



SEQUOIA PROJECT
“Socio-Economic Impact Assessment for Research Projects”

Contract n° 258346

WP1
Management and Coordination

Deliverable D1.3
Final Report



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PROJECT FINAL REPORT

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4.1 Final publishable summary report

Executive Summary

The SEQUOIA project was a Support Action in the Internet of Services (IoS) and Software as a Service (SaaS) area (Objective 1.2) of DG INFSO. The overall objective of SEQUOIA was to develop a self-assessment methodology to be used by the Objective 1.2 projects funded in Call 5 of FP7 to estimate their potential socio-economic impact and maximise their actual socio-economic impact. The methodology was informed and improved based on input from the Call 1 and Call 5 projects working under the same objective. Following two questionnaires (one short, one long and detailed), online focus groups, and many in-depth interviews, we produced a methodology deliverable and other reports detailing the results of the assessment. The project suffered delays – especially in its early stages – due to the difficulty of promoting a socio-economic impact culture in the domain and engage projects. In fact, most Call 1 projects had ended or were ending when SEQUOIA started, so the response rate was initially very low. After encouragement from the EC and a refocusing on Call 5 projects, the response rate improved. Overall, 30 out of 47 projects from Call 1 and Call 5 participated in the SEQUOIA impact assessment exercise. We produced a How-To Guide to Self Assessment for a wide audience, an assessment report reporting the results of the 30 collaborating projects, and a Best Practices Report detailing the analysis of the 5 projects that scored highest in the assessment. We promoted the SEQUOIA methodology in many public events, such as FIA events and IoS Collaboration Meetings. We organised a final conference that was well attended and where the 5 highest-scoring projects had a chance to present their work and their experience with the SEQUOIA methodology. One of the main recommendations coming out of the SEQUOIA work is that for the successful self-assessment of potential socio-economic impact research projects should involve at least one social scientist (person, not necessarily an institutional partner) within their consortium and throughout the duration of their project. Finally, the work done shows the need to work more in spreading a socio-economic impact assessment culture in the domain and the value added provided by the direct engagement of projects in developing the methodology.

Project Context and Objectives

The SEQUOIA project comes in the middle of a European Commission (EC) research policy shift which, from an emphasis in the early Framework Programmes on funding research that is “far from the market”, is leading to an increasing emphasis on the assessment and maximisation of socio-economic impact and exploitation of research results. For example, Horizon 2020 brings together different framework programmes that address not only research but also adoption and deployment:

“Horizon 2020”, the Framework Programme for Research and Innovation, brings together the successor of the 7th Framework Programme for Research, the successor to the Competitiveness and Innovation Framework Programme (CIP, comprising the innovation-related parts of the Entrepreneurship and Innovation Programme (EIP), the Information Communication Technologies Policy Support Programme (ICT-PSP), and the Intelligent Energy Europe Programme (IEE)), and the European Institute of Innovation and Technology (EIT). The decision to bring together all EU research and innovation funding in a coherent, from-research-to-innovation overarching framework was taken on 29 June 2011 by the College in order to make participation easier, increase scientific and economic impact, and maximise value for money.²

These two emphases are not necessarily mutually incompatible if one allows enough time to elapse between research and innovation. Therefore, whereas most of the SEQUOIA work was carried out using more traditional categories for conceptualising the social and economic value generated by the SaaS/IoS projects we worked with, we placed most of the emphasis on the potential impact categories, which we found to be strongly associated with the social dimension. In particular, the main objective of SEQUOIA was to develop a methodology for assessing the socio-economic impact of research projects in the area of SaaS/IoS. More importantly, the methodology was meant to be applicable by the projects on themselves, in order to render the projects as self-sufficient as possible in conducting the assessment.

² Commission Staff Working Paper on Impact Assessment. http://ec.europa.eu/research/horizon2020/index_en.cfm?pg=h2020-documents, 2011.

Main S&T Results

The project suffered a slow start, partly due to the preparation of the questionnaire taking longer than expected and partly caused by lack of response by Call 1 projects. Once the emphasis was shifted to working mainly with Call 5 projects, in the second reporting period the project was able to partly recover from the delays of the first period.

Starting in December 2010 we contacted each of the 47 projects in Call 1 and Call 5, asking them for their availability to meet in person for the focus group sessions. Because there was no overlap at meetings everyone was planning to attend until much too late in 2011, we decided to utilise an online conferencing tool, vyew.com. We divided the focus group into 5 different sessions each of which was attended by about 5 or 6 projects in addition to several members of the SEQUOIA team. These focus groups, of approximately 1.5 hours in duration, were led by Dr Antonella Passani and were very successful. In addition to making introductions and covering some basic points about SEQUOIA's objectives, the projects had a chance to state and explain briefly their own objectives. Each session, furthermore, focused on a particular section of the second questionnaire, which was significantly improved as a consequence. The second questionnaire was then distributed towards the end of the first reporting period

The methodology, improved thanks to the focus group online sessions, was presented in D3.3a and a shorter version for a wider audience in D3.3b. The next stage of the work involved the assessment of the 30 collaborating projects, selecting the 5 projects which scored highest in the assessment, and writing a more detailed "best practices" report focussed on them (D3.2). Their inputs formed the most important part of the Final SEQUOIA Conference that was held in March 2012 in Brussels. D3.2 provides concrete examples that future projects can refer to in order to understand what activities and initiatives they could undertake to maximise their own socio-economic impact both internally to their consortia as well as externally on society at large.

During the second reporting period we solidified the collaboration with the HOLA! project, and have now a presence in the HOLA! portal. We also set up a Linked-In SEQUOIA group and encouraged the projects to join it. We presented preliminary findings from the assessment of the projects at the September 2012 Collaboration Meeting in Brussels, and again at the Future Internet Socio-Economic (FISE) Workshop in October 2012 in Poznan, which was part of the wider Future Internet Assembly (FIA) event. At both events there was a strong attendance from SEQUOIA and multiple presentations in different tracks (plenary, technical-socio-economic, dissemination). The Techno-Socio-Economic session in the Collaboration Meeting was chaired by Francesco Bellini of EK, who also chaired the Techno-Socio-Economic Working Group for the project duration.

The final major activity of the project was the preparation of the Final Conference. Two keynote speakers were invited and presented very interesting talks: Prof Erik Bohlin of Chalmers University, Sweden, presented a macro-economic perspective on impact assessment: "Measuring Direct and Indirect Impacts of ICT investments: Applying Several Methodologies for the ICT, Media and IPTV Sectors". Prof Jordi Molas-Gallart of Universitat Politecnica de Valencia presented a critical discussion on the strong and weak points of impact assessment: "Impact Blues: Symptoms and Treatment". The final activity was the writing of the D6.1: White Paper on the Socio-Economic Impact Assessment of IoS Research Projects, which gives a summary overview and critical discussion of the main findings and recommendations on how impact assessment methodologies could be improved.

Assessment of Call 1 and Call 5 Projects

Deliverable D3.1 - Call 1 and Call 5 Project Assessment Report presents 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 FP7-ICT-2009.1.2) co-financed by the European Commission in the domain of Internet of Services (IoS) and Software as a Service (SaaS). The assessment has been performed through the use of a structured questionnaire, dedicated focus group sessions, and direct interviews addressed to Call 1 and Call 5 projects representatives.

The first finding relates to the need to establish a common language between the socio-economic evaluators and the project representatives, who are usually ICT technologists. These are, in most cases, totally focused on technology issues and generally not concerned with the future exploitation of the project outcomes. The consequence is that the projects are characterised by a weak “assessment culture”, which suggests that in future initiatives evaluators expert both in the economic and the social fields should be involved in order to perform an exhaustive ex-ante, in-itinere, and ex-post impact assessment of projects’ outputs. In fact, if we regard technology development as a social process, the relevance of the socio-economic dimensions increases in the assessment. Moreover, technology development in this domain is often oriented towards the Open Source approach, which makes it more difficult for technical researchers to identify appropriate business models for future exploitations.

With reference to the impact on reaching more users, most of the projects (64%) think that the number of persons benefiting from the use of project outputs 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. The figures collected show a predominant allocation of project budgets towards personnel cost, which is already reflected in a direct impact on occupation, while respondents have difficulty forecasting an impact on occupation generated by project outputs. 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 being composed of various subprojects. This is an important element for optimising their sustainability strategies. The social dimension of projects shows an impact on knowledge creation and sharing, as well as on social capital where good collaboration opportunities and networks were generated.

Best Practices Report

The Best Practices Report presents five case studies selected among the projects analysed during the SEQUOIA project. This report is, therefore, complementary to D3.1. The five projects described in this report (S-Cube, Mosaic, CumuloNimbo, SocIos and I2Web) emerged from the assessment activities as particularly promising in terms of positive impact on users and society as a whole. At the time of the SEQUOIA assessment, the five projects had already generated a fairly good financial return relative to the total lifetime of their projects’ outputs. This positive evaluation takes in consideration the research nature of the five projects and the fact that most of them were at an early stage when SEQUOIA ran the assessment.

More specifically, we can consider these projects as best practices because, to different degrees, they knew stakeholder needs and expectations and engaged them in development activities from the very beginning of their technology development. Moreover, these projects, even if research-driven, have a clear idea of the SaaS/IoS market and know potential competitors. In this sense the link between academia and industry is a positive one, as testified by the attention given to the definition of collaboration agreements. Finally, some of the projects drafted an exploitation and sustainability plan already at the beginning of their activities, considering innovative business models such as those emerging from the Open Source Software domain.

The SEQUOIA team developed a short video introducing the most promising characteristic of the 5 projects as an instrument for supporting their dissemination. The video was shown during final SEQUOIA conference, is available through the SEQUOIA website, and two of the projects assessed asked to include it on their website too.

The SEQUOIA self-assessment methodology demonstrated to be useful and feasible from the perspective of the projects and it is flexible and modular enough to be further adapted in order to better fit the needs of future projects and of the EC. The brochure summarising the methodology can be found in the Appendix.

Potential Impact

We expect D3.3b-How-To Guide and D3.2-Best Practices Report to have the largest impact on current and future IoS/SaaS projects. In addition, these reports and the SEQUOIA methodology in general (D3.3a) include a modelling approach and several guidelines that are more broadly applicable, also to other fields of research. We are planning to extend the white paper (D6.1) and submit it to a journal, which would increase the impact of SEQUOIA further.

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4.2 Use and dissemination of foreground

SEQUOIA was not a research project and its area of work was exclusively in social science, so no foreground IP was produced. All the deliverables are public with the exception of the reports that contain confidential interview data from the informants. All public deliverables can be downloaded from the project website: www.sequoiaproject.eu.

