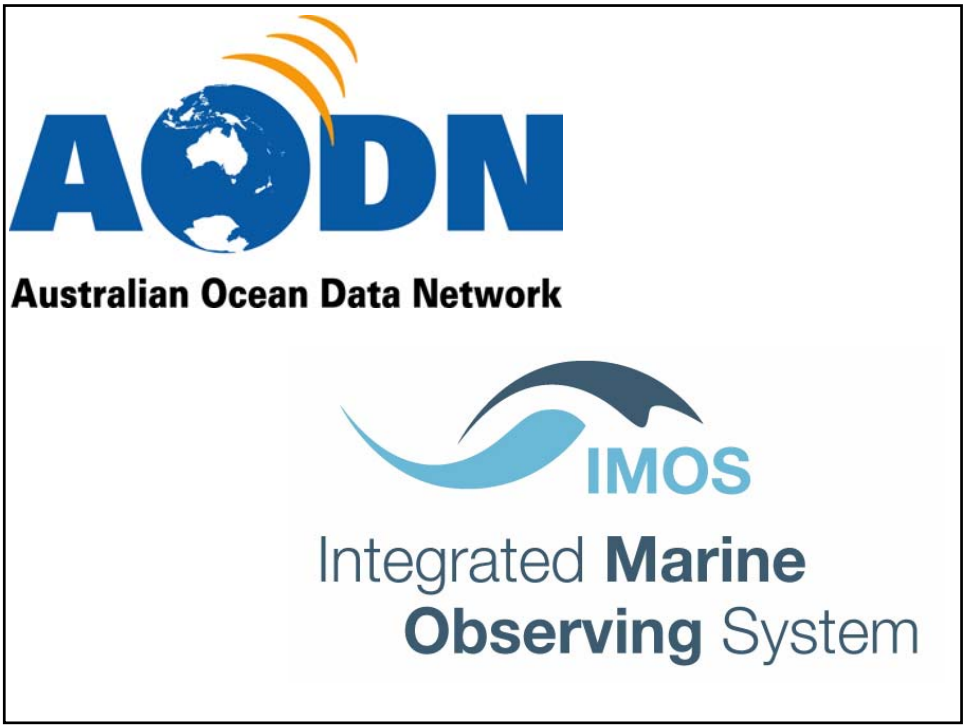


The AODN / eMII Journey

Australian Ocean Data Network

- Not simply about AODN / eMII providing a service
- A journey, jointly owned by the community
- A shared vision based on need
- Evolving
- Negotiation
- Consensus
- Disparate needs & agendas across community
- Technical and cultural challenges … a new path to forge
- Not by Friday

Guiding Principles

Australian Ocean Data Network

NCRIS Strategy Investment Framework:
"*Access* (to data) *is a critical issue in the drive to optimise Australia's research infrastructure*."

"*Diffusion of knowledge*" is established as a performance measure.

IMOS Project Plan:
General principles emphasise, "*Timely, free and unrestricted access to all data, associated metadata and products generated under the auspices of IMOS through systems and processes agreed for data and information management and delivery*".

Data as a performance measure: "*Success will be measured in terms of the quality and quantity of data that IMOS delivers, the number of users and the quality research-results produced with IMOS data*."

Practical Translation of Principles

Australian Ocean Data Network

Develop system for:

- data management
- data discovery
- data access
- data products
- data use and reuse

Contracts with each operator institution will mandate:

- unencumbered data = 'immediate' access to data by all researchers
- quality control / assurance of data to international standards

AODN Vision

Australian Ocean Data Network

A single distributed, federated network for Australian marine science data and information.

To:

- Promote the discovery, transfer and implementation of knowledge about marine environments by facilitating the management and exchange of, and ready access to, marine data and information.
- Provide a key enabling technology for e-research.

What is the AODN?

