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Faculty Summit

10
YEAR ANNIVERSARY

The Health-e-Waterways Project

An Exemplary Model for Environmental Monitoring
and Resource Management

Jane Hunter
Professor of eResearch
School of ITEE
The University of Queensland

Health-e-Waterways Partnership

Collaboration between:

- SEQ Healthy Waterways Partnership (Eva Abal)
 - DNRW, EPA, local councils, universities, community groups
- Microsoft Research (Catharine van Ingen)
- University of Qld (Jane Hunter)

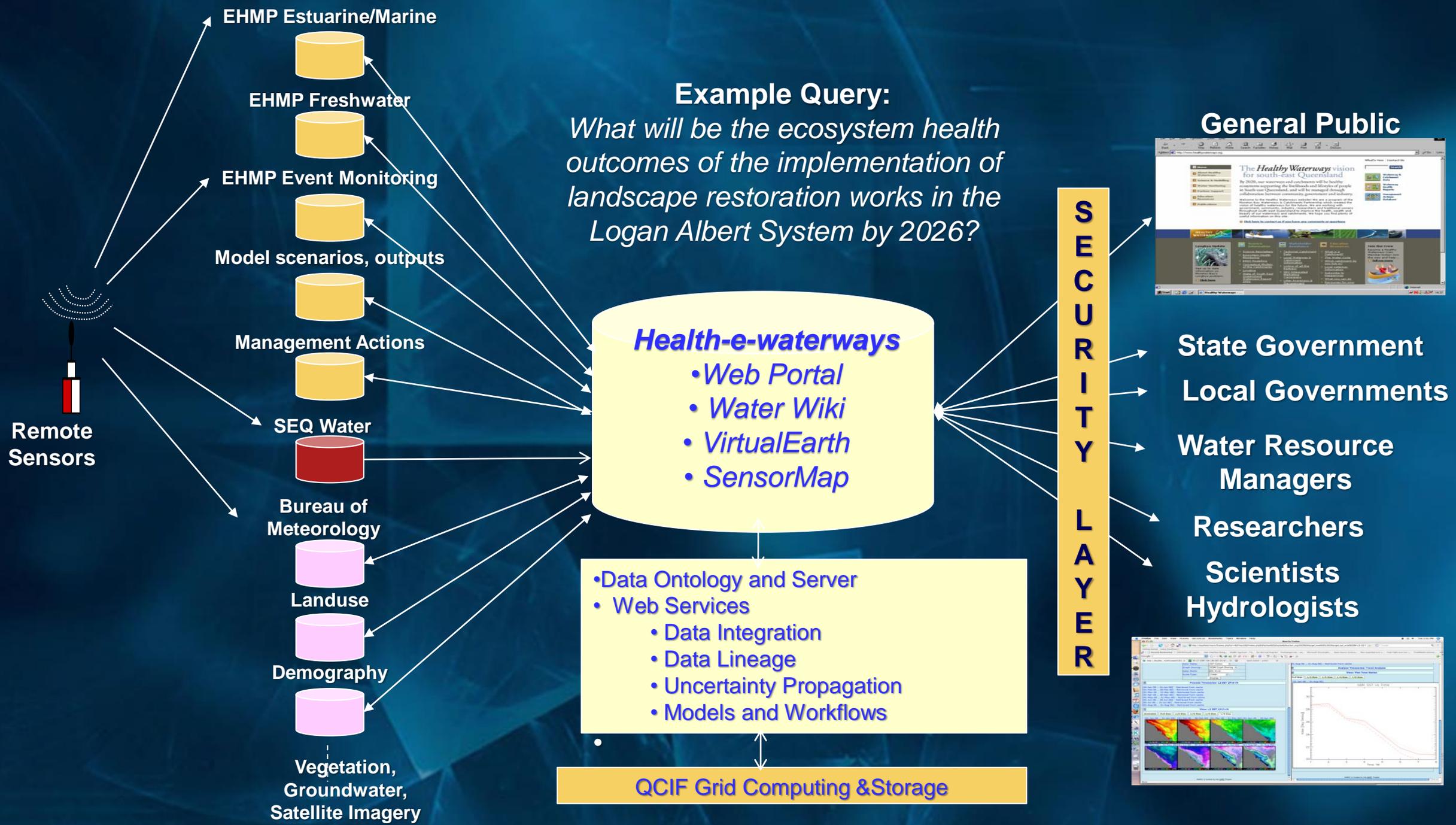
- 3 years funding – MSR, ARC Linkage, SmartState
- Integrated Water Information Management for SEQ-HWP

SEQ Healthy Waterways Data

- FreshWater EHMP – DNRW, Local councils
- Estuarine Marine EHMP – EPA, local councils
- Event Monitoring – DNRW
- Management Action Database – SEQ-HWP
- Models – many different sources
 - Receiving Water Quality, Catchment Models
 - EMSS, E2

