WP3: Socio-economic impact assessment of research projects

Deliverable 3.1 – Call 1 and Call 5 Project Assessment Report

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Deliverable 3.1 – Call 1 and Call 5 Project Assessment Report

by

[1] The last modifications have been made after the final review

Executive Summary

In this deliverable we show the results of the SEQUOIA project-assessment exercise. The SEQUOIA socio-economic impact assessment methodology was applied to 30 research projects (9 from Call 1 and 21 from Call 5 of ICT-FP7) co-financed by the European Commission in the domain of Internet of Services (IoS) and Software as a Service (SaaS).

The main results can be summarised as follows:

- the research community shows a weak "assessment culture";
- there is a need to involve socio-economic experts in the projects and to establish a common language with technologists;
- in spite of the fact that each participating project has to provide "matching funds" to the EU contribution, financial plans are available only in a few cases;
- the early/immature stage of most of the projects was the determining factor in carrying out only an ex-ante assessment;
- technology development is oriented towards the Open Source approach, and it is difficult for researchers to identify appropriate business models for future exploitations;
- most of the projects target mainly developers and software engineers, while the wider society is not their main focus. Thus, if we consider technology development as a social process the relevance of the socio-economic dimensions increases in the assessment. This is accounted for in the calculation of the final aggregate indicator (Return on Research Investment, or RoRI) by assigning more relevance (i.e. "weight") to these dimensions.

Chapter 1 presents the approach and the tools used for carrying out the assessment while in Chapter 2 the financial, economic, and social impact results of the analysis are consolidated at an aggregate level. Chapter 3 presents the assessment through the use of the RoRI parameter, which synthesizes the whole set of information generated by the SEQUOIA methodology and shows the global performance of research projects in terms of social and economic return. In the Annex a form that summarises the analysis performed is provided for each project that completed the assessment.

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CHAPTER 1: INTRODUCTION TO THE ASSESSMENT

This document is produced in the framework of the SEQUOIA project, which aims at estimating the socio-economic impacts of EC-funded Research and Development (R&D) projects funded under Call 1 and 5 of Objective 1.2, in the domain of Internet of Services (IoS) and Software as a Service (SaaS). It presents the main results of the assessment task which has been performed by a team of experts in the socio-economic fields, through the use of a structured questionnaire, dedicated focus group sessions, and direct interviews addressed to Call 1 and Call 5 projects representatives.

The evaluation of targeted research projects presented several difficulties, mainly arising from the fact that the projects are still in their early stages[2] and from the consequent inability to both predict stable application scenarios of the projects' output(s) and to answer some key questions generally related to the exploitation of the projects' main findings. Furthermore, most of the projects assessed turned out to be working on the creation of new "enabling technologies", whose concrete applications may be so widely diverse that their associated impacts are only partially measurable and quantifiable only on a short-term basis. This causes an unavoidable "underestimation problem" of the potential socio-economic impacts attainable. Finally, other difficulties arose from the fact that SEQUOIA's assessment work has been applied to a significant number of projects aimed at devising really heterogeneous kinds of new products/services in the IoS and SaaS domain, requiring the tailoring of the assessment on a case-by-case basis.

With these assumptions in mind, conscious of all the above-mentioned evaluation difficulties and biases, this deliverable presents the main findings of the SEQUOIA assessment team. This deliverable presents the results of the project assessment in an aggregated way, first, while in the last part of the document a short analysis of single project assessments is reported. This deliverable will be followed by D3.2 "Best Practices Report". In D3.2 a deeper analysis of the socio-economic impacts of the 5 projects that scored highest will be presented.

1.1 Approach and tools used for project assessment

The socio-economic evaluation of Call 1 and 5 research projects in the IoS/SaaS domain was performed according to the methodology presented in D3.3a.

The instruments used for data gathering were, essentially, two:

1. A *structured questionnaire*, composed by 55 questions (open and close), which was published through the Eurokleis survey tool[3] and advertised on the SEQUOIA website in the period between 13th and 25th of April, at first, and then extended to the end of October 2011 and which had to be filled in remotely by the target projects and further sent via e-mail to the SEQUOIA evaluation team. An email advertising the opening of the survey and providing all the necessary information for filling in the questionnaire were sent to all Call 1 and Call 5 projects' coordinators. After a first round, in order to gather more questionnaires,

[2] Most of Call 5 projects, that constitute the majority of the projects evaluated , where at the end of their first year when assessed (See paragraph 2.1 Description of the projects sample assessed by SEQUOIA)

[3] http://eurokleis.Sequoia-Second.sgizmo.com/s3/

the Project coordinator acted directly by sending the questionnaire as a word document to the projects' contacts. Finally, the SEQUOIA Project Officer supported the SEQUOIA team in contacting all those projects that had not replied to previous invitations. The data gathering activities, originally planned to end in May, was finally closed on November the 17th. The decision to extend the data gathering window was helpful, as we gathered several more questionnaires by extending the deadline and by offering to the projects different ways of filling it in (online, via email, by phone/Skype call, in person).

The questionnaire is articulated into 8 sections:

- Section A gathers all the information about the contact person (the person in charge of answering the questionnaire) and about his/her role in the project.
- Section B aims at collecting general information about the research project and its main aims:
    - targets addressed;
    - potential outputs;
    - status of the project;
    - researchers (number/experience/gender) directly involved in the project;
    - management system adopted;
    - potential beneficiaries of the project's outputs and expected impact for each category.
- Section C aims at identifying and describing the "base-case" or baseline scenario, that is, the situation that would exist "without" the research project output(s):
    - description of other existing products/services similar to the project's output(s);
    - description of the improvements (advantages) brought by the project's outputs with respect to the existing products/services;
    - description of case pilots showing the concrete application of project output(s) in different sectors;
    - identification of the substantial (operational) differences brought by the project output(s) with reference to the base-case scenario.
- Section D aims at identifying and quantifying the potential impacts generated by the R&D projects in the economic field:
    - identification and quantification of the kinds of economic benefits attainable by the use of the project output(s) (e.g. cost reduction for performing an activity, time reduction for performing an activity, reaching more users, lowering entry barriers in the market, more efficient data exchange, better targeting of users etc.)
    - information about the envisaged typology of commercial exploitation of project output(s) and about the financial income potentially deriving by it (potential users, competitors, fees applicable) ;
    - information about other financial income obtained by the project (e.g. additional private/public research funding, n° of patents/trademarks registered etc.);
    - information about the articulation of project budget (personnel, training, travel, dissemination, subcontracting costs);

  - economic impact assessment time-frame identification.

- Section E aims at identifying and quantifying the potential impacts generated by the R&D projects in the scientific field:
  - number and quality of the scientific outputs produced;
  - dissemination activities performed and other exchange initiatives performed
  - number and typology of highly skilled researchers employed/sponsored in/by the project
  - scientific impact assessment time-frame identification
- Section F aims at identifying and quantifying the potential impacts generated by the R&D projects in the social field:
  - public sectors impacted by the project output(s)
  - consistency of project output(s) with the targets of the digital agenda 2020;
  - identification and quantification of employment impact brought by the project/project output(s);
  - social impact assessment time-frame identification.
- Section G aims at identifying and describing the potential impacts generated by the R&D projects in the technological field:
  - identification of the technological areas explored (e.g. cloud, virtualization, mash-up, semantics etc.);
  - existing technological connections with other products;
  - evaluation of the technological performance of project's output(s);
  - identification of the technological factors encumbering the project.
- Section H aims at identifying and describing the potential impacts generated by the R&D projects in the environmental field:
  - identification of the typologies and quantification of environmental impacts generated by the project output(s);
  - environmental impact assessment time-frame identification

2. The second tool used for data gathering was a series of Skype interviews of about 45 minutes each, arranged in order to connect two socio-economic experts from the SEQUOIA team with a representative from each project. Such interviews were aimed at both gathering the questionnaire missing data, in order to have a complete and homogeneous data-set to be further analysed, and at better understanding the specificities of each project, in order to better and more correctly assess the potential of each, in a more informed way. These interviews were also structured in order to find a "common language" to be shared between the evaluators (social scientists) and the project representatives (generally engineers or ICT technologists), with the aim of both spreading the culture of evaluation among the projects themselves and of better helping the projects understand the impacts they could generate, beyond the technological field, on society as a whole.

Before the launching of the questionnaire a series of online focus group sessions introduced to the projects the SEQUOIA approach and gathered some background information about the projects. The SEQUOIA team used the focus group sessions also for validating the questionnaire and fine-tuning the methodology.

CHAPTER 2 PROJECT ASSESSMENT: AN AGGREGATE OVERVIEW

This section presents an aggregate overview of the main results obtained through the questionnaire filled by the projects representatives and by the interviews directly conducted by the SEQUOIA team. The reason for presenting aggregate results is linked both to reputational reasons (avoid direct comparisons between the socio-economic performance of different projects) and to better highlight and make more understandable to a non-expert reader the trends that the project sample analysed exhibits in terms of the main socio-economic impacts generated.

2.1 Description of the projects sample assessed by SEQUOIA

The SEQUOIA assessment task was performed on a sample of 30 research projects, among which 9 belonging to Call 1 and 21 to Call 5. Of the 30 projects, 24 answered to all the questions asked by the questionnaire, while 6 returned a partial questionnaire (Table 1 and Figure 1).

	N° questionnaires submitted	Completed	Partial
Call 1	9	5	4
Call 5	21	19	2
Tot.	30	24	6
%	110%	80%	20%

Table 1- Questionnaires submitted and returned

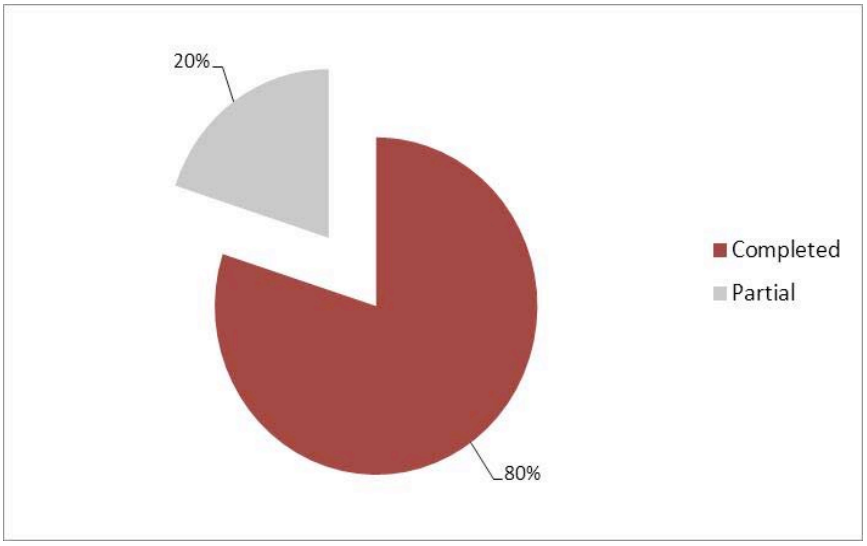


Figure 1 - Questionnaires submitted and returned

Table 2 shows the complete list of the projects that took part in the SEQUOIA assessment exercise and the role of the person in charge of answering the questionnaire and the interview with the SEQUOIA team. As the table shows, in approximately half of the cases the collaboration with the SEQUOIA assessment activities was performed by the project and scientific coordinators (16 out of 30), while the remaining projects were assessed with the help of other persons having different roles in the projects.

Given their overall general knowledge of all the components/tasks of each project, the active participation of project leaders in the assessment has helped a lot the SEQUOIA team in capturing most of the features of the projects to be evaluated, giving, therefore, a fair degree of robustness to SEQUOIA's results.

Project Name	Call no.	Respondent's role in the project
SERENOA	5	Research partner
ADMIRE	1	Project Coordinator
VISION CLOUD	5	Project Coordinator
REMICS	5	Project Coordinator
SRT-15	5	Project Coordinator
CONTRAIL	5	Project Coordinator
CLOUD4SOA	5	Project Management Team
S-CUBE	1	Member of Management Board
SOCIOS	5	Technical Manager
PERSIST	1	Project Coordinator
SLA@SOI	1	Project Coordinator
DiVA	1	Project Coordinator
FASTFIX	5	Dissemination Manager
SOCIETIES	5	Project Coordinator
I2WEB	5	Dissemination Manager
CHOREOS	5	Research Partner
ALERT	5	Project Coordinator
WEBINOS	5	WP Leader
INDENICA	5	Scientific Coordinator
OMELETTE	5	Project Coordinator
MOSAIC	5	Project Coordinator
ACSI	5	Project Coordinator
HOLA!	5	Technical Manager
CUMULONIMBO	5	Technical Coordinator
M:CIUDAD	1	Project Coordinator
FITTEST	5	Project Coordinator
OPTIMIS	5	Project Manager
SERVFACE	1	Scientific Coordinator
RESERVOIR	1	Project Coordinator
IRMOS	1	Research Partner

Table 2 – Projects assessed by SEQUOIA and questionnaire respondents

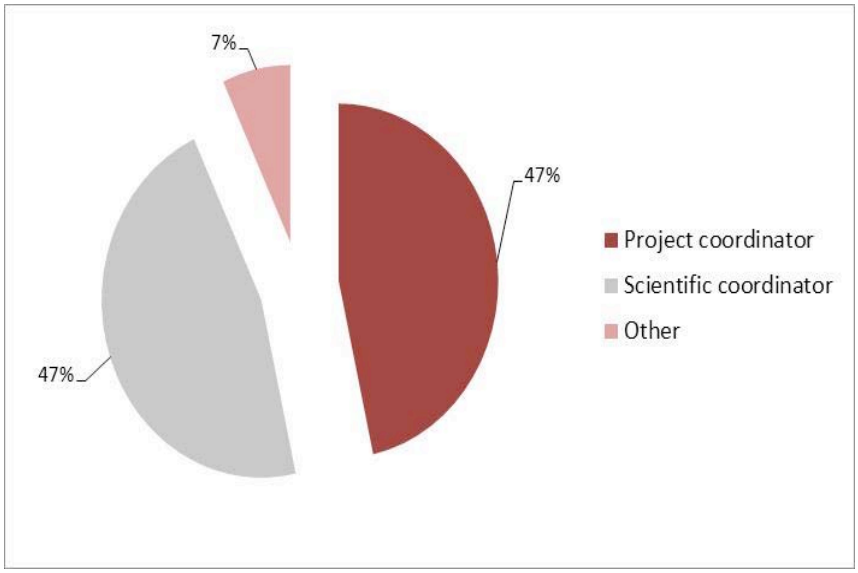


Figure 2 - Respondent roles

Concerning the status of the projects assessed, only 3 have ended (PERSIST, DIVA and IRMOS), while the rest are still in their initial or intermediate phase. Table 3 shows, for each of the assessed projects, the starting date, the end date, and the percentage of project's lifetime completion.

Project name	Start date	End date	Duration (y)	Present stage	% of completion
SERENOA	09/2010	08/2013	3	15 months	41,6%
ADMIRE	03/2008	02/2011	3	ended	100%
VISION CLOUD	10/2010	09/2013	3	14 months	39%
REMICS	09/2010	08/2013	3	15 months	41,6%
SRT-15	10/2010	03/2013	2,6	14 months	46,6%
CONTRAIL	10/2010	09/2013	3	14 months	39%
CLOUD4SOA	09/2010	08/2013	3	15 months	41,6%
S-CUBE	03/2008	03/2012	4	45 months	93,75%
SOCIOS	09/2010	02/2013	3	15 months	41,6%
PERSIST	04/2008	12/2010	2,8	ended	100%
SLA@SOI	06/2008	03/2011	2,6	ended	100%
DiVA	02/2008	01/2011	3	ended	100%
FASTFIX	06/2010	11/2012	2,6	18 months	69%
SOCIETIES	10/2010	04/2014	4,2	14 months	33%
I2WEB	11/2010	04/2013	2,4	13 months	54%
CHOREOS	10/2010	09/2013	3	14 months	46%
ALERT	10/2010	03/2013	2,5	14 months	56%
WEBINOS	09/2010	08/2013	3	15 months	50%
INDENICA	10/2010	09/2013	3	14 months	46%
OMELETTE	10/2010	03/2013	2,5	14 months	56%
MOSAIC	09/2010	02/2013	2,6	15 months	58%

ACSI	06/2010	05/2013	3	18 months	60%
HOLA!	01/2011	07/2013	2,6	11 months	42%
CUMULONIMBO	10/2010	09/2013	3	14 months	46%
M:CIUDAD	11/2007	11/2010	3	ended	100%
FITTEST	09/2010	08/2013	3	15 months	50%
OPTIMIS	06/2010	03/2013	2,9	18 months	62%
SERVFACE	02/2008	08/2010	2,6	ended	100%
RESERVOIR	01/2008	12/2011	3	ended	100%
IRMOS	02/2008	01/2011	3	ended	100%

Table 3 – Projects' status

Table 3, instead, shows that 40% of the projects sample are still in their initial phase, for its 30% of projects that are in an intermediate stage, and for the remaining 30%, projects are almost completed or ended.

With reference to the general description of the assessed projects' sample, the last but, maybe, the most important feature to underline is the fact that all the projects except SERENOA and REMICS did not perform any self-assessment in order to evaluate their socio-economic impact. This maybe a symptom of the scarce "evaluation culture" diffused among the projects and suggests that in future it may be beneficial to involve, directly in the project, expert evaluators both in the economic and in the social field in order to perform an exhaustive *ex ante*, *in itinere* and *ex post* impact assessment of project's outputs.

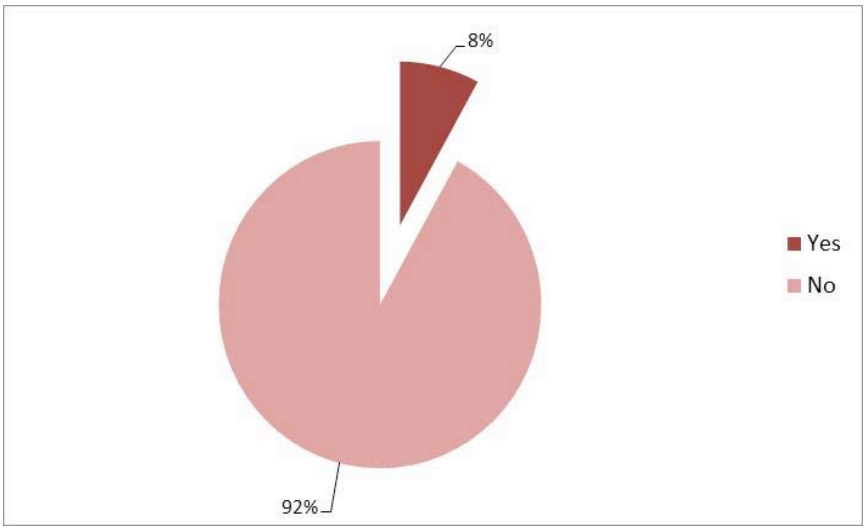


Figure 3 - Use of projects' self-assessment methodologies

The projects assessed have an average total cost of about 5 million euro: the most expensive one is VISION CLOUD, with a total budget of € 19.558.600, while the least expensive is HOLA!, with a total cost of € 149.830[4].

Most of the expenses are devoted to personnel, having an average cost of about 3,8 million euro (73% of the project cost): in particular, the projects with the highest personnel expenses are OMELETTE (99,5% of the project cost), followed by ADMIRE (93,6%), SLA@SOI (92,9%) and DIVA (92,3%), while the project with the lowest personnel cost is CHOREOS, with only 51,8% of the expenses devoted to personnel. Average travel costs of the project sample are about 573.000 euro (11% of the average project cost); demonstration (use cases) and dissemination activities have, more or less, the same weight on the total budget (respectively 8% and 6%, for an average value of about 397.000 and 323.000 euro); finally, subcontracting costs are generally very low (on average about 27.000 euro per project) or absent altogether.

	Average amount	%
Personnel	3.762.836	73%
Training	49.825	1%
Use cases	397.354	8%
Subcontracting	27.313	1%
Travel	573.551	11%
Dissemination costs	323.944	6%
Tot.	5.134.823	100%

Table 4 – Average budget distribution, by category, for the projects' sample

[4] The estimation of the most and the least expensive projects has been based on project representatives' answers.

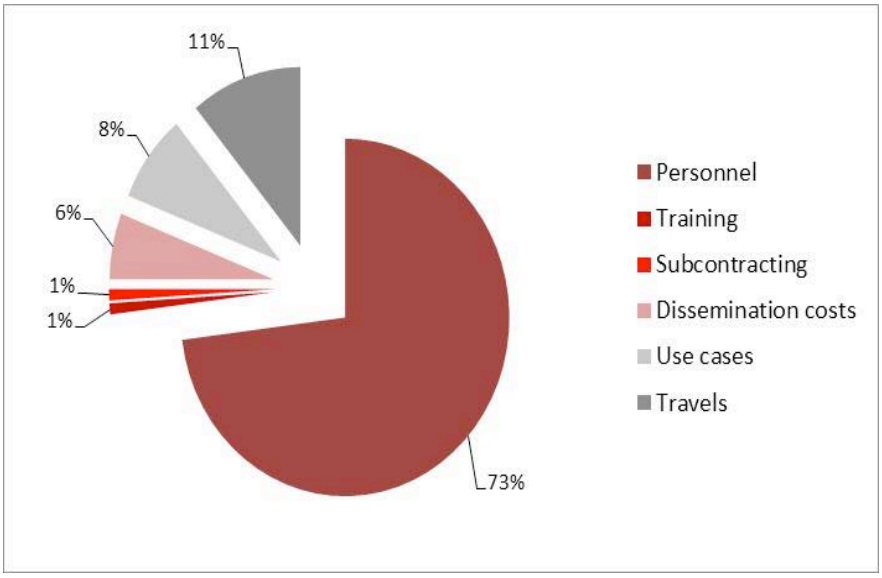


Figure 4 - Project budget distribution (% values)

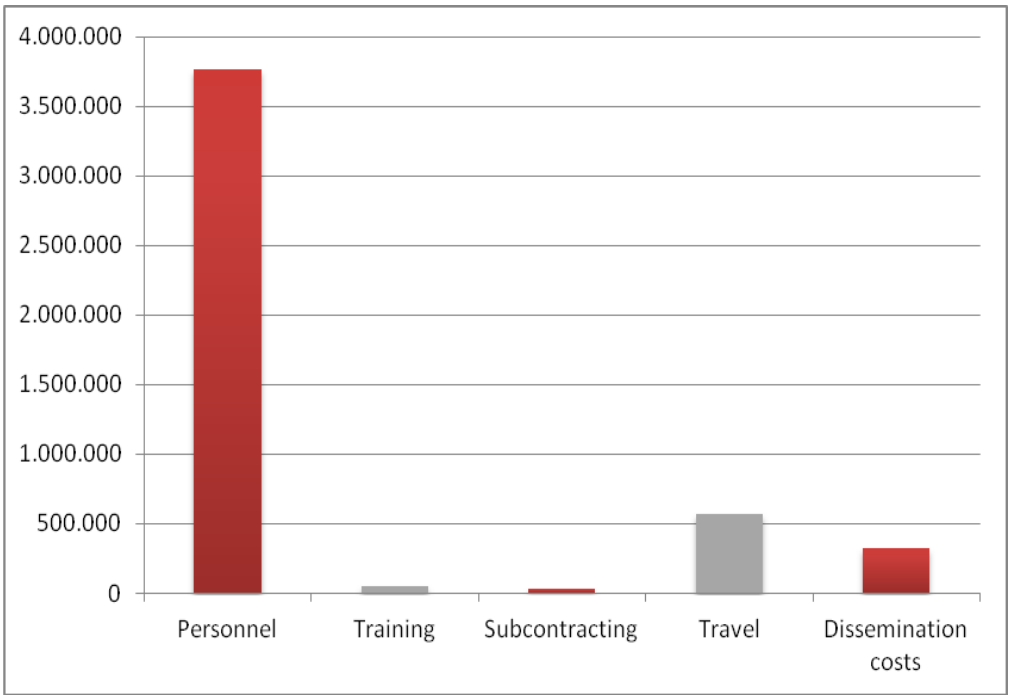


Figure 5 – Project's budget repartition (absolute values)

The high spending in personnel is translatable in terms of a modal number of people directly involved in the research bracketed between 21 to 40 units: 54% of the projects interviewed, in fact, has declared to involve a number of persons working on the project that falls between these figures. The highest direct occupational impact, expressed in absolute terms, is the one provided by WEBINOS, that is the only project involving more than 100 people, while the lowest direct occupational impact,

measured in absolute terms, too, is the one of ALERT, REMICS, SRT-15, ACSI and HOLA! with less than 20 people working on each.

	N° of projects	%
Less than 20	5	19
21 to 40	14	54
41 to 60	4	15
61 to 100	2	8
More than 100	1	4

Table 5 - Persons working on the project

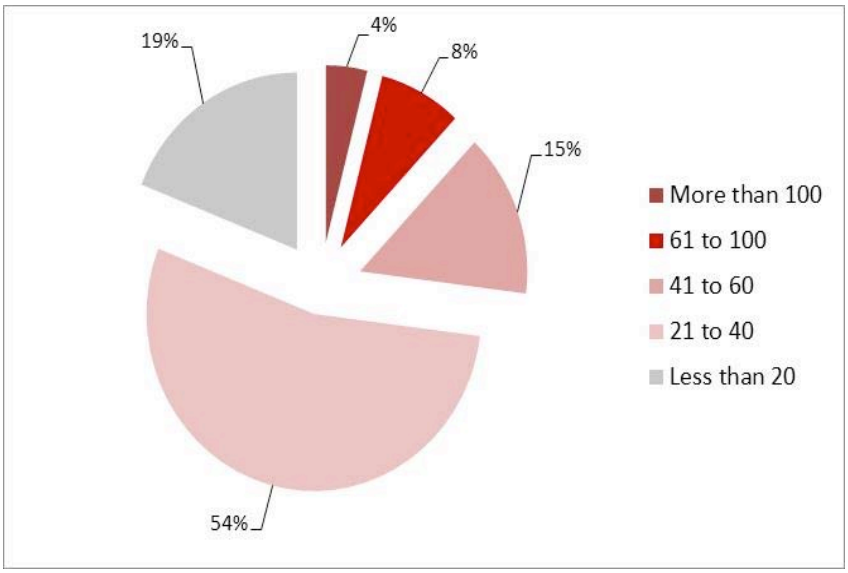


Figure 6 - Absolute direct occupational impact

Anyway, in consideration that the impact on employment generated by each project is directly correlated with the financial dimension of the project itself, in order to make more correct comparisons, it would be very useful to provide information about the

relative occupational impact, by calculating the ratio between the number of people employed by each project and the total budget of the project itself; such value would provide us useful information about the average impact that one single unit of expense has on the labour market. Unfortunately, though, SEQUOIA interview did not gather precise information about the exact number of people directly employed by each project and, therefore, no considerations could be made, at present, about this aspect.

Most of the assessed projects do their own research/studies in more than one specific domain. In particular, in 55% of the cases, they are operating in the field of context-aware services and of SOA, while in 50% of the cases they perform their activities in the field of mobile technologies. Cloud technology is also very explored by the sample (45% of the projects), while grid computing turns out to be the least explored domain (15% of the projects).

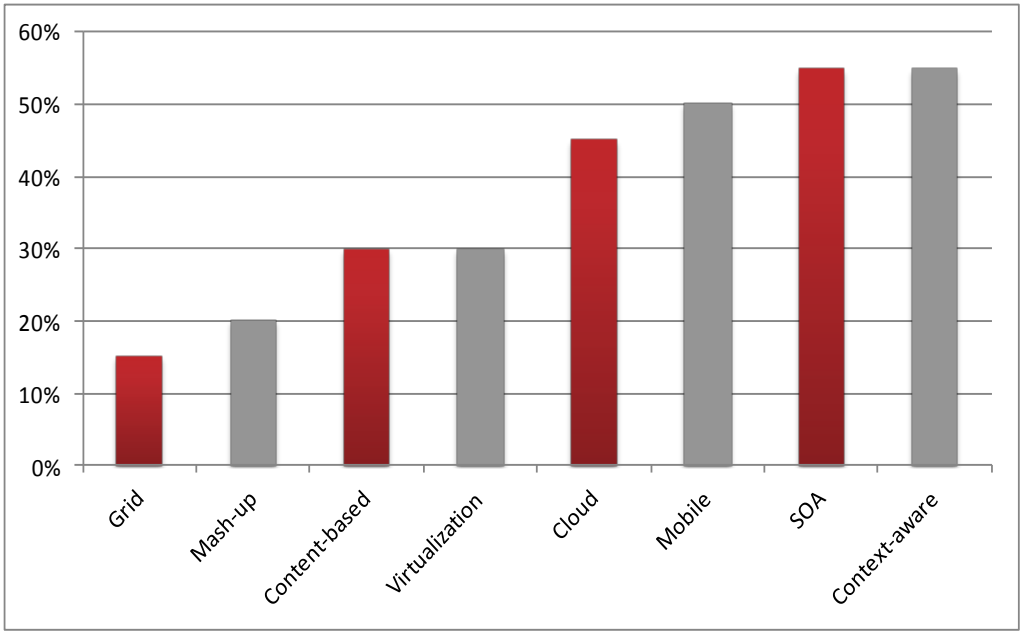


Figure 7 - Projects technological bases (multiple answers allowed)

All but one of the interviewed projects (DiVA) use more than one software language: in particular, in 70% of the cases, they use Java, while in 33% of the cases they use Javascript. Other languages, instead, are used in very few cases, ranging from 18% of C++ to 3,7% of Prolog, Objective C, BPEL, C, Cobol and SQL. The dominance of Java relative to other languages can be partly explained by the fact that most of the projects develop open source software.

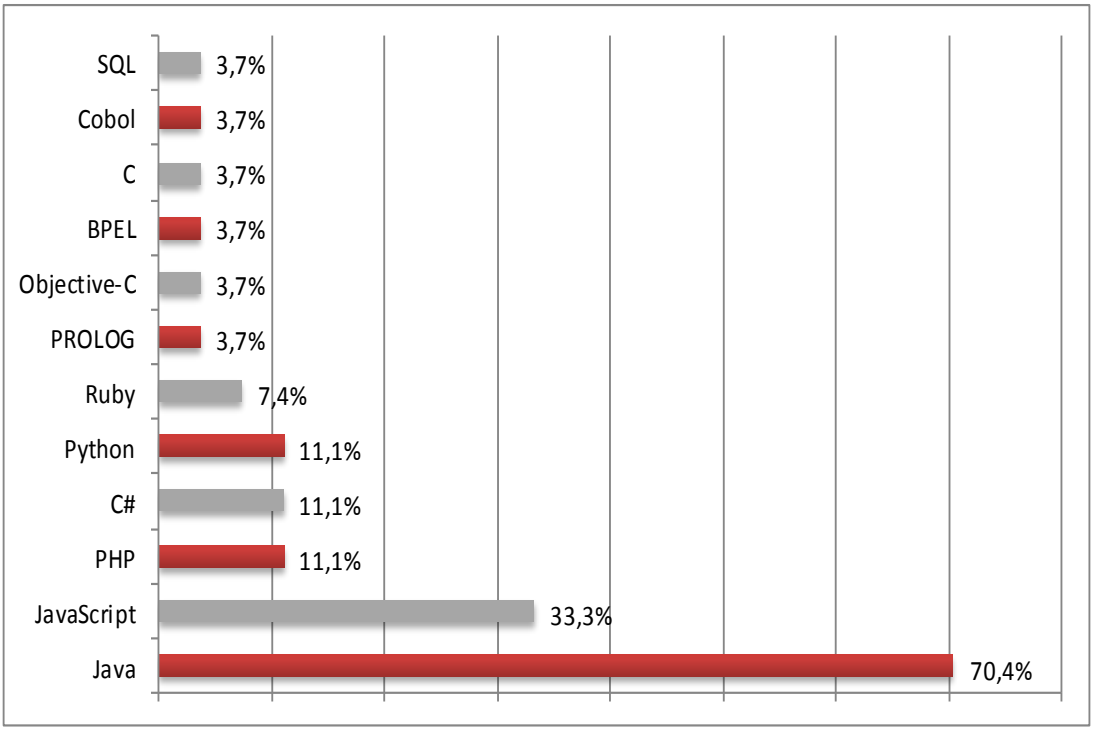


Figure 8 - Software language used

In 60% of the cases, the projects are using during their research existing external products/development environments, therefore implying a sort of "dependency" of their results/performance on external technological factors.

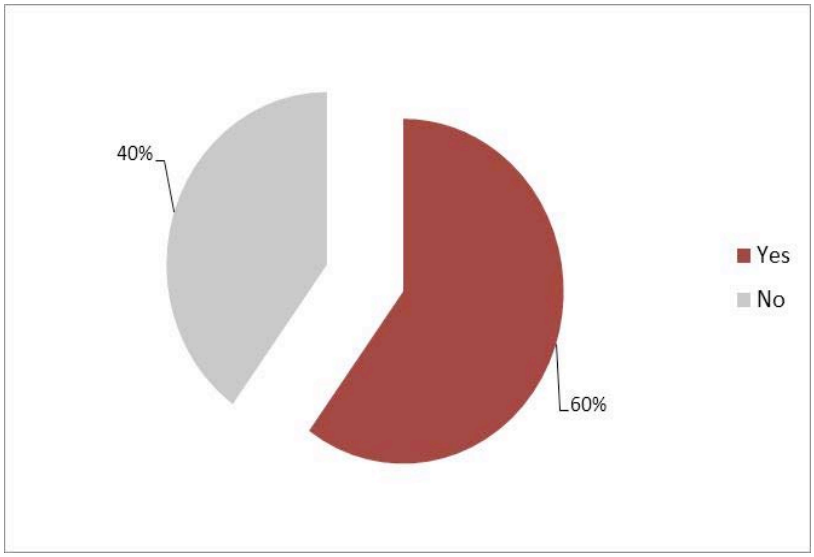


Figure 9 - Projects relation with specific external products

All the projects interviewed assert that their project has more than one output. In particular, most of the projects have as one of their main outputs the improvement of an existing software/infrastructure (70% of the cases) or the development of a new software/virtual infrastructure (63% of the cases); another relevant output, shared by more than the half of the projects, is the development of new methodologies/design processes (59% of the cases) or their improvement with reference to the starting situation (56% of the cases); on the contrary, only a few projects are developing new languages (22%) or improving the existing ones (30%).

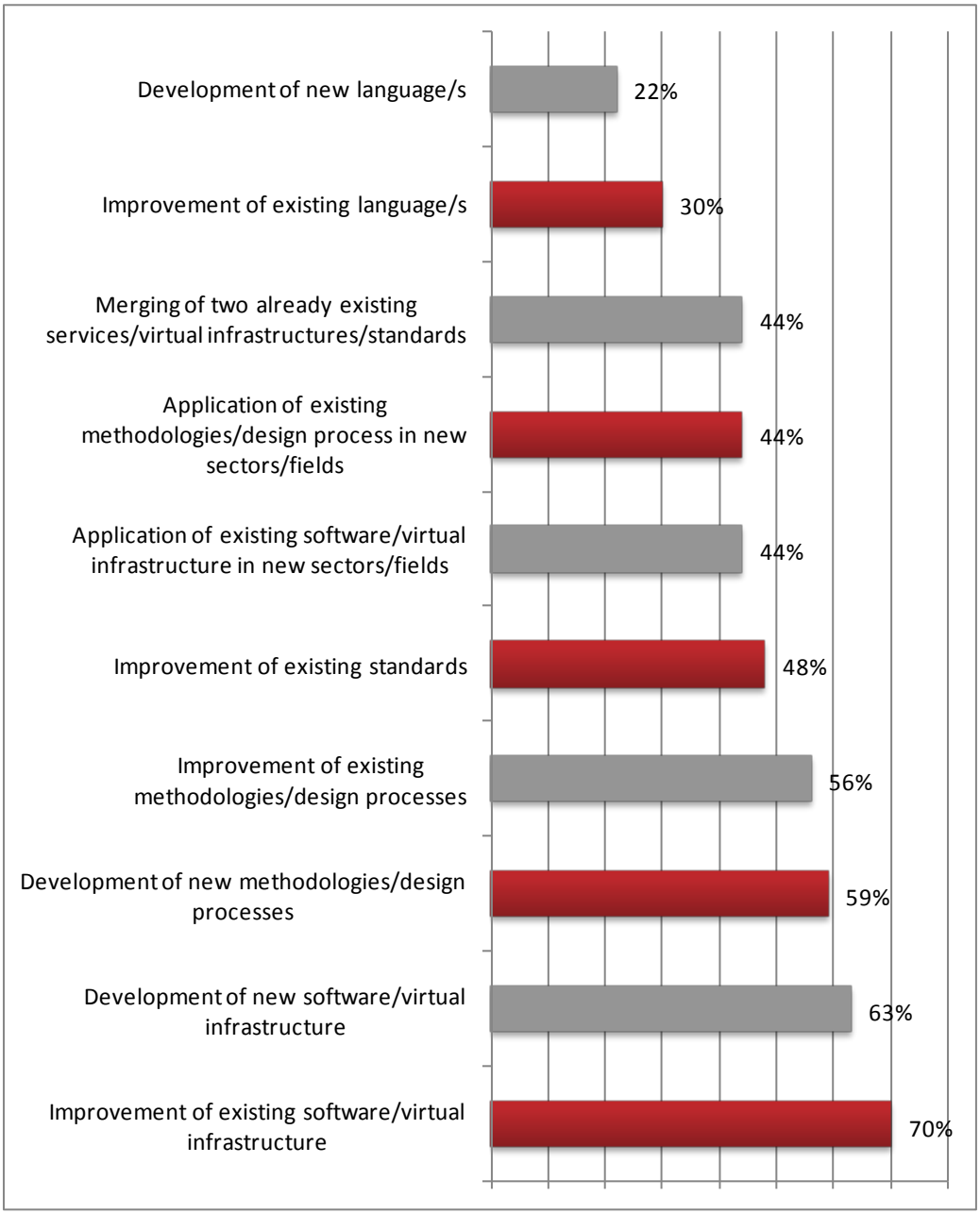


Figure 10 - Projects' main outputs

2.2 The stakeholders impacted by the projects

Having described the projects' characteristics, this section now describes who are the main stakeholders that are differently impacted by the usage/development of projects' outputs.

In particular, the SEQUOIA questionnaire asked the projects to choose one or more typologies of stakeholders, starting from a selected list of categories (Developers and software engineers, Service providers, Infrastructure providers, TELCO operators, Researchers and research communities, Industry and SMEs, Citizens/consumers/end-users, and Project partners), and to rate their relevance by using a 1 to 5 scale. When answering this question, the projects were asked to take into consideration both the stakeholders that are *directly* affected by the project *intended* outputs, but to consider also: a) the stakeholders that could be *indirectly* affected by its *intended* outputs[5]; b) the stakeholders that could be *directly* affected by its *unintended* outputs[6]; c) the stakeholders that could be *indirectly* affected by its *unintended* outputs.

With reference to such question, all the projects interviewed assert that their project outputs impact on more than one stakeholder category. In particular, Table 6 shows that, in some cases such as for the SERENOA project, all the listed categories of stakeholders receive a very high impact (rating = 5) from the project's output development, while, at the opposite side, as for PERSIST, SOCIETIES, OMELETTE and SERVAFACE projects, none of the listed categories of stakeholders receives a very high impact from the project's output(s).

