



e·nventory

The European
eInfrastructures
Observatory
www.enventory.eu

Seventh Framework Programme
Research Infrastructures
e·nventory - European e-Infrastructures Observatory
Grant Agreement no. RI-261554

Deliverable D4.3 Prototype web platform

Abstract: Deliverable D4.3 provides the final set of requirements, functional specifications and user guide for the **European e-Infrastructures Observatory** web platform. It also includes the results of the formative usability and accessibility tests that were conducted with the web platform. This deliverable also serves as a technical reference for any follow-up (production-level) version of the portal after the completion of the project.

© Copyright by the e·nventory consortium



Authors:

Maria Roussou
Katerina El Raheb
Dimitris Nastos
Dimitra Keramida
Antonis Lebesis
Yannis Ioannidis
Nektaria Berikou
Nikos Vogiatzis
Jorge-A. Sanchez-P.

Status – Version:

Final - 2.0

Date:

May 30, 2011

Distribution - Type:

Public

Document revision history

Date	Issue	Author/Editor/Contributor	Summary of main changes/Status
November 30, 2011	1.0	M. Roussou	ToC for approval
January 27, 2012	1.1	M. Roussou, D. Nastos	Added updated user guide
February 10, 2012	1.2	M. Roussou	Added description of formative usability evaluation
February 22, 2012	1.3	Katerina El Raheb	Added draft usability evaluation report & resulting requirements
March 2, 2012	1.4	M. Roussou	Added description of formative usability evaluation
April 10, 2012	1.5	M. Roussou	Refined the evaluation study analysis section and corrected numbering in the user requirements and specifications tables.
April 28, 2012	1.6	M. Roussou	Overall editing of all sections. Updated user guide.
May 18, 2012	1.7	J-A. Sanchez-P., N. Vogiatzis, N. Berikou, M. Roussou, D. Nastos	Approval of deliverable contents at consortium meeting #46
May 20, 2012	1.8	J-A. Sanchez-P.	Refined Executive Summary & Chapter 1. Re-sequenced the services. Reviewed the final requirements and specs. Overall editorial changes.
May 27, 2012	1.9	M. Roussou	Added examples of instruments used for usability evaluation (questionnaires), and cross-browser compatibility table. Further updating of the user guide.
May 30, 2012	2.0	J.-A. Sanchez-P.	Final version submitted to EC

Copyright © e•nventory consortium, 2010-2012

e•nventory is a project co-funded by the European Commission as a Coordination and Support Action within the 7th Framework Programme – Research Infrastructures. For more information on e•nventory, its partners and contributors please see www.enventory.eu

This document contains material, which is the copyright of certain e•nventory consortium members and the EC, and may not be reproduced or copied without permission, except as mandated by the European Commission Grant Agreement no RI-261554 for reviewing and dissemination purposes.

The information contained in this document is provided by the copyright holders "as is" and any express or implied warranties, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose are disclaimed. In no event shall the members of the e•nventory collaboration, including the copyright holders, or the European Commission be liable for any direct, indirect, incidental, special, exemplary, or consequential damages (including, but not limited to, procurement of substitute goods or services; loss of use, data, or profits; or business interruption) however caused and on any theory of liability, whether in contract, strict liability, or tort (including negligence or otherwise) arising in any way out of the use of the information contained in this document, even if advised of the possibility of such damage.

Table of contents

Document revision history	2
Table of contents	3
List of figures	4
List of tables	5
References	5
Acronyms	5
Preface	6
Executive summary	7
1. The European e-Infrastructures Observatory services	8
2. Usability evaluation	10
2.1. Evaluation methodology	10
2.2. Evaluation implementation	11
2.2.1. Usability evaluation design	11
2.2.2. Introduction to the interviewees.....	13
2.2.3. Performing the Tasks.....	14
2.2.4. Interviewing and debriefing	14
2.2.5. Analysing the data.....	15
3. Official change requests	23
3.1. Change requests from the usability evaluation.....	23
3.1.1. Change requests for the Home Page.....	23
3.1.2. Change requests for the Stakeholders Mapping Service.....	23
3.1.3. Change requests for the Pan-European Networks Service	23
3.1.4. Change requests for the Chronology Service	23
3.1.5. Change requests for the Indicators on Maps Service.....	24
3.1.6. Change requests for the Trends Service.....	24
3.1.7. Change requests for the Treemaps Service.....	24
3.1.8. Change requests for the Build Your Own Index Service.....	24
3.2. Change requests from the consultations	24
4. Final requirements and functional specifications	25
4.1. Requirements/Specifications of the Stakeholders Mapping Service	25
4.2. Requirements/Specifications of the Pan-European Networks Service	27
4.3. Requirements/Specifications related to Chronology	28
4.4. Requirements/Specifications related to Indicators on Maps	30
4.5. Requirements/Specifications related to Trends	33
4.6. Requirements/Specifications related to Treemaps	36
4.7. Requirements/Specifications related to Build Your Own Index.....	37
4.8. General Requirements/Specifications	39
4.9. Cross-browser compatibility	40
5. European e-Infrastructures Observatory User Guide	41
5.1. Services on the European e-Infrastructures Observatory	41
5.1.1. Stakeholders Mapping Service	41
5.1.2. Pan-European Networks Service.....	43
5.1.3. Chronology Service.....	45
5.1.4. Indicators on Maps Service	46
5.1.5. Trends Service	52
5.1.6. Treemaps Service	56
5.1.7. Build Your Own Index Service.....	57