The Creative Commons licence applies to all deliverables.

We are planning to extend the white paper (D6.1) and submit it to a social science journal.

The SEQUOIA methodology will form the basis for additional research and exploitation activities especially for the two SMEs in the consortium, EK and T6 ECO.

The most interesting output – from this prospective – is that Eurokleis and T6 Ecosystems have integrated the SEQUOIA methodology in their service portfolios. Over the past year a growing interest for socio-economic assessment has emerged both at Italian and European level. Public and private investors are showing a growing interest in the appraisal of the R&D initiatives, so that this is becoming an interesting market. Some costumers have already asked to adapt the SEQUOIA methodology to their specific needs.

More specifically:

- Companies active in the ICT sector are interested in using the methodology to self-evaluate the socio-economic impact of their products as an instrument for their marketing strategies. In this sense, they are interested in learning their value added for promoting their own products.
- National and international bodies financing and supporting R&D are interesting in using this methodology for keeping track of their investments. The EU is also multiplying the effort. With reference to this, EK and T6 submitted a proposal for a support action under Call 9 FP7-ICT-2011-9 whose title is “MAXICULTURE - MAXimising the Impact of CULTUral REsearch projects”. Adapting the SEQUOIA methodology to other ICT research sectors such as Digital Culture is a way to further improve the methodology and look for more potential markets.

In addition, EK (with the support of T6 ECO and ENG) developed (through another EU co-funded Support Action called ERINA+) a set of ICT tools for socio-economic impact self-assessment that took advantage of the SEQUOIA lessons learned and that have made it easier for both companies to describe and promote the methodology itself. The web-based tools associated with ERINA+ allow the user (as a project or a project-user) to evaluate the efficiency and efficacy of a specific project or service. The results of the assessment are shown as an immediate output of the data entry and can be easily exported. If the MAXICULTURE proposal succeeds, EK and T6 will further develop these tools that make the socio-economic self-assessment more intuitive for the final users.

Finally, we should mention that the SEQUOIA consortium submitted a proposal for developing further and expanding the project work done in the IoS Unit. Unfortunately, the proposal was not successful, but the intention to submit a new proposal in the next call is still valid. The SEQUOIA consortium is interested in linking the self-assessment activity with the possibilities offered by Social Networks (such as Facebook, LinkedIn, etc) in creating a Community of Practice able to adapt, ameliorate and promote active-learning processes within the SaaS/IoS domain.

Section A (public)

TEMPLATE A1: LIST OF SCIENTIFIC (PEER REVIEWED) PUBLICATIONS, STARTING WITH THE MOST IMPORTANT ONES

NO.	Title	Main author	Title of the periodical or the series	Number, date or frequency	Publisher	Place of publication	Year of publication	Relevant pages	Permanent identifiers ³ (if available)	Is/Will open access ⁴ provided to this publication?
1										
2										
3										

³ A permanent identifier should be a persistent link to the published version full text if open access or abstract if article is pay per view) or to the final manuscript accepted for publication (link to article in repository).

⁴ Open Access is defined as free of charge access for anyone via Internet. Please answer "yes" if the open access to the publication is already established and also if the embargo period for open access is not yet over but you intend to establish open access afterwards.

TEMPLATE A2: LIST OF DISSEMINATION ACTIVITIES

NO.	Type of activities ⁵	Main leader	Title	Date	Place	Type of audience ⁶	Size of audience	Countries addressed
1	Conference	LSE, T6 ECO, EK, ENG	ICT Conference	27 September 2010	Brussels	All ICT projects	1000s	EU
2	Workshop	LSE, T6 ECO, EK, ENG	IoS Collaboration Meeting	19 October 2010	Brussels	IoS projects	100	EU
3	Workshop – Informal contacts	ENG	RESERVOIR Cloud Computing Workshop	March 2011	Taormina	IoS projects	50	EU
4	Conference - Informal contacts	ENG, EK	FIA 2011	May 2011	Budapest	DG INFSO	10	EU
5	Workshop	LSE, T6 ECO, EK, ENG	IoS Collaboration Meeting	29 September 2011	Brussels	IoS projects	100	EU
6	Workshop	LSE, T6 ECO, EK, ENG	FISE Workshop	27 October 2011	Poznan	IoS projects	100	EU
7	Conference	LSE, T6 ECO, EK, ENG	Final SEQUOIA Conference	13 March 2012	Brussels	IoS projects	30	EU
8	Video	ENG, LSE	SEQUOIA Best Practises	March 2012	Online	General	100	World
9	Poster	ENG, LSE	SEQUOIA Project	October 2010	Brussels	IoS Projects	100	EU
10	Poster	ENG, LSE	SEQUOIA Project	September 2011	Brussels	IoS Projects	100	EU
11	Roll-up poster	ENG, LSE	SEQUOIA Project	October 2011	Poznan	IoS Projects	100	EU
12	Brochure	ENG, LSE	SEQUOIA Project	October 2010 / May 2011	Brussels	IoS Projects	100	EU
13	Brochure	ENG, LSE	How-to Guide Highlights	March 2012	Brussels	IoS Projects	30	EU
14	Web	ENG, LSE	SEQUOIA Newsletter	May 2011	-	General	400	World
15	Web	LSE, T6 ECO, EK, ENG	SEQUOIA article in Nessi Newsletter:	April 2011	-	General	1500	EU
16	Web	ENG, LSE	SEQUOIA Final Conference in Nessi Mailing List	March 2012	-	General	2000	EU

⁵ A drop down list allows choosing the dissemination activity: publications, conferences, workshops, web, press releases, flyers, articles published in the popular press, videos, media briefings, presentations, exhibitions, thesis, interviews, films, TV clips, posters, Other.

⁶ A drop down list allows choosing the type of public: Scientific Community (higher education, Research), Industry, Civil Society, Policy makers, Medias ('multiple choices' is possible).

**Section B (Confidential⁷ or public: confidential information to be marked clearly)
Part B1**

TEMPLATE B1: LIST OF APPLICATIONS FOR PATENTS, TRADEMARKS, REGISTERED DESIGNS, ETC.					
Type of IP Rights ⁸ :	Confidential Click on YES/NO	Foreseen embargo date dd/mm/yyyy	Application reference(s) (e.g. EP123456)	Subject or title of application	Applicant (s) (as on the application)

⁷ Note to be confused with the "EU CONFIDENTIAL" classification for some security research projects.

⁸ A drop down list allows choosing the type of IP rights: Patents, Trademarks, Registered designs, Utility models, Others.

Part B2

Please complete the table hereafter:

Type of Exploitable Foreground ⁹	Description of exploitable foreground	Confidential Click on YES/NO	Foreseen embargo date dd/mm/yyyy	Exploitable product(s) or measure(s)	Sector(s) of application ¹⁰	Timetable, commercial or any other use	Patents or other IPR exploitation (licences)	Owner & Other Beneficiary(s) involved
SEQUOIA methodology	Methodology for socio-economic impact assessment of research project in the SaaS/loS domain	NO		The foreground will be integrated in the service portfolios of the SMEs represented in the consortium			Creative Commons Attribution-NonCommercial-ShareAlike 3.0 Unported License.	Francesco Bellini, Fabiana Monacciani, Mauro Navarra, Antonella Passani and the SEQUOIA consortium
SEQUOIA How-To Guide	A how-to guide that supports the SaaS/loS project in using the SEQUOIA methodology in an autonomous way	NO		Each SaaS/loS project can exploit this result by using it directly, thus reducing the costs of a socio-economic impact assessment			This foreground is publicly available	The SEQUOIA consortium
SEQUOIA white paper		NO						

In addition to the table, please provide a text to explain the exploitable foreground, in particular:

- Its purpose
- How the foreground might be exploited, when and by whom
- IPR exploitable measures taken or intended
- Further research necessary, if any
- Potential/expected impact (quantify where possible)

⁹ A drop down list allows choosing the type of foreground: General advancement of knowledge, Commercial exploitation of R&D results, Exploitation of R&D results via standards, exploitation of results through EU policies, exploitation of results through (social) innovation.

¹⁰ A drop down list allows choosing the type sector (NACE nomenclature) : http://ec.europa.eu/competition/mergers/cases/index/nace_all.html

SEQUOIA methodology. The aim of this methodology is to support SaaS/IoS projects in a self-assessment of their (potential) socio-economic impacts. It is a tested and validated instrument that EC Co-funded projects in the domain can use for monitoring and improving their impacts. The SEQUOIA methodology can be exploited by the SEQUOIA partners (especially the SMEs there represented: T6 Ecosystems and Eurokleis) for improving their offer for the public and private sectors. Both SMEs, in fact, provide consultancy in the R&D sector by providing management, innovation and impact assessment related services. Both the companies expect to be able to increase their costumers thanks to the use and further development of the SEQUOIA methodology. Moreover, all the SaaS/IoS projects can further exploit the methodology by using it in an autonomous way and by adapting it to their specific needs. The SEQUOIA methodology is released under Creative Common licence.

SEQUOIA How-To Guide. This document (in two formats, one more concise and one more extended) will support the SaaS/IoS projects (current and future) in assessing their socio-economic impacts. They are the main stakeholders of this foreground and can exploit it directly, by so doing reducing the costs related to the impact assessment. The How-To guide is freely available and not protected by any licence so that the projects can modify and reuse it freely.

4.3 Report on societal implications

Replies to the following questions will assist the Commission to obtain statistics and indicators on societal and socio-economic issues addressed by projects. The questions are arranged in a number of key themes. As well as producing certain statistics, the replies will also help identify those projects that have shown a real engagement with wider societal issues, and thereby identify interesting approaches to these issues and best practices. The replies for individual projects will not be made public.

A General Information (completed automatically when *Grant Agreement number* is entered.

