IA4SI PROJECT

"Impact Assessment For Social Innovation"

Contract n° 611253

WP3: Self-Assessment Toolkit and Citizens Engagement Platform Development

Deliverable 3.1 – Self-Assessment Toolkit, User Data Gathering Interphase and Citizens Engagement Platform.

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IA4SI – Impact assessment for Social Innovation

IA4SI is a support action project developing a socio-economic and environmental impact self-assessment methodology for evaluating projects in the field of social innovation. The project is collaboration between iMinds (project coordinator), T6 Ecosystems, Eurokleis and ATC and runs from 2013 to 2016.

D3.1 - Self-Assessment Toolkit, User Data Gathering Interphase and Citizens Engagement Platform

DISCLAIMER

This document has been produced with the assistance of the European Union. The content of this document is the sole responsibility of the IA4SI consortium and can in no way be taken to reflect the views of the European Union.

Acronyms

Acronym/Term	Definition
IA4SI	Impact Assessment for Social Innovation
CAPS	Collective Awareness Platforms for Sustainability and Social Innovation
SAT	Self-Assessment Toolkit
UDGI	User Data Gathering Interface
CEP	Citizens Engagement Platform (Impact4you platform)
LAMP	A platform based on Linux, Apache, MySQL and PHP
WAMP	A platform based on Windows, Apache, MySQL and PHP
OWASP	Open Web Application Security Project

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Executive Summary

This Deliverable derives from the work performed in Work Package 3 of the IA4SI project and contains the user and system requirements as well as the basic description of the software architecture and the technological infrastructure. The IA4SI tools (Impact4you platform[1], Self-Assessment Toolkit, Used Data Gathering Interface) will be subsequently deployed following the rules and guidelines in this document. It has to be noted that this Deliverable is the first of the two documents that will be produced in the context of this WP. The final version of the tools will be delivered in M28 (January 2016).

The design presented here is considered adequate to accommodate the needs of IA4SI during the whole project lifetime, as valuable discussions between all partners have ensured that all views have been considered. Nevertheless, IA4SI cannot establish in full detail all the requirements and the components of the tools beforehand. It is normal that changes, adjustments and additions will be needed in order to refine and finalize all components and modules of the IA4SI project following the testing with CAPS projects and their developments.

The deliverable focuses on describing the user and system requirements and the IA4SI tools (Impact4you platform, Self Assessment Toolkit, Used Data Gathering Interface). The functional and non-functional requirements are examined, as well as the specific roles and use cases of the actual tools together with relevant scenarios of use. Moreover, apart from the general description of the tools, the technological point of view is provided.

[1] The Consortium decided that the Citizens Engagement Platform that will be developed within the project is called Impact4you platform.

1. Introduction

1.1 Purpose

The purpose of this document is twofold and more specifically elaborates on two different but strongly related directions: the user and system requirements analysis and the technical specifications of the IA4SI tools (Impact4you platform, Self Assessment Toolkit, Used Data Gathering Interface). This deliverable contains the basic description of the designing process, the software architecture and the technological infrastructure of the IA4SI tools (Impact4you platform, Self Assessment Toolkit, Used Data Gathering Interface).

1.2 Document Structure

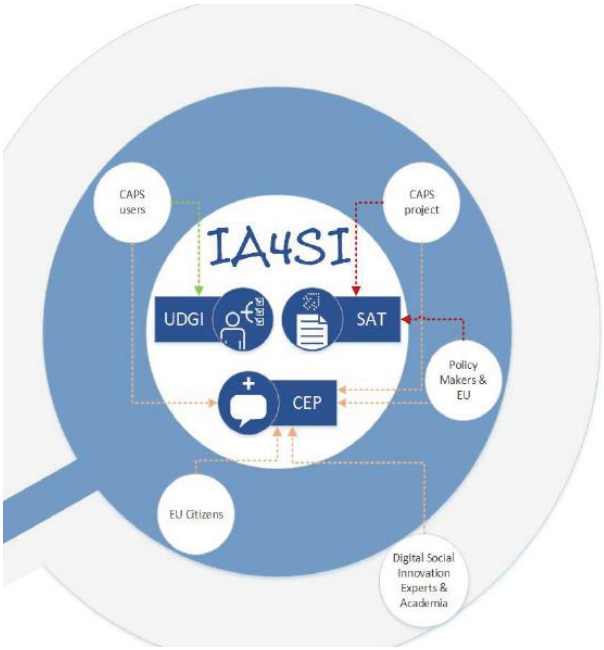
This document is structured as follows:

- Chapter 1 gives a general overview of the document.
- Chapter 2 consists of information regarding methodology of requirements capture, specification of user groups and their roles, system requirements description and usage scenarios presentation.
- Chapters 3 and 4 presents the architecture of the tools, together with topology issues.
- Finally, chapter 5 presents the main conclusions of the document.

2. IA4SI Tools' Requirements

IA4SI project will offer three online tools for impact self-assessment, enabling projects to understand and improve their social, economic and environmental impacts. The three tools are the following:

Figure 1:IA4SI tools



1. The **Impact4you platform**: will be the main tool for engaging citizens in knowing more about CAPS projects and social innovation initiatives, approaches and opportunities. Through the on line platform EU citizens will have the opportunity to express their opinion on CAPS outputs and discuss about the services offered by social innovation projects and their potentiality in terms of impact at social level and social up-taking. The platform will be a dynamic online knowledge and collaboration platform supporting content production, thematic discussions, and stimulates collaboration among the participants.
2. The **Self Assessment Toolkit (SAT)**: Is a semi-automatic instrument supporting CAPS projects in performing the self-assessment of their project social, economic and environmental impacts. Each CAPS project, by logging in to the SAT, will find:
    a. a list of questions to be answered in order to assess projects' impacts: some information will have to be provided by the projects themselves, while other will be precompiled by the IA4SI staff, thanks to the information gathered during projects mapping;
    b. some information derived from the CAPS users' on projects performance;
    c. the assessment of the project: once entered all the data the SAT will visualize the result of the impact assessment in a concise and user-friendly way.
3. The **User Data Gathering Interface (UDGI)**: the UDGI gathers information directly from the users of CAPS projects participating in the assessment. The user data gathering tool is an online questionnaire structured both for single users and organizations. Through this tool, projects' users will provide their opinion regarding the output/services they use and their potential impacts. This tool will gather also some basic information about projects' users.

    The UDGI will be not developed as a different tool from the SAT, it will be integrated and will constitute a relevant module of the SAT for gathering the perceived impact of projects outputs. CAPS projects will provide the link to their users in order to access the online questionnaire. Data gathered through users questionnaire may change over time. The projects can extract the answers of the users in different time frames and historicize the results. The project can also collect new information from users that are related to the new project phase or to the new output that the coordinator of the project has included in the toolkit.

2.1 Methodology for capturing the Requirements

One of the critical success factors in the development of a high quality software application is the deep understanding of the user and system requirements. Once identified, the user requirements effectively lay the foundation for developers, testers, and implementers to begin implementing the functionality, responsiveness, and interoperability required for that system.