Project ID	N° of high-relevance users	% of high relevance users
SERENOA	7	100%
ADMIRE	1	14%
VISION CLOUD	3	43%
REMICS	5	71%
SRT-15	4	57%
CONTRAIL	2	29%
CLOUD4SOA	4	57%
S-CUBE	4	57%
SOCIOS	2	29%
PERSIST	0	0%
SLA@SOI	3	43%
DiVA	2	29%
FASTFIX	4	57%
SOCIETIES	0	0%
I2WEB	3	43%
CHOREOS	3	43%
ALERT	1	14%
WEBINOS	2	29%
INDENICA	1	14%
OMELETTE	0	0%

[5] The intended output is indicated in the project's main objectives

[6] The unintended output can be defined as the "collateral effect" of the project (generally negatively affecting some groups of stakeholders), which is not identified in project' s main objectives, but which could be, at least, broadly foreseen during project implementation.

MOSAIC	1	14%
ACSI	2	29%
HOLA!	1	14%
CUMULONIMBO	6	86%
M:CIUDAD	0	0%
FITTEST	5	71%
OPTIMIS	4	57%
SERVFACE	0	0%
RESERVOIR	0	0%
IRMOS	2	29%

Table 6 - N° of high-relevance categories of stakeholders per project

More in detail, the most targeted category of stakeholders (66% of the projects) is that of Developers and software engineers, which has the highest average impact rating (4,59), too. Another important category of stakeholders are the service providers, which is addressed by 41% of the projects interviewed and which has a high impact rating (4,15), too. The category of Industry and SMEs working in the ICT domain was targeted by 34% of the projects and has a high average impact rating of 4,08; Researchers and research communities, instead, are addressed by 41% of the projects and have a significantly lower impact rating of 3,89. One important thing is that the wider society (Citizens, consumers and end-users in general), instead, is addressed only by 10% of the projects and their average impact is very low (2,65): this fact means that the project outputs are generally intended as mainly addressed to the ICT sector/developers communities, in general, while scarce attention is paid to the social application that may derive from their use/development (only the I2WEB project, in fact, has explicitly stated that one of the purposes of its project outputs is to help older and disabled people in their daily activities).

Another important datum is that 34% of the projects state that the project's partners themselves are the main users of the project's outputs (with an average impact of 3,84): almost all the projects, in fact, are aware that the industrial partners of the research consortium will exploit (at least some parts of) the project outputs in order to commercialize them.

Typology of users	Average rank
Developers and software engineers	4,59
Service providers	4,15
Infrastructure providers and TELCO operators	3,19
Researchers and research communities	3,89
Industry and SMEs	4,08

Citizens/consumers/end-users	2,65
Project partners are project's main users	3,84

Table 7 – Users' relevance from the projects' viewpoint

Typology of users	N° of projects	% of projects
Developers and software engineers	19	66%
Service providers	12	41%
Infrastructure providers and TELCO operators	6	21%
Researchers and research communities	12	41%
Industry and SMEs	10	34%
Citizens/consumers/end-users	3	10%
Project partners are project's main users	10	34%

Table 8 - % of projects with high-relevance stakeholders (score 5)

Table 9 shows that in most of the cases (69%), all the stakeholders impacted by the projects' outputs are both external and internal to the consortium; in 25% of the cases they are only external, while only in 6% they are only internal.

Typology of users	Internal	External	Both	Tot.
Developers and software engineers	12%	8%	81%	100%
Service providers	0%	25%	75%	100%
Infrastructure providers and TELCO operators	5%	38%	57%	100%
Researchers and research communities	8%	4%	88%	100%

Industry and SMEs	0%	25%	75%	100%
Citizens/consumers/end-users	0%	75%	25%	100%
Project partners are project's main users	27%	7%	67%	100%
Tot.	6%	25%	69%	100%

Table 9 - Internality or externality of users

2.3 Identification of the baseline scenario

In order to understand in depth the impacts brought by the projects' outputs to the different stakeholders identified in the previous section, it is important to understand which are the features of the "baseline scenario", that is, the situation without the output(s) of the research project. This should be interpreted as a sort of forecast of the future without the project output(s) or, in other words, a sort of no-investment forecast of what would happen in the future in the context under consideration.

One of the ways to identify and describe the baseline scenario could be that of verifying if there already exist any other commercial products whose objectives are similar to those of the research project output(s), and how well such existing outputs work.

With reference to this issue, only 59% of the projects interviewed assert that another commercial product already exists which could be considered as comparable with the project output, while the remaining 41% declared that the project would develop a completely new solution that has never been explored before.

Existing similar commercial products	**%**
Yes	59%
No	41%
Tot.	100%

Table 10- Existing similar commercial products

The answer to this question has been very useful for the projects' assessment, since it has helped in starting to clarify, at least in qualitative terms, which are the benefits (in addition to those already created by other existing initiatives) generated by their output(s), with reference to the different categories of stakeholders identified in the previous step.

2.3.1 Ex-post scenario description

In this section we describe the "differences" generated (or expected) by project outputs. In other terms, project outputs are expected to transform, to a certain extent, the situation described in the ex-ante scenario: those are the impacts generated or expected by the projects' outputs. We will describe such "transformations" in economic terms first, then in financial terms. A section will be dedicated to the technological dimension of project outputs and, finally, we will consider the social relevance of such transformations.

2.4 Economic impacts

This section describes the main economic benefits (intended as the ameliorations brought by the project with reference to the baseline scenario) which may be experienced by the various stakeholders after project completion and after the exploitation of the research output(s), in order to understand the possible increment in social welfare produced by the project. In the ex-post scenario, in fact, the projects were asked to try to describe the changes brought to society by the exploitation of the output(s) of the IoS/SaaS research project, considering their possible application(s) to real life and, therefore, describing the way in which such outputs could be practically used.

In particular, projects were asked to focus their attention on each selected category of stakeholders, in order to describe the impacts generated by the project's outputs on them, with reference to the following categories of benefits:

- improvements in quantity (e.g. number of users, number of data available/ exploitable etc.)
- improvements in variety (e.g. number or typologies of activities performable etc.)
- improvements in efficiency (e.g. cost reductions, time savings, increment in the optimization of resources, etc.)
- improvements in quality/satisfaction (e.g. increment the services/products/ systems quality, better targeted users/beneficiaries' needs).

To such question, all the interviewed projects answered that their project's outputs impact more than one category of benefits. In particular, Figure 12 shows that the most widespread impacts are: to improve the quality of the services/products/systems (77% of the projects), to reduce the costs for performing some specific activities (63% of the projects), to reduce the time to deliver a service (57% of the projects) or to deploy it over the network (47% of the projects), and to increment the number of users/beneficiaries (53% of the projects).

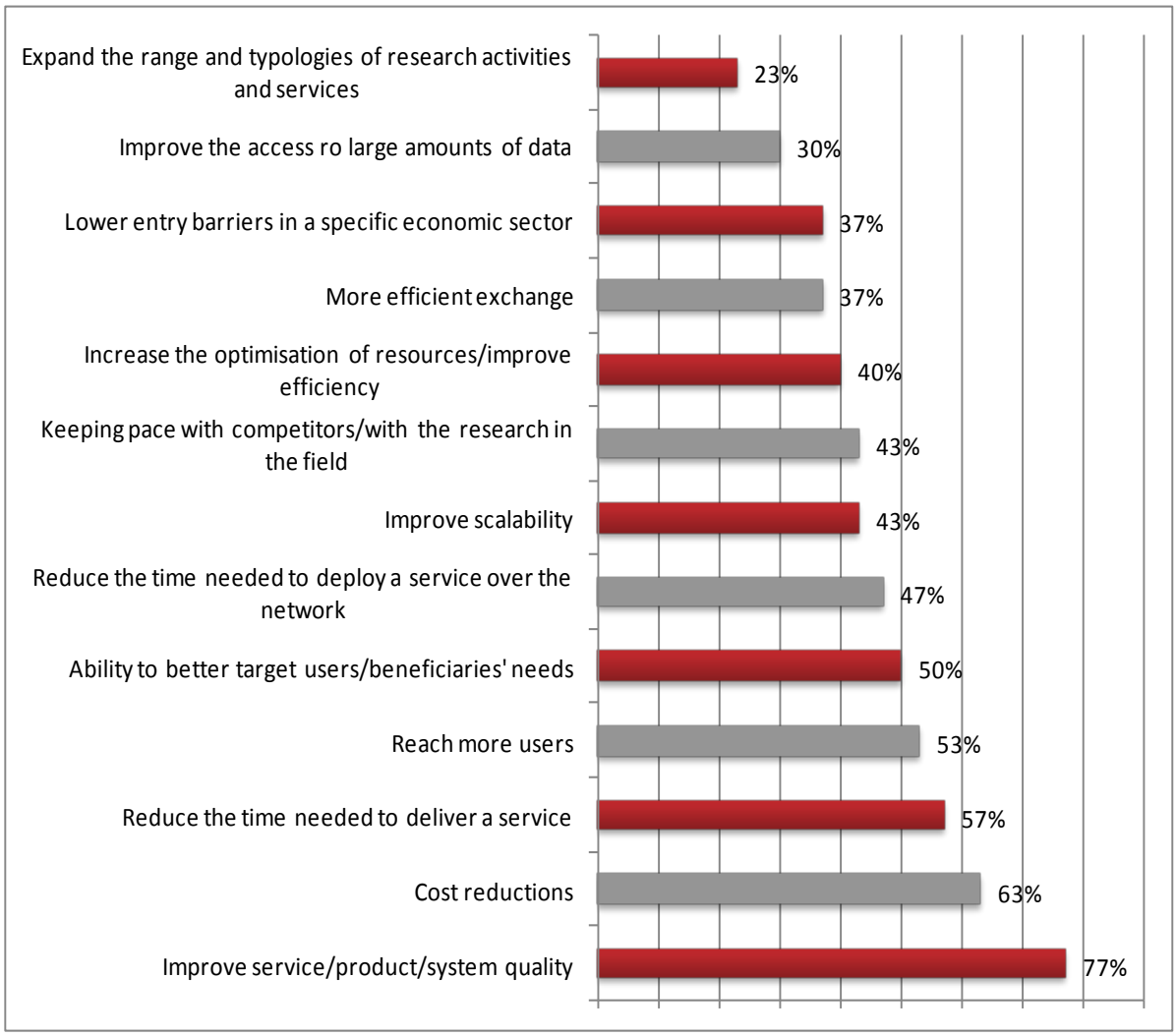


Figure 11 – Typologies of benefits produced

With reference to the cost reductions, Figures 12 and 13 show that most of the projects generating cost reductions (79%) state that their project output will help lowering software development costs by an average of 18%; in addition to this, more than half (57%) of the projects claim both decrement in maintenance costs, for an average value of 8%, and cost reductions due to higher software re-usability, for an average value of 14%.

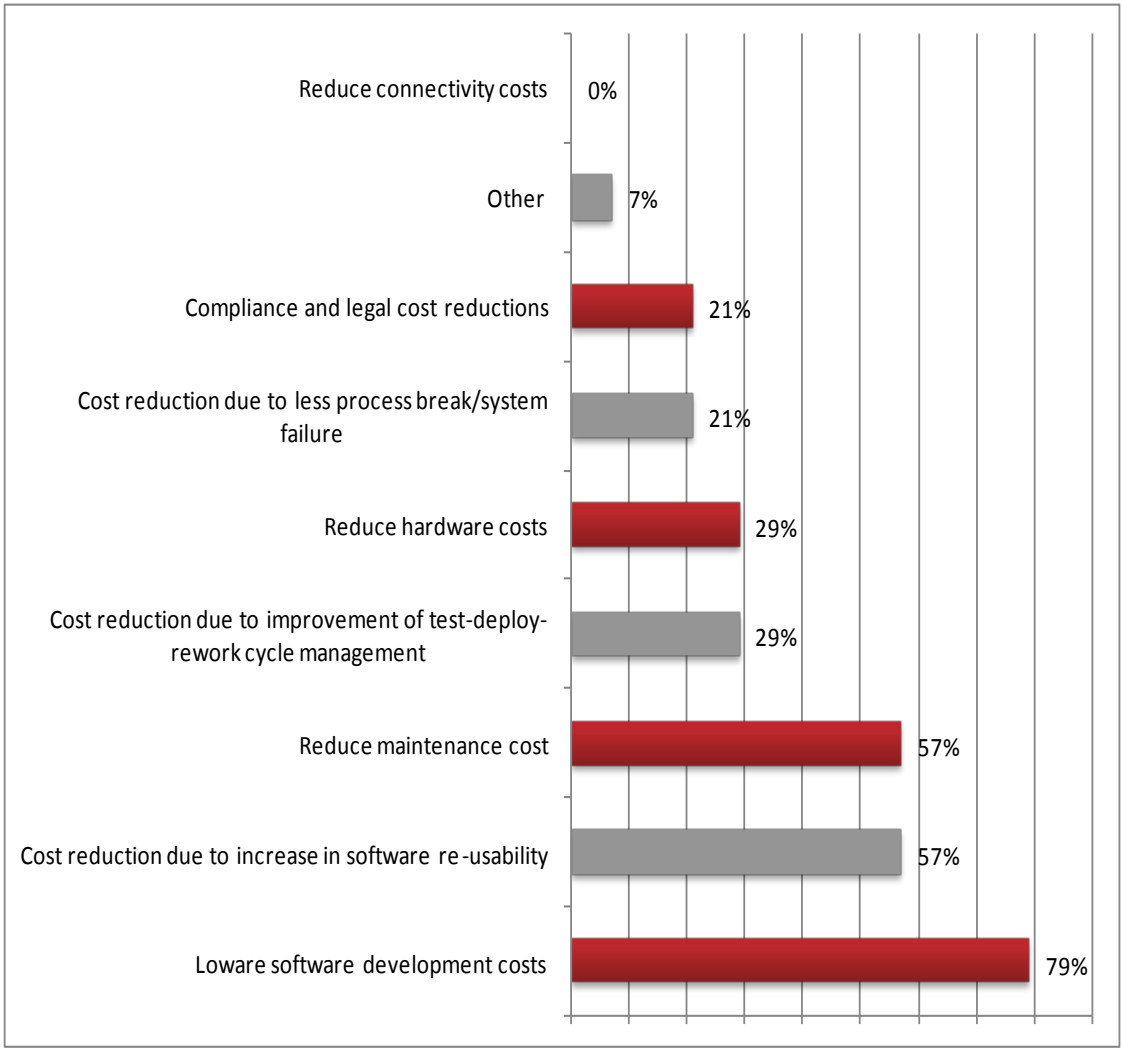


Figure 12 – Typologies of cost reductions claimed by projects

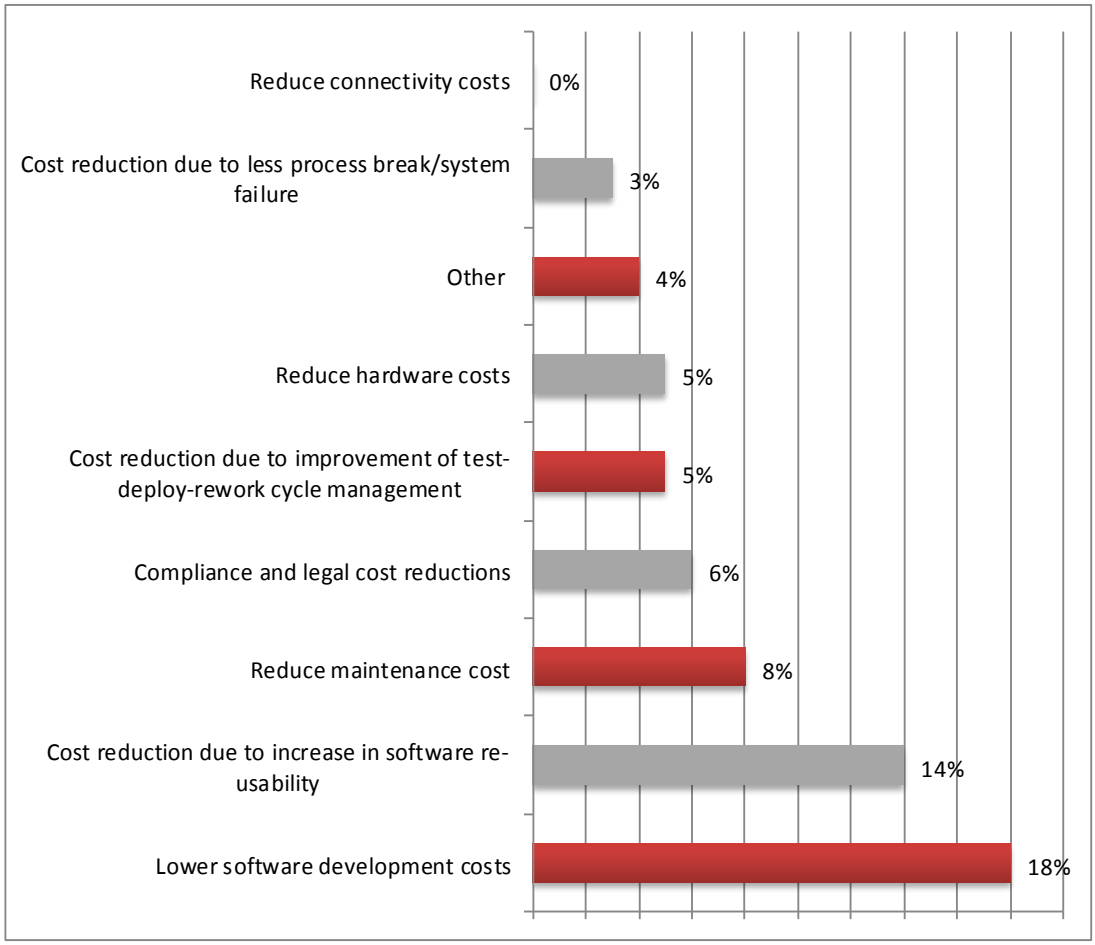


Figure 13 – Average percentage of saving for typology of cost (Average calculated only on projects with cost reductions)

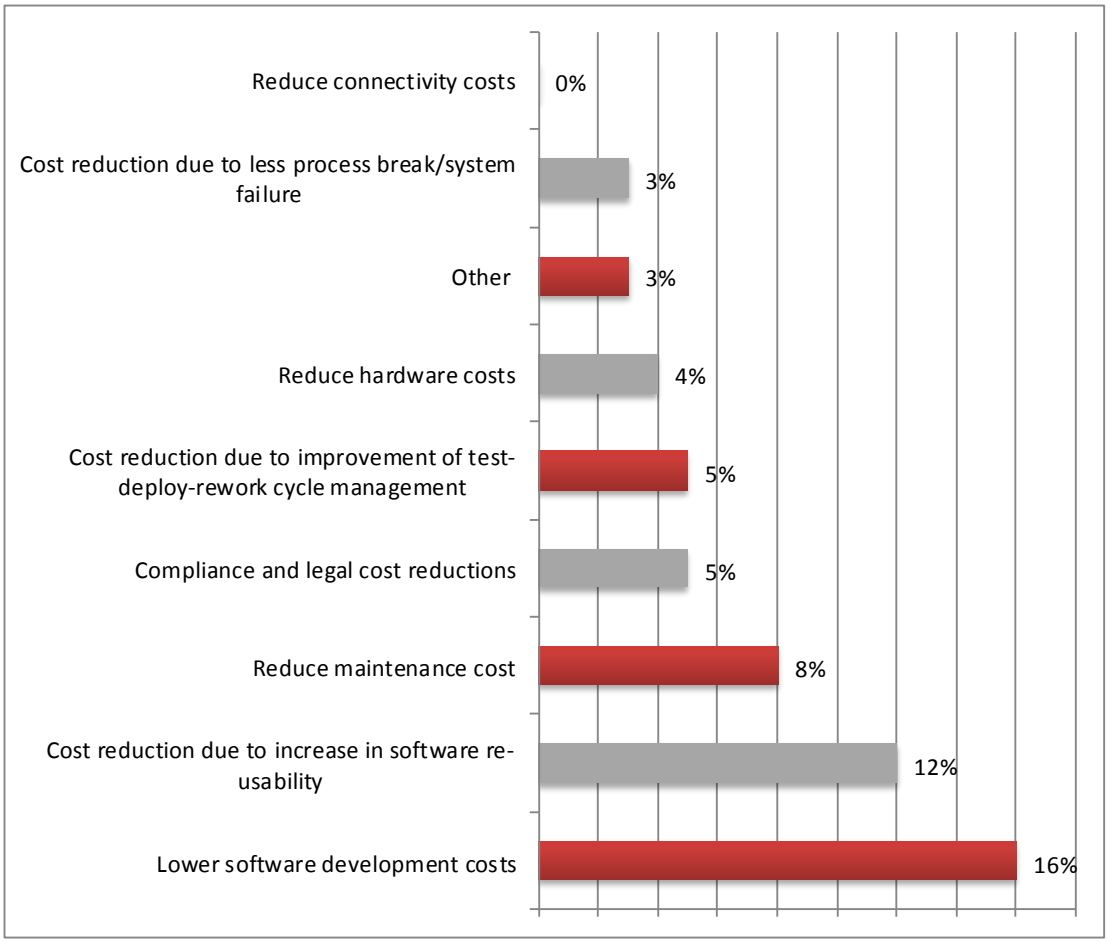


Figure 14 – Average percentage of saving for typology of cost (Average calculated on all the projects)

It is important to mention that the economic impacts described above are based on a qualitative self-assessment made by the respondent projects. In fact, we can say that for most of the interviewed projects the reported figures represent the expected impact, while the concrete evaluation of the project economic impacts will be only possible at the end of the project life-cycle and only if the projects introduce and use self-evaluation instruments (such as the SEQUOIA methodology) or a regular basis.

With reference to the impact on reaching more users, Figure 16 shows that, at present, most of the projects (64%) think that the number of persons benefiting from project outputs' usage is very low and less than 100, while only 18% think that their project's outputs will be soon used by more than 2000 people. Figure 17, instead, shows that, in a time-frame of 3 years from the project end, the number of expected users will be much higher than the present: 41% of the projects, in fact, believes that they will succeed in reaching more than 2000 users while the percentage of projects with a low impact on reaching users decreases from 64% to 23%.

These results are very interesting, since the higher is the increase in the number of users, the higher will be the global value of the economic impact brought by the cost/time reductions and by the positive environmental impacts discussed above. The same may be applied to the social impacts.

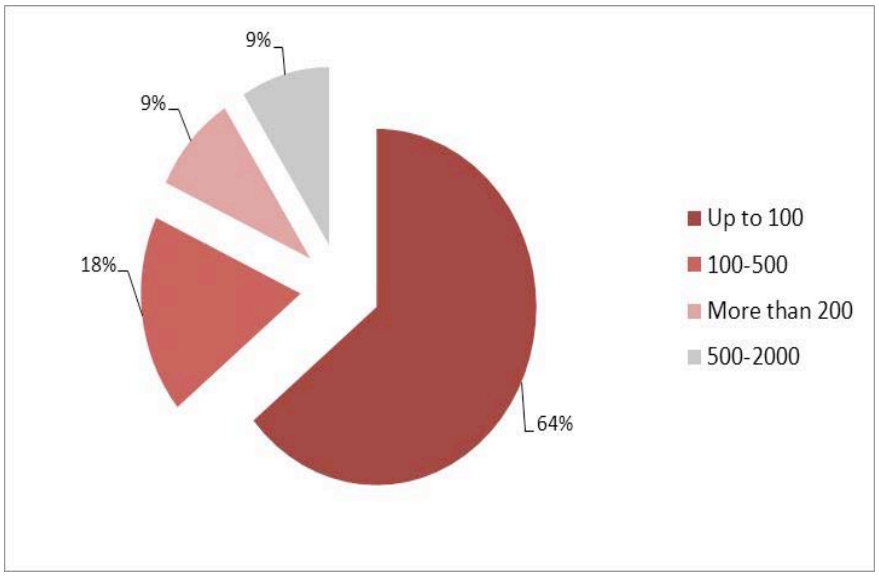


Figure 15 - % of projects per actual number of users

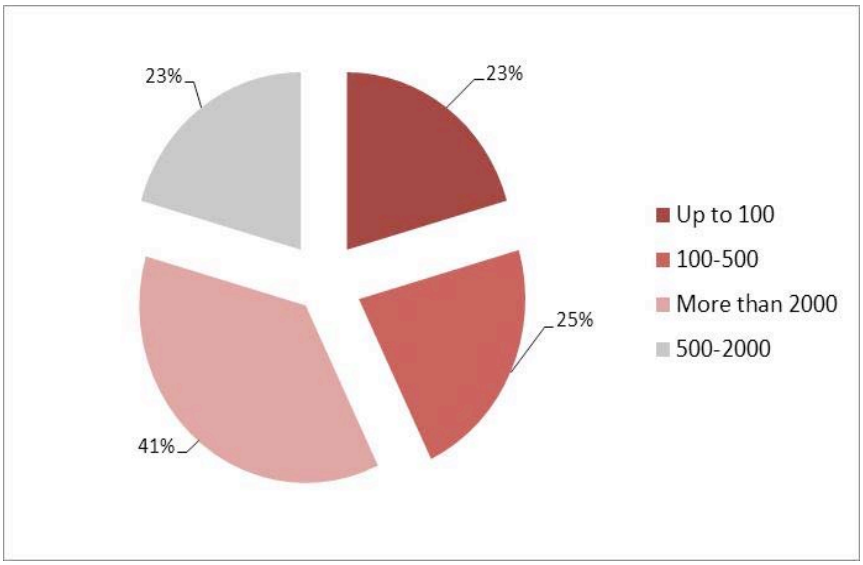


Figure 16- % of projects per users in a 3-year time-frame

Another important type of information SEQUOIA has investigated is whether the research projects assessed have positive impact on the environment, and which are the most important categories of environmental impacts generated. Only 23% of the projects expect to have a positive impact on the environment, mainly due to savings in energy consumption (CONTRAIL, S-CUBE, SLA@SOI and CUMULONIMBO),

reduction in travel (REMICS and SCUBE), consuming and selling less paper (SCUBE), and decrease in storage-related costs and in technological waste production (SLA@SOI). Unfortunately, no quantification of such impacts has been provided, since it depends on the specificities of the application scenarios which have not yet been experimented, due to the early stage of the projects assessed.

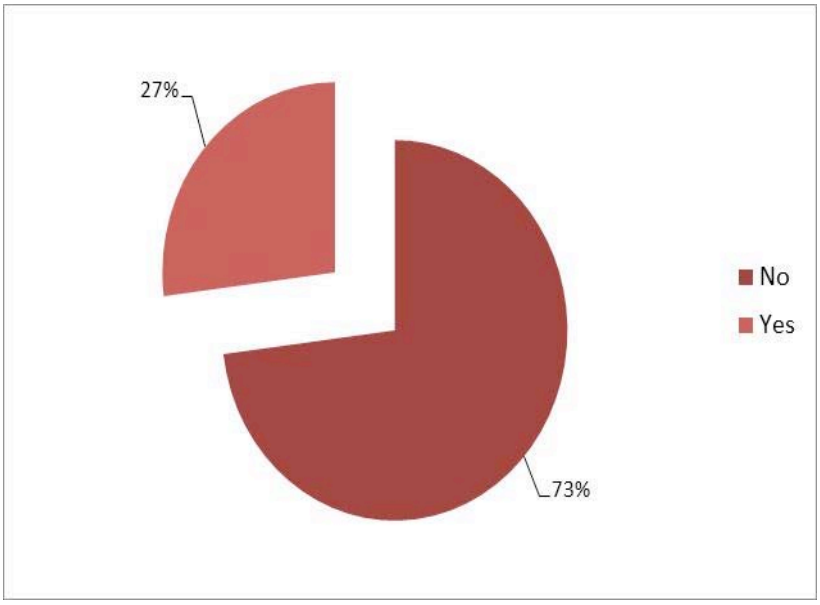


Figure 17 - *Impact on environment*

2.5 Financial impacts

This section describes the financial inflows and outflows generated by the use/ exploitation/commercialization of the projects' outputs.

According to the SEQUOIA methodology, the evaluation has considered as financial income all the revenues due to sales or royalties or other funding, coming from the exploitation of the research projects' output(s). In order to quantify such impact, projects were asked if their output(s) will be commercialized either during the project life or after the project end. 33% of the projects interviewed answered that their project outputs will not be commercialized and, therefore, no financial revenue will ever be generated, while 67% of the projects assessed answered that their outputs will be commercialized, but only at the end of the project. As mentioned in the previous paragraphs, due to the early stage of most of projects there are no business plans available and the financial dimension has not been explored yet. Consequently, on one hand, it is not possible if project partners intend to create commercial spin-off (only one project mentioned the possibility to create a spin-off), or if specific commercial ventures composed by the consortium partners will be established. On the other hand, it is clear but the key role in the commercialization of project outputs will be played by the main industrial/private partners of the consortium, who will exploit them (or, in most of the cases, part of them) for their own purposes.

Since the projects are not able to identify a commercialisation or exploitation plan, unfortunately we cannot quantify this contribution to the financial impact.

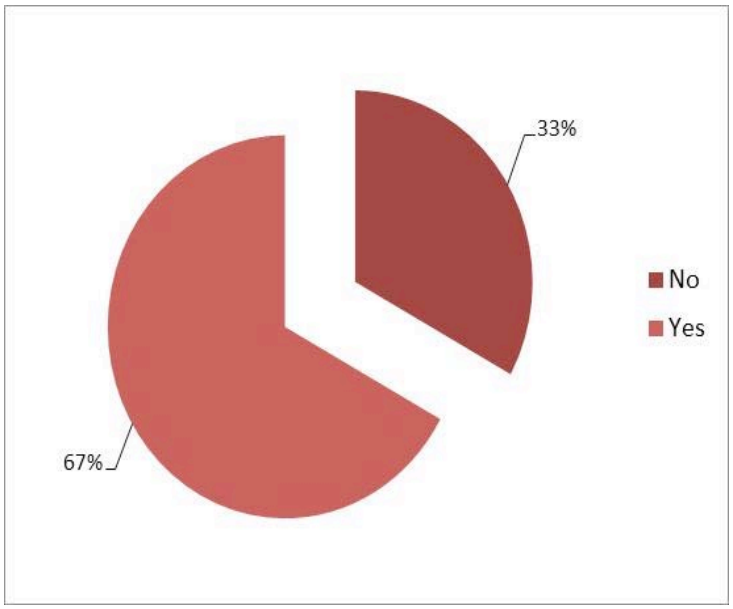


Figure 18- Commercial exploitation of the outputs

The fact that the project consortia will not commercially exploit their outputs is also confirmed by the fact that less than half (46%) of the assessed projects have drafted a business plan, since no financial interest is specifically linked to the exploitation of the projects' outputs but, on the contrary, projects' efforts are almost always oriented towards benefiting further research.

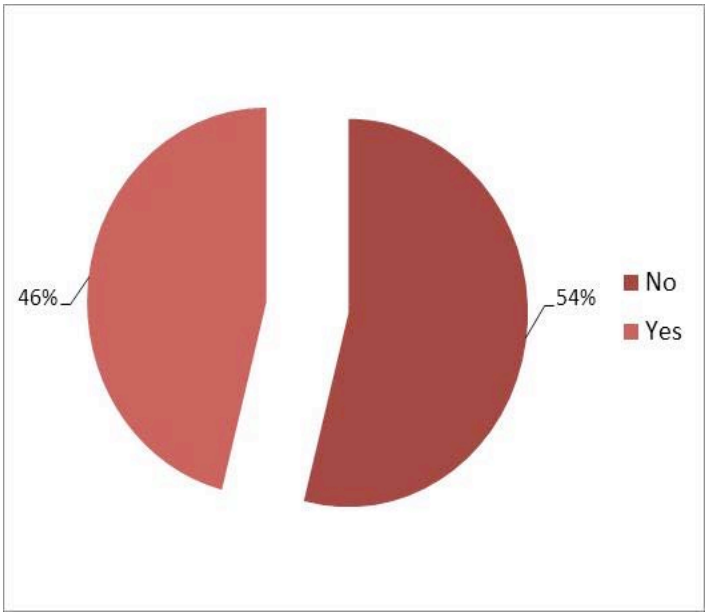


Figure 19- Use o business plan

It is also important to underline that that 75% of the projects has decided to release their project output as open source software. This, of course, will not limit the potential economic and financial exploitation of project results. Respondents deciding to release project's outputs using an OSS approach have difficulties in elaborating a commercial exploitation and a business model for their outputs. Hence, the SEQUOIA questionnaire shows a high need for the projects to identify the relevant characteristics of an Open Source business plan. In the near future, a market analysis of Open Source solutions is required in order to identify the most suitable business and revenue models within the Internet of Service context. Starting from this analysis, projects will able to develop appropriate exploitation processes of their outputs.

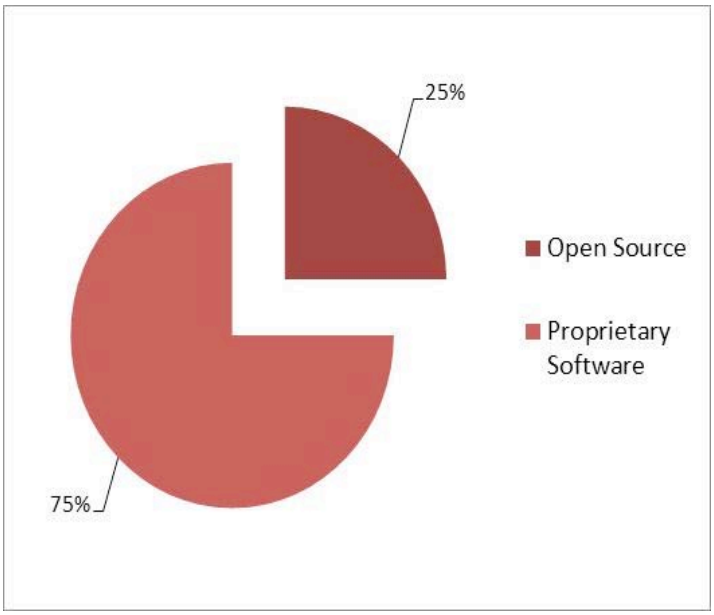


Figure 20- Typology of copyright/license approach

2.6 Technological impact

One of the main outputs of a research project in the IoS/SaaS domain is to provide technological advances in the specific domain of application.

Such technological advances have been measured by SEQUOIA in a qualitative way, by rating, on a scale from 1 to 10, the following characteristics of the project output(s)[7]:

- *Functionality*;
- *Reliability*;
- *Usability*;

[7] The variables used for the technological assessment are derived by ISO9126 *Software engineering — Product quality*

- *Efficiency*;
- *Maintainability*;
- *Portability*;
- *Quality in Use*.

In particular:

- "Functionality" describes the capability of the software product to provide functions which meet stated and implied needs when the software is used under specified conditions; such impact has been subdivided into five sub-impacts: suitability, accuracy, interoperability, security, and functionality compliance.
- "Reliability" describes the capability of the software product to maintain a specified level of performance when used under specified conditions; such impact has been subdivided into four sub-impacts: maturity, fault tolerance, recoverability, reliability compliance.
- "Usability" describes the capability of the software product to be understood, learned, used and be attractive to the user, when used under specified conditions; such impact has been subdivided into five sub-impacts: understandability, learnability, operability, attractiveness, and usability compliance.
- "Efficiency" describes the capability of the software product to provide appropriate performance, relative to the amount of resources used, under stated conditions; such impact has been subdivided into three sub-impacts: time behaviour, resource utilization, and efficiency compliance.
- "Maintainability" describes the capability of the software product to be modified. Modifications may include corrections, improvements or adaptation of the software to changes in environment, and in requirements and functional specifications; such impact has been subdivided into five sub-impacts: analysability, changeability, stability, testability, and maintainability compliance.
- "Portability" describes the capability of the software product to be transferred from one environment to another; such impact has been subdivided into four sub-impacts: adaptability, installability, coexistence, replaceability, portability compliance.
- "Quality in use" measures whether a product meets the needs of specified users to achieve specified goals with effectiveness, productivity, safety and satisfaction in a specified context of use; such impact has been subdivided into four sub-impacts: effectiveness, productivity, satisfaction, and safety

Table 10 shows the average rating calculated with reference to the global technological effect of the projects, obtained as the mean value of the above ratings. As evident, the global average technological rating is more than sufficient and equal to 6,7.

			average**	average*	average	global average
External Quality	Functionality	Suitability	7,67	6,65	6,44	6,7
		Accuracy	5,94			
		Interoperability	7,95			
		Security	5,06			
		Functionality Compliance	6,65			
	Reliability	Maturity	5,12	5,29		
		Fault Tolerance	5,06			
		Recoverability	5,29			
		Reliability Compliance	5,71			
	Usability	Understandability	6,28	6,61		
		Learnability	6,61			
		Operability	7,59			
		Attractiveness	6,47			
		Usability Compliance	6,11			
	Efficiency	Time Behaviour	6,65	6,69		
		Resource Utilisation	7,00			
		Efficiency Compliance	6,41			
	Maintainability	Analysability	6,00	6,27		
		Changeability	6,71			
		Stability	6,37			
		Testability	6,41			
		Maintainability Compliance	5,89			
	Portability	Adaptability	8,06	7,11		
		Installability	7,68			
		Co-Existence	6,53			
		Replaceability	6,71			
		Portability Compliance	6,56			
Quality in use		Effectiveness	7,06	6,87	6,87	
		Productivity	7,69			
		Satisfaction	7,72			
		Safety	5,00			

Table 11 - Technological rating

Improvements in "Portability", and especially adaptability, is the category that obtained the highest score, while Reliability is below the average. This is perfectly understandable considering the research nature of the projects considered.

2.7 Social impacts (including scientific impacts)

In addition to economic, financial, and technological impacts, SEQUOIA turned its attention to social impacts that, as mentioned when describing the project beneficiaries, have to be seen mainly as indirect impacts. For respondents, in fact, it was very difficult to map and describe potential social impacts. This is due, on the one hand, to the disciplinary background of the respondents who are not necessarily accustomed to thinking about social-related issues; and, on the other hand, to the fact that most of the projects are developing *enabling technologies/solutions* that may have very diverse and partially not-predictable applications and uses. It has to be mentioned that it is generally easier to map and describe social impacts when dealing with service development than when dealing with languages, infrastructures, methods, and framework development. In other words, it is easier to map social impacts when the technology developed leads to the engagement of end-users. As we have seen, on the contrary, most projects are developing solutions dedicated to software developers, consequently impacts will be on the ICT industry first and – once exploited by the ICT industry – will then impact citizens and European society as a whole. As mentioned already, this is consistent with the EC policy goals of strengthening the competitiveness of the European software sector.

As described in the SEQUOIA methodology, social impacts have been articulated in three aspects/components, which are:

- Impact on employment and working routine
- Impact on knowledge creation and sharing
- Impact on social capital

We will dedicate a specific paragraph to each of these aspects/components but, before doing so, we will map potential areas of impacts.

We asked to respondent to select those sectors in which they may expect to have an impact; a list of sectors where provided. As shown in the figure below, 67% of the projects expect to have an impact on the ICT industry in general, while areas of social media such as eLearning, eHealth and eInclusion are selected by a percentage of projects equal or below 10%. The same is true for ICT support of mobility and transport. 17% of the projects expect to have an impact on eGovernment, while 23% will have an impact on eInfrastructures. The most interesting datum, however, is represented by the 47% of respondents that declare to have not a direct impact on the sectors mentioned, while developing solutions enabling various possible scenarios/services. This datum, confirms the fact that social impacts are seen as indirect impacts by Saas and IoS actors.

