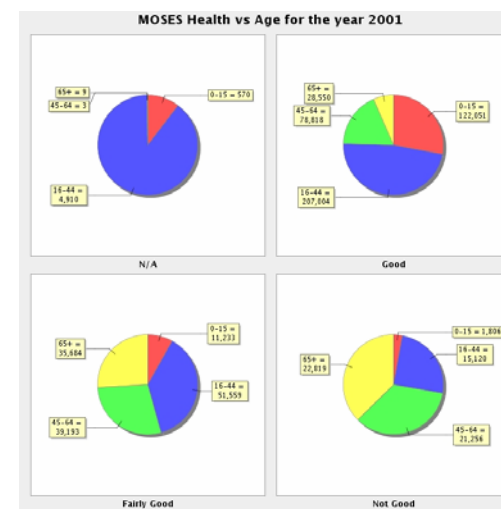
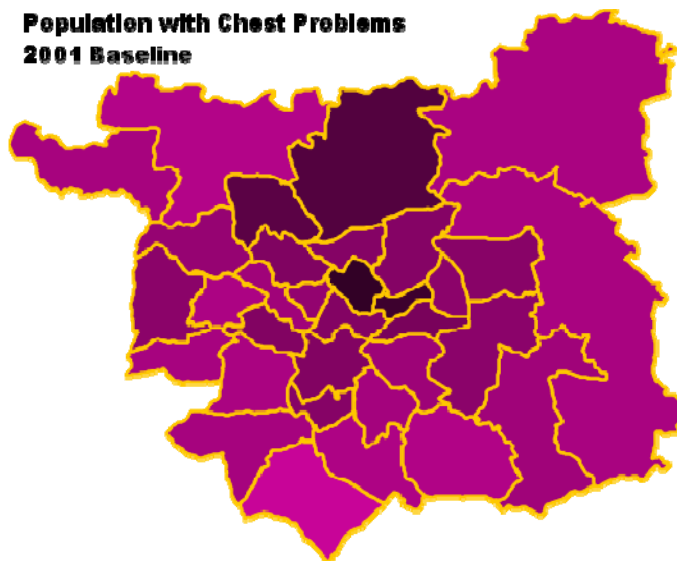