Methods such as document analysis and focus group analysis can be used for the elicitation of user requirements. Scenarios and Use Cases have also become a popular technique for task analysis. Different requirements analysis methods can be applied in parallel to complement each other in order to yield more effective results. For carrying out the process of requirements identification and analysis a variety of tools can be used in a complementary way. These tools are listed together with their benefits and drawbacks in the following list.

Scenarios – Use Cases

- Description: Detailed realistic examples of how users may carry out their tasks in a specified context with the targeted system.
- Benefits: They can bring user needs to life and explain their vision about the future application.
- Drawbacks: They may raise expectations too much and over simplify the population.

User Surveys – Questionnaires

- Description: A set of written questions to a sample population of users. Surveys and questionnaires can help determine needs, current work practices and attitudes to the new system ideas.
- Benefits: Relatively quick methods of determining preferences of large user groups. They also allow statistical analysis.
- Drawbacks: These methods may not capture in depth comments and may not permit follow-up.

Focus Groups – Interviewing

- Description: This technique brings together a cross-section of users in discussion group / multiple interviewing formats. A series of fixed questions with scope for the end users to expand on their response. A useful method for requirements elicitation.
- Benefits: Allows rapid abstinence of a wide variety of user views and allows quick elicitation of ideas & concepts.
- Drawbacks: Recruitment effort to assemble groups. Dominant participants may influence group disproportionately. Negotiate access/possible different opinions from different users.

Existing Systems – Competitor Analysis

- Description: Comparison of expected product with existing systems.
- Benefits: Effective in identifying current problems, possible new features and acceptance criteria.
- Drawbacks: This method may lead to including too many new functions or make system too similar to a competitor's.

The methodology of user and system requirements used in the IA4SI context was a combination of the first and the last approach, as the tools to be implemented follow already developed and tested solutions, and the scope of the project was strongly defined from the beginning. More specifically, the methodology deployed included the following three steps as depicted in the following diagram:

During the first step, the functionalities of the IA4SI tools were recorded by the technical team of the project. A list of functionalities including the user groups and roles and the functional and non-functional requirements of the tools were listed in order to be validated by the entire consortium.

As a second step, the partners performed an internal validation of the list by preparing, in parallel, indicative scenarios regarding the use of the tools.

Additionally, the IA4SI Consortium organized a "Working group" in the context of the 1st IA4SI Workshop with CAPS representatives, with the main aim to discuss the IA4SI tools. Through this dedicated session, the CAPS representatives provided their feedback which will be taken into consideration in the (further) development of the relevant tools.

During the final step, the lists of requirements were finalized and are described below in section 2.4.

2.2 Impact4you User Groups

This section provides an overview of the main actors of the Impact4you platform, guided by the technical point of view and according to the main actions actors conduct while using it. The following Table 1 the main user groups could be identified:

Table 1:Impact4you User Groups

User Groups	Role	Description
 Unregistered User	Unregistered User	Anyone who visits the web pages of the platform and is not registered. Unregistered users will have the right to access the platform in order to view the discussion space, the information related to CAPS projects and outputs, to express their opinions for any topic etc.
 Registered User	Registered User	Any user who performed the registration procedure and after logging in, is able to use any platform services and content and contribute to the Forum.
 Platform Administrator	Platform Administrator ATC	Any consortium-authorized person who monitors the system from a technical point of view ensures its proper operation and handles users, roles and statistics.
 Platform Manager	Platform Manager All partners	Any consortium-authorized person who manages the functionality and the content being available through the system. She / He is responsible for collecting appropriate material, evaluating and rating the selected content and making it available through the platform. Platform managers are responsible for managed and validated content but possibly also the user generated content as well as for monitoring the debates and ensuring that anything is in line with the terms of usage and the general rules applied to the platform.

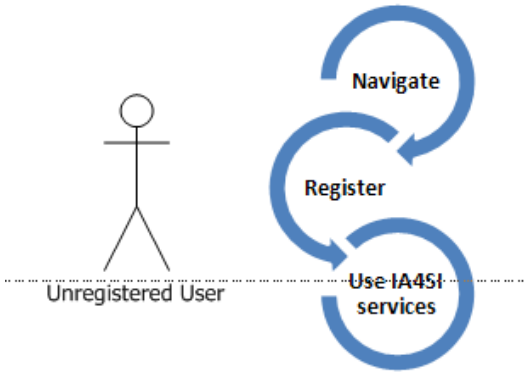
2.2.1 User Roles

Each of the aforementioned actors is able to perform various actions, relevant to the usage of the Impact4you platform. The main actions, following a technical perspective, are described in the following subsections.

Unregistered User

- Navigate through the web interface. Each user can visit any page of the Platform, read on-going discussions, but can also express their opinion on any statement by answering to specific questions and voting were required.
- Register to the Impact4you services. In order to take part to the platform procedures and get access to all services, a user has to fill-in an appropriate form, after agreement to terms and conditions and obtains an Impact4you account. The user can be registered with any name (login), but has to provide a valid e-Mail address, as account activation and e-Mail verification are used during the registration process.

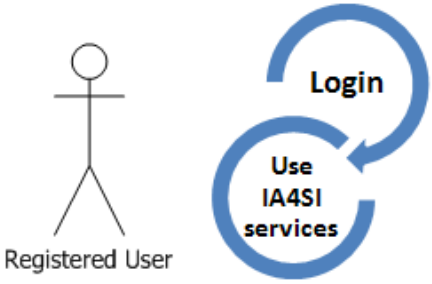
Figure 2: Unregistered User



Registered User

- Login to the system. Using the acquired account details (username and password), each registered user can login to the platform.
- Use the Impact4you services. Each user, after logging in, can take part in on-going discussions in the forum, can visit any page of the platform, read on-going discussion and possible post a comment to a topic of his/her interest.

Figure 3: Registered User

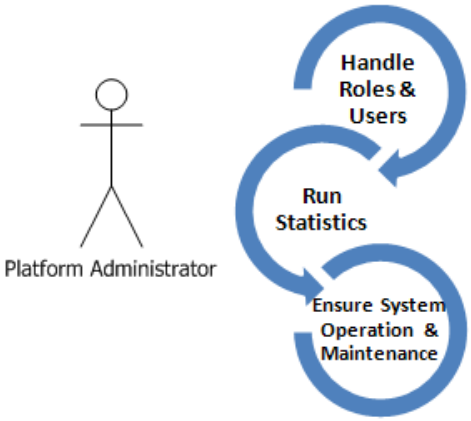


Note: The registration to the platform will be of benefit for the user as users will be kept informed about any evolution regarding the project.

Platform Administrator

- Handle roles. The administrator is responsible for applying any rules to each user group specified above and assign security levels and permissions to them.
- Handle users. The administrator should perform any actions in order to handle user account, such as assigning advanced users to roles (unregistered users are registered through the specified procedure), deleting user accounts for which malicious behaviour has been detected, and so forth.
- Run statistics, i.e. monitor the traffic passing through the networks of the specific Impact4you instance, manage the user accounts within it and keep the number at the status of on-going discussions, views and any other parameter that aids the system observation as well as the project evaluation purposes.
- Ensure proper system operation and maintenance. The administrator is responsible for the applications setup, error handling, hardware and software monitoring, availability of the system, security assurance, etc.