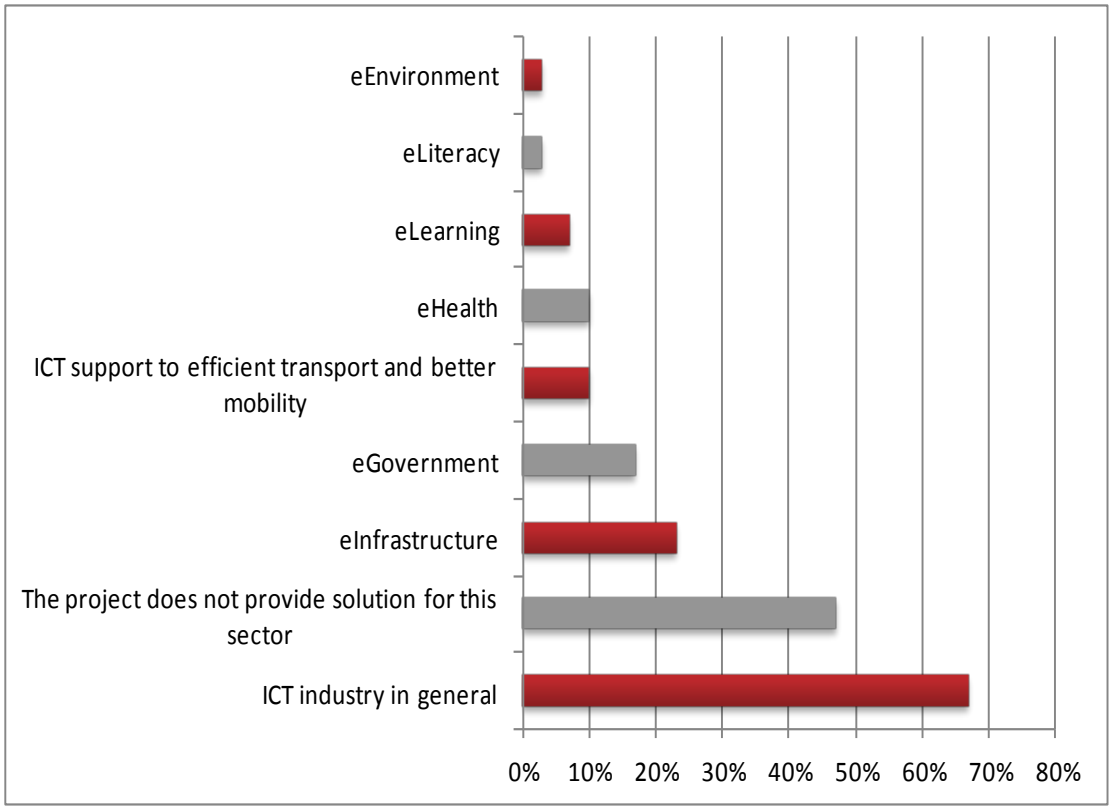


Figure 21 - Categories of Social Impact

The SEQUOIA team also asked to rank the relevance of selected goals of the European Digital Agenda 2020. Respondents were asked to assign a value from 1 to 5, where 1 was "not relevant" and 5 was "very relevant". None of the goals indicated scored very high, but positive results may be observed towards the following goals:

- Allow SMEs to enter new markets by lowering entry barriers for SMEs /lowering resource costs
- Increase the demand for ICT-related services

These goals are seen as quite relevant (scoring more than 3,5) and are consistent with the answers provided to the economics-related questions. Particularly, projects expect to increase ICT-related service demand by providing privacy, identity and security solutions or by improving portability and usability of services.

Goals of European Digital Agenda 2020	Average Rank
Creation of content and borderless services	3,09
Allow SMEs to enter new markets by lowering entry barriers for SMEs /lowering resource costs	3,95
Creation of a united digital market	2,32
Increase ICT related Services demand	3,52
Basic broadband for all	1,29
Fast and ultra-fast broadband for all	1,20
Promote better use of standards	3,00
Make the network more secure/more trustworthy	2,00
Combating cybercrime	1,14
Digitalisation of European cinema	1,14
Increase the interoperability of Smart Grids at European level	1,62
Increase interoperability at a more general level	3,09
Increment eCommerce	2,86

Table 12 - Goals of European Digital Agenda 2020

Here below we report, anonymised, some of the answer gathered:

- "by providing an infrastructure for service interoperation, we are establishing a platform that would potentially become a facilitator for ICT service offerings and therefore indirectly may affect demand".
- "will contribute to borderless services by providing the scalability needed for a high number of users coming from many different countries".
- "the project is very far from all these aspects: it could do all or none…"

2.7.1 Impact on employment and working routines

Almost half of the interviewed projects do not know if they will have an impact on employment rate of the territories interested by the project, 22% declare that they will not have an impact at all, while the remaining 30% of the respondents expect to have such an impact.

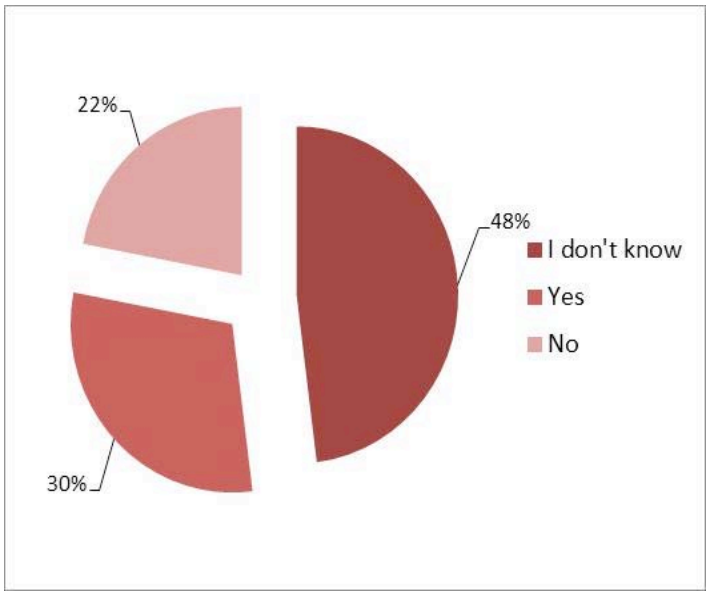


Figure 22 - Impact on employment rate

The difficulties in thinking about impacts on employment are due to the fact that most projects – as described in the economic impact section – do not have – at least at the time of writing – a clear idea about possible commercial exploitation of their results.

However, most of the projects contribute to the creation of new working positions. In fact, 44% of the projects estimated that they will generate more than 200 jobs, 11% will generate between 20 and 200 jobs, while 33% will engage up to 20 new workers. Only the remaining 11% will generate no job positions. This foreseen results are very positive, even if in some cases is not clear how new job position will be created. Among other option, we can see that some projects, by supporting SMEs in being more competitive and in growing may also generate new job positions. Other projects, expect to have an impact on employment by creating new professional figures to be allocated in the job-market.

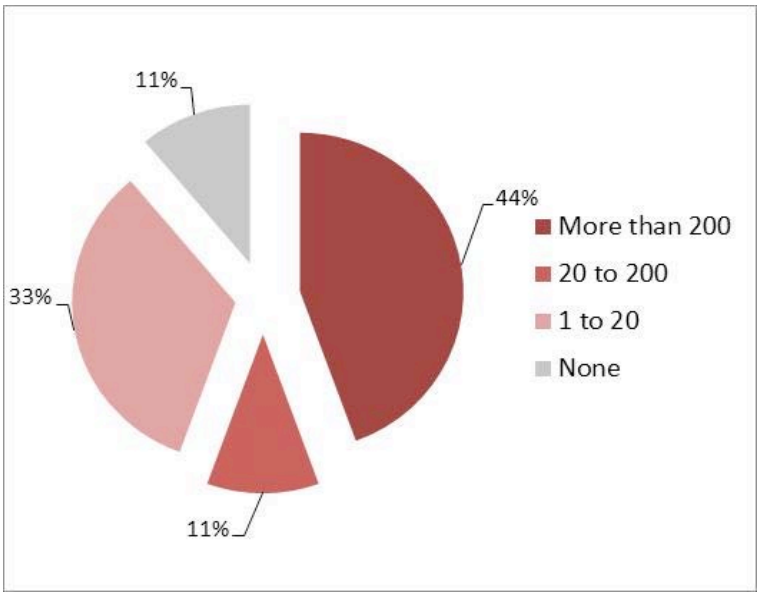


Figure 23 - Work positions generated by the projects

Moreover, projects have an impact on the creation of highly skilled personnel by supporting and sponsoring PhD and Post-Doc positions. As shown in Figure 24 below, each project sponsors an everage number of PhD scolarships equal to 6, for a total number of sponsored PhD students of 117. In addition, 3 Post-Doc positions are sponsored by each project (everage value) for a total number of 45 new Post-Docs.

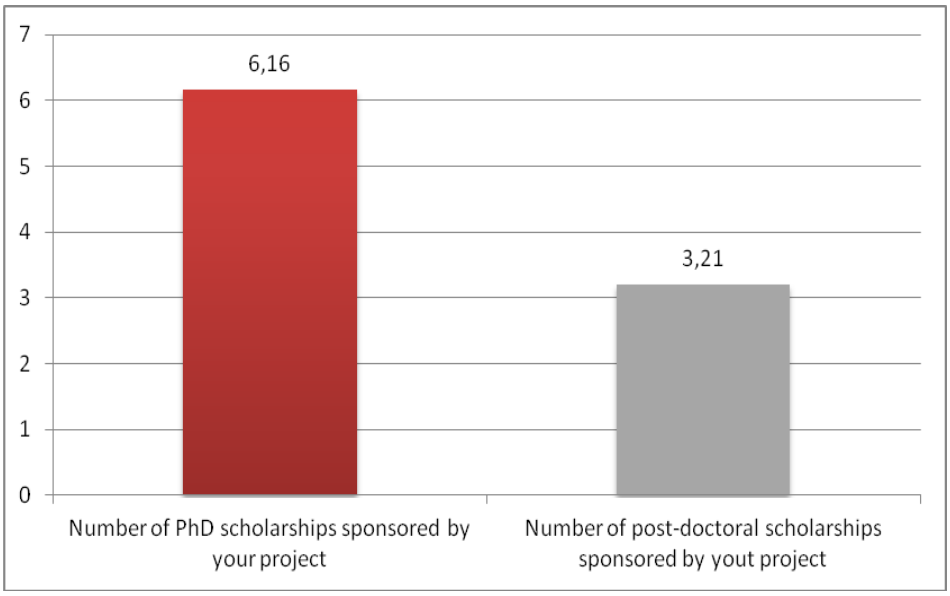


Figure 24 - Impact on tertiary education and Industry

We asked to the projects if their outputs wil have an impact on the working routines of their users. More precisely we asked the respondents to say to what extent they could agree with the following sentences:

- "Provide solutions for working efficiently and conveniently for all sizes of firms"
- "Reduce the work of the users" (more operations will be automated)
- "Enable your users to do their everyday work more quickly "

Projects were allowed assign a value from 1 to 5 to the sentences, where 1 is totally disagree and 5 is totally agree. Seven projects didn't answer, none selected the option "totally agree", and the average value for all the sentences is just below 3 (more precisely 2,84 for the first sentence, 2,95 for the second, and 2,88 for the third one).

2.7.2 Impact on knowledge creation and sharing

In this paragraph we analyse one of the most important and interesting impacts of SaaS and IoS projects, i.e. the creation and diffusion of knowledge.
In mapping the capability of projects in creating knowledge we considered various forms of systematize knowledge: Journal articles (i.e. peer-reviewed articles), articles presented in conferences or published in proceedings (we included in this typology also non-peer-reviewed articles), books, chapter of books, and scientific deliverables (i.e. project deliverables other than those related to management, dissemination, and similar).

Production of knowledge	Total	%	Average
Journal articles	72	12%	6,00
Articles presented at conferences or published in proceedings	308	50%	18,12
Books	4	1%	0,50
Chapters of books	29	5%	3,22
Scientific deliverables	200	33%	12,50
Tot.	613	100%	40,34

Table 13 - Production of knowledge

As we can see in Table 13, each project produced an average number of articles equal to 6, generating a total number of articles of 72. This result is very positive considering that most of the projects under analysis are still running and having an

article published required several months. We can expect this number to grow considerably in the next months/years. Similarly, the number of scientific deliverables that is now at 12,50 as average and 200 as a total is supposed to growth significantly in the near future. However, articles presented in conferences and related proceeding represent 50% of the projects' scientific production. This datum gives us the chance to consider the next variable considered by SEQUOIA: knowledge sharing. Clearly, in fact, journals and books are not the only ways to diffuse scientific results; very important are – in engaging a more diversified audience – conferences and knowledge exchange initiatives. Each project took part in almost 20 conferences in which its project was presented. Unfortunately we do not have data about the number of participants to those events, neither the nature of such conferences, but we can see the effort of projects in disseminating to the scientific community their results.

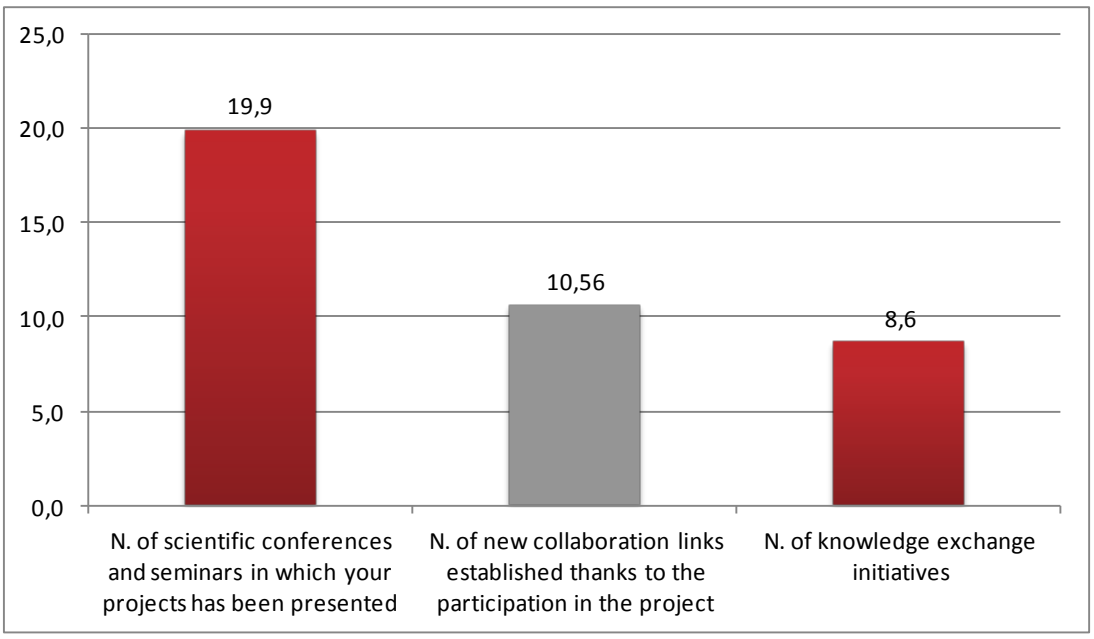


Figure 25 - Circulation of ideas

Finally, one of the pillars of ERA policy is that of reinforcing the relationship and the transfer of knowledge form research to training. For this reason we asked the projects to indicate the number of training modules developed or planned as a result of their activities.

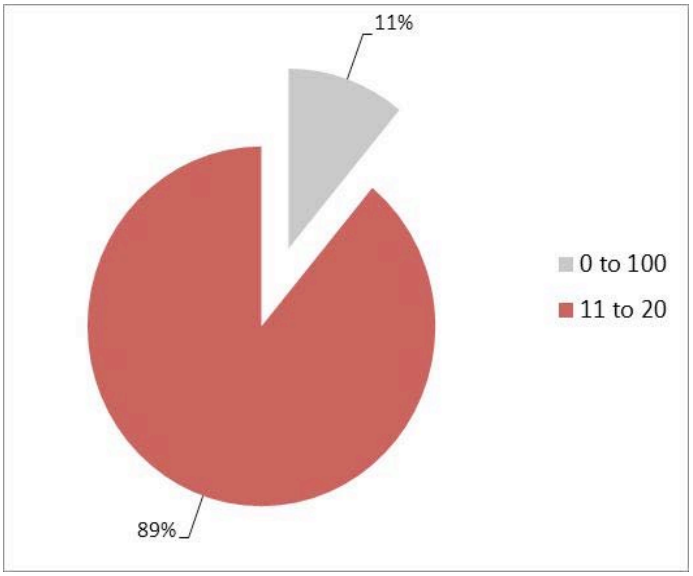


Figure 26 -Training modules and courses developed

Figure 26 shows that the large majority of the projects developed or plan to develop more than 10 training modules. Several projects mentioned their willingness to transform the outputs of each or their research WPs in dedicated training modules. In addition, this kind of material can be extremely important when speaking about sustainability of research projects; in fact, the university is the place in which projects results – even if not ready to be transferred to the market – can be used and fine-tuned by students that one day will be in charge of developing new and better technologies.

2.7.3 Impact on social capital

The third and last dimension considered in the social impact assessment was social capital. With this term we indicate the value that each project has and can generate in terms of new and stronger relational and collaboration links. We considered both the capability of a project to create new relationships for its partners and for its users/beneficiaries. Beside this, we considered "trust" as an important dimension of social capital (see D3.3a and D3.3b).

We considered the number of collaboration links established as a consequence of the participation in the projects. This is an important value added of EU projects: that of creating new research networks and enlarge already-existing ones. In this regard, each project created – on average – more than 10 new links.

More specifically, as shown in the graph below, projects created:

59 new partnership agreements with other universities research centres enterprises or public bodies, 13 new commercial collaborations with actor outside the consortium and 49 submitted new projects proposals that will not been prepared without participating in the project.

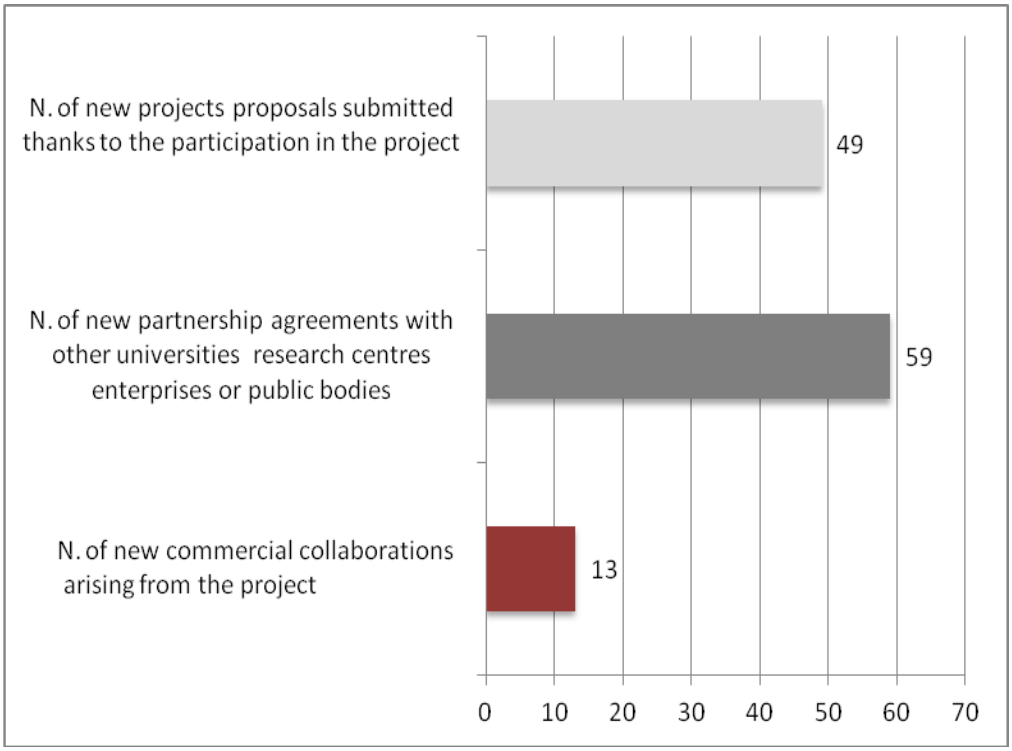


Figure 27 - New collaboration links established thanks to project participation

In addition, we asked the projects' representatives to what extent they can agree on the following sentences:

- "Your project outputs will improve the way in which users communicate and collaborate with each other/ facilitate social interaction"
- "Your project outputs will enlarge already-existing networks"
- "Your project outputs will support network creation/ collaboration of enterprises in the sector"
- "Your project outputs will support network creation/collaboration among citizens"
- "Your project outputs will support network creation/collaboration in academia".

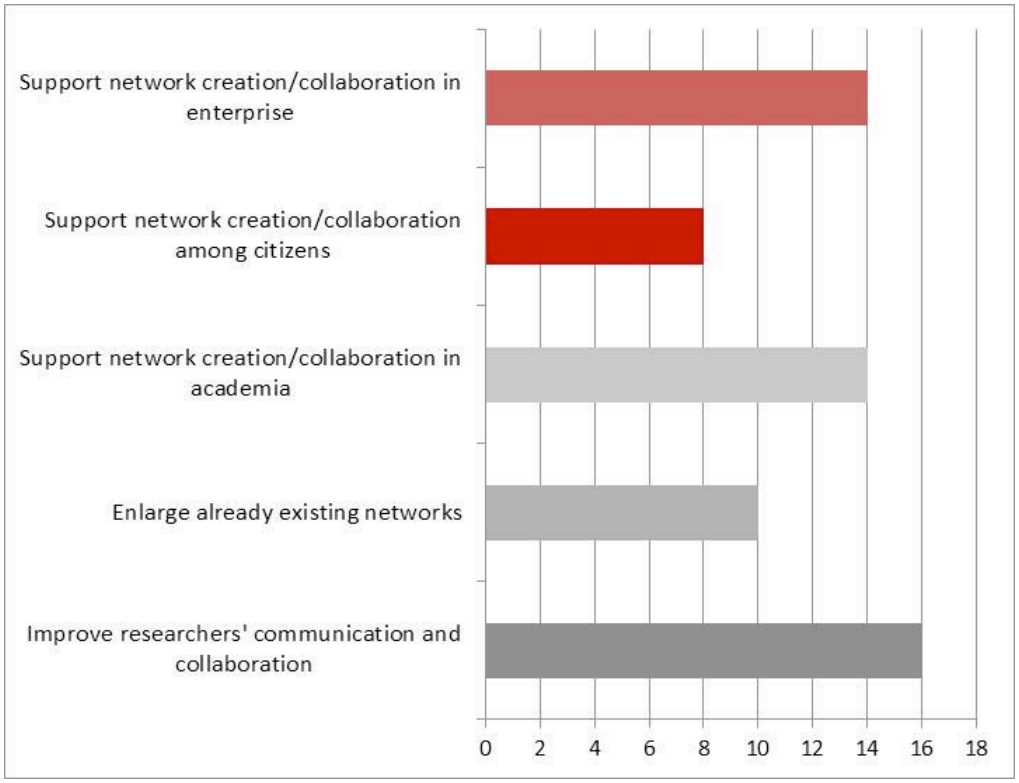


Figure 28 –Supporting network creation and collaboration

47% of respondents agree or strongly agree about the fact that their projects support the creation of networks and the collaboration among enterprises and among academic actors. 33% say that they enlarge already existing networks and 27% expect to have an impact in terms of collaboration among citizens. The majority of the projects expect to improve the way in which users communicate and collaborate with each other.

Finally, we consider how the project may improve:

- "Trust among project users "
- "Citizens' trust in Public Administration "
- "Citizens' trust in ICT and the Internet ".

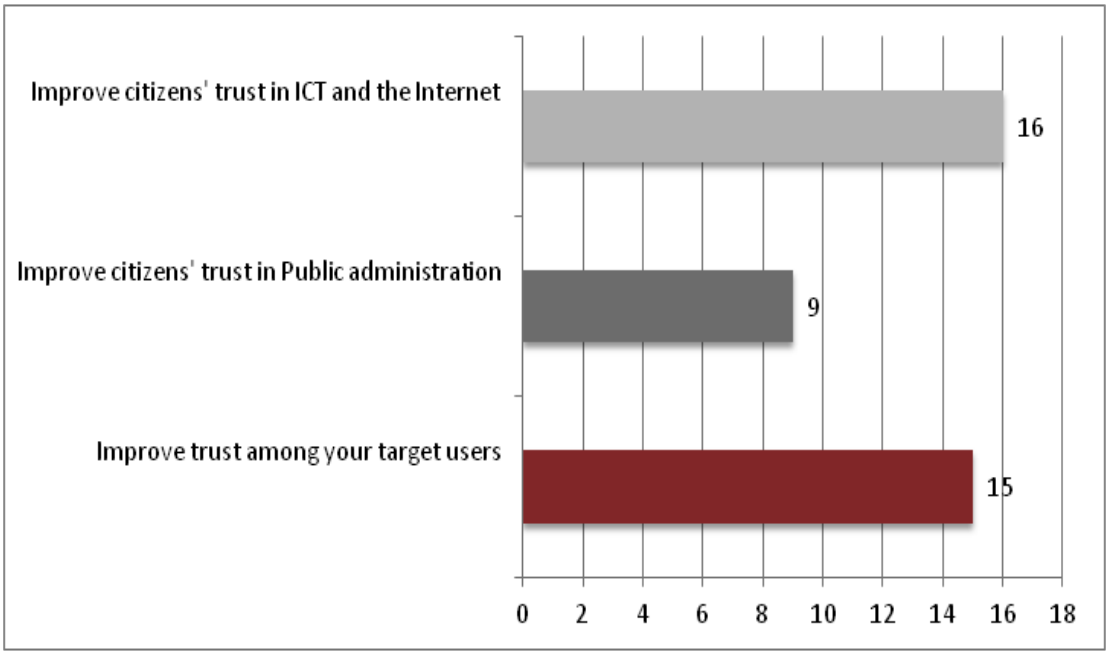


Figure 29 –Impact on trust

About half of the respondent see their project as instrument for improving the trust among users in their online interaction and the user trust in ICT and Internet. This would be a positive outcome of the projects and will foster the achievement of a more and better connected Europe. The capability of evaluated project in fostering trust for the internet and for other users is often related to the improvement in security and management that the project will achieve.

CHAPTER 3: FINAL ASSESSMENT ANALYSIS

Now that a significant amount of information regarding the aggregate socio-economic impacts of the research projects funded under Call 1 and 5 in the domain of IoS and SaaS has been generated and collected, it is possible to process such data to assess globally the average performance of the projects, through the use of aggregated and synthetic indices. In particular, according to the SEQUOIA methodology, three indices should be calculated:

- the iROI, which provides information about the financial sustainability of the projects by measuring, in monetary terms, the (potential and/or future) financial return for the consortium partners;
- the xROI, that quantifies, in monetary terms, the amount of net economic benefits that the projects generate in society as a whole (both users and non-users of research outputs);
- and the RORI, that sums up the information of economic and financial analysis (condensed into the iROI and xROI), expressed in monetary terms, together with those coming out of the technological and social analysis, expressed in other more suitable quali-quantitative metrics. The RORI, therefore, synthesizes the whole set of information generated during the assessment, and shows the global performance of each research project. The issue, here, is to put together all the information generated during the analysis, both qualitative and quantitative, both monetary (or monetisable) or not. The resulting index, therefore, does not have a strict economic meaning but, at least, provides a measure of the whole performance of each IoS/SaaS research project that is comparable both to the mean of the assessed projects' sample, and to that of other projects.

Unfortunately, though, the evaluation of targeted research projects required the SEQUOIA team to make some adjustments to the initial methodology, mainly due to the early stage of the assessed projects and to their consequent inability to provide useful and stable information to "feed" the original SEQUOIA evaluation model.

In particular, the results of the interviews conducted by the SEQUOIA team showed that:

- the IROI is not significant, since no commercial exploitation of projects' outputs is ever performed by the projects' consortia and, therefore, no financial income (except for the EC funding) and outcomes are produced/managed by the projects themselves;
- the XROI value to be calculated by the SEQUOIA assessment at the current projects' stage would be inevitably affected by an underestimation, due to the fact that:
    a) almost none of the projects interviewed has yet performed case study pilots to test the application of their outputs in concrete scenarios, something that would provide useful feedback both for understanding the exploitation features of the projects' main findings and for correctly assessing the economic value generated by the project;

b) most of the projects interviewed are working on the creation of new "enabling technologies", whose concrete applications may be so wide and different that their associated economic impacts are only partially imaginable and quantifiable on a short-term basis.

For these reasons, the only useful indicator remains the RORI, whose calculation will provide a comparable benchmark for both comparing the projects with reference to the mean of the assessed sample, and ranking them in consideration of their global socio-economic performance.

In its original formulation, the RORI index was calculated as a weighted sum of the iROI, the xROI, and the other non-monetisable impact indicators collected with reference to the technological and social aspects. Now, given that the iROI and xROI have proved to be not suitable indices for the current projects' stage, some adjustments to the initial formula for the RORI calculation must be made:

1. since the financial impact is irrelevant, the iROI has not been considered for the RORI calculation;
2. instead of using an underestimated and incorrect xROI, it is preferable to substitute this index with a set of other indicators that give a more correct, though fuzzy, measure of the economic impacts of the projects. In particular, the xROI has been substituted by the following information:
    a) ability of the project outputs to improve efficiency in performing stakeholders activities – this impact will be measured in terms of % of cost savings brought by the use of the project's outputs (see Figure 14);
    b) ability of the project outputs to have a positive impact on the environment: this impact will be measured on a 0/1 scale, where 0 means no/negative impact on the environment and 1 means positive impact on the environment (see Figure 15);
    c) ability to target a high number of persons benefiting from the usage of the project output: this impact will be measured on a 0/4 scale, where 0 means that the project expects no users until three years after project end, 1 means up to 100 users, 2 means a number of users between 100 and 500, 3 means a number of users between 500 and 2000, and 4 means more than 2000 users (see Figure 17);
    d) impact on technological advances able to foster economic growth: this impact will be measured in terms of the outputs' technological rating – expressed on a scale of 1-10 and calculated as the average of the rating of Functionality, Reliability, Usability, Efficiency, Maintainability, Portability and Quality in Use (see Table 10)

In line with the initial formulation of RORI, also social impacts should be considered for its calculation, as follows:

- impact on employment and working routines
- impact on knowledge production and sharing
- impact on social capital (trust, collaboration, networking)

Table 14 shows all the variables used for composing each social impact considered.

Macro variable	Meso variable	Micro variable/indicator
Knowledge production sharing		
	Scientific impact	
		Nb journal articles
		Nb books
		Nb books chapters
		Nb articles presented at conf. or pub. in proceedings
		Nb scientific deliverables
	Knowledge sharing	
		Nb knowledge exchange initiatives
		Nb scientific collaboration links
		Nb training modules
		Nb of scientific events where project presented
		Availability of papers and del through website
	Support ICT usage for all and democratic participation	
		Self-assessment
Impact on employment and work-routine		
	Increment in skilled personnel employment	
		PhD scholarships sponsored by the project
		Post-Doc scholarships sponsored by the project
	Impact on general employment	
		Work positions generated by the project
	Improvement of working routines	
		Self-assessment
Social capital (trust, collaboration, networking)		
	Social capital increment for project participants	
		New collaboration with research institutes
		New collaboration with industry partners
		New project proposals
	Social capital increment for users and beneficiaries	
		Self-assessment

Table 14 - Social Impact variables[8]

The formula for RORI calculation that will be further used, therefore, becomes the following:

$$RORI = \frac{\sum_n X_n w_n}{K}$$

where:

X is the whole set of normalized[9] *indicators* synthesizing the financial, economic and social impacts

$n = 1, ..., N$ (N is the number of *impacts* to be considered)

w are the *normalized*[10] *weights*

K is the *total cost* of the research project

More in detail, in order to perform the SEQUOIA assessment, the weights attached to the single indicators have been set by giving the same importance to the social and the economic aspects.

3.1 The global socio-economic performance of the assessed projects: calculation of the RORI average

Having developed a new formulation for the RORI index, it is now possible to calculate its value with reference to the whole sample of assessed projects: such average RORI will provide a useful benchmark for both selecting the best practices (projects having a RORI higher than the mean) and for making comparisons and ranking among projects.

Table 11 and 12, respectively, show the average value of all the indicators to be used (calculated with reference to the whole set of 30 projects assessed by SEQUOIA) and the weight attached to each.

Table 13, instead, shows the value of the average RORI for the sample of assessed projects, calculated by multiplying each normalized impact by its normalized weight and, finally, dividing the result by the total normalized average cost of the projects.

[8] In some cases, under the column "micro variables" the reader will find the following expression: "self-assessment". It make reference to a dedicate set of questions, reporting various statement with which respondents could agree or disagree by using a scale from 1 to 5 (where 1 was "totally disagree" and 5 was "totally agree"). In the calculation of data related to those micro variables we used the average score attributed by respondents to the dedicated questions.

[9] All values have been normalized by the maximum value of the series

[10] Weights have been normalized by the sum of the weight vector

	Average value	Max value	Norm. value
ECONOMIC IMPACT			
Average % of cost savings	6%	100%	**0,06**
% of hardware costs savings	4%		
% of connectivity costs savings	0%		
% of maintenance cost savings	8%		
% of software development costs savings	16%		
% of cost savings due to increment in software re-usability	12%		
% of cost savings due to improvement of test-deploy-rework cycle management	5%		
% of cost savings due to less process break/system failure/etc	3%		
% of cost saving related to compliance with reg./leg.-bus.legislation/pol.constraints	5%		
Other	3%		
Impact on environment	0,27	1	**0,27**
Capacity of targeting users	2,70	4	**0,68**
Technological advances for growth	6,7	10	**0,67**
SOCIAL IMPACT			
Knowledge production sharing			
Scientific impact			
journal articles	5,69	15	**0,38**
books	0,67	2	**0,34**
books chapters	2,9	10	**0,29**
articles presented at conf. or pub. in proceedings	18,78	100	**0,19**
scientific deliverables	13,29	50	**0,27**
Knowledge sharing			
knowledge exchange initiatives	8,64	60	**0,14**
scientific collaboration links	10,56	120	**0,09**
nb training modules	8,38	50	**0,17**
scientific where project presented	19,9	150	**0,13**
availability of papers and del through website	0,7	1	**0,70**
Support ICT usage for all and democratic participation			
Self-assessment	2,33	40	**0,058**
Impact on employment and work-routine			
Increment in skilled personnel employment			
PhD scholarships sponsored by the project	6,16	20	**0,31**
Post-Doc scholarships sponsored by the project	3,21	10	**0,32**
Impact on general employment			
Work positions generated by the project	40,67	200	**0,20**
Improvement of working routine			
Self-assessment	2,847222222	12	**0,24**
Social capital (trust, collaboration, networking)			
Social capital increment for project participants			
New collaboration with research institutes	3,28	17	**0,19**
New collaboration with industry partners	0,81	5	**0,16**
New project proposals	2,58	17	**0,15**

Social capital increment for users and beneficiaries			
Self-assessment	2,46875	32	**0,08**
Average investment (K)	5.134.823	14.000.000	**0,37**

Table 15 - Indicators' value for RORI calculation

	Macro weight	Meso weight	Micro weight	Intra-variable weight	Norm weight	Final weight
ECONOMIC IMPACT	**50**					
average % of cost savings		18	100		18,00	**0,18**
Impact on environment		7	100		7,00	**0,07**
Capacity of targeting users		18	100		18,00	**0,18**
Technological advances for growth		7	100		7,00	**0,07**
SOCIAL IMPACT	**50**					
Knowledge production sharing		25	40			
Scientific impact						
journal articles				30	3	**0,03**
books				25	2,5	**0,02**
books chapters				20	2	**0,02**
articles presented at conf or pub in proceedings				15	1,5	**0,01**
scientific deliverables				10	1	**0,01**
Knowledge sharing			40			
knowledge exchange initiatives				20	2	**0,02**
scientific coll links				30	3	**0,03**
nb training modules				25	2,5	**0,02**
scientific where project presented				15	1,5	**0,01**
availability of papers and del through website				10	1	**0,01**
Support ICT usage for all and democratic participation			20			
Self assessment					5	**0,05**
Impact on employment and work-routine		10	40			
Increment in skilled personnel employment						
PhD scholarships sponsored by the project				50	2	**0,02**
Post-Doc scholarships sponsored by the project				50	2	**0,02**
Impact on general employment			30			
Work positions generated by the project					3	**0,03**
Improvement of working routine			30			
Self-assessment					3	**0,03**

Social capital (trust, collaboration, networking)		15	60			
Social capital increment for project participants						
New collaboration with research institutes				45	4,05	**0,04**
New collaboration with industry partners				30	2,7	**0,02**
New project proposals				25	2,25	**0,02**
Social capital increment for users and beneficiaries			40			
Self-assessment					6	**0,06**
Total	100	100			100	**1**

Table 16 - Indicators' weights

	Norm. weights	Norm. values	Weighted value	RORI
ECONOMIC IMPACT				**0,8108**
Average % of cost savings	0,18	0,06	0,01	
Impact on environment	0,07	0,27	0,01	
Capacity of targeting users	0,18	0,68	0,12	
Technological advances for growth	0,07	0,67	0,04	
SOCIAL IMPACT				
Knowledge production sharing				
Scientific impact				
journal articles	0,03	0,38	0,01	
books	0,02	0,34	0,00	
books chapters	0,02	0,29	0,00	
articles presented at conf. or pub. in proceedings	0,01	0,19	0,00	
scientific deliverables	0,01	0,27	0,00	
Knowledge sharing				
knowledge exchange initiatives	0,02	0,14	0,00	
scientific collaboration links	0,03	0,09	0,00	
nb training modules	0,02	0,17	0,00	
scientific where project presented	0,01	0,13	0,00	
availability of papers and del through website	0,01	0,70	0,00	
Support ICT usage for all and democratic participation				
Self-assessment	0,05	0,05	0,00	
Impact on employment and work-routine				
Increment in skilled personnel employment				
PhD scholarships sponsored by the project	0,02	0,31	0,00	
Post-Doc scholarships sponsored by the project	0,02	0,32	0,00	
Impact on general employment				
Work positions generated by the project	0,03	0,20	0,00	

Improvement of working routine				
Self assessment	0,03	0,24	0,00	
Social capital (trust, collaboration, networking)				
Social capital increment for project participants				
New collaboration with research institutes	0,04	0,19	0,08	
New collaboration with industry partners	0,02	0,16	0,04	
New project proposals	0,02	0,15	0,03	
Social capital increment for users and beneficiaries				
Self assessment	0,06	0,08	0,05	
Average investment (K)	0,37			

Table 17 – RORI Average

CONCLUSIONS

The assessment activities carried out by the SEQUOIA team showed interesting results that will be further analysed in the D6.1 “SaaS and IoS Research White Paper”.

The first evidence relates to the need of establishing a common language between the socio-economic evaluators and the project representatives that usually are ICT technologists. These ones are, in most of cases, totally focused on technology issues while the future exploitation of the project outcomes is not considered. The consequence is a weak "evaluation culture" diffused among the projects that suggests to involve in future initiatives expert evaluators both in the economic and in the social field in order to perform an exhaustive *ex-ante*, *in-itinere* and *ex-post* impact assessment of project's outputs. Most of the assessed projects justify the absence of information about the exploitation with the early stage in which the projects are at the moment but we have to underline that if companies use projects to supplement their R&D budgets then they should be able to tell well in advance what impact such an investment has on their business plans. This would help us get a better sense for the RORI index, at least at company level. Indeed the RORI is now shifted towards economic and social components rather than include all the financial aspects.