Grant Agreement Number:

Title of Project:

Name and Title of Coordinator:

B Ethics

1. Did your project undergo an Ethics Review (and/or Screening)?	
<ul style="list-style-type: none"> If Yes: have you described the progress of compliance with the relevant Ethics Review/Screening Requirements in the frame of the periodic/final project reports? <p>Special Reminder: the progress of compliance with the Ethics Review/Screening Requirements should be described in the Period/Final Project Reports under the Section 3.2.2 'Work Progress and Achievements'</p>	<i>No</i>

2. Please indicate whether your project involved any of the following issues (tick box) :	YES
--	------------

RESEARCH ON HUMANS	
• Did the project involve children?	No
• Did the project involve patients?	No
• Did the project involve persons not able to give consent?	No
• Did the project involve adult healthy volunteers?	No
• Did the project involve Human genetic material?	No
• Did the project involve Human biological samples?	No
• Did the project involve Human data collection?	No

RESEARCH ON HUMAN EMBRYO/FOETUS	
• Did the project involve Human Embryos?	No
• Did the project involve Human Foetal Tissue / Cells?	No
• Did the project involve Human Embryonic Stem Cells (hESCs)?	No
• Did the project on human Embryonic Stem Cells involve cells in culture?	No
• Did the project on human Embryonic Stem Cells involve the derivation of cells from Embryos?	No

PRIVACY	
• Did the project involve processing of genetic information or personal data (eg. health, sexual lifestyle, ethnicity, political opinion, religious or philosophical conviction)?	No
• Did the project involve tracking the location or observation of people?	No

RESEARCH ON ANIMALS	
• Did the project involve research on animals?	No
• Were those animals transgenic small laboratory animals?	No
• Were those animals transgenic farm animals?	No
• Were those animals cloned farm animals?	No
• Were those animals non-human primates?	No

RESEARCH INVOLVING DEVELOPING COUNTRIES	
• Did the project involve the use of local resources (genetic, animal, plant etc)?	No
• Was the project of benefit to local community (capacity building, access to healthcare, education etc)?	No

DUAL USE	
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• Research having direct military use	No	
• Research having the potential for terrorist abuse	No	
C Workforce Statistics		
3. Workforce statistics for the project: Please indicate in the table below the number of people who worked on the project (on a headcount basis).		
Type of Position	Number of Women	Number of Men
Scientific Coordinator	1	1
Work package leaders	1	3
Experienced researchers (i.e. PhD holders)	4	1
PhD Students	1	1
Other	5	4
4. How many additional researchers (in companies and universities) were recruited specifically for this project?		7
Of which, indicate the number of men:		1

D Gender Aspects		
5. Did you carry out specific Gender Equality Actions under the project?	<input type="radio"/> Yes <input checked="" type="radio"/> No	<input type="radio"/> Yes <input checked="" type="radio"/> No
6. Which of the following actions did you carry out and how effective were they? <i>None</i>		
	Not at all effective	Very effective
<input type="checkbox"/> Design and implement an equal opportunity policy	○ ○ ○ ○ ○	○ ○ ○ ○ ○
<input type="checkbox"/> Set targets to achieve a gender balance in the workforce	○ ○ ○ ○ ○	○ ○ ○ ○ ○
<input type="checkbox"/> Organise conferences and workshops on gender	○ ○ ○ ○ ○	○ ○ ○ ○ ○
<input type="checkbox"/> Actions to improve work-life balance	○ ○ ○ ○ ○	○ ○ ○ ○ ○
<input type="radio"/> Other: <input style="width: 200px;" type="text"/>		
7. Was there a gender dimension associated with the research content – i.e. wherever people were the focus of the research as, for example, consumers, users, patients or in trials, was the issue of gender considered and addressed?		
<input type="radio"/> Yes- please specify <input style="width: 150px;" type="text"/>		
<input checked="" type="radio"/> No		
E Synergies with Science Education		
8. Did your project involve working with students and/or school pupils (e.g. open days, participation in science festivals and events, prizes/competitions or joint projects)?		
<input type="radio"/> Yes- please specify <input style="width: 150px;" type="text"/>		
<input checked="" type="radio"/> No		
9. Did the project generate any science education material (e.g. kits, websites, explanatory booklets, DVDs)?		
<input type="radio"/> Yes- please specify <input style="width: 150px;" type="text"/>		
<input checked="" type="radio"/> No		
F Interdisciplinarity		
10. Which disciplines (see list below) are involved in your project?		
<input type="radio"/> Main discipline ¹¹ : 5.2, 5.4		
<input type="radio"/> Associated discipline ¹¹ : <input style="width: 100px;" type="text"/>	<input type="radio"/> Associated discipline ¹¹ : <input style="width: 100px;" type="text"/>	
G Engaging with Civil society and policy makers		
11a Did your project engage with societal actors beyond the research community? (if 'No', go to Question 14)	<input type="radio"/> Yes <input checked="" type="radio"/> No	<input type="radio"/> Yes <input checked="" type="radio"/> No
11b If yes, did you engage with citizens (citizens' panels / juries) or organised civil society (NGOs, patients' groups etc.)?		
<input type="radio"/> No		
<input type="radio"/> Yes- in determining what research should be performed		
<input type="radio"/> Yes - in implementing the research		
<input type="radio"/> Yes, in communicating /disseminating / using the results of the project		

¹¹ Insert number from list below (Frascati Manual).

<p>11c In doing so, did your project involve actors whose role is mainly to organise the dialogue with citizens and organised civil society (e.g. professional mediator; communication company, science museums)?</p>	<input type="radio"/> <input type="radio"/>	Yes No
<p>12. Did you engage with government / public bodies or policy makers (including international organisations)</p>		
<p> <input checked="" type="radio"/> No <input type="radio"/> Yes- in framing the research agenda <input type="radio"/> Yes - in implementing the research agenda <input type="radio"/> Yes, in communicating /disseminating / using the results of the project </p>		
<p>13a Will the project generate outputs (expertise or scientific advice) which could be used by policy makers?</p> <p> <input type="radio"/> Yes – as a primary objective (please indicate areas below- multiple answers possible) <input checked="" type="radio"/> Yes – as a secondary objective (please indicate areas below - multiple answer possible) <input type="radio"/> No </p>		
<p>13b If Yes, in which fields? <i>Research and Innovation</i></p>		
Agriculture Audiovisual and Media Budget Competition Consumers Culture Customs Development Economic and Monetary Affairs Education, Training, Youth Employment and Social Affairs	Energy Enlargement Enterprise Environment External Relations External Trade Fisheries and Maritime Affairs Food Safety Foreign and Security Policy Fraud Humanitarian aid	Human rights Information Society Institutional affairs Internal Market Justice, freedom and security Public Health Regional Policy Research and Innovation Space Taxation Transport

13c If Yes, at which level? <input type="radio"/> Local / regional levels <input type="radio"/> National level <input checked="" type="radio"/> European level <input type="radio"/> International level		
H Use and dissemination		
14. How many Articles were published/accepted for publication in peer-reviewed journals?	0	
To how many of these is open access¹² provided?		
How many of these are published in open access journals?		
How many of these are published in open repositories?		
To how many of these is open access not provided?		
Please check all applicable reasons for not providing open access:		
<input type="checkbox"/> publisher's licensing agreement would not permit publishing in a repository <input type="checkbox"/> no suitable repository available <input type="checkbox"/> no suitable open access journal available <input type="checkbox"/> no funds available to publish in an open access journal <input type="checkbox"/> lack of time and resources <input type="checkbox"/> lack of information on open access <input type="checkbox"/> other ¹³ :		
15. How many new patent applications ('priority filings') have been made? <i>("Technologically unique": multiple applications for the same invention in different jurisdictions should be counted as just one application of grant).</i>	0	
16. Indicate how many of the following Intellectual Property Rights were applied for (give number in each box).	Trademark	0
	Registered design	0
	Other	0
17. How many spin-off companies were created / are planned as a direct result of the project?	0	
<i>Indicate the approximate number of additional jobs in these companies:</i>		
18. Please indicate whether your project has a potential impact on employment, in comparison with the situation before your project:		
<input type="checkbox"/> Increase in employment, or <input type="checkbox"/> Safeguard employment, or <input type="checkbox"/> Decrease in employment, <input type="checkbox"/> Difficult to estimate / not possible to quantify	<input type="checkbox"/> In small & medium-sized enterprises <input type="checkbox"/> In large companies <input checked="" type="checkbox"/> None of the above / not relevant to the project	
19. For your project partnership please estimate the employment effect resulting directly from your participation in Full Time Equivalent (FTE = one person working fulltime for a year) jobs:	<i>Indicate figure:</i> 4	

¹² Open Access is defined as free of charge access for anyone via Internet.

¹³ For instance: classification for security project.

Difficult to estimate / not possible to quantify	<input type="checkbox"/>
I Media and Communication to the general public	
20. As part of the project, were any of the beneficiaries professionals in communication or media relations?	
<input checked="" type="radio"/> Yes <input type="radio"/> No	
21. As part of the project, have any beneficiaries received professional media / communication training / advice to improve communication with the general public?	
<input type="radio"/> Yes <input checked="" type="radio"/> No	
22 Which of the following have been used to communicate information about your project to the general public, or have resulted from your project?	
<input type="checkbox"/> Press Release <input type="checkbox"/> Media briefing <input type="checkbox"/> TV coverage / report <input type="checkbox"/> Radio coverage / report <input checked="" type="checkbox"/> Brochures /posters / flyers <input checked="" type="checkbox"/> DVD /Film /Multimedia	<input type="checkbox"/> Coverage in specialist press <input type="checkbox"/> Coverage in general (non-specialist) press <input type="checkbox"/> Coverage in national press <input type="checkbox"/> Coverage in international press <input checked="" type="checkbox"/> Website for the general public / internet <input checked="" type="checkbox"/> Event targeting general public (festival, conference, exhibition, science café)
23 In which languages are the information products for the general public produced?	
<input type="checkbox"/> Language of the coordinator <input type="checkbox"/> Other language(s)	<input checked="" type="checkbox"/> English

Question F-10: Classification of Scientific Disciplines according to the Frascati Manual 2002 (Proposed Standard Practice for Surveys on Research and Experimental Development, OECD 2002):

FIELDS OF SCIENCE AND TECHNOLOGY

1. NATURAL SCIENCES

- 1.1 Mathematics and computer sciences [mathematics and other allied fields: computer sciences and other allied subjects (software development only; hardware development should be classified in the engineering fields)]
- 1.2 Physical sciences (astronomy and space sciences, physics and other allied subjects)
- 1.3 Chemical sciences (chemistry, other allied subjects)
- 1.4 Earth and related environmental sciences (geology, geophysics, mineralogy, physical geography and other geosciences, meteorology and other atmospheric sciences including climatic research, oceanography, vulcanology, palaeoecology, other allied sciences)
- 1.5 Biological sciences (biology, botany, bacteriology, microbiology, zoology, entomology, genetics, biochemistry, biophysics, other allied sciences, excluding clinical and veterinary sciences)