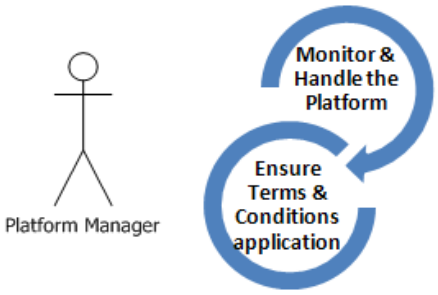
Figure 4: Platform Administrator



Platform Manager

- Collect appropriate material. The platform managers have to search and identify new material that could be relevant to any discussion. This material can be legal info, news and any other content belonging to managed or validated content of the system.
- Make content available, i.e. perform the appropriate actions to upload the actual content in the system, or making it available from external sources through the suitable URL.
- Validate content from trusted sources, i.e. check new appropriate content in external sources (e.g. sites) and include it as validated and suitable for the project purposes.
- Transfer content from one category to another, i.e. either identify content from legal or domain specialists and transfer it to the validated content, or store external validated content inside the system in the managed content domain.
- Manage the content available through Impact4you. This action includes any additional tasks surrounding the aforementioned activities, such as identifying new trusted sources or handling updates and versions of material.

Figure 5: Platform Manager



2.3 Self- Assessment Toolkit User Groups

The potential set of actors of the Self Assessment Toolkit is presented in the Table 2 below:

Table 2: Self -Assessment Toolkit User Groups

Actor	Description
IA4SI researchers	The IA4SI consortium will use the tool for gathering and analyzing data from CAPS projects and their users and also for improving the methodology thanks to the feedback from the final users.
CAPS Project Coordinator	She/he will fill in the main data in the toolkit.
CAPS Project Partner	Is involved to gather partner specific information
CAPS users	The users will evaluate CAPS project outputs
System Administrator	The system administrator will enable or disable user accounts

2.4 Requirements Description

The requirements of the IA4SI tools can be divided into functional and non-functional ones:

- ✓ The functional requirements refer to the tools main operation, capabilities and services provision.
- ✓ The non-functional requirements refer to secondary (but necessary) demands for the tools proper operation, apart from its main functionality.

2.4.1 Functional Requirements

The functional requirements can be clustered into the following categories:

- ✓ Operational Requirements, referring to the basic operation characteristics of the tools i.e. their functionalities and services to be offered.
- ✓ Storage Requirements, dealing with any issues related to the storage of any data and information related to the tools.

Based on these categories, the rest of this section is dedicated to the definition of the functional requirements of the tools. For every requirement, the following information is provided:

- The incremental requirement ID
- The respective requirement title
- Short description of the requirement

Table 3: Functional Requirements

ID	Category	Description
Impact4you platform		
F1	Operational Requirements	All users of the system are authorized; they don't have to perform a login procedure to be able to do any action – login is necessary for the forum. Moreover they can update their personal info or change password.
F2	Operational Requirements	Users should be able to register in the platform also by using their Facebook or Twitter accounts
F3	Operational Requirements	Provide the user access to the other 2 tools (Self-Assessment toolkit & User data gathering interface) – using links.
F4	Operational Requirements	eVoting functionality - vote the projects' outputs and discuss these with and about the projects. Also the user should be able to i. Invite his/her friends to vote ii. Share his/her votes to social networks Users will be able to answer specific questions.
F5	Operational Requirements	Provide access to the CAP projects and & their platforms/outputs.
F6	Operational Requirements	Calendar -> displaying the events of Impact4you and+ CAP projects
F7	Operational Requirements	Users will be able to provide their comments regarding the platform – ticketing functionality
F8	Operational Requirements	Forum functionality -> communicate with each other
F9	Operational Requirements	Allow users to share files, video, Word docs, etc.
F10	Operational Requirements	Present the results (statistics of each question, summarized forum, discussions and all evaluated material) and disseminate them through social networks
F11	Operational Requirements	Connect with successful social innovation initiatives and associations
F12	Operational Requirements	People will be able to browse/search: news; people; events; documents
F13	Operational Requirements	The platform should provide relevant usage statistics (i.e. Google Analytics)
F14	Operational Requirements	Unregistered users be able to see all content
F15	Operational Requirements	Users will be able to provide comments per each issue
F16	Operational Requirements	Administration Services The platform will allow the administrators to perform all relevant actions such as assigning roles (creating user groups and user rights) and managing the platform from the technical perspective.
F17	Operational Requirements	Project's website will be available through the platform

F18	Operational Requirements	Platform will provide a private section for CAPS projects
F19	Storage Requirements	The platform will be able to consolidate and process users' data and create various statistics requested for evaluation purposes.
F20	Storage Requirements	Content Categories The platform will store the following information: ▪ User contributions such as opinions, posts, etc. ▪ Platform relevant documentation ▪ Questionnaire for evaluation purposes
Self-Assessment Toolkit		
F21	Operational Requirements	The SAT should handle authentication and user profiling (Project Coordinator, Project Partner).
F22	Operational Requirements	The system must present different interfaces for data acquisition (according to the user profile).
F23	Operational Requirements	The tool shall provide a dedicated interface for collecting CAPS users information
F24	Operational Requirements	The tool must allow the visualization of the progress of the compilation of data.
F25	Operational Requirements	The tool must allow the display of the user's personal profile.
F26	Operational Requirements	The tool must provide a password recovery
F27	Operational Requirements	The tool must give the possibility, once the data collection is ended, to carry out the self-assessment.
F28	Operational Requirements	The tool must allow the historicizing of the acquired information and the assessments of the data provided.
F29	Operational Requirements	The tool must allow the visualization of data with overviews and details of the variables included in the assessment.
F30	Operational Requirements	The tool must include comparisons with benchmark systems.
F31	Operational Requirements	The tool must provide an historic overview of the results of the projects in order to analyze and/or monitor the project over time.
F32	Operational Requirements	The tool shall allow the project coordinator to define pools of users and gather data filled in by their users in order to analyze the perceived efficiency of the project in different time frame.
F33	Operational Requirements	The tool must allow users to enter project information for user profiling based on statistics and information on the use of project's outputs.
F34	Operational Requirements	The tool should provide analysis of the data provided.

2.4.2 Non-Functional Requirements

The following sections describe aspects that characterize the tools and affect the technical design. It refers to various parameters of the tools (known as non-functional requirements)

that must also be met - apart from the functional requirements - in order to enable IA4SI tools to provide the appropriate technology means to support the various Users.

The IA4SI tools should satisfy a set of non-functional requirements, which will ensure the normal operation of the tools and the provision of a proper environment. The non-functional requirements are depicted on the following Table 4.