The SEQUOIA methodology has been developed in order to compare the ex-ante (without project results) with the ex-post (with project results). In practice the results mainly relate to an ex-ante assessment due to the early stage of most of projects and to what mentioned in the previous paragraph.

The figures collected show a predominant allocation of projects’ budget towards personnel cost that is already reflected in a direct impact on occupation while responders have difficulties to forecast an impact on occupation generated by projects’ output.

As regards the development platform adopted, JAVA environment is the preferred one as well as other open source technologies (i.e. PHP). Respondents deciding to use the technologies and to release project’s outputs using the OSS approach have difficulties in elaborating a commercial exploitation and a business model for their outputs since the default understanding of “exploitation” is through patents, copyright and licences. Thus, a market analysis of Open Source solutions is required in order to identify the most suitable business and revenue models within the Internet of Services context.

Looking at the technology outputs these vary from incremental innovation (i.e. Improvement of existing software/virtual infrastructure or of a existing processes) to radical innovation (Development of new language/s) and each project should be understood as composed of various subprojects. This is an important element for optimising their sustainability strategies.

Moreover, rather than categorising the projects by focusing on the technologies used to achieve given services, it would be better to categorise by target applications. The former method leads to double counting, since projects use more than one technology/language.

With reference to the impact on reaching more users, most of the projects (64%) think that the number of persons benefiting from project outputs’ usage is very low and less

than 100, while only 18% think that their project's outputs will be soon used by more than 2000 people.

If we look at the social dimension of projects these show an impact on knowledge creation and sharing, as well as for social capital where good collaboration opportunities and networks were generated.

With reference to the projects' stakeholders, most of the interviewed (66%) assert that their outputs impact on more than one stakeholder category where the developers and software engineers are the more targeted with the highest average impact rating (4,59). The wider society (Citizens, consumers and end-users in general) is addressed only by 10% of the projects and their average impact is very low (2,65): on one hand this is consistent with EC policy to avoid direct government intervention in the "free" market but, on the other hand, this fact means that scarce attention is paid to the social application that may derive from their use/development. Thus the question is: "What is a good project?". At a first glance it seems that it might be not too much innovative (existing standards, languages are very important for adoption) and should engage potential users since the beginning and be part of existing communities of practice as, in SEQUOIA, we see software engineering as a social and not only technological process (i.e. only the I2WEB project has explicitly stated that one of the purposes of its project outputs is to help older and disabled people in their daily activities).

ANNEXES: PROJECTS' SYNTHETIC EVALUATION REPORTS

The following forms will shortly summarise the economic, social, scientific and technological impact on direct and indirect beneficiaries of the all 24 project that fully responded to the SEQUOIA questionnaires and interviews. Please, consider that reports and analysis refer to the time when the data were collected (as reported in the introduction of the deliverable) and potentially could not be perfectly aligned at the present time. The projects' reports are sorted by alphabetical order.

Moreover, with reference to the technological impact, consider also that the "quality in use" index is calculated on the base of four different variables: effectiveness, productivity, satisfaction and safety.

1. ID ACSI

The ACSI project is aimed at reducing the extensive effort (time, and cost) associated with the design, deployment, and maintenance of infrastructure to support cross organizational service collaborations. This includes setup efforts (i.e., planning and design), service on-boarding effort (i.e., the ability of services to join such collaborations when in operation), and finally the effort associated with maintenance (i.e., supporting the evolution) of such collaborations over time.

For further information: http://www.acsi-project.eu/

CATEGORIES OF STAKEHOLDERS AND DESCRIPTION OF THE MAIN ACTIVITIES GENERATED BY THE PROJECT

The following categories of users' beneficiaries of the ACSI project are the most relevant in terms of impact: service providers and project partners.

The following categories of direct and indirect beneficiaries in terms of lower outputs' impacts are related to infrastructure providers, industry and SMEs.

See in detail the specification of the ACSI project's output impacts on direct and indirect beneficiaries:

- ***service providers:*** the use of the project's output is related to the ability for service providers to create new types of software. The expected impact is related also to new services for consumers and professionals
- ***infrastructure providers:*** the project's output allow infrastructure providers do develop new ways to use their existing infrastructure and the potential expected impact is related to the increased usage
- ***industry and SMEs:*** the use of the project's outputs allows industry and SMEs to increase new product development. The potential expected impact is related to added

intelligence to existing product sets.
- ***project partners:*** the project's outputs will enable project partners to develop new exploitation plans for existing products.

ECONOMIC IMPACT

In terms of socio-economic impact, the project will produce different benefits on stakeholders: improve service and system quality, lower entry barriers in specific economic sectors, increase more efficient data exchange, improve scalability, produce cost reductions, reduce the time needed to deliver and deploy a service.

With reference to the cost reduction, the ACSI project's outputs will produce 20% maintenance cost reduction, 40% of lower software development costs, 40% of cost reduction due to increment in software re-usability and 20% of cost reduction due to less process break and system failure.

With reference to the sustainability plan, the project is expected to develop 2 new partnership agreements with other universities, 2 new project proposals and 1 new patents. The most relevant substantial impact of the project will be probably be obtained 3 years after the end of the project.

So far, the ACSI project has not identified a potential commercial exploitation of its outputs and has not yet drafted a Business Plan.

MORE ACCURATE DESCRIPTION OF ECONOMIC IMPACTS THROUGH CASE PILOT EXPERIENCE

The ACSI project will develop from 1 to 3 case pilot experiences within the eGovernment and the eInfrastructure sector. The two use cases involved are expecting to substantially benefit from the system developed by the ACSI project.

The main aim of these case pilots is to provide a tool that can be used directly by business people and system architects having minimal technical skills for rapidly constructing a virtual organization that carries out the collaboration of services between multiple industrial partners. This system also allows to substantially reduce different typologies of costs, such as lower software development and maintenance costs.

SOCIAL IMPACT

ACSI will have mainly an impact on three sectors of the society: on eGovernment, improving administrative processes in distributing research funds, on eInfrastructure, as it will improve efficiency of energy debt liquidation, and finally on the ICT industry in general thanks to streamlining processes.
The project will contribute to some of the goals of the European Digital Agenda 2020. First of all, it is expected to increase interoperability at a more general level, as this is one of the main objectives of ACSI. Moreover, it will increase the ICT related Services demand. Through the infrastructure for service interoperation provided, the project will

establish a platform that will become a facilitator for ICT service offerings and will therefore indirectly affect the demand. The project will also increment eCommerce, facilitating interoperability at a semantic level. Finally, ACSI will promote a better definition and use of standards regarding Case-management, SBVR and data component BPMN.

Knowledge production and sharing

The project has an important impact in terms of knowledge production and sharing. It has produced already an important amount of scientific publications (2 books, 30 articles presented at conferences, etc.) and of scientific deliverables. Open access is provided to most of these articles, ensuring a wide diffusion of their content in the scientific community. The project has also established many new collaboration links (10) and has participated in 15 knowledge exchange initiatives. It has as well organized training sessions on service integration and enterprise software. All these elements demonstrate that ACSI is diffusing largely its scientific results to the other researchers and that it promotes knowledge exchange inside the scientific community.

ACSI has also an impact in terms of support to the usage of ICT by all. Through its platform it may facilitates ICT service offerings, making highly innovative services available to citizens. It promotes also flexibility for personalization on a large scale and high interface adaptability. Finally, the project enables diversity and individual expression, and it impacts positively education.

Impact on employment and working routine

The project has a positive impact on the employment of high-skilled personnel. It sponsors 10 Post-doctoral scholarships, improving the curriculum and increasing the future employment possibilities of these students.

It is too early to evaluate if the project will have an impact on the employment rate at territorial level. Nonetheless, considering that the project will facilitate the offer of ICT services and will promote an increase in the number of customers, the project could have a positive impact on employment.

ACSI will have also a positive impact on the working routine of its users. In fact, it will provide solutions that will help them to work more efficiently and conveniently, reducing their work and reducing the time necessary to do their work. In particular, the project's outputs will help developers and software engineers to design and deploy service collaboration infrastructures with less time and effort.

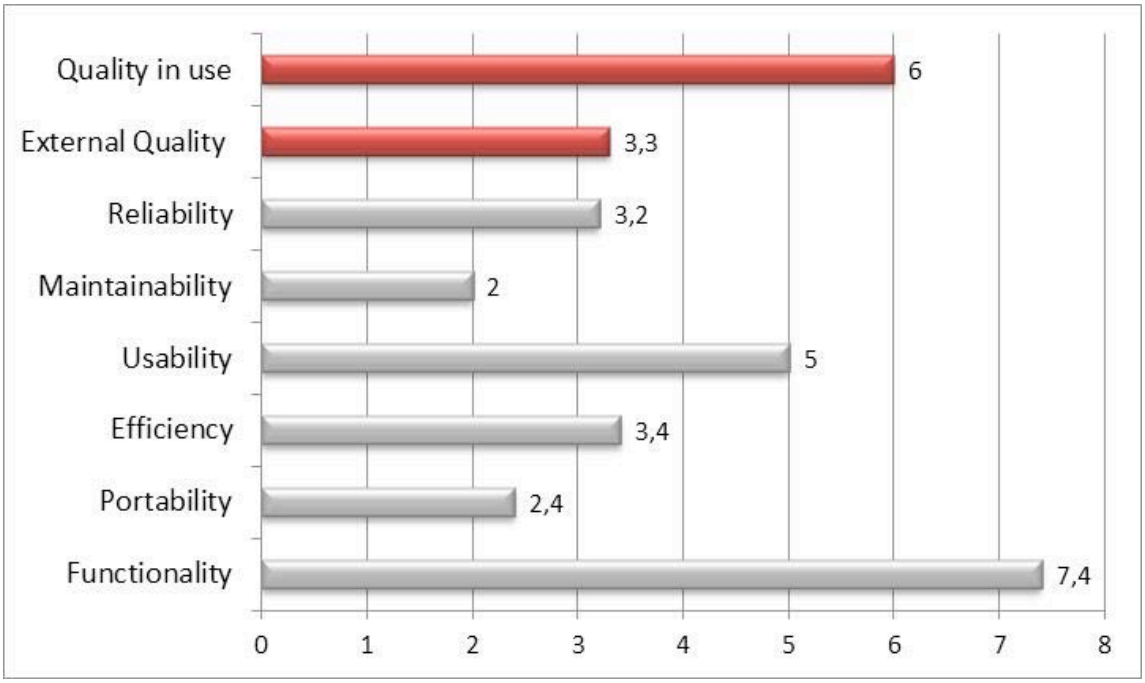
Social capital

Even though it is still early to have a complete assessment of the impact of ACSI on the social capital of its participants, the project is expecting to finalise new collaboration agreements with research centres and the partnership is programming new project proposals. Moreover, the project is organizing communication and dissemination events with industry actors. These elements show that the project will surely contribute to increase the social capital of its participants, strengthening their networks in both the scientific and the economic communities.

The project expect also to have an impact on the social capital of its users and beneficiaries. First of all ACSI will support the creation of networks between the enterprises of the sector. The services providers will be able to extend their activities through the developed platform and to collaborate with other collaborating organizations. It will support also the strengthening of already existing networks and the creation of new ones inside the academia. Moreover, thanks to the infrastructure developed that will

support cross organizational service collaborations, the project will improve the way in which users communicate and collaborate with each other, improving trust among them. Finally, the project will improve citizen's trust in ICT and the Internet and in the Public Administrations, as it will improve administrative processes in distributing research funds.

TECHNICAL ASPECTS



From a technological point of view, the most technological innovative aspect of the ACSI project is related to the Integration of data management technologies with process management technologies.

The ACSI project is based on different technologies, such as SOA, Semantics, Web 2.0, Cloud, virtualization and content-based services.

With reference to the technical characteristics of the ACSI project, the technological impact assessment detected a low relevance of external products' quality in use.

The most important category of the technical project's outputs quality is related to functionality of technologies. Furthermore, the quality in use of technologies allows to increase the usability of the ACSI project's outputs.

2. ID 32 ADMIRE

The ADMIRE project is aimed at providing tools and services to allow people to make better use of digital data for decision-making science and business analysis.

ADMIRE will combined strategies, skills and technology to create a single platform for knowledge discovery through a specific process divided into 6 stages each of 6 months:

1. Initial research stage infrastructure setup
2. Second research first implementation stage
3. Third research second implementation
4. Fourth research third implementation
5. Fifth research fourth implementation
6. Final research final implementation

For further information: http://www.admire-project.eu/

CATEGORIES OF BENEFICIARIESAND DESCRIPTION OF THE MAIN ACTIVITIES GENERATED BY THE PROJECT

The most relevant category of users' beneficiaries of the ADMIRE project are researchers and research communities**.**

The following categories of direct and indirect beneficiaries in terms of lower outputs' impacts are related to project partners industry and SMEs:

- ***researchers and research communities:*** the use of the ADMIRE outputs allows researchers to trigger new knowledge discovery and to produce higher capabilities
- ***industry and SMEs:*** the expected impact of the project outputs for them is related to the capability of trigger new knowledge discovery and to produce higher capabilities
- ***project partners:*** the project's outputs enable beneficiaries to develop new knowledge discovery and to produce higher capabilities.

ECONOMIC IMPACT

In terms of socio-economic impact, the use of ADMIRE project's outputs will produce different benefits on stakeholders: improve the quality of the services, provide the access to a larger amount of data, improve the scalability, expand the range and typologies of research activities and services made available to research communities, reduce the time needed to deliver and to deploy a service over the network.

The ADMIRE project will not have a commercial exploitation of its outputs, indeed this project is very research-oriented. However, the project has been very successful, indeed it has yet attracted a consistent amount of public investments and during its life it is expected to generate 13 new partnership agreements with other universities and to enable the submission of 6 new project proposals. The most relevant economic impact of the project will be probably obtained 1 year after the end of the project.

MORE ACCURATE DESCRIPTION OF ECONOMIC IMPACTS THROUGH CASE PILOT EXPERIENCE

The ADMIRE project will develop 4 to 6 case pilots in different sectors, such as environment hazard forecasting and natural risk management, mathematics and natural science, telecommunications, interoperability and mobile services, eHealth, Virtual Assistants.
In two science-based use cases (astronomy and seismology) ADMIRE has shown to provide a way to do discoveries which could not be done before. Within the environmental risk management scenario, in fact, ADMIRE has provided a mean to assess flood risks, using data analytics rather than large-scale simulations, which are more expensive. In order to understand the expected economic impacts generated by the ADMIRE case pilot experiences, we need to previously identify the background related to the environmental risk side. Through the use of the project's outputs, researchers are able to predict flood risk without the need of develop a lot of heavy duty simulation of a river system on Hence, ADMIRE allows to develop a very innovative approach: (e.g. about temperature variations, rain falls, river levels etc.), the use of the project's outputs enables researchers to follow a much easier, cheaper and quicker approach, without using large scale simulation on supercomputers, therefore providing them of cost savings in terms of less effort and less time required.

SOCIAL IMPACT

As other projects taken into consideration, ADMIRE project doesn't directly provide solutions for specified sectors of the society, but it enables the creation of solutions for these sectors. In fact, it offers solution for data integration and data mining in large-scale systems, and it is agnostic about the nature of such data. Therefore its impact on society can regard different sectors, like Health or eEnvironment (see the use cases developed). As the main target users of the project is the research community, the social impact of the project will depend on which research area will better use ADMIRE's outputs.
ADMIRE will support some of the goals of the European Digital Agenda 2020. In particular it will help the creation of content and borderless services, combining data coming from whatever data source, as long as it is on the web. It will also increase the ICT related Service demand and promote a better and major use of standards. In fact, in order to be able to use open and accessible data, it is important to follow standards, and the project has introduced its own standards.

Knowledge production and sharing
ADMIRE has been a very successful project under a scientific research point of view. It has produced an important quantity of scientific material. In terms of knowledge sharing, the results have been presented to a very high number of conferences and events, not only in Europe but worldwide. The main target of the results' diffusion was the research community, even if contacts have also been made with some policy-makers. Another aspect that ensures a wide transfer of the project's scientific results is that the project will give open access to all the outputs. Regarding the impact on the use of ICT tools by society, the project will help to make highly innovative services available to citizens. Moreover it will have positive impacts on education.

Impact on employment and working routines
It is difficult to assess ADMIRE's impact on employment, as it depends on how its tools will be used. During the use case no work position was created, but the project promoted some "pushed up positions". The project will have an impact on employment only at a later stage, when a commercial exploitation will be developed.
It will however have a positive impact on working routine, as it provides solutions for working efficiently and conveniently, reducing time and work of the users.

Social capital
The project will have a positive impact on the social capital both of the project participants and of the users. New collaboration agreements have arisen from the project, both with research institutes and industry partners. This important network has supported the development of new project proposals and of plans for the future further development and commercial application of ADMIRE's outputs.

Moreover, the project's outputs will improve the way in which users communicate and collaborate with each other, improving trust among them and supporting the creation of networks and collaboration at the various levels of society (enterprises, academia, citizens).

3. ID ALERT

ALERT project aims at improving the overall bug resolution process in Open Source developers' collaborative environments.

The aim of the ALERT project is to develop methods and tools that improve FLOSS coordination by maintaining awareness of community activities through real-time, personalized, context-aware notification. ALERT will create an active collaboration platform, i.e. a virtual actor would interact with other developers, process and recognize various kinds of interactions, suggest actions on the basis of these and remember and bring past interactions into the developers' attention, thus enabling developers to work better together.

For further information: www.alert- project.eu

CATEGORIES OF STAKEHOLDERS AND DESCRIPTION OF THE MAIN ACTIVITIES GENERATED BY THE PROJECT

The most relevant categories of users' beneficiaries of the ALERT project are developers, and software engineers. The following category of direct and indirect beneficiaries in terms of lower outputs' impacts is related to researchers and research communities.

See in detail the specification of the ALERT project's output impacts on direct and indirect beneficiaries:

- ***developers and software engineers:*** the project's output will allow developers to create awareness that will enable interested parties to be notified, based on their interest/expertise. Potential expected impact: ALERT output will help developers to foster scalability and sustainability, allowing better resource sharing, collaboration and interoperability
- ***researchers and research communities:*** ALERT output proposes new ideas, methodological approach and ontologies for researchers that can be seen as the base for future research or complementary work to the current research in the areas of knowledge extraction, complex event processing, user modelling and semantics.

ECONOMIC IMPACT

In terms of socio-economic impact, the project's outputs will produce different benefits on stakeholders: improve the quality of the services, reach more users, improve the access to large amounts of data, develop more efficient data exchange, reduce the time needed to deliver the service over the network, ability to better target users' needs.

The ALERT project do not foresee a commercial exploitation of it outputs. However the most relevant substantial impact of the project will be developed at the end of the project through the creation of new projects' proposals.

MORE ACCURATE DESCRIPTION OF ECONOMIC IMPACTS THROUGH CASE PILOT EXPERIENCE

The ALERT project will develop from 1 to 3 case pilot experiences within the distributed software development sector. The use cases are developed in order to evaluate and impact the ALERT system in three important FLOSS communities (OW2, KDE and Morfeo).

These three use cases will be instantiated to address the three relevant aspects in FLOSS coordination: awareness, communication and task assignment. With reference to the impacts produced by the ALERT project, they may be classified by the type of target users:

- for integrators of FLOSS, ALERT can help to reduce the time and human effort needed to manage the daily tasks of this resembling process, frequently expensive and complex for these companies
- for development communities, ALERT could help to foster scalability and sustainability allowing a better resource sharing, collaboration and interoperability.
- for SMEs based on FLOSS, ALERT may offer precise and frequently updated information about the specific needs that must be addressed in the development process. Then, SMEs could provide additional support to fill existing gaps and correct errors and limitations of FLOSS products.

For FLOSS development platforms, ALERT may increase the flexibility and resiliency, creating services tailored to help developers focus their effort and skills on those areas of the project on which they are more needed.

SOCIAL IMPACT

The main sector on which ALERT will have an impact is the ICT industry. In fact, by producing a solution for a better open source development process, it will have a strong impact on the increasing use of OSS.
ALERT will contribute to one of the goals of the European Digital Agenda 2020 as it will increase the ICT related Services demand. At a lesser level, it will also increase interoperability at a more general level.

Knowledge production and sharing
Considering that the main users of the project are developers and researchers, the impact in terms of knowledge production and sharing is the most important one in this case.
ALERT is still at an early phase of its activities, but it has already produced some articles for conferences, and scientific deliverables.

Open source is provided to most of these documents. It will be possible to make a more accurate assessment of its impact in terms of knowledge production at a later stage of the project.
Regarding the impact on knowledge sharing, again only a preliminary assessment can be made. The project has established a new collaboration link. It has also organized some communication and dissemination events, all targeted to academic participants.

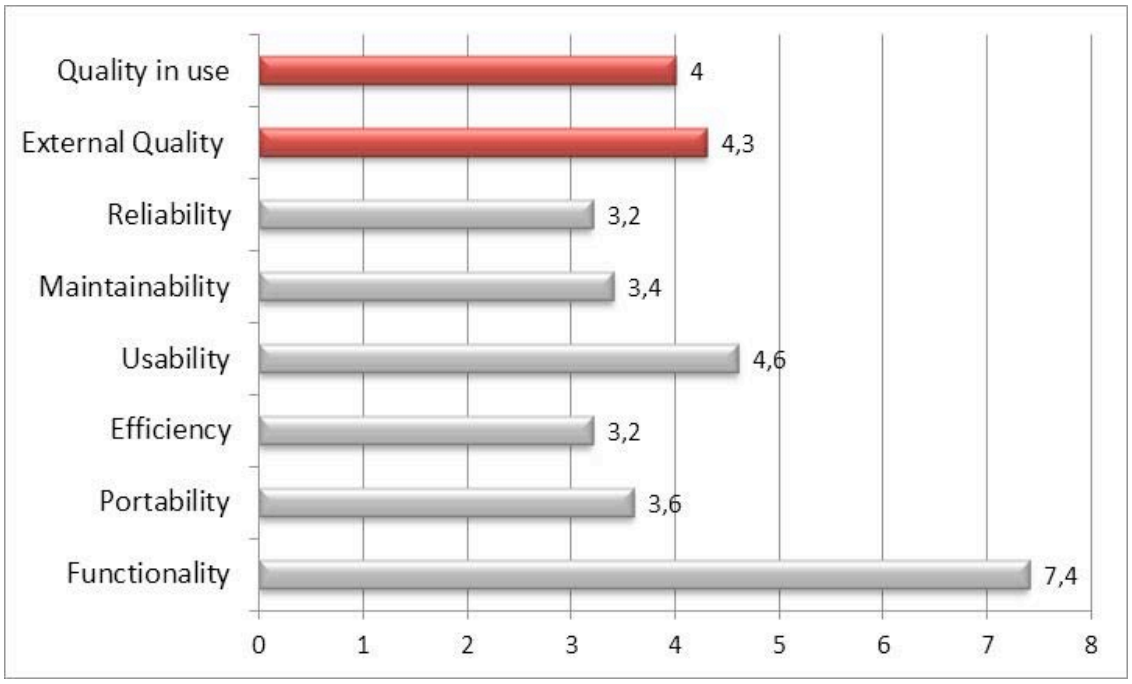
Considering also the importance given to open source by the project, it appears that knowledge sharing will be an important aspect of the project and that the partners are paying attention to diffuse and exchange their scientific results.

The project will have an important result in the use of ICT by all besides the academic word. In particular, it will make information and knowledge available to a larger number of interested users and it will support the transfer of knowledge between the research centres and the economic actors. Moreover, the project will make highly innovative services available to citizens. ALERT will foster scalability and sustainability, allowing for developers and software engineers better resource sharing, collaboration and interoperability.

Impact on employment and working routine
Here again it is too early to assess the impact that the project will have on employment. However, ALERT will have an impact on the working routine of its users.
In particular, it will provide solutions to enable them to work more efficiently and conveniently, reducing their work (more operations will be automated) and allowing them to do their work more quickly.

Social capital
The project will have a positive impact on the social capital of its users and beneficiaries. Most of all, it will improve the way in which users communicate and collaborate with each other, facilitating social interactions.
The project will also support the creation of networks and the collaboration among citizens and in academia.

TECHNICAL ASPECTS



From a technological point of view, the most technological innovative aspect of the ALERT project is related to the convergence of web applications across multiple devices.

The ALERT project is mainly based on different technologies, such as Semantics, context-aware services and content-based services.

With reference to the technical characteristics of the ALERT projects, the technological impact assessment detected a low relevance of external products' quality in use.

The most important category of the technical project's outputs quality is related to the reliability of technologies. Furthermore, the quality in use of technologies allows to increase the functionality and usability of the ALERT project's outputs.

4. ID CHOREOS

CHOReOS revisits the concept of choreography-centric service-oriented systems to introduce a dynamic development process and associated methods, tools, and middleware for the software systems that implement and coordinate the services in the Ultra Large Scale Future Internet.

CHOReOS builds upon principles of decentralization, incremental compositionality, and the need for adaptation to offer integrated support via Integrated Development and Runtime Environment (IDRE) for scalable choreography development. This will enable development of decentralized, compositional, adaptable and quality aware choreographies

by domain experts.

Here is what to expect from the CHOReOS project:

- Abstractions and models for the Internet of Services
- A choreography-centred development environment
- Service-oriented middleware for Future Internet
- Governance mechanisms for choreographies.

For further information: www.choreos.eu

CATEGORIES OF STAKEHOLDERS AND DESCRIPTION OF THE MAIN ACTIVITIES GENERATED BY THE PROJECT

The most relevant categories of users' beneficiaries of the CHOReOS project are developers, software engineers, service providers and project partners. The following categories of direct and indirect beneficiaries in terms of lower outputs' impacts are related to infrastructure providers, citizen and end users.

See in detail the specification of the CHOReOS project's output impacts on direct and indirect beneficiaries:

- ***developers and software engineers:*** CHOReOS output will allow developers to use highly innovative software engineering methods and tools enabling the dynamic synthesis, adaptation and V&V of ultra-large scale Future Internet choreographies. The potential expected impact is related to deep technological advances in software/service engineering.
- ***service providers:*** CHOReOS outputs allow service providers to lower barriers for service providers, in particular SMEs, in order to develop services by composing them through standardized open (source) platforms and interfaces
- ***infrastructure providers:*** the CHOReOS output will allow infrastructure providers to unify various types of executions platforms including ESBs, Grids and Clouds, whose inherent characteristic is to provide support for enforcing QoS guarantees. Therefore, the potential expected impact of CHOREOS output use is a higher contribution of the infrastructure providers to the Future Internet in terms of service development, management and interoperability in an environment of converged IT, telecom and media platforms
- ***citizens and users:*** CHOReOS outputs will enable citizens and users to benefit from high-added value services through innovative service front ends and a higher user empowerment and more advanced and dynamic online communities.

ECONOMIC IMPACT

In terms of socio-economic impact, the project is expected to produce different benefits on stakeholders: improve the quality of the service, reach more users, improve more efficient data exchange, improve scalability, reduce the time needed to deliver and to deploy the service over the network, keep pace with competitors and develop cost reductions.

With reference to the cost reduction, the CHOReOS' team expects a 20% of lower software development costs and a 30% cost reduction due to improvement of test-deploy-rework the cycle management. The most relevant substantial impact of the project's outputs will be probably experienced 1 year after the end of the project.

The CHOReOS project will lead a commercial exploitation of the project's outputs and will draft a Business Plan in the future. Up to 50 persons are expected to work on the commercial exploitation of the CHOReOS project's outputs.

MORE ACCURATE DESCRIPTION OF ECONOMIC IMPACTS THROUGH CASE PILOT EXPERIENCE

The CHOReOS project has developed 3 different use cases:

- **Passenger friendly airport**: this use case illustrates the use of choreographies in the context, on the one hand, of G2G and B2G coordination and more precisely coordination among Air Traffic Control authorities, Airports and Airlines, and, on the other hand, of the coordination among all the passenger-level players such as Airports, Airlines, Hotels, Ground transportations and, last but not least, the passengers themselves. The first context exemplifies rather static but complex coordination based on laws and strict domain rules; it allows dealing with a first level of requirements for choreographies development directly by Air Traffic Management experts. The second context deals with larger and more evolving coordination among numerous partners, including ordinary end-users (passengers), and participates directly to passenger's well-being
- **Mobile-enabled coordination of people**: this use case also points up two levels of use of choreographies: the first one involves the interaction among smartphone users who share information; the second one concerns the coordination of Large-scale Brainstorming able to support discussions among groups of users by means of online tools such as shared whiteboards, outliner and video-chats.
- **The Coordination of large-scale brainstorming** use case aims at creating and maintaining communities of trustable customers as well as participative workforce. In this case large scale choreographies tackle issues with coordination tasks in multiple levels and filtering and dispatching information provided by different groups of users. This process may last days or weeks and is monitored and customized on the fly by moderators.
- **DynaRoute**: this use case copes with choreographed services towards the management of a fleet of taxis in a large city such as Thessaloniki, Greece, The choreographies of this use case show the interactions among transportation users, transportation companies and other businesses to assist citizens when travelling. This use case utilizes local, bidirectional communications among various actors, as well as location-based services. It enables thousands of actors (people, things or services) to interact with each other in a variety of ways, maintaining low service complexity, faster response times and true scalability. This use case will receive particular attention since it will be the occasion of a real-life demonstration.

SOCIAL IMPACT

CHOReOs will have an impact mostly on the following sectors: eGovernment, as it will promote a higher performance and safety of ULS information systems resources management; eInfrastructure, as it will provide new high efficiency platforms and tools for different services deployment on the Future Internet; and ICT support to efficient transport and better mobility, as it will improve the efficiency and the quality of the services provided. Finally, the project will also have an impact on the ICT industry in general.
CHOReOS responds to some of the goals of the European Digital Agenda 2020. In particular it will increase interoperability at a more general level, promote a better use of standards, increase the ICT related Services demand and allow SMEs to enter new markets by lowering entry barriers for them. At a lower degree, it will support the creation of content and borderless services and make the network more secure and trustworthy.

Knowledge production and sharing
CHOReOS industry partners include technology developers, providers and integrators and innovative service developers and providers, which are in the position to exploit CHOReOS technologies for further use and take-up. External dissemination of project results are done through open source community, workshops, and conferences.
CHOReOS plans to release it is Integrated Development and Runtime Environment (IDRE) as open source software. Thanks to consortium partner - OW2 Consortium, CHOReOS will undertake active measures towards creating a sustainable community of open source developers for it is IDRE.

Project consortium organizes two workshops to promote project results. First workshop aims at interacting and integrating complementary approaches to the development of IDRE also from external researchers. The second workshop relates to open source software developments of CHOReOS and will be dedicated to creation of developer community around the CHOReOS integrated solutions.

*In addition, p*resentation of project results at major conferences and exhibitions e.g. ICT Event, CeBIT, OOP, Java One, JAX World, Software Engineering Today, Software Architect and are going to facilitate knowledge sharing with the industry.

Even if the project started only in October 2010, it has already an important impact in terms of knowledge production. It has published 15 articles in journals, 4 chapters of books, it has presented 60 articles at conferences and drafted 5 scientific deliverables.

CHOReOS has a positive impact also on the sharing of scientific knowledge. It has been presented in 10 scientific conferences and seminars. Even if not all the scientific publication are not available now on the web, the partners will adopt in the future a policy on open access to ensure a wide diffusion of its scientific outputs. Several training modules has also been prepared by the project, including online tutorials for the students. Training sessions will be organised first inside the partnership, and then outside. These aspects should ensure a good transfer of the project's scientific results to the rest of the research community.

Finally, the project supports also the usage of ICT by all and democratic participation. First of all, it supports the transfer of knowledge between the research centres and the industries

and SMEs. The project has organised dissemination and knowledge transfer workshops in this objective. CHOReOS will also help to make information and knowledge available to a large number of interested users. Regarding the society in general, thanks to the project innovative services, that will positively impact on citizen's everyday life, will be developed and made available to them.

Impact on employment and working routine

Exploitation of CHOREoS results are perspective in safety and security systems, border surveillance systems, military applications to allow for exchange of field data, transport supervision systems, ticketing, oil and gas transportation, as well as mobile networking and services. Other industries such as media, education and government can also potentially benefit from project results.

CHOReOS will have a positive impact on employment. Firstly, it supports the employment of high skilled personnel as it sponsors 10 PhD scholarships. Moreover it should promote the creation of a high number of new job positions (more than 200). In fact, it will make the enterprises more competitive, enabling them to look for more employees, and it will foster the creation of new enterprises. The new job positions should be created by Telco companies (both inside and outside the consortium) and by IT companies.

The project will have an impact also on the working routine of its users. It will provide solutions that will enable them to work more efficiently and conveniently, reducing their work and reducing the time necessary to do their work.

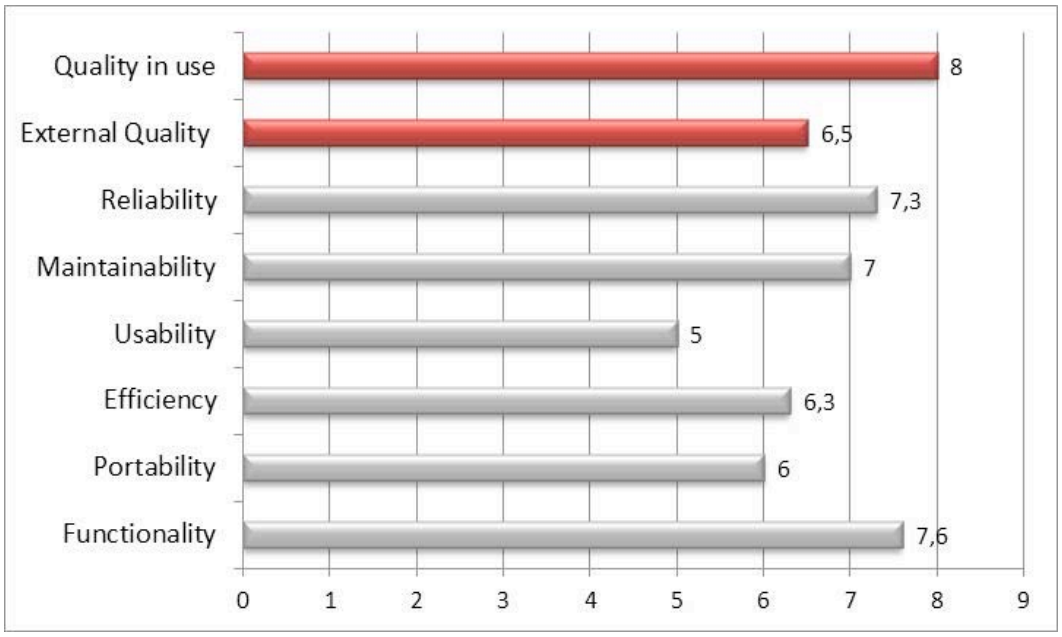
Social capital

It is too early to evaluate the impact of the project on the social capital of its participants.

Regarding the impact on the social capital of its users and beneficiaries, some positive aspects can be already highlighted. First of all, CHOReOS will improve the way in which its users communicate and collaborate with each other, facilitating social interaction. The project use case of coordination of large-scale brainstorming will directly enhance the accumulation of social capital in conditions of increasing mobility.

The project itself will support the creation and the enlargement of networks between the enterprises of the sector and in academia. Finally, it will improve the citizen's trust in ICT and the Internet.

TECHNICAL ASPECTS



From a technological point of view, the most technological innovative aspect of the CHOReOS project is related to the Integrated Development and Run-time Environment (IDRE) based on choreographic approach. CHOReOS middleware will contribute to unifying various types of execution platforms leading to greater convergence among IT and telecom systems.

In addition, CHOReOS will contribute to contemporary standards in information system modelling and evolution of today's languages for choreography and orchestration.

With reference to the technical characteristics of the CHOReOS projects, the technological impact assessment detected an high relevance of external products' quality in use, indeed the software and middleware systems of the project allows to increase effectiveness, productivity and satisfaction of users .

The most important category of the technical project's outputs quality is related to the functionality of technologies. Furthermore, the quality in use of technologies allows to increase the reliability and maintainability of the CHOReOS project's outputs.

5. ID 23 CLOUD4SOA

The vision of Cloud4SOA is to open up the Cloud market to small-to-medium PaaS providers in Europe, strengthen their market position, and in parallel help to alleviate the vendor lock-in barrier for Cloud developers. Cloud4SOA will thus enhance Cloud-based application development, deployment and migration by semantically interconnecting Platform as a Service (PaaS) offerings that share the same technology and will facilitate

the access and lifecycle management for Cloud-based application developers to the PaaS offering that best matches their computational needs.

For further information: http://www.cloud4soa.eu/

CATEGORIES OF BENEFICIARIES AND DESCRIPTION OF THE MAIN ACTIVITIES GENERATED BY THE PROJECT

The most relevant categories of users' beneficiaries of the CLOUD4SOA project are developers, software engineers, infrastructure providers industry and SMEs. The following categories of direct and indirect beneficiaries in terms of lower outputs' impacts are related to researchers, research communities and project partners.

See in detail the specification of the CLOUD4SOA project's output impacts on direct and indirect beneficiaries:

- ***developers and software engineers:*** the use of the project's output facilitates developers to migrate from SaaS applications to PaaS offerings. The expected impact of the CLOUD4SOA outputs is in terms of no vendor lock-in for deployment activities
- ***service providers:*** the use of the project's output facilitates developers to migrate from SaaS applications to PaaS offerings. The expected impact of the CLOUD4SOA outputs is in terms of no vendor lock-in for deployment activities
- ***infrastructure providers:*** the use of the project's output for infrastructure providers allows them to migrate to a more open PaaS segment and to reduce Cloud adoption barriers
- ***researchers and research communities:*** the use of the project's outputs allows researchers to make advances in semantics and SOA research within the Cloud interoperability context. The potential impact of the project's outputs is related to the convergence of semantic and SOA communities with Cloud initiatives
- ***industry and SMEs:*** the use of the CLOUD4SOA output will allow to facilitate the migration to PaaS solutions and to boost overall PaaS SMEs market developer base, by addressing key adoption barriers**.**

ECONOMIC IMPACT

In terms of socio-economic impacts, the project's output will produce different benefits on stakeholders: improve the quality of the service, reach more users, lower entry barriers, provide more efficient data exchange, reduce the time needed to deliver and to deploy a service over the network, keep pace with competitors, better target users' needs, increment the optimization of resources, improve efficiency and provide cost reductions.

The CLOUD4SOA project has yet identified a commercial exploitation of its project's outputs and it has also drafted a business plan, but unfortunately they cannot disclose this information to the SEQUOIA project.

The project is really focused on the need of the Cloud market, indeed the main economic objective of CLOUD4SOA is related to the increase of interoperability and portability of cloud providers within the PaaS context. The project is actually studying the IaaS and

PaaS European market and the potential of increase the revenues by developing new Open Standards.

MORE ACCURATE DESCRIPTION OF ECONOMIC IMPACTS THROUGH CASE PILOT EXPERIENCE

The CLOUD4SOA project will develop from 1 to 3 case pilots, in different sectors such as telecommunications, interoperability, mobile devices and collaborative web tools.

The CLOUD4SOA project will develop different positive economic impacts, in terms of open up the Cloud market to small-medium European PaaS providers and to strength their market position, also in order to reduce the vendor lock-in barrier for Cloud developers.

SOCIAL IMPACT

The vision of Cloud4SOA is to open up the Cloud market to small-to-medium PaaS providers in Europe, strengthen their market position, and in parallel to help to alleviate the vendor lock-in barrier for Cloud developers. Therefore the main sector on which the project will impact is the ICT industry in general, the Cloud industry and the PaaS in particular. The project will facilitate interoperability aspects on PaaS layer, creating new collaboration opportunities between PaaS offerings and helping to alleviate a chief concern among PaaS users (cloud developers). The project will also have an impact on other sectors of the society, depending on who and how the architecture developed will be used after the end of the project.

