for grants, we all know that they do make some match-making initiatives, but they have not been so effective. There are large events, with a lot of people and a lot of selection bias. So, having a place where we can send out a call that we are looking for someone who would like to work on a specific project, no matter the funding in mind, and regardless of whether it is private research or university partnership, or a call for grants, one could even see a list of previous participants' organizations and the previous projects they have worked on, etc. Also, that would be a useful place to find partners for projects. This is a goal that is not currently addressed by other organizations but this would be useful to have though. Obviously, it is still a lot of work to do to create something effective that does that, but it would be a valuable thing to have it.

It is good our focus to be not only on software research, but also on software development, implementation of the best practices and sustainability so that there is a continuum. It would be very useful if we got some help from the EC to look after this aspect of organizing researchers from different organizations.

We could create a legal network like in the Free Software Foundation which is just a mailing list with authorities, and it could also be very useful. Probably there are many mailing lists with people like the GDR-GPR where researchers from the SE field could subscribe. There is a need to strengthen the network, but some simple things could have a really big impact in that domain. The advantage of creating a network is that the network becomes more valuable with every new member that joins the network. It is really about the rules that you put into practice.

But before getting there, the question is what the goals are and why the existing factors do not satisfy those goals?

The chairperson has pointed out that the good thing of that community is really the possibility to exchange ideas on a specific topic like Open Data and the mailing list is a tool that really helps for that purpose. Having someone who also volunteers to organize meetings or keep track of the discussions could be helpful, as well. So, having a network even with a very small budget, in which there is the possibility of sharing ideas, organizing meetings occasionally, and getting in touch with experts in the domain would be very useful to have.

There are similar communities that already exist in France. For instance, there is the so-called organization GDR-GPL which is basically the community of SW engineers opened both to academia and industry. It is not just a mailing list, but it is organization at national level for people interested in SE research with annual meetings and several working groups, and alike. Besides, such organizations already exist in other countries which are in collaboration with the GDR-GPL. What we are trying to achieve with the SWForum.eu workshop is to raise such kinds of activities at the European level. However, some of the participants have expressed their opinion about a federated approach by which we consider building up something from scratch, leveraging the national organizations while they exist, and then help building up such organizations in the EU countries where they do not exist yet.

A similar organization was also existing in Italy however, at the end it has failed. So, a way to go ahead could be to understand what is out there and whether we could join forces and have a form of federation at a European level.

It is important that the community is opened to involve more people as well as let more people know about it, this is how we could increase the visibility of such organization.

So far there has not been established a systematic channel by which we could have a dialog with the SE community and define the agenda for the SE research. Particularly, some of the agenda for SE research Europe is sometimes strongly influenced by EU organizations. There are many more topics that are interesting and important, but do not reach the policymakers.

It is an interesting question how large the SE community should be across Europe.

During the workshop and beyond, it has been discussed a couple of times with the PO about the fact that we find it difficult to convince their bosses that some calls focusing on software methods and SE could be quite useful, but the practical impact of such research is hard to be demonstrated as the software is an intangible asset. So, we most likely need to join forces.

We must find a good way to communicate certain needs so that they can be understood and shared with all EU citizens.

As a matter of fact, at the local level the situation has been much worse than at the European level, because it is not only that the SE didn't exist, but rather it was not even seen as an application area. This is really something that we need to work on, trying to convey the importance of SE research and the need for support in that field.

With that discussion we would like to understand first the issue and then if existing organizations can host that issue so a group of people can help in developing that issue, i.e., making SE research more visible and concrete, etc.

For instance, as it has been reported, the UK does have its Software Sustainability Institute that supports some funds through a call "Research funding" which has been very successful in this area. If we can convince the EC to do something similar for our organization, that might be a good way to pursue.

Initiatives

There are many SE organizations at national level that we must study. In the workshop chat some examples were included as GDR GPL (https://gdr-gpl.cnrs.fr/) in France, TIVIA (https://tivia.fi/in-english/) in Finland as well as, SISTEDES in Spain https://www.sistedes.es/#mision-vision, and VERSEN: https://www.versen.nl in the Netherlands.

It would be interesting to join our forces around an organization like Informatics Europe, but more specifically instantiated to SE. It is also useful to give concrete examples that help us in conveying the message that was given by the open letter [4]. There is still work that we could do about that issue.

