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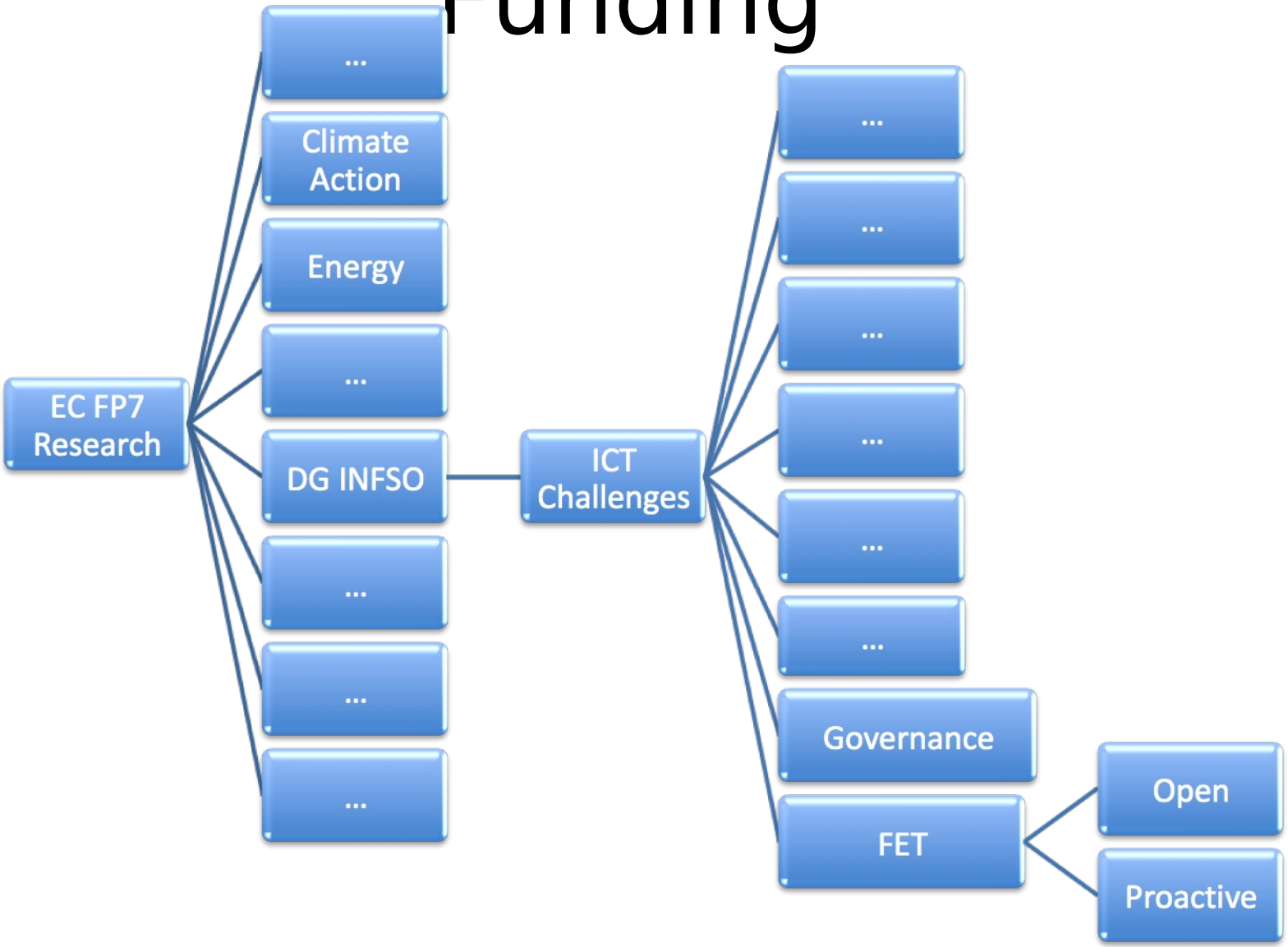
Problems

problems

problems

New technologies

European Commission Funding



FET Flagships

- http://cordis.europa.eu/fp7/ict/fet-proactive/home_en.html
- 10 years
- €100m per year (10x100 = €1billion)
- Proposal should be ambitious large-scale, science-driven, visionary research initiatives that aim to achieve scientific breakthrough
- Ambitious goals require extensive cooperation
- Leveraged support