Table 4:Non-Functional Requirements (Impact4you platform)

ID	Category	Description
Impact4you platform		
NF1	Portability	The developed modules should target to be adapted to multiple end user devices, thus the relevant technologies to be as device agnostic as possible.
NF2	Performance	This requirement has to do with Quality of Service (QoS) characteristics, such as bandwidth availability for data transmissions (download / upload a file). It also concerns to the response time required for performing operations offered by the platform and the subsequent delay imposed to the end users. Platform will ensure acceptable values for these factors for the time periods where the system is fully available. Although the platform will be delivered in a form of a prototype and not a complete product, all necessary provisions will be taken, so that it will be possible for the prototype to evolve in production system of good performance.
NF3	Scalability/ Expandability	Platform will be able to scale and expand in order to handle more traffic (i.e. large number of user requests). Moreover, it will effectively deal with increases in the volume of the stored items. A dramatic increase in the number of users or content will have minimal impact on the system's performance.
NF4	Availability	The system's availability is considered in terms of running time for the whole platform but also per component. Platform will ensure that authorized users have always access to data and associated assets with over 99% reliability. This requirement will be fulfilled through stability in the presence of failures and through error handling in a sensible way. This requirement concerns all systems, tools and services in the architecture. Although the Platform will be delivered in a form of a prototype and not a complete product, all necessary provisions will be taken, so that it will be possible for the prototype to evolve in a high availability production system.
NF5	Usability	Platform will provide a user friendly and attractive interface to its users for accessing the content provided, but also for using the Services. The platform user interface will be user friendly and attractive and provide easy access to all services, user manual etc.
NF6	Responsiveness	This requirement has to do with the response time required for performing the operations allowed by the system, typically analyzing, searching and retrieving content, and the subsequent delay imposed to the end users for experiencing services. All transactions performed among the system components and the target system roles should be of acceptable quality, which should be validated mainly through user-centric assessment and observation. Typical values for search and retrieval phase should range from 10-20 ms for a content set of the order of hundreds items.
NF7	Maintenance	Administration, maintenance and technical support for the

ID	Category	Description
Impact4you platform		
		platform will be provided at least during the project lifetime. Appropriate, authorized people (mainly from ATC) will be selected among the consortium and will provide any operation maintenance features either on site or by remote access. Moreover, if a service or component version has been upgraded; the old version of the service / component must be available for some time in order for the IT personnel to upgrade the software to use the new version. Finally, ease of deployment will ensure simple update of any module without significant impact on the general system.
NF8	Security	The platform will ensure safeguarding the accuracy and completeness of data and the prevention of unauthorized entities to access and modify services and data. Access to the critical system provided services and data will be limited to authorized users, by creating and enforcing the proper access control policies.
NF9	Content Management	The following content types will be used for the platform documentation: - Text - Videos - Photos - Internet Links**,** urls
NF10	Moderation/Forum	Moderation: Any interaction which results to visible user generated data will be accompanied with an appropriately selected moderation procedure, in order to ensure the normal and smooth operation of the system and the application of the terms of usage. The moderation type will be the following: Post-moderation: Each registered user can provide any data (comments, opinion, other content) and the info becomes online available immediately. But, the platform managers monitoring the discussion can delete it if they decide that it is inappropriate for any reason. This approach is more user-friendly, but undesirable posts can be visible even for a short time of period.

ID	Category	Description
Self- Assessment Toolkit		
NF1	Usability	- To develop graphic and interaction elements for an easy to use interface - To use interaction tools and methodologies for enabling the understanding of the system, also for future usages - To create simple interfaces, with few contents - To clearly show the actions that the user can perform within the interface - To offer browsing activities that help the user to understand where he is and which operations he can perform - To use colors showing a clear identity of the product - To use colors easy to be distinguished - To use clear labeling and icons - To create tools to merge similar tools related to the same category - To combine under the same category similar functionalities - To divide the different sections on the base of the different elements related to all the actions - To enable the progressive analysis of contents - To give feedback on the actions developed - To use easy icons - To support the user during the interaction with the system - To offer to the user specific functionalities on the base of their own characteristics - To offer research tools easy to use - To easily identify the users - To use graphics that supports the user to understand and identify data in the reports.

Table 5:Non-Functional Requirements (SAT)

2.5 Overview of Impact4you platform & SAT Use Cases

A description of the use case view is provided in this section. It mainly describes the set of the use cases that represent some significant, central functionality of the Impact4you platform as well as the Self-Assessment Toolkit.

2.5.1 Main Use Cases per Actor for the Impact4you platform

The use cases that the Impact4you platform will perform are identified in the following table.

Table 6: Use Cases of the Impact4you platform

ID	Actor	Use Case Title	Use Case Description
UC1	EU Citizen, CAPS project Coordinator, CAPS project users	Perform Registration and Authentication	All users will be presented with login functionality. Also, the will have the option to use their social account in order to get registered.
UC2	EU Citizen, CAPS project Coordinator, CAPS project users	Vote CAPS project outputs	All users will be presented with a list of questions.

ID	Actor	Use Case Title	Use Case Description
UC3	EU Citizen, CAPS project Coordinator, CAPS project users	View voting results and number of voters	All users will be presented with the voting results per output as well as the overall number of the people voted so far.
UC4	EU Citizen, CAPS project Coordinator, CAPS project users	Share vote with my friends in Social Media	All users will be presented with a list of Social media through which users can share their votes in social media.
UC5	EU Citizen, CAPS project Coordinator, CAPS project users	View search results	All users may navigate within the search results.
UC6	EU Citizen, CAPS project Coordinator, CAPS project users	View news and blogs	All users will be presented with an overview of the most important news, articles and posts.
UC7	EU Citizen, CAPS project Coordinator, CAPS project users	View discussions in the Forum	All users can view the list of discussions provided in the Forum.
UC8	EU Citizen, CAPS project Coordinator, CAPS project users	Post a comment in the Forum	Registered users will be presented with a list of topics in order to post a comment.
UC9	EU Citizen, CAPS project Coordinator, CAPS project users	View information about Collective Awareness Platforms for Sustainability and Social Innovation.	All users will be presented with the information regarding CAPS project.
UC10	EU Citizen, CAPS project Coordinator, CAPS project users	Provide comment regarding the platform	All users will be presented with Feedback functionality.
UC11	EU Citizen, CAPS project Coordinator, CAPS project users	View map of users	All users will be presented with a map displaying the number of users voted so far and their origin.
UC12	EU Citizen, CAPS project Coordinator, CAPS project users	View Information about IA4SI	All users will be presented with information about IA4SI project, its main aim and objectives.

2.5.2 Main Use Cases per Actor for the Self-Assessment Toolkit

The use cases that the SAT toolkit will perform are identified in the following table.