List of figures

Figure 1: The initial European e-Infrastructures Observatory services homepage (1 st level)	8
Figure 2: The initial European e-Infrastructures Observatory services homepage (2 nd level)	8
Figure 3: The interviewer form for the usability evaluation	12
Figure 4: Usability evaluation in action	13
Figure 5: The usability evaluation questionnaire	14
Figure 6: The Organisation Mapping service UI during the usability evaluation	16
Figure 7: The Communities Mapping service UI during the usability evaluation	17
Figure 8: The Chronology service UI during the usability evaluation	18
Figure 9: The Indicators on Maps service UI during the usability evaluation	19
Figure 10: The Trends (time series graph) service UI during the usability evaluation	20
Figure 11: The Trends (column chart) service UI during the usability evaluation	20
Figure 12: The Trends (bar chart) service UI during the usability evaluation	20
Figure 13: The Trends (scatter plot) service UI during the usability evaluation	20
Figure 14: The Trends (scatter plot) service UI during the usability evaluation	21
Figure 15: The BYOI service UI during the usability evaluation	22
Figure 16: The new e-Inventory homepage	41
Figure 17-Standard menu of e-Inventory webpage	41
Figure 18: Stakeholders Mapping service	42
Figure 19: Stakeholders Mapping Types of e-Infrastructures	42
Figure 20: Stakeholders Mapping Regions and Countries	43
Figure 21: Pan-European Networks Service	43
Figure 22: Pan-European Networks Community Option	44
Figure 23: Pan European Networks Time Slider	44
Figure 24: Chronology Service	45
Figure 25: Chronology Service Details	45
Figure 26: Chronology Service Zoom in	46
Figure 27: Indicators on Maps service (default indicator at start-up: NREN typical backbone capacity)	46
Figure 28: Indicators on Maps service (selection of another indicator, e.g. Number of Researchers)	47
Figure 29: Indicators on Maps service (selection of countries)	47
Figure 30: Indicators on Maps service (selection of a different year)	48
Figure 31: Indicators on Maps service (mouse over a country)	48
Figure 32: Indicators on Maps service (selection of a different sequential colour scheme)	49
Figure 33: Indicators on Maps service (selection of a diverging colour scheme)	49
Figure 34: Indicators on Maps service (selection of the number of colour classes)	50
Figure 35: Indicators on Maps service (adjustment of the data ranges of the legend)	50
Figure 36: Indicators on Maps service (Data in tabular form)	51
Figure 37: Trends service (default indicator at start-up: NREN typical backbone capacity)	52
Figure 38: Trends service (selection of another indicator, e.g. Internet Users)	52
Figure 39: Trends service (selection of countries)	53
Figure 40: Trends service (horizontal bar chart)	53
Figure 41: Trends service (vertical bar chart)	54
Figure 42: Trends service (scatter plot)	54
Figure 43: Trends service (scatter plot with trails)	55
Figure 44: Trends service (scatter plot with a third indicator on the bubble size)	55

Figure 45: Treemaps service (1 st level)	56
Figure 46: Treemaps service (2 nd level)	56
Figure 47: Treemaps service (3 rd level)	57
Figure 48: Build Your Own Index service	57

List of tables

Table 1: The European e-Infrastructures Observatory services	9
Table 2: Tasks identified for the usability evaluation	11

