

Pilot Semantic Grid Service for Environmental Modelling

Pete Edwards	(Principal Investigator)
Alun Preece	(Co-Investigator)
Edoardo Pignotti	(Research Assistant)
Nick Gotts	(Macaulay Institute)
Gary Polhill	(Macaulay Institute)



FEARLUS-G



<http://www.csd.abdn.ac.uk/research/fearg/>

Key Aim of the Project

- To serve a well-established environmental modelling framework to the scientific community.
 - Allow very large-scale experiments to be run, analysed, and repeated.
- To promote collaboration by facilitating access to alternative models and comparison of results.
- To support training by providing a shared co-laboratory environment for experimentation.

What is FEARLUS?

- FEARLUS Model 0-6-5 is an agent-based model of land-use change. (Macaulay Institute, Aberdeen.).
 - Aims to provide understanding of land use change, particularly as regards rural Scotland.
- Contains objects that represent human decision-makers in the real world.
- Allows a variety of land-use strategies and their outcomes to be explored.
- A FEARLUS experiment consists of running a series of simulations (computationally expensive).

ProcCtrl

Start

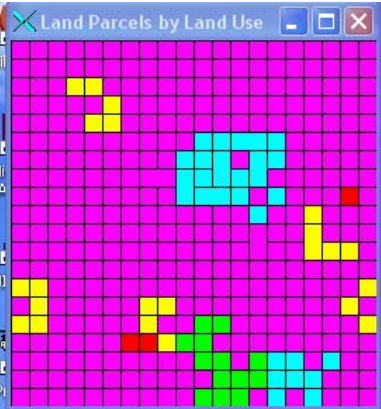
Stop

Next

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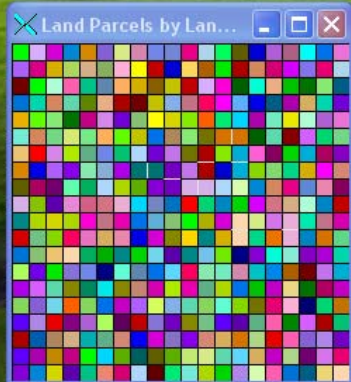
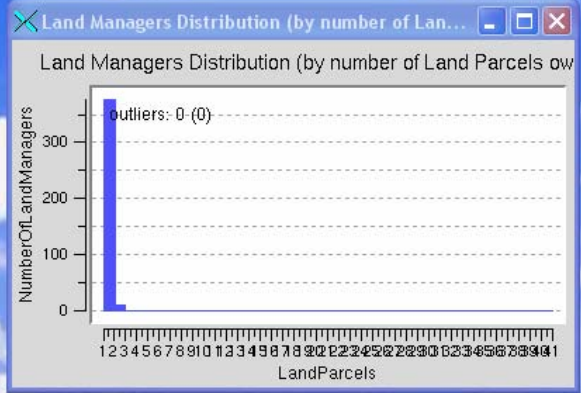
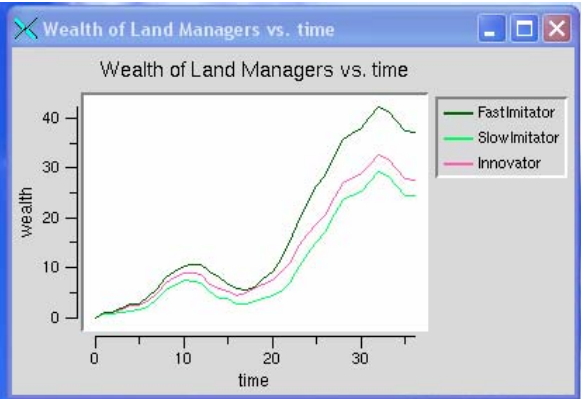
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Send to ...