2. ENGINEERING AND TECHNOLOGY

- 2.1 Civil engineering (architecture engineering, building science and engineering, construction engineering, municipal and structural engineering and other allied subjects)
- 2.2 Electrical engineering, electronics [electrical engineering, electronics, communication engineering and systems, computer engineering (hardware only) and other allied subjects]
- 2.3. Other engineering sciences (such as chemical, aeronautical and space, mechanical, metallurgical and materials engineering, and their specialised subdivisions; forest products; applied sciences such as

geodesy, industrial chemistry, etc.; the science and technology of food production; specialised technologies of interdisciplinary fields, e.g. systems analysis, metallurgy, mining, textile technology and other applied subjects)

3. MEDICAL SCIENCES

- 3.1 Basic medicine (anatomy, cytology, physiology, genetics, pharmacy, pharmacology, toxicology, immunology and immuno-haematology, clinical chemistry, clinical microbiology, pathology)
- 3.2 Clinical medicine (anaesthesiology, paediatrics, obstetrics and gynaecology, internal medicine, surgery, dentistry, neurology, psychiatry, radiology, therapeutics, otorhinolaryngology, ophthalmology)
- 3.3 Health sciences (public health services, social medicine, hygiene, nursing, epidemiology)

4. AGRICULTURAL SCIENCES

- 4.1 Agriculture, forestry, fisheries and allied sciences (agronomy, animal husbandry, fisheries, forestry, horticulture, other allied subjects)
- 4.2 Veterinary medicine

5. SOCIAL SCIENCES

- 5.1 Psychology
- 5.2 Economics
- 5.3 Educational sciences (education and training and other allied subjects)
- 5.4 Other social sciences [anthropology (social and cultural) and ethnology, demography, geography (human, economic and social), town and country planning, management, law, linguistics, political sciences, sociology, organisation and methods, miscellaneous social sciences and interdisciplinary, methodological and historical S1T activities relating to subjects in this group. Physical anthropology, physical geography and psychophysiology should normally be classified with the natural sciences].

6. HUMANITIES

- 6.1 History (history, prehistory and history, together with auxiliary historical disciplines such as archaeology, numismatics, palaeography, genealogy, etc.)
- 6.2 Languages and literature (ancient and modern)
- 6.3 Other humanities [philosophy (including the history of science and technology) arts, history of art, art criticism, painting, sculpture, musicology, dramatic art excluding artistic "research" of any kind, religion, theology, other fields and subjects pertaining to the humanities, methodological, historical and other S1T activities relating to the subjects in this group]



SEQUOIA

**Socio Economic Impact Assessment
for Research Projects**



How-to Guide Highlights

Project funded by the European Commission
"Information Society and Media Directorate General", Support Action





HOW-TO GUIDE HIGHLIGHTS

Scope and features of the SEQUOIA How-To Guide Highlights

This booklet is an abridged version of the “SEQUOIA Self-Assessment How-To Guide¹”. It helps the reader understand the SEQUOIA methodology and offers support to research projects in the areas of SaaS and IoS in assessing their socio-economic impacts.

In other words, by applying the SEQUOIA methodology, projects will be able to answer the following questions:

- What difference the project will make to the status quo?
- Who and what the project is relevant for?
- The extent to which EU investment in the project produces benefits for social and economic actors?
- Where the project can have the greatest impact taking into account the various potential types of impact and where the project can increase its impact?

Clearly, answering these questions in a systematic and well-documented way is not an easy task. The SEQUOIA methodology and this How-To Guide can assist the reader in this process; however, he/she should be aware of a few important things:

a) An effective impact assessment should engage various partners (if not the entire project consortium) and should be based on an internal system for gathering the data needed for the impact assessment. The sooner a project starts gathering information and data (even at the stage of proposal writing) the easier it will be to assess its impacts.

b) Conducting an impact assessment requires the interpretation of the methodology described in this guide and its adaptation to project-specific characteristics, as well as the collection and analysis of the required data. If the project’s consortium includes a sociologist and/or an economist, these professionals are best suited to apply the SEQUOIA methodology. If the project does not have these skills in the consortium, it may be necessary to consider contracting one or two such professionals.

Having said this, the reader will find next a step-by-step guide for conducting a socio-economic impact self-assessment using the SEQUOIA methodology. More specifically, this guide will help the reader in:

- Defining the areas of impact,
- Defining the stakeholders affected by the project,
- Defining the baseline scenario,
- Describing specific financial, economic, and social impacts generated by the project,

- Quantifying financial, economic and social impacts generated by the project,
- Elaborating on collected data and performing the final assessment.

Moreover, the description of each step will be accompanied by an example that will show, in more practical terms, how to run the assessment. The project used as example (FOREST) is purely fictional, and it is used only to better exemplify the activities to be performed in the various steps.

As said above, this brochure is an overview of the complete “SEQUOIA Self-Assessment How-To Guide”: All the specific tools supporting the use of the guide (e.g. tables, questionnaire etc) can be found in the corresponding SEQUOIA deliverable D3.3b available on the project website (www.sequoiaproject.eu).

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¹ http://www.sequoiaproject.eu/index.php/documents/cat_view/43-released-deliverables

HOW-TO GUIDE HIGHLIGHTS

When to use this guide

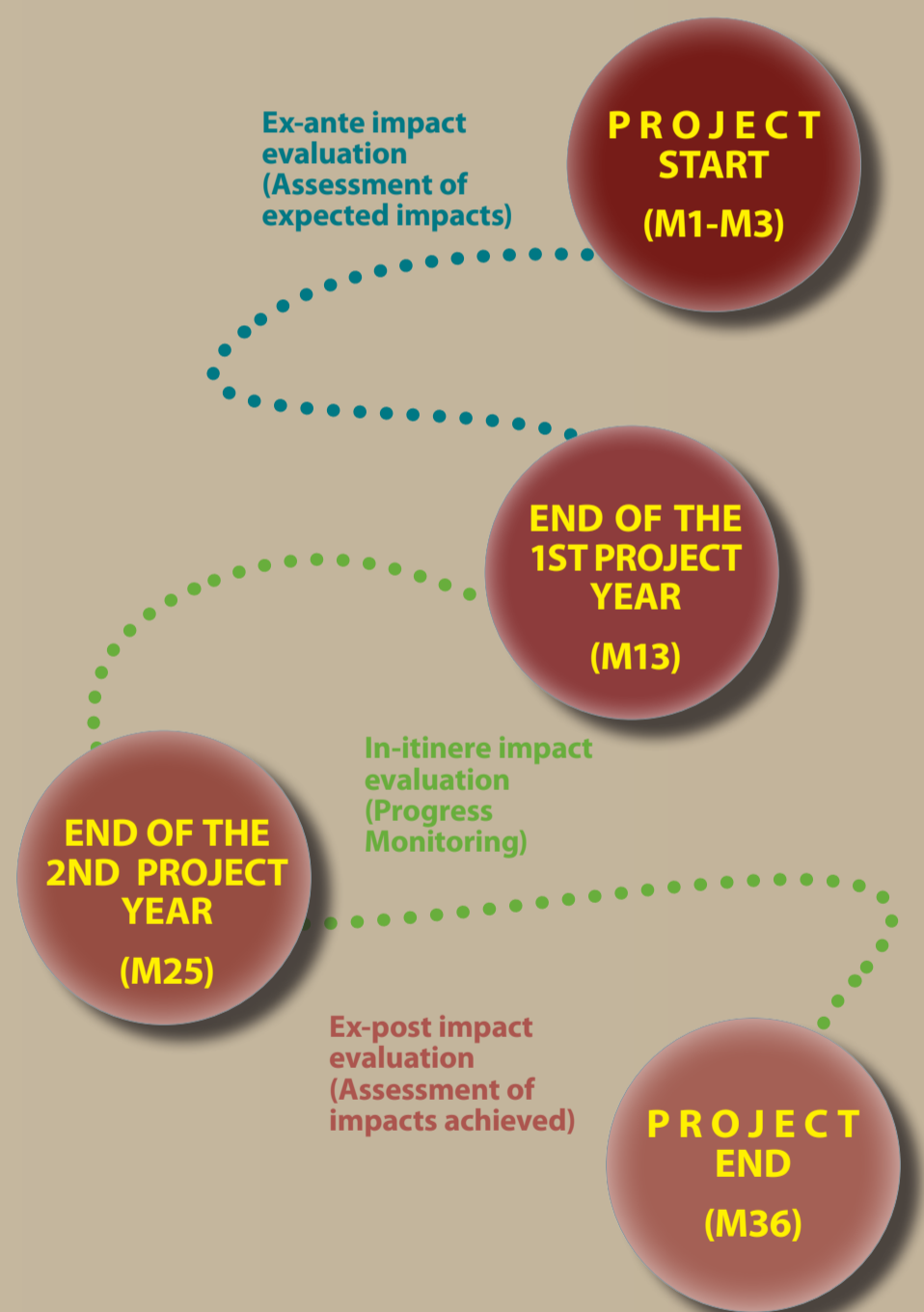
The SEQUOIA methodology can be used at different stages of a project's life-cycle: the "ideal" procedure for applying the SEQUOIA methodology is to run a self-assessment at the beginning of the project and then repeat the assessment exercise at regular intervals during the project. Let's assume the project to be assessed will last 3 years. Following this usage schema, the evaluator will run an ex-ante impact assessment (at the beginning of the project), two in-itinere² impact assessments (at the end of Year 1 and of Year 2), and an ex-post impact assessment at the end of the project.

By following this schema, it will be possible to monitor the progress of the project in terms of socio-economic impact and to see, at the end of the project, the extent to which it has succeeded in reaching the expected impacts described in the ex-ante impact assessment. In fact, as stated later in this Guide, the SEQUOIA methodology is based on an ex-ante/ex-post approach. In other words, the SEQUOIA methodology compares the state of the art without the project (called later "baseline scenario") with the situation as it is as a result of the modifications generated by the project; this can of course also be achieved via different time-frames (Fig. 1).

Ideally, in order to map the achieved impacts of a project it would be necessary to run an impact assessment activity one to three years after the end of the project. In fact, research projects tend to deliver (at the end of the project life-cycle) outputs that are not yet ready to be fully exploited by the final users. However, unfortunately, due to the way in which EU research projects are planned and executed, it would be difficult to run an impact assessment after the funded lifetime of a project (project partners will be engaged in other activities, they will not have the necessary resources/interest for running such an assessment, and so on). For this reason, despite the limitations inherent in this approach, we suggest using the SEQUOIA methodology within the project's funded lifetime.