Flagships Time-line

- Call for Pilot Studies (similar to Coordinated Action awards) open any day
- Call to close December 2nd 2010
- Spring 2011 5-7 Pilot Studies awarded around €1.5m each for 1 year
- 2 Flagships to be selected
- 2013 Flagships to set sail

There will be several proposals but ...

FuturIcT

- The main driver is the need to develop global scale models that will allow us to avoid any cascade of events leading to a domino effect that lowers our ability to create fair and sustainable future.
- We want to link people with data to models and then policy.
- FuturIcT is thus at the heart of a new 21st Century ‘science’ that will use and develop information and communication technologies (ICT) in a social framework.

FuturIcT

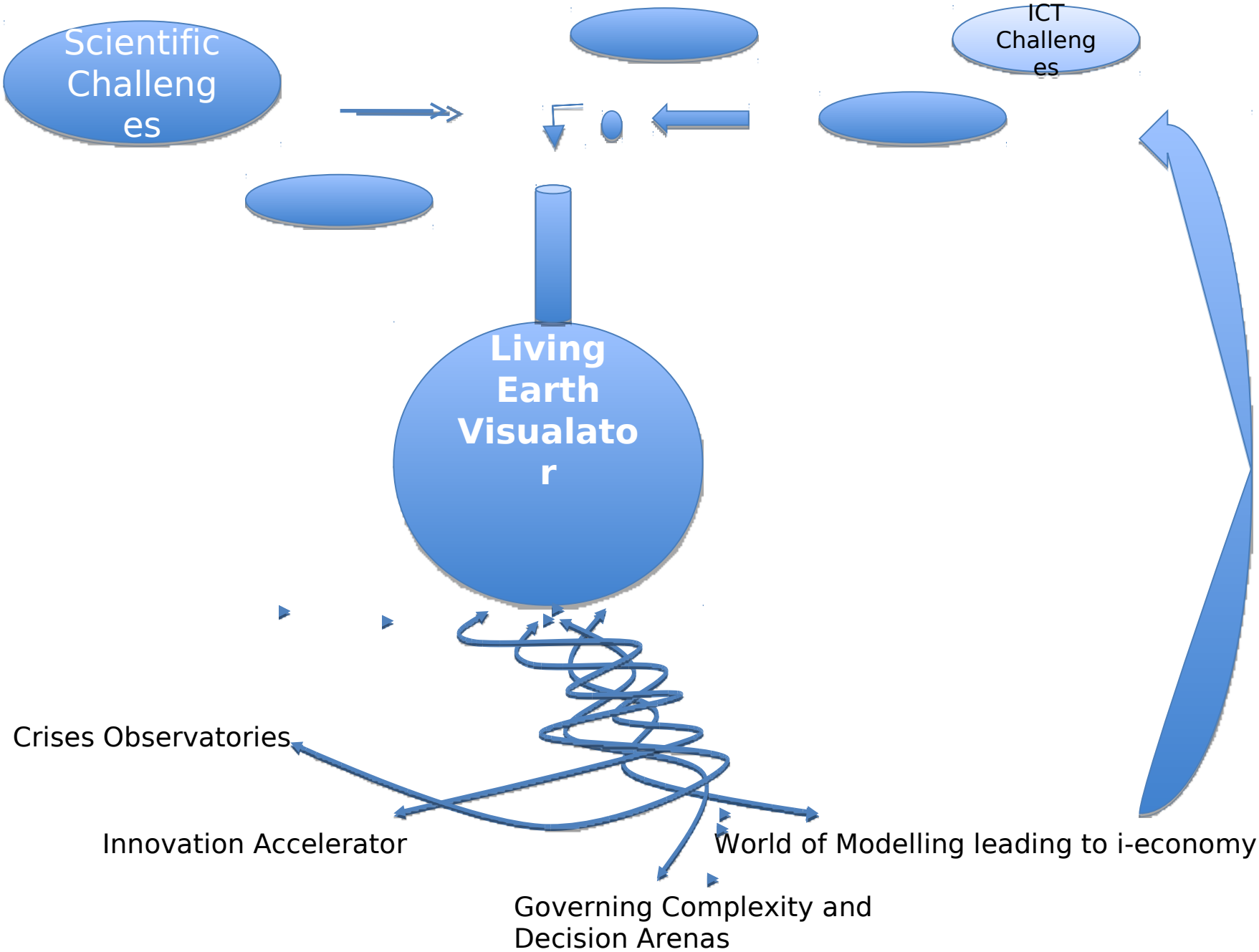
- Lead by Dirk Helbing
- Supported by Steven Bishop, Paul Lukowicz, Alex Vespignani, Jeff Johnson, JB McCarthy
- Plus a host of other scientists