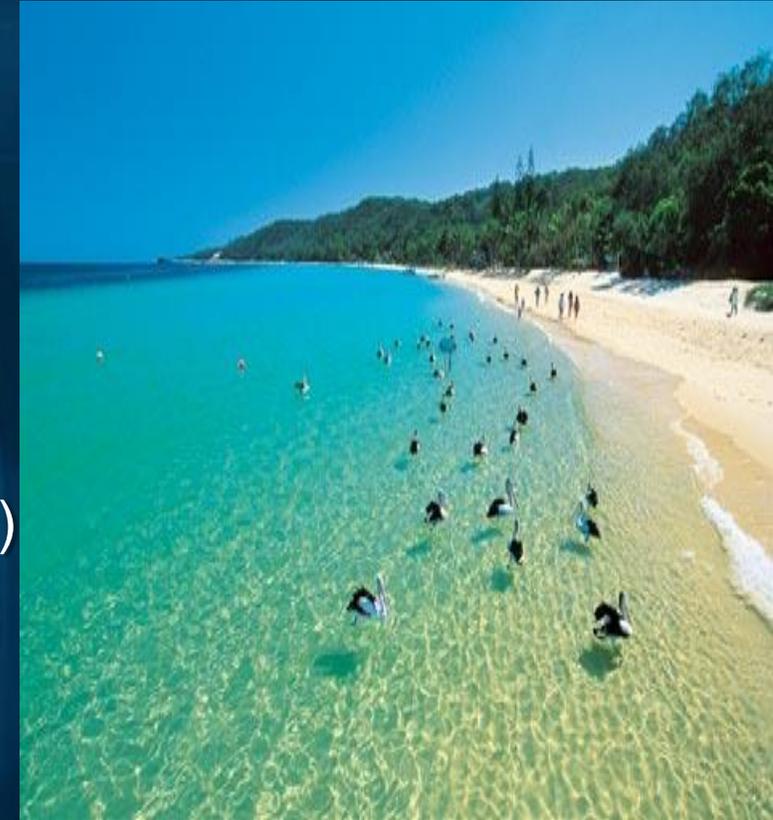


Example Query:
What will be the ecosystem health outcomes of the implementation of landscape restoration works in the Logan Albert System by 2026?

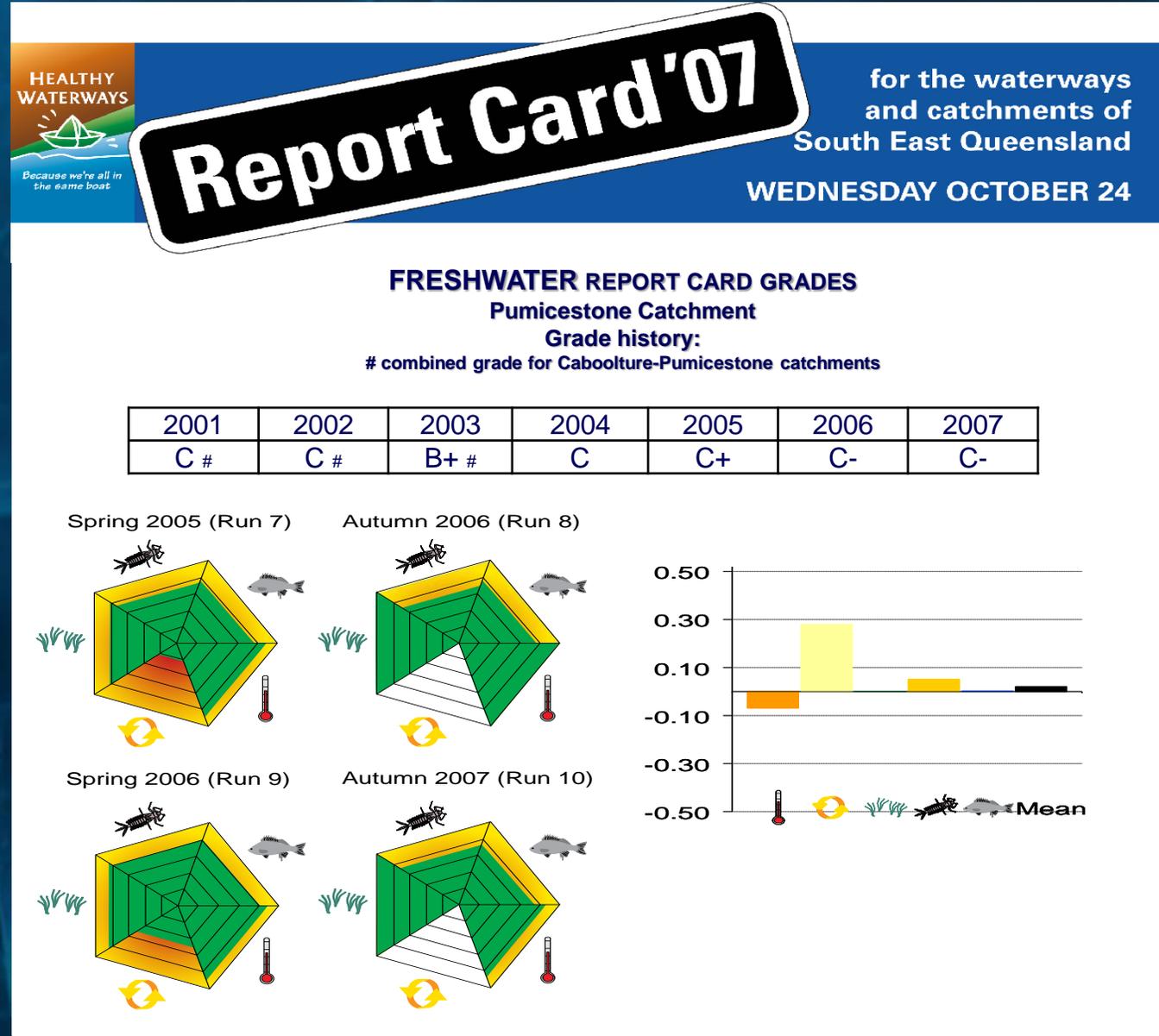
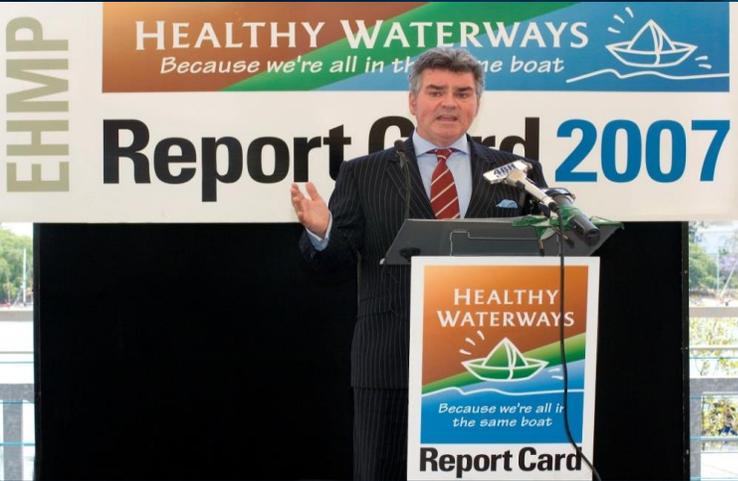


