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Abstract: e•nventory deliverable D2.1 exhibits an extensive survey of existing data observatories in any field and domain in order to assess their characteristics, content, and functionality, as well as a survey of available repositories that contain databases of indicators and metrics related to eInfrastructures. The survey concludes with good-practices that will be used to shape the e•nventory specifications.

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Acronyms

ADSL	Asymmetric Digital Subscriber Line
ASTI	Agricultural Science and Technology Indicators
ATP	Advanced Technology Program
CERI	Centre for Educational Research and Innovation
CERN	European Organization for Nuclear Research
CIA	Central Intelligence Agency
DAI	Digital Access Index
DG	Directorate General
DOI	Digital Opportunity Index
EAO	Economic Assessment Office
ECO	European Cluster Observatory
EDG	European Data Grid
EFTA	European Free Trade Association
EGI	European Grid Initiative
EGI-InSPIRE	European Grid Initiative-Integrated Sustainable Pan-European Infrastructure for Researchers in Europe
e-IRG	e-Infrastructure Reflection Group
EIS	European Innovation Scoreboard
ERA	European Research Area
ESF	European Science Foundation
ESFRI	European Strategy Forum on Research Infrastructures
EU	European Union

FLOPS	FLoating point OPerations per Second
FP	Framework Programme
GDF	Global Development Finance
GDI	Gender-related Development Index
GDP	Gross Domestic Product
GEM	Gender Empowerment Measure
GÉANT	the pan-European data network dedicated to the research and education community
GITR	Global Information Technology Report
GVRC	Global Virtual Research Communities
HDI	Human Development Index
HDR	Human Development Report
HDRO	Human Development Report Office
HPC	High-Performance Computing
HPI	Human Poverty Index
IBRD	International Bank for Reconstruction and Development
ICT	Information and Communication Technology
IDA	International Development Association
IDI	ICT Development Index
IEA	International Energy Agency
IFPRI	International Food Policy Research Institute
IMD	International Institute for Management Development
IP	Internet Protocol
IT	Information Technology
ITU	International Telecommunication Union
IRU	Indefeasible Right to Use
MDGs	Millennium Development Goals
NEA	Nuclear Energy Agency
NGI	National Grid Initiative
NREN	National Research and Education Network
NRI	Networked Readiness Index
OECD	Organisation for Economic Co-operation and Development
R&D	Research & Development
REDI	Research and Education Development Index
STI	Science, Technology and Industry
TERENA	Trans-European Research and Education Networking Association
UNDP	United Nations Development Programme
WCY	World Competitiveness Yearbook
WDI	World Development Indicators
WEF	World Economic Forum
WLCG	World Wide LHC Computing Grid
WSIS	World Summit on the Information Society

Preface

The e•nventory project targets the formation of the **European eInfrastructures 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 eInfrastructures 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 eInfrastructures Observatory**; through the collection and utilisation of appropriate indicators, the project will be able to monitor the status quo and evolution over time of eInfrastructures 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 eInfrastructures stakeholders and research and innovation indicator experts and will extend prior benchmarking efforts (e.g. EARNEST) by including an extensive set of eInfrastructures 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 eInfrastructures Observatory** that will be the baseline for **monitoring** eInfrastructures development progress,
- eInfrastructures **stakeholders' feedback and consensus** on the proposed structure and functionality of the **European eInfrastructures Observatory**, and
- **European eInfrastructures Observatory** functionality **demonstration through a prototype web platform** that will be available to all eInfrastructure communities and to the general public.

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

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

High utilisation of the **European eInfrastructures Observatory** from the broad eInfrastructure 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 WP2 is to define the baseline list of indicators that will make up the core of the **European eInfrastructures Observatory** monitoring framework. This set of indicators will be the final outcome of a thorough selection process that will take into consideration several related factors.

Deliverable D2.1 exhibits an extensive research survey to assess the characteristics, content, and functionality of existing data observatories in a wide variety of fields and domains and of available repositories, databases, indicators and metrics related to eInfrastructures. The deliverable concludes with good-practices that will be used to shape the e•nventory specifications.

What are the deliverable contents?

D2.1 briefly presents the notion and principles of evaluation along with the data collection and analysis techniques, the existing framework in the European Union as well as prior efforts on evaluating the development progress of eInfrastructures.

Then, it provides an in-depth study of available data observatories in a wide variety of fields and domains in order to collect best practices on how to approach and construct a top -class European eInfrastructures Observatory, including its structure, methodology and data organisation approach.

Similarly, a cartography of online and offline eInfrastructure directly or indirectly related databases and repositories is provided, in order to identify related databases where raw data values are stored and can supply the indicators that will monitor eInfrastructures development.

The comparative study of international data observatories and repositories provides a good-practice study **that will be used in order to help shape the European eInfrastructures Observatory's** specifications, and especially the follow up deliverables D2.2 and D4.1.

What are the deliverable main conclusions?

There is a clear need to assess European Commission investments in the area of eInfrastructures and to use this as feedback in developing new and better European Union policies in this area. Although evaluation in other areas of ICT has been **on-going, there is a lack of systematized evaluation of eInfrastructures'** development that would facilitate a rigorous evidence-based decision-making contrary to opinion-based decision making.

A European eInfrastructures Observatory can be a key baseline tool for performing evaluation, capturing key aspects of eInfrastructures development and being capable of evaluating eInfrastructures penetration.

Although several observatories already exist for several disciplines that provide access to a variety of data, none possess the consolidation and unification level that may cover the full spectrum of eInfrastructures.

Contrary to the observatory scene, there are quite a few databases with stored data that are regularly collected. However, although data that concern national research and education networking organisations are available for a large set of countries and are collected regularly, data concerning grids and supercomputers should be enriched. Overall, a more systematic approach in order to ensure a higher level of accuracy and availability of eInfrastructures-related data is urged. Such data will be the pillar upon which the European eInfrastructures Observatory will be based and will be key in establishing its pilot operation.

How does this deliverable contribute to the project quality metrics?

This study sets the grounds for the achievement of the following project quality metrics:

- At least a core set of 15 indicators are selected and utilised for benchmarking

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

This study 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

- Core set of benchmark indicators not finalised / constantly being revised
- The on-line interactive visualisation tool is not user friendly enough

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

- Deliverable D3.1 (M05) will document the process for achieving the formation of the **European eInfrastructures Observatory** Advisory Board, including its composition, mandate, scope, planned activities, and expected results and recommendations.
- Deliverable D4.1 (M06) will compile and describe several information visualisation and representation techniques for data indicators, in accordance with reference/good examples implemented **internationally. Although primarily a “technical” deliverable, it is meant to assist the WP3 consultation activities.**
- Deliverable D2.2 (M06) documents the first set of the **European eInfrastructures Observatory** benchmarking indicators that will be used as input for the next phases of the project, especially as the baseline for discussion for the consultation activities in WP3.
- Deliverable D3.2 (M09) will collect the **European eInfrastructures Observatory Advisory Board’s** initial assessment and directions upon concluding a first round of consultation process with the Advisory Board. This will serve as an intermediate input for the e•nventory workplan.
- Deliverable D4.2 (M12) will document the first set of draft specifications for the prototype implementation of the web platform, namely its architecture, web engine, data collection, storing, and updating mechanisms, as well as its visualisation and representation methodology.
- 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) will document 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.