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The European e·Infrastructures Observatory

Workshop on development of impact measures for e·Infrastructures (SMART No. 2010/0051)

Brussels, 20.02.2012

Jorge-A. Sanchez-P.

Project inventor





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Need

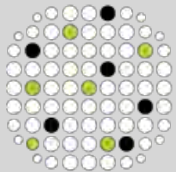
- e·Infrastructure stakeholders **need** a tool/service for **prospective**, i.e. ex-ante evaluation/impact assessment and **retrospective**, i.e. interim or ex-post evaluation of related e·Infrastructure initiatives and programmes



- **06.2009, Proceedings of Workshop “Role of Research Infrastructures for a Competitive Knowledge Economy”, ESFRI:** *further reflection on impact assessment work of the different stakeholders, allowing hopefully for better management of the facilities as well as more efficient preparation of future actions”, elaborating more explicitly that “[...] increased attention to the planning of new large scale facilities has led to requests for studies on the impact of research infrastructures. As well as bringing scientific benefits, funding bodies are increasingly interested to measure and maximise their economic and social benefits from their investment on large scale facilities”, and concluding that “although there is some material from impact studies available, this is mainly of an ‘anecdotal nature’ and time might have come to provide more sophisticated evidence. This might require the definition of new methodologies to measure performance, impact and output of the new major facilities listed in the ESFRI Roadmap”.*
- **09.2009, Study “Evaluation of pertinence and impact of Community Support for Research Infrastructures in the 6FP”, commissioned by DG Research and DG INFSO:** *“it is recommended that concrete impact measures based on the sound evaluation of existing and potential data sources are developed. This includes establishing a set of indicators for which comparable time-series data can be collected. This will provide more specific and measurable impacts moving away from opinion-based indicators. This will enable impacts to be measured and evaluated more accurately in the future”.*



- **2009-2010, Council of the European Union** invited the **Member States** and **stakeholders** to *“further monitor the digital and ICT related performance through indicators and scoreboard”*.
- **11.2010, eConcertation meeting, Session on Socio-Economic Evaluation of e-Infrastructures:**
 - *The e-Infrastructures' impact should be analyzed in parallel both in the macroeconomic and microeconomic domains, e.g., developing methodologies of socio-economic evaluation at each level; finding complementary and proper indicators; using/creating ad hoc and official data sources; and enabling stakeholders and policy makers to access significant quantitative and qualitative macro and micro information and data.*
 - *All e-Infrastructure projects should develop a common understanding about evaluation and impact assessment, openly discuss the methodology, agree on indicators and data sources and contribute to the build-up of the evaluation framework.*
 - *Projects should start collecting both qualitative and quantitative information from the start (and often beyond the life of a project), and should know their user base to facilitate impact assessment.*
 - *The public at large is not aware of the electronic infrastructures, as they don't have access and therefore don't know about it. If one wants to “touch” them the data has to be related to their real world scenario. Impact assessment could have an impact on the public at large if used as a method to foster European pride.*



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The RI-IMPACT Study



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RI-Impact results assessment

Contributing areas

- Identified a **common framework**
 - 5 classes of characteristics / composite indicators to encompass key e·Infrastructures project elements
 - structured set of questions that are fully quantifiable thus allowing for measuring, aggregation and statistics extraction
 - exhibits relevance to high-level EU roadmaps (EU2020, Digital Agenda, etc.)
- Proposes a **process** that is
 - relatively **light-weight** and can be run (and embedded in their periodic reporting activities) by the projects with acceptable overhead
 - **expandable** (albeit with respective adaptations to the set of questions) and applied to projects to other emerging e·Infrastructures fields



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RI-Impact results assessment

Missing areas

- Impact analysis is **limited** as it confines to project boundaries / participators rather than EU/MS macroscopic level, thus not revealing the (quantitative and/or qualitative) impact / contribution of **e·Infrastructures** to the society-at-large
- Methodological framework relies on self-assessment of project themselves which can lead to **subjective** responses
- There is **no apparent validation process** to cross-check and/or curate the received responses
- The process addresses primarily **projects at European level** while National-wide efforts that (co-)finance and help deploy **e·Infrastructures** are not necessarily included
- The framework seeks the perspective of **e·Infrastructures** projects but not of the **Owners** per se, neither **Users** nor **Sponsors** of **e·Infrastructures**

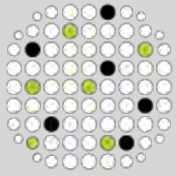


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Overall assessment

- A **periodic, project-based assessment that can be aggregated at overall Programme level** is necessary
 - Proposed approach of RI-Impact can help address that gap and provide a methodological framework for eInfrastructures projects monitoring
- A **holistic approach and supporting tools** are still missing, able to
 - monitor eInfrastructures impacts and trends at EU/MS (and beyond) level and reveal interrelations to macroscopic socio-economic indicators
 - utilise “factual”, unbiased metrics and data without subjective interpretations
 - apply a validation/curation process to ensure that the utilised data accurately represent the eInfrastructures status quo
 - take into account owners, users, and sponsors of eInfrastructures at both EU and National level
 - cover regions beyond EU with the same monitoring framework thus allowing for cross comparisons of EU eInfrastructures to international ones



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state of affairs



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Vision

- **e.nventory's vision** is the formation of the **European e-Infrastructures Observatory**:
 - a **single entry-point / one-stop-shop** data warehouse
 - geographically addressing **EU MS**, while being expandable for global coverage
 - capable of representing **e-Infrastructures-related benchmarks** for networking, supercomputing and grids while being expandable to emerging **e-Infrastructures**
 - through **intuitive, interactive and user-friendly visualisation interfaces: use-case scenarios** and **“get-to-do-what-the-user-wants-to-do”**
 - supplementary **visualisations** exhibiting European **e-Infrastructures** achievements