At this point, the question raised to the participants in the workshop was: Do you want to help us? (See Fig. 7)
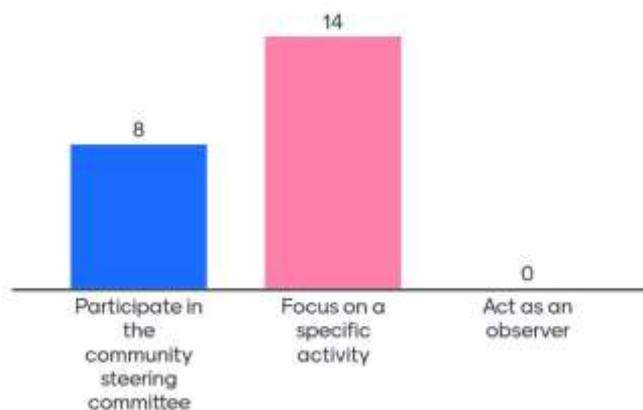
Figure 7 In what form would it be convenient for you to participate?

As discussed above, we need to choose a team and share the objectives with them. The chairperson pointed out that we discussed multiple objectives along the discussion, but there is a specific convergence of them, counting on the importance and value of the software agenda and making SE more prominent specially to help the EC in identifying SE as an area to support actively. This could be a starting point.

Therefore, we do not necessarily need to create an organization that is detached from everything else, but it could be a part of something which already exists. In that respect, we can really use all the effort considering that we are paid for the project, and we do have a budget to spend, so we are trying to understand in which way we could help, with the objective of having something that remains out there beyond our project.

Initially, we could start to create a mailing list with the people who are participating in that workshop. However, whoever is not interested could be excluded from that mailing list. We could try to define some focuses or maybe some milestones. A CSA project could put more effort in general, given the fact that it does have resources for this so, we could try to understand how to work toward a common goal. In the following section 4 we focus our attention on the definition of a concrete plan and try to see how to proceed.

For instance, the OS topic was a central topic in the mentimeter chart as well as the implementation of best practices on the research community and SE research. However, SE research would find it difficult to go its way towards the market and research innovation if all the SW is not properly developed following some of the best practices which are defined in the OS world. They are definitely very useful to make the code accessible, open, share the development, etc. The existing organizations are professional at making sure that projects are implementing the best practices and methodologies, and a set of criteria. So, the way the software is developed, shared, published, etc. is very important. It is not enough to add some code on GitHub among the millions of projects. What we need is good control and governance of each project. In many of the EU research and innovation actions (RIA) that are funded by the EC many researchers are not trained and not able to create quality documents so to facilitate the project dissemination.

In this respect, the chair highlighted that some of the participants mentioned training as an important topic. So, we must disseminate what has already been done in this area, and probably there are some areas left that we could provide our help for instance, in training, and following the best practices, etc. For instance, OW2 and Eclipse could have the help of the CSA, if it would be useful for them. Instead, they could help in dissemination and communication, as well as finding people and aggregating them around certain specific teams. If it is necessary to have experts trained in a specific subject, they could try to look at our network if someone is

---

interested in giving lectures on a specific subject. Also, we could promote our activities and service.

Further comments were on considering the best practices in the projects. The observation was that we are not always successful with applying them in practice. From Eclipse's perspective, they have a rigorous development process. There are a few things they enforce in their OS projects that pursue SE best practices like continuous integration (CI) for example, and it is important to push this as a best practice also in the research. As well, there are training materials, but they are not fully successful with using them. It would be interesting to adjust those training materials for the purpose of our community and to share them. This could also be experienced in using the material as it is and identifying gaps or ideas for improvement. This is really a concrete task which could be taken as a starting point to help in that area. So, one of our services would also be to collect resources and to disseminate information about training materials that are available.

Another topic suggested for the research agenda was secure software development, including initiatives related to secure development lifecycle evaluation, complaints, etc.

An important discussion was around the label of sustainability or sustainability dimension in general, how to measure specific KPIs for sustainability. Essentially, this topic could belong to the SE research agenda as it is very important to be considered from the beginning. It could be related also to the green SE or technical sustainability, other dimensions like social, individual sustainability, so it is a cross-cutting term, but we need to have a way to measure sustainability. It was also mentioned the UK initiative on the online sustainability evaluation that could be correlated with the OW2 which is for measuring the readiness level.

