

ACTION-Grid

International Cooperative Action on Grid Computing and Biomedical Informatics between the European Union, Latin America, the Western Balkans and North Africa

The project aims to exchange research results and foster collaborations in Nanoinformatics, Grid technologies and Biomedical Informatics among Latin America, the Western Balkans, North Africa and the European Union (EU). One of its main aims is to deliver a White Paper that will provide input to the European Commission in developing a future agenda in R&D in these areas.

Objectives of the Project

Context: Biomedical Informatics (BMI), a discipline that has changed clinical practice and research, is expanding its scope by extending its research efforts to new areas such as Public Health, Nanomedicine, Genomic Medicine and Systems Biology.

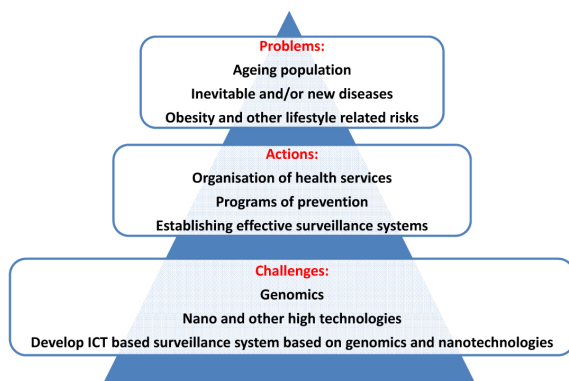


Figure 1 – Challenges for Public Health, courtesy of Josipa Kern

Nanomedicine claims to be the newest, exciting frontier of Biomedicine. It promises to deliver methods and technologies far more ambitious, but it still needs the theoretical foundations that are the basis for solid scientific disciplines, a field where BMI researchers can collaborate.

Objectives: The ACTION-Grid project main goal is to provide to the European Commission an analysis of the state of the art and priorities in the synergic area between BMI and Nanomedicine. To achieve this objective ACTION-Grid members have defined several sub-objectives:

- To foster training and mobility in Grid, BMI and Nanoinformatics
- To develop a White Paper in collaboration with a panel of recognized experts. This document will be delivered to the EC to establish a future agenda covering the Grid/ Nano/ Bio/ Medical informatics
- To disseminate results through diverse means: conferences, articles, website, etc.

Project Description

Project Description: ACTION-Grid is an initiative addressing the novel discipline of Nanoinformatics, giving an opportunity to analyze its emerging research topics and challenges.

Medical Nanoinformatics requires a multidisciplinary approach fostering synergies among medicine, nanotechnology and information technology. The convergence between nanotechnology and informatics complements the efforts to integrate the different levels in Biomedicine.

“ACTION-Grid is the first European initiative addressing the development of Nanoinformatics applied to Medicine.”

While BMI covered information processing and management, ranging from public health level down to the molecular level, Nanoinformatics also includes the atomic level.

The ACTION-Grid project is aiming to develop a collaborative framework within experts of NANO-BIO-MED areas, collecting relevant results obtained in these fields to disseminate them among the European Union, Latin America, the Western Balkans and North Africa.

SCENARIO

Over the last years the European Commission projects have produced interesting resources and tools that can be valuable for Biomedicine and Nanomedicine. ACTION-Grid aims to survey and disseminate Grid/ Nano/ Bio/ Medical informatics resources among countries of three continents to enhance international collaboration and enhance research on these areas.

Expected Results & Impacts

To achieve the goals of the project the following tasks are being performed:

- **A survey of current Bio-Nano-Medical initiatives.** The project has conducted a survey targeted to support the collaboration among different institutions in the mentioned geographical areas and target disciplines, dealing with aspects such as: technological and scientific innovation; research and development; training and mobility; scientific dissemination; and technology transfer. It could be of interest to compare such data with global trends in emerging research domains to evaluate EU areas of strengths.

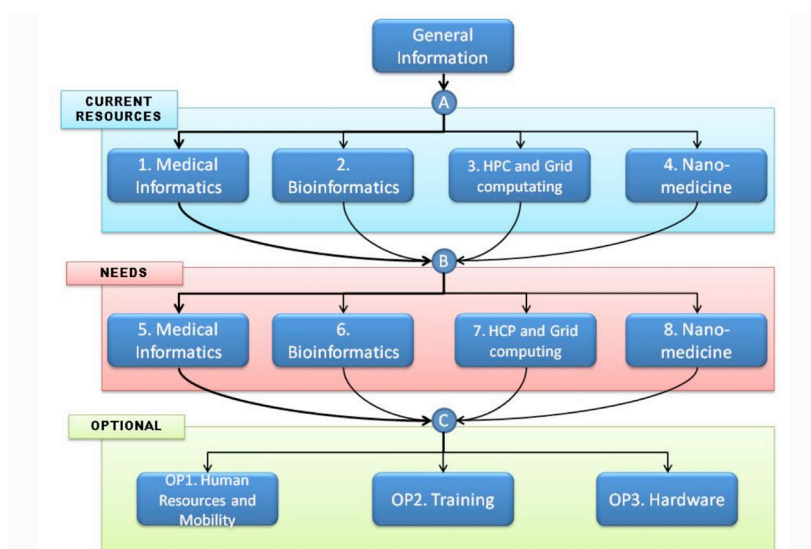
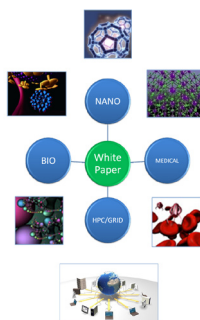


Figure 2 - Topics and structure of the ACTION-Grid survey

- **Training and Mobility.** ACTION-Grid fosters the exchanges among professionals of the involved areas. These exchanges count on the complementarity and specialization of the different participants, creating new synergies. The Support Action also promotes and facilitates training and knowledge sharing through the creation of a complete training programme based on workshops, training activities and e-learning courses. It is also remarkable the development of a prototype of a Training and Mobility Brokerage Service, a secure online Training and Mobility marketplace accessible over the Internet.
- **White Paper.** The project aims to produce a White Paper with the most relevant research lines in BMI and Nanomedicine in this moment. The European Commission will use this White Paper to foster future research initiatives in the European framework. To enhance the quality of this document, the project consortium created a panel of international expert in the mentioned areas.
- **Nanoinformatics:** Members of the project are addressing scientific and engineering issues for the new discipline Nanoinformatics, such as: data and knowledge bases of nanoparticles and biological interactions; creation of nano-ontologies; research on interoperability and integration; data mining from large databases; representations and models for nanoparticles; and connection of databases of toxic effects with computerized medical records.



These achievements will be reused and transferred in a wider context, having an important impact also outside the European Union.



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- Foundation for Research and Technology (Greece)
- Sociedad Italiana de Beneficencia en Buenos Aires (Argentina)
- Universidad de Talca (Chile)
- HealthGrid (France)
- Sveučiliste u Zagrebu, Medicinski Fakultet (Croatia)

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KEYWORDS

Nanoinformatics, Nanomedicine, Biomedical Informatics, Grid technologies, Nanotechnologies