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 & techniques, D4.1, e•nventory project, Feb 2011.
- [6] European e-Infrastructures Observatory Advisory Board charter, D3.1, e•nventory project, April 2011.
- [7] First set of European e-Infrastructures Observatory indicators, D2.2, e•nventory project, March 2011.
- [8] Advisory board initial assessment and directions, D3.2, e•nventory project, May 2011.
- [9] *Web platform draft specifications*, D4.2, e•nventory project, September 2011.
- [10] *Interim Dissemination and outreach report*, D5.2, e•nventory project, September 2011.
- [11] Dissemination and communication plan update, D5.3, e•nventory project, December 2011.
- [12] *Advisory board final recommendations*, D3.3, e•nventory project, January 2012.
- [13] Final set of European e-Infrastructures Observatory indicators, D2.3, e•nventory project, March 2012.
- [14] *Usability Engineering*, Morgan Kaufmann Publishers, Nielsen, J. (1994).
- [15] Ergonomics requirements for office work with visual display terminals (VDTs), Part 11: Guidance on usability, ISO 9241-11 (1998).
- [16] *Remote Usability Testing*, UserZoom resources. Last retrieved from <http://www.userzoom.com/products/online-usability-testing>
- [17] *Protocol Analysis: Verbal Reports as Data (Revised Ed.)*, MIT Press, Ericsson, K. A., & Simon, H. A. (1993). Also at <http://www.usabilityhome.com/Interview.htm>.

Acronyms

BYOI	Build Your Own Index
CHRON	Chronology
GEN	Generic Requirements
HCI	Human Computer Interaction
IoM	Indicators on Maps
NMAP	Pan-European Networks
SMAP	Stakeholders Mapping
TREE	Treemaps
TREND	Trends

Preface

The **e·nventory** project targets the formation of the **European e·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 e-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 e·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 e-Infrastructures 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 e-Infrastructures stakeholders and research and innovation indicator experts and will extend prior benchmarking efforts (e.g. EARNEST) by including an extensive set of e-Infrastructures 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 e·Infrastructures Observatory that will be the baseline for monitoring e-Infrastructures development progress,
- e-Infrastructures stakeholders' feedback and consensus on the proposed structure and functionality of the European e·Infrastructures Observatory, and
- European e·Infrastructures Observatory functionality demonstration through a prototype web platform that will be available to all e-Infrastructure communities and to the general public.

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

- the **European Parliament**, the **European Commission** and **National Governments** that are sponsoring e-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 e-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 e-Infrastructures contributing to this goal;
- **e-Infrastructure policy bodies** that have a clear mandate of supporting the development and the sustainability of e-Infrastructures and need an impact assessment tool to monitor the progress of achieving their objectives;
- **e-Infrastructure projects** that carry out specific e-Infrastructure activities and need to monitor their impact during deployment as well as retrospectively;
- **scientific/research communities** that are empowered by e-Infrastructures and are eager to comprehend their strengths and weaknesses that influence their everyday work.

High utilisation of the European e·Infrastructures Observatory from the broad e-Infrastructure community is a key measure of the project's impact; therefore, the entire project work plan 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 e-Infrastructures Observatory. The goal of the portal is to 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 e-nventory data repository.

Deliverable D4.3 is the continuation of deliverable D4.2 [9], which documented the requirements and draft functional specifications of the European e-Infrastructures Observatory web platform. This document includes the final additions to the requirements and specifications, as derived from the consultations with stakeholders and the evaluation conducted with representative users. The deliverable also provides the final user guide. This deliverable also serves as a technical reference for any follow-up (production-level) version of the web platform after the completion of this project.

What are the deliverable contents?

Deliverable D4.3 provides the final additions to the requirements, functional specifications and user guide of the European e-Infrastructures Observatory web platform. Specifically, Chapter 1 provides a brief description of the European e-Infrastructures Observatory services, as defined in previous project deliverables. Chapter 2 presents the usability evaluation performed with representative users and the findings per service. Chapter 3 lists the approved change requests. Chapter 4 outlines the final set of requirements and functional specifications as derived from D4.2 and the approved change requests. Finally, Chapter 5 presents the final user guide.

What are the deliverable main conclusions?

The design of any interactive tool is an iterative and evolving process, through repeated design-evaluation-redesign cycles. In this sense, the definition of requirements and functional specifications, and the subsequent design of tools and services, are being formulated continuously, also taking into account users' feedback. The process of studying users while interacting with the platform in a systematic manner yielded useful insights and practical feedback, which was fed back into the development of the platform.

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 strategic objectives not endorsed by eInfrastructure stakeholders;*
- *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 D5.4 (M23) will take the form of an inauguration workshop that will demonstrate the European e-Infrastructures Observatory to representatives of the e-Infrastructures 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 e-Infrastructures groups.