Table 7: Use Cases of the Self-Assessment Toolkit

ID	Actor	Use Case Title	Use Case Description
UC1	Project/Project Coordinator	Registration of a new project to the toolkit	The coordinator of a project who wants to register to the toolkit must fill in a form by indicating: • Name • Surname • Company • Name of the project • E-mail • Password • Confirm password This request will generate a registration that will be validated by the System Administrator.
UC2	System Administrator	Enabling the access of a project/user to the toolkit	The System administrator after having formally checked the information inserted during the registration of the project (match with the information provided by the EU Commission) gives the project coordinator access to the toolkit.
UC3	Project/Project Coordinator	Collection of data of the project	The coordinator of the project, by using a guided interface, fills in the data related to his project. The information will be organized in areas and sub-areas. There will be four main areas: • General Information • Socio/Politic Impacts • Economic Impacts • Environmental Impacts General Information questions are mandatory. The actor can choose if/which ones of the other three areas of impact are relevant to the project or not. The system will show to the actor only the questions related to these impact areas selected.
UC4	Project/Project Coordinator	Definition of the consortium and categories of users	During the definition of the consortium, the project coordinator can indicate the name, surname and email of the responsible of each partner, this information will be sent to the System Administrator that will enable each actor to access the toolkit.
UC5	Project / Project Partner	Populating the data of the individual partners	Once the System Administrator enabled the individual partners, they have access to the platform and can fill in their relevant data. The partners will use two different sections: one for collecting information through a wizard-interface and a second for visualizing the information inserted by the project coordinator.
UC6	Project / Project Coordinator	Checking the progress on partners data collection	In a separate section, the Project Coordinator will be able to monitor the progress of the data collection, also of individual partners; through a special button s/he can ask them to complete the data collection. This button will send a reminder by email to the selected partners.

ID	Actor	Use Case Title	Use Case Description
UC7	Project / Project Coordinator	Assessment of the project	Once the collection of data has ended - and after checking that the information of the partners is completed -, the project coordinator will carry out the assessment of the project. This process will develop new detailed reports and will be repeated during the progress of the project.
UC8	Project / Project Coordinator	Definition of pool of user responses	The project coordinator, once carried out the assessment, will be able to create new pool of user responses for the data collection. This procedure is optional; it will require the following information: • Pool Name: a unique name for the pool • Pool Description: a brief description helping the coordinator to identify the purpose of user data collection, such as changes to the design phase, or the introduction of a new output, etc. Once the coordinator of the project has created the pool of users, s/he will distribute the link to fill in data.
UC9	Project Users	Data Collection users	Users accessing the interface will insert information about the project/output/service
UC10	Project Coordinator	Visualization of the Report	The coordinator by accessing the report section can see the following different reports: • General overview of the latest report • Details of the latest report • Comparison of one's personal assessment over time For the comparison of assessments over time, the project coordinator can select the timeframe and/or the assessment to be used.

3. Impact4you Platform architecture

3.1 Initial Considerations

In order to derive the architectural design of the Impact4you platform, a number of available software design methodologies, tools and technologies have been examined, even from the initial stages. All of them expose specific benefits and drawbacks and target to different level of detail for the design and specification of the appropriate architecture to guide the software development.

For the IA4SI project sake, a prototyping methodology has been selected and adopted. The reason for doing this is to follow an almost parallel process between requirements gathering and developing the Impact4you platform, which will enable the partners' to actively participate in the specification of use cases and the evaluation of the system developments and provide valuable feedback in an iterative way. Furthermore, rapid prototyping will enable the releasing of platform prototypes to the market in a rather short timeframe allowing to draw in the target users, before the technologies conveyed become obsolete and have little or no acceptance to the market.

In addition to the functionality, the tools and technologies adoption was based on the following critical factors:

- Using open source technologies in order to avoid possible interaction and interconnection problems as well as to offer the possibility to easily replace functions or even modules without important impact on the whole platform operation.
- Design of a web based platform which ensures non-functional requirements (e.g. security and privacy, dynamic and easy scalability as well as usability and easy of use).
- Take into account the technical partners' experience and know-how

Therefore, following the above criteria, the most appropriate technology chosen by Impact4you platform was the Drupal framework.

3.2 Drupal Technology

As mentioned previously, the Impact4you web based platform will be implemented using a pre-existing solution that incorporates many useful features, the Drupal framework. Drupal is a free software package that allows you to easily organize, manage and publish your content, with an endless variety of customization. It is free, there are no licensing fees or per registered user fees associated with it. In addition, the code to the application is open and available to all. Through an intuitive, menu-driven interface, Drupal can be used to easily create new sites or web applications with extended functionality and features:

- Versatile - Drupal is an open source web application framework ideal for creating, deploying and managing interactive web, intranet and extranet sites
- Easy to Use - Drupal is designed to make it easy for administrators, content editors, developers, and designers to manage all aspects of their web assets. Wizards, content sensitive help, and a well-researched user interface provide a smooth user experience.
- Feature-rich - Drupal comes loaded with a set of built-in features that provide exceptional functionality. Web design, content management, security, and membership options are all easily managed and customized through simple, browser-based tools.
- Scalable - Drupal has proven itself repeatedly in the field on sites with over a million pages, and at over 20,000 requests per second. Its core installation handles over 99

percent of use cases, while free optimization tools and a large base of Drupal-trained administrators address the other one percent.

- Secure - Drupal is used by thousands of high profile web sites and is subject to rigorous security testing both by the Drupal community and by security experts around the world. Drupal's core code has been proven to prevent common security vulnerabilities such as those defined by the Open Web Application Security Project (OWASP).

3.3 Impact4you platform Architecture

The architecture of the Impact4you platform will follow the 5-layers structuring the information flow of Drupal depicted in the following schema:

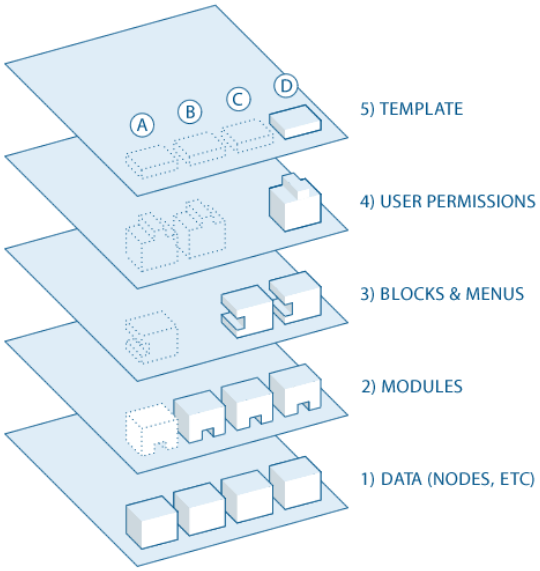


Figure 6: Drupal Flow

A brief description of the 5 layers is presented below:

- The collection of nodes—the data pool is at the base of the system. Before anything can be displayed on the site, it must be input as data.
- The next layer up is where modules live. Modules are functional plugins that are either part of the Drupal core (they ship with Drupal) or they are contributed items that have been created by members of the Drupal community. Modules build on Drupal's core functionality, allowing the customization of the data items (fields) on node types, setting up a forum, programmatically sorting and display of content (custom output controlled by user-defined filter) and more.
- At the next layer, we find blocks and menus. Blocks often provide the output from a module or can be created to display whatever we want, and then can be placed in various spots in the template (theme) layout. Blocks can be configured to output in various ways, as well as only showing on certain defined pages, or only for certain defined users. Menus are navigators in Drupal, which define the content coming on each defined menu path (relative url). Menus are a core element of Drupal which provides access to all the pages created in Drupal.
- The next layer includes the user permissions. This is where settings are configured to determine what different kinds of users are allowed to do and see. Permissions are

defined for various roles, and in turn, users are assigned to these roles in order to grant them the defined permissions.

