
FuturICT
Spain
www.futurict.es
www.futurict.eu

What are the Flagship Initiatives?

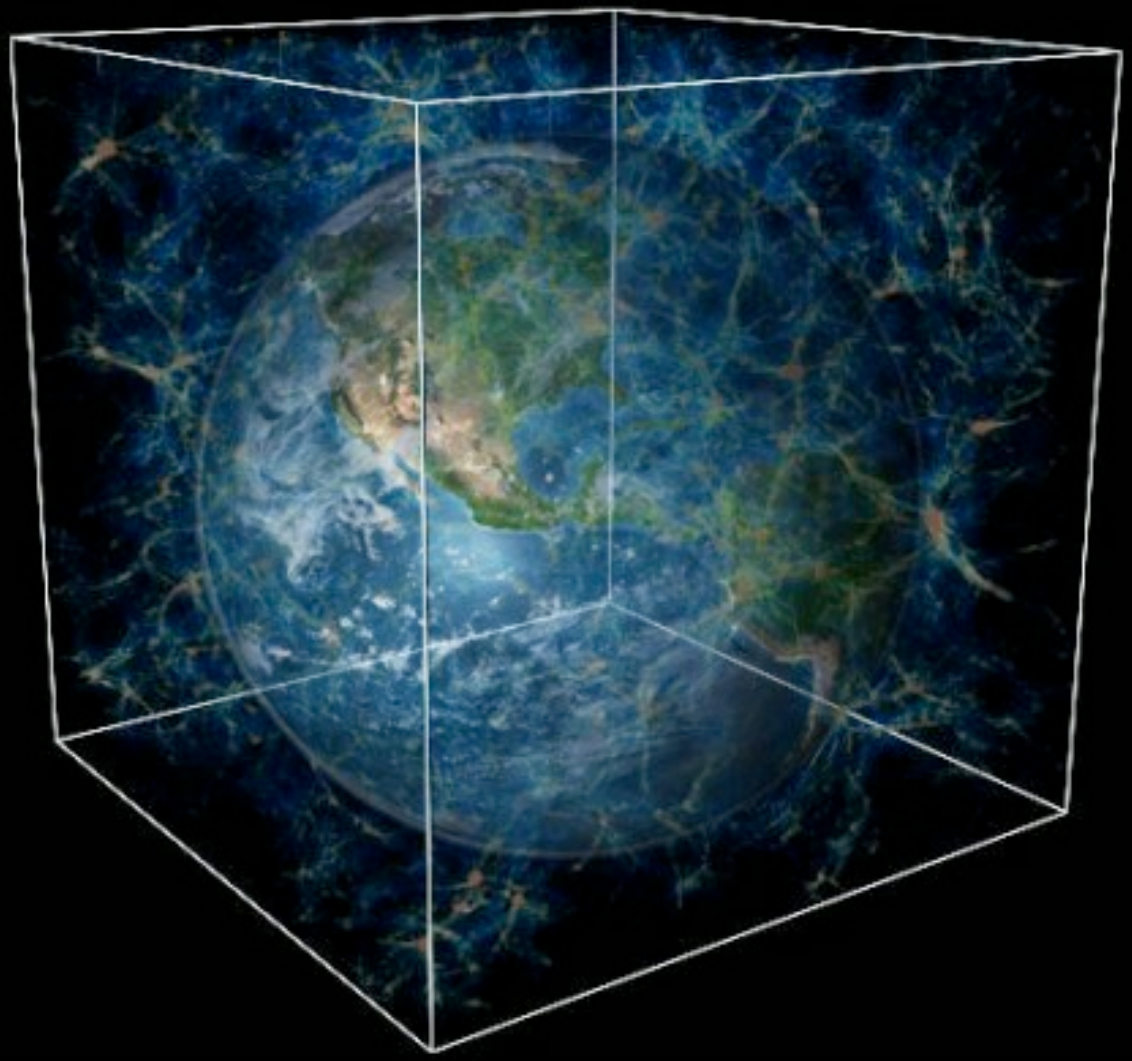
- Initiative of the area Future and Emergent Technologies are of the EU
- 10 years project 1G€
- 6 competitors now

FuturICT -Spain

http://www.FuturICT.es

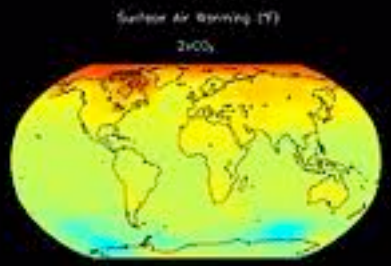
City Hub: Barcelona,
Spokesperson: Maxi San Miguel,
Deputy Spokesperson: Albert Díaz-Guilera

