

**Objective ICT-2011.9.14
'Science of Global Systems'**

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Objective ICT-2011.9.14

'Science of Global Systems'

The term '**Global Systems**' refer to systems with

- interdependencies on global scales (world-wide → local) *and*
- interdependencies across different decision domains (economic, ecological...)

Motivation:

- (1) To better understand interdependencies between economic, social, and ecological systems in order to allow coherent decisions across different domains.
- (2) To improve the **interface/link between modellers and society**. Actors in society become an integral part of the scientific modelling process.
(*Both* points need to be addressed in proposals)

Role of IT:

- IT has created many of these interdependencies
- IT tools will help with new modelling/design techniques
(e.g. analysis of massive data sets, online communities as 'laboratories', validation of models, visualisation of model results, etc)

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Target outcomes:

Develop '**Cross-System Modelling**' that allows coherent action across different decision domains, e.g.:

IT tools to recognize/represent global interdependencies e.g. via concurrent analysis of large-scale data sets on socio-economic systems

Develop a '**Science of foresight**' that includes better model results and the abundance of data available with societal decisions, e.g.:

Methods to build narratives from models and data

An IT-induced change of scientific practice in socio-economic and ecological systems analysis, e.g.:

New system models of societal processes and social organization,

New tools to gather/analyse data on socio-economic and ecological systems

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Expected impact:

Better links between modellers and stakeholders facilitated by new policy-relevant models of global systems.

Overcome fragmentation in various policy-relevant models -beyond 'policy silos': Models better suited for global coordination/governance

Impact will be measured by policy uptake in targeted areas, in particular :

- New responses to systemic risk (in economy, ecology, climate)
- Better models of the financial system in the wake of the financial crisis
- New system models of climate change impact and sustainability

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GSDP – Global Systems Dynamics & Policies

Objectives of GSDP:

Define a research program

- to develop the foundations for better models of societal action.
- to enhance interaction between science and society.
- to develop a systemic approach to challenges from global coordination

Define, mobilize, and unite the research community in 'global systems science'. Link this community to the relevant decision bodies.

Develop an online ecosystems around 'global systems science'.

(the website www.gsdp.eu will be host a repository of papers/visions around the emerging area of 'global systems science' and will serve as a discussion forum)

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The global systems science community:

- Complex systems modellers interested in socio-economic and ecological system models (link with call ICT-2011.9.7: Dynamics of Multi-Level Complex Systems)
- Computer scientists interested in developing the next generation of system models (new types of formal language specification – CCT etc)
- Researchers interested in system models of sustainability
- IT researchers interested in developing methods for social and economic sciences to derive interdependencies from large socio-economic data.
- Social scientists, economists interested in next generation models that use IT (Social Sciences2.0)
- Decision makers and societal actors interested in how modelling can be of help in societal processes.

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See also www.gsdp.eu