



VeRSI Geo Model Information Knowledge Environment

A.B.M. Russel, eResearch Project Leader
abm.russel@versi.edu.au,
Melbourne, Victoria, Australia

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VeRSI

- Victorian eResearch Strategic Initiative
- 5 Year Program 2006-2011
- State Govt funded
- An unincorporated JV

eResearch

- Cyberinfrastructure (US)
- eScience (UK)



MONASH
University



THE UNIVERSITY OF
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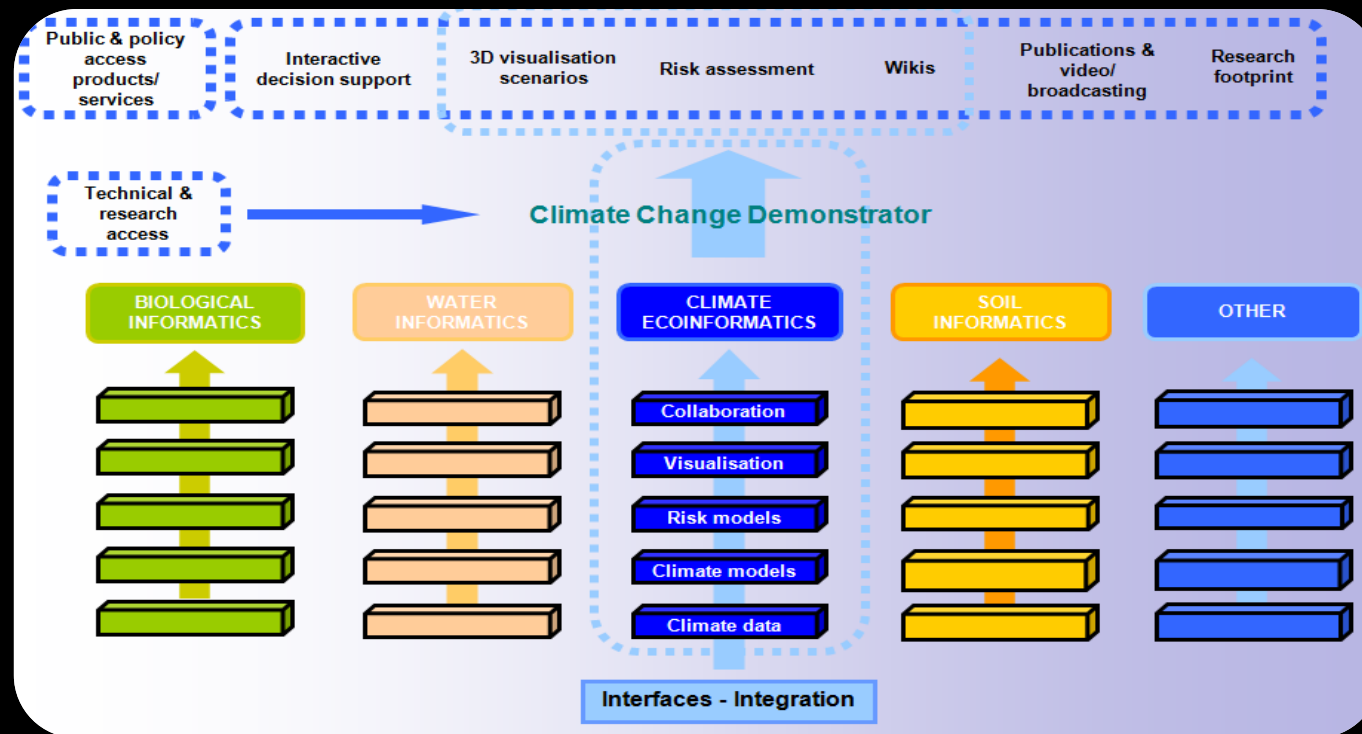


LA TROBE
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Ecoinformatics Program