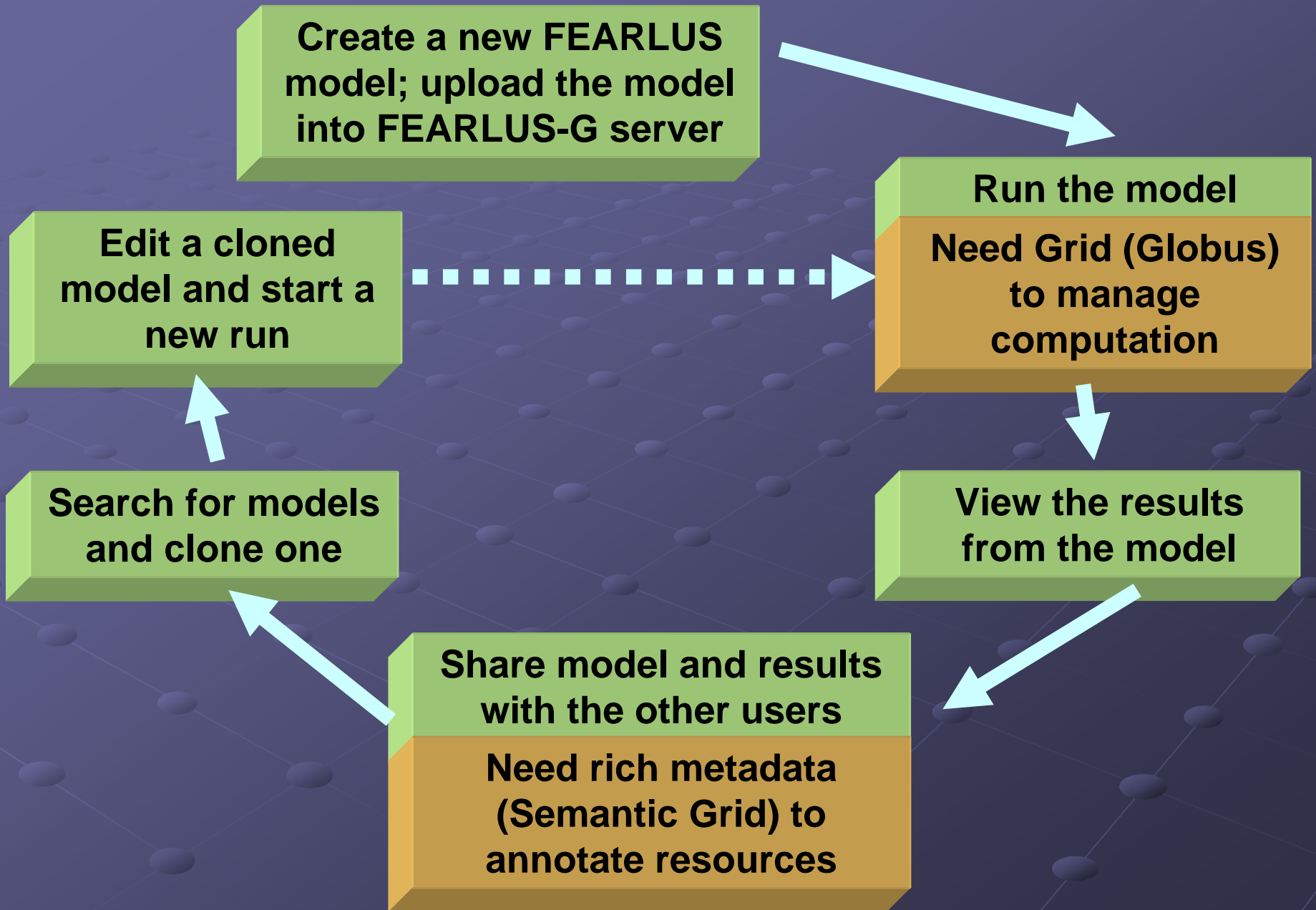


Parameter

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economyBSSize	19
economyToggleProbs	NumberArray
landParcelBSSize	1
nLandUse	6
pLandUseDontCare	0
clumping	None
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landUseFile	<NULL>
climateFile	<NULL>
climateToggleProbFile	empty.ct
economyFile	<NULL>
economyToggleProbFile	econ-19bit-10pct.et
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useLandUseFile	0 *
useClimateFile	0 *
useEconomyFile	0 *