In the following pages, the reader will be guided through the logic of impact assessment and the necessary steps needed to apply the SEQUOIA methodology.

Fig. 1 - When to apply the SEQUOIA methodology (for a typical 3-years project)



² A in-itinere evaluation is a common term which literally stands for "in-process evaluation" or "intermediate evaluation" and, to some extent, "monitoring".

SEQUOIA ASSESSMENT PROCESS

High level overview

This section offers a brief overview of the analytical process involved in carrying out a robust self-assessment of the socio-economic impacts generated by a research project in the IoS/SaaS domain. It is structured as a proposed agenda and check-list for the research consortium partners or for external evaluators, to assess the socio-economic impacts generated by the project's outputs.

The process of project impact self-assessment has five steps (Fig. 2):

1. Mapping the areas of impact
2. Baseline identification
3. Ex-post scenario description
 - economic impact
 - social impact
4. Ex-post scenario quantification
5. Final assessment analysis: calculation of iROI, xROI, tROI and RORI

In the following sections each assessment step is described in terms of its main aims and the key features of the evaluation approach/technique to be used.



Fig. 2 - Process of project impact assessment

STEP-BY-STEP GUIDE

Mapping the areas of impact



In practice...

FOREST is a 3-year project. The main problem the project aims to solve is the lack of interoperability related to mobile devices. FOREST's main objective is, therefore, to develop a platform capable of automatically migrating services from one mobile device to another.

The list of stakeholder categories impacted by FOREST's outputs is as follows:

- Developers and software engineers
- Service providers
- Infrastructure providers
- TELCO operators
- Researchers and research communities
- Industry and SMEs
- Citizens/consumers/end-users

All the above-mentioned stakeholders will be affected by the project's outputs but not to the same extent. In order to define which categories of stakeholders will experience the greatest impacts, the evaluator attributes a value from 1 to 5 to each stakeholder category where 1 is not very relevant and 5 is very relevant.

As a result, developers and software engineers, service providers and SMEs emerged as the most relevant stakeholders. In the table below the evaluator describes the expected impacts for each category of stakeholders.

Stakeholder categories	Expected/experienced impacts
Developers and software engineers	They will experience significant time-savings. In fact, once a service for a device is developed they will be able to deploy the service also on other devices and other operating systems.
Service providers	They will be able to reach more users by deploying services on different devices with reduced adaptation costs.
SMEs	SMEs from the software sector will take advantage of FOREST's outputs because they will be allowed to focus their efforts on the development of new services instead of spending resources adapting a service to various devices. In addition, they will be less dependent on infrastructure providers.

The first step of the project assessment aims at the identification of the objectives of the project, in order to understand whether the project will generate some form of socio-economic value.

This step asks the evaluator to define what kind of impacts can be expected from the project and on whom these impacts will have an effect. More specifically, in this step the evaluator will need to:

- briefly describe the project objectives (the "problem" the project is expected to resolve and how the project outputs did/will resolve it);
- map the project stakeholders;
- select those stakeholders that are more relevant for the project under assessment;
- for each stakeholder clearly describe the expected/experienced impacts.

The figure below shows the activities to be performed in this step.



Fig. 3 – Activities to be performed in Step 1

It is important to take into consideration not only the stakeholders that are directly affected by the project's intended outputs, but also to consider:

- a) the stakeholders that could be indirectly affected by its intended outputs;
- b) the stakeholders that could be directly affected by its unintended outputs¹;
- c) the stakeholders that could be indirectly affected by its unintended outputs.

The example in the box on the left may be of help in understanding the level of detail that is preferable in this step.

¹ The unintended outputs can be defined as the "collateral effects" of the project (generally negatively affecting some groups of stakeholders) which are not identified in the project's main objectives, but which could be, at least, broadly foreseen during the implementation of the project.

STEP-BY-STEP GUIDE

Baseline identification



Once the areas of impact have been mapped, the next step consists in verifying whether the project outputs have brought/may bring some improvements to the social/economic welfare of its intended beneficiaries/target audience (who are a sub-set of the stakeholders mapped in the previous stage). The basic approach of such an assessment is to compare the situation with and without the output(s) of the project.

The situation without the project output(s) could be defined as the “baseline scenario”. This will usually be a forecast of the future without the project outputs or, in other words, a sort of no-investment forecast of what will happen in the future in the context under consideration without the project under assessment.

The evaluator should map all commercial and non-commercial initiatives that have some similarities with the project under assessment and/or that a potential user can see as an alternative to the project under analysis. He/she should, then, describe such initiatives and their outputs and possibly highlight the similarities between the project under analysis and the initiatives identified.

Fig. 4 visualises the activities to be performed in order to define the baseline scenario.



Fig. 4 – Activities to be performed in Step 2

In order to better understand what a “baseline scenario” is, how to construct it, and how to use such estimation for the further impact analysis, the box on the left provides an example.

In practice...

There are two initiatives that are similar to FOREST in terms of target audience and objectives. Both are commercial. The first one is called OCEAN and its main output is a middleware that enables data and applications to automatically migrate from Apple to Android smartphones. The second one is called DESERT and its main output is an analytical software programme that quantifies the hours of work needed in order to adapt a service to a mobile device other than the one for which the service was originally designed.

Both the initiatives are only partially similar to FOREST. Synthetically, FOREST is more than the sum of these two initiatives.

The service provided by OCEAN costs 5 Euro for each MB transferred from a device to another.

The DESERT service costs 10 Euro for each service analysed.

In any case, an SME who developed a game for iPhone and wishes to transfer it to an Android device will need more than the services offered by OCEAN and DESERT. So, the hypothetical SME will spend 30 Euro for using the service offered by OCEAN (10 Euro x 3 MB of data to be transferred), plus 10 Euro for taking advantage of DESERT’s analysis. Such analysis indicates that the SME will need to invest 30 hours for adapting the game developed for iPhone to the Android platform. Considering the average hourly cost for a game programmer as 100 Euros, the labour cost for adapting the game to the new device is of 3,000 Euros. The total cost for adapting the game to a device other than the one for which it was originally designed is consequently 3,040 Euros.

OCEAN service + DESERT service + Game programmer labour cost = Total cost
 (30 Euros) (10 Euros) (3,000 Euros) (3,040 Euros)

This is the baseline scenario for the main output of FOREST.

STEP-BY-STEP GUIDE

Ex-post scenario description



This step aims at describing/forecasting the situation after project's completion and after the exploitation of the research outputs.

In the ex-post scenario, the evaluator must try to describe the changes brought by the SaaS/IoS project outputs. The evaluator should consider the possible application of project outputs to real life and, therefore, should describe the way in which such outputs can be used in practice. More specifically, the evaluator should identify all project outputs, describe how each of them works in practice (e.g. how it will be used by the beneficiaries) and then compare the advantages brought by each project output compared to the situation described in the baseline scenario.

Fig. 5 synthesises the activities to be performed in this step.

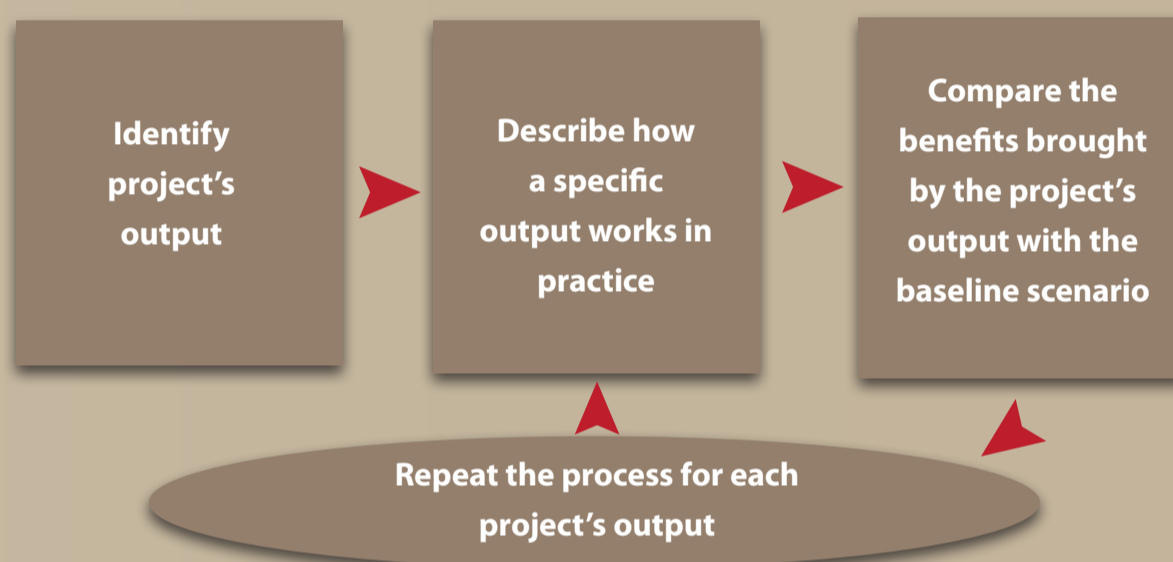


Fig. 5 – Activities to be performed in Step 3

The evaluator should try not to limit prematurely the concept of “output” generated by the research to the “direct product”, but should also think of the wide range of exploitation possibilities that could be achieved by third parties (both within and outside the research consortium), in their own specific domains of action.

Another way to tackle this issue is to think about the case studies, pilots, or use cases that have been/must be performed during the life of the research project. This should help identify at least one use case in which substantial (operational) differences are likely to emerge between the assessed research project outputs and the baseline scenario.

A correct evaluation of the research project outputs should always be made in “differential” or relative terms. The costs and the benefits brought by each specific research project output could be captured by looking at the differences (rather than the absolute values) introduced by the project outputs with respect to the original baseline scenario.

The evaluator should keep in mind that a comprehensive and exhaustive quantitative assessment is almost impossible. In order to understand what the main financial and socio-economic impacts generated by the project outputs are, and really understand the most important welfare changes brought by the project, a very wide number of fields should be investigated.

Furthermore, considering the diversity of the components, the SEQUOIA methodology recommends that the evaluator focus on a specific set of micro-economic variables that will be introduced in the next sections.

Another important consideration to keep in mind is related to the complexity of most of the SaaS and IoS projects. Each project will deliver more than one output; in addition, each project normally develops several technological components that may have different impacts and may follow different exploitation paths. This complexity should be respected in the project assessment. Thus, we suggest dividing the project in its main outputs/components and running the assessment on each specific component. Each component will have specific stakeholders, and a specific baseline scenario, as well as clearly defined social and economic impacts. The box on the left provides an example that may support the evaluator in better understanding how to define the ex-post scenario.