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Current status

- Identified a core set of **45 benchmarking indicators** that are the baseline for **monitoring e·Infrastructures** development progress
- Collected more than **10.000** individual figures and other related data and benchmarks
- Deployed **7 intuitive, interactive and user-friendly visualisation tools** based on best practices in visualisation and representation techniques
- Collected **stakeholders' feedback and consensus** for more than **1** year on the structure and functionality of the **European e·Infrastructures Observatory**
- Ready to launch the **European e·Infrastructures Observatory**



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November 18, 2011

LETTER OF SUPPORT

To Dr Jorge Sanchez,
Coordinator, eInventory plus Consortium

The undersigned **Faúlín Magriñas**, Chairman of the National Research & Education Networks Policy Committee - NREN PC (the **GEANT** Consortium Governance body) hereby expresses my support to your eInventory plus proposal. To my understanding, its main goals are to expand the geographic and thematic coverage of the eInfrastructure Observatories that you are currently establishing. This will be accomplished by (1) addressing regions such as the USA, Russia, China, Australia, South Africa, Latin America and (2) extending its scope beyond NREN and Grid infrastructures, into data infrastructures and cloud computing.

From the summary that you provided to me, but also having experienced your pioneering work over the last years, I am sure that eInventory plus will be in line with NREN/GEANT activities in this very sensitive area. I personally recognize its usefulness to demonstrate the development progress of electronic Infrastructures (eInfrastructure) in Europe and beyond and share its vision. To support community-building by identifying and pin-pointing distributed eScience resources thus promoting the wider utilisation and exploitation of global infrastructures.

I wish you success in your proposal and pledge my support in carrying out the challenging tasks of eInventory plus.

Sincerely,

Faúlín Magriñas
Professor of National Technical University of Athens
Chairman, NREN Policy Committee (GEANT Consortium)

Prace-1.eu Advanced Computing (PRACE) A.S. B.V.
Rue de l'Europe 55
1050 Brussels
Belgium

November 21, 2011

Dear Sr. Sanchez,

As a follower of the letter of support of November 19, 2011 in the European eInfrastructure Observatories development, I recognize its usefulness, through the collection and activation of appropriate facilities, to assess the impact of High Performance Computing Infrastructures for Europe in a timely and broad way.

In my capacity as Chair of the PRACE Council, I express my support for the eInventory plus proposal that will extend the geographic and thematic coverage of the eInfrastructure Observatories, addressing global regions of interest, such as, the USA, Russia, China, South Africa, and Latin America.

I express hereby PRACE's intent for collaboration in the framework of its international collaboration activities.

Yours sincerely,

Prof. Dr. A. Halkias
Chair of the PRACE Council



22nd November 2011

To Whom it may concern

One of the key challenges facing e-Infrastructure providers such as EGI, which represents the European Grid Infrastructure of 300 resources either organized through one of 6 national resource infrastructure providers, is to report the benefits and scope of its resources and their usage to leaders and decision-makers at national and European levels. Currently, we have limited resources to structure and present the raw data that is collected as part of the operational infrastructure.

The work being proposed within the eInventory plus project is that infrastructure stakeholders will use the Infrastructure Observatories European comprehensive monitoring and distributed framework that will allow EGI providers to keep overall track of the development and progress of infrastructure for Europe and beyond, and its capacity to support community-building by identifying and pin-pointing distributed eScience resources thus promoting the wider utilisation and exploitation of infrastructures.

If the project is funded EGI will be willing to establish a dialog with the project to arrange for the automatic insertion of data into the Infrastructure Observatory - the current actual mechanisms have many drawbacks - and to participate in a project advisory board to guide the evolution of the project to ensure it meets the needs of EGI stakeholders. We would work through any project advisory board to expand the observatory into new technical areas such as cloud computing and geographical regions with which we are collaborating.

Yours sincerely,

Dr. Xerxes Ioannidis

Director

EGI.eu

November 22, 2011

Letter of Support

I am aware of the European eInfrastructure Observatories development and I recognize its usefulness to demonstrate the development progress of electronic Infrastructures in Europe and beyond, and its capacity to support community-building by identifying and pin-pointing distributed eScience resources thus promoting the wider utilisation and exploitation of infrastructures.

On behalf of the EUDAT Project consortium, I express my support for the eInventory plus proposal that will expand the geographic and thematic coverage of the eInfrastructure Observatories, addressing global regions of interest, such as, the USA, Russia, China, Australia, South Africa, and Latin America, as well as emerging infrastructures, such as, data infrastructures and cloud computing.

I express my intent for cooperation in the framework of its international collaboration activities.

Yours sincerely,

Dr. Xerxes Ioannidis
EUDAT Project Co-ordinator

CSC - IT Center for Science Ltd.
P.O. Box 651000000-140
FI-02101 Espoo, Finland
Kotkankatu 10
+358 9 381 9777

November 21, 2011

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In my capacity as project coordinator of OpenAIRE, I express my support for the eInventory plus proposal that will expand the geographic and thematic coverage of the eInfrastructure Observatories, addressing global regions of interest, such as, the USA, Russia, China, Australia, South Africa, and Latin America, as well as emerging infrastructures, such as, data infrastructures and cloud computing.

I express my intent for cooperation in the framework of its international collaboration activities.

Yours sincerely,

Prof. M. Chalkias

November 16, 2011

To Whom It May Concern:

This letter is to express my support for the eInventory plus proposal. I am currently the Vice-Chairman of the School of Computing, Director of the Center for High Performance Computing, and the Director of the Center for High Performance Computing. I have been the principal investigator on grants from the National Science Foundation and other agencies and companies. As a principal investigator, I have been responsible for managing the internal resources of more than \$20,000 each year since 2006. I have been the principal investigator on grants from the National Science Foundation and other agencies and companies. As a principal investigator, I have been responsible for managing the internal resources of more than \$20,000 each year since 2006. I have been the principal investigator on grants from the National Science Foundation and other agencies and companies. As a principal investigator, I have been responsible for managing the internal resources of more than \$20,000 each year since 2006.

