

System Architecture/Design & Content Standards for Animal Acoustic Telemetry (AAT) Data

IOOS POST-NANOOS Project

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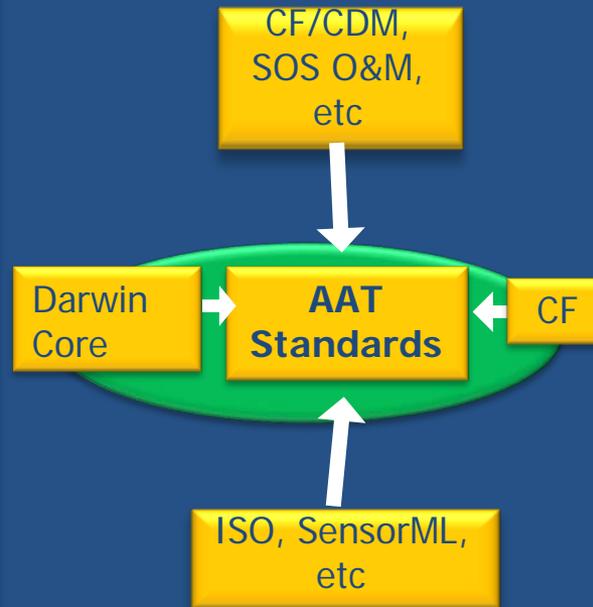
AAT Standards Development

Interoperability of AAT Original Data & Metadata

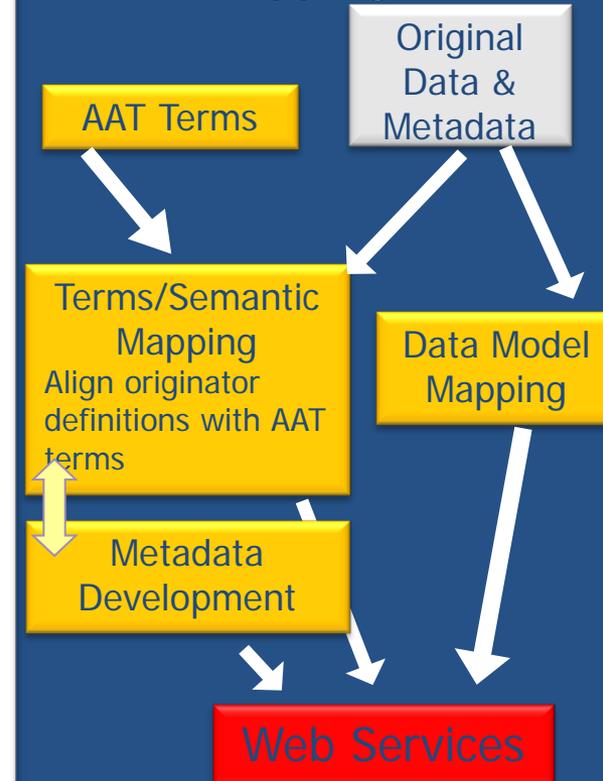
AAT Data & Metadata Contents

- Receiver metadata
- Detection Data
- Tag metadata
- Spatial-Temporal Reference
- Taxon / Identification
- Observation Details
- Sampling Details
- Animal Tracks
- etc

Semantics & Data Model Standards



Semantics & Data Model Mappings



AAT Data and Metadata Elements

Complex data, compared to conventional physical/chemical observations or direct biological observations!