A consortium of about 1000 scientitsts sharing a dream:
Forecast the world

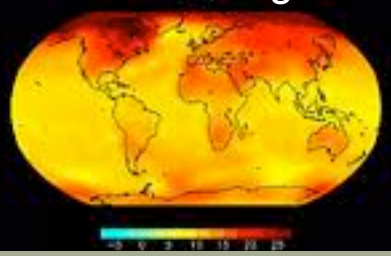


Integrating the best in

- **ICT**
- **Complexity Science**
- **Social Sciences**

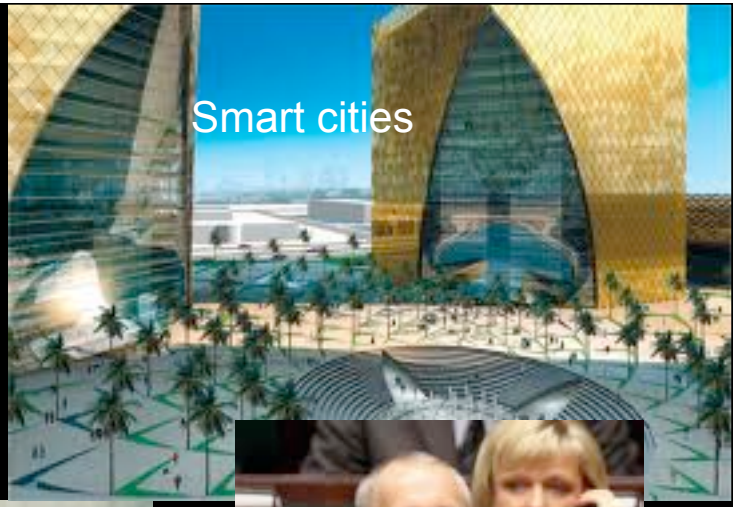


Global warming



Energy resources

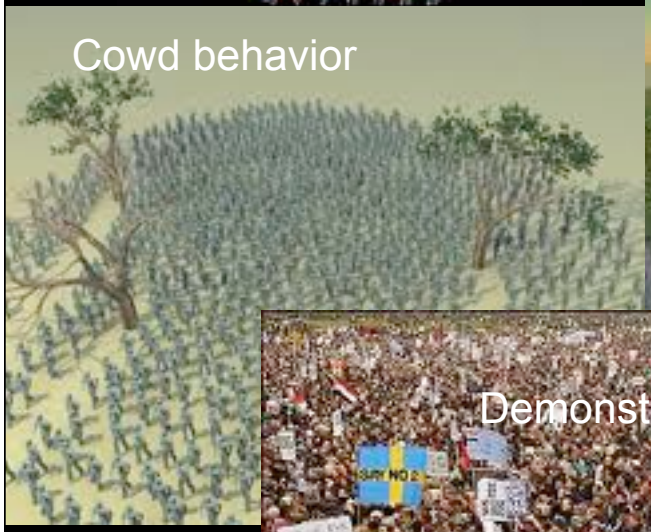
Smart cities



Virtual worlds

Politics

Cowd behavior



Demonstrations

Urban planning

Data time: Petabytes (10^9 Mb) of data monitor our activity

15M

- http://15m.bifi.es/index_en.php

Live semantics

The Grand Challenges

Problems:

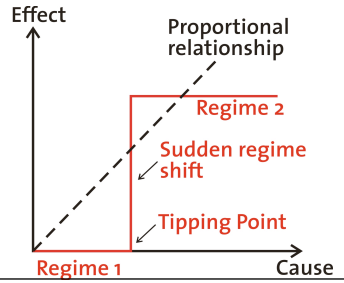
1. Demographic change
2. Financial and economic stability
3. Social, economic and political inclusion
4. Public health
5. Balance of power and conflict
6. Corruption and crime
7. Collective social behavior
8. Institutional design
9. Sustainable use of resources
10. Reliability of critical infrastructures

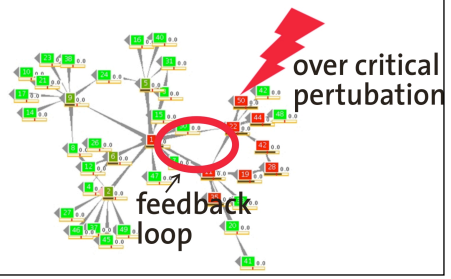
Reasons:

1. Interdependency, interconnectivity
2. Socio-economic, ecological, and technological complexity
3. Self-organization, emergence, chaos
4. Limits of predictability and control
5. Lack of quantitative models
6. (Due to) Lack of data
7. Lack of computational power
8. Lack of systemic predictions
9. Lack of tested alternatives
10. Systemic risks

This is about to change!