Living Earth Visulator (LEV)

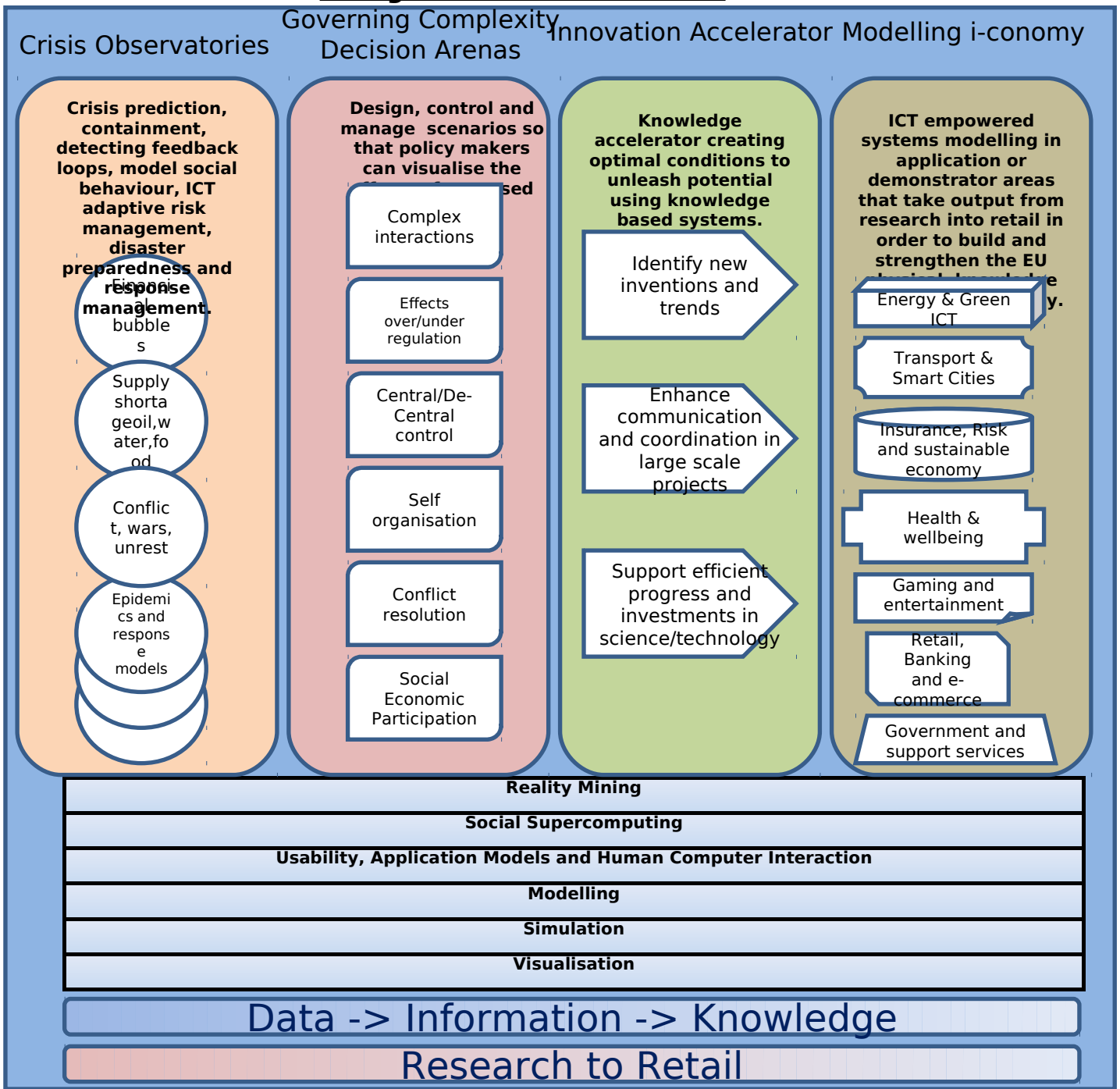
Living Earth Visulator – a broad concept that includes the modelling, simulation, and visualisation of social-technological-economic-environmental global changes, and acting as an information translator that turns data into information into knowledge.