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In my aforementioned capacity, I am pleased to support the geographic and thematic coverage of the global regions of interest, such as, the USA, Russia, China, Australia, South Africa, and Latin America, as well as emerging infrastructures.

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Prof. Ashley Mendelsohn

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Prof. Ashley Mendelsohn

November 23, 2011

Letter of Support/Intent

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In my capacity as Executive Director of the Latin American Research and Education Network (ReCLAR) I express my support for the eInventory plus proposal that will expand the geographic and thematic coverage of the eInfrastructure Observatories, addressing global regions of interest, such as, the USA, Russia, China, Australia, South Africa, and Latin America, as well as emerging infrastructures, such as, data infrastructures and cloud computing.

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The observatory services





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The *Indicators on Maps* service

Available graphs and controls

Indicators window

Graphs window

Countries window

List of all available indicators and categories

List of all available countries

map centred on Europe with the range of indicator values presented with colours

Map legend and features

Options and export

Time slider

List of all available years

Map controls



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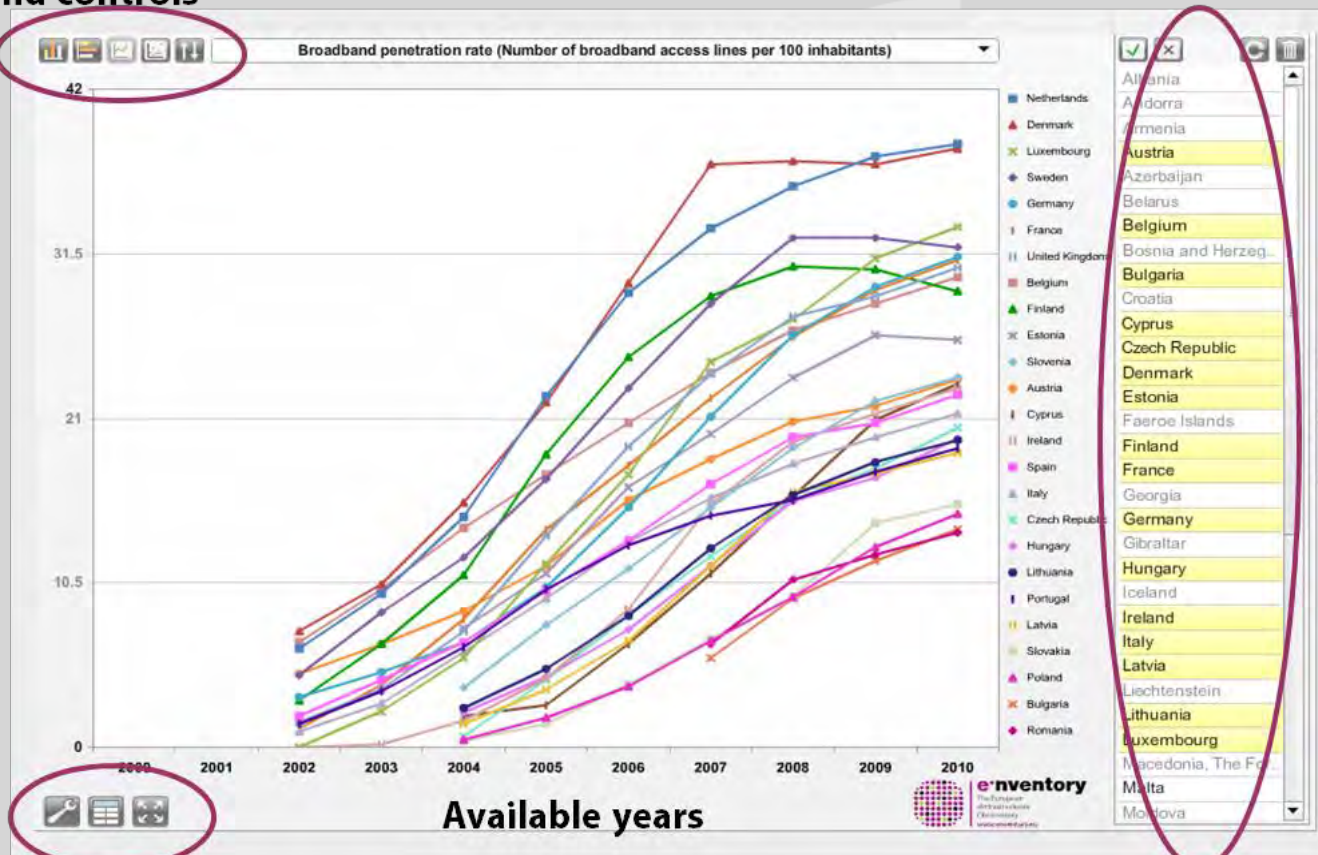
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The Trends service