The project responds to some of the goals of the European Digital Agenda 2020: it helps SMEs to enter new markets by lowering entry barriers for them, and it increases interoperability at a more general level. The utilization of CLOUD4SOA's outputs will also support an increase of ICT related Services demand, the creation of a united digital market and a better use of standards.

Knowledge production and sharing

One year after the beginning of the project, it is still early to be able to assess project's impact in terms of scientific production. It is however possible to foresee an interesting impact in terms of knowledge sharing. The project has already participated in knowledge exchange initiatives and new collaboration links have been established. Moreover, the expert group (on Cloud Semantic Interoperability) created by the project will have a fundamental role in sharing and diffusing the scientific results of the project. One of its goal is to enable the community building process for discussion and development in Europe.

Another important impact of CLOUD4SOA is that it supports the transfer of knowledge between research centres and SMEs. In fact, the project will involve SME participants (including SaaS and PaaS providers) in order to obtain their feedback on the difficulties encountered in terms of interoperability and portability, and on the framework and platform developed by the project. The involvement of the beneficiaries throughout all the phases of the project ensures a good transfer of scientific and technological knowledge to

them.

Impact on employment and working routine

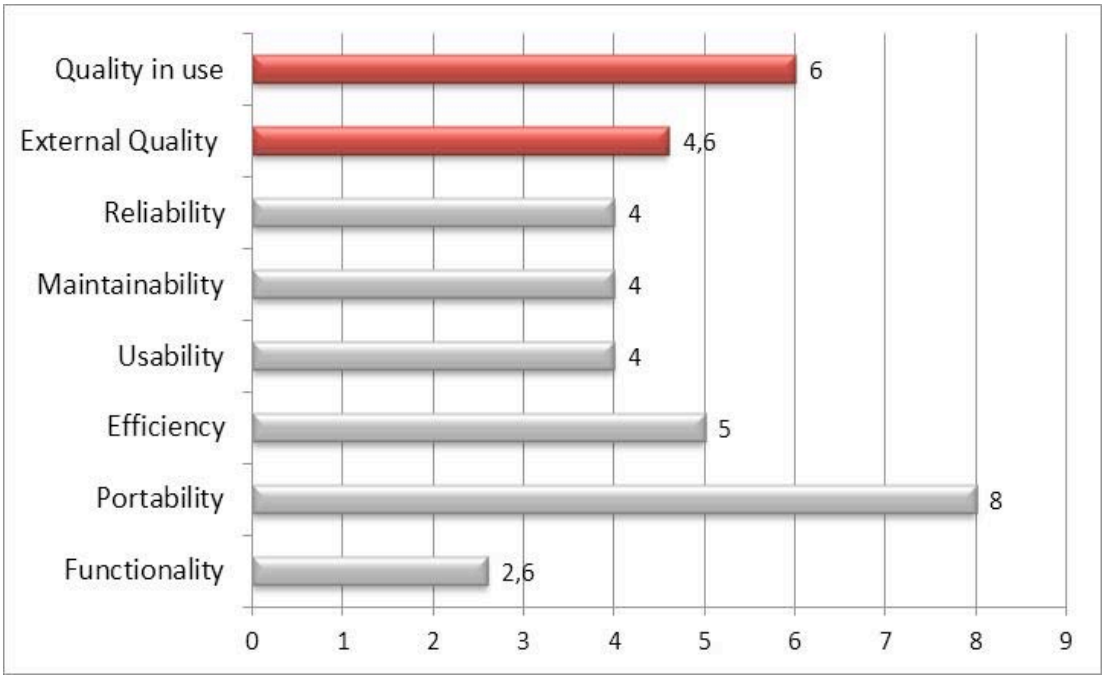
At this stage of the project we do not have the elements to assess in an accurate way the impact of the project on employment and working routine. However, considering that CLOUD4SOA will help SMEs to enter new markets and support an increase of ICT related Services demand, we can foresee that it will have a positive impact on employment after the end of the project.

Social capital

The project will have a positive impact on the social capital of its users and beneficiaries. In fact, it will improve trust among its target users and improve the way in which they communicate and collaborate with each other. It will also enlarge already existing networks in the sector.

The project will also have an impact on the citizens, as it will facilitate social interaction and improve citizen's trust in ICT and the Internet.

TECHNICAL ASPECTS



From a technological point of view, the most technological innovative aspect of the CLOUD4SOA project is related to the interoperability between PaaS vendors and Cloud/SOA technologies, in order to surpass the adoption's barrier and to increase the competition in this evolving and user-centric market.

The CLOUD4SOA project is mainly based on different technologies, such as SOA,

Semantics, Cloud and mash-ups.

With reference to the technical characteristics of the CLOUD4SOA projects, the technological impact assessment detected a low relevance of external products' quality in use, indeed, the project is not based on external software.

The most important category of the technical project's outputs quality is related to the portability of technologies and to the efficiency of infrastructures. Furthermore, the quality in use of technologies allows to increase the usability, maintainability and reliability of the CLOUD4SOA project's outputs.

6. ID 26 CONTRAIL

The problems that the Contrail project are solving are: vendor lock-in of the particular cloud providers; difficulty to migrate or outsource IaaS, PaaS once one picks a provider; the need to deal with multiple front-ends and identities; the lack of guarantees and formalised SLAs; the problem of trust and protection.

For further information: www.contrail-project.eu

CATEGORIES OF STAKEHOLDERS AND DESCRIPTION OF THE MAIN ACTIVITIES GENERATED BY THE PROJECT

The most relevant categories of users' beneficiaries of the CONTRAIL project are developers, industry and SMEs. However, also the following categories of direct and indirect beneficiaries are important, especially in terms of social impact: service providers, infrastructure providers, researchers and research communities, citizen, consumers and end users.

See in detail the specification of the CONTRAIL project's output impacts on direct and indirect beneficiaries:

- ***developers and software engineers:*** the use of CONTRAIL project's output will enable developers to exploit innovative technologies to better support the development and life cycle management of service-oriented applications. The impact of CONTRAIL outputs is related to scalability, performance reliability (defined as QoS, e.g., response time or throughput depending on the needs of applications), and security (defined as QoP)
- ***service providers:*** the use of the project's outputs allows service providers to build and join a federated platform for Cloud services. The impact of the use of the project's outputs for service providers is related to scalability, elasticity, security guarantees, and integration of SLAs
- ***infrastructure providers:*** by using the project's output, infrastructure providers will be able to seamlessly integrate resources from other Clouds with their own infrastructure and to protect their infrastructure. The impact of CONTRAIL outputs for infrastructure

providers will be on new solutions at the federation layer

- ***researchers and research communities:*** the use of CONTRAIL output enables researchers to develop innovative solutions and to reduce some Cloud Computing issues, in terms of security and SLA enforcement. Researchers will be able to store securely their data and results. By using the CONTRAIL outputs, the research community can also use PaaS services, validate findings, and leverage solutions
- ***industry and SMEs:*** the use of the CONTRAIL project's output enables industry and SMEs to escape the vendor lock-in and to reduce the initial hardware costs. The impact of CONTRAIL outputs on industry and SMEs will be on standardization efforts, enhancing trust, software quality and compliance to open protocols and interfaces
- ***citizens, consumers, end users:*** the use of the project's outputs allows citizens and users to benefit from a reliable, transparent and secure Cloud infrastructure, and from data privacy guarantees. They will also be able to choose a trade-off between performance, scalability, and isolation.

ECONOMIC IMPACT

In terms of socio-economic impact, the CONTRAIL project expects to produce different benefits on stakeholders: improve the quality of the services, allow the access to a larger amount of data, develop more efficient data exchange, reach more users, lower entry barriers, improve scalability, reduce the time needed to deploy a service over the network, keep pace with competitors, better target users' needs, increment the optimization of resources, improve efficiency and provide cost reductions.

At the present stage CONTRAIL project do not foresee a commercial exploitation of its outputs, indeed it will follow an open source solution, which is the main target of the project.

With reference to the cost reduction, CONTRAIL expects to reduce hardware costs by 50%, maintenance costs will be reduced by 5% and will lower software development costs by 20%. The substantial impact of the project's outputs will be presumably obtained 3 years after the end of the project.

MORE ACCURATE DESCRIPTION OF ECONOMIC IMPACTS THROUGH CASE PILOT EXPERIENCE

The CONTRAIL project will involve 4 use cases in different sectors, such as mathematics and natural science, geo-reference data, multimedia processing. Use case related to electronic drug discovery at a computational level is useful to validate the technology and make stress tests. Moreover, 3 others business cases are yet developed, one of which is related to the multimedia workplace (website). The most relevant benefit that is enabled only by the use of CONTRAIL is the ability of the companies to deploy their services into the Cloud federation, being able to optimize the costs and the guarantees, react to any rate changes or growth of their business, without the need to remain with the same provider, and possibly at some point, to migrate to their own infrastructure. The QoS and QoP mechanisms also reduce the burden of having to prove provider's fault for outages. Further, it is much easier to address the redundancy and fail-overs, when a major Cloud provider

suffers an outage. Furthermore, CONTRAIL provides high level (data storage) services and runtime environments, high level of security and privacy to the users, through Service Level Agreements, which guarantee the reliability of the business activities.

SOCIAL IMPACT

CONTRAIL project, through its open source approach, will not impact directly one sector of the society, but enables the creation of various solutions that can apply to different sectors, such as e-business, telecommunication, media, e-science and ICT Industry in general.
Its outputs answer to some of the goals of the European Digital Agenda 2020, in particular regarding the support to SMEs to enter new markets by lowering barriers, the promotion of better standards and the increase of security. It will help also to increase ICT related Services demand, increase interoperability at a more general level and increment eCommerce.

Knowledge production and sharing
An interesting impact in terms of knowledge sharing can be noted. CONTRAIL team has participated in a high number of knowledge exchange initiatives and has created new collaboration links with other research institutes. Moreover, all the scientific material produced is available on the project's website.
Regarding its impact on the use of ICT by all, the project will make highly innovative services available to citizens, and should help to develop services that will positively impact on citizens' everyday life. For example, by providing a better Quality of Protection (QoP), more health care providers will be made comfortable to deploy their services on the Cloud, making their services available to more people.

Impact on employment and working routine
What CONTRAIL's impact on employment will be is hard to evaluate, since it depends on the application and use of its outputs. Nonetheless, considering that it will enable more SMEs to enter the market, removing – at least partially - vendor lock-in and entry barrier, the project should have a positive impact on employment in the future.
It will also have an impact on working routines, as it will provide solutions to work more efficiently and conveniently for all sizes of firms, through the use of a single heterogeneous Federated Cloud.

Social capital
It is still too soon to evaluate the impact of the project on the social capital of its participants. Regarding the social capital of its users and beneficiaries, the project will have various positive effects. Considering that the robustness, reliability, transparency and security of the infrastructure provided are one of the pillar of the project, it will help in improving trust among its targets users and among citizens toward ICT infrastructure in general, and towards Public administration. CONTRAIL gives in fact an important attention to data protection and to the quality of the service. It will support also the creation of networks and the strengthening of collaboration in academia.

7. ID CuNim CUMULONIMBO

The CumuloNimbo project will develop transactional frameworks such as Java EE, which are the most common way of building applications today. One of the most difficult problems in this area is the lack of scalability of the transactional support, and in fact the total gap of scalable solutions that scale out (using many nodes). CumuloNimbo aims at filling this gap providing a highly scalable transactional system for the Cloud.

For further information http://cumulonimbo.eu/

CATEGORIES OF STAKEHOLDERS AND DESCRIPTION OF THE MAIN ACTIVITIES GENERATED BY THE PROJECT

The following categories of users' beneficiaries of the CumuloNimbo project are the most relevant in terms of impact: service providers, infrastructure providers, industry and SMEs, researchers and research communities.

The category of beneficiaries with a lower expected outputs' impacts are: citizens, consumers and end users.

See in detail the specification of the CumuloNimbo project's output impacts on direct and indirect beneficiaries:

- ***developers and software engineers:*** the use of the project's ouput is related to develop applications on top of CumuloNimbo PaaS. Expected impact on the ability to scale their applications transparently without having to change them
- ***service providers:*** the use of the project's output is related to the capabilit of providing services on top of CumuloNimbo as PaaS. The expected impact is related to the improvement of transparent scalability and elasticity they will experience. Beside they will be able to reach more users and clients
- ***infrastructure providers:*** the project's output is related to the data management services. Telco operators will be able to simplify their services due to the transparency of CumuloNimbo platform. The project's output will also improve the ability to combine analytical processing with the elastic online transactional processing system reducing the computational resources needed
- ***industry and SMEs:*** the use of the project's outputs allows industry and SMEs to use and/or develop applications running on top of CumuloNimbo platform. The expected impact is related to the benefits related to scalable transactional applications.
- ***researchers and research communities:*** the use of project's output is related to the extension of the research performed in CumuloNimbo that will transform the current way of attaining highly scalable transactional processing. Expected impact: transformation of the understanding of how to scale transactions
- ***citizens, consumers, end users:*** the use of the project's outputs allows to run applications on top of CumuloNimbo platform. The potential expected impact is related to good QoS during peak periods thanks to the scalability and elasticity of the system.

ECONOMIC IMPACT

In terms of socio-economic impact, the project is expected to produce different benefits on stakeholders: improve service/product/system quality, reach more users, lower entry barriers in a specific economic sector, improve the access to large amounts of data, improve scalability, provide cost reductions, reduce the time needed to deliver and deploy a service, keeping pace with competitors/with the research in the field, ability to better target users/beneficiaries' needs, increment the optimization of resources, improve efficiency.

With reference to the cost reduction, the project's outputs will produce 10% of hardware costs reduction, 10% maintenance cost reduction, 10% of software development costs, 10% of cost reduction due to increment in software re-usability and 10% of cost reduction due to less process break and system failure.

With reference to the sustainability plan, the project is expected to develop 2 new patents. The most relevant substantial impact of the project will be probably obtained already during the project lifetime.

The CumuloNimbo project has identified a potential commercial exploitation of its outputs and has already drafted a Business Plan. The project expects up to 50 persons to work on the commercial exploitation of its outputs. CumuloNimbo has also identified its global target market:

-applications requiring high scalability for transactional workloads
-applications that are willing to migrate to the cloud but only if it does not require changes to the applications itself
-applications that currently are complex due to the non-transparent scalability mechanisms used and want to get simplified via the CumuloNimbo transparent scalability solution.
The project provide also a list of its potential competitors showing the willingness to exploit its outputs in the next future.

SOCIAL IMPACT

CumuloNimbo, through the development of a highly scalable transactional system for the cloud, will have an impact mainly on three sectors of the society. First it will have an impact on the ICT Industry in general as the project will provide solutions for the scalability problems faced by the data management activities, which are activities required by most of the ICT industry' actors. Secondly, the project will have an impact on eInfrastructure because the applications running on CumuloNimbo platform will migrate without requiring any change, preserving their original semantics and improving thier scaling transparency. Finally, the last sector on which the project will have an impact is eGovernement as eGovernment applications that will benefit from the underlying scalability, elasticity and high availability of the CumuloNimbo solutions.
The project will contribute to some of the goals of the European Digital Agenda 2020. First it will allow SMEs to enter new markets by lowering entry barriers and lowering resource costs. Moreover, as the project promotes a greater transparency, scalability and elasticity of the services provided, reducing the risk of anomalies and increasing the

quality of the service for the end-users, the project will increase the ICT related Services demand and increment eCommerce. Finally, the project will also increase interoperability at a more general level.

Knowledge production and sharing

As the project started only in October 2010, it is early to assess its impact in terms of scientific knowledge production. The project has however already produced a high number of scientific deliverables (about 30) and a few articles have been published or presented at scientific conferences.

Regarding knowledge sharing aspects, the project has been presented during some conferences and various communication and dissemination events have been organized.

The project will have an impact as well on the use of ICT by the citizens. First of all, it supports the transfer of knowledge between research centres and industries. For example, CumuloNimbo has participated in exchange initiatives with various industries. The project will also promote the development and the availability of highly innovative services that will positively impact on citizen's everyday life. Finally, CumuloNimbo will promote flexibility for service' personalization on a large scale and high interface adaptability.

Impact on employment and working routine

The project has an important impact on the employment of skilled personnel. About 20 new researchers have been recruited for the project, and it sponsors a high number of PhD and Post-Doctoral scholarships (about 20 in total).

The project will also have a positive impact on the employment rate at territorial level. In fact, it will make enterprises more competitive and increase the number of their clients, enabling them to look for more employees. It will also foster the creation of new enterprises. In particular, the service providers that will use the Platform developed by CumuloNimbo will be able enlarge their market thanks to the transparency, scalability and elasticity of their services.

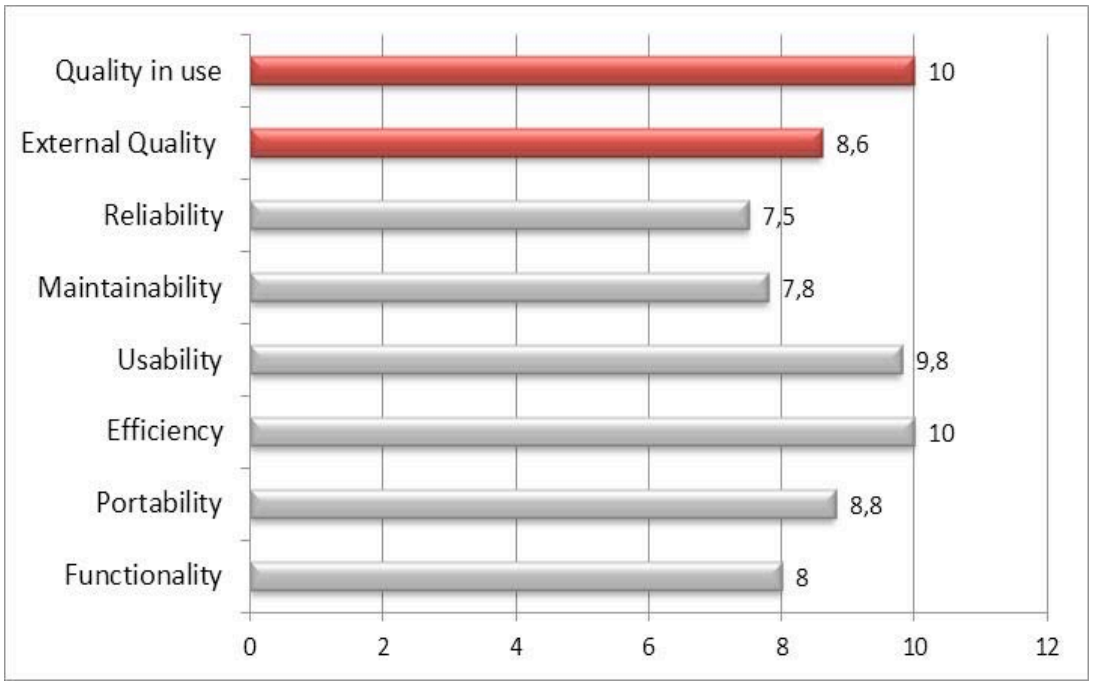
CumuloNimbo will have an impact as well on the working routine of its users. It will develop solutions that will help them to work more efficiently and conveniently, with more operations automated and less time necessary to do their work. In particular, the developers and software engineers that develop their applications on top of CumuloNimbo Platform will be able to scale their applications transparently without having to change them.

Social capital

It is too early to assess the impact of the project on the social capital of its participants.

However the project will have an impact on the social capital of its users and beneficiaries. First of all, it will support the creation of networks and the collaboration both among enterprises and inside the academia. Moreover, it will improve the way in which users communicate and collaborate with each other, facilitating social interaction. The last important impact of the project is that it will improve the trust of citizens towards ICT and the Internet, and towards Public Administrations, as it will reduce the number of anomalies and increase the transparency and the quality of those services that will take advantage of its platform.

TECH NICAL ASPECTS



From a technological point of view, the most technological innovative aspect of the CumuloNimbo project is related to the transparent scalability of transactional systems.

The CumuloNimbo project is based on different technologies, such as SOA and Cloud.

With reference to the technical characteristics of the CumuloNimbo project, the technological impact assessment detected an high relevance of external products' quality in use, which is mostly related on the following external products: Derby, HBase, Zookeeper, Bookeeper, HDFS, JBoss, Hibernate.

The most important category of the technical project's outputs quality is related to efficiency of technologies. Furthermore, the quality in use of technologies allows to increase the usability and functionality of the CumuloNimbo project's outputs.

8. ID 18 DiVA

The goal of DiVA is to provide a new tool-supported methodology with an integrated framework for managing dynamic variability in adaptive systems. This goal will be addressed by combining aspect-oriented and model-driven techniques in an innovative way. It will test its results implementing case studies from two different domains: crisis management and Customer Relationship Management (CRM).

The main DiVA's objectives are:

- to provide novel build time and runtime management of adaptive system (re)configuration of co-existing, co-dependent configurations that can span across several administrative boundaries in a distributed, heterogeneous environment
- to provide efficient handling of the number of potential configurations, that may grow exponentially with each new variability dimension
- to increase quality and productivity of adaptive system development and help the designers to model, control and validate adaptation policies as well as the trajectory going from one safe configuration to another
- to demonstrate its interest and generality and disseminate its results.

CATEGORIES OF STAKEHOLDERS AND DESCRIPTION OF THE MAIN ACTIVITIES GENERATED BY THE PROJECT

The most relevant categories of users' beneficiaries of the DiVA project are developers, software engineers, researchers and research communities. The following categories of direct and indirect beneficiaries in terms of lower outputs' impacts are related to service providers, infrastructure providers, industry and SMEs, citizen, end users and project partners.

See in detail the specification of the DiVA project's output impacts on direct and indirect beneficiaries:

- ***developers and software engineers:*** the use of project's output will allow developers to develop adaptive software. The potential expected impacts are related to efficiency, scalability and manageability
- ***service providers:*** the use of project's output will enable service providers to create adaptive services. The potential expected impacts are related to efficiency, scalability and manageability
- ***infrastructure providers:*** the use of project's output will allow infrastructure providers to manage the network. The potential expected impacts are related to adaptability and fault-tolerance
- ***researchers and research communities:*** the potential expected impacts of the project's outputs on researchers are related to models at run-time and scalability
- ***industry and SMEs:*** the potential expected impacts of the project's output on industry and SMEs are related to efficiency, scalability and manageability of software development
- ***citizens and users:*** the impact of the project's output on citizens and users is related to the possibility to have a better and more user-friendly software
- ***project partners:*** the use of the project's outputs allows project partners to develop

research activities and new products. The potential expected impacts, therefore, are related to the elaboration of new research projects and the development of better products.

ECONOMIC IMPACT

In terms of socio-economic impact, the project will produce different benefits on stakeholders: improve the quality of the service, scalability, reduce the time needed to deliver the service over the network, increment the optimization of resources and develop cost reductions. With reference to the cost reduction, 50% is related to lower software development costs.
The most relevant substantial impact of the project will be presumably obtained more than 5 years after the end of the project.

DiVA project has identified a commercial exploitation of its outputs, maintaining parts of the software of DiVA results as a OSS on the DiVA website. DiVA has also drafted a Business Plan, but unfortunately they do not disclose this information with the SEQUOIA team.

MORE ACCURATE DESCRIPTION OF ECONOMIC IMPACTS THROUGH CASE PILOT EXPERIENCE

The DiVA project will develop from 1 to 3 case pilot experiences in different sectors: transportations and logistics, telecommunications, interoperability and mobile services.

SOCIAL IMPACT

As many other projects, DiVA doesn't create directly solutions for specific sectors of the society, but it provides models for programming that can be used in any sector. Therefore, the domain in which the project will have an impact will depend on how its outputs will be used. Besides, the project has an impact also on the ICT industry in general that will benefit from the methodology, framework and tools that it developed.
The project isn't directly related to the goals of the European Digital Agenda 2020. However, it will participate in the promotion of a better use of standards in the ICT industry.

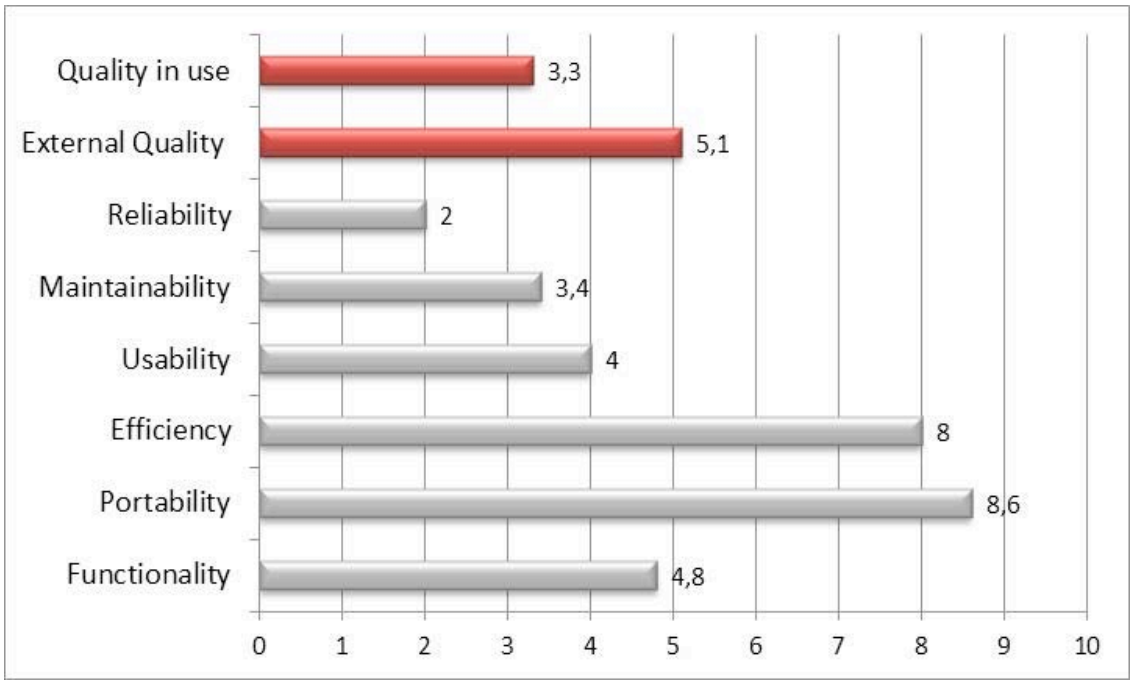
Knowledge production and sharing
The project produced a medium amount of scientific material: it published 5 articles on journals and 2 chapters of books, it presented 32 articles at Conferences, it drafted 23 scientific deliverables, and it sponsored 1 PhD thesis.
In parallel, the project made an effort in terms of knowledge sharing. First of all, all the scientific material produced is available on its website (even after the end of the project), and the project has created an open source repository that contains the DiVA studio and all the components for download. Moreover, it participated in collaborative events and formed a collaborative group which helps in the transfer of the project's results. Finally, it organized some training sessions during a summer school, which represent another opportunity to transfer the project's scientific knowledge to interested researchers.
DiVA will also have an impact on the use of ICT by citizens. Through the use of its

outputs, highly innovative services, that will positively impact on their everyday life, will be developed and made accessible to citizens. Moreover, the project will promote flexibility for personalization on a large scale and high interface adaptability.

Impact on employment and working routine
DiVA will not have a direct impact on employment, except for the 2 PhD scholarships that it sponsored, through which it will improve the curriculum and carrier opportunities of these two students. The project will however have an impact on the working routine of its users. In fact, thanks to the tools developed, DiVA allows them to do their work more quickly and it reduces in general their work, as more operations are automated.

Social capital
The project had a positive impact on the social capital of its participants. In fact, the partnership has established 3 new collaborations with research institutions, widening thus their network in the research community. Moreover, 2 new project proposals have been submitted to carry on the work on the bases of DiVA results. This is an indicator of the strength of the partnership that worked on DiVA and on its desire to continue to work together. The project doesn't directly have an impact on the social capital of its users and beneficiaries.

TECHNICAL ASPECTS



From a technological point of view, the most technological innovative aspect of the DiVA project is related to the use of models in all phases of the software development and deployment, making the software more independent from the platform and increasing the scalability of the service.

The DiVA project is mainly based on different technologies, such as mobile and context-aware services.

With reference to the technical characteristics of the DiVa projects, the technological impact assessment detected a low relevance of external products' quality in use, which is only related to the use of "Eclipse".

The most important category of the technical project's outputs quality are related to the portability and efficiency of technologies. Furthermore, the quality in use of technologies allows to increase the functionality and usability, of the DiVA project's outputs.

9. ID 17 FASTFIX

FASTFIX will enable time and cost-efficient maintenance and support services, by monitoring software applications, replicating semantic execution failures, and automatically generating patches.

Software maintenance and support services are key factors to customers' perception of software quality. Customers demand of these services is growing; at the same time the contribution of maintenance to products total cost of ownership needs to be reduced. Reducing maintenance costs is even more crucial for SME's.

FASTFIX results will include a platform and a set of open source tools to on-line monitoring of execution environments, gathering semantic information on application and user behaviour. This information is sent in real time to a support centre, taking special care on privacy and security issues. Using event correlation techniques, FASTFIX identifies failure symptoms, performance degradation or changes in user behaviour and allow for failure replication, patch generation and patch deployment, resulting in a self-healing software application.

For further information: www.fastfixproject.eu

CATEGORIES OF STAKEHOLDERS AND DESCRIPTION OF THE MAIN ACTIVITIES GENERATED BY THE PROJECT

The following categories of users' beneficiaries of the FASTFIX project are equally relevant: developers, software engineers, researchers and research communities, industry and SMEs, project partners.

See in detail the specification of the FASTFIX project's output impacts on direct and indirect beneficiaries:

- ***developers and software engineers:*** the use of project's output allows developers and software engineers to develop time and cost-efficient maintenance and support services. The potential expected impacts, therefore, are the following: time and cost-efficient maintenance and support services, with the advantage of automatic corrections
- ***researchers and research communities:*** the use of the project's outputs enables researchers to develop time and cost-efficient maintenance and support services

- ***industry and SMEs:*** the use of the project's outputs allows industry and SMEs to develop time and cost-efficient maintenance and support services
- ***project partners:*** the project's outputs will enable project partners to develop time and cost-efficient maintenance and support services.

ECONOMIC IMPACT

In terms of socio-economic impact, the project will produce different benefits on stakeholders: improve the quality of the service, increment the optimization of resources and develop cost reductions. With reference to the cost reduction, the project aims to reduce maintenance costs.

The most relevant substantial impact of the project will be probably obtained 1 year after the end of the project, but the economic time frame may be considered longer if FASTFIX is properly updated by the development of sensors needed for adapting it to the new technologies.

The FASTFIX project has identified a potential commercial exploitation of its outputs and has drafted a Business Plan. Up to 50 persons will work on the commercial exploitation of the project's outputs. There are two potential partners that can benefit from the use of the FASTFIX outputs: researchers' partners that are interested to continue to make discoveries and researchers on these themes and another partner that will develop training activities through this Open Source service. The FASTFIX team has not identified the potential revenues and the market share achievable, because they have not yet tested the first version of the software. The FASTFIX project states that there are no other competitors that can offer the same services of FASTFIX and this is an interesting consideration for the economic and financial impact, because the projects' outputs can develop disruptive and innovative services to the IoS market.

MORE ACCURATE DESCRIPTION OF ECONOMIC IMPACTS THROUGH CASE PILOT EXPERIENCE

The FastFix project will develop from 1 to 3 case pilot experiences within the digital manufacturing sector.

The FastFix case pilot experiences will develop a platform and a set of tools that will monitor online customer environments, gathering information on program execution and user interaction, with the objective of identifying execution errors symptoms, performance degradation or changes in user behaviour. By using correlation techniques, this platform would also decrease the risk of failure replication, by identifying incorrect execution patterns, patch generation and patch deployment. The project will bring forth more time- and cost- efficient maintenance services of software applications, by setting up mechanisms to get all the necessary information about application execution, errors, context and user behaviour. The gathered information will be sent in real time to a support centre.

Hence, FastFix can automatically upgrade and maintain the service. The system supports

maintenance in different ways, including the automatic generation of patches and quick fixes. The benefit of FastFix is the ability to support maintenance into the software development process generating less costs and more economic value.
The project will also increase the software quality, by supporting the process of software production/software engineering.

SOCIAL IMPACT

FASTFIX will provide a platform for software maintenance and support which will be applicable to software applications regardless of their execution environment. Therefore it will have a positive impact on the ICT industry in general. It will have an impact also on eInfrastructures and eHealth, improving the quality of life of the maintenance engineers.

The project will sustain some of the goals of the European Digital Agenda 2020. In fact, thanks to the platform and tools developed, it will allow SMEs to enter new markets. As it will help to lower the costs and improve the quality and functionality of the software, these will become more usable. The projects will also, in parallel, increase the ICT related Services demand. Finally, FASTFIX will also help to make the network more secure and trustworthy as it will identify errors and deploy remedial patches more quickly, avoiding system and application crashes.

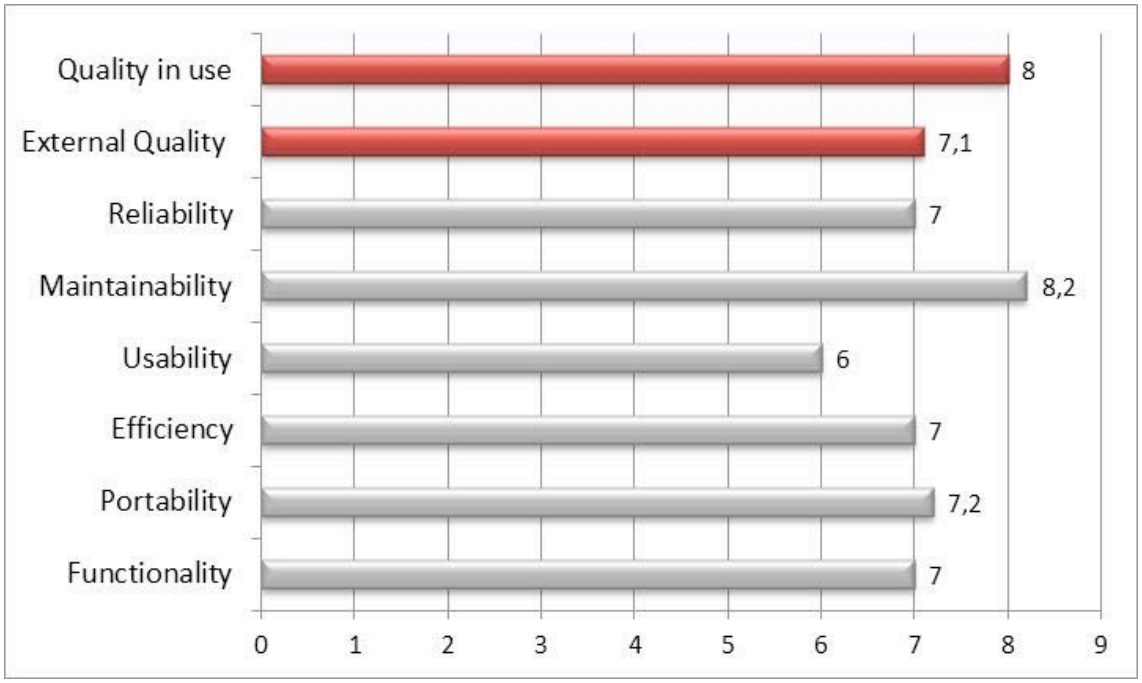
Knowledge production and sharing
FASTFIX is currently at the middle of its timeframe, so it is early to have a complete assessment of its scientific impact. Nonetheless the project already has produced some scientific publications (9 articles on journals, 3 articles presented at conferences, 10 scientific deliverables).
The project already has as well an important impact in terms of knowledge sharing. It participated in 7 knowledge exchange initiatives, and has established already 3 new collaborations links. No training material has yet been produced, but the project is preparing some training sessions. On the contrary, open access has not been provided to the scientific material produced, and the scientific publications or deliverables are not accessible on the project's website, limiting the access of the other researchers to the project's outputs.
The project will also have an impact on ICT usage for all. In fact, thanks to its outputs, highly innovative services, that will positively impact their everyday life, will be developed and made available to the citizens. Moreover, the project supports also flexibility for personalization on a large scale and high interface adaptability.

Impact on employment and working routine
It is not possible for the moment to assess the impact of the project on employment. However, considering that FASTFIX will allow new SMEs to enter the market, it should have a positive impact on the employment rate.
The project will have also a very positive impact on working routine. In fact, it provides solutions for working efficiently and conveniently for all sized of firms and much reduce the work of the engineers and maintainers, more operations being automated. This will also help the users to save a lot of time in their everyday work.

Social capital
It is too early to assess the impact of FASTFIX on the social capital of its participants.

The project will have however an impact on the social capital of its users and its beneficiaries. First, it will improve the trust among its users and improve the way in which they communicate and collaborate with each other. Secondly, improving the quality and the reliability of the software, the project will also improve citizen's trust in ICT and the Internet and in Public administration.

TECHNICAL ASPECTS



From a technological point of view, the most technological innovative aspect of the FASTFIX project is related to the using and reasoning about context information at run time to self-heal or handle errors. The FASTFIX project is mainly based on different technologies, such as Semantics Web, mobile and context-aware services.

With reference to the technical characteristics of the FASTFIX projects, the technological impact assessment detected an high relevance of external products' quality in use, which is mainly related to Jena, Eclipse, TeamWeaver. Javassist and Soot. The most important category of the technical project's outputs quality is related to the maintainability of technologies. Furthermore, the quality in use of technologies allows to increase the portability, efficiency, functionality and reliability of the FASTFIX project's outputs.

10. ID HOLA

HOLA is a Support Action project aimed at developing:

- continuous, active collaboration amongst IoS projects (and other potential R&D communities)

- horizontal knowledge management within IoS community (and other potential R&D communities)
- visibility of projects' results towards exploitation strategies.

The main activities of the HOLA project are:

- tools and services design and development, focused on the FP IoS Community (projects and entities)
- test and validation within the IoS Community. Wide spread of developed tools and services – reinforcing their continuous use
- dissemination of tools and services to other FP communities (mainly ICT)
- achieving sustainability of tools and services.

For further information: http://holaportal.eu/

CATEGORIES OF STAKEHOLDERS AND DESCRIPTION OF THE MAIN ACTIVITIES GENERATED BY THE PROJECT:

Most relevant categories of beneficiaries for the HOLA project are researchers and research communities. This is coherent with the fact that HOLA is a Support Action aiming at fostering the collaboration among IoS project's partners and related scientific communities.

See in detail the specification of the HOLA project's output impacts on direct and indirect beneficiaries:

- ***developers and software engineers:*** the use of the project's outputs is related to the access to project's CWGs' sites and the IoS Digital Library.
- ***Service providers:*** The expected impact of the project's outputs on service providers is related to the access to joint knowledge repository dedicated to IoS. Such repositories may be useful for their day-to-day activities also as a starting point for creating new types of software
- ***researchers and research communities:*** the project's outputs allow researchers to access to and to create project's sites, to participate in the CWGs and access the IoS Digital Library. The potential expected impact for researchers is related to permanent, networked and enhanced visibility of their projects and profiles, to the access to joint repository of knowledge in R&D in the IoS area, useful for their day-to-day activities and potentially to be transferred to other R&D communities.

ECONOMIC IMPACT:

In terms of socio-economic impact, the project will produce different benefits on stakeholders: improve service and system quality, reach more users, improve the access to large amounts of data, provide efficient data exchange, expand the range of research activities, reduce costs, keep pace with competitors and increment the optimization of resources.