Library of modelling tools using real-time data streams, agent based methods, cutting edge information technology, and unprecedented computational power.

The aim is to predict the emergent behaviour of inter-dependent complex social systems but this will provide understanding of the social dynamics driving the most critical issues facing humanity today and will offer decision makers data driven solutions to anticipate and effectively confront crises head on.


Scientific Challenges
ICT Challenges
Living Earth Visualator
Crises Observatories
Innovation Accelerator
World of Modelling leading to i-economy
Governing Complexity and Decision Arenas

Living Earth Visualator (LEV)



Living Earth Visulator

Fundamental ICT Challenges

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

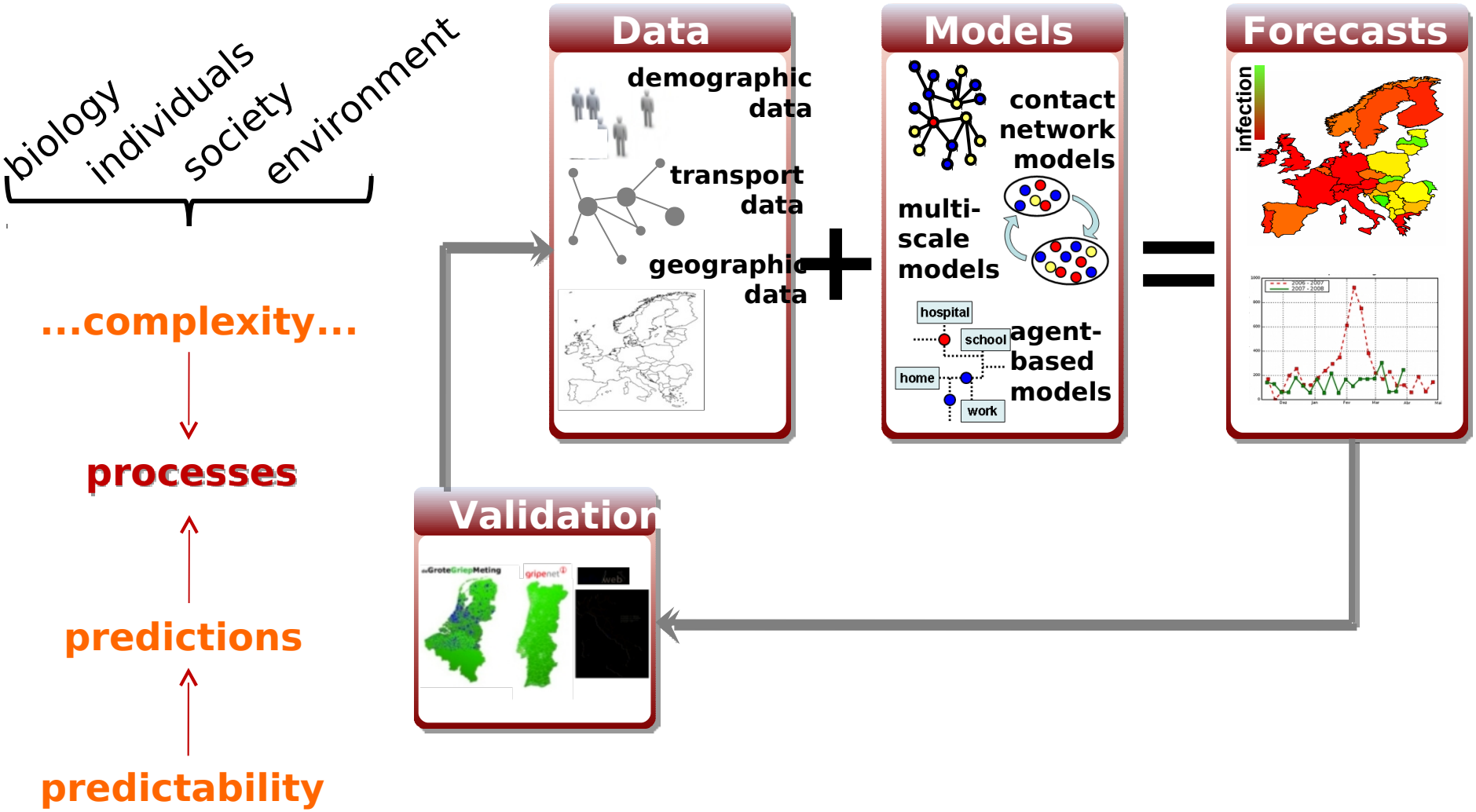
Applied ICT Challenges

- Data Collectors
- Massive Agent based models
- Simplified equation based m
- Aggregation of models
- ICT-Empowered Systems Modelling
- Evaluating ICT Systems
- Reasoning ICT Systems
- Creative ICT Systems

Crisis Observatories

- Massive data mining
- Social super-computing …. But also small scale intelligent models
- Crisis prediction, containment, detecting feedback loops, model social behaviour, ICT adaptive risk management, disaster preparedness and response management
- Parallel worlds - scenario analyses

Global-Scale Simulation of Socio-Economic-Environmental Systems



(thanks to Alex Vespignani)