- On the top layer, we have the site theme (the "skin"). This is made up predominantly of XHTML and CSS, with some PHP variables intermixed, so Drupal-generated content can go in the appropriate spots. Also included with each theme is a set of functions that can be used to override standard functions in the modules in order to provide complete control over how the modules generate their markup at output time. Templates can also be assigned on-the-fly based on user permissions.

The Impact4you platform will be developed based on the functionalities and facilities available in all these 5 layers. The design of the portal will provide an eye-pleasing and easy to use GUI to the user, in order to help him/her exploit the functionalities that will be offered by the impact4you platform. This design will follow the principles of Drupal themes and will be completely compatible with all the elements of the platform. Moreover, the Access Control Management needs identified by the user requirements will be implemented using the permissions of Drupal.

Menus, modules and custom nodes (content types) will be specifically created and configured in order to realize the platform's functionalities. Extensive use of core modules will help the development of standard portal capabilities such as commenting, webpage authoring, content ordering etc., whereas community contributed modules or event custom ones will be used wherever specific functionalities are required.

3.4 Overview of the Impact4you Platform

The IA4SI consortium has reserved the following URL which will be used by all users for accessing the Impact4you platform http://www.impact4you.eu.

The platform consists of the following main pages:

- Home
- Join CAPS Community
- Forum
- About

The Home Page

The Home page of the platform is divided in three parts:

1. On the top of the home page a user can see The "Login" option, through which the visitor is redirected to the "User Login" window appearing in the upper part of the page. If s/he has already been registered, he/she uses the fields email address and password. If not, s/he fills in the relevant data and presses the button "Register" and after the completion of this procedure an informative e-Mail is sent to the specified address and activates the user account. The question "Forgot Password?" below the password field is used for password reminder. If the user has forgotten the password, s/he has to write the username and press the "Forgot Password?". The password will be sent by e-Mail to the specified address. The user can also login to the platform by using his/her Facebook or Twitter account in the relevant icons.
2. On the middle of the home page a user can view a short description of the projects' outputs and start voting the questions of his/her interest. By clicking the "Vote Now" button the user is redirected to the internal page where he/she can vote the available questions.
3. At the bottom of the home page the user can see:
   - The "Latest News" which allow the visitor to view the latest news of the CAPS projects
   - The "Latest Tweets" which allow visitor to view the latest tweets of the IA4SI Twitter.

- The “Map of Users” which the visitor could see the number of users voted so far per country.
- General information containing “Contact Us”, “Terms of use”, “Privacy Policy”.

The CAPS Community Page

This page presents CAPS community by describing the projects’ concepts and links to the relevant webpages.

The Forum Page

In this area the user could participate in the relevant discussions.

The About Page

This page presents information about the IA4SI concept and a link to its website for more information.

3.5 Topology

3.5.1 Physical structure

The physical structure of the Impact4you platform is demonstrated in the Figure 7 below. There are two main levels of components with the lowest level containing the servers and the operating system of the platform and the highest one with the Drupal framework upon which the Impact4you platform will be built.

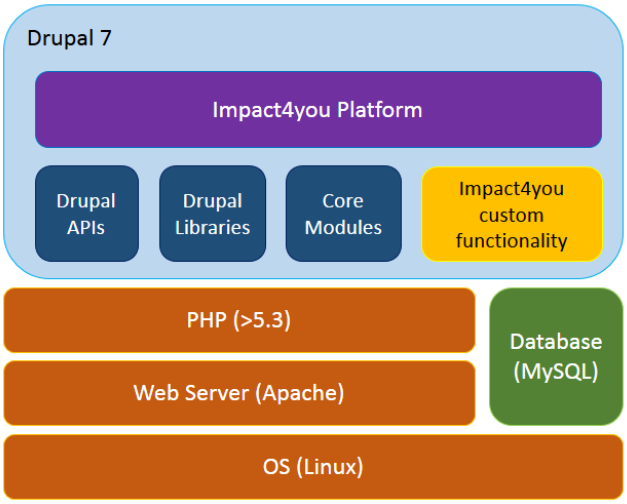


Figure 7: Physical Diagram

A database server and a web server are also included in the platform. The web server is responsible for the portal’s presentation and for the applications that run in the back-end of the portal. It is accessible through internet to all potential users, authenticated or not, depending on the services desired. It interacts with the database server in an appropriate way in order to handle, retrieve and display data to the end user. Simultaneous data access, backup and auditing without any interruption of the web interface are ensured by the use of a database management system (RDBMS).

The database server contains the actual content of the Impact4you front-end and the data needed by the rest of the modules as well. It also contains the Drupal data structure which is the base of all the other modules and functionalities.

3.5.2 Hardware Requirements

Hardware requirements for the Impact4you web based application are modest, requiring no specialized hardware. Any modern webserver will have sufficient capability to host the platform modules.

3.5.3 Client Prerequisites

Citizens will use standard PCs, typical internet connections and web browsers. There are no specific prerequisites, though a modern web browser (MS Internet Explorer, Mozilla Firefox, Google Chrome, Safari, Opera, etc.) is recommended and JavaScript must be enabled in order to use Impact4you platform. Where video content is being used then the appropriate player will need to be installed.

4. Self-Assessment Toolkit & User Data Gathering Interface

The toolkit will allow the acquisition of project information and will be available through project's website www.ia4si.eu. It will be structured to guide the users in gathering the information with simple wizard (a guided procedure). Particular attention will be given to user experience in order to make the tool as simple and intuitive as possible.

The tool will be used by project Coordinators and project partners as well. Project Coordinators will enter the information needed, and will be able to ask the specific partners (one or more) to fill-in the relevant sections. The project Coordinator will be able to view all information inserted by project partners, with the exception of specific information that can arose issues of privacy and commercial issues (for example, questions related to the business model or growth in turnover generated by the participation to the project). The project partners will insert their specific information, as requested, and will be able to see all the information of the project inserted by the project Coordinator.

The wizard interface will guide the user through the sections of information acquisition, at the end of which the user can set the parameters for the assessment and launch the project assessment.

The first two sections will constitute the focal point of the tool. In the first session the user should provide basic information about the project (project budget, start date, end date, previous experience in the domain, etc.). During the second session the user (project coordinator) should rate the relevance of the areas of impacts for the project. The project coordinator will do it by putting in order of relevance the "icons" related to the impacts.

The users can modify the information filled in these sections at any time by adding or removing output, or changing the order of importance of the impacts. This will change the results of the assessment.