In practice...

FOREST will generate the following outputs:

- FOREST platform (for the automatic migration of services between mobile devices)
- FOREST online course

The FOREST platform will enable its users to automatically migrate services from one mobile device to another. The platform works as a PaaS, is Open Source, and is free of charge for the users. A tangible example would be a game programmer being able to migrate a game from iPhone to Android in 3 hours.

If we compare this data with the baseline scenario (that required 30 hours for the game migration), we see that the benefit for the user in term of time savings is significant and is equal to 27 hours saved.

As stated before, in addition to the platform, FOREST will also generate an online training course for software developers. The online training course will be freely available for everybody, so it will not generate any financial revenue for the project. However, it will give a benefit to its users by improving their knowledge and in building a community with shared interests. The FOREST online course is totally new and no similar initiatives are available at EU level. Consequently the benefits for the users cannot be compared with other similar initiatives. Asking the users to describe and evaluate the quality/quantity of knowledge provided and the relevance of the networking aspect of the course may help assess the benefits. If this is not possible, the evaluator can count the hours of training delivered and the learning modules developed; he/she can use these values as a qualitative measure of the knowledge produced for the benefit of the users.

STEP-BY-STEP GUIDE

Ex-post scenario quantification



In this step, the evaluator will be guided in transforming the qualitative information gathered so far into quantitative data. Therefore, detailed information needs to be gathered to quantify two kinds of impacts generated by the projects:

- Economic impacts
- Social impacts

The economic impacts of the IoS/SaaS research projects

The table below shows the data that will be gathered in this step for quantifying the economic impacts. As the evaluator will notice, the data are divided in two categories: monetisable and non-monetisable. This division will be useful in the next step; in fact, the two categories of data will be treated differently and will provide different outputs in terms of impact indexes.

Monetisable data
Project total cost
Cost for running the outputs of the project after the formal end of the project
Project revenue
Cost for running a single operation without the project outputs (accordingly to the baseline scenario)
Cost for running a single operation using the project outputs
Energy needed for running a single operation without the project outputs (according to the baseline scenario)
Energy needed for running a single operation using the project outputs
Number of PhD students sponsored/funded by the project
Number of post-doc researchers sponsored/funded by the project
Number of employment positions generated by the project through collaboration agreements with enterprises and third parties and/or through the creation/enlargement of spin-offs
Non-monetisable data
Technological advances

In practice...

We said that by using FOREST's main output (the FOREST PLATFORM) a potential user will save 27 hours when adapting a game developed for iPhone on Android. Now we have to transform this benefit (time savings) into monetary terms. To do this we can multiply the hours saved by the average hourly salary of a game programmer (100 Euros). Consequently, the savings in terms of labour costs is 2,700 Euros. This result is based on the fact that the game programmer will need only 3 hours (100 Euros * 3 hours, in red in the table below) for adapting the service to the new platform. However, the total cost of the baseline scenario was of 3,040, which included the cost of using DESERT and OCEAN services that are no longer needed. Consequently the total savings for one operation will be:

$$3,040 - 300 = 2,740 \text{ Euros}$$

In order to be more precise, it is necessary to multiply this benefit (2,740 Euros) by the number of FOREST users, and by the number of operations to be performed on a yearly basis by each user. Let us assume that FOREST is on-going but that, thanks to a pilot case run in the game sector, the evaluator estimates a number of users equal to 100. Each game programmer will migrate 50 games each year.

Consequently, we can calculate IMP. 5, which is the difference between the cost of performing activities between the baseline and the ex-post scenario, by multiplying the cost savings for one operation by the total number of operations executed annually. Imp. 5 will be as follows:

$$2,740 * 5000 = 13,700,000 \text{ Euros}$$

With reference to the cost of running the project's outputs after the formal end of the project, FOREST is not planning to create a spin-off or to sell its outputs, but the University leading the project will provide the maintenance of FOREST outputs and will further develop them. It will also support the users by providing assistance. The FOREST consortium foresees that 10 people will be doing these activities, mainly PhD holders (7 persons) and Post-Doc researchers (3 persons). The labour cost for running the outputs of the FOREST project will be, therefore, of 34,375 Euros/month. That is equal to 343,860 Euros on an annual basis.

The formula used for reaching this figure (in green) is shown in the table below¹.

$$\text{Personnel cost (343,860 Euros)} + \text{Maintenance cost (88,772 Euros)} = \text{Total operational cost (412,632 Euros)}$$

All the data needed for quantifying economic impacts is shown below.

Monetisable data	
Project total cost (IMP.1)	3,200,000 Euros (EU funding + partners' co-funding)
Cost for running the outputs of the project after the formal end of the project (IMP.2)	412,632 Euros
Project revenues (IMP.3)	None (no commercial exploitation planned)
Cost for running a single operation without the project outputs (accordingly to the baseline scenario)	3,040 Euros
Cost for running a single operation using the project output	300 Euros
Energy needed for running a single operation without the project outputs (accordingly to the baseline scenario)	90 KWh
Energy needed for running a single operation using the project outputs	30 KWh
Number of PhD students sponsored/funded by the project	6
Number of Post-Doc researchers sponsored/funded by the project	2
Number of employment positions generated by the project through collaboration agreements with enterprises and third parties and/or through the creation/enlargement of spin-offs	0
Non-monetisable data	
Technological advances (IMP.4)	7

¹ The personnel cost has been calculated as follows.

Personnel cost = (cost of one PhD student * n. of PhD students) + (cost of one Post-doc researched * n. of Post-doc students)

Personnel cost = [(2.753*7) + (3.128*3)] * 12 = 343.860 Euros

Maintenance cost are quantified as the 20% of the personnel costs.

STEP-BY-STEP GUIDE

Ex-post scenario quantification

Below is a checklist of the main economic impacts that should be considered for the assessment:

1. Effects on cash inflows/outflows
 - Total cost of the research project being evaluated (IMP. 1)
 - Total cost for running the output(s) of the project (IMP. 2)
 - Revenues obtainable by exploiting the project outputs (IMP. 3)

2. Effects on technological advances

The evaluator can measure such technological advances in a qualitative way, by rating, on a scale of 1 to 10, the improvement realised by the project outputs in terms of the following characteristics: Functionality, Reliability, Usability, Efficiency, Maintainability, Portability, and Quality in Use. The global technological effect (IMP. 4) can be obtained by calculating the mean value of the above ratings. The unit of measurement for the technological impact, therefore, is a score on a scale of 1-10.

3. Effects on welfare derived from technological advances.

3a. Effects on efficiency

To measure this kind of benefit, the evaluator should estimate, for each project output and related use-case scenario, the cost of performing the activity before (baseline scenario) vs. after project output exploitation. The differences in costs will then be the benefit generated by the project itself. (IMP. 5)

3b. Effects on environment

The use of project outputs may bring a reduction in energy consumption for performing user activities and calculate the difference in energy costs between the baseline and the ex-post scenarios (IMP. 6)

3c. Effects on labour market

In addition to other more indirect impacts on quality of life, that the evaluator should take into consideration in the social part of the analysis, that one of the most important social impacts could be the creation of new jobs/roles. These could be measured, for example, in terms of the number of PhD students and post-doctoral researchers sponsored by the project, but also in terms of the number of new employment positions generated through collaboration agreements with enterprises and third parties and through the creation/enlargement of spin-offs.

These benefits on the labour market (IMP. 7) can be quantified by multiplying the number of new jobs generated by the average income of each. Alternatively, the evaluator can use the European average salary for skilled personnel, which for a PhD student is equal to 2,753 Euros/month and for a post-doc researcher 3,128 Euros/month.

3d. Other effects on welfare

Each project output may also generate other specific effects (IMP. 8) that the evaluator should try to capture, describe and monetise by using the most appropriate proxies.

Note that this task exceeds the scope of this Guide, the main aim of which is to provide basic instructions for performing a standardised assessment for each research project in the IoS/SaaS domain. A customised assessment, therefore, requires a case-by-case analysis.

The social impacts of the IoS/SaaS research projects

For most projects it can be very difficult to imagine and map social impacts. On the one hand, this may be due to the interdisciplinary background of SaaS and IoS project partners, who are not necessarily accustomed to thinking about social issues; or, on the other hand, to the fact that most of these projects are developing enabling technologies/solutions that may have very diverse and partially not-predictable applications and uses.

Clearly, these difficulties need to be taken into consideration when applying the SEQUOIA methodology, but we suggest making an effort to map potential social impacts. From a methodological point of view, the SEQUOIA team tried to keep the social impact variables as concrete and close to the context of research projects as possible. As described in the SEQUOIA methodology (D3.3a), social impacts have been articulated in three main categories:

- Impact on employment and working routines
- Impact on knowledge production and sharing
- Impact on social capital

We will discuss each category separately in the following paragraphs. We anticipate in the table below the data that the evaluator will need to gather in order to perform the quantification of social impacts.

Data required for quantifying social impacts
Work positions generated by the project
Improvement of users' working routines
Number of journal articles published or submitted in peer-reviewed journals
Number of books published
Number books chapters edited
Number of articles presented at conference or published in proceedings
Number of scientific deliverables produced
Number of knowledge exchange initiatives performed
Number of new scientific collaboration links established
Number of training modules created
Number of scientific events where project has been presented
Availability of papers and deliverables through project website
Improvement in supporting ICT usage for all and democratic participation
Number of new collaboration links established with research institutes
Number of new collaboration links established with industry partners
Number of new project proposals submitted
Social capital increment for users and beneficiaries

Impact on employment and working routines

First of all, we have to remember that the ability of a project to generate new employment positions has already been considered in the economic impact. Here we will only consider those variables/aspects related to employment that cannot be transformed into monetary value. In order to estimate these impacts, the evaluator should consider the number of persons working on the project and the number of additional researchers recruited for the project.

Additionally, the evaluator should analyse the ability of the project to impact on the working routines of the project's users/beneficiaries. Ideally, the evaluator should get in touch with project users and ask them to describe how and to what extent the project outputs will/do improve their work routines. If this is not possible, the evaluator should self-assess those improvements.

STEP-BY-STEP GUIDE

Ex-post scenario quantification

Impact on knowledge production and sharing

For any research project, the ability to produce knowledge and systematise it in scientific outputs and diffuse it within and outside the scientific community is crucial. The evaluator who wishes to assess the project impact in this way should analyse the number of scientific materials produced by the projects (in terms of journal articles, articles presented at conferences or published in proceedings, articles presented at conferences or published in proceedings, books, chapters in books, and scientific deliverables).