Objectives/Approach

- Generate Online EHMP Report Cards
- Develop database registry:
 - EHMP Freshwater
 - EHMP Estuarine Marine
 - EHMP Event Monitoring
 - Management Action Database
- Identify common conceptual model (ODM,WRON,WaterML 2.0)
- Map datasets to common model/ontology
- Identify optimum data harvesting and storage
 - Store in SQLServer DB with Datacubes/MatLab/R scripts
 - Web services interface to in-situ data
 - Metadata harvesting -> central catalogue
- Develop Virtual Earth+ontology-based query interface



Annual Ecosystem Report Cards



- snapshot of ecosystem health - A to F
- Very simple, good media coverage
- insight into the effectiveness of investments in catchment management



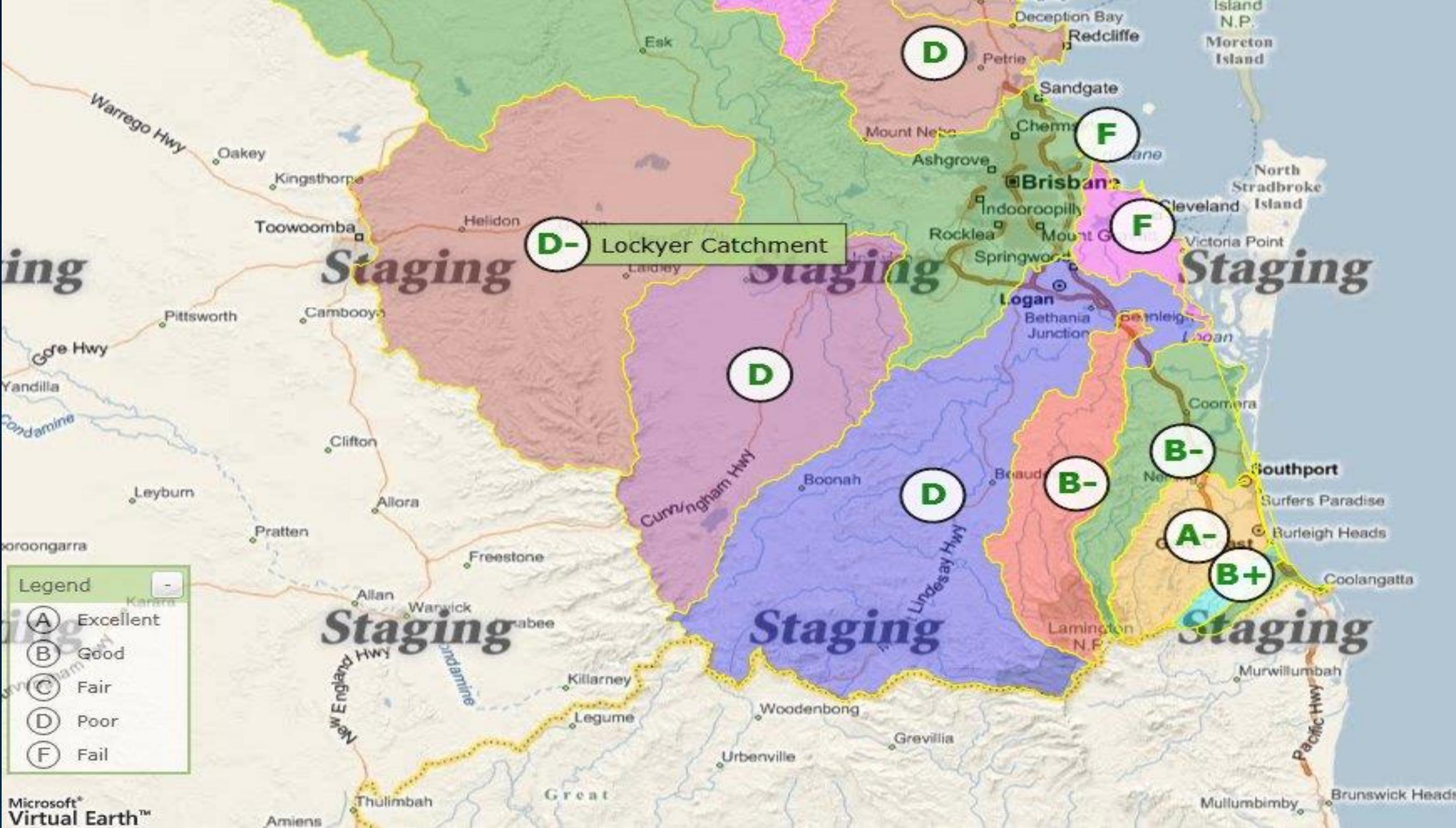
Overview

The Health-e-Waterways project is a collaboration between the [UQ eResearch group](#), the [South East Queensland Healthy Waterways Partnership](#) and [Microsoft Research](#).

The project aims to develop cyber-infrastructure to address new management and decision-making challenges concerning Queensland's water supply. In particular, it aims to enable and promote the sharing and collaborative integration and analysis of high quality information concerning water. Due to climate change, urban development and population growth, recent years have seen large investments in Queensland's water supply infrastructure. This has created a need for sophisticated technological solutions to allow scientists, urban planners and policy makers to track water movement, consumption and quality through the entire supply process.