# Modelling and Simulation for e-Social Science through the use of Service-Oriented and Web 2.0

**Dr Paul Townend**  
**Distributed Systems and Services Group**  
**University of Leeds**

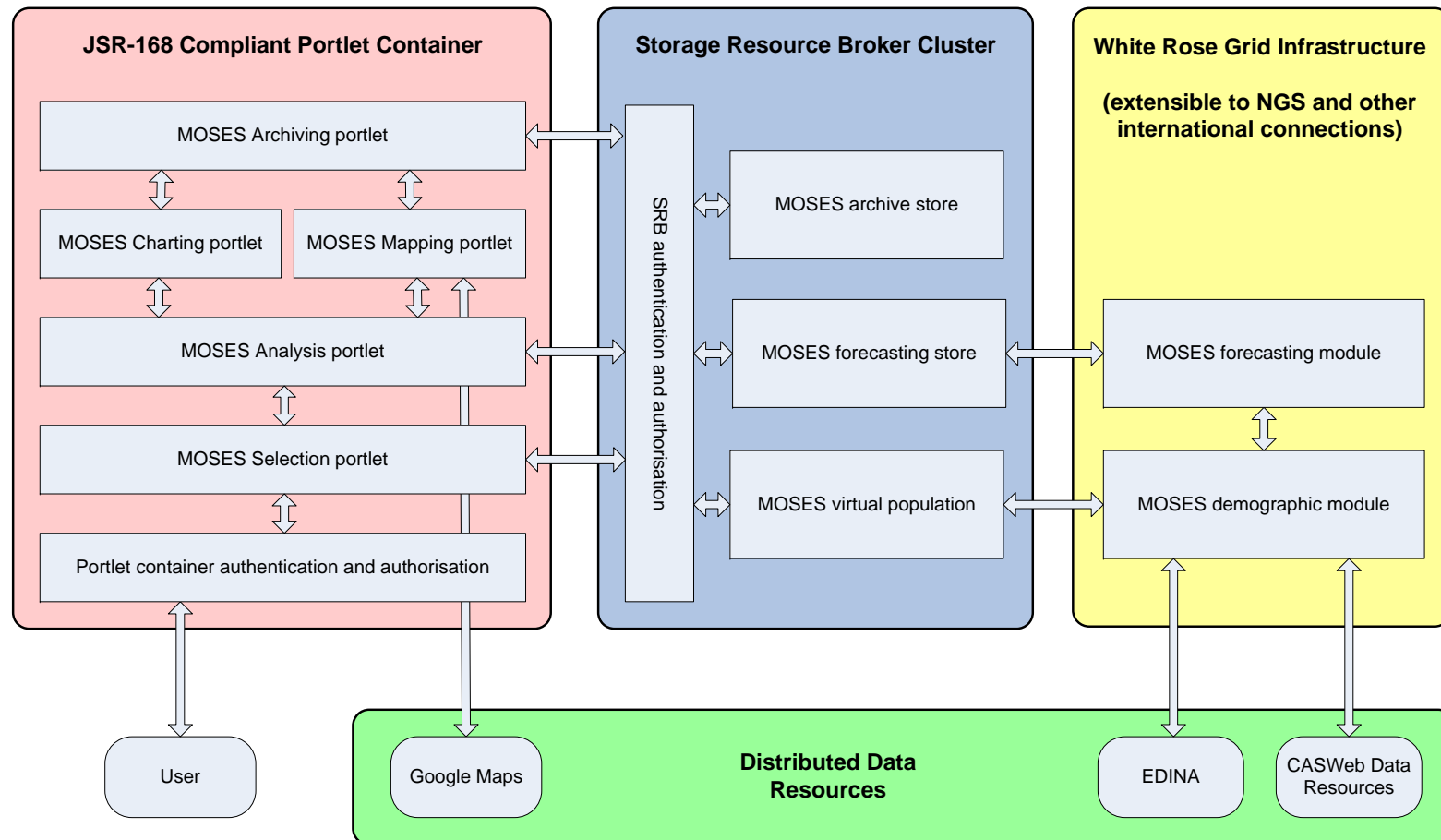
- MOSES:
  - Generates a **virtual population** and **dynamically models it**.
  - Integrates **multiple large datasets** from multiple sources
  - Allows user access through a set of **JSR-168 compliant portlets**
  - Requires large processing power – **Beowulf** and **WRG/NGS**.



# MOSES Architecture



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# MOSES Portal



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Modelling and Simulation of e-Social Science

[Logout](#)

