



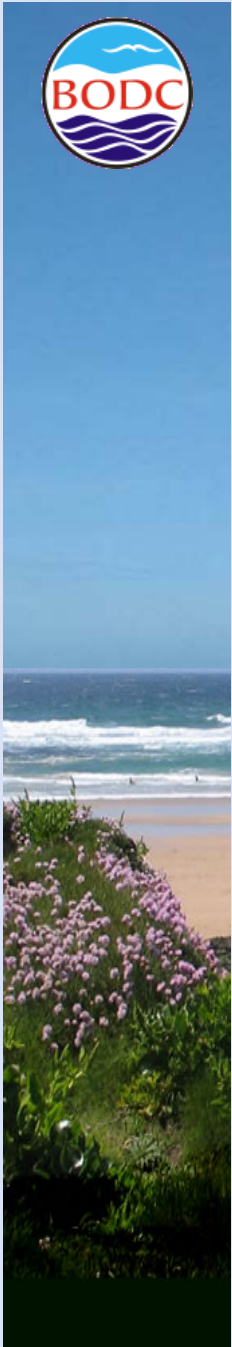
The Development of an Operational Vocabulary Server

Roy Lowry (BODC)

Quyen Luong (BODC)

Geoff Williams (Australian IMOS)

Michael Hughes (Unilever Research)





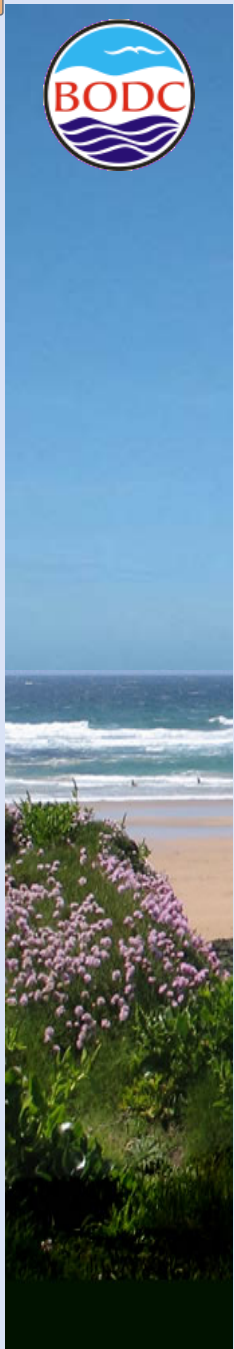
Outline

- **What makes a system operational?**
- **NERC Vocabulary Server evolution towards operational status in:**
 - Governance practice
 - Change management
 - Robustness
 - Interoperability
- **NERC Vocabulary Server evolution – where next?**
 - Ontology bridging
 - Multilingual support
 - Publication and Citation
 - Standards development



Define: Operational Resource

- **Operational resources**
 - **Are invisible**
 - Always there whenever called
 - Never the cause of delay
 - Never the cause of failure
 - **Are interoperable**
 - Readily integrate with other similar systems
 - Plug and play into user applications
 - **Are well used**
 - The acid test.....





