



eInventory

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Observatory

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Web platform draft specifications

Abstract: Deliverable D4.2 provides the requirements and functional specifications for the **European eInfrastructures Observatory** web platform. The profiling of the targeted users, the description of cases of use, the listing of requirements and associated functional or usability specifications, and the visual renderings of the platform in a sketch-like or more detailed form, are the methods used to derive the system's specifications. These techniques, in tandem, are used to guide system design and development, including information visualisation methods and interface design.

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References

- [1] *Annex I – Description of Work*, e•nventory project, grant agreement 261554, June 2010.
- [2] *Quality assurance plan and risk assessment*, D1.1, e•nventory project, October 2010.
- [3] *Dissemination and communication plan*, D5.1, e•nventory project, December 2010.
- [4] *International observatories, repositories and indicators study*, D2.1, e•nventory project, January 2011.
- [5] *Indicators visualisation and representation modelling and techniques*, D4.1, e•nventory project, February 2011.
- [6] *First set of European eInfrastructures Observatory indicators*, D2.2, e•nventory project, March 2011.
- [7] *Advisory board initial assessment and directions*, D3.2, e•nventory project, May 2011.
- [8] A. Cockburn, *Goals and Use Cases*, Journal of Object-Oriented Programming, vol. 10, no. 7, pp. 35-40, 1997.
- [9] A. Cooper, R. Reimann, and D. Cronin, *About Face 3: The Essentials of Interaction Design*, 3rd ed. Wiley Publishing, Inc., 2007, p. 648.
- [10] C. Courage and K. Baxter, *Understanding Your Users: A practical guide to user requirements. Methods, Tools & techniques*, Morgan Kaufmann Publishers, 2005, p. 704.
- [11] K. Gomoll, E. S. Church, and E. Bond, *The Field Study Handbook; A Common Sense Approach for Discovering User Needs*, User Interface Engineering, 2007. Last retrieved at http://www.uie.com/reports/field_study_handbook/
- [12] K. Goodwin, *Designing for the Digital Age*, Wiley Publishing, Inc., 2009, p. 740.
- [13] J. T. Hackos and J. C. Redish, *User and Task Analysis for Interface Design*, John Wiley & Sons, Inc., 1998.
- [14] ISO 13407: *Human-centred design processes for interactive systems*, International Standards Organisation.
- [15] B. R. Krause, *Getting Creative With Specs: Usable Software Specifications*, 2003. Last retrieved from http://www.boxesandarrows.com/view/getting_creative_with_specs_usable_software_specifications
- [16] M. Kuniavsky, *Observing the User Experience: A Practitioner’s Guide to User Research*, Morgan Kaufmann Publishers, 2003.
- [17] M. Maguire and N. Bevan, *User requirements analysis: A review of supporting methods*, Proceedings of IFIP 17th World Computer Congress, Montreal, Canada: Kluwer Academic Publishers, 2002, pp. 133.
- [18] P. McBreen, *Using Use Cases for Requirements Capture*, 1998, p.8. Last retrieved from <http://www.mcbreen.ab.ca/papers/UseCaseNotes.pdf>
- [19] J. Preece, Y. Rogers, and H. Sharp, *Interaction Design: Beyond Human-Computer Interaction*, John Wiley & Sons, Inc., 2002, p. 519.
- [20] Wikipedia, Requirements Analysis, http://en.wikipedia.org/wiki/Requirements_analysis
- [21] C. Wodtke and A. Govella, *Information Architecture: Blueprints for the Web*, 2nd ed. New Riders Press, 2009, p. 312.

Acronyms

FS	Functional Specifications
IV	Indicators Visualiser
OM	Organisation Mapping
OT	Other Tools
RE	Requirements

Preface

The **e·nventory** project targets the formation of the **European infrastructures Observatory**, a single-entry-point and one-stop-shop data warehouse, capable of representing multiple primary and convoluted indicators and benchmarks, and a yardstick tool for progress monitoring, impact assessment, post-mortem analysis and ex-ante evaluation of infrastructures at regional and national levels across the European Union and beyond.

The aim of the **e·nventory** project is to carry out a design study that will set the grounds towards the **European infrastructures Observatory**; through the collection and utilisation of appropriate indicators, the project will be able to monitor the status quo and evolution over time of infrastructure development and communicate all findings to related stakeholders but also to the public-at-large, in a seamless and impartial way.

The **e·nventory** project will carry out extensive consultation with infrastructure stakeholders and research and innovation indicator experts and will extend previous benchmarking efforts (e.g. EARNEST) by including an extensive set of infrastructure components (i.e., computing, communication and services), eventually deploying a prototype web platform dealing with a critically-selected subset of indicators, through intuitive, interactive and user-friendly mappings, plots and graphics.

The project action plan is structured so that it can achieve:

- identification of a core set of **benchmarking indicators** for the **European infrastructures Observatory** that will be the baseline for **monitoring** infrastructure development progress,
- infrastructure **stakeholders' feedback and consensus** on the proposed structure and functionality of the **European infrastructures Observatory**, and
- **European infrastructures Observatory** functionality **demonstration through a prototype web platform** that will be available to all infrastructure communities and to the general public.