Cascade failures/ avalanche effects: Epidemic spreading, congestion spreading, failure of interbank market, breakdown of former GDR





What will it do

- FuturICT will build a Living Earth Platform for a global-scale simulation of our techno-socio-economic-environmental system and more

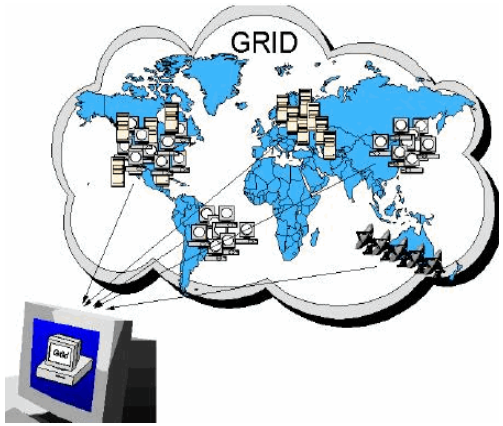
- This will integrate Crisis Observatories running massive data mining for the advance detection of possible crises:
- financial market instabilities
- emerging conflicts
- health risks and disease spreading
- environmental changes, etc.

- Participatory Platforms will inform decision-makers and involve citizens

- The Innovation Accelerator will speed up research, development, and the creation of new business opportunities.

- The focus on Managing Complexity will develop integrative system designs and new decision-making and governance tools.

The Living Earth Simulator



Fundamental ICT Challenges

- Exascale Computing
- Highly Decentralized and Peer-to-Peer Systems
- Zero-Delay Reality Mining
- Swarm Computing
- Social Computing
- Social Information Theory