Available graphs
and controls

Indicators list

Countries list



Options and export



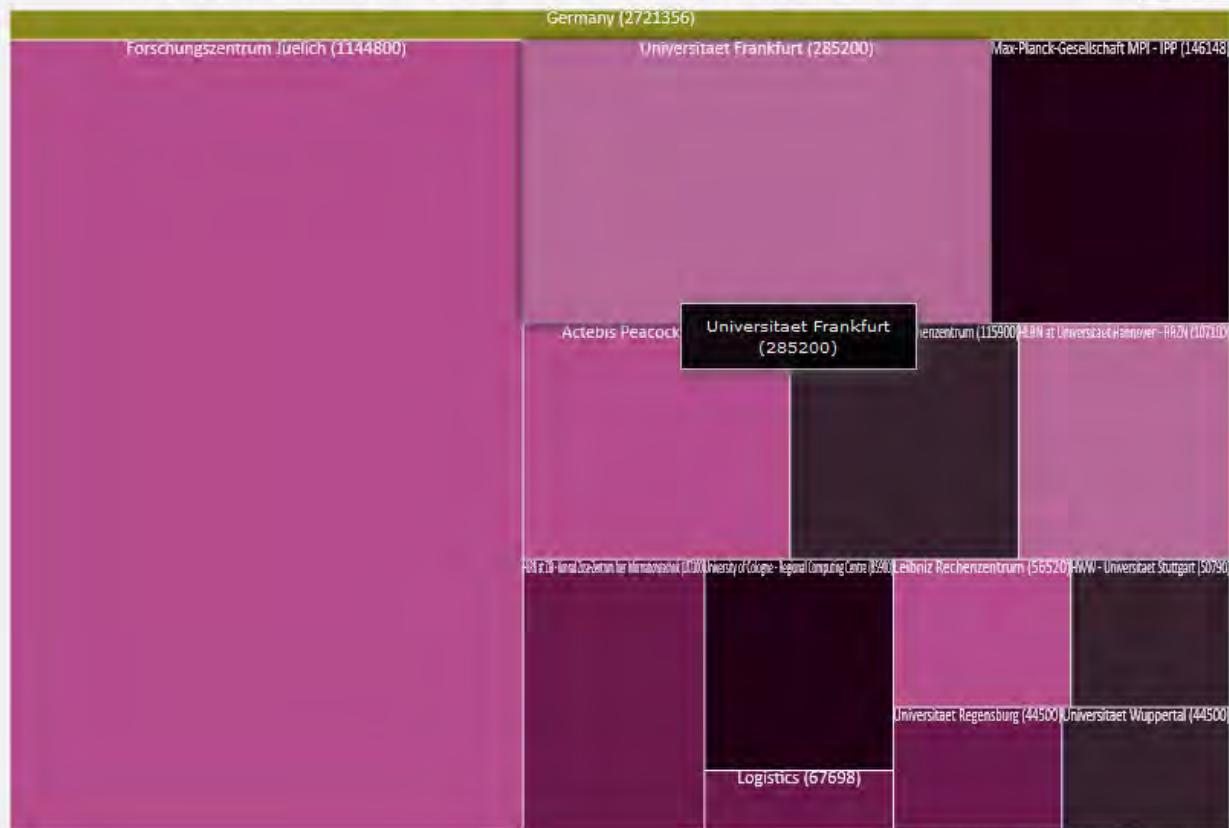
The *Treemaps* service

Treemaps

Select Indicator: National supercomputers maximum performance (Gflops) 2010

Click on a node to view details, right-click or press the button to go up one level.

go up one level









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The Organisation Mapping service

Type

-  National Research & Education Networks
-  National Grid Initiatives
-  Supercomputer Centers
-  Coordinating Entities

Region

Country [select all](#) | [none](#)



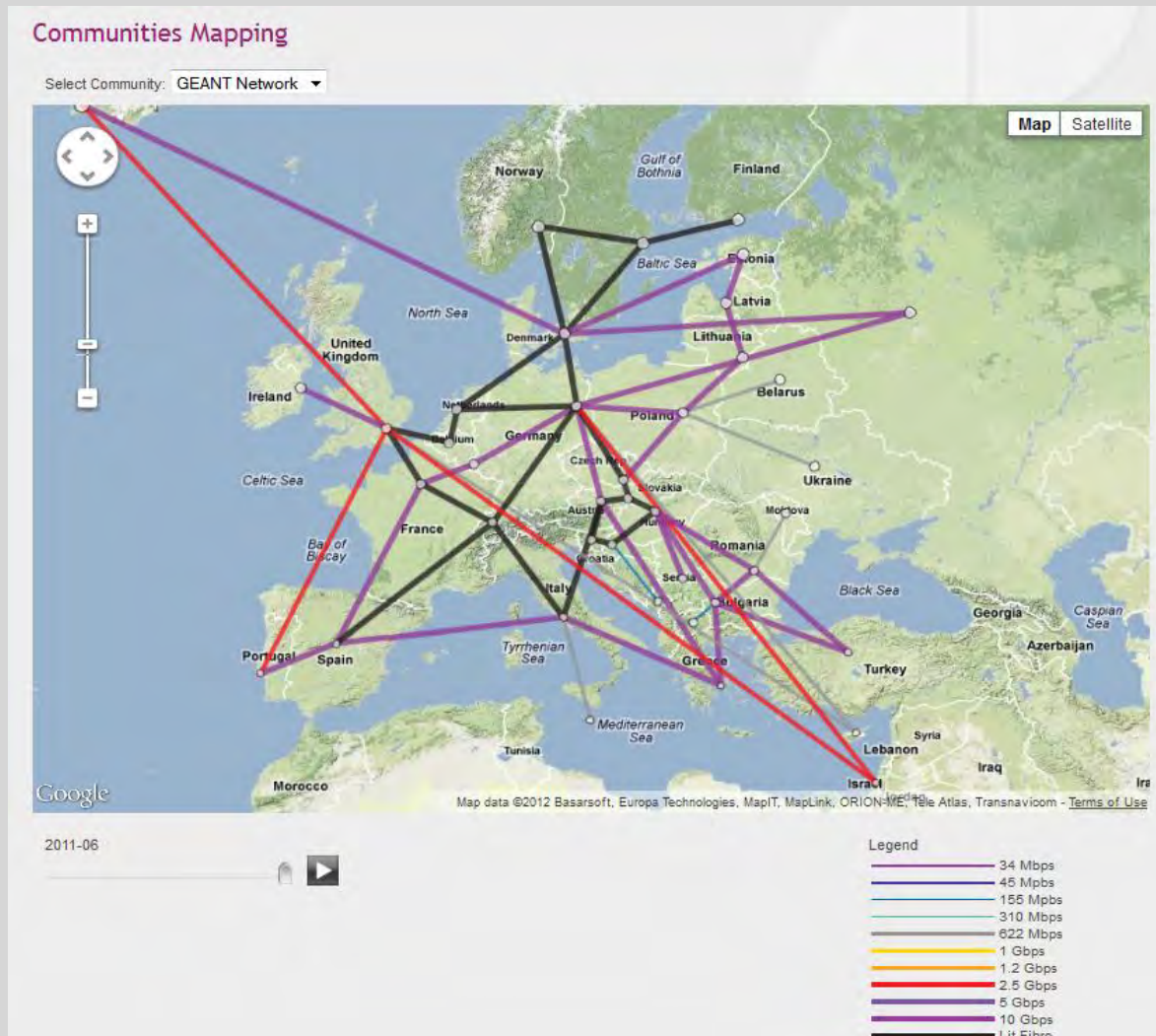
Map data ©2011 Basarsoft, Europa Technologies, Centre Consulting, MapIT, MapLink, ORION-ME, Tele Atlas, Transnavic - [Terms of Use](#)