An opinion was expressed by a researcher that the sustainability of software tools for SE could be improved - i) we can make better tools for SE if we work together at larger scales and ii) we can keep SE tools alive if we work together. One big challenge there is to get people power (resources) to do this. The other challenge is to stand behind a common agenda (like CERN).

Considering the experience that we have already in some countries like the Netherlands, Finland, France, etc. it is a good point to analyze what they are doing at national level and try to do the same for the body that we have in mind. The proposed idea was to get a few representatives from the existing organizations to make a short presentation of their activities. For instance, we could assign for this analysis the experts who have mentioned these initiatives:

- France: GDR GPL
- Spain: SISTEDES
- Finland: TIVIA
- Netherlands: VERSEN

It was also touched upon the Technology Radar and Market & Technology Readiness Level (see Fig. 8). There are many CSA and from that point of view, MTRLs are very well applied. There are several MTRLs that could be understood within a project. A more customized view of the MTRL methodology was developed for the software. Also, there are two webinars that were specifically organized and are available on the SWForum.eu webpage.

Figure 8 Market & Technology Readiness Level

Wrap up

Based on the above discussion, what we have agreed upon at the end of the workshop is to organize some meetings on specific topics as follows:

- SE research agenda
    - Green software
    - How to measure sustainability of software (related to green software, but not only)
    - https://software.ac.uk/resources/online-sustainability-evaluation
    - Secure software development (including secure development lifecycles, evaluation, compliance)
    - SE for AI (and AI for SE)
    - European Sovereignty in empirical software engineering
    - Training for development of OS software
- SE platform
    https://www.ow2.org/view/MRL/
- Analysis of existing national initiatives to create a federation
    - GDR-GPL (FR) Jean-Marc, Stefano, Gael
    - TIVIA (Finnish) Jean-Marc
    - VERSEN (NL) Michail
    - SISTEDES (Spain) Rafael

It was also suggested that we identify the main pillars beforehand. Considering as such pillars the Research, OS, Market & Industry and then trying to describe them well. First, we need to decide which will be the pillar that we would like to focus on in our group and which one could remain outside. Something more, we need to work at a metalevel anyway, or we will be losing our focus. Another pillar could be the relationship with the EC, as it is deemed that this activity could also be performed by our group.

We could have an outreach pillar which could try to find a connection and possibility of merging with the other national organizations like OW2 or else, and to perform the relationship with the EC so we could do multiple things.

- Main Pillars
    - Research
    - Open source
    - Market/industry
- Outreach
    - Relationship with the European Commission

- o   Federation of national organizations
- o   We need to analyze the situation and check what has been done in each nation
- Define a roadmap

It is worth investigating which pillar is more useful for us, but we need to do it in a more agile way, and to find the minimum value product (MVP) which is the pillar we would like to start with first and once we create the whole group, we could add the other pillars. Otherwise, we would start looking at all the perspectives and we are going to lose focus. So, adding one pillar at a time is the best strategy suggested. Since we are talking about something that will last for many years, we can create a roadmap in the next few months that will be followed by the people driving the rule.

Even if there are federations like VERSA in the Netherlands, they are not really doing much beyond the borders, but only at a country level. The most urgent is the outreach, especially in relation to the EC.

Another idea shared by a participant was if we could create a head layer that connects all these national organizations or provide additional service on top of that, it would be a good service for the research community. Moreover, it is good first to set up the research community agenda and then we move to the market & industry.

As for the federation, we need to make a choice. If we want to create such a federation, it means that the body could be a legal entity, independent, a group inside an existing European activity, anyway, the membership for this body should be opened not only for individuals but also for other organizations. In this way we are forcing people to create organizations at a certain level.

It was highlighted that even if there are various organizations a lasting and structured relationship with the EC is missing or at least is not so evident now. The main idea is the creation of a federation of national organizations, but we must analyze the situation and check what has been done in each nation. Creating an organization that includes only national organizations could have a strong constraint that we should think about. We could first define a roadmap and touch upon pillars at different times.

Finally, the chair was thankful to all participants in the workshop for providing a very useful and fruitful discussion.