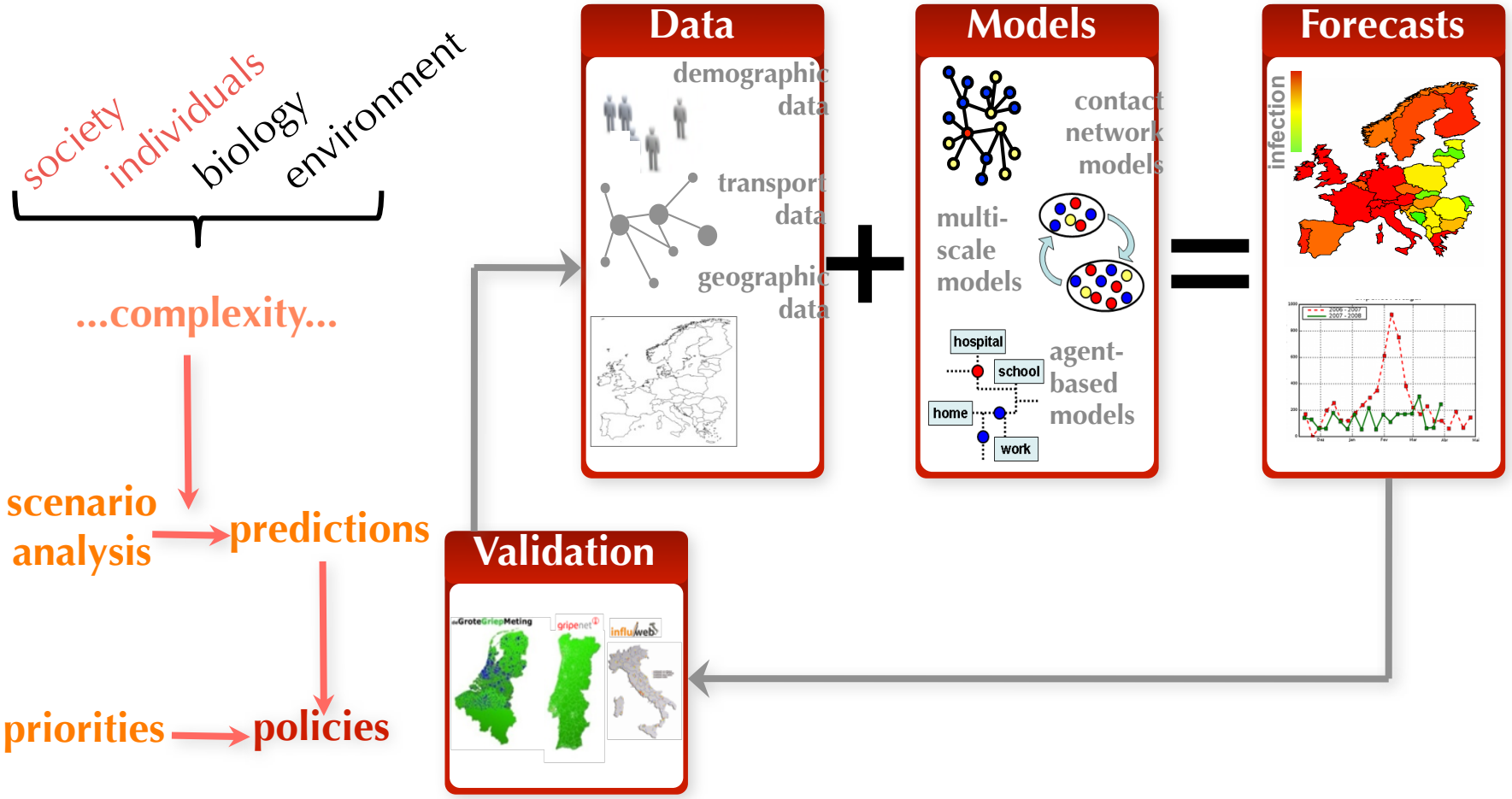
Applied ICT Challenges

- User-Oriented ICT Systems
- Data Collectors
- ICT-Empowered Systems Modeling
- Evaluating ICT Systems
- Reasoning ICT Systems
- Creative ICT Systems

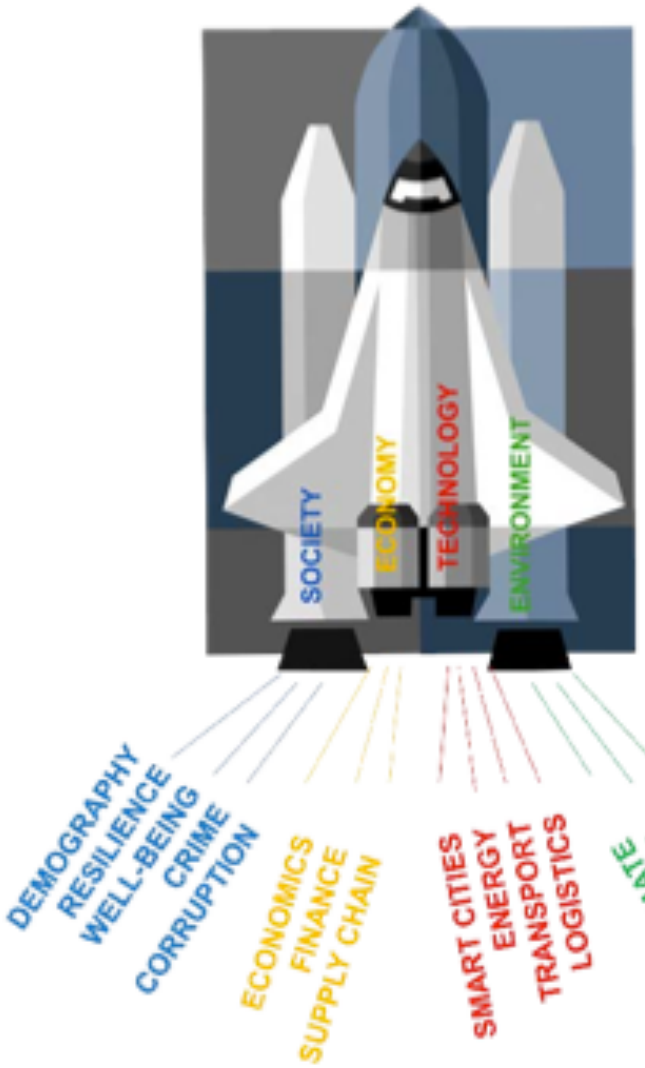
How will it work

FuturICT will combine the **best expertise across all scientific disciplines** - from computer science, physics, mathematics, environmental science and economics through psychology, ecology, anthropology and sociology. FuturICT will use supercomputing facilities, networked systems, data-acqusition systems and laboratories, creating a new kind of data-rich social science, on which intelligent future policies can be based