Australian Ocean Data Network

- AODCJF as 'core component'
- BlueNet project
- eMII project of IMOS

The AODCF

Australian Ocean Data Centre Joint Facility

Australian Ocean Data Network

A partnership among Commonwealth Agencies:

- Australian Antarctic Division (AAD)
- Australian Institute of Marine Science (AIMS)
- Bureau of Meteorology
- CSIRO Marine and Atmospheric Research
- Geoscience Australia
- Royal Australian Navy

- with support from the National Oceans Office

To manage ocean data to meet national and international obligations

BlueNet

Australian Ocean Data Network

A DEST-fur ...les:

1. Join u
   - dat
   - Blu
2. Help ac ...al' data
   - buil
3. Develc
   - Me ...(MEST)
   - sup ...e Catalogue

BlueNet
Australian marine science data network

BlueNet - partners

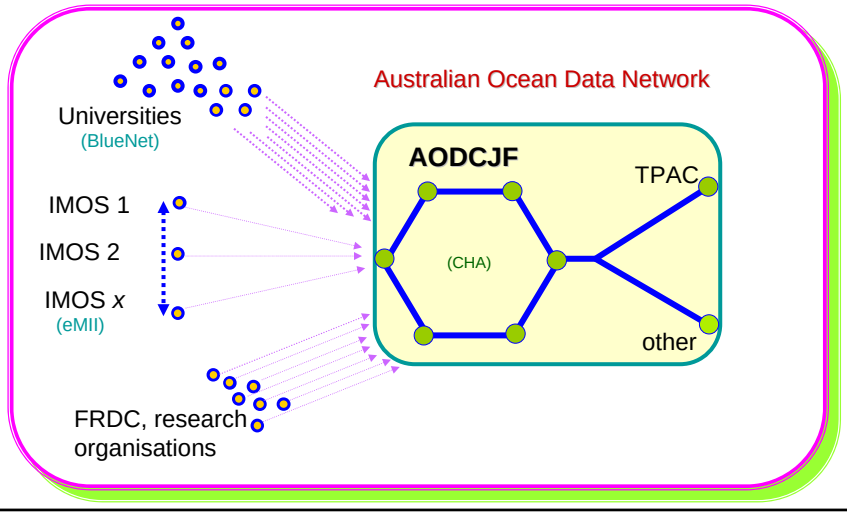
Australian Ocean Data Network

- AODCJF Agencies, TPAC
- James Cook University
- University of Sydney
- Australian National University
- University of Melbourne
- University of Tasmania
- University of Western Australia

- (University of Queensland)
- (UNSW)
- (Flinders University)
- (Deakin University)

The AODN Network

Australian Ocean Data Network



AODN Technologies
Portal & Catalogue

Australian Ocean Data Network

Portal

- Visualises / integrates disparate datasets
- GIS-like functionality (map layering, legend, zoom, etc)
- GUI to search for and call services listed in Catalogue
- Several different types of searches
- Allows user to build complex searches

Catalogue

- Harvested metadata records are imported into the Catalogue
- No GUI; handles calls from remote clients (e.g. Oceans Portal) for searching
- Is a registry for:
  - metadata
  - data
  - for web services (provides links to services that facilitate data access, data manipulation, visualisation and download)

AODN Technologies: MEST

Australian Ocean Data Network

Metadata Entry & Search Tool (MEST)