Evolutionary Process

Governance practice

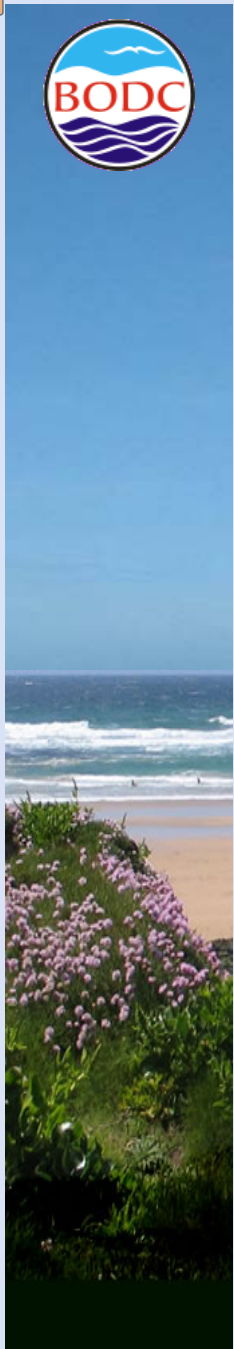
- **In the beginning vocabulary governance was anarchic**
 - * 'Dictator' decisions with little thought
 - * Distributed governance spawning multiple local versions
 - * Governance that was a myth rather than reality e.g. GF3
- **Evolutionary steps**
 - * Communication developments
 - E-mail list servers
 - Teleconferencing and videoconferencing
 - Vocabulary publication on the Web
 - * Move from lone dictators to moderated community discussion
 - SeaVoX established to provide governance for SeaDataNet semantics delivered through the NERC Vocabulary Server based on CF Standard Names model
 - * ISO19135 governance model leading to vocabulary/ontology repositories that clearly document governance



Evolutionary Process

Change management

- **In the beginning change management was anarchic**
 - * Terms and definitions were changed with little thought about the consequences
 - * Terms were even deleted
- **Evolutionary steps**
 - * Realisation of the problem
 - * ISO model for change based on deprecation
 - * Documentation of change by semantic relationships

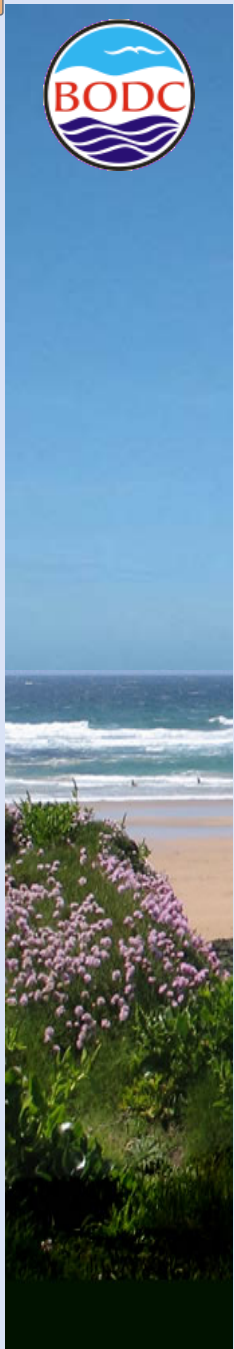




Evolutionary Process

Robustness

- **In the beginning the Vocabulary Web Services were frequently down**
- **Evolutionary milestones**
 - * Introduction of service monitoring
 - * Development of automated resuscitation scripts
 - * Load management (robots exclusion)
 - * Hardware hardening
 - Duplicating WAN connections
 - Backup servers
 - Fault-tolerant virtual servers

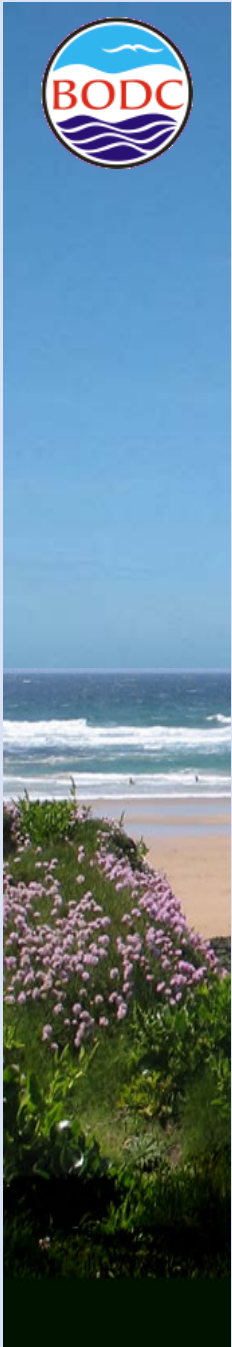




Evolutionary Process

Interoperability

- **Three stages in the NERC Vocabulary Server evolution**
 - * API modelled on a FORTRAN subroutine interface returning strings
 - Interoperates with custom software coded from scratch
 - * API returning XML documents conforming to a home grown schema
 - Interoperates with custom software based on libraries
 - * API returning XML documents conforming to a standard schema (SKOS)
 - Interacts with generic tools