In order to evaluate the impact on knowledge sharing, the evaluator should first count the number of knowledge exchange initiatives organised, new collaboration links established thanks to the participation in the project, and scientific conferences and seminars at which the project has been re/presented.

He/she should also analyse the number and typology of new training modules, online courses and seminars developed by the project.

Finally, the evaluator should check if the scientific outputs generated by the project are publicly available on the project website or in other open repositories.

The above aspects are strictly related to project activities, while the following ones ask the evaluator to consider benefits provided by the project outputs to the project's stakeholders/ beneficiaries. Ideally the evaluator should contact or monitor the project stakeholders/beneficiaries in order to have more effective data on this important aspect. If this is not possible, the following section can support the evaluator in gathering information about the project's ability (as perceived by the project itself) to support ICT usage for all and to foster democratic participation by the users.

Impact on social capital

The last aspect to consider in assessing the social impact of the project is related to social capital. One of the most important values added by EU co-funded projects is, indeed, that of reinforcing and enlarging research networks and, by doing so, strengthening the European Research Area. Social capital represents the non-material wealth generated by the fact of belonging to multiple relational networks. In other words, we will see how SaaS and IoS can support project partners and project outputs' beneficiaries in enlarging and making their social networks denser. In addition to this, we will consider the impact on trust, considering trust as one of the most important components of social capital.

In assessing the impact of the project on the social capital of the project partners, the evaluator should take into consideration the number of new collaboration links established with industrial actors, the number of new partnership agreements established with other universities, research centres, enterprises or public bodies and the number of new projects proposals submitted thanks to the participation in the project.

In assessing the impact of the project on the social capital of the project beneficiaries and end-users, the evaluator should take into consideration the impact of the project on the way users collaborate, the way it supports the creation and enlargement of networks and the way it improves trust among the users.

In the box that follows, the evaluator can find the data gathered with reference to the example we used so far to illustrate the SEQUOIA methodology.

STEP-BY-STEP GUIDE

Ex-post scenario quantification

In practice...

The first data required when quantifying social impacts is related to the number of persons that worked on the project. The SEQUOIA methodology suggests using full-time equivalent.

Considering the entire duration of the FOREST project, and all the partners, 62 persons were engaged in research and administrative activities. However, not all worked on a full-time basis on the project. More specifically, 20 persons worked full-time, 30 worked part-time and 12 worked 5 days per month. All of them were employed for the entire duration of the project (3 years). Adding these figures the evaluator obtains the following result: 38 is the total number of persons that worked on the project each year. The calculation made for reaching this result is:

$20 + (30/2) + (12/4) = 38$ (the evaluator considered a person-month to be composed of 20 working days)

No additional researchers were recruited specifically for the FOREST project.

Then, the evaluator considered the project's ability to improve users/beneficiaries' working routines. Unfortunately, FOREST did not have the budget needed for directly engaging its users in the assessment of social impacts; consequently, the table below shows the evaluator's opinions on the subject.

The project will:	Strongly disagree	Disagree	Agree	Strongly agree
Provide solutions for working efficiently and conveniently for all sizes of organisations			X	
Reduce the work of the users (more operations will be automated)				X
Allow your users to do their everyday work more quickly				X

As we have said before, FOREST's main output considerably reduces the time needed for migrating an application from one device to another, so we can see the project's benefit in terms of improving the working routines of its users. The evaluator should now transform his/her evaluation using the 0-4 scale suggested (see Question 29) and calculate the average value:

$$(3 + 4 + 4) / 3 = 3,6$$

Once the impact on employment and working routines has been considered, the evaluator should consider the project impact on knowledge production and sharing. The related data is shown below:

Number of journal articles published or submitted in peer-reviewed journals	4
Number of books published	1
Number books chapters edited	2
Number of articles presented at conference or published in proceedings	20
Number of scientific deliverables produced	20
Number of knowledge exchange initiatives performed	10
Number of new scientific collaboration links established	5
Number of training modules created	12
Number of scientific events where project has been presented	13

All the scientific outputs are available. The evaluator should transform this information into a number; 1 is the value to be attributed to the project if all the outputs are publicly available as in this case.

Finally, the evaluator should express his/her opinion on the following statement, transform the results in a 0-4 scale, and calculate the average:

Your project will:	Strongly disagree	Disagree	Agree	Strongly agree
Make information/knowledge available to a larger number of interested users			X	
Support knowledge transfer between universities/research centres and industry/SMEs		X		
Make highly innovative services available to citizens		X		
Develop services that will positively impact on citizens' everyday life			X	
Make available high-quality knowledge/ information to citizens		X		
Reduce the digital divide		X		
Support democratic processes/ democratisation		X		
Positively impact education		X		
Enable diversity and individual expression		X		
Promote flexibility for personalisation on a large scale/high interface adaptability			X	

As evident, FOREST project do not have a high direct impact on the dimension considered in the table above.

The evaluator followed the same process in analysing FOREST's impact on social capital and discovered that the project did not invest too much in this aspect. In fact, no collaboration links were established by FOREST's partners with industrial actors, no partnership agreements were signed with universities outside the FOREST consortium, and only one project proposal was submitted as a follow-up to FOREST. The FOREST project showed a low ability to enlarge its partners' networks and, similarly, did not influence the social capital of its users even if – thanks to the summer school – it facilitated the social interaction of researchers and software developers in the area of mobile devices.

We will see in the next steps how to use the data gathered so far.

STEP-BY-STEP GUIDE

Final assessment analysis



Once all the information regarding the economic and social impacts of the research project have been generated and collected, the last step is to process this data to assess the project's performance globally with the use of aggregated and synthetic indices.

Specifically:

- All the information regarding the economic impacts (except the technological ones) should be used by the evaluator in order to perform the Economic Impact Assessment, which aims at understanding whether the project output(s) is able to improve the total welfare of society by measuring, in economic terms, the range of direct and indirect impacts affecting both the users and non-users of the project outputs. The final output of the economic assessment, then, will be condensed into three indices: the iROI, the xROI and the tROI.
- All the data related to social impacts, instead, should be used by the evaluator to perform the social impact assessment, which aims at understanding the improvement made by the project in terms of impact on employment and working routines, knowledge production and sharing, and social capital. The final output of the social assessment, then, will be a multi-criteria and multidimensional description of the attained impacts in the social sphere. In other words, the evaluator will have an index for each of the three social dimensions just mentioned (working routines, knowledge production and sharing and social capital).
- Finally, the economic indices (iROI, xROI and tROI) and the multi-criteria description of the social impacts will be condensed into a global indicator called RORI.

Fig. 6 shows the activities to be performed in this step.

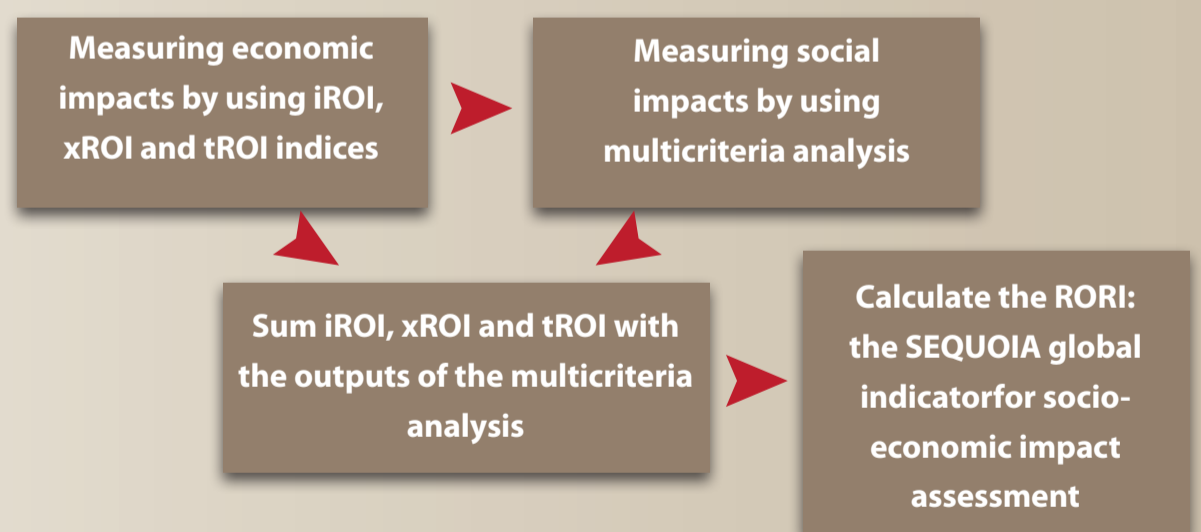


Fig. 6 – Activities to be performed in Step 5

The next sections describe in greater detail the meaning of each indicator/index and show the inputs to be included and formulas to be used for calculating such indicators/indices.

iROI (Internal Return On Investment)

This indicator provides information about the financial sustainability of the project, by measuring the (potential and/or future) financial return for the consortium partners. The iROI indicator is based on the financial evaluation of the total cost for performing the research project and on the identification of the financial returns

STEP-BY-STEP GUIDE

Final assessment analysis

for the consortium partners, deriving mainly from selling the output(s) produced. The formula for the iROI calculation is the following:

$$\text{iROI} = \frac{\text{Investment financial inflow} - \text{investment financial outflows}}{\text{Investment cost}}$$

In order to better identify what data must be included for the iROI calculation, the above formula can be “described” using the symbols that have been introduced in the previous sections, thereby obtaining the following:

$$\text{iROI} = \frac{\text{IMP.3} - \text{IMP.2}}{\text{IMP.1}}$$

An iROI higher than zero means that the financial returns estimated over the project output lifetime cover the expenses that the consortium itself must sustain in order to run the project, both during the research phase and during the exploitation of the results phase. Such an indicator is measured as a percentage e.g. if $\text{iROI} = 5\%$ or 0.05 , this means that the financial net benefits are 5% of the investment costs. Given that many research project outputs are provided as open source or as a free service/tool to the end-users, and many possible exploitations of the research outputs are not foreseeable at the end of research project life-cycle, the evaluator can normally expect an average iROI somewhere between 0 and 5%.

xROI (External Return On Investment)

This indicator quantifies the net economic benefits (other than the financial ones) that the project generates in society as a whole (considering both users and non-users of research outputs). In order to be included into the xROI, each impact of the project (positive or negative), other than the financial ones, must be expressed in monetary terms by using appropriate proxies¹.