With reference to cost reduction, the HOLA project's outputs will produce 10%

maintenance cost reduction, 10% of software development costs' reduction, 40% of cost reduction due to increment in software re-usability and 20% of cost reduction due to less process break and system failure.

With reference to the sustainability plan, HOLA project will identify in the next future a potential commercial exploitation of its outputs and will also draft a Business Plan. The project expects that up to 50 persons will work on the commercial exploitation of its outputs.

SOCIAL IMPACT:

HOLA! is a different project from the others as it is a support project facilitating community building and communication for the Saa/IoS actors; in fact, it is not a SaaS/IoS research project in the strict sense of the term. Therefore its impacts are different from the impacts of the other projects and SEQUOIA methodology is only partially accurate in detecting such impacts.
HOLA! responds to one of the goals of the European Digital Agenda 2020: it supports the creation of content and borderless services. In fact, the project is about compiling knowledge, structuring and interrelating it, making it permanent and exploitable and increasing active cooperation in R&D.

Knowledge production and sharing
HOLA! doesn't have an impact in terms of knowledge production, but one of its main objectives is to promote knowledge sharing among the scientific community and with developers and software engineers. HOLA! Portal gives access to projects' and CWGs' sites and to the IoS Library. Therefore it gives permanent and enhanced visibility to the projects and access to a joint repository of knowledge in the IoS area useful for researchers and developers. In this context, the project has organized knowledge exchange initiatives and different communication and dissemination events to ensure a wide diffusion of its tools and to strengthen its impact in terms of knowledge sharing.

Impact on employment and working routine
HOLA! will not have an impact on employment, but it will have a positive impact on the working routines of its users, in particular the researchers. If fact, these will have an easier and quicker access to an important amount of knowledge useful for their day-to-day activities.

Social capital
HOLA! will have a very positive impact on the social capital of its users. It supports the creation and the strengthening of collaboration in academia and among the enterprises in the sector. In fact, besides increasing the visibility of the projects' results and the management of horizontal knowledge within the IoS community, the other goal of the project is to promote a continuous and active collaboration among the projects/projects' partners. HOLA! offers tools that will help improve the way the projects communicate and collaborate with each other, improving the trust among them.

11. ID INDENICA

INDENICA acts upon the assumption that the platform(s) used as basis for application development in the enterprise sector cannot be used simply off the-shelf, but needs to be tailored for different usage scenarios. The INDENICA project tries to support this tailoring process providing appropriate methods and tools. The reason behind this process is that application development is complex when executed on top of the whole power of enterprise-grade service platform.

For further information: www.indenica.eu

CATEGORIES OF STAKEHOLDERS AND DESCRIPTION OF THE MAIN ACTIVITIES GENERATED BY THE PROJECT

The most relevant categories of users' beneficiaries of the INDENICA project are developers, industry, SMEs and project partners.

See in detail the specification of the INDENICA project's output impacts on direct and indirect beneficiaries:

- ***developers and software engineers:*** the use of the project's output allows developers to tailor the service platform for their usage scenario.
- ***industry and SMEs:*** the project's output enables industries and SMEs to deploy and to host service platforms. The potential expected impacts are an easier adoption of service platforms and less effort in application development
- ***project partners:*** the INDENICA outputs will directly be used by the project's partners inside their own companies.

ECONOMIC IMPACT

In terms of socio-economic impact, the project will produce different benefits: lower entry barriers in a specific economic sector, reduce the time needed to deliver and to deploy the service over the network, keeping pace with competitors, ability to better target users' needs and develop cost reductions. The most relevant substantial impact of the project's outputs will be developed during the project life-time.

The INDENICA project has lead to a commercial exploitation of its outputs, but it has not yet drafted a business plan. However, the main economic impact of the project is expected on time reduction, which will also potentially trigger from 20% to 80% of cost reductions. The project has also identified its potential target market, which is constituted mainly by ICT industries specialized in the service platform providers sector and on software developers and users of such platforms.

MORE ACCURATE DESCRIPTION OF ECONOMIC IMPACTS THROUGH CASE PILOT EXPERIENCE

The INDENICA project will develop from 1 to 3 case pilot experiences within the sectors of transportation and logistics, telecommunications, interoperability and mobile services. All the three case studies will be integrated into a larger one. This process will feature the integration among the different scenarios, that do not exist in current conventional solutions. Unfortunately, at this early stage, the project's team is still developing the use cases and there are no information available with reference to the potential economic impact of the project on case pilots.

The case studies of the INDENICA project consist of an Integration Scenario of a Warehouse Management platform, a Remote Maintenance platform and a Yard Management platform as main scenario plus a number of small scenarios to cover the whole scope of the INDENICA tools.

The goal of INDENICA is to provide means for managing variability on a system wide level covering the aspects of vertical as well as horizontal integration of different platforms. The case study will show the feasibility of the investigated methodologies and tools. INDENICA addresses the challenges by describing requirements of the whole system family using a goal-oriented approach. Based on these requirements the variability of the system as a whole is examined employing new variability approaches. Such a holistic view on the system covers not only the variability aspects of the involved platforms but also the issues related to the integration of multiple platforms and the derivation of variability from the virtual platform to the single platforms.

Furthermore, INDENICA will provide unified views to describe the architecture of the complete system. These views can be used to generate connectors between the different platforms covered by the architectural views. A single tool suite will be investigated and implemented by a prototype for the deployment and monitoring the single platforms and the system as a whole. This approach finally allows the runtime adaption that spans different parts of the system.

The most relevant objective of INDENICA is organisation-wide reuse of service to reduce development costs. In order to reach this goal a Virtual Service Platform is introduced.

SOCIAL IMPACT

The service platform developed by INDENICA is not centred on a specific sector, but it could be used in different settings, such as eHealth, eGovernment, etc. The project will have impact on the ICT industry, in particular for the development of software.
Regarding the goals of the European Digital Agenda 2020, INDENICA will help to increase interoperability at a more general level. It will also allow SMEs to enter new markets and increase ICT related services demand.

Knowledge production and sharing
Considering that the project is ending its first year of activity, not a lot of scientific material has been produced yet. Nonetheless, the project has developed new collaboration

links and the project has been presented in various conferences and seminars. The assessment of its impact in terms of knowledge production and sharing will be more accurate at a later stage of the project.

Impact on employment and working routine

The project has a positive impact on skilled personnel employment. In fact a large number of PhD and Post-Docs scholarships have been sponsored by the project, promoting an increment of highly qualified researchers in its domain and the employment perspectives for these persons.

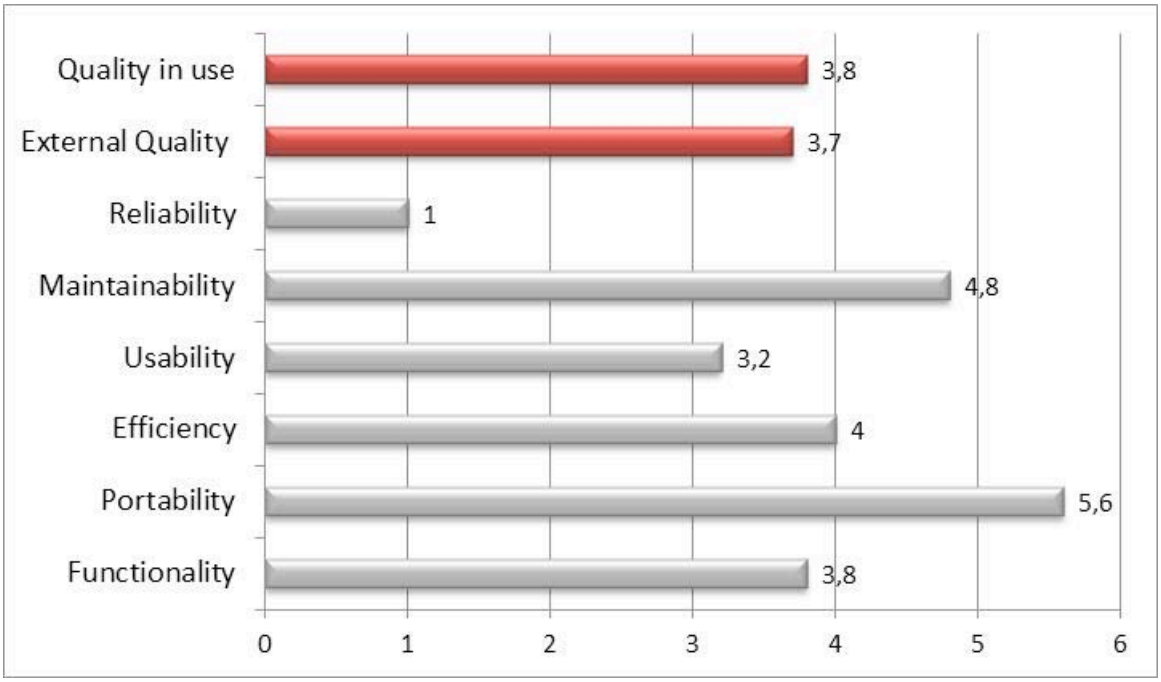
Regarding the employment rate of the territory, it is not possible at the moment to evaluate the number or the typology of work positions that will be generated by the project, as it depends on the use made of the service platform generated by the project.

On the other hand, the project will have a high impact on working routine. In fact, it will allow software developers to do their every-day work more quickly and in an easier way, with many operations automated. It will also allow persons with less technological knowledge develop services.

Social capital

The project is in a too early stage to assess its impact on the social capital of its participants. The consortium is composed of research institutes and industry partners, but collaboration links with other academia or economic actors outside the partnership will be developed in the coming years. However, the project will surely support the creation of networks among the enterprises of the sector in the future.

TECHNICAL ASPECTS



From a technological point of view, the most technological innovative aspect of the INDENICA project is related to novel technologies for platforms' adaptation. The INDENICA project is mainly based on different technologies, such as SOA, and Cloud.

With reference to the technical characteristics of the INDENICA projects, the technological impact assessment detected a low relevance of external products' quality in use. However, INDENICA is based on "Eclipse" external product.

The most important category of the technical project's outputs quality is related to the portability of technologies and to the maintainability of infrastructures. Furthermore, the quality in use of technologies allows to increase the efficiency and functionality of the INDENICA project's outputs.

12. ID 15 I2WEB

Recent and rapid developments in the way people access and use web services have thrown up new challenges for older and disabled people. These developments include the increasing emphasis on generating and sharing content, for example through social-networking sites, blogs, wikis, and photo and video-sharing sites. By 2025 40% of Europe's population will be older or disabled and the mission of the i2Web project team is to empower this section of the population to easily compose, share and use internet-linked services. The project realised trials with users on user requirements (Del in 2 months). User trials: current standards for disabled persons are static, and they will make it more dynamic.

For further information: www.i2web.eu

CATEGORIES OF STAKEHOLDERS AND DESCRIPTION OF THE MAIN ACTIVITIES GENERATED BY THE PROJECT

The most relevant categories of users' beneficiaries of the I2WEB project are developers, software engineers, service providers, citizens and users, old and disabled persons. The following category of direct and indirect beneficiaries in terms of lower outputs' impacts is related to industry and SMEs.

See in detail the specification of the I2WEB project's output impacts on direct and indirect beneficiaries:

- ***developers and software engineers:*** the use of the project's output for developers enables them to develop IDE tools to assess and to offer design-for-all advice on the accessibility of interactive online services they are developing. Therefore, the potential expected impact is that they will be able to create more eAccessible Services
- ***service providers:*** the project's output will allow service providers to assess the Accessibility of the online services that they commission and provide. Therefore, the potential expected impact is that they will be able to provide more eAccessible Services

- ***industry and SMEs:*** the use of the project's outputs enables industry and SMEs to provide services that will be more accessible to more of the population. Therefore, the potential expected impact is a higher use of such services and higher revenues from services sale.
- ***citizens and users:*** the use of the project's output will allow citizens and end users to access to more services and tools, in order to use more online interactive services
- ***others:*** the use of the project's output will allow older and disabled users to access more services; therefore, the potential expected impact is their higher involvement in mainstream FI services.

ECONOMIC IMPACT

In terms of socio-economic impact, the project's output will produce different benefits on stakeholders: it will improve the quality of the service, reach more users, improve the access to large amounts of data, reduce the time needed to deliver the service over the network, ability to better target users' needs and develop cost reductions.

With reference to the cost reduction, 10% is related to reduction of cost related to compliance with regulatory and policies constraints.

The I2WEB project will certainly develop an exploitation of its outputs and it has drafted an initial Business Plan. They expect that from 51 to 100 persons will work in the commercial exploitation of the project's outputs.
With reference to the economic sustainability, the project has already succeeded to attract additional private and public investments.

The most relevant substantial impact of the project is expected to be experienced 3 years after the end of the project.

MORE ACCURATE DESCRIPTION OF ECONOMIC IMPACTS THROUGH CASE PILOT EXPERIENCE

The I2Web project will develop from 4 to 6 case pilot experiences in different sectors: eGovernment, eInfrastructure, eBanking and IPTV. I2Web will be a complete open innovative and state-of-the-art service that will determine the accessibility not just of web-sites, but fully interactive eServices and devices, so it will thus be positioned as a more functional and holistic multi-device service, that will in particular address WCAG 2.0 compliance, than existing solutions.

The most relevant economic impacts of the I2Web case pilot experiences are related to validate the framework tools in different industrial software development environments and ensure the impact of the developed frameworks, by feeding the project results into relevant standardization bodies.

SOCIAL IMPACT

Considering that I2WEB aims at providing tools to develop inclusive Future Internet

services including disabled and older persons, the sector in which it will have its main impacts is eAccessibility. In fact, I2Web will be a complete open innovative and state-of-the-art service that will determine the accessibility not just of websites, but of fully interactive eServices and devices. It will be thus positioned as a more functional and holistic multi-device service, that will in particular address WCAG 2.0 compliance. Besides, the project will also have an impact on eLiteracy and eInclusion, as it will empower a large number of Europe's population, that will be older or disabled, to easily compose, share and use internet-linked services and engage in the mainstream Future Internet.
In doing so, I2WEB responds to various of the goals of the European Digital Agenda 2020. First of all it will help create content and borderless services, increasing eCommerce and ICT related Services demand. Moreover, it will promote a better definition and use of standards, as it will promote new dynamic standards for disabled people. Finally, at a lesser degree, it will allow SMEs to enter new markets by lowering entry barriers for them.

Knowledge production and sharing
Considering that the project has just finished its first year of activity, it is still early to have a full assessment of its scientific impact. It has already produced some scientific deliverables and presented 4 articles at conferences. However, great attention is given by the project to the exchange and diffusion of its scientific results. In fact, it has participated in some knowledge exchange initiatives and it has established 5 new collaboration links. A training module on WCAG 2.0 compliance has also been prepared by the partners. All of the scientific material produced by the project is available on its website and it organises different communication events targeted to its users. This demonstrates that the project gives importance to the diffusion of its results to the rest of the scientific community in order to ensure a large application of the tools developed in the future.
I2WEB will also have a very positive impact on the use of ICT by all and democratic participation. Its outputs will enable the development of highly innovative and interactive services to citizens that will positively impact their everyday life, and will make these services available to a high number of persons who could be otherwise excluded (for example for banking and eGovernment services). It will make also information and knowledge available to these citizens. This will lead to a reduction of the digital divide, it will enable diversity and individual expression across all the European population and it will impact positively on education. The project will also promote flexibility for personalization on a large scale and high interface adaptability. At a lesser degree, I2WEB will support the transfer of knowledge between research centres and SMEs, and support democratic processes.

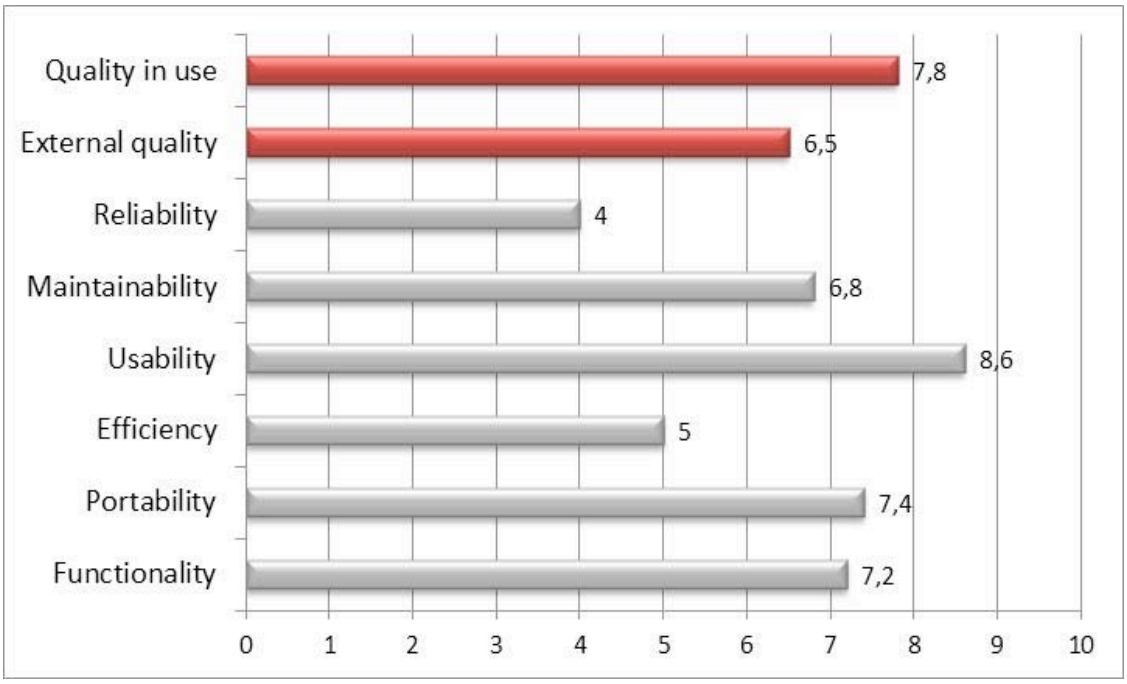
Impact on employment and working routine
I2WEB will have a very positive impact also on employment. First of all, the project sponsors 2 PhD and 2 post-doctoral scholarships, incrementing the number of skilled personnel and improving the carrier possibilities for these students.
Moreover, after the end of its activities, the project should have a positive impact on the employment rate in Europe. The project will promote the creation of new professionals and make SMEs more competitive enabling them to look for more employees. The project foresees that over 200 new job positions should be created thanks to the project.
Finally, the project will have an impact on the working routine of its users. It will allow them to do their everyday work more quickly, as it will become easier for them to become WCAG compliant.

Social capital

Even if it is early to have a full assessment of the impact of the project on the social capital of its participants, I2WEB has already established about 5 new commercial collaborations, about 3 new partnerships agreements with other research centres, and presented about 4 new project proposals. These data demonstrate that in one year the project has already given the partners the occasion to widen their networks both at the economic and academia level.

The project expects also to have a very positive impact on the social capital of its users and its beneficiaries. It will improve the trust of citizens towards ICT and the Internet. The project will also facilitate social interaction and support the creation of networks among the citizens, through the use of services and tools to which they would otherwise not have access. At a lesser degree, I2WEB will support the creation of collaboration between the enterprises of the sector, and improve the citizen's trust in the Public administrations that will be more accessible. Moreover, the project aims also at having an impact at political level at national and local level, with the promotion of innovative standards regarding eAccessibility.

TECHNICAL ASPECTS:



From a technological point of view, the most technological innovative aspect of the I2WEB project is related to User, Device & Application Models and Web Compliance Tools for fully interactive multimedia Future Internet Services.

The I2WEB project is mainly based on different technologies, such as SOA, Semantics, WEB 2.0, mobile and context-aware services.

With reference to the technical characteristics of the I2WEB projects, the technological impact assessment detected an high relevance of external products' quality in use, which is related to the use of ECLIPSE, eBanking, CitizenScape, Promedia and imergo® products.

The most important categories of the technical project's outputs quality are related to the accessibility, usability and portability. Furthermore, the quality in use of technologies allows to increase the functionality and maintainability of the I2WEB project's outputs.

13. ID MOSAIC

Cloud computing solutions are currently used in settings where they have been developed without addressing a common programming model, open standard interfaces, adequate service level agreements or portability of applications. Neglecting these issues current Cloud computing offers force people to be stranded into locked, proprietary systems. Developers making an effort in Cloudifying their applications cannot port them elsewhere. Moreover, users put in the hands of commercial providers applications and data without negotiable quality of service agreements. Within this complex context, the Mosaic project aims at building an application platform to negotiate cloud service, following the requests of users.

For further information: www.mosaic-cloud.eu

CATEGORIES OF STAKEHOLDERS AND DESCRIPTION OF THE MAIN ACTIVITIES GENERATED BY THE PROJECT

The most relevant categories of users' beneficiaries of the MOSAIC project are developers and software engineers. The following category of direct and indirect beneficiaries in terms of lower outputs' impacts is related to service providers.

See in detail the specification of the MOSAIC project's output impacts on direct and indirect beneficiaries:

- ***developers and software engineers:*** the project's output will enable software engineers to develop Cloud applications through agnostic Cloud API. Potential expected impact: reducing development costs
- ***service providers:*** the project's output will allow service providers to provide portable and applications which are more attractive than the previous one.
- ***infrastructure providers:*** the use of the project outputs will simplify access to the infrastructure and, consequently, increase the number of customers.

ECONOMIC IMPACT

In terms of socio-economic impact, the project will produce different benefits: improve the quality of the service, reach more users, reduce the time needed to deliver and to deploy

the service over the cloud, keeping pace with competitors, better target users' needs, increment the optimization of resources and to develop cost reductions.

With reference to the cost reduction, this is related to reduced hardware costs, to lower software development costs, to the increment in software re-usability and to the improvement of test-deploy-rework cycle management.

The project has not yet identified a commercial exploitation plan and has not drafted a Business Plan. MOSAIC is based on an Open Source approach, but the project is interested in knowing more about economic exploitation possibilities related to OSS. For this reason, after the SEQUOIA assessment, the project will run a business models analysis.

With reference to the economic sustainability plan, the project has already attracted considerable public investments at national level and is expected to generate 16 new partnership agreements with other universities and 10 new project proposals. The most relevant impact of the project is expected to be experienced 1 year after the end of the project.

MORE ACCURATE DESCRIPTION OF ECONOMIC IMPACTS THROUGH CASE PILOT EXPERIENCE

The MOSAIC project will develop from 1 to 3 case pilot experiences, one of which will be dedicated to natural risk management.

With reference to the potential impact, they are particular evident from the developers point of view: thanks to MOSAIC they will be able to migrate services from one cloud to another in a easier and cost effective way. Moreover, some activities will be migrated automatically from a cloud provider to another, in a transparent way and also the selection of the resources will become more clear (brokering mechanism will be automatic). However, the most substantial impacts of the MOSAIC project are related to open-source codes, that are different in the technical solutions that they adopt and in the objectives.

SOCIAL IMPACT

The platform developed by MOSAIC is not specific to one sector in particular. It offers tools that will enable the development of services for any sector of society.
MOSAIC, through its activities and outputs, contributes to some of the goals of the European Digital Agenda 2020. First of all, it will allow SMEs to enter new markets by reducing not only the vendor lock-in, but also the cloud provider lock-in as it will facilitate the migration from one cloud to another. The project will so also increase the interoperability that is often lacking in the cloud. Moreover, thanks to the platform developed that supports the development of services, MOSAIC will increment eCommerce and increase ICT related Services demand.

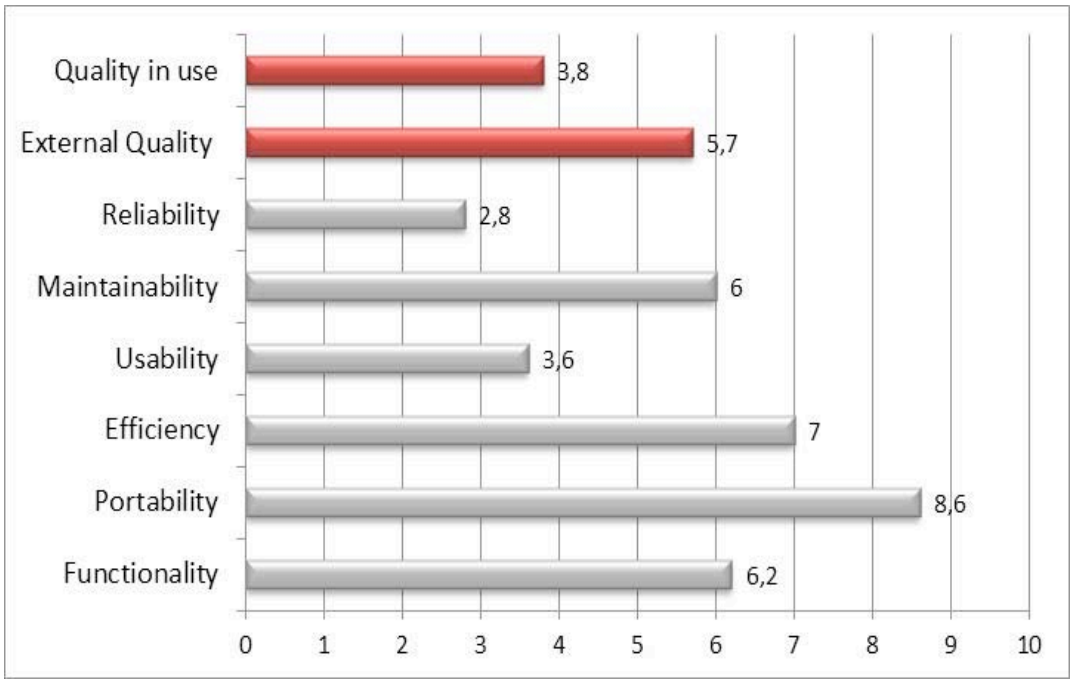
Knowledge production and sharing
Even if the project is not yet finished, it has already produced a positive impact in terms of

knowledge production. It has published different articles and chapters of books, it has participated in an important number of national and international conferences and it has drafted about 15 scientific deliverables.
MOSAIC is doing an important effort also in terms of knowledge sharing. Even if at the moment most of the articles published are not open access provided, open access will be provided to the MOSAIC platform at the end of the project. Moreover the project is organizing an important number of training sessions (between 21 and 30) and participates to various public joint activities for exchange, dissemination and training. These activities ensure a wide transfer of the project's scientific results to the rest of the scientific community and to future researchers.
MOSAIC supports also a wider usage of ICT in society. In fact, it makes information and knowledge available to a larger number of interested users. The project is organizing various activities to raise awareness of potential users communities, so that in the future more users can use its outputs. Thanks to the platform developed, the project will make also highly innovative services available to citizens. Finally, it promotes flexibility for personalization on a large scale and high interface adaptability.

Impact on employment and working routine
MOSAIC is producing an impact on employment directly through its implementation. About 15 to 25 additional researchers have been recruited for the project, and the project is sponsoring 9 PhD and Post-doctoral scholarships. This impacts the curriculum and future working possibilities of the highly qualified researchers and students involved.
On the contrary the project will not have an impact on the employment rate on the territory. In fact, it promotes the use of the Cloud and in general the Cloud tends to diminish and not increase the employment.
MOSAIC will have an impact on the quality of work and the working routine of its users. In fact, the project provides the developers and software engineers solutions that reduce their work, as some actions are automated, and help them work more efficiently. In particular, it provides tools to simplify the migration from a cloud to another (so that it is not necessary to do again 50 to 99% of the programming work). It helps them also in the choice of the resources.

Social capital
MOSAIC will have an important positive impact on the social capital of its participants. A more complete assessment will be possible at the end of the project, but the partners have already established new partnership agreements with a high number of other research centers (16). Moreover it has taken contacts with multi-national companies and organized seminars for the industries. This demonstrates that the partners have widened a lot their network of contacts both in the research and the industry communities and that the project strengthens their social capital. Another significant aspect is the number of new project proposals presented (about 10). This datum shows that MOSAIC partnership is strong and intends to carry on further the work done on the project.
On the contrary, the project will not have a direct impact on the social capital of its users and beneficiaries.

TECHNICAL ASPECTS



From a technological point of view, the most technological innovative aspect of the MOSAIC project is related to the ability to design a language and platform-agnostic application programming interface for using multi-Cloud resources and Cloud usage patterns.

The MOSAIC project is mainly based on different technologies, such as Semantics, Cloud and virtualization.

With reference to the technical characteristics of the MOSAIC projects, the technological impact assessment detected a low relevance of external products' quality in use.

The most important category of the technical project's outputs quality is related to the portability of technologies. Furthermore, the quality in use of technologies allows to increase the efficiency, functionality and maintainability of the MOSAIC project's outputs.

14. ID OMELETTE

The convergence of Telecom, IT and content services is driving the emergence of new markets on an open Internet of Services. Mash-ups have been a major success in Web 2.0. The success of Web 2.0 services has encouraged Telcos to expose their services as Telco Mash-ups, in order to provide third parties with facilities to build their business. Moreover, the exposure of network infrastructure as services is facilitating the entry of new API-driven Telco agents that bring traditional Telco services (telephony, messaging, IP

location, etc.) to the Web. Yet, the technologies underlying each of the different mash-up types are heterogeneous, which makes integration challenging. Also, mash-ups do not offer a universal composition model either, since mash-up development is not vendor independent. A mash-up developed within a specific technology has to be re-coded in order to be deployed in another engine.

OMELETTE proposes an innovative process of service development based on a mash-up oriented approach, which will enable the development of multimodal services in a seamless way.

For further information: www.ict-omelette.eu

CATEGORIES OF STAKEHOLDERS AND DESCRIPTION OF THE MAIN ACTIVITIES GENERATED BY THE PROJECT

The most relevant categories of users' beneficiaries of the OMELETTE project are developers and software engineers, project partners, industry and SMES, infrastructure providers. The following category of direct and indirect beneficiaries in terms of lower outputs' impacts is related to researchers and research communities, citizen and users.
See in detail the specification of the OMELETTE project's output impacts on direct and indirect beneficiaries:

- ***developers and software engineers****:* the project's output allow them to create new mash-ups for any kind of customer/end-user as OMELETTE development tool. The potential expected impact is that developers can benefit of the use of OMELETTE editors or components to generate a community around OMELETTE and to share its services
- ***service providers:*** the use of the project's output enables service providers to offer web services that can be consumed by users/customers, wrapped and distributed via the OMELETTE registry. Potential expected impacts for them are lower development costs, reduced time-to-market, higher competitiveness
- ***infrastructure providers:*** the use of project's output will allow infrastructure providers to expose their assets as a service. Potential expected impacts for such category of stakeholders are lower development costs, reduced time-to-market, higher competitiveness
- ***researchers and research communities:*** the project's outputs will enable researchers to create new mash-ups for their own needs or any kind of customer/end-user. Therefore, the potential expected impact is that they can benefit of the use of OMELETTE editors or components to generate a community around OMELETTE and to share the services
- ***industry and SMEs:*** the use of the project's output will allow industry and SMEs to create new mash-ups for their own needs or any kind of customer/end-user. Therefore, the potential expected impact is that they can benefit of the use of OMELETTE editors or components to generate a community around OMELETTE and to share the services
- ***citizens and users:*** the use of the project's outputs will enable end users to create their own services by attractive service creation tools and stimulate them to get involved and take up the community. Therefore, the potential expected impact is that end users can participate in the community around OMLETTE by sharing the services they develop.

ECONOMIC IMPACT

In terms of socio-economic impact, the project will produce different benefits: improve the quality of the service, reach more users, improve the access to a large amount of data, improve more efficient data exchange, improve scalability, reduce the time needed to deliver and to deploy the service over the network, keeping pace with competitors, better target users' needs and to develop cost reductions.

With reference to the cost reduction, the 50% are related to lower software development costs, 50% are related to the increment in software re-usability and 50% to improvement of test-deploy-rework cycle management. The most relevant substantial impact of the project is expected to be experienced 1 year after the end of the project.

OMELETTE will lead a commercial exploitation of its project's outputs and will draft a Business Plan. The project expects from 101 to 500 persons that will work on the commercial exploitation of the outputs.

With reference to the economic sustainability plan, OMELETTE predicts 2 new commercial collaborations arising from the project and 2 new partnership agreements with other universities.

MORE ACCURATE DESCRIPTION OF ECONOMIC IMPACTS THROUGH CASE PILOT EXPERIENCE

The OMELETTE project will develop from 1 to 3 case pilot experiences within the sector of eLearning and collaborative decision making (TPilot and University of Boston).

With reference to the OMELETTE project impacts we need to specify two different perspectives:

- *User perspective:* the tools to edit composed service in OMELETTE are faced from two different approaches: in the one hand, the mash-up editors, despite easy to use, are not specifically targeting end users, but power-users who are somehow familiar with programming patterns. On the other hand, the automated data routing among widgets in the Mash-up Live Environment and the automatic service composition serve to empower users in creating mash-up without wholly and explicitly devising its flows. We may say OMELETTE has quitted from trying users become programmers, and it instead allows them to specify some goals so as to get automated help in the creation of the mash-ups - while letting real programmers to intricate mash-ups.

- *Service model:* in OMELETTE, the basic component of a mash-up in the lower layers is a data transformer, which receives some data as input, processes it and returns new, processed data output; while the basic component in the upper layers is a widget that reacts to user commends. Each service is only alive while it is processing some data, and aggregation of them is done through piping techniques that route data flow from the output of one service to the input of another. As a result, the compositions in OMELETTE are instead mash-ups. From a software engineering perspective, in OMELETTE we build data transformations or data flows. in OMELETTE, mash-ups may be reused as components of

other mash-ups which reuse them, since anything providing a restful interface can be reused as again a composing service in a mash-up.

The results of OMELETTE will be validated through the following two different application scenarios:

1) International Campus Education: students have to work in teams distributed over different campus. The university enhances its existing Web portal with the OMELETTE Live Environment in order to provide collaboration solution that supports communication and co-working of students and ensures a high quality of education an supervision.
2) Collaborative Decision Making: this case study demonstrates how managers and employees of a company benefit from collaboration features provided by OMELETTE. The underlying enterprises portal software is enhanced with mash-up and telecommunication features by the Live OMELETTE Environment. The portal is organized in collaborative workspaces called activities. The participants of an activity are able to jointly use the existing portal content together with the widgets provided by the OMELETTE Live Environment.

Hence, the project will positively impact mainly on higher usability for the users (very easy to be used), on the link with telecommunication services and on the interoperability among services, applications and platforms (in the OMELETTE library there are widget interoperability standards).

SOCIAL IMPACT

OMELETTE, as many of these projects, doesn't directly offer a solution for a specific sector of the society, but it enables different solutions to be created in any sector.
The project contributes to different goals of the European Digital Agenda 2020. First, it allows SMEs to enter new markets, as it intends to impact on cost and time-to-market period reduction by means of making service development easier. Moreover, it will promote a better use of standards by making extensive use of W3C standards on widgets and contributing to the corresponding standardisation committee. It will also increase interoperability at a more general level by contributing to a new W3C standard on widget interoperability. Finally, the project will increase ICT related Services demand as these services become more available at a lower cost or costless.

Knowledge production and sharing
As the project has started its activities about 14 months ago, the assessment of its scientific impact can be only partial. It has however already presented a certain amount of articles at conferences, and drafted the first scientific deliverables.
The impact of OMELETTE in terms of knowledge sharing will be very positive. About 90% of its scientific production will be open access provided. Moreover it has already established a high number of new collaboration links (12) with projects of the 7th Framework Programme, projects outside this programme and even with an enterprise. To transfer its scientific outputs, the project is also organizing different training sessions. A virtual campus on the sector will be created and a summer school with the SOCIOS project will be held next summer. Finally, to exchange with other researchers, the project is participating to knowledge exchange initiatives and using different means of

communication (web-portal, online community, blogging activities, Twitter, Facebook, etc.).

OMELETTE will also support ICT usage by all and democratic participation. First of all it will enable highly innovative services, that will positively impact on the citizen's everyday life, to be developed and made available for all. It will also make available high-quality information to citizens. Through the use of the platforms developed by the project, the services composed will be able to support democratic processes, to impact positively on education and to promote diversity and individual expression. Moreover, the project will promote flexibility for personalization on a large scale. Finally, it supports the transfer of knowledge between research centres and economic actors; in fact links have already been established by the project with an enterprise in this objective.

Impact on employment and working routine

OMELETTE will have a positive impact on employment. Besides its support to the employment of skilled personnel (with the sponsorship of 4 PhD scholarships), the project will create new professionals, foster the creation of new enterprises, and make enterprises more competitive, enabling them to look for more employees. About 20 to 50 new jobs positions should be created thanks to the project.

Some of these new job positions will be linked to the maintenance of the OMELETTE platforms. These platforms (some open access and other business-oriented) will be in part maintained by the partners and in part by the OMELETTE Community. These platforms will need people to administrate and maintain them, and people to support the potential users and provide consultancy on how to use the platform.

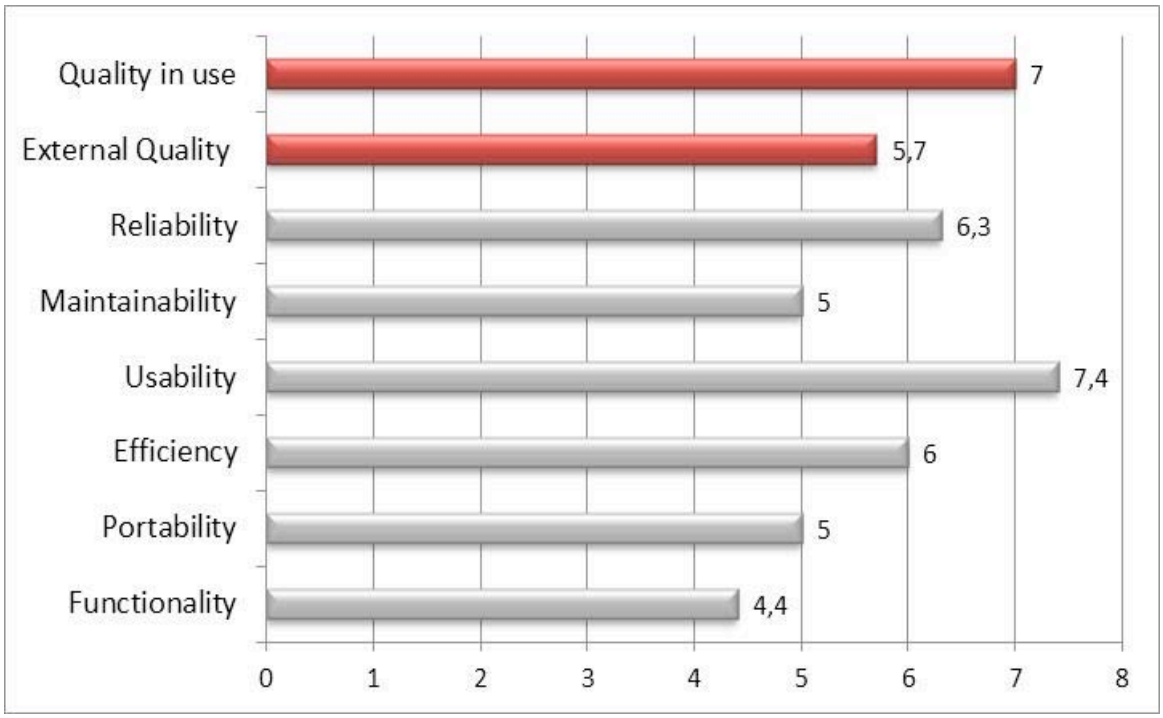
OMELETTE will also have an impact on the working routine of its users. It will in particular reduce their work, more operations being automated, and allow them to do this work more quickly.