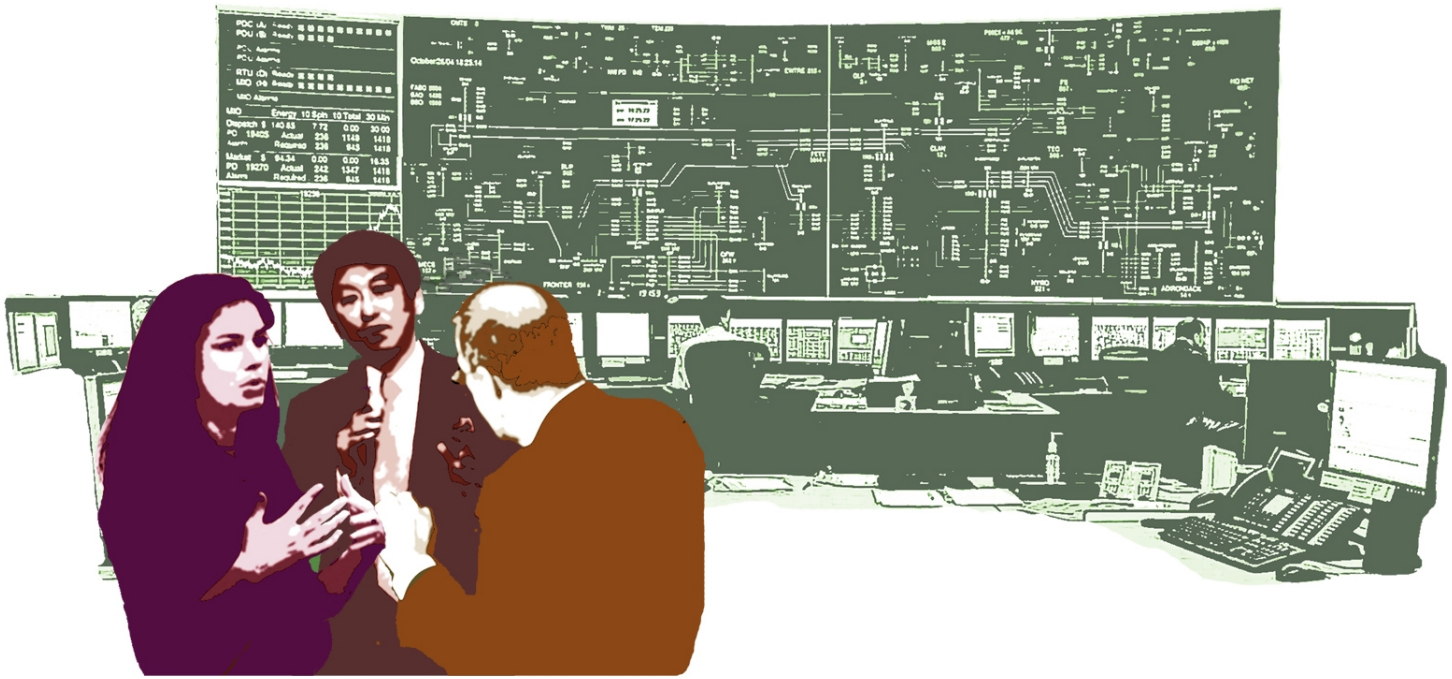
Innovation Accelerator

- creating optimal conditions to unleash potential using knowledge based systems
- identifying innovations early on
- evaluating them across disciplines and supporting co-creation projects between different scientific disciplines, business, and governance
- Enhance communication and coordination in large scale projects
- The Innovation accelerator will translate data into information and then into knowledge

Governing Complexity

- to design and manage the governance of complex interactions
- to support the coordination between multiple parties
- study systemic effects of over- or under-regulation to identify the optimal mix of central and decentralised control
- find management strategies that support a robust, but flexible and adaptive organization; identify novel conflict resolution mechanisms; develop new ways to increase social and economic participation as part of e-Governance

Decision Arenas



Place decision-makers in a strategy room equipped with real-time, integrated visualisations of social, economic and environmental changes in response to decisions.

Used for running scenarios of various events including:-

Crisis Management

- Prediction
- Training
- Operational relief and recovery
- Linked Centres
- Translation of language and narrative

Citizen Jury

- Dissemination
- Public understanding
- Legitimacy of policy
- Social inclusion

i-conomy

- The world of modelling providing massive value-added for an innovation economy
- ICT-empowered systems modelling in application or demonstrator areas - smart energy, smart cities, transport, crime and corruption ...
- use advances in the LEV to build on and respond to models and data.
- stimulate new research challenges both to the LEV as well as identifying new scientific challenges.
- business engagement to take ICT from research into retail in order to build and strengthen the European physical, knowledge and service economy.