The coordinator of the project also expressed her thanks to all participants in the workshop and asked them to stay tuned for the next steps. We will be back with a summary and more ideas.

The workshop "Developing a vibrant and self-sustainable European community on Software Engineering" was closed with that.

4   Plan for future steps toward self-sustainable SWForum.eu

In this section, we outline the goals that are not currently addressed and future steps for creating the self-sustainability that we have agreed upon during the workshop (see Section 2).

The goals that are not currently addressed by other organizations, but still usefull, are as follows:

- Creating a working group on SE, but we should study first the existing communities. Existing SE communities could share experience with us, they could provide guidelines, synergy, leadership and leverage what has already exists.
- Walking together as an organization is really challenging and it is potentially better.
- Identifying the needs of the various SW organizations that exist in Europe and that are not yet addressed.

- Matchmaking for research projects: a useful place where to find partners for projects; a place where we can send out a call that we are looking for someone who wants to work on a specific project.
- Exchanging ideas on a specific topic like open data and the mailing list is a tool that helps for that purpose.
- Building a federation (federated approach): building something from scratch, leverage the national organizations while they exist, and helping build up such organizations in the EU countries where they have not existed yet.
- Training (and training materials) as an important topic and implementation of best practices. This is really a concrete task which could be taken as a starting point to help in that area.
- Collecting resources and disseminating information about resources that are available.

Other than that, the future steps towards self-sustainable SWForum.eu we have agreed upon during the workshop are as follows:
- Definition of a steering group to set up the objectives of the organization/ working group
- Identification of subgroups focusing on specific topics
- Organization of workshops on some specific scientific topics
- Creation of a roadmap and definition of pillars

5   SWForum.eu impact

The sources of impact for SWForum.eu are a combination of **integration**, **interaction**, and **depth of expertise**.

Both during the early phases of SWForum.eu and the Sustainability Workshop it was noted that intensive integration of software artifacts and processes is needed to attain significant impact in the future. There are many examples: the computing continuum involves the transparent integration of software across platforms. New, integrated lifecycles such as DevOps will achieve economic impact. Integration of cybersecurity best practices and techniques in software development is the only way to ensure that software-intensive products are secure. A particularly important point is the need for integration across disparate sectors of R&D for progress in software to occur.

This last point brings us to the main pillars of SWForum.eu: bringing together the R&D communities of Europe to facilitate cross-fertilization and integration of their results. These means bringing such disparate projects together as those doing Cloud research, critical embedded systems, process-oriented (e.g., DevOps) work, and so forth. The impact of SWForum.eu will be directly measurable by its success in facilitating this integration and interaction of communities.

This in turn leads to the tools that are being made available by SWForum.eu to facilitate the processes of **integration** and **interaction** in the communities. The project radar is intended to facilitate **integration** across the R&D sectors targeted by SWForum.eu, by making explicit to all participants where exactly each of the relevant project lies across the spectrum of the European R&D community. This is materially accomplished through the taxonomy [5], which provides the mapping across the spectrum of projects. Attached to the radar is the projects hub [6], also hosting the project mini-sites, where each project is capable of providing additional information about the nature of their research and where it fits into the overall picture of R&D in Europe. The mini-sites are literally next to each other in the platform, so that project personnel can easily see their "neighbouring" projects and connect with them. Above all, they can be visualized in their place in the landscape through the radar. It is also possible to associate quantitative KPIs with these facilities, such as "Number of projects analysed the project radar". In fact, these KPIs are being tracked so that SWForum.eu will have concrete evidence of impact as projects are added.

With respect to **interaction**, the SWForum.eu Online Forum [7] is being configured to host working groups, and the Sustainability Workshop has been instrumental in fine-tuning the original list of working groups. Participants are being seeded from those in the Sustainability workshops, with a view toward promoting cross-fertilization of the different domain specialties. The goals of the working groups are shaping up to be outputs discussed in the previous section, including white papers and position papers not unlike the original manifesto produced by participants in the Sustainability Workshop. The intended audience for a significant portion of these white papers will be policymakers, not only technical practitioners. Here, too, quantitative KPIs may be defined and are indeed being tracked by the consortium as leading indicators of impact, such as "Number of participants in working groups", "Number of working groups", and "Number of posts".

