


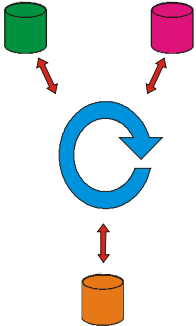

Data exchanges, XML, and why the exchange problem is still unsolved
 Anthony W. Isenor
 Technology Demonstration Section
 Networked Underwater Warfare



Outline


- Models of Data Exchange
- SGXML Efforts
- GML
- JCOMM ETDMP
- Marine Metadata Interoperability (MMI)
- Why it is still unsolved


Informal Model

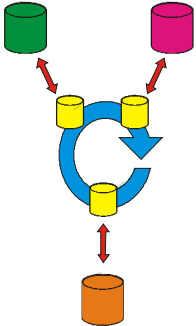
- Oceanographic Community
 - IOC, ICES, JCOMM
 - GOOS, US IOOS
- For?
 - environmental data




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Formal Model

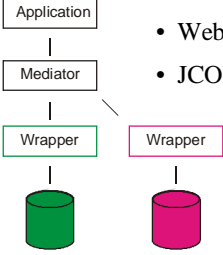
- Military Community
- For?
 - planning, execution, reporting and monitoring



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Wrapper Model

- Wrappers, Mediators, Integrators, Navigators



- Web Services
- JCOMM ETDMP

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SGXML Efforts

- Metadata
- Parameter Dictionaries
- Data in XML

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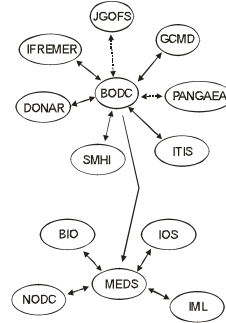
SGXML - Metadata

- Review and mapping
 - ISO 19115, FGDC, EDMED, DIF, MARC 21 and Dublin Core
 - Mapping contribution
 - MEDI to ISO; EDMED to ISO
- Identified levels of metadata
 - unification, service, thematic, associated (ETDMP)
 - archival, browse, summary, discovery... (NDG)

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SGXML - Parameter Dictionaries



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SGXML - Data - Keeley Bricks

- Two principles
 - Exploit the natural hierarchy found in ocean data types
 - Construct different structures from these data objects
- Profile Data Study
 - 20 bricks

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SGXML - 20 Keeley Bricks

- analysis_method
- availability
- calibration
- comment
- data_dictionary
- data_point
- data_set_id
- depth_pressure
- history
- instrument
- latitude
- ldate
- longitude
- provenance
- quality
- quality_testing
- sampling
- sensor
- units
- variable

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Keeley Bricks

- data_set
 - availability
 - comment
 - data_point
 - data_set_id
 - provenance
 - quality
 - quality_testing
 - variable_set
 - location_set
 - history_set
 - data_set

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XML Document – data_set

```

<data_set>
  <data_point pt_code="Species" pt_link="1">Cragon</...>
  <data_point pt_code="Stage">Postlarva</data_point>
  <data_point pt_code="number">15</data_point>
  <data_point pt_code="biomass">13</data_point>
  <data_set_id level="record"/>
  <location_set>
    <depth_pressure pt_code="DEPT">14.141</depth_p...>
  </location_set>
</data_set>
  
```

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SGXML - Data - Japanese Efforts

```

    <dictionary>
    <locationList>
    <gml:Point gml:id="loc0001">
    <gml:name>St.1</gml:name>
    <gml:pos>139.9194 35.6361</gml:pos>
    </gml:Point>
    <gml:Point gml:id="loc0002">
    <gml:name>St.2</gml:name>
    <gml:pos>139.9364 35.5864</gml:pos>
    </gml:Point>
    </locationList>
    <itemList>
    <item itemid="item001" unitid="degC" instrumentId="ins0001" methodId="met0001">
    <name>water temperature</name>
    </item>
  
