FuturICT is a visionary project that will deliver new science and technology to allow us to explore, understand and manage our connected world. This will create new information and communication technologies (ICT) that are socially adaptive and socially interactive, supporting collective awareness.
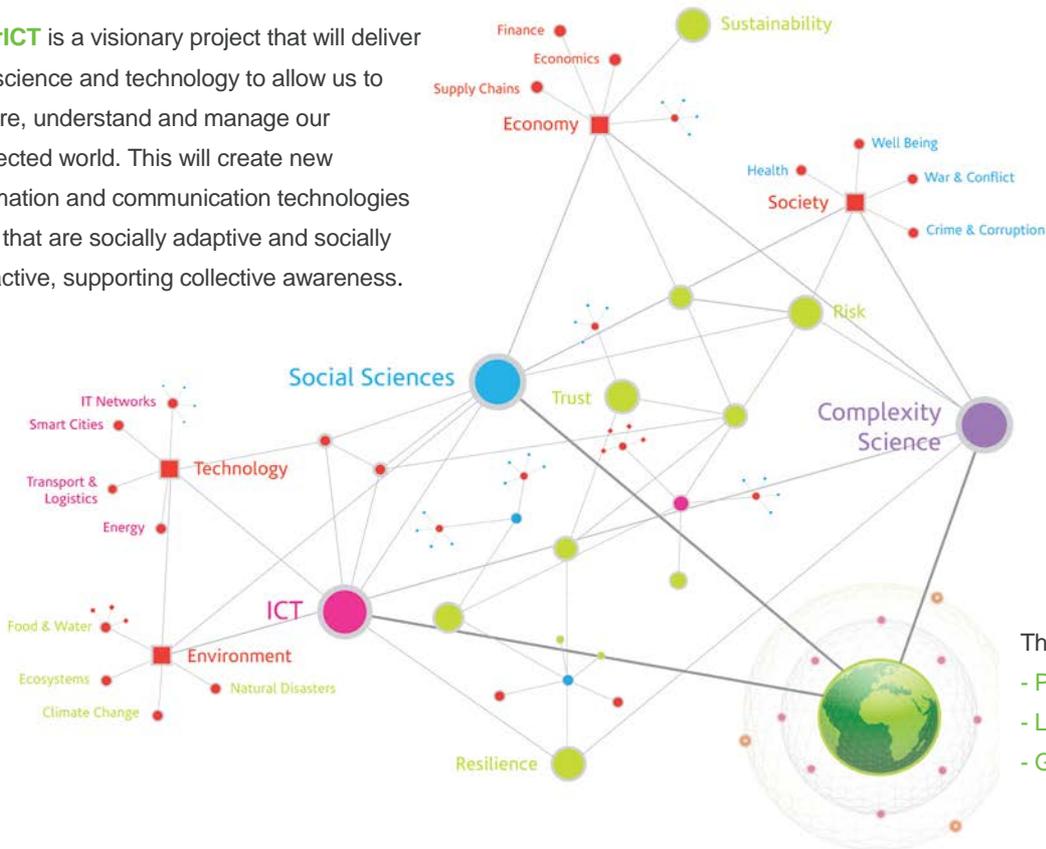
The FuturICT Platform:
- Planetary Nervous System
- Living Earth Simulator
- Global Participatory Platform

The Living Earth Simulator

The ability to create a smarter society, one with **anticipatory capabilities**, is almost in our grasp. We can apply ICT tools and complexity science methods that will increase and connect the innate anticipatory capabilities of humans. To this purpose, FuturICT will build a Living Earth Simulator (LES), a sophisticated framework for simulation, visualisation and participation, which will allow the exploration of future scenarios at different degrees of detail, using a variety of perspectives and methods (including agent-based simulations and multi-level models).

When studying society, the current separated disciplinary approach has failed to consider the reflexive nature of this study where humans reinvent society at the same time they try to understand it. The LES will take as input Big Data from the Planetary Nervous System, including information about events (e.g. social unrest), trends, demographics, and other data collected both locally and globally; it will feed this data into large-scale models based more than one mathematical theory, building a world of models for simulation and interpretation. The LES will allow validation of at all scales providing generative, mechanism-based explanations for emergent behaviour.

What can we ask the LES?

The LES will translate the information coming from the Planetary Nervous System in a process based around BigQuestions and BigTheories into knowledge and predictions about global scale socio-economics phenomena (e.g. likelihood of a financial crisis, expected effect of certain policies and laws, impact on specific industries, crime rates). A What-NEXT component will be responsible for obtaining and updating anticipatory representations of future developments of the domain state; a What-IF component will be responsible for the design and test of reactions and intervention measures, which deal with issues of policy modelling and governance.

How can we support the LES?

The LES will benefit from data, theories and models that could be provided both by individuals and institutions. Global participation for a collective effort to build the future, as catalysed by the presence of the LES, will be the key to overcome the problem of forecasting in society.
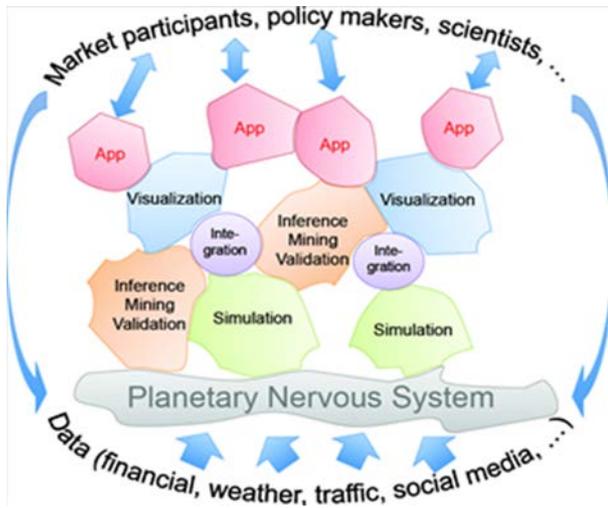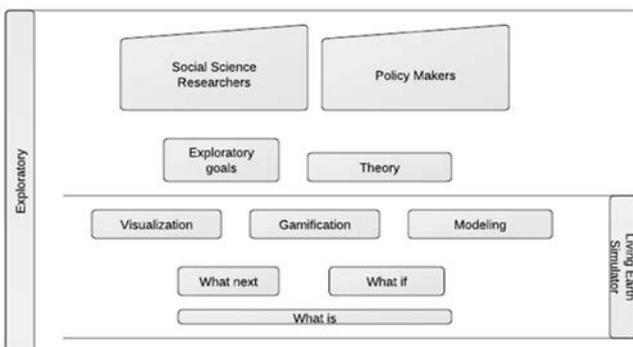
How will the LES be built?

The Living Earth Simulator will be open to scientists, policy makers, FuturICT Exploratories and, through the Global Participatory Platform, *the general public*. It will be built in a modular way made accessible through software facilities, standards, and application programming interfaces. The main components of the LES will be:

Simulation and Modelling: agent-based, multi-level modelling and simulation, with heterogeneous individual agents, mechanisms and processes, working at several aggregate, interacting levels of intentional, cognitive (as distinguished from rational) agency: from humans as they change through time, to humanity as it changes through time.

Statistical Inference, Data Mining and Validation: to inform simulations through data, mine massive data produced by the simulations, and validate the results of simulations.

Visualization and Visual Analytics: to allow easy combining and integration of building blocks from the platform: user interfaces and visualization for modelling, visual analytics technologies for understanding results.

Living Earth Simulator: Taking the Heartbeat of Society

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