The modelling paradigm




Living Earth Platform = FuturICT Knowledge Accelerator
Ethics
Flagship Infrastructures
Education
Innovative Management
Science & Arts
Other Projects and Programs
Dissemination
Policy Partnerships
Business Partnerships
Global Participatory Platform
Exploratory of Society
Exploratory of Technology
Computational Social Science
Innovation Accelerator
Complexity Science
Exploratory of Economy
Exploratory of Natural Hazard
Planetary Nervous System
Living Earth Simulator
Cross-Cutting ICT



Plataforma FuturICT
Años(7-10)

Exploratorios Años(4-6)

Observatorios Años(1-3)

FuturICT.es
Qué aporta España?

Valores de FuturICT.es:

1. Infraestructura computacional a gran escala (supercomputación y grid).
2. Importantes registros en comunicación de datos y redes de telefonía.
3. Reconocimiento internacional de investigadores del proyecto en sistemas complejos, y en particular en simulación social. Más de 20 instituciones de investigación y empresas vinculadas al proyecto.
4. Red de colaboraciones científicas en este ámbito ya establecida.
5. Interés de empresas establecidas en España por nuevas tecnologías.

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Consortium: i) Mostly ICT

Barcelona Supercomputing

Advanced Communications and Computer Architecture

institute IMDEA networks

IFCA Instituto de Física de Cantabria

YAHOO! LABS

National computing infrastructures: Supercomputing (RES) and grid computing (NGI)

i) BSC-European PRACE initiative. Iinitial supercomputing nodes deployed by 2013.

ii) Spanish NGI operating since 2010. Part of EGI (a potential prominent actor of FuturICT)

ICT Technologies:

i) Data gathering from social and peer-to-peer-networks, mobile networks, sensor networks, or webs Data Communications and networking. Economic aspects of ICT.

ii) Parallel and distributed computing Scalable system architectures for social. Reliable Architectures for Data Centers and Internet Servers.

iii) Yahoo research Labs (Barcelona)

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Consortium:
ii) Mostly Complexity Science

Institute for Cross-Disciplinary Physics and Complex Systems (CSIC-UIB)

Carlos III University Madrid

complexitat.CAT

Catalan Complexity Consortium CxCAT

CxCAT-BKC
Barcelona Knowledge Campus

CxCAT-URV
Rovira Virgili University

Institute for Biocomputation and Physics of Complex Systems

Complexity Science:

- Spain can be ranked as country number 7 in terms of total scientific production since 2005
- Becomes country number 1 normalized to the country population.
- Average citation of Spanish papers is 25% above the world average.

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Consortium:
iii) Mostly Social Science/Simulati

INSISOC
SOCIAL SYSTEMS ENGINEERING CENTRE

ARTIFICIAL INTELLIGENCE RESEARCH INSTITUTE - IIIA

SimulPast

CASES:
Complex Adaptive Socio-Ecological Systems (MF, CSIC)

icta

Institute of Enviromental Science and Technology

Laboratory for Socio **Dynamic** Simulation

- Partners of FuturICT-Spain are founding members of ESSA and of the Artificial Economics Conference
- Artificial Intelligence: European research Institute with the largest number of Fellows of the European federation of AI societies
- FuturICT-Spain participants belong to the Department of Economics ranked (econphd.net) in Economics number 1 in Spain and number 9 in the EU

Consortium: Other

FuturICT-Spain

innaxis
Innovation for a Complex World

Stakeholder and private sector liasons

Arts Santa Monica:

Dissemination,
Education,

Outreach

Business Partners

satec
IT's easy

Telefónica I+D
Leading the innovation at Telefónica

Ibermática
Technology & Expertise

YAHOO! LABS

Also supported by (see letters of support i

- INDRA
- Telenium
- Skybus
- Conceptual KLT
- GVC Gaesco
- Optimitive
- Ubiqqua
- Puntech Mobility Solutions

Current status

- Finished Coordinated Action 1 year
- Submission of proposals Oct'12
- Final decission Dec'12
- Rump-up Phase 2.5 years
- Participació espanyola en RUP:
  - 4 representants de complexitat.CAT

Participació catalana en convocatòries recents

- **FP7: FET Proactive Intiative: Dynamics of Multi-Level Complex Systems (DyM-CS)**
- Participació en 3 dels 9 projectes aprovats
- Consorci universitats catalanes (URV-UPC-UB)