Concerning **depth of expertise**, the Sustainability Workshop was a critical point of departure for ensuring that the community being built by SWForum.eu provides the highest levels of expertise in all relevant software-related domains across the EU landscape. The participants in the workshop represent a significant portion of the most senior and experienced personnel in the EU software research landscape at this time, and have their own multiplier networks to ensure that the SWForum.eu community grows in such a way as to increase the depth of overall expertise. Here, too, we are tracking KPIs including "Number of contacts in the database" and

"Histogram of involved software-related domains and industries." Likewise, the MTRL initiatives [8] are oriented toward measuring and raising the levels of expertise within individual projects. They likewise permit the definition of measurable KPIs.

Those are the baseline sources of impact in SWForum.eu and the levers we are implementing through the platform and our dissemination events such as the Sustainability Workshop. We expect to see impacts in the following directions:

- Elevating software technology across the EU to assure broad coverage of EU priority topics and avoid the current defragmentation that exists. The Sustainability Workshop was a direct initiative toward this impact.
- Promoting the growth of a densely connected ecosystem of communities across the EU. The facilities of the platform (such as forum, hub, radar, MTRL measurements) are examples of initiatives in that direction.
- Strengthening of the Digital Single Market. The workshops held so far, and those planned, are expected to contribute significantly toward this impact. The initiative to strengthen and hopefully federate the national software initiatives will have a direct impact on this goal.
- Raising awareness among the end user community. The platform facilities as well as the outreach events are equally valuable for the end user community as for the provider community.
- Contribution to capacity building in the software arena. This is a goal of the EU in the software area, and has been identified in the Sustainability Workshop as a key issue. The online forum is already being used in order to publicize training and general capacity-building initiatives available in the software domains of interest. It is worth also noting that specific EU priorities such as cybersecurity awareness and capacity building as well as open source are being given particular attention in SWForum.eu.
- Expected impacts are coupled with measurable KPIs, covering both project outputs and policy quality improvement (an increase of policy effectiveness).

6 Conclusions

In this section we summarize the main conclusions from the previous sections, and we highlight the future work ahead.

The question for further discussion remains whether creating an independent organization or joining an existing community, anyway an alignment is necessary, because we have to consider that creating a critical mass is something that requires time.

We have started to define a set of objectives and topics at this first sustainability workshop, but maybe some others will come out in the future. We are about to start doing some concrete work and the suggested way to proceed was to have three specific topics for discussion at single workshops as follows:

1. How to set up an organization, or how to connect to existing ones or to have a new one, or else?
2. The research agenda and training to create high-quality open-source software
3. How to build up a SE platform?

It will be our responsibility to organize those discussions and structure them, unless someone else would like to take the lead on. We are trying to make sure that this kind of discussions and meetings will go on beyond the SWForum and they will make it sustainable as it is aimed to. We also would like to promote the idea that we could be more structured and powerful if we do such events in collaboration. We aim at creating a long-lasting organization or working group.

So, the most critical aspects are outreach, research, and open-source. Organizations like OW2, SW Heritage, Eclipse are advanced and there is a lot of work done out there. The easiest way for us would be to act as a support to such organizations. In the first place, we must understand how we could help organizations that are already strong and focused on this, but here we have discussed some of the aspects where we could help.

We will start scheduling the next meetings, but there will be a single meeting addressing any of the specific topics mentioned above.

7   Bibliography

[1] SWForum.eu Deliverable, "D3.6 Fellowshio programme, governance structure and business model for SWForum.eu - v.1".

[2] SWForum.eu Deliverable, "D2.1 First cross-fertilization workshop report - v.1".

[3] SWForum.eu Deliverable, "D3.1 SWForum Landscape report - v.1".

[4] SWForum.eu, "Open Letter: Europe needs strong software research," Dec. 2021. [Online]. Available: https://www.ipetitions.com/petition/europe-needs-strong-software-research.

[5] SWForum.eu Deliverable, "D2.5 Project Radar Taxonomies," 2021.

[6] SWForum.eu, "Projects hub," [Online]. Available: https://www.swforum.eu/project-hub.

[7] SWForum.eu, "Online forum," [Online]. Available: https://www.swforum.eu/.

[8] SWForum.eu Deliverable;, "D4.4 MTRL methodology and assessments - v1," 2022.