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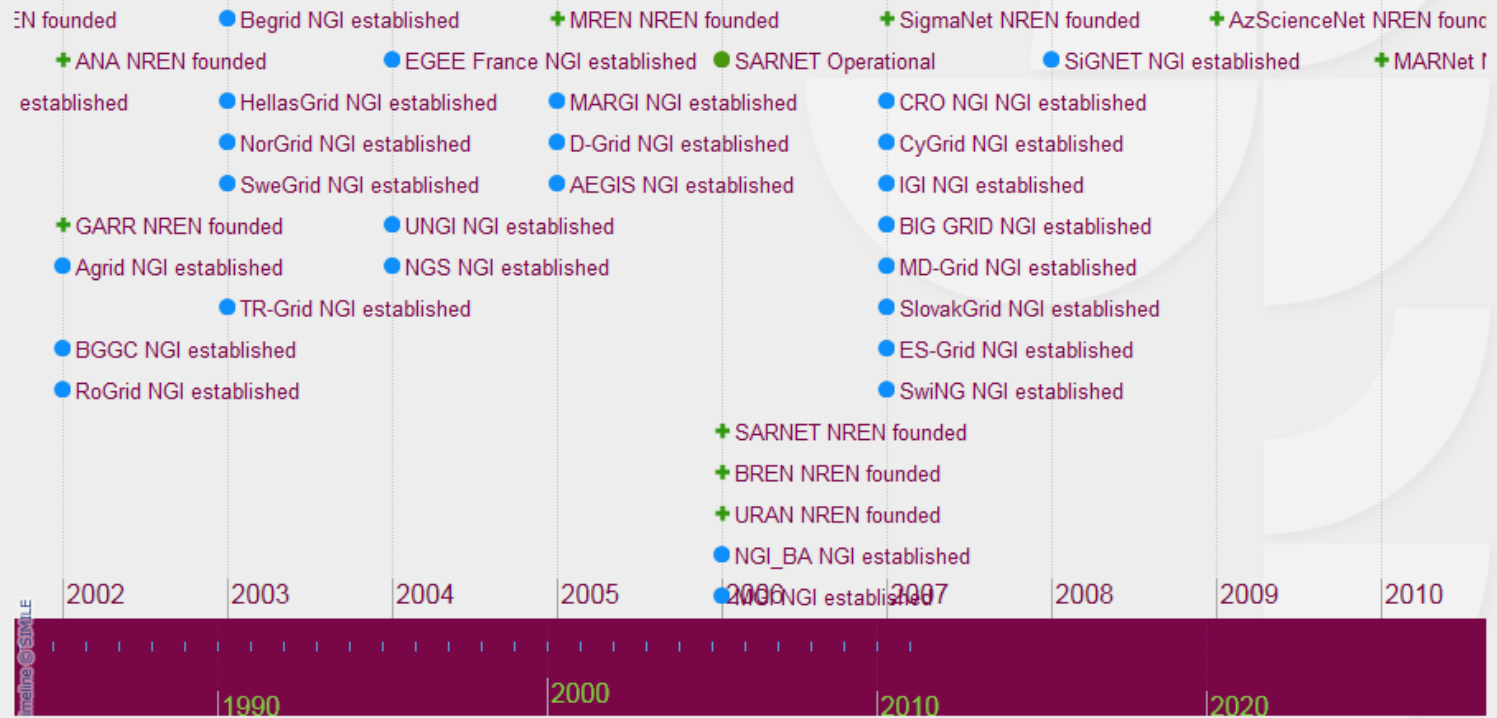
The Communities Mapping service

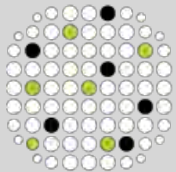




The Chronology service

Chronology





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some remarks – food for thought