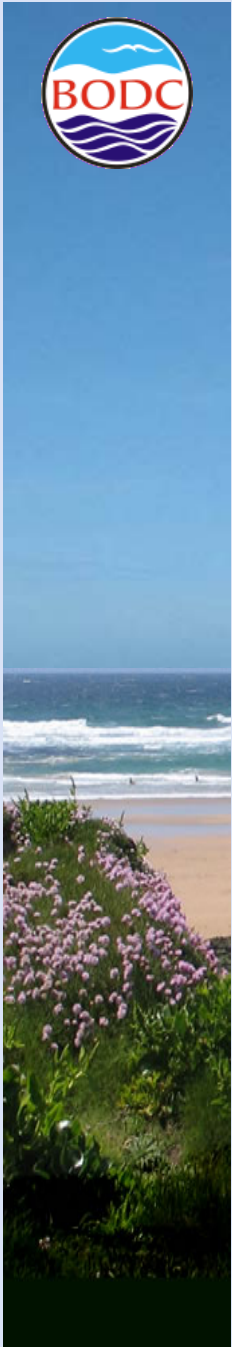
Future Developments

Bridging

- **Many semantic resources on the Web such as**
 - * MMI ontology repository
 - * NASA SWEET ontology
 - * WoRMS
 - * GEMET thesaurus
- **Replication is a waste of time**
- **New semantic resources for NETMAR FP7 project will be developed from existing resources through bridging**

Multilingual capability

- **NETMAR requires multilingual semantic resources**
- **GEMET has impressive multilingual capability based on SKOS2**
- **NERC Vocabulary Server to develop along similar lines**





Future Developments

Publication

- **NERC Vocabulary Server publishes versioned lists**
- **All previous versions accessible through URLs**
- **Giving the vocabularies formal citations and DOIs seems a sensible way to go**

API Standards

- **Standards available for payload documents and resource URN syntax**
- **Similar standards needed for resource URL syntax and SOAP API**

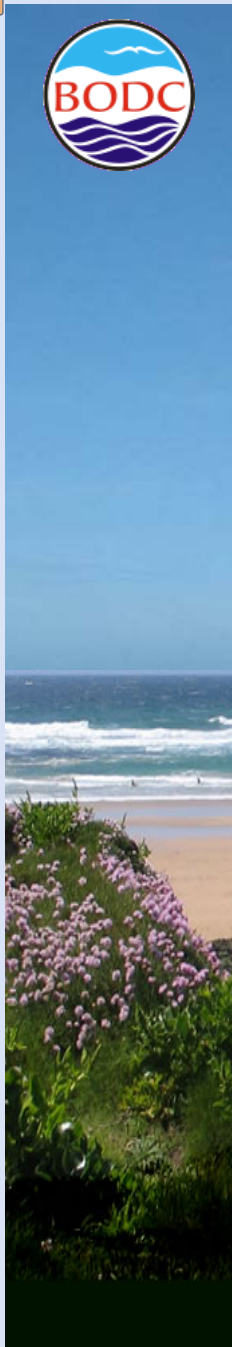


The Acid Test

NERC Vocabulary Server Usage Statistics by API Method (2010-03-18) with robots blocked

Method	Oct-Dec 2009	Jan-Mar 2010
searchTerm	65097	2695
getMap	50661	45108
verifyTerm	1456	8973
getList	116019	107307
whatLists	208991	14105
whatListsCat	7792	2206
getRelatedRecordByTerm	2063	5625
getRelatedRecordByCriteria	996	8234

Operational Status Confirmed





The End

**Thank you for your
attention.**

Any questions?