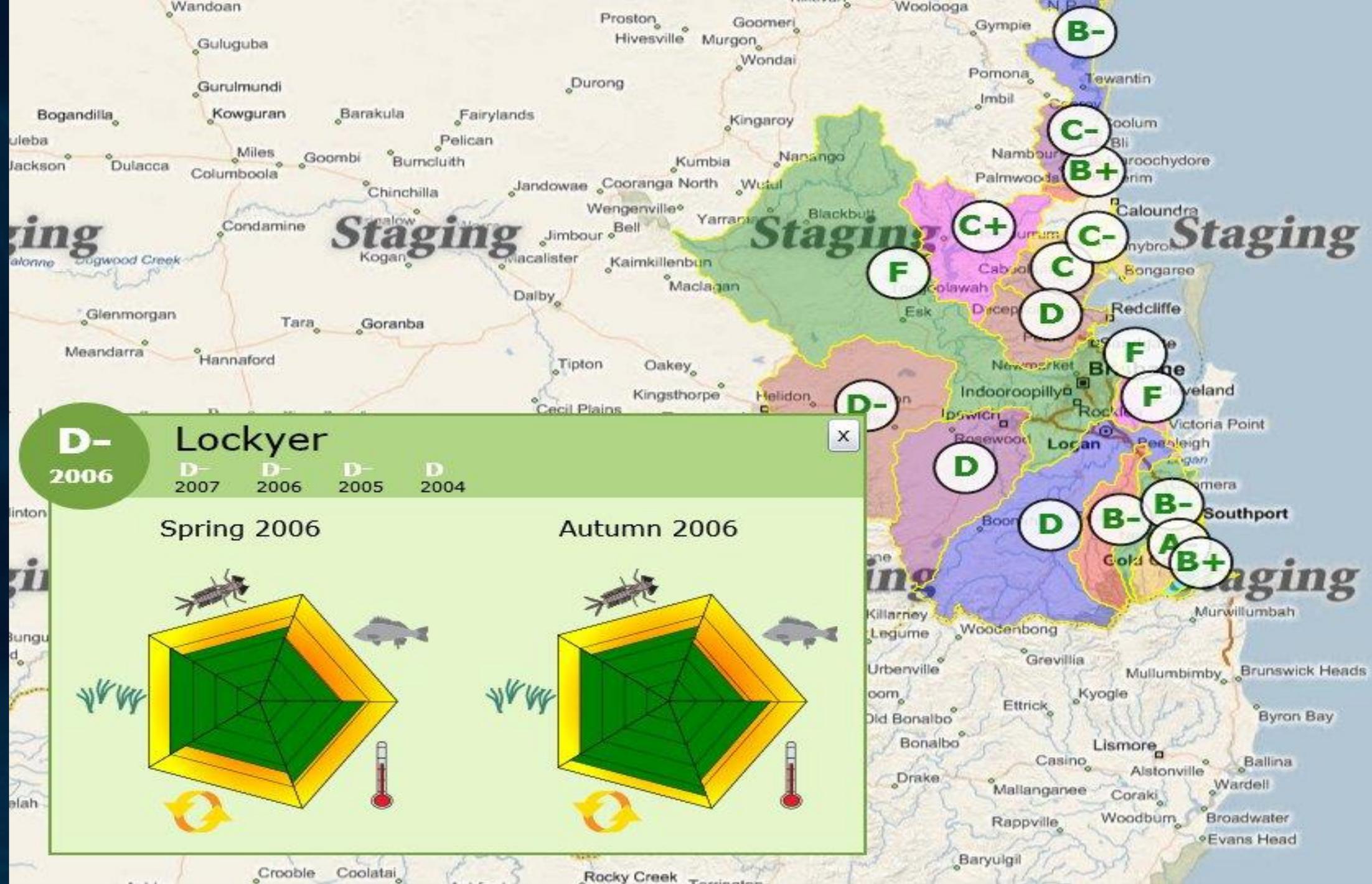
The Health-e-Waterways project is funded by [Microsoft Research](#) and an [ARC Linkage](#) grant.





Legend

- (A) Excellent
- (B) Good
- (C) Fair
- (D) Poor
- (F) Fail



D- 2006 Lockyer

Year	Staging Grade
2007	D-
2006	D-
2005	D-
2004	D

Spring 2006

Autumn 2006



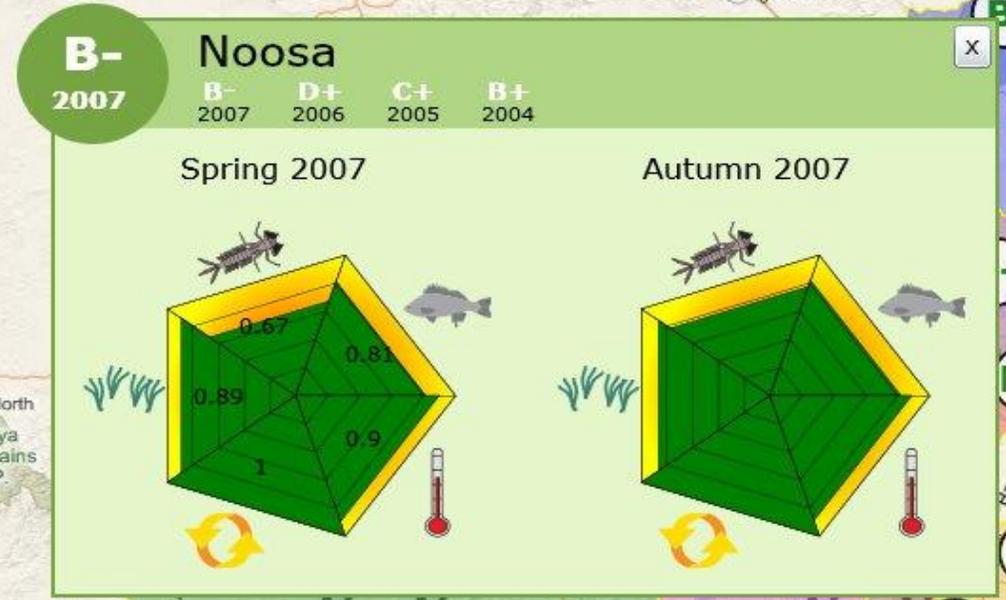
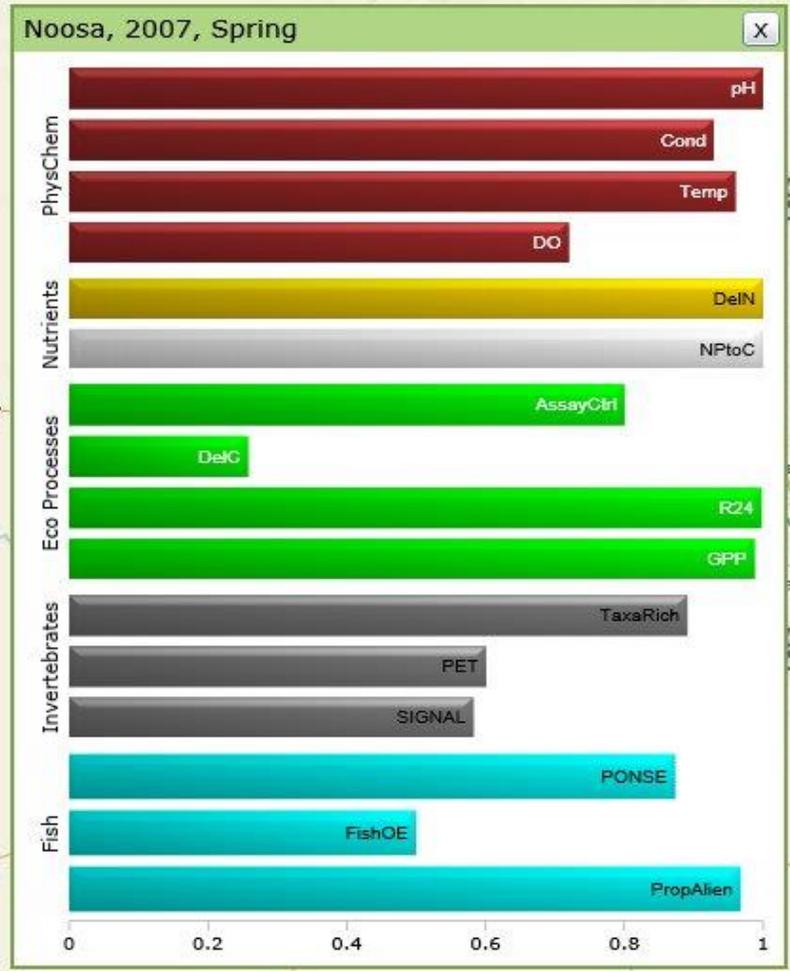
Staging