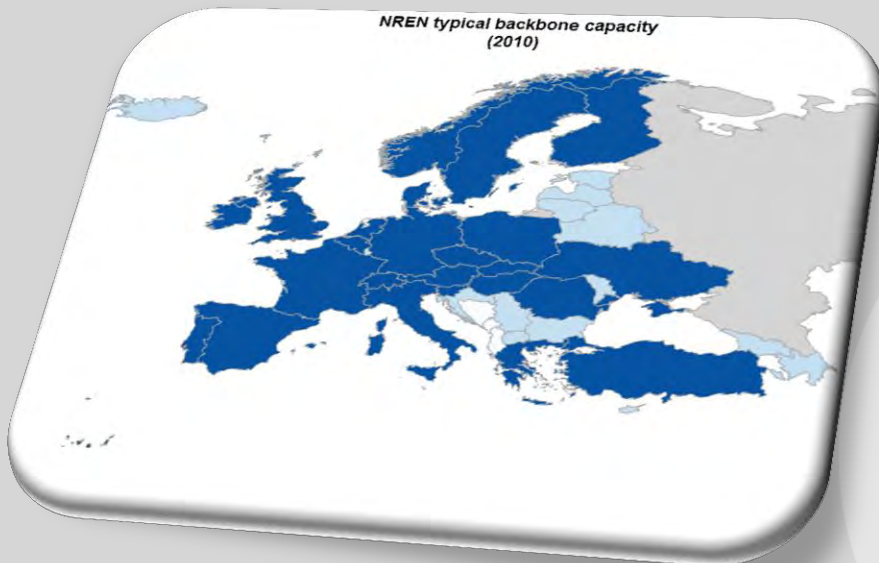


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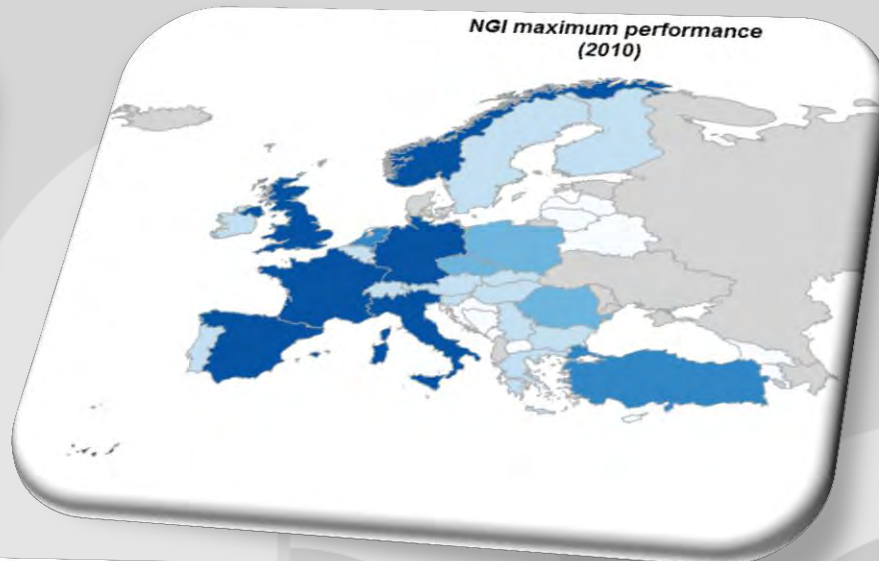
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Networking, Supercomputing & DCI