Welcome, Paul  
Townend

Welcome

**MOSES Selection Portlet**

MOSES Analysis Portlet

MOSES Charting Portlet

MOSES Mapping Portlet

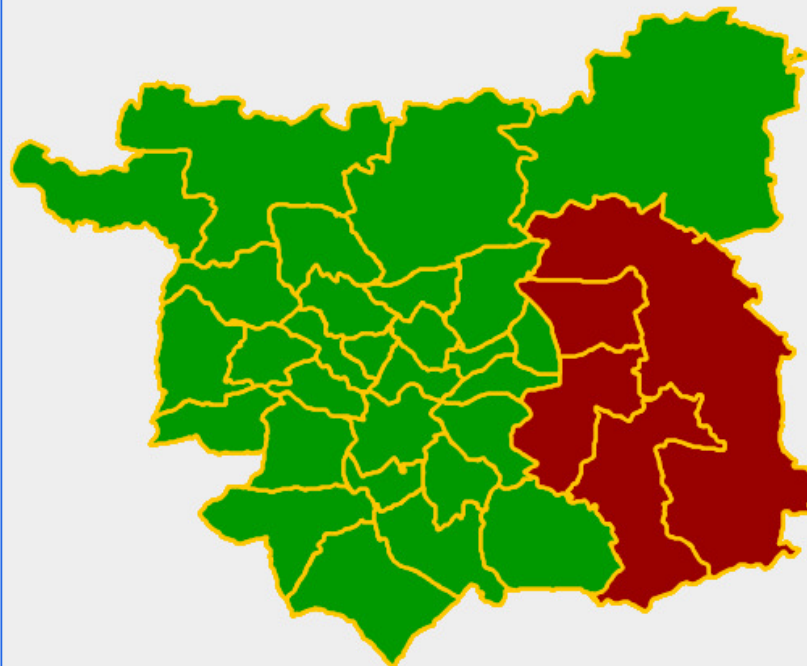
MOSES Scenario Portlet

MOSES Reporting Portlet

**MOSES Selection Demonstrator**

The MOSES selection demonstrator

Welcome to the MOSES selection demonstrator!



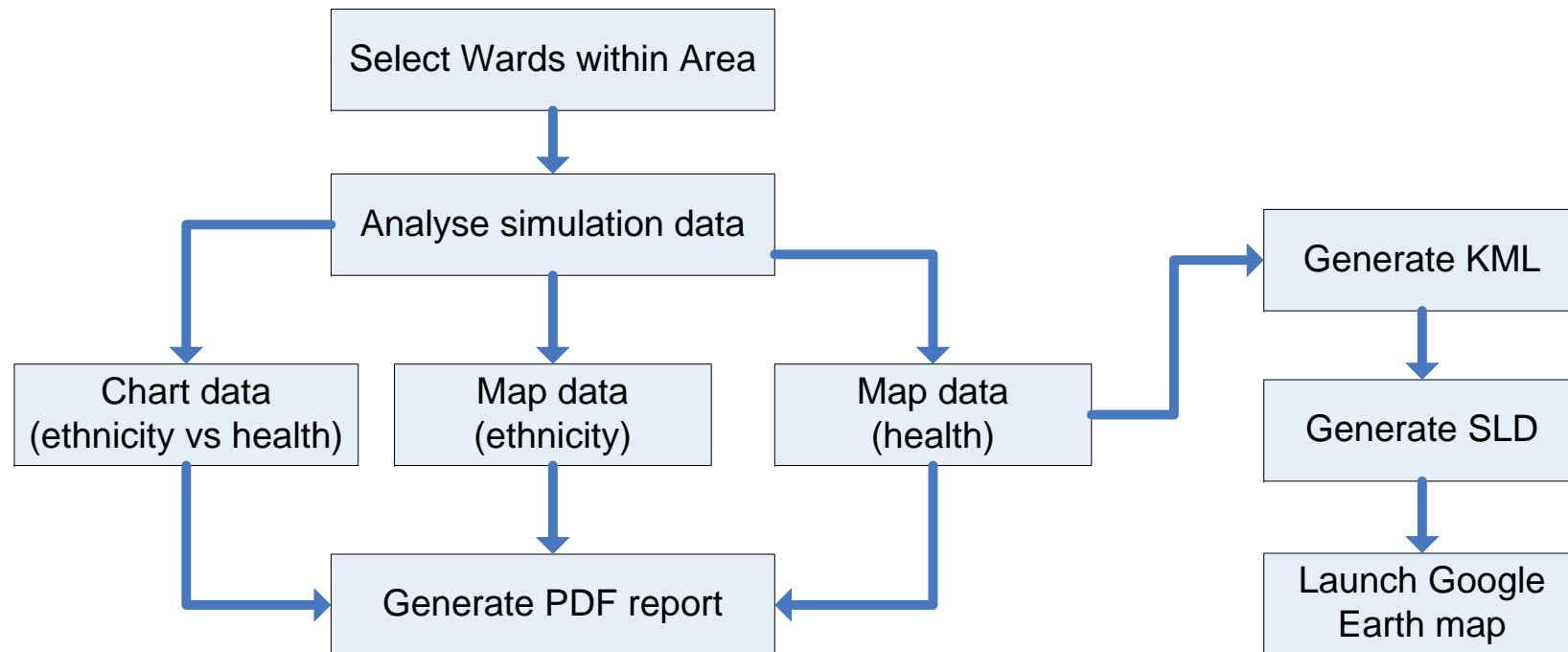
- |   |  |
|---|--|
| <input type="checkbox"/> Barwick and Kippax       | <input checked="" type="checkbox"/> Pudsey North         |
| <input checked="" type="checkbox"/> Kirkstall     | <input checked="" type="checkbox"/> Weetwood             |
| <input checked="" type="checkbox"/> Horsforth     | <input checked="" type="checkbox"/> Cookridge            |
| <input checked="" type="checkbox"/> Middleton     | <input checked="" type="checkbox"/> Rothwell             |
| <input checked="" type="checkbox"/> Hunslet       | <input checked="" type="checkbox"/> City and Holbeck     |
| <input checked="" type="checkbox"/> University    | <input checked="" type="checkbox"/> Morley North         |
| <input checked="" type="checkbox"/> Richmond Hill | <input checked="" type="checkbox"/> Burmantofts          |
| <input type="checkbox"/> Halton                   | <input checked="" type="checkbox"/> Roundhay             |
| <input type="checkbox"/> Whinmoor                 | <input checked="" type="checkbox"/> Moortown             |
| <input checked="" type="checkbox"/> North         | <input checked="" type="checkbox"/> Beeston              |
| <input checked="" type="checkbox"/> Armley        | <input checked="" type="checkbox"/> Bramley              |
| <input checked="" type="checkbox"/> Aireborough   | <input checked="" type="checkbox"/> Headingley           |
| <input checked="" type="checkbox"/> Harehills     | <input checked="" type="checkbox"/> Chapel Allerton      |
| <input checked="" type="checkbox"/> Seacroft      | <input checked="" type="checkbox"/> Otley and Wharfedale |
| <input checked="" type="checkbox"/> Morley South  | <input type="checkbox"/> Garforth and Swillington        |
| <input checked="" type="checkbox"/> Wetherby      | <input checked="" type="checkbox"/> Pudsey South         |
| <input checked="" type="checkbox"/> Wortley       |  |