The formula for xROI calculation is the following:

$$\text{xROI} = \frac{\text{Socio Economic Benefits} - \text{Socio Economic Costs}}{\text{Investment cost}}$$

In order to better identify what data must be included for xROI calculation, the above formula can be “described” using the symbols that have been introduced in previous sections, thereby obtaining the following:

$$\text{xROI} = \frac{(\text{IMP.5} + \text{IMP.6} + \text{IMP.7} + \text{IMP.8})}{\text{IMP.1}}$$

An xROI higher than zero means that the economic benefits estimated over the project’s lifetime are higher than the economic costs society has to pay for enjoying the outputs of the project itself.

The xROI should be normally higher than the iROI, given the wider meaning of project costs and benefits than a project’s inflows and outflows. Therefore, the evaluator should normally expect an average xROI somewhere between 5% and 20%; values higher than 20% would denote, therefore, a very high economic impact of the project.

Note that, in some cases, especially for research projects that are not close to the market (i.e. closer to basic research than applied research), the xROI value could be negatively affected by the underestimation of the project’s total long-term intangible and highly unpredictable benefits. For this reason, xROI values lower than 5% can be considered acceptable as well.

tROI (Total Return On Investment)

This indicator quantifies the total monetisable impacts of the research project, both those experienced by the consortium’s partners and by the whole society. It is calculated by summing up all the information gathered by the iROI and the xROI indices.

The formula for xROI calculation, therefore, is the following:

$$\text{tROI} = \text{iROI} + \text{xROI}$$

The average expected tROI is somewhere between 5% and 25%. However, values lower than the average can be considered acceptable in some specific cases (see above).

¹ Some economic benefits are intrinsically non-monetizable (e.g. the technological advances - par. 2.4) and, therefore, should not be included into the xROI. On the contrary, such effects must be measured on their own most suitable metric and included into the multicriteria analysis and in the RORI index (see par. 2.5).

STEP-BY-STEP GUIDE

Final assessment analysis

Multi-criteria assessment

As discussed above, not all the impacts generated by the projects can be measured in monetary terms: the impact on the environment, on working routines, on knowledge production and sharing, and on social capital, or even the technological improvements brought by the project outputs, in fact, cannot be easily transformed into economic/financial values.

According to the SEQUOIA methodology, therefore, the evaluator should assess such impacts through the use of the Multicriteria Techniques (MCA), according to which, where monetisation is not possible, each impact must be expressed in its most appropriate and suitable unit of measurement (see also D3.3a).

The main impacts to be considered in the MCA, with an indication of the most suitable metric to be used for their measurement, are:

1. Technological benefits (scale 1 -10)²
2. Impact on employment and working routines (absolute values and scale 0-4)
3. Impact on knowledge production and sharing (absolute values, scale 0-4 and scale 0-1)
4. Impact on social capital (absolute values and scale 0-4)

RORI

Once all the information about the financial (iROI) and economic (xROI) performance of each project is summarised and after the assessment of other non-monetisable impacts through the use of the MCA, the last step consists of calculating a global index, synthesising all the information generated during the assessment, and showing the total performance of each research project. This index is called RORI, as it expresses the global Return On Research Investment.

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, it provides a measure of the whole performance of a IoS/SaaS research project at a given moment. It is useful for comparing the project performances in different time-frames, and it allows the comparison with other projects.

The RORI index is calculated as a weighted sum of the iROI, the xROI, and the other non-monetisable impact indicators collected in the multi-criteria table.

The formula for the calculation of the RORI is the following: $RORI = \sum_{n=1}^N X_n w_n$

where:

$n = 1, \dots, N$ (N is the number of variables)

w are the indicators weights³ $\sum_{n=1}^N w_n = 1$

X are the normalised indicators synthesising the following impacts:

- Financial (iROI)
- Economic (xROI)
- Technological benefits
- Impact on employment and working routine
- Impact on knowledge production and sharing
- Impact on social capital

As mentioned above, it is necessary to attribute to each variable a proper weight; the weights express the relative importance of each impact assessed.

A way for defining the weights could be to select a panel of experts and follow their indication. At the present stage, the SEQUOIA team suggests the weighting system reported in the table below that assigns equal relevance to monetisable and non-monetisable impacts.

iROI	xROI	Technical benefits	Impact on employment and working routine	Impact on knowledge production and sharing	Impact on social capital
0,15	0,35	0,10	0,10	0,20	0,10
0,5		0,5			

² The technological benefits are calculated as the average of Functionality, Reliability, Usability, Efficiency, Maintainability, Portability and Quality in Use, all of them already originally expressed into a 1-10 scale.

³ Weights express the relative importance of each variable assessed. The sum of all weights must be equal to one.

AFTER THE IMPACT ASSESSMENT

In this section we briefly examine what to do after the calculation of the SEQUOIA indices: iROI, xROI, tROI, multi-criteria indices and RORI.

Evaluating your performance using the SEQUOIA average RORI

We have seen in Section 1 that projects can use the SEQUOIA methodology in different time-frames. If a project follows the ideal process (assessing ex-ante, in-itinere and ex-post impacts) this section can be skipped. Such a project will not need an external benchmark to evaluate its progress. This is because even if such a project will not have a benchmark at the time of the ex-ante assessment, it will have it later on, when the ex-ante assessment will become the benchmark for the subsequent assessment exercises.

If this is not the case, and the evaluator needs an external benchmark in order to be able to “read” the impact assessment outputs, the evaluator can use the average values calculated by the SEQUOIA team. The average values that have been calculated by analysing 30 SaaS and IoS projects are presented below. The evaluator can use them to know if the project he/she is assessing is in line with other projects, if it is below average, or above average.

More information about the average performance of the 30 projects assessed by the SEQUOIA team can be found in D3.1.

In the next section we will see how to organise an impact assessment report.

The socio-economic impact report

After performing all the stages described in previous pages, you will have a completed socio-economic impact analysis. However, the process is not finished yet. There is a final important stage: reporting the results of the analysis to the various stakeholders. The evaluator’s findings may be for internal management use, for public distribution, or the basis for discussions with various stakeholders. Preparing a report is useful to make recommendations, which can influence what happens as the research project moves forward.

The following quantitative and qualitative information is usually also included in a comprehensive socio-economic assessment report:

- Information related to the research project, including a discussion of its targets, key stakeholders and structure;
- Description of the main outputs and a qualitative description of the advances (benefits) brought about by the project for society;
- Case studies/use cases, or quotes from participants/users that illustrate particular findings;
- Details of the calculations, and a discussion of any estimates and assumptions.

Projects assessment and best practices

The SEQUOIA socio-economic impact assessment methodology, described in this guide, 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 instruments used for data gathering were, essentially, two:

- A structured questionnaire, composed of 55 questions, which was published through the Eurokleis survey tool² 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 completed remotely by the target projects and further sent via e-mail to the SEQUOIA evaluation

team. 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, divided into 8 sections, aimed to collect general information about the projects and to identify and quantify the potential impacts generated in different fields such as technology, science, society, the environment and the economy.

- 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 data missing from the questionnaire, in order to have a complete and homogeneous data-set that could be further analysed, and a better understanding of the specificities of each project, so as to more correctly assess the potential of each, in a more informed way. These interviews were also structured in such a way as 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 to also validate the questionnaire and fine-tune the methodology.

The deliverable “Deliverable 3.1 – Call 1 and Call 5 Project Assessment Report” contains the results of the projects assessment in aggregated way, first, while in the last part of the document a short analysis of single project assessments is reported.

The 5 projects that scored highest have been defined as “best practices”. The selected projects¹ are S-Cube, mOSAIC, CumuloNimbo, SocIoS, I2Web. A deeper analysis of the socio-economic impacts of these 5 projects will be presented in D3.2 “Best Practices Report” which will be released at the end of March 2012 on the SEQUOIA website.

Conclusions

The evaluator, at this point, should have a clear idea about the SEQUOIA methodology and he/she should be ready to deepen the socio-economic impact assessment reading deliverable D3.3b “SEQUOIA Self-Assessment How-To Guide”.

To learn more about its theoretical foundations, the evaluator can refer to D3.3a “SEQUOIA Final Self-assessment Methodology”, which is available on the project website: www.sequoiaproject.eu. In addition, a short animated description of the SEQUOIA impact assessment methodology is available here: <http://prezi.com/jm1zsr2vphv7/sequoia-self-assesment-how-to-guide/>.

¹ www.s-cube-network.eu, www.mosaic-cloud.eu, <http://cumulonimbo.eu/>, <http://www.sociosproject.eu/>, <http://i2web.eu>



SEQUOIA

At a glance

SEQUOIA

Socio-Economic Impact Assessment for Research Projects.

Project Coordinator

Dr Paolo Dini (p.dini@lse.ac.uk)

Duration

May 2010 – April 2012

Website

<http://www.sequoiaproject.eu>



Maximising the socio-economic impact of Software as a Service (SaaS) and Internet of Services (IoS) research projects. The SEQUOIA Support Action is defining a systematic socio-economic framework in support of exploitation practices to be advantageously pursued by projects to assess their socio-economic impact.

Today's socio-economic circumstances have put increased pressure on funding bodies to demonstrate that resources are spent in the most effective and efficient manner. Confirming this, the Europe 2020 Flagship Initiative 'Innovation Union' communication suggests reforms in innovation systems in order "to get more value for money". The definition of an adequate research evaluation model is on national political agendas both inside and outside Europe. Better evaluation methods are needed to identify what works and what does not, and why, as well as what could and should be scaled up.

What can research projects do to contribute to European priorities such as promoting socio-economic growth?

Today, research projects need to engage more with objectives that go beyond technological achievements. According to the ICT work programme 2009-2010, technologies developed under Challenge 1 (Pervasive and Trustworthy Network and Service Infrastructures) are expected to be tailored to meet key societal and economic needs. Furthermore, the socio-economic implications of new technological solutions need to be assessed at an early stage.

SEQUOIA is a support action co-funded by the European Commission under the Unit 'Software & Service Architectures and Infrastructures' which aims to translate these generic statements into more specific socio-economic objectives. It develops a self-assessment methodology by which research projects in the SaaS and IoS areas can assess the impact of their project outputs against the social and economic dimension of their target beneficiaries. Through its methodology SEQUOIA helps projects focus more on the creation of value and aims at giving them qualitative and quantitative value information to help them become more aware of their social and economic innovation capabilities. In this way, the new projects will be able to self-evaluate their potential output in terms of socio-economic benefits, and possibly re-orient their activities in order to improve such impact.