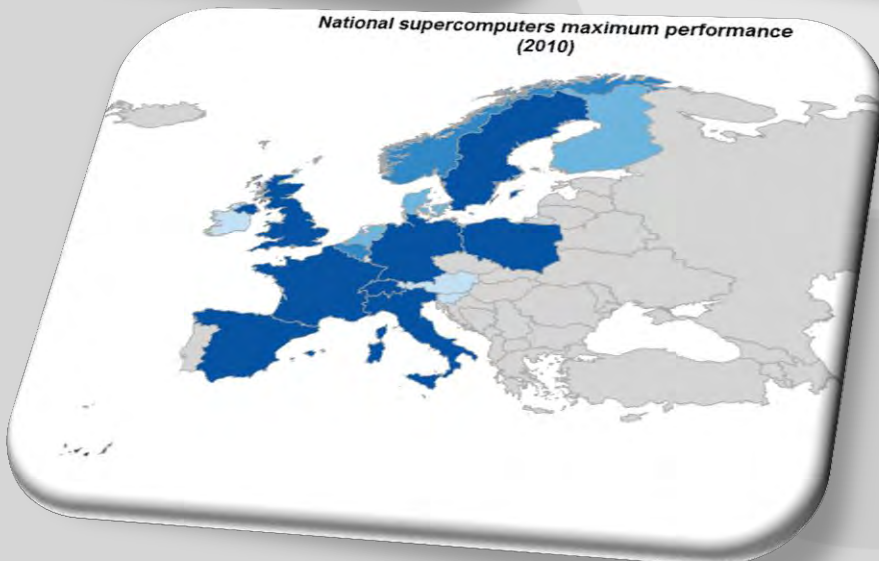
*NREN typical backbone capacity
(2010)*



*NGI maximum performance
(2010)*



*National supercomputers maximum performance
(2010)*



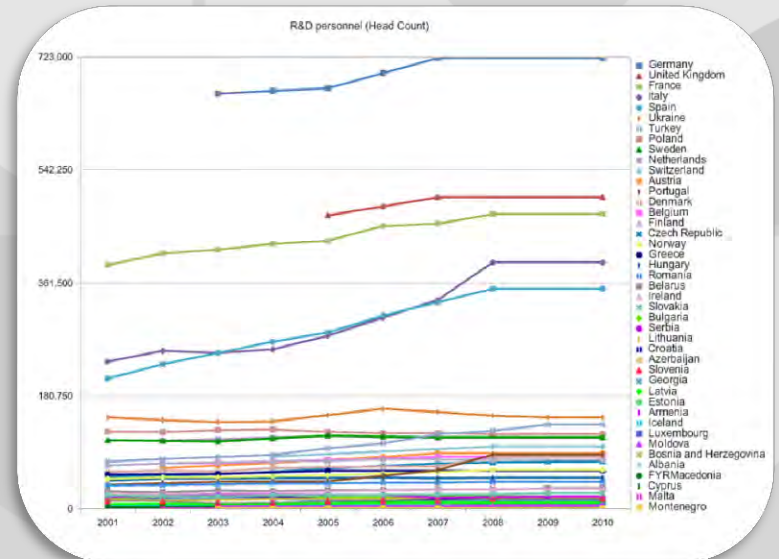
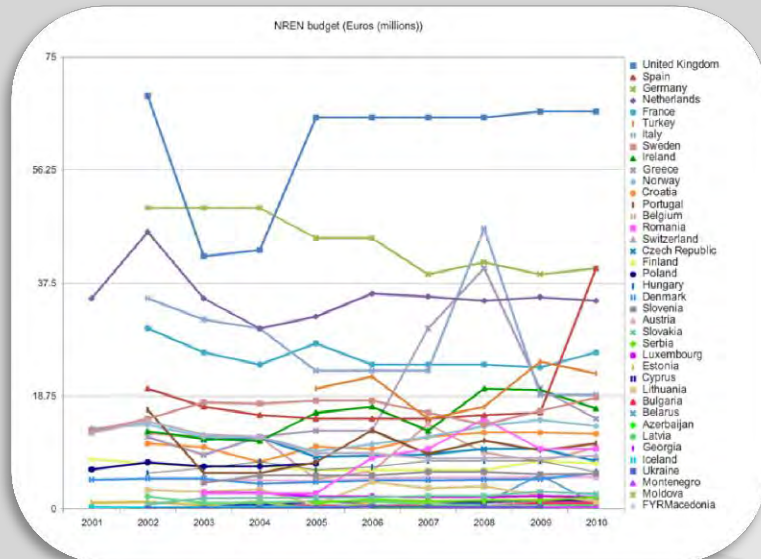
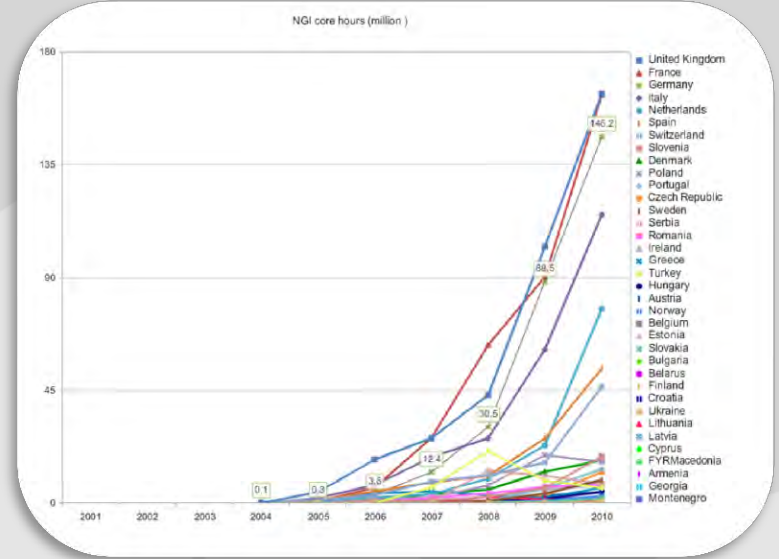
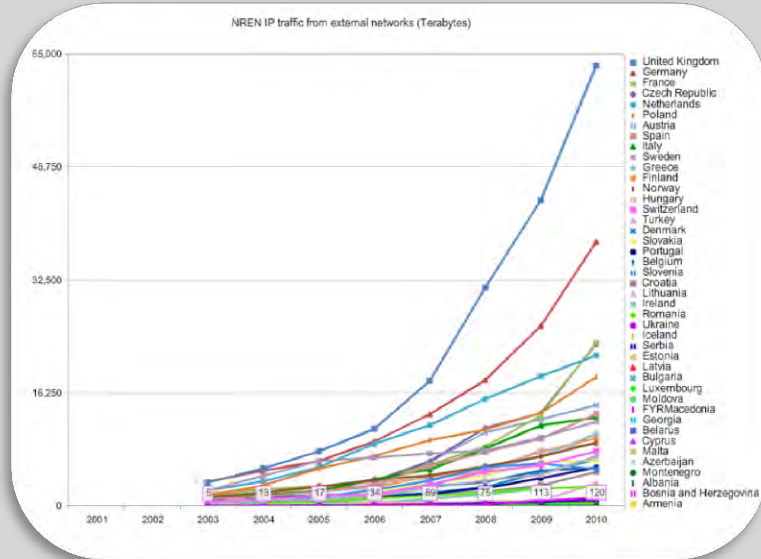


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Usage vs. Users vs. Budget





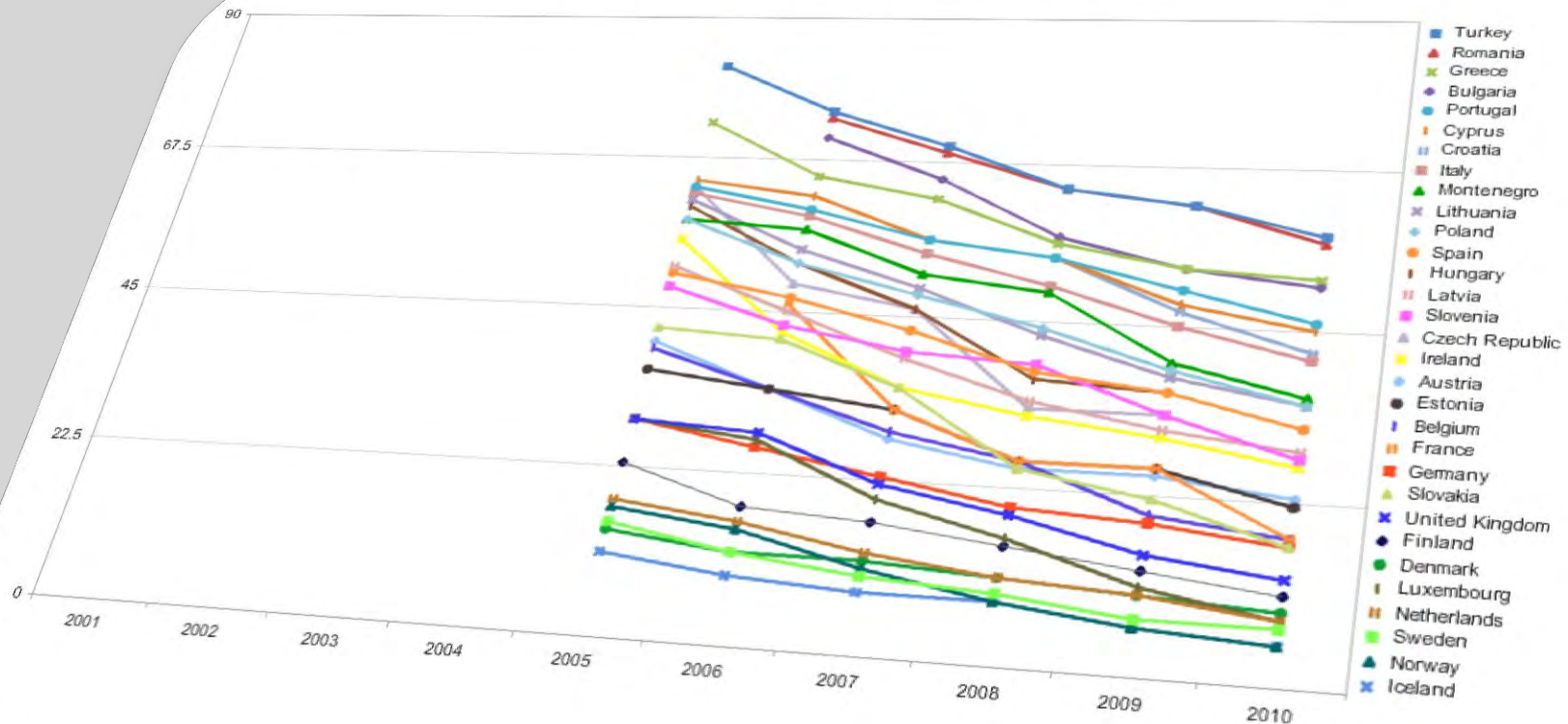
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Alarming indicators