- In the time remaining for MOSES (and leading into GENESIS), one of our main goals is to expose MOSES functionality as services.
- This is intended to increase flexibility in order to provide multiple ways of accessing MOSES:
  - Portlet interface
  - Java GUI interface
  - Custom taverna workflows
- Service-orientation will also facilitate the integration of MOSES functionality into other e-Social Science applications.

# Service-orientation (2)

A possible / example workflow:



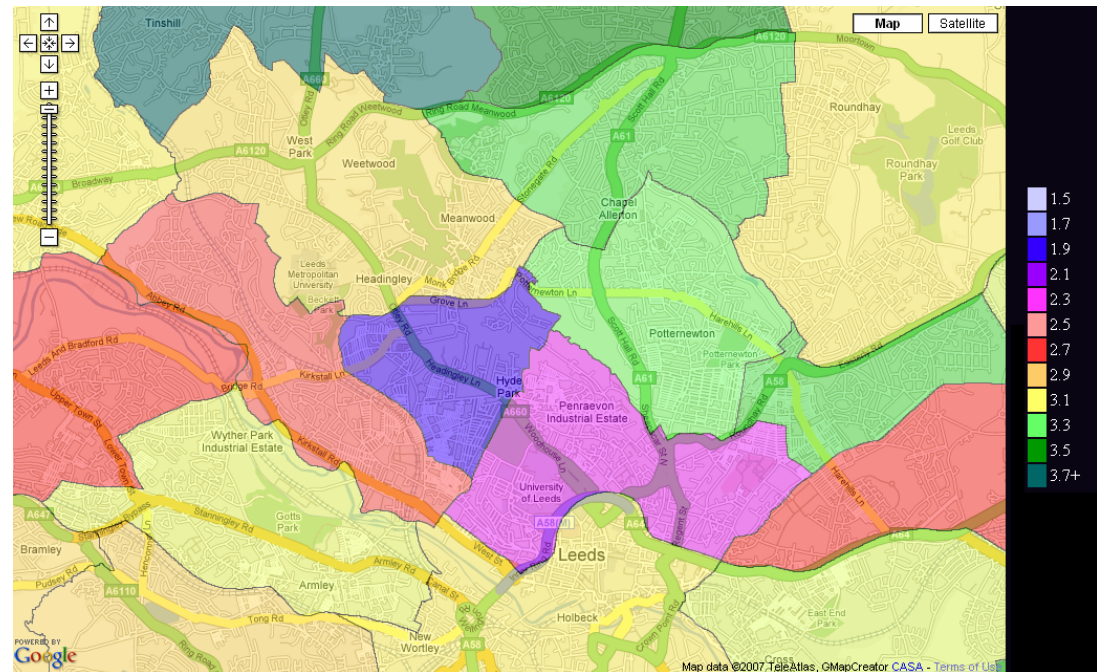
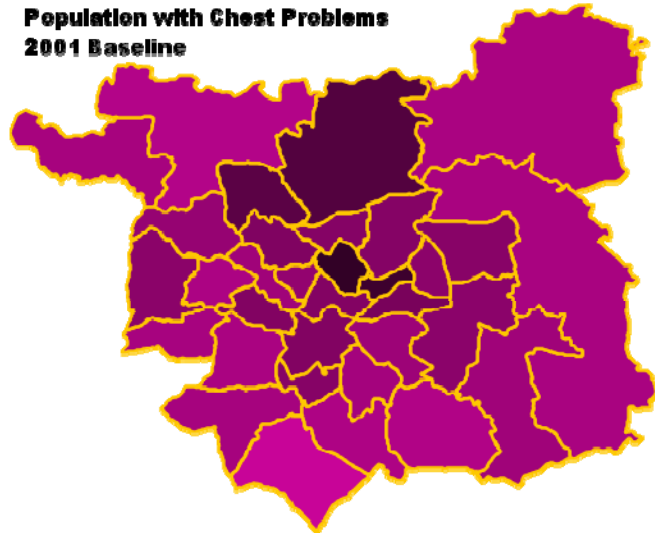
# Web 2.0 (1)



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- Work is ongoing into the use of “Web 2.0” technologies, primarily to offer rich and interactive visualisations of MOSES data.

**Population with Chest Problems  
2001 Baseline**



# Web 2.0 (2)



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The screenshot displays the Google Earth desktop application. The interface includes a menu bar (File, Edit, View, Tools, Add, Help), a toolbar with navigation icons, and a search panel on the left. The search panel has tabs for 'Fly To', 'Find Businesses', and 'Directions', with a search input field containing 'Fly to e.g., 94043'. Below the search panel is the 'Places' panel, which shows a list of saved locations: 'My Places', 'Temporary Places', and 'supertramCongestion.kml'. The 'Layers' panel is also visible, showing a 'View: Core' dropdown and a list of layers including 'Primary Database', 'Terrain', 'Geographic Web', 'roads', 'Traffic', 'Weather', '3D Buildings', and 'Borders and Labels'. The main map area shows a topographic view of the Leeds region, with roads labeled (A658, A6120, A660, A61, A647, A64, A63, A656, A642, A650, A62, A653, A58, M606, M621, M1, M62) and towns labeled (Otley, Guiseley, Yeadon, Baildon, Shipley, Bradford, Pudsey, Leeds, Morley, Rothwell, Garforth, Kip). A compass rose is located in the top right corner of the map. The bottom status bar shows coordinates (53°46'37.29" N, 1°44'19.27" W), a scale of 100%, and an eye alt of 19.95 km. Copyright information for Europa Technologies, The GeoInformation Group, Infoterra Ltd & Bluesky, and Tele Atlas is also present.



- Continued improvements in MOSES modelling.
- Much more detailed view of the overall MOSES/GENESIS architecture – gather exact requirements, come up with data format standards, look at how to allow easy addition/modification of datasets into the system, etc.
- Continual refactoring of MOSES code in order to create stand-alone MOSES services.
- Continued refinements to our use of “Web 2.0” technologies such as Google Maps, Google Earth, Open Layers, etc.



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