The **e·nventory** project responds to the need of infrastructure stakeholders by delivering a prototype tool to aid impact assessment of related infrastructure initiatives and programmes. In that respect, the **user communities** that will effectively use the **European infrastructures Observatory** as a yardstick tool and translate the project outputs into a real influence on infrastructure policy, are the **infrastructure stakeholders** themselves, including:

- the **European Parliament**, the **European Commission** and **National Governments** that are sponsoring infrastructure initiatives and place a high value in their policy agenda on the impact assessment, post-mortem analysis and ex-ante evaluation, to help design better and more successful future infrastructure programmes;
- **research funding bodies** that plan the development of strategies to address the digital divide and digital opportunity issues and need to utilise and assess the impact of infrastructures contributing to this goal;
- **infrastructure policy bodies** that have a clear mandate of supporting the development and the sustainability of infrastructures and need an impact assessment tool to monitor the progress of achieving their objectives;
- **infrastructure projects** that carry out specific infrastructure activities and need to monitor their impact during deployment as well as retrospectively;
- **scientific/research communities** that are empowered by infrastructures and are eager to comprehend their strengths and weaknesses that influence their everyday work.

High utilisation of the **European infrastructures Observatory** from the broad infrastructure community is a key measure of the project's impact; therefore, the entire project workplan has been designed to maximize **stakeholders' engagement** and awareness.

The **e·nventory** project kicked-off in September 2010 and is planned to be completed by August 2012. The project is co-financed by the European Commission's Seventh Framework Programme for Research Infrastructures.

Executive summary

What is the focus of this Deliverable?

The objective of WP4 is to create the necessary tool/web platform, albeit at a pilot/prototype level, through which access will be given to the **European eInfrastructures Observatory**. The portal will allow for various representation and statistical data aggregation methods, including graphs, distributions, and other visualisation means that will enable accurate and user-friendly utilisation of the **eInventory** data repository.

Deliverable D4.2 documents the requirements and draft functional specifications for the prototype implementation of the **European eInfrastructures Observatory** web platform, in other words, descriptions of what the product should do and how it should function.

What are the deliverable contents?

Deliverable D4.2 provides the requirements and functional specifications for the **European eInfrastructures Observatory** web platform. The profiling of the targeted users, the description of cases of use, the listing of requirements and associated functional or usability specifications, and the visual renderings of the platform in a sketch-like or more detailed form, are the methods used to derive the system's specifications. These techniques, in tandem, are used to guide the system design and development, including the information visualisation methods and interface design.

Chapter 1 presents the process of identifying needs and establishing requirements. Chapter 2 defines the users and the use cases. Chapter 3 outlines the requirements and functional specifications that were derived from this process. Chapter 4 presents the low-fidelity and high-fidelity design prototypes that were created as a result of the requirements and specifications.

This specification document should be considered as a “living document”: it will be updated, as the project proceeds, with details added on the structure, architecture and use cases.

What are the deliverable main conclusions?

The definition of requirements is concerned with determining what the platform should do; these requirements may relate to function, appearance, performance, etc. Successful systems and products begin with an understanding of the needs of the users.

Hence, to arrive at these requirements, the characteristics of the target users were described, through the definition of use cases for two target groups: policymakers (eInfrastructure “enablers”) and researchers (eInfrastructure “users”). These use cases, which describe how the user and the system will interact, are condensed and abstracted into listings of requirements and associated functional or usability specifications.

Additionally, visual renderings of the platform in a sketch-like (low fidelity) and more detailed form (high fidelity) are used to illustrate the look and structure of the interface as well as the flow, behaviour and organisation of the interaction with the platform.

Acting in conjunction, these techniques aim to construct a complete picture of the platform, serving the purpose of eliciting feedback and ensuring that all the stakeholders involved have a common understanding of the system under development.

As the design of any interactive tool is an iterative and evolving process, through repeated design-evaluation-redesign cycles, the definition of requirements and functional specifications does not end here. The final set of specifications for the prototype web platform dealing with a critically-selected subset of indicators and relevant repositories, its functionality, the results of the usability and accessibility tests, and the final user's guide will be presented in a follow-up deliverable (D4.3), due in project month 20.

How does this deliverable contribute to the project quality metrics?

This deliverable sets the ground for achieving the following project quality metrics:

- *At least 2 use cases supported by the prototype web platform, i.e. at least 2 different user-group needs addressed through the interactive visualisation of indicators developed.*

How does this deliverable contribute to the avoidance/mitigation/exploitation of the project risks?

This deliverable contributes to the avoidance, mitigation or exploitation of the following project risks:

- *Project high-level objectives not clear and/or agreed within the consortium;*
- *Not accomplishing effective interactive web visualisation of the information space;*
- *The on-line interactive visualisation tool not being user-friendly enough.*

What is next in the process to deliver the e•nventory results?

- Deliverable D5.2 (M12) will report (mid-project) on the implementation of dissemination and outreach activities, including assessment of their impact on the targeted eInfrastructure groups.
- Deliverable D5.3 (M14) will present an update of the dissemination plans for the project as well as a potential revision of the project communication package.
- Deliverable D3.3 (M15) will document, after concluding the entire consultation process, with the **European eInfrastructures Observatory Advisory Board**, the final reflections that will serve as a key milestone and final input for the e•nventory workplan.
- Deliverable D2.3 (M16) will provide the final set of the **European eInfrastructures Observatory** benchmarking indicators after the finalization of consultation activities in WP3.
- Deliverable D4.3 (M20) is the continuation of this document as it will include the final set of specifications for the prototype web platform dealing with a critically-selected subset of indicators and relevant repositories, its functionality and the user's guide. It will further include the results of the usability and accessibility tests that will be conducted with the platform. This deliverable will also serve as a technical reference for any follow-up (production-level) version of the portal after the completion of the project.
- Deliverable D5.4 (M23) will take the form of an inauguration workshop that will demonstrate the **European eInfrastructures Observatory** to representatives of the eInfrastructures community at large.
- Deliverable D5.5 (M24) will provide a final report on the implementation of dissemination and outreach activities, including assessment of their impact on the targeted eInfrastructure groups.