The last section of the tool will show the result of the impact assessment, i.e. the expected impact of the project under analysis. The project coordinator can select the type of report that wants to create: specify parameters, such as periods to be considered and means of comparison, and generate the report. There will be two different types of reports, the temporal one, which will allow projects coordinators to make a comparison between their assessments over time, useful to look at the evolution of the project, and the intra-project one that will allow them to compare their project with other projects or with external benchmarks. During the generation phase of the latter report, users will be able to select the types of projects in order to be compared to projects:

- with similar budget
- with similar sort of impacts
- with similar stage of development (research, prototyping, product development).

The Projects' will also be able to see the results of the project user's assessment and compare their perception of project impact with the perception of their users. The assessment made by the projects' users will be based on the information gathered through the User data gathering interface tool. The self-assessment report will visualize the results of a project accordingly to all the indices and indicators considered by the IA4SI methodology.

The platform for data gathering and project assessment will consist of different web applications, with different user's grants. The framework will be based on Linux and Apache web server. The programming language used for the development of the toolkit and users' questionnaire will be PHP. The user authentication will be based on an LDAP system, in order to manage big number of users and group membership (projects and roles on the project) in an easy manner.

Data will be stored in a MySQL database system. Two different databases will be created to store users' data and projects data.

4.1 Architecture/Technology

Toolkit/platform for data gathering and project assessment, outlined and described at a high level in the previous paragraphs is shown in the figure below.

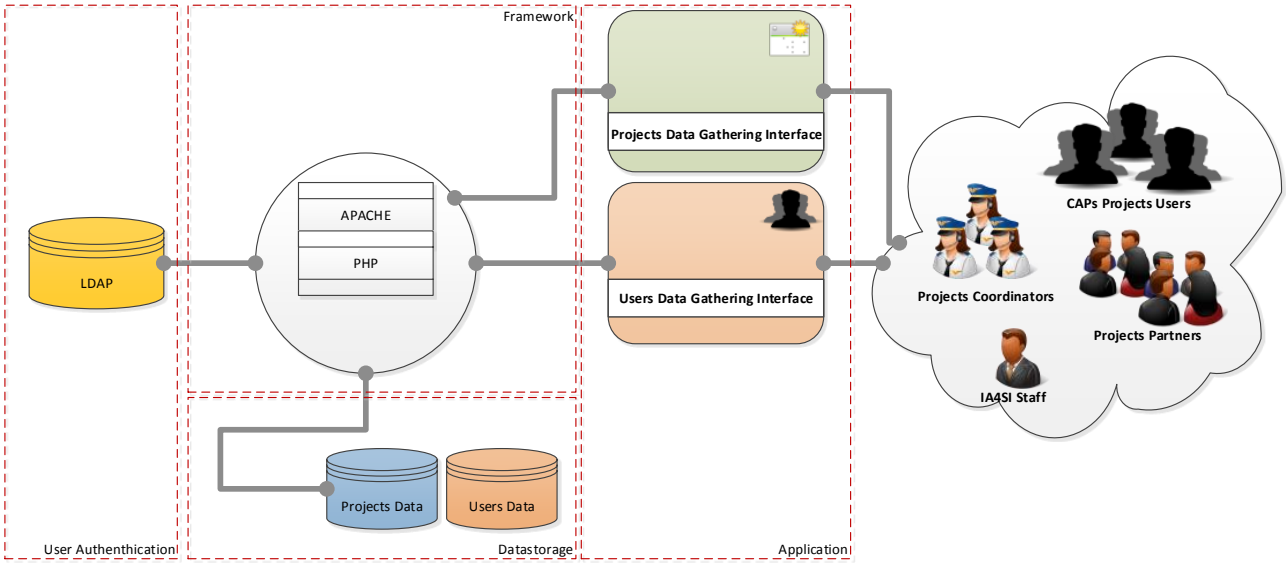


Figure 8: SAT Toolkit/Platform Architecture

It consists of different web applications, with different users grants. The framework will be based on Linux and Apache web server. The programming language used for the development of the toolkit and users questionnaire will be PHP. The user authentication will be done using LDAP system, in order to manage big number of users and group membership (projects and roles on the project) in an easy and interoperable way. Data will be stored in a MySQL database system.

4.2 Overview of the Self-Assessment Toolkit

The process of acquiring information, organised by thematic areas, described in the previous chapters, provides a strong involvement of the different actors engaged in the CAPS projects. At the project level, in many instances the detailed information of a single project activity can be owned by a single partner. A mechanism evaluation based on the projects impacts, therefore, has to provide a granularity level of the individual partners in the collection of information.

The perception of the users also has a key role in the evaluation process, as project users are considered relevant actors in the data gathering process.

The Figure below shows the various actors that will participate to the enrichment of the information about the project.

Figure 9:IA4SI actors in self-assessment

At the end of the data gathering process, the project has the opportunity to launch the assessment and to compare his results with others projects or with external benchmarks. This is an important output for the project that can give to the coordinator, and to the partners, relevant indication about the results of ongoing activities.

4.2.1 Capturing data across project lifecycle

A research project is constituted by a stream of activities interrelated and aimed at the discovery or the production of new knowledge/technology. This will be included in a prototype and commercialized throw a marketing strategy. Research, prototyping and commercialization phases are summarized in the figure below and represent the lifecycle of a project, especially in the case of research projects (such as STREPs and IPs) These phases can bring the research to the general public and have positive impacts on citizens and society.

Being able to monitor a project in all its phases of development can be a value-added output of the project and can prevent potential issues.

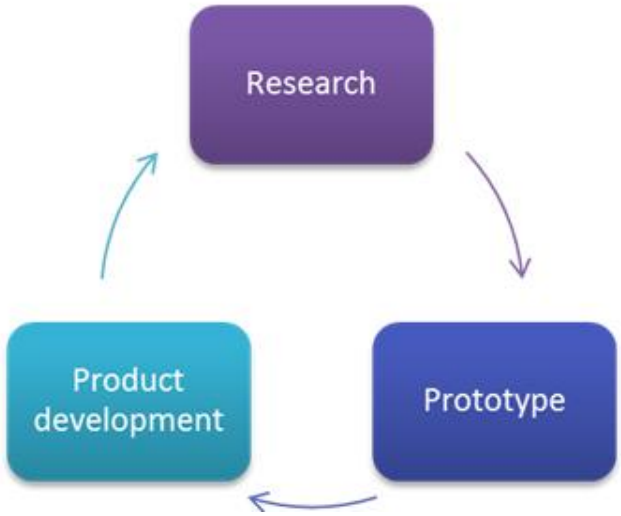


Figure 10: CAPS Projects lifecycle

It is therefore strategically important to be able to monitor the project in its early stages and provide a comparative analysis of its results or impact over time.

The data gathering tool was designed, structured and developed to support the project in all the stages of collecting data throughout its life cycle. Attention will be given to understand, analyze and represent variables relating to each phase of the project, in order to develop indices to monitor the progress of the project itself.

4.2.2 Project data snapshots

The Figure below illustrates how the use of the IA4SI toolkit over time, will allow a comparison of assessment in different timeframes. This will be important for CAPS projects in analyzing their progress across the project development phases.

