

This document gives a conceptual overview of the integrated systems platform, **resilience.io**, under development and demonstration by The Ecological Sequestration Trust with partners Imperial College London and the Institute for Integrated Economic Research. The Trust was established to accelerate and scale-up transformative urban-rural development towards a resilient, low-carbon, resource efficient way of living. Currently, our collective understanding of how economic, ecological and human systems interlink is limited. To help solve this, we have brought together world-leading modellers and sector experts to create an innovative, open-source decision-support tool as a public good.

Collaborative intelligence gained through the use of this tool will help us understand and manage risks associated with the stresses and shocks of climate change, resource scarcities, ecosystem degradation and disaster events.

This introduction is part of a set which includes four related 1-page specifications:

1. **Functional specification** - the vision for **resilience.io** functionality. **resilience.io** will spatially represent a city-region and its connections to the outside world. Users will be able to input and test scenarios, while outputs, based on integrated systems analysis, can be used as an evidence-base for decision making.
2. **Technical specification** - the technical architecture of the **resilience.io**. This describes the software components of the modelling platform and how they depict a computer representation of the city-region.
3. **Data specification** - defines the data requirements through a description of the five core models integrated within the platform, four data elements (spatial, entity, process and agent) and fourteen sectors of the human ecosystem which describe all productive and consumptive activities.
4. **Data collection strategy** - provides generic procedures that can be applied to the 14 sectors which fit within the 5 core models as described in the data specification.

### User experience

**resilience.io** will be open-source, allowing users to access it from their computer or digital device in any location with internet access. It will offer a comprehensive representation of a city's economy, ecology and human activity. Once developed, 3D visualisations will be used to create and see the results of projects within an intuitive and collaborative user environment.

### Culture

Urban development that integrates cultural heritage is more sustainable, more diverse, and more inclusive. Communities will both use and contribute data, information and knowledge to **resilience.io**, ensuring that the culture and heritage of existing communities is embraced, to build trust and enable communities, however diverse, to find a common purpose through collaboration.

### Financing development

**resilience.io** is being developed to support city-region planning and decision making so as to evidence, and then support the implementation of new policy and technology interventions that achieve more resilient development pathways. This evidence will help to mobilise finance to these projects as outlined in our report [how to connect in finance and insurance](#).

### Strategic links

**United Nations:** We are working with the [UN Sustainable Development Solutions Network](#) (UN-SDSN), the [UN Office for Disaster Risk Reduction](#) (UNISDR) and the [Global Partnership for Sustainable Development Data](#) (GPSDD) to establish how **resilience.io** can be used for monitoring and achieving progress towards goals for sustainable development and resilience. **resilience.io** will also provide a decision-support tool for risk-sensitive investments and policies.

**International Centre for Earth Simulation:** The [ICES Foundation](#) are integrating vast pools of knowledge into next generation 'holistic' modeling, simulation and visualization to depict the medium and long term changes to planetary systems. Connecting **resilience.io** to these models will allow us to better understand how global changes impact locally and also how decisions made at regional level feed back to planetary systems.

**OASIS:** In order to support regional resilient decision-making, The Trust are working with OASIS to integrate their [catastrophic loss modelling framework](#) with **resilience.io** to support insurance functionality and better manage climate risks in city-regions.

**GEODAN:** [Geodan](#) will supply the crucial data brokering capability and build cutting edge visualisation and graphics. They will also create a data brokering system between the ICES platform and OASIS framework.

**Future Earth Ltd:** [Future Earth Ltd](#) are supporting our activities in establishing a set of demonstrator city-regions globally. Our priority is to put the **resilience.io** platform into practice and we are taking a rapid prototyping approach so learnings from these demonstrators are incorporated into updates to the platform and this set of specifications.

For more information please visit [resilience.io](#)