Population who have never used the internet

Population who have never used the internet (Percent of population (%))

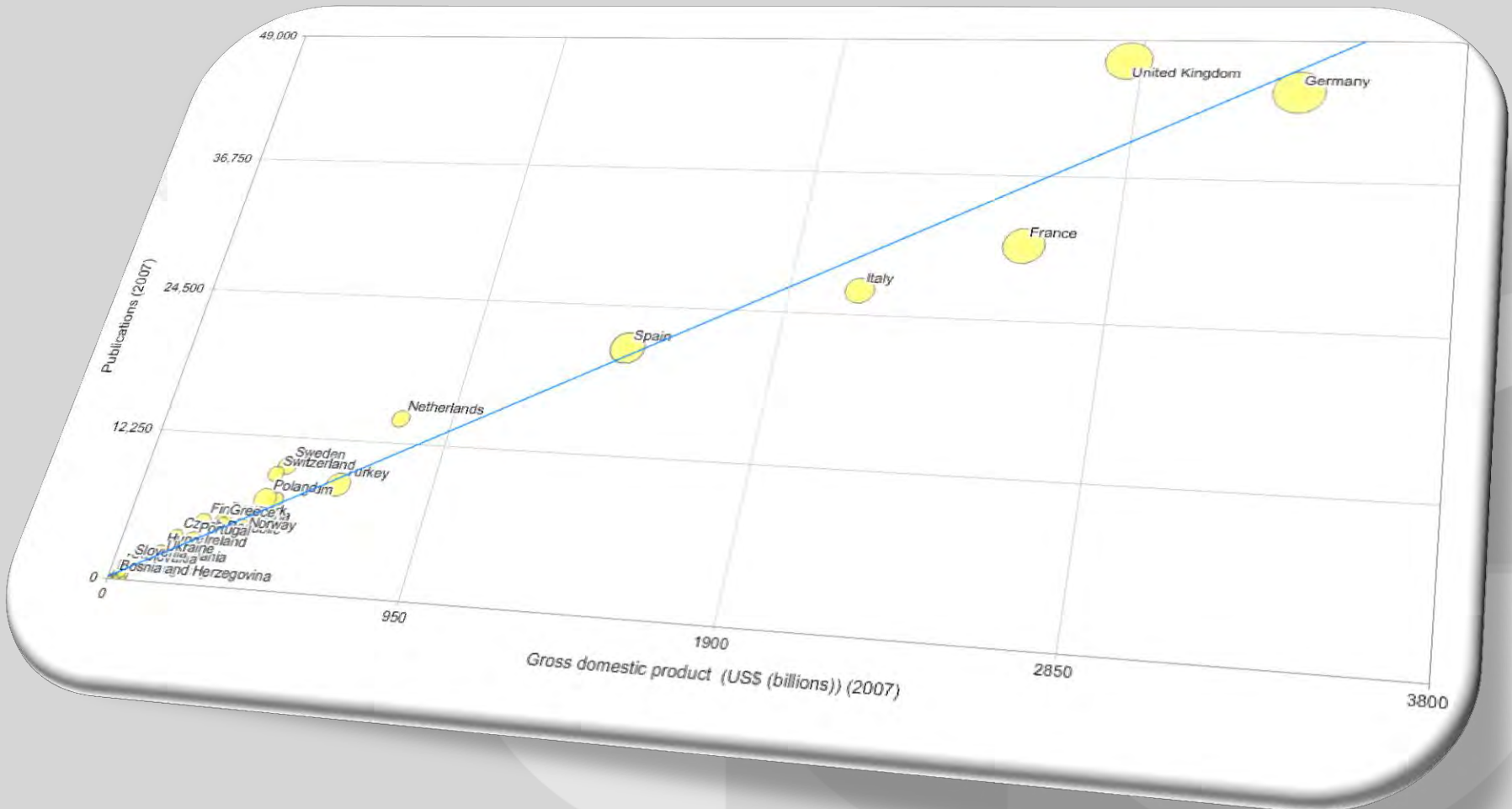




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Interesting Correlations Publications vs. GDP





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Visit the playground and provide your feedback:

<http://www.enventory.eu/playground>

For login/password contact:

Dr.-Ing. Jorge-A. Sanchez-P.

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F: +30.211.800.1843