Collaboratory



Technologies Overview

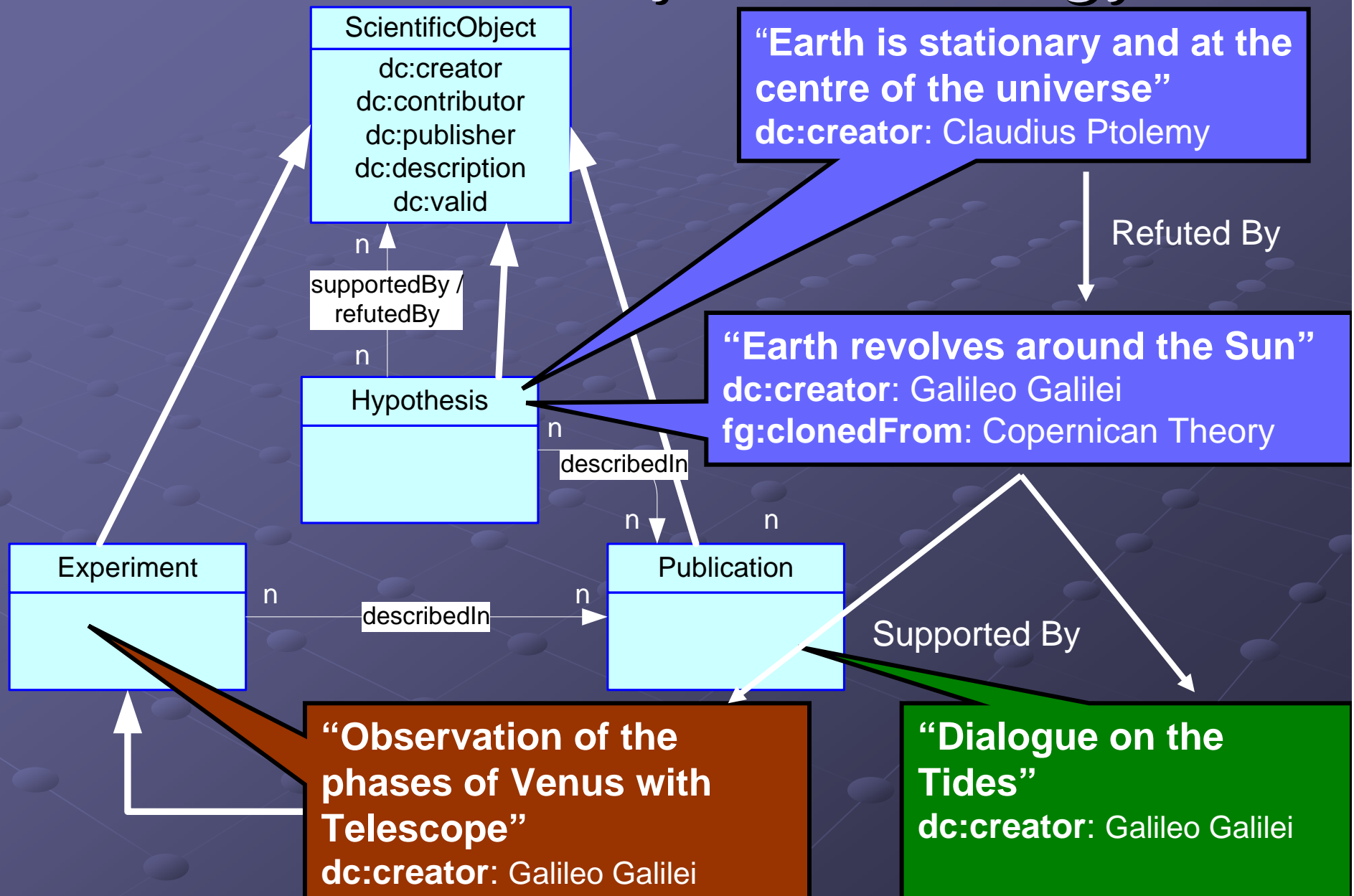
Processes

- Globus Toolkit facilitates distributed computation across multiple CPUs/hosts.
 - Grids overcome the limitation of traditional Web technologies.

Data & Metadata

- ELDAS is a Grid service that allows access to different databases, e.g. MySQL, DB2, Oracle.
- Jena2 is a Java framework for managing Semantic Web metadata (ontologies).

Scientific Object Ontology





Pilot Semantic Grid Service for Environmental Modelling

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Welcome to the FEARLUS-G Web Client