What is needed

- Global models
- Integrated systems
- Visualisation methods
- Comprehensive versus comprehensible
- Demonstrators
- Individual support, Institutional support
- Input on text

Impact of FuturIcT

Future Living

- Customized Information Services
- Personalized Education
- Smart Cities, Transport, Transport
- Micro-Generation of Energy
- Safety and Security

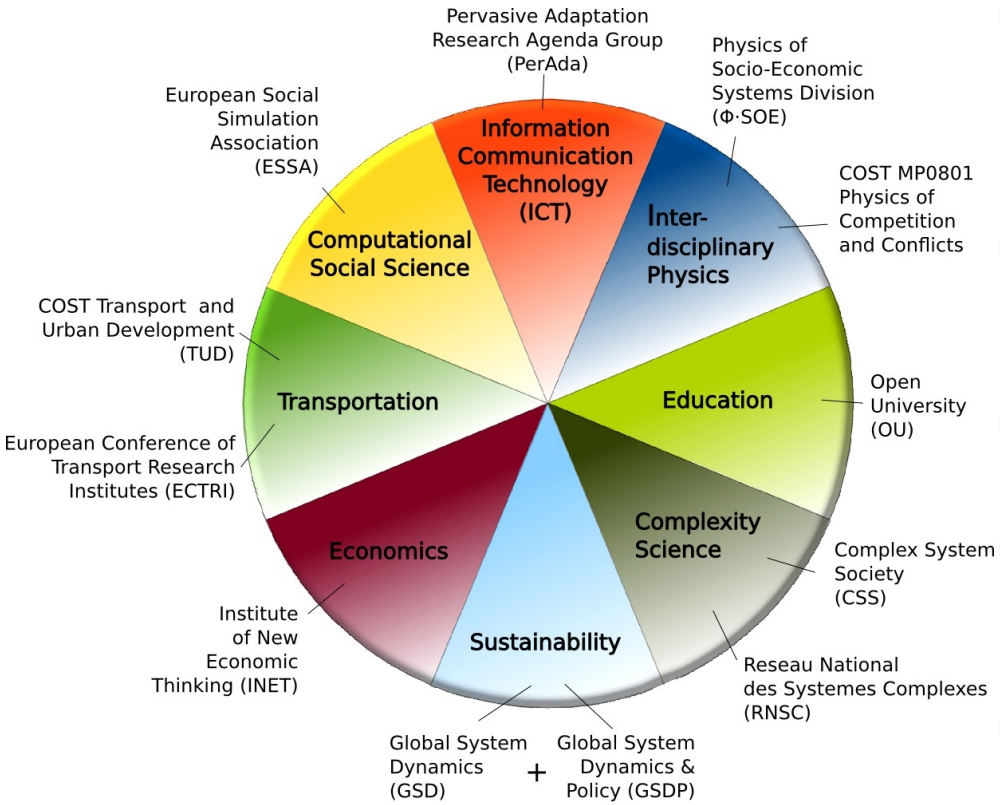
Towards Robust and Sustainable Systems

- Realistic Theory of Economic Systems
- Contingency Plans and Risk Management
- Managing Complexity and Institutional Design
- Global Systems Dynamics

What do we envisage

- ??
- Regional hubs (including, in UCL, a physical Institute for the Information Society)
- Open access to data and a gold star rated library of models
- Decision arenas

Plausibility of FuturIcT



The FuturIcT Knowledge Accelerator integrates the best of all relevant knowledge

Related Projects

- Europe is the leader in social simulation, but US military and homeland security now invest huge sums into many projects
- EU projects on techno-social systems: QLectives, Cyberemotions, Epiwork, Socionical
- Science of Science: HITIME, VIVO, GAPMINDER, GLOBALHUBS, CREEN…
- Large-Scale Multi-Agent Simulation: EURACE, Agent-Based Macro-Financial Model
- EURACE, EMIL, PERPLEXUS, PATRES, MMCOMNET, EVERGROW, DELIS, EC-AGENTS, PACE, CREEN, IRRIIS…
- All e-Governace projects

Links

- GSD: Global System Dynamics and Policies (www.globalsystemdynamics.eu)
- GSDP: Global System Dynamics and Policies
- Vismaster: Visual Analytics – Mastering the Information age (www.vismaster.eu)
- PADGETS: Policy gadgets (www.padgets.eu)
- EIT: European Institute of Innovation and Technology (http://eit.europa.eu)
- …

www.futurict.eu