



## ERINA Study

# Innovation and best practices in using e-Infrastructures in areas beyond research (e-Gov, e-Health, e-Learning)

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## ERINA Objective

Recommendations for

Exploiting Research Infrastructure potential

in key Areas of the Information Society

(e-Government, e-Health, e-Learning)





## ERINA aim at providing...

An **independent assessment** of Research infrastructures' potentials.

A set of recommendations that will examine:

- The potential implementation efforts for **adopting e-Infrastructure concepts** in other ICT Areas
- Potential **synergies and externalities**
- **Economies of scales** at European level,
- **Benefits and efficiency gains** for the target areas





# Achievements

*First phase - collecting potential best practices and evaluation of target areas state-of-the-art*

- *About 100 best practices for each areas*
- *Selection of comprehensive set of indicators*
- *State-of-the-art analysis*

*Second phase – analysis and selection of a sub-set to perform the impact analysis.*

- *From 35 to 4-5! Covering all domains;*
- *Detailed analyses of the e-Gov, e-Health and e-Learning domains*
- *Identification of a new easy-to-adopt methodology for the cost-benefit analysis;*
- *Surveying and the evaluation of trends in three domains.*





## Projects selected



- EBI - European Bioinformatic Institute
  - Pan-European Institution, Cambridge (UK)
- Cyclops - CYber-Infrastructure for CIVIL protection Operative Procedures
  - EU project led by Italian Civil Protection
- Eduroam – Educational Roaming
  - EU project, linked to GEANT initiatives
- Ten Competence
  - EU project, led by Dutch Open University
- PIC - Port d'Informació Català,
  - Local initiative, Barcelona (ES)
- VIKT - Secure Computer Network of the State Institutions
  - Regional Initiative - Lithuania
- MEDCOM - The Danish Health Data Network
  - Regional initiative - Denmark
- PIPS - Personalized Information Platform for Life and Health Services
  - EU project, led by San Raffaele Hospital, Milan (IT)





## Projects to be analysed

- EBI – European Bioinformatic Institute, Cambridge (UK)
  - Due to their **massive data and the existing links with industries** for business and Hospitals for clinical research
- Cyclops – an EU project led by Italian Civil Protection
  - Due to their experimentation of e-Infrastructures to **allow better services and solve Civil Protection difficulties**
- Ten Competence – an EU project, led by Dutch Open University
  - Due to their investigations of new **ITC infrastructures supporting new form** of e-Learning
- PIC – Port d'Informació Català, Barcelona (ES)
  - Due to their work done with hospitals in **outsourcing radiography storage** enabling fast clinical research on cancer and other diseases





## Yet-Another Methodology?

Other studies have been performed in order to stress “the potential of the digital economy to deliver growth, jobs and modern, on-line public services”

- e-Government Economic Project (eGEP),
- e-Health Impact - Study on Economic Impact of e-Health,
- The ICT Impact Report – A review of studies of ICT Impact on schools in Europe.





## Why need for another approach

Correct and robust but **impossible** to re-use:

- **Domain-dependency** of the studies
- The **indicators are too specific**.
- The evaluation of the impact of an e-Infrastructure should be as much as possible **independent from any domain**.
- **Lack of a standardized methodology** to evaluate of the ICT impact,
- Link between ICT structure and its specific impacts on an e-service (e-project) or in a domain was missing.







## ERINA indicators

The developed methodology is based on a **gap analysis** between ex-ante and ex-post scenarios.

Seven **indicators or perspectives** to cover every possible benefit/impact:

- Economic efficiency
- Operational efficiency
- Knowledge based
- Accessibility
- Time savings
- Environmental impact
- ICT infrastructure





## Initial Potential benefits (1/2)

- *Mobility* – allowing citizens, as well as researchers to access services and personal data from everywhere in EU (and outside);
- *Interoperability* - connecting different entities and systems to maximise the value and reuse potential of data and information;
- *Massive data processing and data storage* – allowing the processing of enormous amounts of data to support challenging applications;





## Initial potential benefits (2/2)

- *Creation of a unique environment* – encompassing the entire set of subjects in any domain;
- *Distributed services* – promoting the “anytime, any place” concept of fruition of the service;
- *Resource and data sharing* – creating an integrated environment to enable resource and human interactions facilitating collaboration.





## ERINA Initial analysis

Looking at the initial outcomes...

- all projects oriented to implementing ICT platform to reach the defined goals:
  - in e-Government the highest average impact is on accessibility;
  - in e-Learning the highest impact is on the accessibility and knowledge-based rules;
  - In e-learning, the economic efficiency seems to be less important than the accessibility and knowledge-based (Rule 3 and Rule 5).
- in all the domains the environmental impact does not seem to be considered,
- ITC savings and performances, have serious lack of row data.