Social capital

It is still early to assess accurately the impact of the project on the social capital of its participants. However, as indicated before, the project has established a high number of collaboration links with other projects, research centers/universities and enterprises, so the project will surely contribute to widen their networks of contact with the economic and research actors.

OMELETTE will also have an impact on the social capital of its users and beneficiaries. First of all, it will support the strengthening of the collaboration links (enlarging already existing networks and creating new ones) at all levels of society: between the enterprises of the sectors, in academia and among the citizens. Secondly, it will have an impact on the relations between its users: it will improve the way in which they collaborate and communicate with each other and improve the trust among them. Finally, it will improve the trust of citizens in ICT and the Internet.

TECHNICAL ASPECTS



From a technological point of view, the most technological innovative aspect of the OMELETTE project is related to the ability of providing a standard mash-up delivery platform specification, reference architecture and implementation, which allows the development of host and vendor-independent mash-ups, guaranteeing portability and platform interoperability in an open Internet of services. This model will encompass mash-ups of different kinds: multimedia (streaming, speech), event-oriented (for telecommunications), content and data mash-ups.

The OMELETTE project is mainly based on different technologies, such as Semantics, WEB 2.0, mobile, context-aware services, content-based services and mash-ups.

With reference to the technical characteristics of the OMELETTE projects, the technological impact assessment detected a medium relevance of external products' quality in use, which is mainly related to MyCocktail and ServFace products.

The most important category of the technical project's outputs quality is related to the usability of technologies. Furthermore, the quality in use of technologies allows to increase the reliability and efficiency of the OMELETTE project's outputs.

15. ID 21 PERSIST

The objective of PERSIST is to create a bridge between existing "islands of pervasiveness" such as smart device, smart car, smart office. PERSIST will develop Personal Smart Spaces providing a minimum set of functionalities which can be extended and enhanced as users encounter other smart spaces during their everyday activities. They will be capable of learning and reasoning about users, their intentions, preferences and context.

For further information: www.ict-persist.eu

CATEGORIES OF BENEFICIARIES AND DESCRIPTION OF THE MAIN ACTIVITIES GENERATED BY THE PROJECT

The most relevant categories of users' beneficiaries of the PERSIST project are developers, software engineers, citizens, consumers, end-users, industry and SMEs. The following category of direct and indirect beneficiaries in terms of lower outputs' impacts is related to researchers and research communities.

See in detail the specification of the PERSIST project's output impacts on direct and indirect beneficiaries:

- ***developers and software engineers:*** the use of project's output allows developers to provision new service APIs and, therefore, the potential expected impact is related to new service creation
- ***service providers:*** the use of project's outputs enables service providers to create new kinds of services and, therefore, the potential impact is related on new services development
- ***researchers and research communities:*** PERSIST outputs will develop new concepts in pervasive computing for researchers and the potential expected impact is related to future research projects
- ***industry and SMEs:*** the use of project's output will allow industry and SMEs to create new typologies of services and, therefore, the potential expected impact is related to new services creation
- ***citizens, consumers and end users:*** the project will develop new modes of interaction with services for citizens and end users and, therefore, the potential expected impact is related to the creation of new services available to users.
-

ECONOMIC IMPACT

In terms of socio-economic impact, the project will produce different benefits on stakeholders: improve the quality of the service, reach more users, improve more efficient data exchange, improve scalability, expand the range and the typologies of research activities and services made available to research communities, better targeting of users' needs.

The PERSIST project has lead a commercial exploitation of its output, but it has not yet draft a business plan. However, the project estimated that the most relevant substantial impact of the project is expected to be developed 3 years after the end of the project.

With reference to the economic sustainability analysis, the PERSIST project is expected to generate 1 new commercial collaboration, 1 new partnership agreements with other universities, 1 new project proposal. The most relevant incomes attracted by the project are related to private investments within the sector of e-tourism and public investments at national level.

MORE ACCURATE DESCRIPTION OF ECONOMIC IMPACTS THROUGH CASE PILOT EXPERIENCE

The PERSIST project has developed 5 case pilot experiences in different sectors: a navigation scenario (integrating with the GPS technology), a virtual world (depending on who walked on that room, the room was changing - e.g. different type of furniture - only if each person has persist installed in its own device), denature assistant (for persons suffering of denature problems and they meet other persons with the same problem, they can know their preferences, problems, etc.), personal smart workspace; disaster management scenario.

SOCIAL IMPACT

As for many of the projects, the aim of PERSIST is not to create solutions directly for specific sectors of the society, but it provides an open and extensive architecture that can have an impact on any sector, depending on the services developed thanks to this architecture. The project enables the creation of new service types, allowing private enablers to be integrated into product sets and interoperability between smart spaces.

PERSIST contributes to some of the goals of the European Digital Agenda 2020: it allows the creation of content and borderless services, it allows SMEs to enter new markets by lowering entry barriers, it promotes the creation of a united digital market, it makes in part the network more secure and trustworthy, it promotes eCommerce, and, most of all, it increases interoperability at a more general level.

Knowledge production and sharing

PERSIST has produced a fair number of scientific deliverables, and many articles were presented at conferences. To ensure a wide diffusion of its scientific outputs, most of the material is available on its website, and open access has been provided to the architecture developed. Moreover, some training sessions and a summer school have been organized to transfer the scientific results to other or future researchers. The project has established two new scientific collaboration links, and has participated in a couple of knowledge exchange initiative. In total, we can consider that the project had a medium impact in terms of knowledge production and sharing.

The project had an impact also in supporting the ICT usage for all. First of all, it makes

highly innovative services available to citizens and promotes the development of services that will positively impact on citizen's everyday life. Moreover, it makes information available to a larger number of interested users and it promotes flexibility for personalization on a large scale with high interface adaptability. Finally, it supports the transfer of knowledge between research centers and SMEs.

Impact on employment and working routine

Considering that the project developed an architecture to enable SMEs to use and augment smart places, but didn't develop services directly, it is difficult to estimate what the impact of the project on employment will be. It will depend on how the SMEs will effectively develop these services, and if they will create job positions. The project sponsored however 2 PhD scholarships, incrementing the skills and employment possibilities of these researchers.

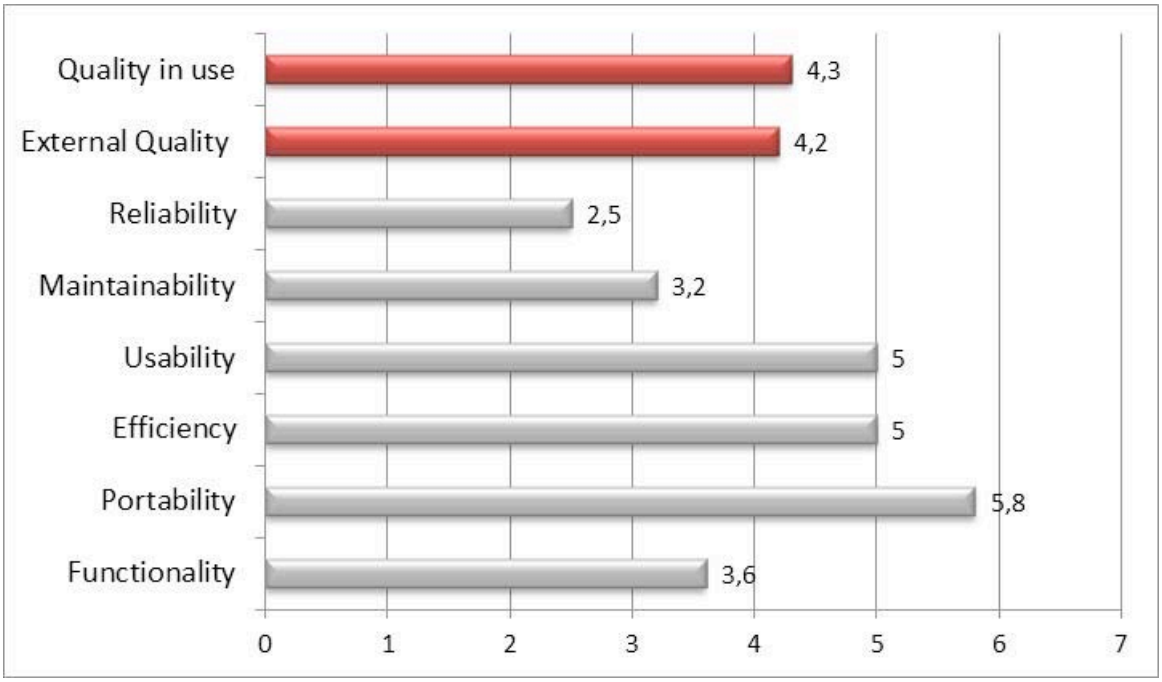
PERSIST has moreover a positive impact on working routine, as it reduces the work of the service developers, automate several operations, and it allows its users to do their everyday work more quickly.

Social capital

During the project a new collaboration with an industry partner has been established. This is an important aspect because it ensures a wider application and diffusion of the PERSIST's outputs and it increments the network of the project participant.

But the project has most of all an important impact on the social capital of its users and beneficiaries. It changes completely and improves the way in which users communicate and collaborate with each other and it facilitates social interaction through the use of personal smart spaces and their interactions. It supports also the collaboration among the different actors of society (enterprises, academia) and among citizens. Finally, it could have a positive impact for disabled persons as the architecture offers the possibility to develop very useful services for people facing difficulties in having a full independent life.

TECHNICAL ASPECTS



From a technological point of view, the most technological innovative aspect of the PERSIST project is related to proactive behaviour and the potential to bridge pervasive and smart spaces. The PERSIST project is mainly based on different technologies, such as mobiles, context-aware and virtualization ones.

With reference to the technical characteristics of the PERSIST projects, the technological impact assessment detected a low relevance of external products' quality in use, indeed, the project is not based on specific external software.

The most important category of the technical project's outputs quality is related to the portability of technologies and to the usability and efficiency of infrastructures. Furthermore, the quality in use of technologies allows to increase the functionality and the maintainability of the PERSIST outputs.

16. ID 29 REMICS

Cloud computing is actually becoming even more an hot theme and many companies want to offer some services in the cloud or use cloud computing platforms and storage services. However, in many cases, companies already have some legacy system that needs modernization and will be the basis for future development. The REMICS project investigates how these legacy applications should be modernized in order to move to the cloud paradigm.

For further information: www.remics.eu

CATEGORIES OF STAKEHOLDERS AND DESCRIPTION OF THE MAIN ACTIVITIES GENERATED BY THE PROJECT

The most relevant categories of users' beneficiaries of the REMICS project are developers, service providers, researchers and research communities, industry and SMEs and project partners.

See in detail the specification of the REMICS project's output impacts on direct and indirect beneficiaries:

- **developers and software engineers**: the use of the project's outputs allows developers to modernize legacy applications and to reduce **maintenance** costs
- **service providers:** the use of the project's outputs enables service providers to deploy services within the Cloud which are aimed to reduce maintenance costs and to enlarge the users' access to the Cloud
- **researchers and research communities**: the use of REMICS output allows researchers to develop tools and methodology and to improve the state of the art in their research fields
- **industry and SMEs:** the use of the project's output allows industry and SMEs to reuse legacy applications. The expected impact of the REMICS project's outputs is related to more flexibility, better usability and reduced maintenance costs
- **project partners:** the use of the REMICS project's output allows project partners to develop and to test solutions in order to trigger a transfer to the development process.

ECONOMIC IMPACT

In terms of socio-economic impact, the REMICS project's output will produce different benefits on stakeholders: improve the quality of the service, reach more users, keeping pace with competitors and provide maintenance cost reductions (70% is the estimated percentage of maintenance cost reduction).

The REMICS project do not foresee a commercial exploitation of its outputs and it has not yet drafted a business plan because project's outputs will be released as free and a trial version will be provided on the project's website. Hence, the main financial revenues of REMICS will be generated through partnerships with vendors.

MORE ACCURATE DESCRIPTION OF ECONOMIC IMPACTS THROUGH CASE PILOT EXPERIENCE

The REMICS project will involve from 1 to 3 case pilots, in the accounting sector, the EPR sector and the tourism. The case pilot identified by the REMICS project will impact on the modernization of SOA within the Cloud environment, increasing interoperability to connect old information systems with newest, and as a result, improving quality and productivity.

SOCIAL IMPACT

REMICS doesn't directly provide a solution for a specific sector, but it enables the creation of various solutions; it will therefore have impact on different sectors of society, depending on the utilization that will be made of its outputs. It will have an impact also on the ICT industry in general.
Its outputs will help also in the fulfilment of three of the goals of the European Digital Agenda 2020: it will be useful in allowing SMEs to enter new markets by lowering entry barriers for SMEs and lowering resource costs, in increasing interoperability at a more general level and in promoting a better use of standards. In fact, the presence of tools vendors inside the partnership ensures that several contributions to standards will be made by the project.

Knowledge production and sharing
Still in the first phases of its activities, the project has not produced substantial scientific materials yet. It has already some interesting impacts in terms of knowledge sharing. In particular, the project has produced a number of training modules and participated in knowledge exchange initiatives. Moreover, all the scientific production is accessible on its website. All these aspects ensure a wide diffusion of the project results to the beneficiaries and to future researchers.
The project also has an impact on the use of ICT by all in society. In particular, it supports the transfer of knowledge between research centres and industries and it makes highly innovative services available to citizens. Moreover, it has a positive impact on education.

Impact on employment and working routines
We do not have elements to evaluate the impact of the project on employment. However, the project should have a positive impact on working routine, as it provides solutions for its users that will help them work more efficiently and conveniently.

Social capital
REMICS has a positive impact on the social capital of its participants. It has developed collaboration actions with other projects and participates in working groups on the Research Agenda 2020. Besides, new partners have entered the consortium. This helps the partners to widen their networks and links with other research and economic actors, offering them more opportunities to develop projects and solutions in the future.

17. ID 22 S-CUBE

S-Cube, the Software Services and Systems Network, aims at establishing an integrated, multidisciplinary, vibrant research community which will enable Europe to lead the software-services revolution, thereby helping shape the Internet of Services, which – as part of the Future Internet – will be a backbone of our future interactive society.

For further information: http://www.s-cube-network.eu/

CATEGORIES OF STAKEHOLDERS AND DESCRIPTION OF THE MAIN ACTIVITIES GENERATED BY THE PROJECT

The most relevant categories of users' beneficiaries of the S-CUBE project are developers, software engineers, service providers, researchers and research communities. The following categories of direct and indirect beneficiaries in terms of lower outputs' impacts are related to Industry and SMEs and other categories.

See in detail the specification of the S-CUBE project's output impacts on direct and indirect beneficiaries:

- ***developers and software engineers:*** the use of the project's outputs allows them to develop and to maintain service-based systems, in order to understand how to design and to evolve services systems (leading to better planning and efficient development processes)
- ***service providers:*** the use of the project's output enables service providers to improve the user satisfaction due to better addressing user needs and dynamically responding to varying user contexts
- ***researchers and research communities:*** the use of the project's outputs allows researchers to be involved in the understanding of open, multi-disciplinary research to be addressed for the Future Internet. Researchers can develop better aligned and orientated research in the field of SOC driven
- ***industry and SMEs:*** the use of the S-Cube outputs enables industry and SMEs to catalogue techniques and methods that can be transferred to industry (e.g., quality modeling languages, knowledge model with key terminology, lecture modules). The potential expected impact is related to the increasing of the availability of up-to-date information about novel trends in technology and techniques for services systems influencing the way systems can be built and planned
- ***other:*** the use of the project's output allows to train European students in the relevant areas for service-based systems, including software engineering, business processes, service-oriented computing and cloud computing.

ECONOMIC IMPACT

In terms of socio-economic impact, the project's outputs will produce different benefits on stakeholders: improve the quality of the service, reach more users, improve scalability, expand the range and the typologies of research activities and services made available to research communities, better target users' needs, increment the optimization of resources, improve efficiency and obtaining well trained and educated graduates.
The S-CUBE project has not yet identified a commercial exploitation of its outputs and it has not drafted a Business Plan.
With reference to the sustainability plan of the project's outputs, S-CUBE expected to generate 17 new partnership agreements with other universities and 17 new project proposals. S-CUBE expects to realise the most substantial economic impact of its outputs 3 years after the end of the project.

MORE ACCURATE DESCRIPTION OF ECONOMIC IMPACTS THROUGH CASE PILOT EXPERIENCE

The S-CUBE project will involve different case pilot experiences within different sectors, such as wine production, automotive, eHealth and eGovernment.
The case pilot experiences of the project have shown that the various economic impacts on stakeholders are the following: improving the quality of business process and modeling languages, increasing the revenues of services providers, infrastructure providers, industry and SMEs.

SOCIAL IMPACT

The sectors on which the project will have the more impact in general are eLearning, ICT support for efficient transport and ICT industry in general. In terms of eLearning, the S-Cube Virtual Campus will be a central access point for training and education material on service-based systems. With reference to transport and mobility, the S-Cube results will be exploited in the FI PPP project Finest. Finally, for the ICT industry in general, the project will promote awareness for novel techniques and methods, specifically on adaptive services and systems.
S-Cube contributes to the fulfilment of some of the 2020 European Digital Agenda's goals. S-Cube is mostly related to the political goal "Increase ICT related Services demand". But it will also work towards the fulfilment of some other goals: "Increment eCommerce", "Increase interoperability at a more general level", "Creation of content and borderless services" and "Creation of a united market". The project will have, in fact, an impact on all the aspects related to services and commerce.

Knowledge production and sharing
In terms of scientific production, the outputs are very positive. On the S-Cube website 304 documents (including articles, proceedings and reports) are available in the Literature Database, and links to original documents are provided even if open access is not fully guaranteed.
The knowledge produced by the project has been shared and diffused not only through publications and training activities but also thanks to several exchange initiatives. In fact, S-Cube presented the project and its outputs in 150 conferences, organised 60 exchange initiatives and established 120 collaboration links such as joint teaching courses exchange of resources of information.

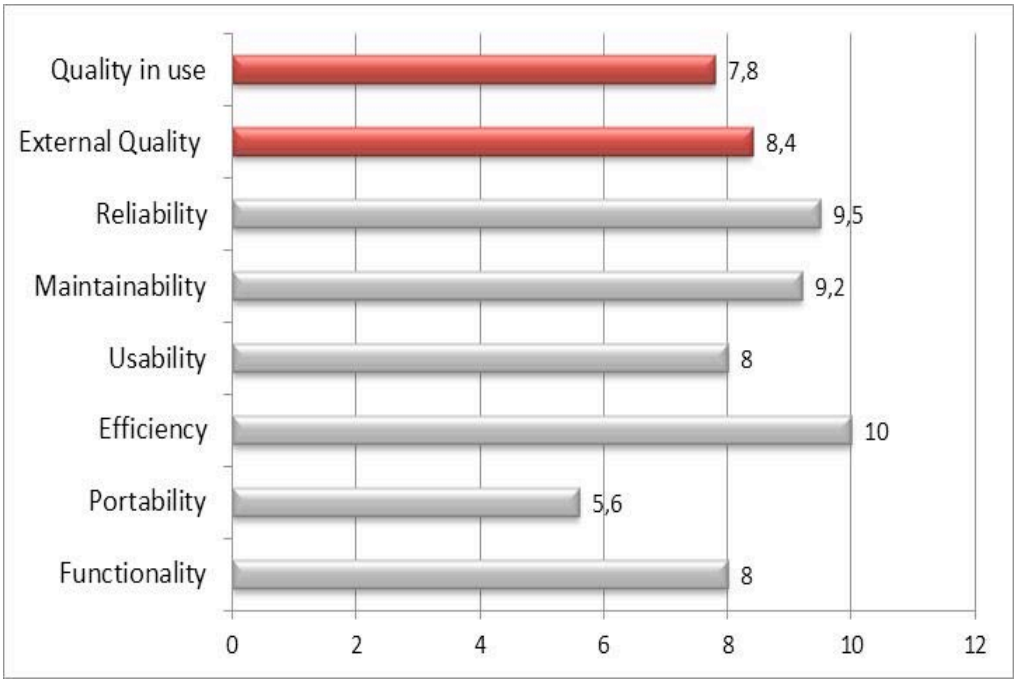
Finally, knowledge diffusion used also the training channel, which is in accordance with the identification of students and postgraduates as important beneficiaries of the project. Not only have training courses been organised, but the project has also organised an online training course and a summer school.

Impact on employment and working routine
During its life, the S-Cube project sponsored a high number of PhD and post-doctoral scholarships, thereby determining a positive benefit deriving from the potential exploitation of the resulting highly-trained students by the new economy.
In the future, the project expects to have an impact on employment rate in various territories because it is training new professionals that will be competitive on the labor

market.
The project will not have a high impact on working routine. The main impact regarding this aspect regards the way the researchers work: they will benefit from more awareness for the need of cross-disciplinary work, a better integration with other European researchers and richer collaborations and a wider access to research results. This will certainly have positive impacts on their research work.

Social capital
S-Cube has a positive impact in terms of social capital and researchers networking. The number of new partnership agreements with other universities, research centres, enterprises or public bodies is an important indicator. The organisms of these new agreements have become associate partners to the project. Another indicator of the importance of research networking made by S-Cube is the number of new project proposals submitted thanks to the participation in the project. The project has also been in contact with the NESSI project, which aims at uniting a community of over 430 organisations from industry and academia in order to promote the Internet of Services through complementary activities Therefore we can consider that the project has developed a large research network, which has a very positive impact on the social capital of its partners/participants.
Moreover, considering that one of the objectives of S-Cube is to elaborate joint research agendas and roadmaps, the partners have taken many contacts with policy makers in the field of the Internet of Services. A white paper on the S-Cube vision has also been produced.

TECHNICAL ASPECTS



From a technological point of view, the most technological innovative aspect of the S-CUBE project is related to the development of an interoperable community, that will enable also the revolution of the software-services sector.

The S-CUBE project is mainly based on different technologies, such as SOA, Mobile, Context-aware services, Cloud, virtualization, content-based services, Grid and mash-ups.

With reference to the technical characteristics of the S-CUBE projects, the technological impact assessment detected an high relevance of external products' quality in use between all the project assessed with the SEQUOIA methodology.

The most important categories of the technical project's outputs quality are related to the portability of technologies and to the efficiency, maintainability and reliability of infrastructures. Furthermore, the quality in use of technologies allows to increase the usability and functionality of the S-CUBE project's outputs.

18. ID 28 SERENOA

It is very difficult to create software that adapts to user's device preferences surrounding context. SERENOA intends to create a software framework based on language for application specification authoring tools and runtimes to help developers creating context-aware SFEs (Service Front-Ends). This software framework will support developers creating programs, of any sector and using any language. SERENOA will translate the declarative language based on XML from WHAT developers doing in HOW.

For further information: http://www.serenoa-fp7.eu/

CATEGORIES OF STAKEHOLDERS AND DESCRIPTION OF THE MAIN ACTIVITIES GENERATED BY THE PROJECT

The following categories of users' beneficiaries of the SERENOA project are all equally relevant in terms of outputs' impacts.

See in detail the specification of the SERENOA project's output impacts on direct and indirect beneficiaries:

- **developers and software engineers, service providers, infrastructure providers and TELCO operators:** with the use of SERENOA output, they can generate more complex software, adapted to the users' context. In addition, the use of the SERENOA project outputs, allows to minimize the time-to-market needed for software commercialization, and to increase the set of targeted users, which would lead to a potential increasing of incomes
- **researchers and research communities:** the use of the project's output allows researchers to develop reusable languages, methodologies and tools for future work in software generation research. Through the use of the SERENOA output, therefore, research institutions will improve their curricula
- **industry and SMEs:** the use of the project's output allows industries and SMEs to generate more complex software well fitting to their needs, to minimize the time-to-market of such software and to increase the set of targeted users, which would lead to a potential

increasing of incomes. Through the use of the project's outputs, industry and SMEs will also improve their services catalogue

- **citizens, consumers and end-users:** through the use of SERENOA outputs, citizens and consumers can use software which maximizes the user experience
- **project partners:** the use of the SERENOA outputs will provide a mixture of the previous mentioned expected impact items on project partners.

ECONOMIC IMPACT

The SERENOA project's output will produce different benefits in terms of socio-economic impact on stakeholders, among which: improve the quality of the services provided, to reach more users, to lower entry barriers in various sectors, to expand the range and the typologies of research activities and services made available to research communities, to reduce the time needed to develop new services, to keep pace with competitors and to better target users' needs.

The project's output will impact on the different sectors of e-Government and ICT industry in general. However, the SERENOA project does not directly provide or create a solution for these sectors, but it enables the creation of various solutions.

More in detail, in terms of economic impacts, the use of SERENOA's output will allow to reduce costs related to the development of new software in a percentage of 100% for all the users' categories, which today are up to 100, but in three years will be more than 2000. The substantial expected impacts of the project's outputs will be reached at the end of the project.

The SERENOA project has developed a commercial exploitation of its outputs and has yet drafted a business plan, but is not able to identify the most important variables of a business plan, such as SERENOA's main competitors, the global market value and the potential market share achievable.

MORE ACCURATE DESCRIPTION OF ECONOMIC IMPACTS THROUGH CASE PILOT EXPERIENCE

The SERENOA project will perform from 1 to 3 case pilots in different sectors, such as telecommunications interoperability, mobile services, e-Commerce and virtual assistants.

The Wireframe software - Mockup Tiger is a good example of a successful case pilot experience. Mockup Tiger helps companies to build wireframes, mockups and prototypes. This solution is innovative because it provides web based rapid prototyping application and offers the best widgets to build Dashboard Wireframes or website Mockups, scalable library of vector icons, powerful text widgets, containers, boxes and dashboard chart widgets. Different categories of stakeholders can benefit from the positive economic impacts by using the Mockup Tiger solution, but in particular web designers, business owners and Business Intelligence enterprises. The most relevant benefits are related to costs savings, caused by the outsourcing process, the increasing of quality production, indeed companies can use extensive libraries of chart widgets. Corporate users can use Mockup Tiger for their everyday documentation, simplifying the research process and this software can minimize the costs related to potential service disruptions.

SOCIAL IMPACT

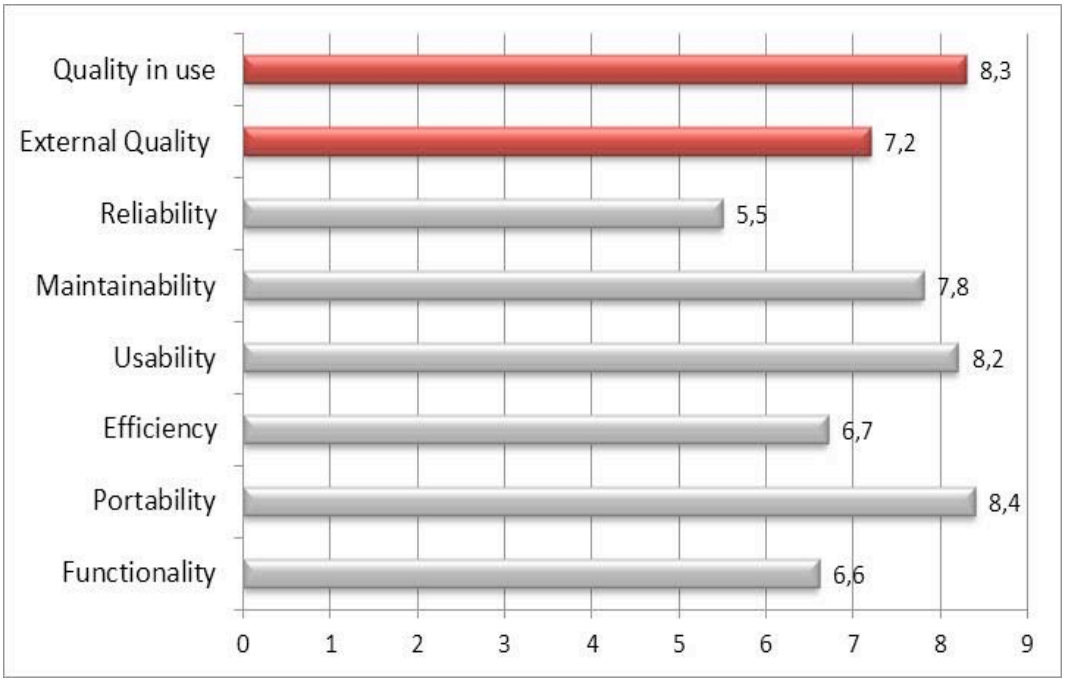
SERENOA will have an impact on the ICT industry in general, helping the developers to create context-aware adaptive service front-ends. But the project is not focused on one specific sector; it mostly enables the creation of various solutions applicable to all the sectors, suggesting a software framework to create applications.
It will therefore participate in the fulfilment of mainly two goals of the European Digital Agenda 2020: to create content and borderless services and to allow SMEs to enter new markets by lowering entry barriers for SMEs and lowering resource costs.

Knowledge production and sharing
Regarding the scientific aspects, the impact in terms of knowledge production is still limited as the project is in an early stage of its activities. Moreover, not many knowledge exchange initiatives or scientific collaboration links have been organized yet. But the training activities represent an important aspect of the project with a whole WP dedicated to this activity and this will have important impacts on the diffusion of the scientific outputs to the scientific community, future researchers and potential users. Besides, an important part of the scientific material produced during the project is available on its website.
In parallel, the project will largely support a wider usage of ICT by all in the society, making information and innovative services available to a larger number of interested users and help develop services that will positively impact on citizen's everyday life. The project holds a particular attention to disable and deaf persons, who will be able to use software and access to services other while inaccessible for them. SERENOA will also foster the transfer of knowledge between research centres and industry/SMEs.

Impact on employment and working routines
The impact on employment of SERENOA project is quite high. In fact, the project will support the creation of new job positions because it is expected to considerably facilitates the development of software and it will facilitate the entrance of more enterprises in the mobile business. The SMEs will not have to look for staff highly specialized for programming and will have an easier access to the market.
SERENOA will also have a positive impact on the working routine, reducing the work of the developers and the amount of time to do their work. It provides solutions to work more efficiently and conveniently for all sizes of firms. In fact, the project hides the complexity of programming, so that, potentially, users will be able to use it for programming even without knowing any programming languages.

Social capital
Whereas the project hasn't had until now a big impact on the social capital of projects participants, it foresees an impact on the social capital of users and beneficiaries, in particular in terms of support to network creation and collaboration between enterprises of the sector and inside academia, and to the enlargement of already-existing networks.

TECHNICAL ASPECTS



From a technological point of view, the most technological innovative aspect of the SERENOA project is related to the ability to develop a multi-dimensional context.

The SERENOA project is mainly based on different technologies, such as SOA, Semantics, Web 2.0, mobile and context-aware services.

With reference to the technical characteristics of the SERENOA project, the technological impact assessment detected an high relevance of external products' quality in use.

The most important categories of the technical project's outputs quality are related to the portability and usability of technologies. Furthermore, the quality in use of technologies allows to increase the maintainability, efficiency and functionality of the SERENOA project's outputs.

19. ID 19 SLA@SOI

The on-going transformation of a product-oriented economy towards a service-oriented economy has come to a critical point. IT-supported service provisioning has become of major relevance in all industries and domains. The main objective of the SLA@SOI project is to develop a business-ready service-oriented infrastructure to empower the service economy in a flexible and dependable way.

For further information: http://sla-at-soi.eu/

CATEGORIES OF STAKEHOLDERS AND DESCRIPTION OF THE MAIN ACTIVITIES GENERATED BY THE PROJECT

The most relevant categories of users' beneficiaries of the SLA@SOI project are developers, software engineers and infrastructure providers. The following category of direct and indirect beneficiaries in terms of lower outputs' impacts are related to researchers and research communities.

See in detail the specification of the SLA@SOI project's output impacts on direct and indirect beneficiaries:

- ***developers and software engineers:*** the project's outputs will enable developers to engineer predictable SW systems. The potential expected Impact is related to the possibility of developing flexible software that can be traded as goods
- ***service providers:*** the use of project's outputs will allow service providers to develop systematic SLA management activities. The potential expected impact is related to the provisioning of dependable services in a transparent way
- ***infrastructure providers****:* the use of project's output will allow infrastructure providers to develop systematic SLA management activities. The potential expected Impact is related to the provisioning of dependable services in an efficient manner
- ***researchers and research communities:*** through the use of project's output, researchers will run follow-up experiments. The potential expected impact is related with the improvement of research and concepts.

ECONOMIC IMPACT

In terms of socio-economic impact, the project expects to produce different benefits on stakeholders: improve the quality of the services, lower entry barriers, reduce the time needed to deliver and deploy the service over the network, increment the optimization of resources and develop cost reductions.
With reference to the cost reduction, the project foresee to reduce hardware costs and in particular 25% of reduction is related to maintenance costs, 20% is due to improvement of test-deploy-rework cycle management, 25% is due to less process break or system failure, 30% is related to compliance with regulatory, business legislation and policies constraints.
The SLA@SOI project has identified a potential commercial exploitation of its output, but it has not yet drafted a business plan. With reference to the economic sustainability, the project has generated 4 new commercial collaborations with third parties, the submission of 3 new project proposals and the registration of 2 new IPRs patents.

MORE ACCURATE DESCRIPTION OF ECONOMIC IMPACTS THROUGH CASE PILOT EXPERIENCE

The SLA@SOI project will develop from 4 to 6 case pilot experiences in different sectors: telecommunications, interoperability and mobile devices, eGovernment, eInfrastructure, eHealth, ERP.

For instance, with reference to the government and to the eHealth use cases, the use of SLA@SOI output will introduces substantial differences, because it imposes automatic SLAs. The eGovernment use case demonstrates the integration of human-based services with technology-based services. It centres on the implementation of a system for the reservation of medical treatment services. The emphasis is on showcasing the automated, dynamic SLA-driven selection, monitoring and adjustment of third party provisioned services. The main objective of the use case is to evaluate the usefulness of SLAs for eGovernment services provided to citizens and enterprises. The project will consider the perspectives of all parties involved, in order to increase efficiency and flexibility. SLA management is an important business challenge, it represents a critical part of any supplier agreement, and it will produce a positive impact in the long-term if it is properly codified at the beginning of the contract.

With reference to the business scenario, the use case presents three realistic scenarios which have the potential to benefit from an SLA management framework. The major potential benefits include run time monitoring and reporting, run time selection of services and SLA driven adjustment and negotiation. For example, the Run-time SLA negotiation and adjustment scenario deals with responding to unusual events (e.g. an epidemic) to re-configure resource allocations and SLAs, ensuring to all parties the full achievement of the expected objectives. The key features of this scenario includes the integration of human-delivered services, dynamic re-negotiation, the combination of automatic and manual re-negotiation processes and the run time adjustment of resource allocation.

SOCIAL IMPACT

The SAL@SOI project, whose full name is "Empowering the Service Economy with SLA-aware Infrastructures", aims at promoting the service-oriented economy, where IT-based services can be flexibly traded as economic goods (under well-defined and dependable conditions and clearly associated costs). The sectors in which it will have the major impacts are: eGovernment, with the imposition of SLAs for publicly governed health services, eInfrastructure, as the project provides SLAs for cloud providers, and the ICT industry in general, as it provides SLAs for service providers.
With its outputs, the project responds to various goals of the European Digital Agenda 2020. Most of all, it supports and facilitates the creation of content and borderless services. Moreover, it helps SMEs to enter new markets and it supports the increase in ICT related Services demand and the increment of eCommerce in general. Finally, it promotes a better use of standards.

Knowledge production and sharing
The project had a positive impact in terms of knowledge production and sharing. It has produced a discreet amount of scientific material (4 journal articles, 1 book, 6 chapters in books, 24 scientific deliverables) and has presented articles to about 40 conferences.
In terms of knowledge sharing, the project has established 10 new collaboration links and has presented the project and its results in 50 public events. This ensures a wide diffusion of the outputs of the project and a large sharing of its approach within the research community.

Impact on employment and working routine
SLA@SOI had a very positive impact on the increment in skilled personnel employment.

A large number of persons worked on the project (41 to 60) and it sponsored a very high number of PhD scholarships (20). This in an important aspect as it has a strong influence on the curriculum and future employment possibilities of the students, and it increases the number of highly specialized researchers in the society.
The project will not have other direct impact on employment or working routine.

Social capital
The project had a positive impact on the social capital of its participants. It established 4 new collaboration links with industry partners, widening their network and strengthening their capacities to work with economic actors. Moreover, 3 new project proposals were drafted. This shows the strength of the partnership created and the desire of the partner to carry on further the work done in SLA@SOI together.
In parallel, the project has an interesting impact on the social capital of its users and beneficiaries. It improves the trust among its target users (mostly developers and software engineers, service providers and infrastructure providers), and supports the collaboration between the enterprises of the sector. It has an impact also on citizens, as it participates in improving their trust in ICT and the Internet, and their trust in Public administration.

20. ID 10 SOCIETIES

SOCIETIES aims at creating a new paradigm for social networking as dynamic communities of users and the major objective is to develop a social impact by bringing new groups of people together.
In order to reach this goal, SOCIETIES is developing a complete, integrated Co-operating Smart Space (CSS), which extends pervasive systems beyond the individual to dynamic communities of users.

For further information: http://www.ict-societies.eu/

CATEGORIES OF STAKEHOLDERS AND DESCRIPTION OF THE MAIN ACTIVITIES GENERATED BY THE PROJECT:

The most relevant categories of users' beneficiaries of the SOCIETIES project are developers, software engineers, service providers, researchers and research communities, industry and SMES. The other category of direct and indirect beneficiaries in terms of lower outputs' impacts is related to project partners.

See in detail the specification of the SOCIETIES project's output impacts on direct and indirect beneficiaries:

- ***developers and software engineers:*** the use of the project's output enables developers to create new service types based on dynamic group formation.
- ***infrastructure providers:*** the project's output will allow infrastructure providers to find new ways to use their existing infrastructure.
- ***researchers and research communities:*** the project's outputs will impact on the creation of new teaching materials and on simplifying contacts among researchers

- ***service providers:*** the project's output will allow service providers to develop new services for consumers and professionals
- ***industry and SMEs:*** the project's outputs for industry and SMEs will impact on added intelligence to the existing product sets. The SOCIETIES outputs will create new opportunities in terms of development of new services and advertisements to groups of users with specific interests
- ***citizens and users:*** the potential expected impact for consumers and professionals is related to the new services that will be made available to them
- ***project partners:*** the potential expected impact of the project's outputs on project partners is related to new services and product offered.

ECONOMIC IMPACT

In terms of socio-economic impact, the project will produce different benefits on stakeholders: improve the quality of the services, reach more users, lower entry barriers in a specific economic sector, develop a more efficient data exchange, improve scalability, expand the range and the typologies of research activities and services made available to research communities, reduce the time needed to deliver and to deploy the service over the network, better target users' needs. No costs' reduction is expected.

It is expected that the most relevant impacts of the project will be experienced from 3 to 5 years after the end of the project, but some components will surely have a longer economic life.

The SOCIETIES project has identified a commercial exploitation of its outputs and has already drafted a Business Plan. From 25 to 50 persons will work on the commercial exploitation of the project's outputs. The potential competitors of the SOCIETIES projects are all the companies working within the context-aware services sector and the PERSIST project developing devices integrated in smart spaces.

With reference to the sustainability analysis of the SOCIETIES project's output, in the next future, it is expected to generate at least one new partnership agreement with other universities.