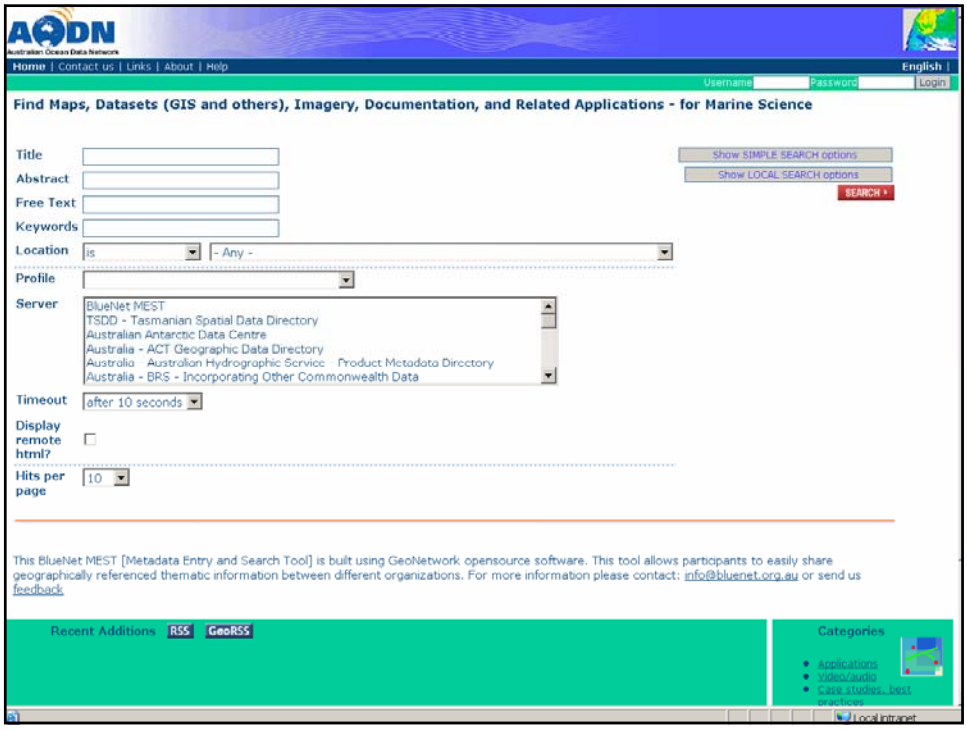
- Simultaneous searching across multiple catalogues / repositories
- Web map services - allowing visualisation of multiple datasets
- Manages permissions and access (user-levels for metadata viewing, creation and editing, and data access)
- Explicit content-specific display of “Copyright and Use-limitations”
- Gathers statistics about data-downloads; data owners advised of the users of their data
- ISO19115 compliant (the international geospatial metadata standard) PLUS other metadata standards, e.g. for sensors, observation and measurement
- Several ‘controlled’ vocabularies relevant to marine science ‘sub-disciplines’
- Customisable metadata-entry templates for varying data types
- Data upload and download
- For general use, deployed on a central server

AODN Technologies: MEST

Australian Ocean Data Network

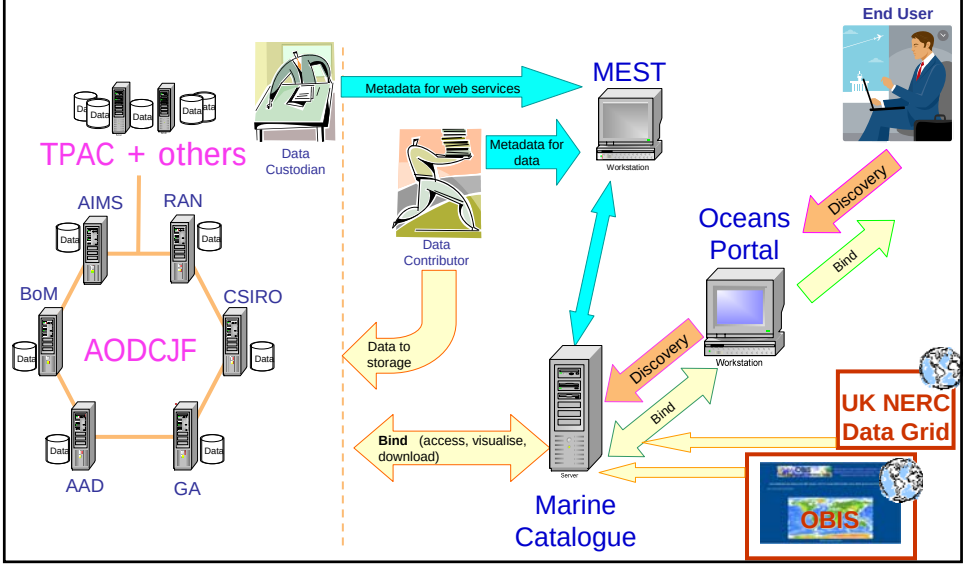
Metadata Entry & Search Tool (MEST)