## Lesson Learned



- Lack of **raw data** for evaluation
  - Almost none compare initial scenarios with future ones, quantifying the expected benefits with a formal approach
  - See other similar studies results
- Mobility is **not an issue** for e-Gov
  - Common initiatives on technical solution are hanging-up due to political issues.
  - See Euroam, eIDM, and others
- Urgent a generalisation of **e-Infrastructure concepts** to create the bridge with other ICT areas stakeholders
  - Experiences and community culture are very different
  - Needed strong consultancy activity to help use the same language





# The Recommendations

They need to take into account **different perspectives**

- technical,
- social,
- economic & financial.

They need **to be tailored** for different target groups:

- Designers
- Managers
- EU bodies
- Local and central authorities of member states





## Draft recommendations (1/2)

- Applying the “Jan Foster’s silos” metaphor to e-Science, e-Gov, e-Learning, e-Health
  - To **reduce costs** by sharing/outsourcing HW acquisition and/or maintenance
    - *Eg. MEDCOM (from e-Health Impact study)*
  - To **improve service** quality/time-to-market (benefits under estimation)
    - *Eg. EBI/Impact project (under evaluation)*
  - To **innovate and generate** new services for citizens
    - *Eg. PIPS, service for personal health accessing data from pharma/food markets and industries*





## Draft recommendations (2/2)

- Using **disruptive on-the-edge technologies** boosts **innovation** and development of new services
  - Complex approaches/methods/algorithms need vast **computational power**
    - *Eg. CYCLOPS (under evaluation)*
  - Managing digital data of any form due to the digital revolution needs storage capabilities and effective retrieval techniques.
    - *Eg. TENCompetence (under evaluation)*
  - Data integration lead to new knowledge, discoveries and services in the knowledge society
    - *Eg. EBI (under evaluation)*







## Other potential areas of investigation (I)

- **Strategies** for adopting in the key areas
  - In each key areas **not all challenges may gain benefits** from e-Infrastructures. A one-for-all approach is not suitable.
    - *Eg. Several Public Administration services in the e-Gov environment*
  - Pioneers projects need to be promoted **bridging two communities**... even at regional level
    - *Eg. Two initiatives in e-Gov and e-Health from the Comunidad Valenciana (E)*
  - **Organisational constraints and opposition** are very strong in any area especially in e-Health
    - *Eg. Directly from Engineering experiences on the field*
  - **Political barriers** may cancel actual benefits
    - *Eg. Mobility in e-Gov is not a technical issue any-more*





## Other areas of investigation (II)

- **Environmental benefits** not quantifiable
  - Too many variables for calculating such indirect impact
- Current e-Infrastructure vs **a futuristic global Infrastructure**
  - Is e-Infrastructure evolving? Toward which future? In which time frame?
  - May Key Areas requirement be taken into consideration? How to deal with current limitations?
- Correlations with **Web 2.0 technologies**
  - The new buzzword in e-Gov.





# Communicating results

Different channels including:

- A **pedagogical web site**, to collect, store information allowing any organizations to search and retrieve relevant information
- A **Virtual Community**, networking experts for different domains facilitating inter-organizational communication and addition of new best-practices
- **Check lists to self-assessment** of the organizational benefit of introducing e-Infrastructure technology
- A **final report printed**, for specialists and general public as an easy-to-use handbook





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**ERINA**  
Recommendations for **Exploiting Research Infrastructure** potential in key **Areas**

**eLearning** **eGovernment** **eHealth**

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**FOCUS ON**

Focus on  
**ERINA** stands for **Exploiting Research Infrastructure potentials in key Areas of ICT**. It is part of an EC - GÉANT & e-Infrastructure Unit initiative driven by the European Commission, Information Society and Media Directorate-General, to study the opportunity of adopting e-Infrastructures in sectors, such as Education, Government and Healthcare.

e-Infrastructures builds the basic technical and electronic services foundation for new research environments in which scientists can access unique or distributed facilities regardless of their type and location. This can include instruments, computing resources and experimental data, which enables them to streamline their own research efforts.

Therefore e-Infrastructures form the foundation of new organisational models for scientific communities, which will in the end not only benefit from economies of scale but also empower to implement new and innovative ways of conducting research. It is assumed that these features also can be leveraged into sectors such as e-Health, e-Learning and e-Government if a coordinated approach is taken on a European level.

The goal of the [ERINA study](#) is to develop a set of recommendations that could pave the way for adopting e-Infrastructure ...

more >>

**NEWS**

> **Survey**

On-line surveys open until the 30<sup>th</sup> September for the collection of more in-depth information on the cases selected and to carry out the socio-economic analyses.

[Benchmarking Model Validation Surv...](#)

> **Press release - Sept 2007**

Initial findings of the EU Research Study 'ERINA' will be presented at a workshop during the **4th Ministerial e-Government Conference** in L...

> **Erina Workshop**

Lisbon - 21st September 2007 - in occasion of the 4th Ministerial e-Governemnt Confere...

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