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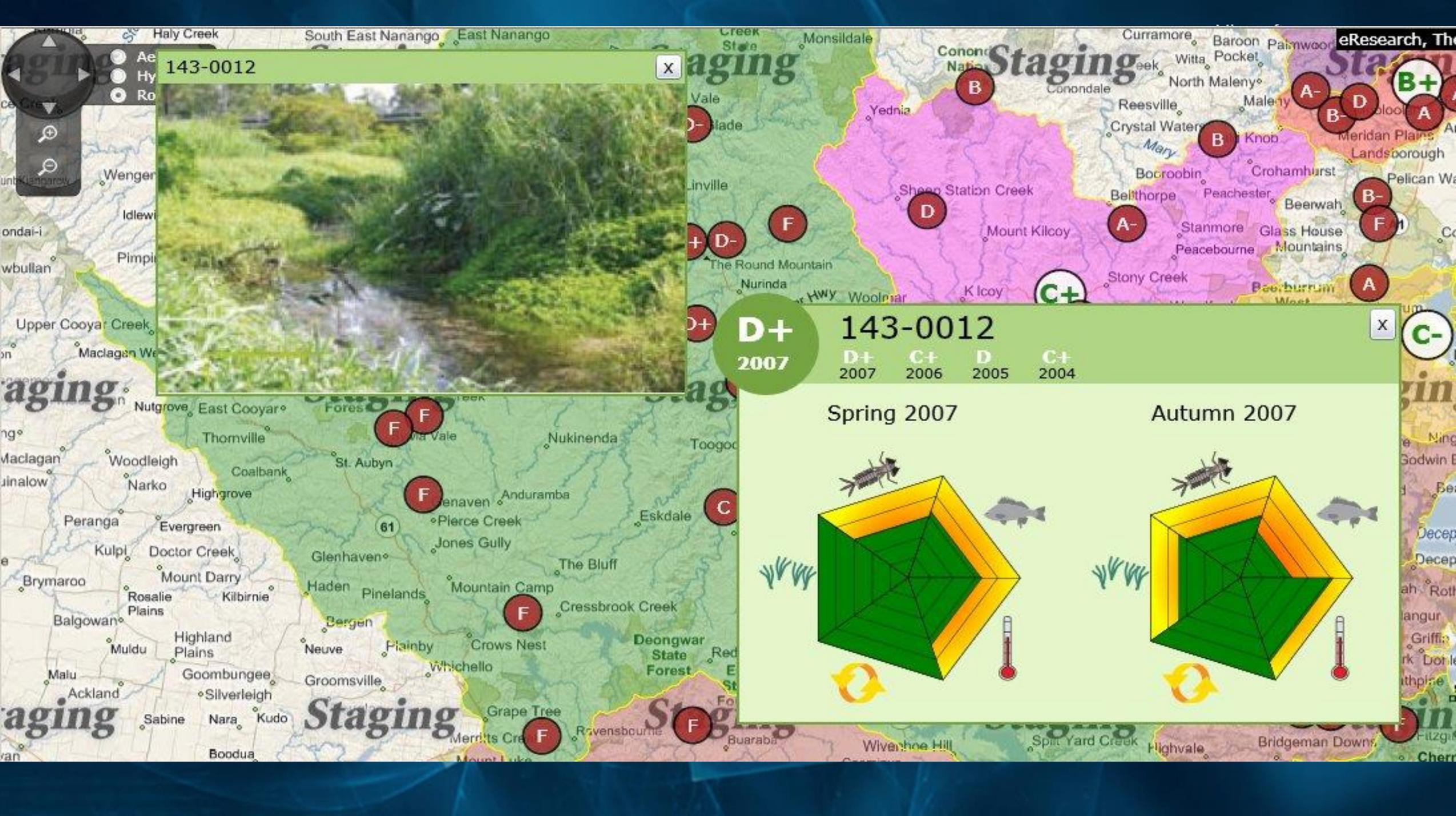
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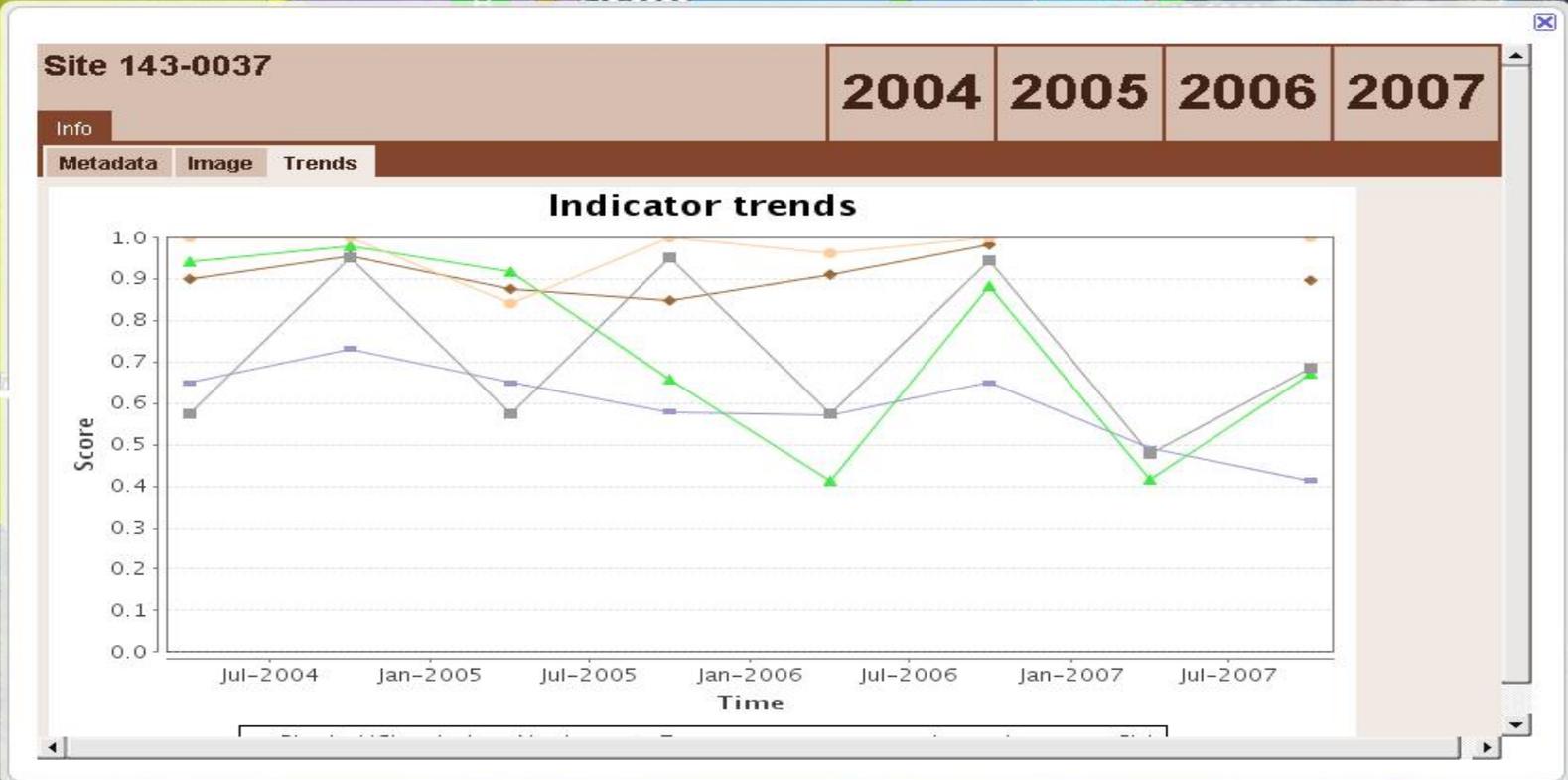