- Intended to be flexible
- Will evolve with needs of community



The AODN Network

Australian Ocean Data Network



AODN - Outreach

Australian Ocean Data Network

Provision of tools and services for eMII

- Comprehensive help documentation – for MEST use, metadata creation, IP, hosting issues, etc
- “In-the-field” tool, and conversion program, for non-networked metadata entry
- User guides, induction guides, web pages, FAQs
- Discussion lists
- Help desk
- Workshops and training: standard and special-needs sessions (for various stakeholder groups)

Services to maximise data exposure / discoverability

- Publish metadata to the Australian Spatial Data Directory
- Links to other similar information resources and services

Challenges: Culture I

Australian Ocean Data Network

Changing Culture - Data Sharing

- Educating scientists about the utility of their science (legacy = data as well as papers)
- Overcoming researcher resistance to depositing data:
  - reservations about sharing data (loss of professional advantage; concerns about misuse by others)
  - concerns about the time needed to input metadata/data
  - concerns about IP
- Acknowledgment of data reuse

Challenges: Culture II

Australian Ocean Data Network

Changing Cultures - Institutional Issues

- Interactions with pre-existing programs and practices
- Different understanding and capacity within an organisation (policy at top not related to staff view)
- Work flows at an institutional level
- Priorities in resource allocation in an environment of change management

Challenges: Standards @?$%!!

Australian Ocean Data Network

- An ‘end-to-end’ problem in the data flow
- Data, metadata, QA / QC, timeliness, archival practice etc.
- Getting agreement between disparate bodies, e.g. in:
  - developing metadata standards, vocabularies
  - interpretation and application of standards
- Integration of standard practices with pre-existing programs
  - standards developed for the AODN have to mesh with those in pre-existing, data management-mature programs

Challenges: Technical & Legal

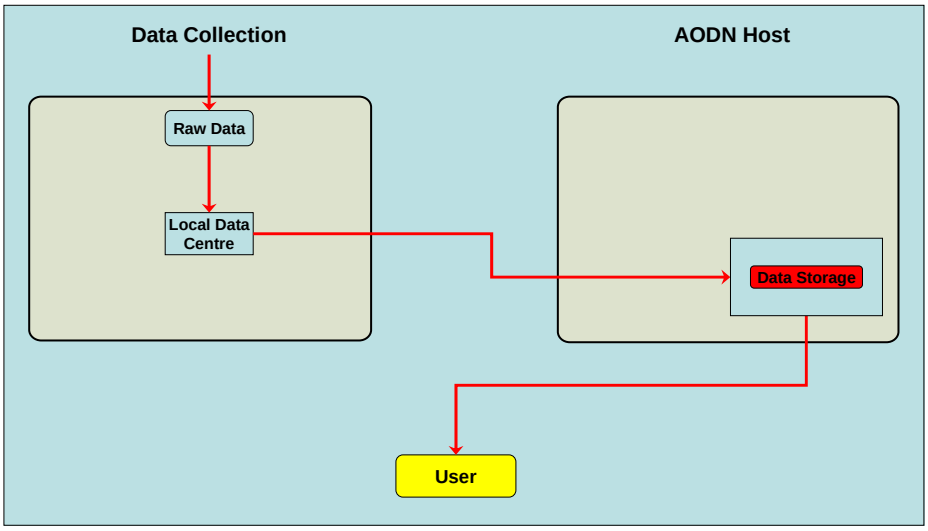
Australian Ocean Data Network

Technical & other challenges

- Access/Authentication/Authorisation, dual identities, and transitory organisational membership
- Standards development (and adoption)
- Coping with different software [proprietary, legacy, etc] for data storage, management etc
- Developing web services: web-map services, web features etc
- Versioning, duplication and ‘point-of-truth’:
  - data (raw, QC’d, integrated, real time vs. delayed, delayed error-correction)
  - metadata
- IP