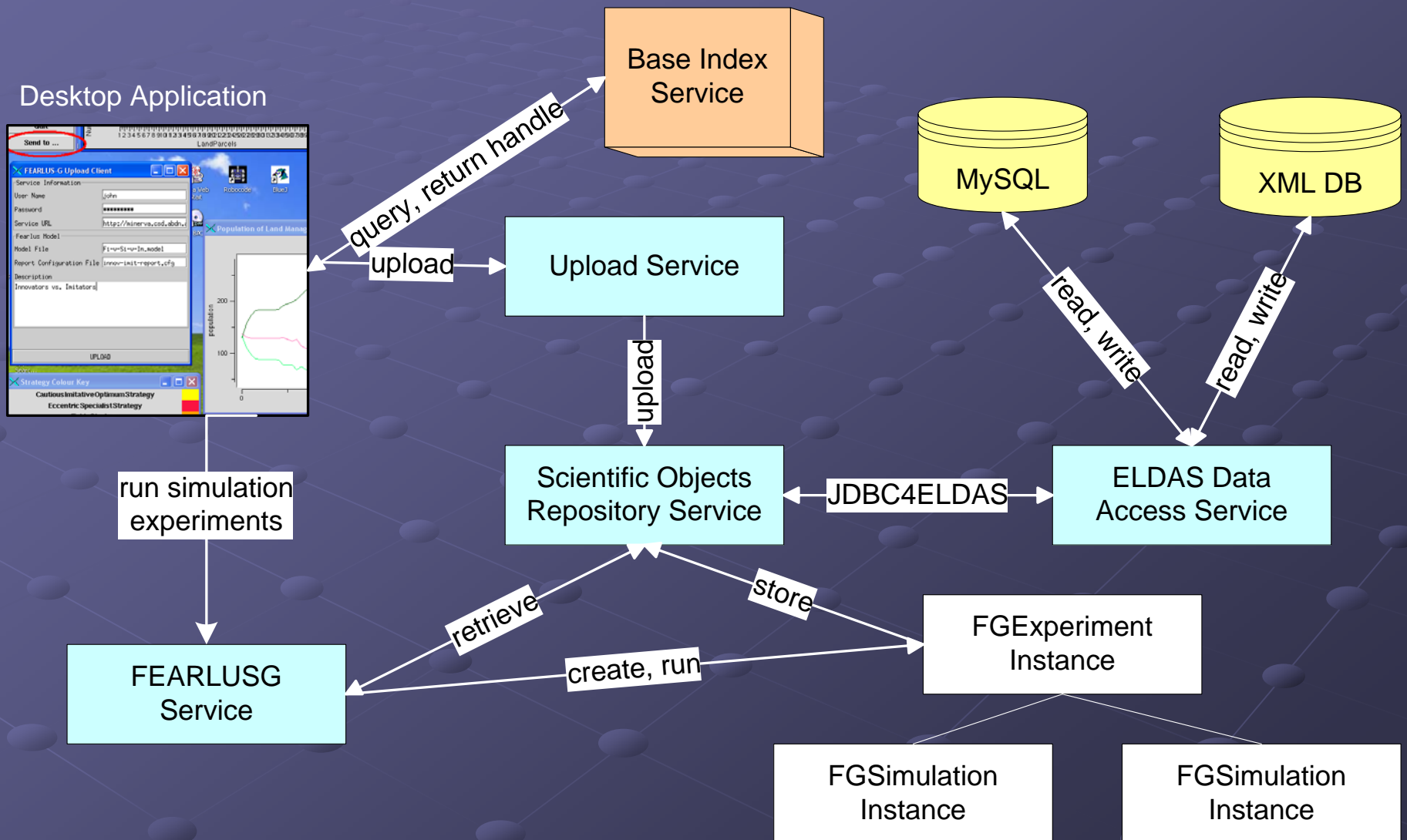
Models uploaded from: gpolhill

Model Name	Date	Time	Description	Status	Options
Fi-v-In.model	2004-06-03	13:59:29	Innovators/Imitators Fast Imitators vs. Innovators	Completed	Run View Delete Publish Clone Send
Fi-v-Si.model	2004-02-20	14:03:10	Clone from (ngotts): Innovators/Imitators Fast Imitators vs. Slow Imitators	Completed	Run View Delete Publish Clone Send
Si-v-In.model	2004-02-20	14:09:27	Innovators/Imitators Slow Imitators vs. Innovators	▶▶ Running...	Run View Delete Publish Clone Send

Last Update: 03/06/2004
epignott@csd.abdn.ac.uk



Integrated Architecture



Expected Contributions of This Work

- Reusable ontology for representing (social) science concepts.
- Integrated framework for managing (social) science data & metadata.
- Proof-of-concept collaboratory for land-use modelling experiments.
- Engaging user-scientists internationally in evaluating all of the above.
- Training of social scientists in/through using the collaboratory.

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