MORE ACCURATE DESCRIPTION OF ECONOMIC IMPACTS THROUGH CASE PILOT EXPERIENCE

The SOCIETIES project will develop from 7 to 10 case pilot experiences in different sectors with reference to the disaster management process: telecommunications, student services, enterprise services, disaster management services. Unfortunately, no information about the case pilot experiences are available or disclosed to the SEQUOIA project.

SOCIAL IMPACT

The platform developed by SOCIETIES does not offer solutions for specific sectors of the

society, but it enables the creation of various solutions which can be applied to any sector. In fact, the project does not create services, but it allows the services to be developed. For example, new methods of cultural exchange and inclusion based on dynamic community formation could be created. Besides, the project has also an impact on the ICT Industry in general.
Through its outputs, SOCIETIES contributes to one of the goals of the European Digital Agenda 2020. In particular, it will help to increase the ICT related Services demand because it will bring new users to the services.

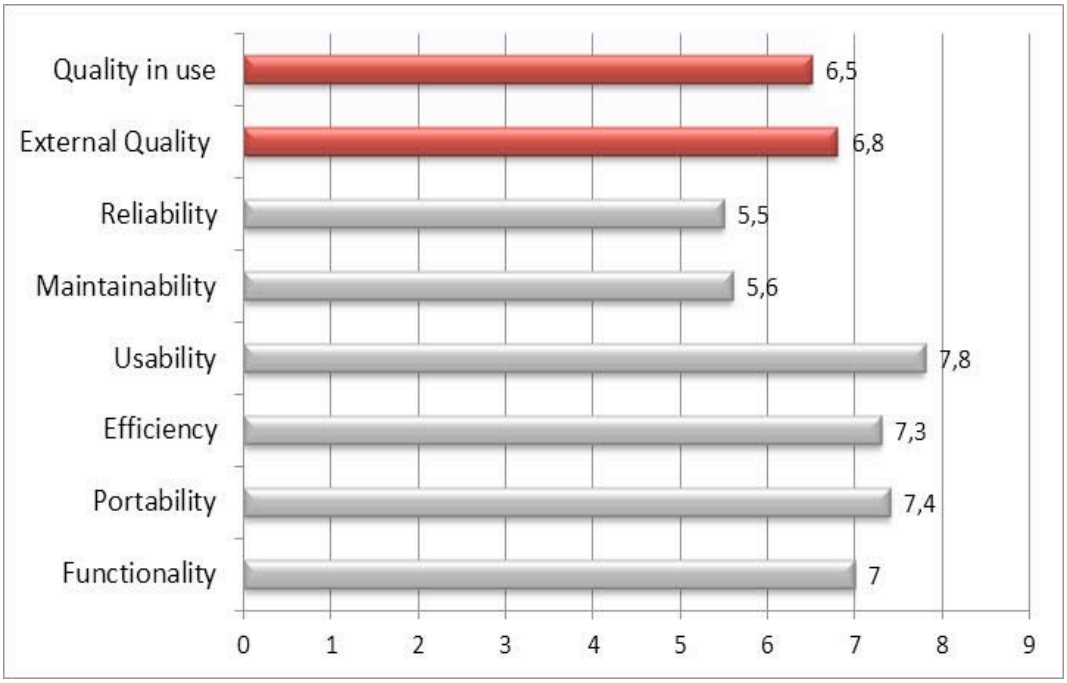
Knowledge production and sharing
Considering that SOCIETIES has started its activities only one year ago, it has not produced a scientific impact yet. Nonetheless, it will surely produce an impact in terms of knowledge sharing. In fact, the partners participate in collaborative meetings that promote the exchange of scientific knowledge. Moreover, the platform developed by SOCIETIES will be accessible on open sources, ensuring a wide diffusion for it.
The project will also have a very important impact on the use of ICT by all and on democratic participation. First of all, it will support major flexibility for personalization on a large scale and high interface adaptability. Moreover, it will support the transfer of knowledge from research centres and industry and SMEs (to industry partners, but also to SMEs external to the project). Another important aspect of the project is that it will make high quality information available to a larger number of interested users, and in general to citizens. It will also support the development of innovative services that will positively impact on citizen's every-day life.
Regarding the society in general, SOCIETIES will help reduce the digital device and enable diversity and individual expression; it will support democratic process and impact positively on education.

Impact on employment and working routine
SOCIETIES will have a positive impact on employment. First of all, it sponsors a high number of scholarships (10 PhD and 5 Post-Doc scholarships) and this will promote the employment of skilled personnel in the research sector. Moreover, after the end of the project, the project should promote the creation of new work positions for the services developed thanks to SOCIETIES platform. It is however difficult to evaluate the importance of this impact at this early phase of the project.
The project will also have a positive impact on working routine. In fact, it provides solutions to its users to work more efficiently and conveniently, reducing their everyday work and reducing the time necessary to do their work. In fact, the architecture developed by SOCIETIES makes the more complex technological aspects disappear in the background so that the users do not need to pay attention to what is in the background.

Social capital
It is too early yet to evaluate the impact of the project on the social capital of its participants.
However, SOCIETIES will have a very positive impact on the social capital of its users and its beneficiaries. First of all it will improve the way in which its users communicate and collaborate with each other and reinforce the trust among them. Moreover, the project will support the creation of networks at all the levels of society: between the enterprises of the sector, in academia and among the citizens. It will also enlarge the already-existing ones.

The project will also improve citizen's trust in Public administration and ICT and the Internet. In fact, the project develops trust mechanisms, improving the access to and the use of the services.
Finally, SOCIETIES will have a positive impact for people with disabilities as it will help people that cannot easily move to connect with other persons and will allow them to have virtual contacts.

TECHNICAL ASPECTS



From a technological point of view, the most technological innovative aspect of the SOCIETIES project is related to the proactive behaviour which combines learned information, context awareness and dynamic community formation and the fact that SOCIETIES bridges the physical and digital worlds of the users.

The SOCIETIES project is mainly based on different technologies, such as SOA, WEB 2.0, mobile, context-aware services, Cloud and virtualization.

With reference to the technical characteristics of the SOCIETIES project, the technological impact assessment detected a medium relevance of external products' quality in use.

The most important category of the technical project's outputs quality is related to the usability of technologies.

Furthermore, the quality in use of technologies allows to increase the portability, efficiency and functionality of the SOCIETIES project's outputs. In addition, it is critical to note that SOCIETIES is carrying out a rigorous investigation into what elements of pervasive technology today's consumers will actually accept, this will be an important work for research and development in this space going forward.

21. ID 20 SocIos

The main objective of the SocIos project is to build a layer exposing a functionality of data from a variety of social networks insights. The SocIos system first tries to homogenize and to group data and functionality, and suddenly it provides tools that basically leverages on them.

Some applications on the top of that layer allows to identify events that appear in the social network insights, apps that help to search through this multitude of social network insights in a single way and building layer after layer eventually end up satisfying various application domain needs. This application domains are designed for generalists end users and TV commercial production company.

For further information: www.sociosproject.eu

CATEGORIES OF BENEFICIARIES AND DESCRIPTION OF THE MAIN ACTIVITIES GENERATED BY THE PROJECT

The most relevant categories of users' beneficiaries of the SocIos project are industry, SMEs and project's partners. The following categories of direct and indirect beneficiaries in terms of lower outputs' impacts are related to citizens, researchers and software engineers. The less relevant category of beneficiaries is related to service providers.

See in detail the specification of the SocIos project's output impacts on direct and indirect beneficiaries:

- ***developers and software engineers:*** the use of project's output will allow developers to develop services leveraging SNS functionality from various SNS'. The potential expected Impact is related to novel services where SNS users are the data providers leveraging user created content (UCC) and social dynamics (SD)
- ***service providers:*** the project's outputs will enable service providers to adopt SocIoS platform and to provide services to enterprises.
- ***researchers and research communities:*** the use of project's outputs will allow researchers to use the SocIoS API to access the data residing in SNS so as to conduct experiments. The potential expected impact is related to the improvements in social computing
- ***industry and SMEs:*** the use of SOCIOS outputs will allow industry and SMEs to build applications that leverage UCC and SD. The potential expected impact is related to new business opportunities
- ***citizens, consumers and end users:*** the use of project's outputs will allow citizens and end users to become data providers and to be involved in a business value chain. The potential expected Impact is related to better services, being incentivized to provide data
- ***project partners:*** the potential expected impact of the project's outputs is related to reduced cost for commercials production (for casting and location scouting) and timely identification of events as well as capability to double-check sources of news.

ECONOMIC IMPACT

In terms of socio-economic impact, the project's output will produce different benefits on stakeholders: improve the quality of the service, reach more users, improve the access to a large amount of data, expand the range and the typologies of research activities and services made available to research communities, keep pace with competitors and provide cost reductions.

The SocIos project has lead a commercial exploitation of its output, but it has not yet draft a business plan. However, the project is able to identify the potential cost reductions achieved through the commercialisation of its output. the project is expected to produce a 70% of lower software development costs, 70% of cost reduction is related to the increment in software re-usability, 70% is due to reduction of cost related to compliance with regulatory/legal-business legislation/policies constraints, 80% is related to cost and time reduction for accessing the data due to the easy and controlled access to a vast amount of data sources.

At this stage of the development of the project, SocIos' researchers are not yet able to identify the potential market share achievable, however, they identified the project's main competitor: a platform named "Hootsuite" that aggregates data from social networks and display them to the users. There is an important difference in this approach, in how they technically implement, because they just displaying the timeline and the wall posts. Instead, the SocIos' project is able to provide more tools for people to actually modify the shared data.

With reference to the economic sustainability, the project's outputs had attracted 15.000€ of public investments beside that of the EU and it has already generated the submission of 2 new project proposals. The most relevant substantial economic impact will be presumably obtained 1 year after the end of the project.

MORE ACCURATE DESCRIPTION OF ECONOMIC IMPACTS THROUGH CASE PILOT EXPERIENCE

The SocIos project will develop 2 case pilots in different sectors such as news broadcasting and commercial production.

With reference to the news broadcasting use case, the substantial impact is related to timely identification of news items and automated validation of sources commercial production, such as location scouting and extras' casting, that will allow faster procedures, increasing the efficiency of news broadcasters and allowing relevant costs' reductions.

The second case pilot allows to focus on a specific set of social network users who can monitor their activities and see what other users are doing. By using the project's outputs users can have an holistic view on social networks' relationships and can use a huge amount of information, drastically reducing the search costs. Furthermore, they can also track events and access to the information very quickly, benefiting from the reputation and trust mechanism developed by the project. This approach allows to increase the security of the network and, as a result, its economic value and profitability.

SOCIAL IMPACT

The main sectors in which SocIoS will have an impact are the ICT Industry, for which it provides an API that will aggregate functions and data from various Social Network Sites, and the eInfrastructure, for which it provides a platform to allow users to use the aforementioned API and deploy services that provide the intelligence to the business processes implemented. SocIos enables also the creation of solutions for other sectors, providing a new platform for deploying services that leverage social content and dynamics.

SocIos responds mainly to two of the goals of the European Digital Agenda 2020: it will promote an increasing ICT related Services demand and an increasing interoperability at a more general level.

Knowledge production and sharing

As the project has started only one year ago, it is too early to assess its impact in terms of knowledge production and sharing.

However, dealing with the social networks, SocIos will have an important impact on the use of ICT by all citizens. The objective of this project is to make information and knowledge, but also highly innovative services, available to a larger number of interested users, and to enable the development of services that will positively impact on citizen's everyday life. In fact, the focal point of the project is the provision of the necessary tools to common Internet users that allow them to compose, provide and consume application services.

SocIos will also support the transfer of knowledge between research centres and SMEs; it will impact positively on education and promote flexibility for personalization on a large scale and high interface adaptability.

Impact on employment and working routine

SocIos has a positive impact on employment, especially on the employment of skilled personnel. 6 additional researchers have been contracted by project's partners in order to perform project activities, and more than 7 PhD and post-doctoral scholarships have been sponsored. This is a determining aspect because it has an important impact on the curriculum and future carrier possibilities of PhD and Post-doctoral students. Moreover, it has an important impact on society by producing highly specialized personnel.

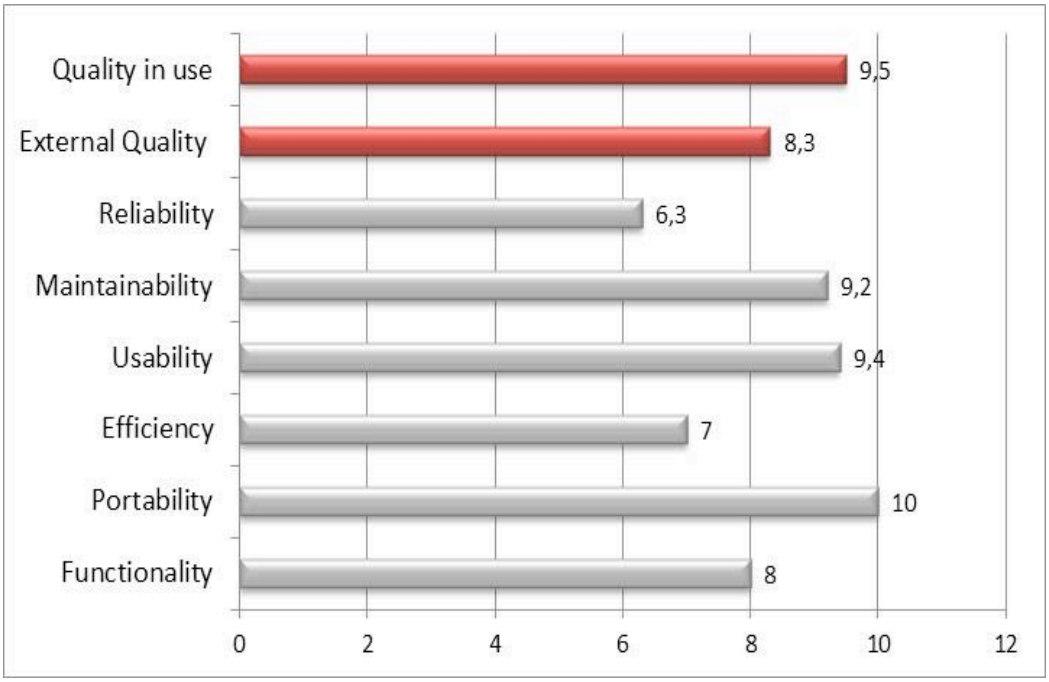
It is also interesting to make a gender analysis of the staff employed by the project. In fact, 40% of the staff are women, even among the highest work positions. It respects the EC target/guideline at this regard.

SocIos will also have a positive impact on the working routine. Most of all, it will allow the users to do their everyday work more quickly, saving an important amount of time for the development and the consumption of applications. The project will also provide solutions to work more efficiently and more conveniently for all sizes of firms and it will reduce the work of the users as any operations will be automated**.**

Social capital

SocIos will have a very positive impact on the social capital of its users and beneficiaries. First it will support the creation of networks and promote the collaboration not only in academia but also among the citizens, facilitating their social interactions. It will also improve the trust among the users, and the trust of the citizens in ICT and the Internet.

TECHNICAL ASPECTS



From a technological point of view, the most technological innovative aspect of the SocIos project is related to the aggregation of SNS functionality and content, and in particular to the capability to automatically combine API methods with web services into workflows. The SocIos project is mainly based on different technologies, such as SOA, Semantics, WEB 2.0, content-based services and mash-ups.

With reference to the technical characteristics of the SocIos projects, the technological impact assessment detected an high relevance of external products' quality in use,.. This external product are related to Opensocial, Facebook API, Twitter API, FlickR API, Youtube API.

The most important category of the technical project's outputs quality is related to the portability of technologies and to the usability and maintainability of infrastructures. Furthermore, the quality in use of technologies allows to increase the functionality and the efficiency of SocIos' outputs.

22. ID 27 SRT-15

The main objective of the SRT-15 project is to provide elastic and fault tolerant processing of BIG data in the cloud. SRT-15 will result in easier and less costly access to computer resources and thus will foster the cooperation between the for-profit and non-profit businesses. This in turn will help to fuel important societal results such as job creation.

Moreover, fast and dependable, on demand data stream processing offers new business opportunities in the areas such as Service Composition and Energy Monitoring.

For further information: www.srt-15.eu

CATEGORIES OF STAKEHOLDERS AND DESCRIPTION OF THE MAIN ACTIVITIES GENERATED BY THE PROJECT

The most relevant categories of users' beneficiaries of the SRT-15 project are developers, software engineers, industry and SMEs, project partners. The following categories of direct and indirect beneficiaries in terms of lower outputs' impacts are related to researchers and research communities.

See in detail the specification of the SRT-15 project's output impacts on direct and indirect beneficiaries:

- ***developers and software engineers:*** the use of SRT-15 project's output by developers allows them to develop new applications that can shorter and make easier the development cycles
- ***researchers and research communities:*** the use of SRT-15 project's output by researchers enables them to develop evaluation and extension services, in order to advance the SotA
- ***industry and SMEs:*** the use of the project's output by industry and SMEs allows them to develop new products , therefore lowering their Total Cost of Ownership
- ***project partners:*** the use of SRT-15 project's outputs enables to develop and to test services to transfer the development process.

ECONOMIC IMPACT

In terms of socio-economic impact, the SRT-15 project will produce different benefits on stakeholders: improve the quality of the service, increment the access to a larger amount of data, develop more efficient data exchange, reach more users, improve scalability, reduce the time needed to deliver and deploy a service over the network, keeping pace with competitors, better target users' needs, increment the optimization of resources, improve efficiency and provide cost reductions.

At the present stage SRT-15 project do not foresee a commercial exploitation of its outputs and has not drafted a business plan jet.

MORE ACCURATE DESCRIPTION OF ECONOMIC IMPACTS THROUGH CASE PILOT EXPERIENCE

The SRT-15 project will involve from 1 to 3 case pilots, which will impact on utilities, Smart Grid supply and demand management and the quality of service monitoring. The case pilot identified by the SRT-15 project will impact mainly on privacy policies, preserve routing and fault tolerance.

For instance, let assume the case of contemporary companies face a flood of data originating in different, distributed applications and services, ranging from simple RFID events to complex business and financial events. The flexible and timely interaction of different services operating on SRT-15 platform implies that SRT-15 needs to be able to process and analyse high volumes of data in real-time. Such challenging requirements for acting on urgent events cannot be met by contemporary, general event analysis software, such as traditional database systems.
SRT-15 will use Complex Event Processing (CEP) to connect different services using the cloud infrastructure. CEP will filter and aggregate events between services publishing information (publishers) and services receiving information (subscribers). The goal of SRT-15 is to use the distributed CEP technology in conjunction with content-based routing to achieve the real-time service interaction. SRT-15 will use the CEP to close the gap between the constantly increasing amount of information produced and stored by different applications and users and the relatively stable cost for the information transmission.
In terms of economic impact, the case pilot experiences focus on high performances that improve quality and revenues.

SOCIAL IMPACT

The sectors on which SRT-15 will have a major impact are the ICT industry on general and the Utilities – Smart Grid Management sector. For the ICT industry, the project will establish CEP as the tool for BIG Data Processing. Regarding the Utilities – Smart Grid Management sector, thanks to the project, it will be possible to better manage the supply and demand, to reduce energy costs and to better adopt green and renewable technologies.
The project responds therefore to some of the goals of the European Digital Agenda 2020: it allows SMEs to enter new markets by lowering entry barriers and resource costs, it promotes an increase in the ICT related Services demand, it helps in making the network more secure and more trustworthy, and finally it increases the interoperability of Smart Grids at European level.

Knowledge production and sharing
As most of the Call 5 Projects, SRT-15 is still in the first steps of its activities, and has not produced substantial scientific outputs yet. Nonetheless, an effort to promote knowledge sharing has already been made: two new collaboration links have been established thanks to the project (in terms of exchange of information and resources) and a knowledge exchange initiative has been organized.

The project supports also ICT usage for all in society. SRT-15 will result in an easier and less costly access to computer resources for all.

Thanks to its outputs, highly innovative services and high-quality information will be made available to citizens. It will also be possible to develop services that will positively impact on citizen's everyday life. Besides, the project supports the transfer of knowledge between research centres and industries and SMEs.

Impact on employment and working routines
For the moment no direct impact is visible on the employment of skilled personnel. But the project foresees an important impact on general employment after the end of the project. In fact, the project will make SMEs more competitive, enabling them to look for more

employees.

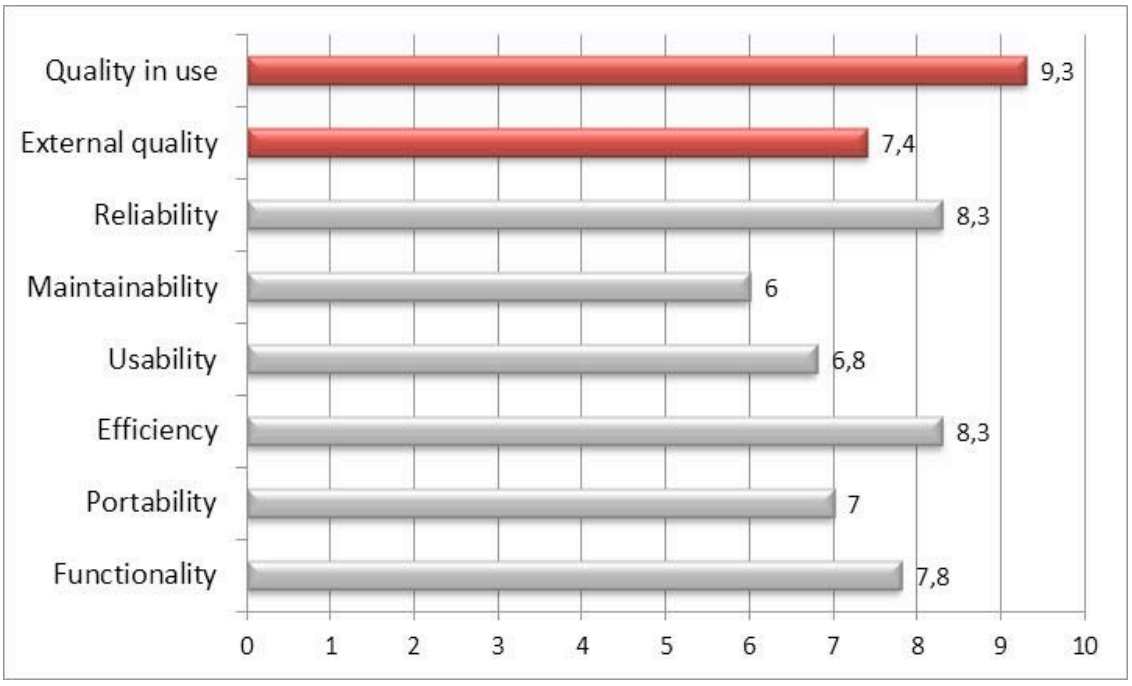
Moreover, as it lowers entry barriers, it will allow new SMEs to enter the market. Finally, fast and dependable, on demand data stream processing offers new business opportunities in the areas such as Service Composition and Energy Monitoring.

The project foresees that in total the project should generate more than 200 new job positions in the years following the end of the project. The project will also have some positive impact on the working routine. In fact, it will reduce the work of the users (developers, software engineers, researchers), as more operations will be automated, and reduce the time to do this work. SRT-15 will provide solutions to work more efficiently and conveniently, in particular for SMEs.

Social capital
As for the scientific production, it is too early to evaluate the impact of the project on the social capital of its participants.

The project has however an impact on the social capital of its users and beneficiaries. SRT-15 fosters the cooperation between the for-profit and non-profit business, supporting therefore the creation of networks inside society and in academia. Moreover, it will improve citizen's trust in ICT and in the Internet.

TECHNICAL ASPECTS



From a technological point of view, the most technological innovative aspect of the SRT-15 project is related to the elastic complex event processing and privacy preserving routing in the Cloud. The SRT-15 project is mainly based on different technologies, such as Cloud and virtualization.

With reference to the technical characteristics of the SRT-15 projects, the technological impact assessment detected an high relevance of external products' quality in use, between all the assessed projects.

The most important categories of the technical project's outputs quality are related to the efficiency and reliability of infrastructures. Furthermore, the quality in use of technologies allows to increase the functionality, portability and usability of the SRT-15 project's outputs.

23. ID 31 VISION CLOUD

VISION Cloud is developing the next generation Data Cloud to increase the global competitiveness of the European ICT industry by creating an innovative virtualized infrastructure for cost effective delivery of data intensive and media rich services providing comprehensive data interoperability and mobility QoS and security guarantees.

For further information: www.visioncloud.eu

CATEGORIES OF STAKEHOLDERS AND DESCRIPTION OF THE MAIN ACTIVITIES GENERATED BY THE PROJECT:

The most relevant categories of users' beneficiaries of the VISIONCLOUD project are service providers, infrastructure providers, researchers and research communities. The following category of direct and indirect beneficiaries in terms of lower outputs' impacts is related to project partners.

See in detail the specification of the VISIONCLOUD project's output impacts on direct and indirect beneficiaries:

- ***developers and software engineers:*** the use of the project's output allows developers to develop new technologies for Cloud Storage and spin off technologies within partner organizations
- ***service providers:*** the use of the VISIONCLOUD's output enables service providers to lower infrastructure costs and to increment efficiency in the use of resources. Service providers will also be able to place multiple instances of the data and generating more business opportunities for smaller European companies
- ***infrastructure providers:*** the use of the project's output will allow infrastructure providers to develop greater capabilities
- ***researchers and research communities:*** the use of the project's output will enable researchers to learn from VISIONCLOUD activities
- ***project partners:*** the use of the project's output on project partners, will allow them to create spin-off technologies and to develop new business activities.

ECONOMIC IMPACT

In terms of socio-economic impact, the VISION Cloud project will produce different benefits on stakeholders, such as: to improve the quality of the service, to lower entry barriers in specific economic sectors, to improve the access to a large amounts of data, to develop more efficient data exchange, to improve scalability, to reduce the time needed to deliver and deploy a service over the network, to keep pace with competitors, to better target users' needs, to increment the optimization of resources and to improve their efficiency and provide cost reductions.

The VISION CLOUD project has identified a commercial exploitation of its outputs and has already drafted a Business Plan.
The VISION Cloud project's output will generate its substantial impact 1 year after the end of the project.

MORE ACCURATE DESCRIPTION OF ECONOMIC IMPACTS THROUGH CASE PILOT EXPERIENCE

The VISION Cloud project will perform from 4 to 6 case pilots in different sectors, such as telecommunications, interoperability and mobile services, eHealth and the enterprise environment in general. The following description of the 4 Vision Cloud' use cases will identify the economic key goals of the project:

Media
Deutsche Welle and RAI are the two partners involved in the media use case. Both companies face a challenge from digital conversion. As of December 2010 one assumption is that if clouds can speed up the workflows for Television, Radio and Online-Publishing, there will be higher adoption at lower costs. The media use case will cover digital video production, reformatting and coding as well as universal data resources for visualization and data-driven journalism.

Telecommunications
Multimedia smart phones offer a range of new ways to capture content - from photos to videos. Such user-generated content, combined with a wide range of mobile apps and social media currently lead to massive new storage demands in the telecom industry. VISION Cloud will test new ways to offer consumers access to cloud storage everywhere. France Telecom and Telenor will be two of the partners working in this particular use case.

Healthcare
If patients, doctors, hospitals and insurances could exchange data both securely and more efficiently, there is a promise of huge cost savings all around the world. In VISION Cloud the Healthcare use case will focus on data and files exchange that where not possible in the past. Privacy of sensitive data at all time is one of the challenges that has to be solved convincingly in this particular area. Siemens will be one of the leading partners in this use case.

Enterprise
Storage, access, workflows and business analytics are already a big business all around the world. The key goal of the Vision Cloud project within this use case is to understand how this process can become better, more agile and adaptable and what would be the benefits of cloud computing beyond cost flexibility in data storage? Partners with expertise in this field include IBM, SAP and Siemens. The know-how here will be combined with academic resources from the European universities and institutes involved in VISION Cloud.

SOCIAL IMPACT

The sectors of society on which VISION CLOUD will have major impacts are: eHealth, providing solutions for efficient storage and retrieval of patient data, mobility, avoiding lock-in of data in storage clouds, and the ICT industry, improving the storage clouds in general.
The two main goals of the European Digital Agenda 2020 on which Vision Cloud will have an impact are the creation of content and borderless services, and the possibility given to SMEs to enter new markets by lowering barriers for them and reducing resource costs.

Knowledge production and sharing
In terms of scientific production and knowledge sharing, the project has not yet had important impacts. It has published some book chapters and prepared training material, but this material is not available to large public jet.
VISION CLOUD should have an impact on ICT usage by all: it will make information available to a larger number of interested users, support the transfer of knowledge between the various actors of society, make highly innovative services available to citizens and help develop services that will positively impact on citizens' everyday life.

Impact on employment and working routines
It is difficult to estimate the impact of VISION CLOUD on employment. In theory, European companies will be able to take the reference architecture being produced by VISION Cloud and create their own commercial data clouds, creating new job positions.
Moreover, the project will have an impact on working routines. It will provide solutions for working efficiently and conveniently for all size firms, and allow the users to do their every-day work more quickly.

Social capital
The project has not yet have an impact on the social capital of its participants. But it foresees an impact on the social capital of its users and beneficiaries on various aspects. The project should: improve the way in which users communicate and collaborate with each other and facilitate social interaction, improve the trust among the users, improve citizen's trust in the Public administration and in ICT and the Internet. The project will improve the infrastructure to obtain services via the Internet, also lowering the costs for the citizens.

24. ID WEBINOS

Webinos will provide an open source web runtime and code libraries that enable application providers to distribute and deliver web applications across multiple devices. The value for the application developer is in being able overcome the platform fragmentation caused by a range of operating systems across devices such as mobile phone, laptop, TV, in-car devices, desktop computers, and tablets. The platform will not only enable one application to run across multiple devices – it will also enable converging applications. The value for end-users is enhanced information experiences and information access across multiple personal devices.

A suite of innovative applications are also being created and developed as means to demo and showcase platform possibilities to the public. The applications will exhibit various aspects, including such as application convergence, context-awareness, ubiquitous computing, deployment across various devices, and information security and privacy.

For further information: www.webinos.org

CATEGORIES OF BENEFICIARIES AND DESCRIPTION OF THE MAIN ACTIVITIES GENERATED BY THE PROJECT

The most relevant categories of users' beneficiaries of the WEBINOS project are developers, citizens and end-users. The following categories of direct and indirect beneficiaries in terms of lower outputs' impacts are related to service and infrastructure providers researchers, industry and SMEs.
See in detail the specification of the CLOUD4SOA project's output impacts on direct and indirect beneficiaries:

- ***developers and software engineers:*** the use of the project's outputs allows developers to simplify the creation and the implementation of web applications. Potential expected impacts, therefore, are reduced development costs, and faster/wider access to the market
- ***service providers:*** the use of the project's output enables service providers to simplify the provision of web applications. Potential expected impacts, therefore, are reduced distribution and delivery costs, and faster/ wider access to the market
- ***infrastructure providers:*** the use of the project's outputs allows infrastructure providers to enlarge the market of web applications. Potential expected impacts, therefore, are increased revenue per application and an easier management of the market place
- ***industry and SMEs:*** the project's outputs will enable industry and SMEs to better provide or consume web applications. Potential expected impacts, therefore, are a higher impact per application that is consumed or provided that will result in increased capacities and revenue, and reduced costs
- ***citizens and users:*** the project's outputs will allow to develop consumer web applications, enhancing information experiences across multiple devices, converged applications and seamless access to information.

ECONOMIC IMPACT

In terms of socio-economic impact, the project will produce different benefits: lower entry barriers in a specific economic sector, improve scalability, reduce the time needed to deliver and to deploy the service over the network, ability to better target users' needs and cost reductions.

With reference to the cost reduction generated by the project's outputs, this is related to reduced maintenance costs, cost reduction due to increment in software re-usability and lower software development costs.

The WEBINOS project has yet identified a commercial exploitation of its outputs, through a joint exploitation plan for the open source platform and individual exploitation plans for applications. Unfortunately, the project has not drafted a Business Plan.

With reference to the economic sustainability, the project's output, in the future, is expected to generate new private investments, new commercial collaborations, new partnership agreements and new project proposals. The most relevant substantial economic impact of the project will take place 3 years after the end of the project.

MORE ACCURATE DESCRIPTION OF ECONOMIC IMPACTS THROUGH CASE PILOT EXPERIENCE

The WEBINOS project will develop from 4 to 6 case pilot experiences within the sector of telecommunications, interoperability and mobile services. Moreover, the use case experiences developed by the project, enabled the development of travel applications provided cross devices, increasing the money value of the final product. The following list will describe the WEBINOS case pilot experiences:

- *Virtual device:* WEBINOS allows the distributed execution of applications while using device features available on the user's devices (especially mobile, PC, automotive and home media devices). Examples of this use case were developed by the WEBINOS project within the discovery of connected blood glucose meter to be used by web applications for diabetics. The user's measure data, if stored in the user's personal "diabetes record" in the cloud, is available for view by any of the user's internet connected computing devices as well as from the user's health care provider (if the user has approved this). Another example is related to the development of an application that uses device functionality in the home network without additional UPnO or DLNA knowledge. In this way, devices in the home network are working together with the created WEBINOS application, generating interconnected value. The economic impact of this use case is very clear, it improves the quality of life, reducing transport's costs and improving the execution of different connected applications. The economic value of every single device is increased within the network.
- *User management:* this use case family is about managing user profile and preference data and providing single-sign-on functionalities. This section is related to profile management in terms of sharing common user properties, to preference management, in

order to detect or actively select commonly used devices or services for accessing certain features, single-sign-on providing the user with the ability to access multiple services and applications without the need of user authentication for each service any time. This use case will reduce the time needed to deliver and deploy the service over the network.

- *Application execution environment:* this use case is related to the special execution mechanisms available to third party applications or services which are uncommon in today's Web runtime environments. Through this use case applications can be also remotely installed to devices adhering to the security guidelines, so the application is always available and ready to use, reducing research costs.
- *Communication:* this use case is about the communication between applications that resides in different type of devices and servers. The area addresses the publishing and subscribing to events, real time communication, storing and consuming media whilst the media is downloaded, data sharing between devices and users, session mobility, addressing (devices, applications). This use case enable the subscribing to the information, the upload or synchronization of contents, the data files are stored in the cloud and no redundant data has been uploaded due to the lost of the network connectivity. This use case generates high reduction of capital expenditure costs (CAPEX), improving the scalability and the flexibility of the service.

SOCIAL IMPACT

The sector in which WEBINOS will have major impacts is the ICT industry in general. Application developers and providers will benefit from a reduction of development costs, and from a faster and wider access to the market. In parallel end-users will obtain enhanced information experiences and information access across multiple personal devices.
The project will participate in the fulfilment on some of the goals of the European Digital Agenda 2020, in particular regarding the lowering of entry barriers and lowering of resource costs allowing SMEs to enter new market. It will also help the creation of content and borderless services, the promotion of a better use of standards, the increase of interoperability at a more general level, and the increase of eCommerce.

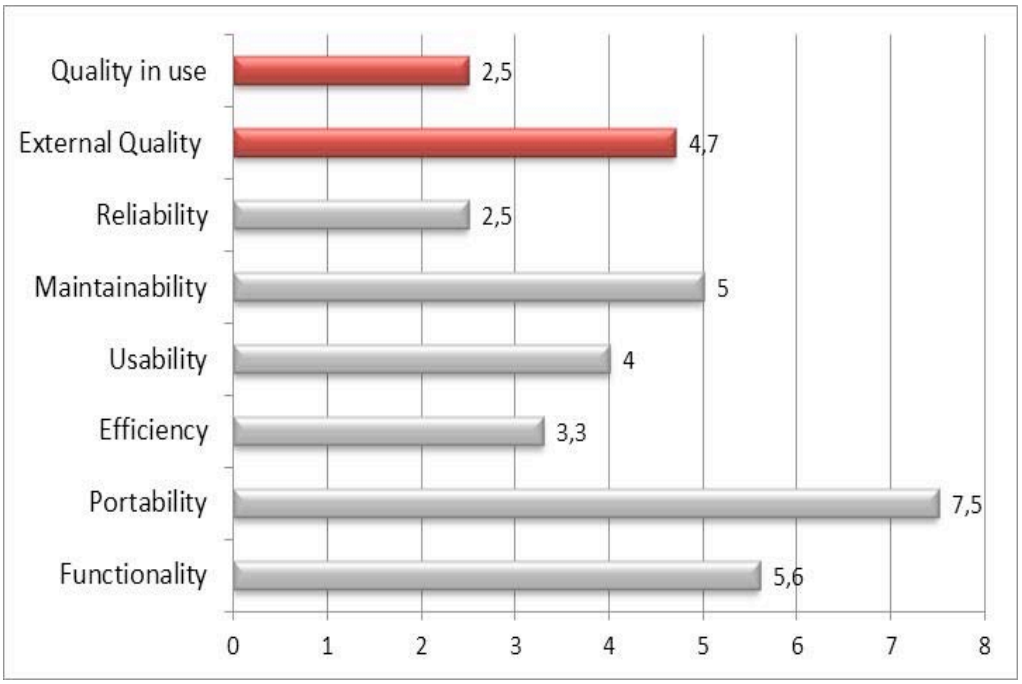
Knowledge production and sharing
While it is still early to assess the knowledge production of the project at this stage of its activities, it is already noticeable that WEBINOS will have an important impact in terms of knowledge sharing. Open-access will be provided to all the scientific production, including the platforms developed. The project is also organising an important number of communication and dissemination events for developers and research communities. Training is another important aspect of the project. Besides a toolkit, a high number of on-line training courses are being developed. All this ensures the diffusion of the scientific outputs inside and outside academia and to future researchers.
The project will also support the use of ICT by all citizens, since it facilitates the development of services and applications for personal devices. It will make highly innovative services available to citizens, support the development of services that will positively impact on citizen's everyday life, enable diversity and individual expression and reduce the digital device. But most of all, WEBINOS will promote flexibility for personalisation on a large scale ensuring a high interface adaptability.

Impact on employment and working routine

The project has a positive impact on skilled personnel employment. The project is sponsoring various PhD and Post-Doc scholarships and has recruited around 25 new researchers for the project.
The project will also have a positive impact on the employment rate in Europe, even if it is difficult to estimate the numbers. In fact, it will create new professionals, it will make SMEs more competitive, enabling them to look for more employees, and it will foster the creation of new enterprises.
Regarding working routines, WEBINOS will allow the application developers to do their everyday work more quickly, reducing considerably the time necessary to programme one application for different devices.

Social capital
Through the project the partners are increasing their social capital. Different links have been established with other research institutes and with industries, enabling them to prepare new project proposals and to develop commercial ideas for the future.
WEBINOS will also have an impact on the social capital of its users, as it will improve the way in which they communicate and collaborate and improve trust among them. Regarding the citizens, as the project promotes a wider use of application on different personal devices, it will facilitate social interaction and improve their trust in ICT and the Internet.

TECHNICAL ASPECTS



From a technological point of view, the most technological innovative aspect of the WEBINOS project is related to the convergence of web applications across multiple devices. The WEBINOS project is mainly based on different technologies, such as WEB 2.0, Mobile, context-aware services, Cloud and Content-based services.

With reference to the technical characteristics of the WEBINOS projects, the technological

impact assessment detected a relevance of external products' quality in use, indeed, the project is based on several javascript libraries and on HTML5.

The most important category of the technical project's outputs quality is related to the portability of technologies, that is he very most relevant category, and to the functionality of infrastructures. Furthermore, the quality in use of technologies allows to increase the maintainability and usability of the WEBINOS projects outputs.