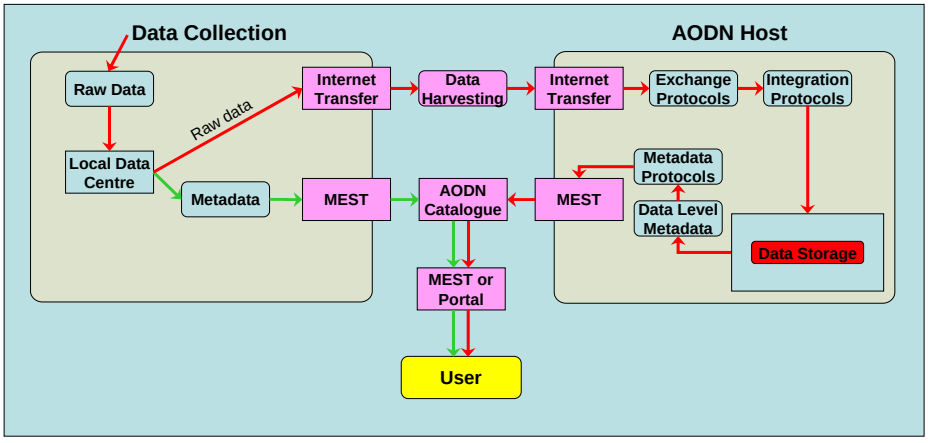
Elements of data management process

Australian Ocean Data Network



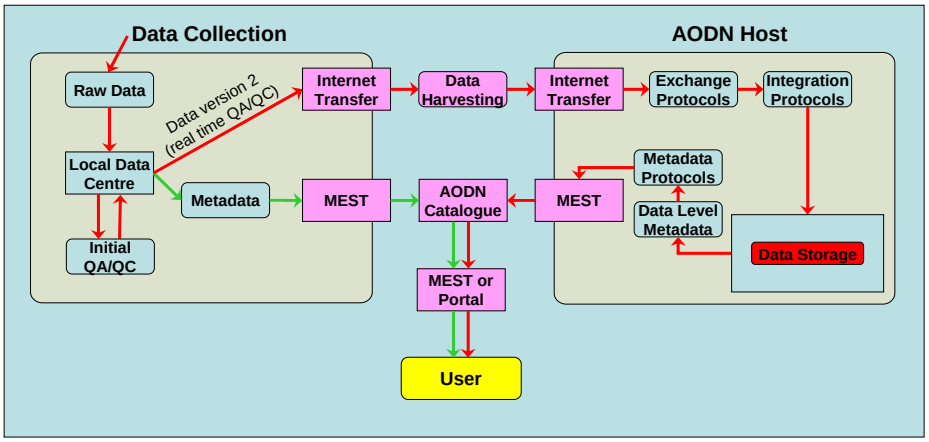
Elements of data management process: Step 1

Australian Ocean Data Network



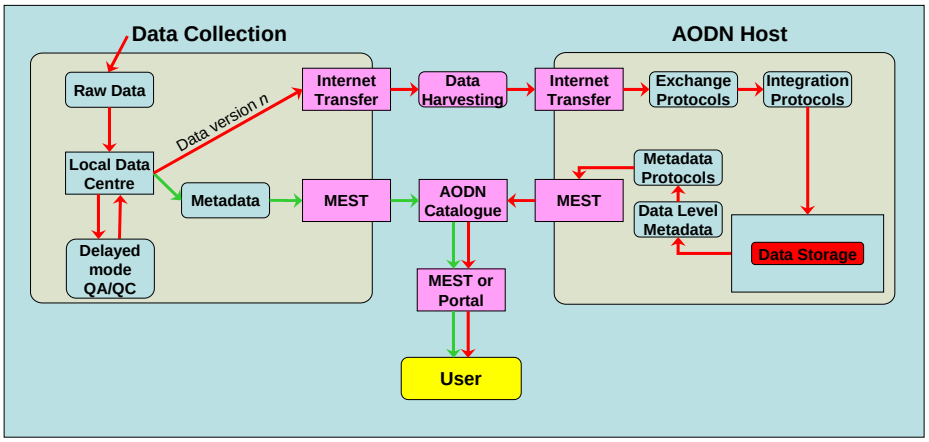
Elements of data management process: Step 1 or 2