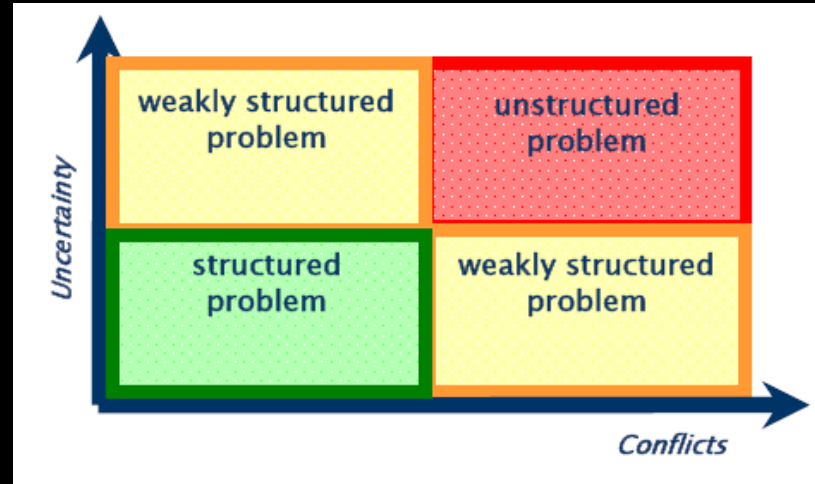
- Goal: An online collaborative and shared resource for managing ecosystem and environmental data and information products.



Wicked Problems

Structured problems are tractable and understandable and often have a single and optimal solution.

Weakly or unstructured problems are characterised by high levels of uncertainty, potential conflicts, or both. Ludwig (2001) called them “wicked” problems with no definitive formulation, no stopping rule, and no tests for a solution.



Donald Ludwig. The era of management is over. *Ecosystems*, 4(8):758, 764, December 2001

Climate Change

- IPCC 4th report – “Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level.”

- Climate Change:
 - Mitigation
 - Impacts Adaptation



Ecoinformatics Program

VeRSI Ecoinformatics Climate Change Demonstrator Program

- e-Resource Centre (eRC) Environment
 - Security, Wiki, Repository
 - Models, Information & Data
 - Virtual Organisation
- MIKE Metadata Registry
- Workflow Platform
- Geospatial Visualisation



Virtual Organisation

- Virtual Organisation is group of people or organisations who share resources and skills to achieve a common goal.
- Example VO Services are
 - Shared project activities
 - Secure shared space
 - Secured content sharing
 - Collaborative discussions
 - Shared computation & communication
 - Distributed data store

Requirements for collaboration

- Service or Content sharing
 - Protection
 - Integration
 - Authorisation
 - Access Control
 - Management

Building a Secure VO - AAA

- Shibboleth is an architecture that enables organisations to build single sign-on environments that allow users to access web-based resources using a single login.
- Open standards: Security Assertion Markup Language (SAML)

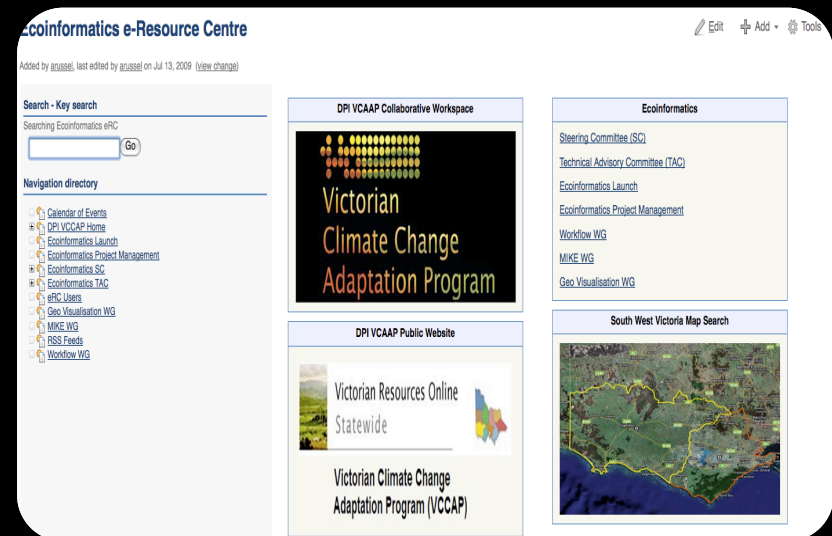


Shibboleth Components

- Identity Provider
- Service Provider
- Federation Identity WAYF (Where Are You From)