143-0012 - NRM&E stream gauge, Opposum Creek Road



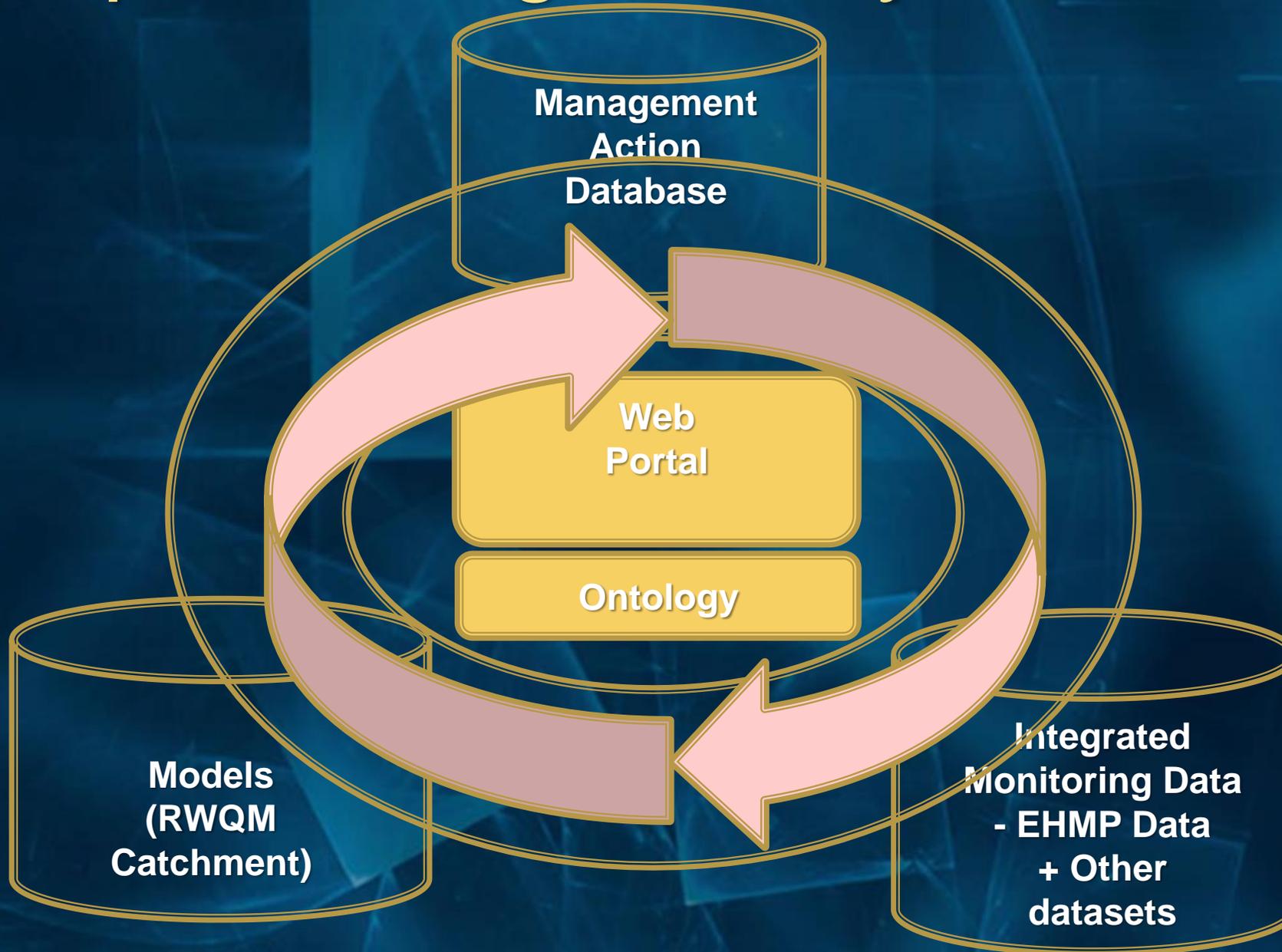
- My Places
 - Sightseeing
 - Select this folder and click on the 'Play' button below, to
- Temporary Places
 - EHMP Report**
 - Catchments
 - Albert
 - Bremer
 - Caboolture
 - Coomera
 - Currumbin
 - Lockyer
 - Logan
 - Lower Brisbane
 - Maroochy
 - Mid Brisbane
 - Mooloolah
 - Nerang
 - Noosa
 - Oxley
 - Pimpama
 - Pine
 - Pumicestone
 - Redlands
 - Stanley
 - Tallebudgera
 - Upper Brisbane
 - Sites
 - 145-0012
Cainbale Creek Road, Kerry
 - 145-0011
Kerry - Beaudesert Road, Hillview
 - 145-0013
Sundown Court, Munstervale Road
 - 145-0014
Wonglepong Bridge, Wonglepong
 - 143-0046