Australian Ocean Data Network



Elements of data management process: Step *n*

Australian Ocean Data Network



Example: ARGO Data

Australian Ocean Data Network

Argo float

Satellite

Coriolis

GADC Brest

BoM

real time QA/QC

Final R-file netCDF

publish thru GTS

CMAR

real time QA/QC

Final R-file netCDF

Delayed mode QA/QC processing

Delayed mode data

Coriolis

GADC Brest

GoDAE

GADC USA

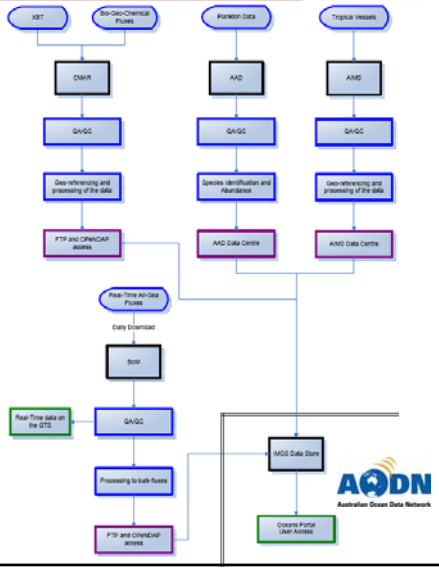
Workstation

MEST or portal

HTTP, FTP etc. access

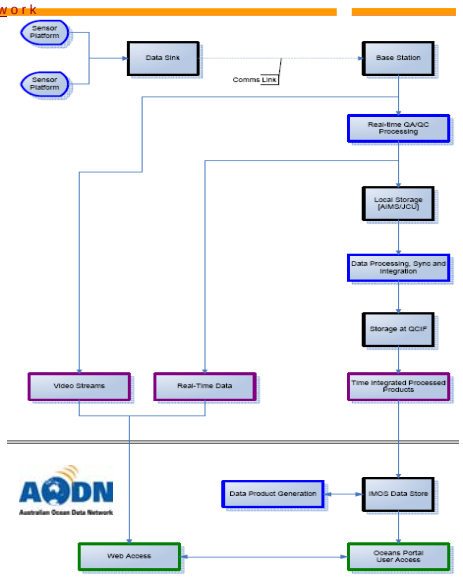
Example: SOOP

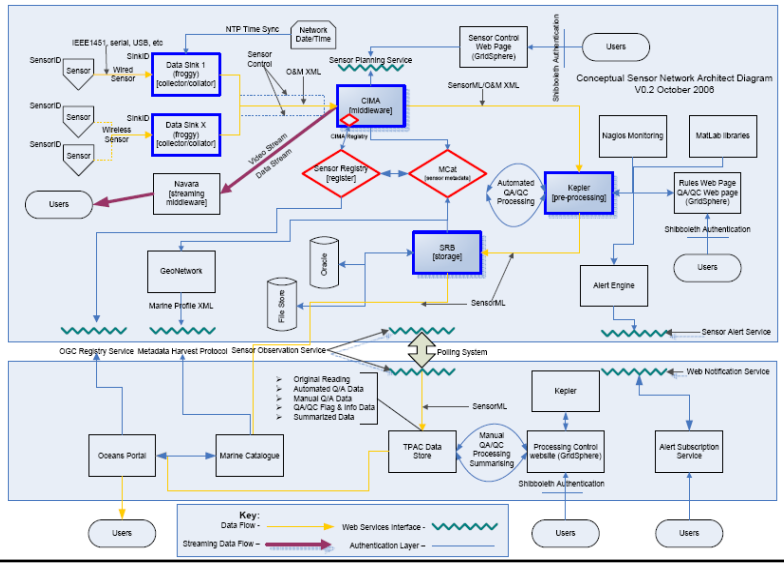
Australian Ocean Data Network



Example: Sensor network

Australian Ocean Data Network



Sensor network data system 'architecture'

Australian Ocean Data Network