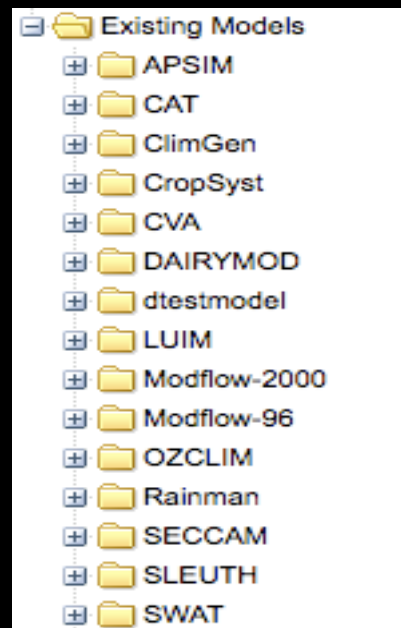
e-Resource Centre (eRC) Environment Platform

- Neutral – sits on VeRSI environment
- Trustable
- Provides:
 - Sensitivity
 - Data Integrity
 - Integration
 - Accessibility by Government and Universities
 - Manage the research process



Model Information Knowledge Environment (MIKE)

- A metadata registry for environmental models used in land suitability analysis



MIKE Modules

- Query Module
 - Model Description
 - Model Instances
 - Model Versions
- Spatial Query Mapping Module
- Administration Module
 - Recording
 - Updates

Query Module

- FOSS: Ext, DWR, JPA, PostgreSQL

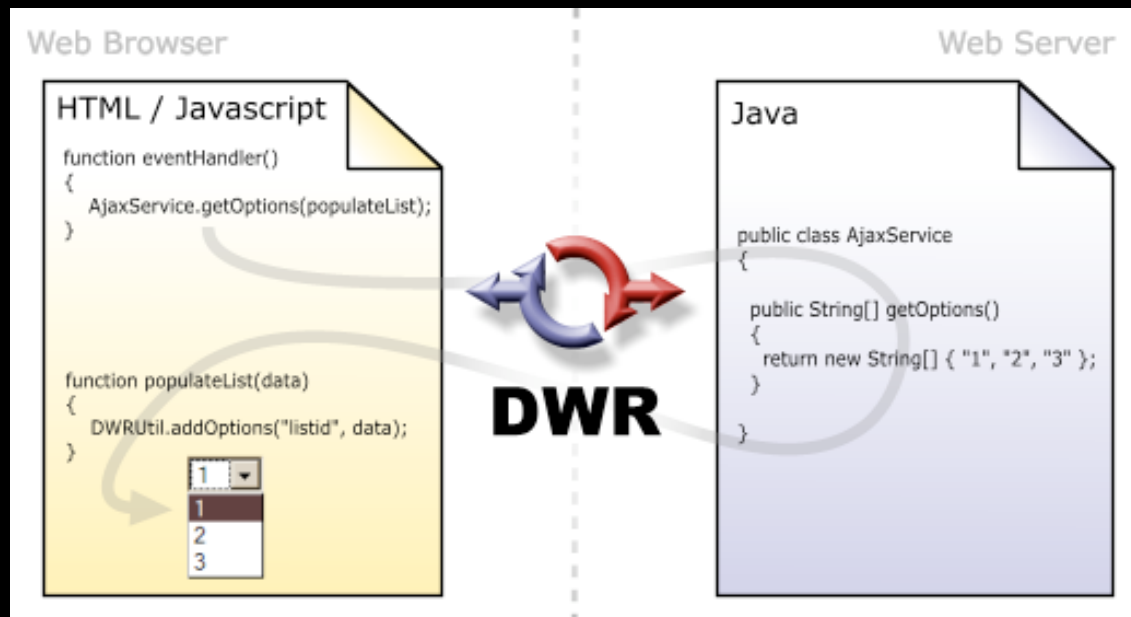
The screenshot displays the 'Query Module' interface. At the top, there are tabs for 'Query Module', 'Map Module', and 'Admin Module'. Below these, the 'Search Criteria' section includes a 'Search:' dropdown set to 'Model Names' and a 'For:' input field with the placeholder 'enter search term'. The 'Results Summary' section on the left shows a tree view of 'Existing Models' with sub-items: 'APSIM', 'CAT', 'CAT Model Group' (selected), 'CAT 1D', and 'CAT 1D Water Balance submodel'. The main content area is divided into two tabs: 'CAT Model Group - Model Descriptions (3)' and 'CAT Model Group - Model Instances (5)'. The 'Model Descriptions' tab is active, showing a table with the following data:

Description Type	Description ID	Registered Date	Record Owner	Record Behaviour
Abstract	38	Mon, 25 Feb 2008	sw10	
Abstract	36	Thu, 29 Nov 2007	sw10	
Abstract	37	Mon, 25 Feb 2008	sw10	

Below the table, a text description reads: 'The CAT 1D is an enhancement of the one-dimensional model called PERFECT (Productivity, Erosion and Runoff Functions to Evaluate Conservation Techniques) (Littleboy et al 1989). CAT 1D contains sub-models that simulate, soil water balance, crop growth, soil erosion, crop residue and crop cover. It also has nutrients (N only), salt and livestock models. All biophysical processes are simulated on the basis of daily timesteps.'

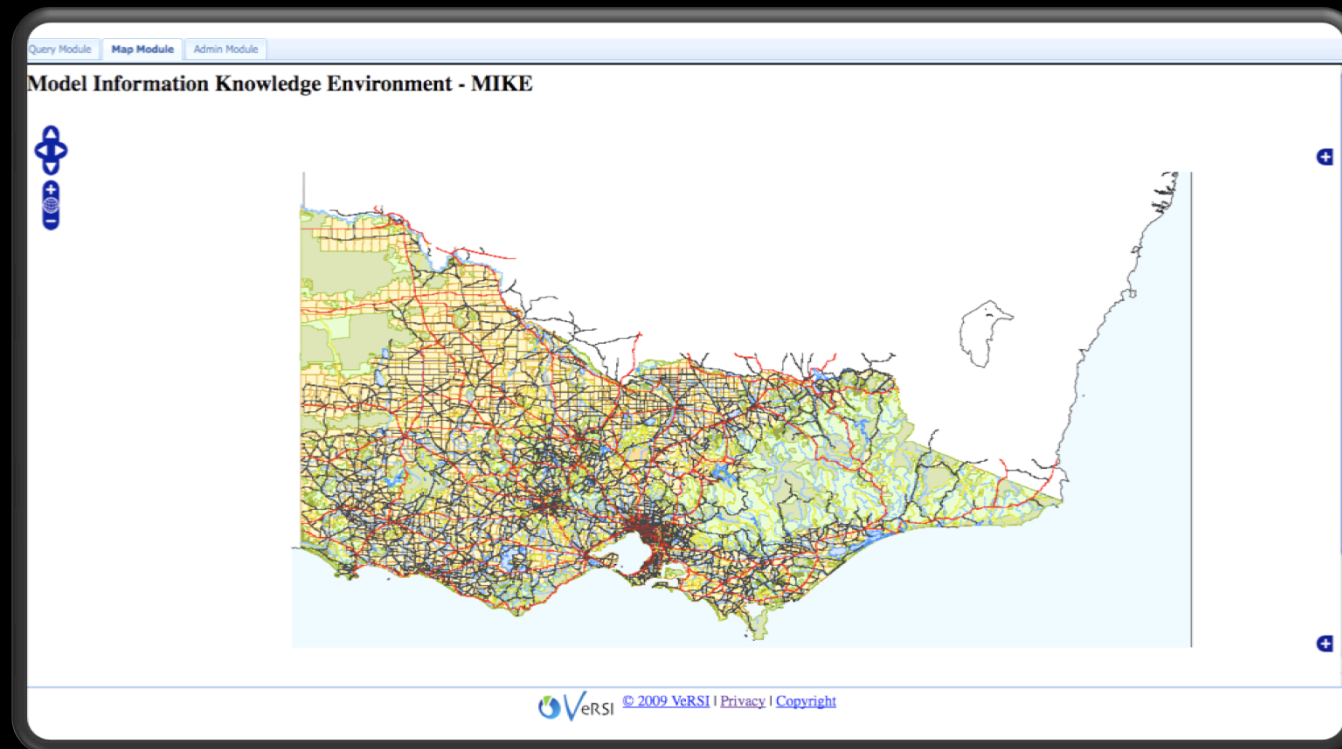
DWR

- Direct Web Remoting (DWR) is a RPC library which makes it easy to call Java functions from JavaScript



MIKE Mapping

Using OGC reference implementation
FOSS: Geoserver, OpenLayers, PostGIS



Questions?

Thank you!

www.versi.edu.au

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