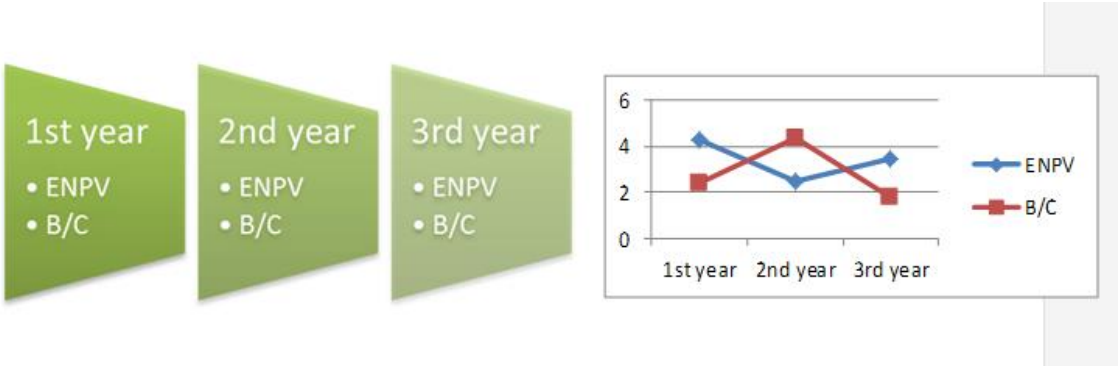


Figure 11: Project data snapshots

4.2.3 Questionnaire versus Toolkit

Starting from the needs identified in the previous paragraphs, the IA4SI team analyzed different tools and instruments to gather data from the users. The simplest choice would have been to create a questionnaire, but we understand that especially for the data collection made by the coordinator and partners, they need a more elaborate tool. For these reasons, the IA4SI team has taken into consideration to develop a toolkit, a web based application, for the data collection process.

In the table below, the pros and cons of the two solutions are reported.

Table 8: Questionnaire vs. Toolkit

	PRO	CON
Questionnaire	It is simple The user has the knowledge of the system and is accustomed to use it	Low flexibility It does not allow the delegation of the settlement of the information It does not provide different levels of access for users It does not provide a tool for real-time reporting and data analysis is generally done when the questionnaire is closed
Toolkit	Flexibility and scalability Can provide different levels of user access It allows to provide a real-time output It can be designed to allows the users to collect the information in different time frames (snapshots) on which can be made different statistics It can include a reporting system	The users will need to be trained in order to use the tool in an effective way The tool development require a considerable amount of time

During the selection process it was analyzed the user experience with complex toolkit and we decided to make it similar to a questionnaire.

For the reasons the IA4SI team has decided to adopt a very dynamic and intuitive Self-Assessment Toolkit (SAT). During the creation of the Toolkit, carefully attention will be given to the project user interface development, in order to develop a simple and continuously evolving questionnaire.

To gather information about projects users, instead, we decided to adopt a simple questionnaire, more effective even for the limited number of questions.

Since we evaluate the project at different phase of its development, in order to analyze the perceived efficiency of the users, the Toolkit will be created for freezing and saving snapshots. This feature allows the users and projects to save the data entered by users up to a certain time frame, use them in current evaluations and mark the beginning of the collection of new data when the project is changing lifecycle phase or when it reaches a new milestone.

4.2.4 Login procedures

The accessing page of the Toolkit is the login page, where each collaborating project will insert username and password provided by the IA4SI technical staff (on request). Username and password will be given firstly to the Project Coordinator, but also to one representative for each partner that has to fill in the questions specifically addressing the partners. The project coordinator will request to the technical staff to provide username and password to the partners by providing the following information:

- Name of the company/research institution
- Name of the representative
- Representative email

4.2.5 Welcome page

By entering username and password in the login page, the user is directed to the Welcome page of the Toolkit that shows the general information about the self-assessment proves. On the left of the page, there will be the sections of the Toolkit, such as Project Information, Start your assessment, Economic Impact, Socio-Political Impact, Environmental impact, Assessment and Reports.

4.2.6 How to use the sections

By clicking on a section (on the left column), the Toolkit automatically opens a drop down menu with other sub-sections. The user has to click on all the sub-sections in order to access one by one to all the questions and reply to them. For example, by clicking on the Project Information section, the Toolkit will show several sub-sections: general information, duration and maturity, consortium, collaboration with other projects, additional information about partners, main focus, stakeholders, management and monitoring. As mentioned earlier, the user is requested to rank the areas of impact in terms of relevance. By doing this, the users not only attribute a different weight to the corresponding section, but also modify the order in which the section (and the related questions will appear). In this way, if an user decide to prioritize economic impact over the impact on society, the questions related to the economic impact will appear at the beginning of the tool and the question related to impact on society will follow.

The section about the Assessment aims to gather the final information to proceed with the assessment of the project, such as the assessment type (up to date or considering the entire duration of the project). The final section of the Toolkit, named Reports shows the assessment of each project, that are then compared to other projects results or external benchmarks on a time basis, analyzing all the results obtained by the project on a specific timeframe. The information about the perceived efficiency collected through the Users Data Gathering Interface will be included in these reports.

4.3 The User Data Gathering Interface

The user data gathering tool will be an online questionnaire structured both for single users and organizations. By using this tool, project users will be requested to provide their opinion about the output/services they use and their potential impacts. This tool will gather basic information about projects' users. The IA4SI team will be able to use these data in the analysis of the domain.

CAPS projects will be able to contact their users autonomously by sending them an invitation by email and by providing a link for accessing the user data gathering tool. The information gathered by this tool will be used during the assessment of the projects and will be shown in the assessment report.

4.3.1 Hardware Requirements

Hardware requirements for the SAT and User questionnaire are modest, requiring no specialized hardware. Any modern webserver will have sufficient capability to host the SAT and the User Questionnaire.

4.3.2 Client Prerequisites

Project coordinators, partners and Users will use standard PCs, typical internet connections and web browsers. There are no specific prerequisites, though a modern web browser (MS Internet Explorer, Mozilla Firefox, Google Chrome, Safari, Opera, etc.) is recommended and JavaScript must be enabled in order to use Impact4you SAT and User Data Gathering information. Both the SAT and the User Data Gathering information will be tested and optimized for the use with tablets.

5. Conclusion

This document has presented, first, the process guiding the IA4SI project to analyse and record the system requirements in order for these to be employed in the system design process. Although this document describes a baseline of requirements, it is expected that subsequent refinements will be applied through the design and implementation phases according to a feedback loop connecting the testing with CAPS projects, their users and a dedicated testing process for the Impact4you platform by the implementation team.

This deliverable has also shown a detailed overview of all IA4SI components, as well as any relevant aspects concerning the architectural design of the system.

During the implementation process, adjustments and changes will likely be made in order to address any issues that might emerge. This version of the document, however, has provided the main guidelines for the development of the tools. The 1st version of the IA4SI tools will be available by the end of M8 (May, 2014).