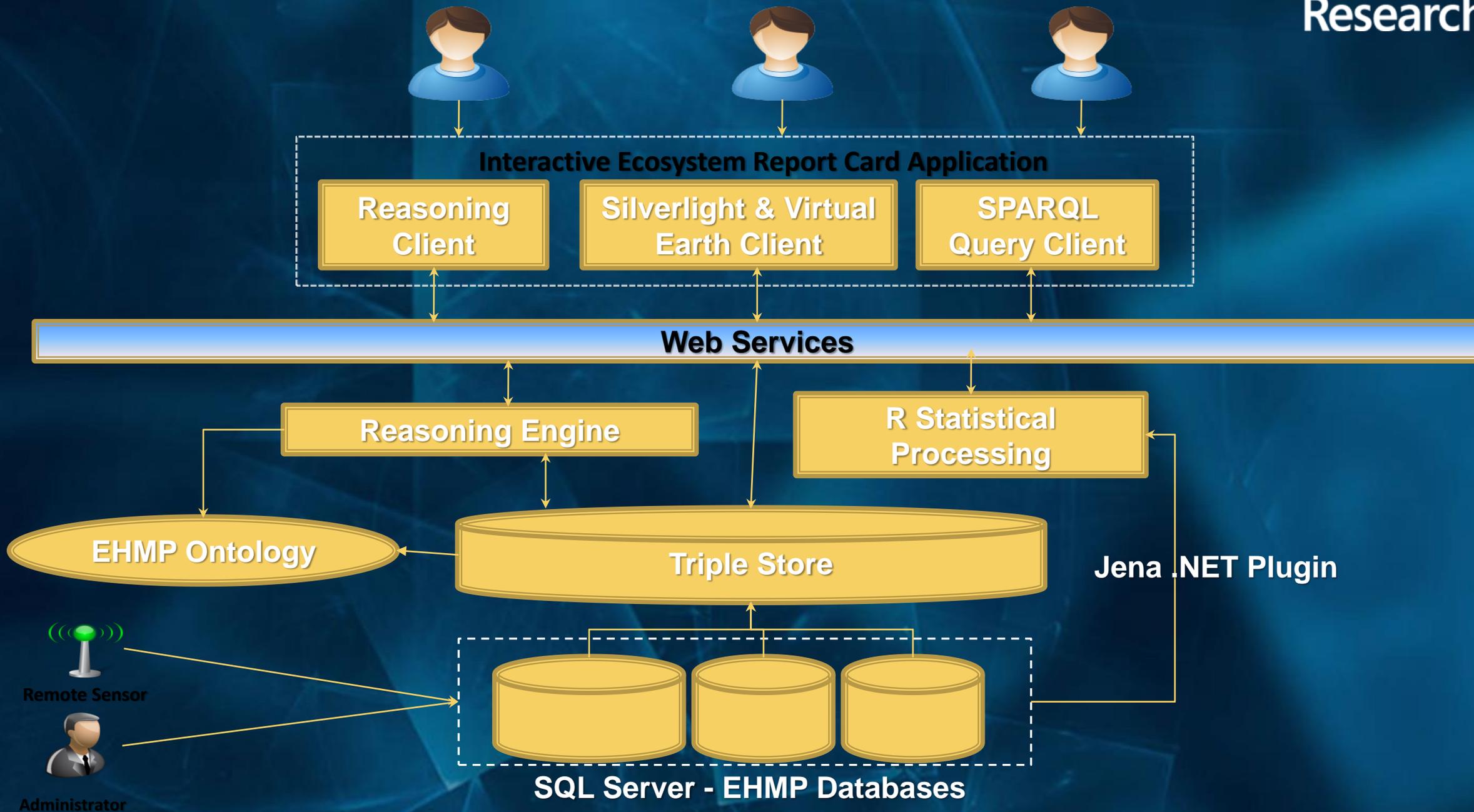


Current Activities

- Web site – <http://www.health-e-waterways.org/>
- Online Report Cards -
 - Completed FreshWater reporting
 - Working on reporting for estuarine-marine data
 - Working on reporting for BCC
- Data requests – streamline process for SEQ-HWP through online forms
- Management action database
 - Enabling councils to upload data on extent of implementation of actions

Adaptive Management Cycle





User-Driven/Ontology-based Spatio-temporal Queries

Monitoring data + Model outputs + socio-economic models/data

- “How will the mandatory adoption of rainwater tanks in the Logan Region effect domestic water requirements in 5 years time, taking into account the effects of climate change and population growth in the region?”
- What impact will a \$20mill sewage treatment plant upgrade have on on the prawn industry in the Logan Estuary if implemented now?
- Give me the regions in SE Qld that contain 80% sub-tropical rainforest, are above 3000m elevation, have >-20% rainfall and contain endangered species

Outcomes to Data

- ICT Framework for Web-based Environmental Reporting
 - Standardized methods for measuring and aggregating indicators -> Ecosystem reports
 - Comparison and longitudinal trends
- Extensible EHMP Ontology - Common Observational Data Model
 - Waterways data, climate/rainfall data, vegetation, landuse,
 - Species distribution, satellite imagery
 - Management Strategies and Actions
- *Framework for Semantic Integration of Environmental Monitoring, Modelling and Management Data*
 - Extensible, Interoperable, **Migratable/Adaptable**

Future Work

- Complete Estuarine-Marine Online Reporting -> GBR Report Cards
- Registry of water-related databases in SEQ, Qld
- Model Registry – Open Model Interface OpenMI
- Integrated Information Interface
 - SPARQL (ontology-based) + spatio-temporal querying to integrated data
 - MODIS satellite data, BoM climate data, land use, vegetation data
 - Real-time sensor data -> actionable notification services
 - Community data – WaterWatch, Caring for Country – QA/QC
 - Socio-economic data – demographics
 - Management Action Database
 - Hydrological and climate models with different spatio-temporal representations and different platforms
- Web Portal – Wiki & Annotation tools
- The Data Conservancy Project (NSF DataNet, JHU)

Editorial

"Day after day we have seen stumbling responses to burst pipelines and utter confusion over the Government's policy of adding fluoride to our drinking water"

Open tap on vital water information

THIS past week has shown us, once again, that Queenslanders know how to work together in times of crisis.

When the skies opened in earnest on Wednesday, the response from all parties — from government and council agencies to emergency workers and local residents — was impressive and calm. Premier Anna Bligh and her Government, in particular, capably handled and co-ordinated the response to Brisbane's heaviest downpour in decades.

How ironic, then, that when it comes to dealing with all of that water once it has made its way into southeast Queensland's water system, the Government has shown itself to be verging on the incompetent.