```

Compliments: Keita FURUKAWA and Tsuneki SAKAIBARA

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SGXML - Data - Japanese Efforts

```

    <observationLocation locationid="loc0001">
    <time>
    <gml:TimePeriod>
    <gml:TimeInstant>
    <gml:timePosition>2002-07-25T10:03</gml:timePosition>
    </gml:TimeInstant>
    </gml:TimePeriod>
    </time>
    <gml:duration>P0DT0H0M6S</gml:duration>
    <gml:TimePeriod>
    <gml:TimeInstant>
    <gml:timePosition>2002-07-25T10:09</gml:timePosition>
    </gml:TimeInstant>
    </gml:TimePeriod>
    <valueSet observationId="waterQuality">
    <depthInstant>
    <depthPosition>0.5</depthPosition>
    <totalDepth>
    <depthPosition>6.5</depthPosition>
    <basic>water surface</basic>
    <totalDepth>
    <value itemid="item001">25.3</value>
    <value itemid="item005">41.9</value>
    <value itemid="item006">4</value>
  
```

Compliments: Keita FURUKAWA and Tsuneki SAKAIBARA

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GML

- Intimidating – 529 pages
- “...for the modelling, transport and storage of geographic data”
- feature – “an abstraction of real world phenomenon; it is a geographic feature if it is associated with a location relative to the Earth”
- GML observation schema

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JCOMM ETDMP Concept

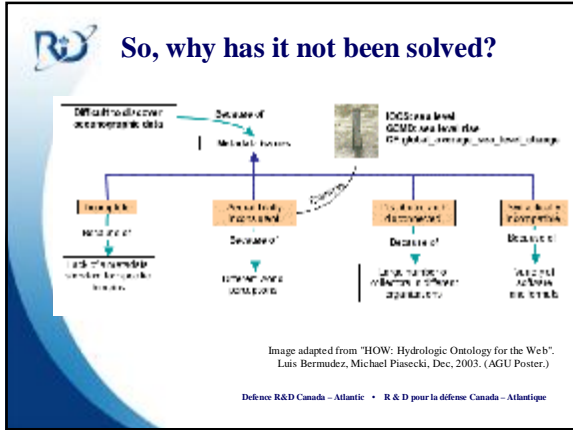
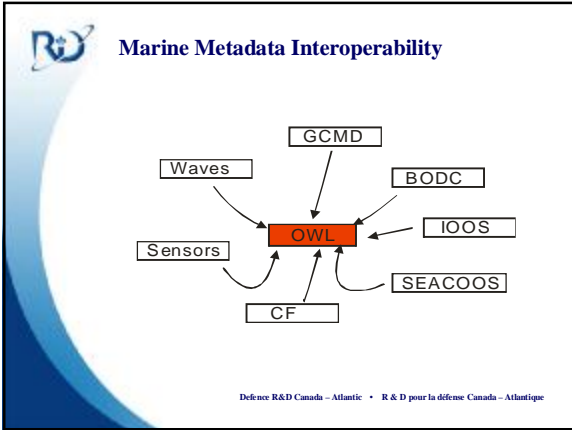
Compliments of Nicolay Mikhailov, ETDMP.

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Marine Metadata Interoperability

- Many aims, main one is:
 - Solve the “meta” part of the data interoperability problem
- Harmonizing vocabularies

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- ## To Conclude
- Models of Data Exchange
 - Informal, Formal, Wrapper
 - SGXML Efforts
 - Metadata, Parameter Dict., Data in XML
 - GML
 - JCOMM ETDMP
 - Wrapper model implementation
 - Marine Metadata Interoperability (MMI)
 - OWL to Harmonize vocabularies
 - Why it is still unsolved
- Thank you.
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 - Final SGXML Report at http://pubs.dcdc-rdd.gc.ca/pubdocs/pcow1_e.html
 - Canadian Parameter mappings, http://www.meds-sdmm.dfo-mpo.gc.ca/meds/About_MEDS/standards/login_e.asp

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