Day after day this week we have seen stumbling responses to burst pipelines and utter confusion over the Government's new policy of adding fluoride to our drinking water. At first, we heard there was too much, and then there was too little, and then a complete revision of much of what we had been

told earlier. And in today's *Courier-Mail*, we have a report of yet more water quality problems.

The State Government has just spent billions of dollars building the southeast Queensland water grid and spent millions more taking over regional council water assets to create what it was calling just a couple of years ago "a streamlined water management system" to run it all.

On the evidence of the past week, this new system is suffering some serious teething problems, among them an apparent lack of desire on the part of water technocrats and bureaucrats to share information — particularly bad information — with other agencies, their political masters and, most importantly, the water-drinking public.

Premier Bligh must be understandably fuming at the fact that she has repeatedly had to publicly correct water quality information previously provided to her by her public servants. But she and her ministers also have to take some of the

blame for creating this complicated new water administration system in the first place.

Perhaps we just have to give it time before everything starts working smoothly and efficiently. Perhaps — but in the meantime, however, the Premier, as a matter of urgency, needs to rebuild public confidence in the Government's ability to handle this most precious, and necessary, of our needs.

A good place to start would be to publish water quality test results as soon as they become available, a practice followed by some water authorities in other parts of the world. This is basic and essential information and should not be hidden away and made public only reluctantly.

It is quite probable that when councils ran much of the southeast water system we had occasional problems with water quality that may never have been made public. But now that we have this brand new water management system, the Government has no excuse at all

for hiding essential information from the public, particularly if it wants our trust.

Our Queensland revealed

IN June 1846 *The Moreton Bay Courier* began publishing news for the residents of Brisbane, a town which had been open to free settlers for just four years. In 1859, when Queensland became a state, the newspaper was still going strong, and 150 years later it survives as *The Courier-Mail*. The unique archives retained by the newspaper, through changes in name and management span, are indicative of its central position in Queensland life. Opening those archives for the 150th anniversary of statehood has been a gift to the people of immense historical significance. Today we present the first of a series of four-page specials recalling 15 decades of statehood as witnessed by this newspaper. Enjoy them.

Responsibility for election comment is taken by David Fagan, 41 Campbell St, Bowen Hills, Qld 4006. Printed and published by Queensland Newspapers Pty. Ltd. (ACN 009 661 778). A full list of our editors, with contact details, is available at news.com.au/couriermail/ourstaff.

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Questions?

<http://www.health-e-waterways.org/>

Contact: j.hunter@uq.edu.au