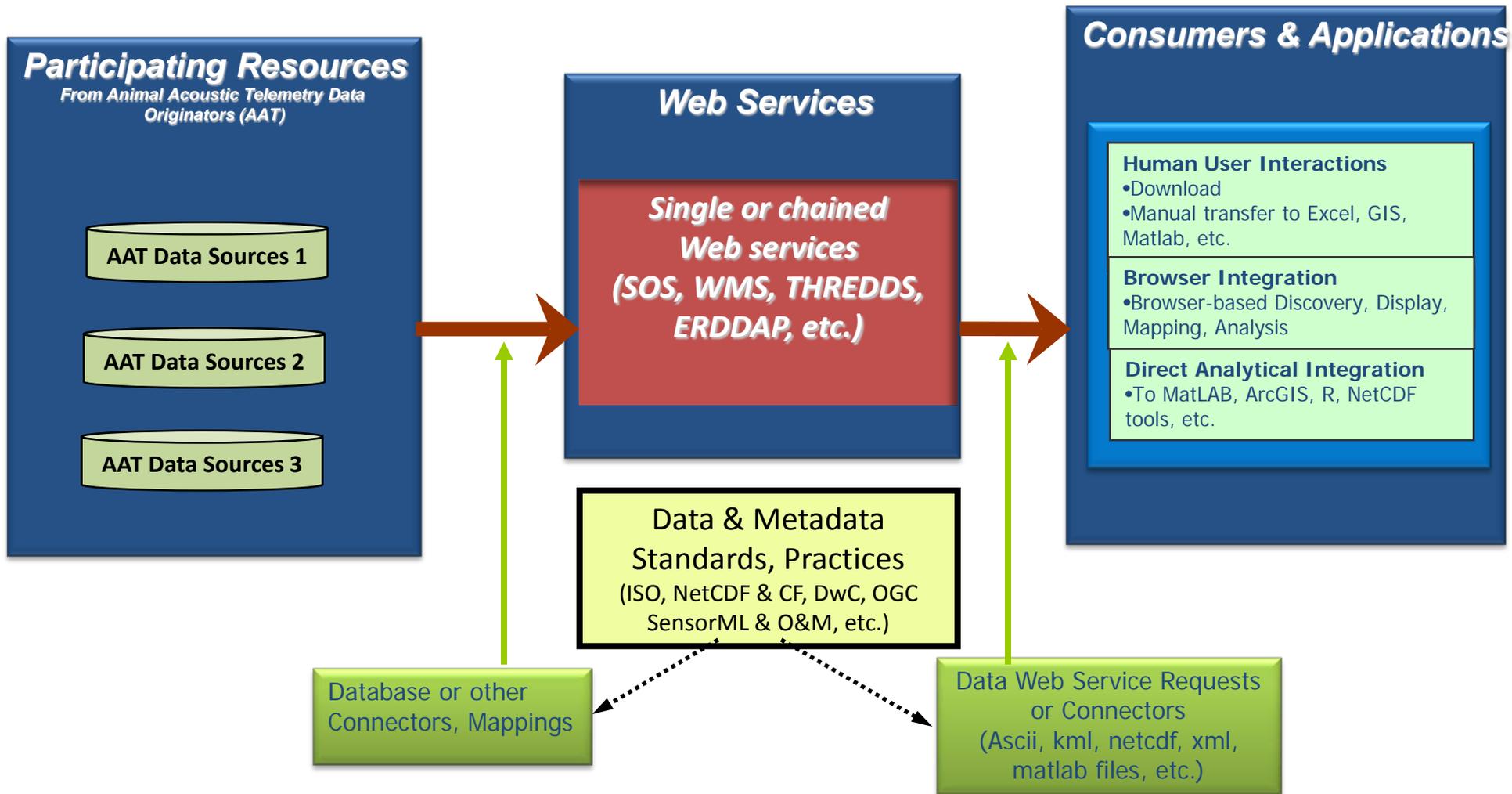
Core Information Elements:

- Sensor Information (*receiver metadata*)
- Sensor Observations (*detection data*)
- “Associated Observed Properties” (*tag metadata*)

Expanded Content (from raw to highly derived). John’s Content Standard categories, discussed later:

1. Dataset Attributes
2. Detections
3. Equipment Logfiles
4. People
5. Tag Deployments
6. Receiver Arrays
7. Tracks

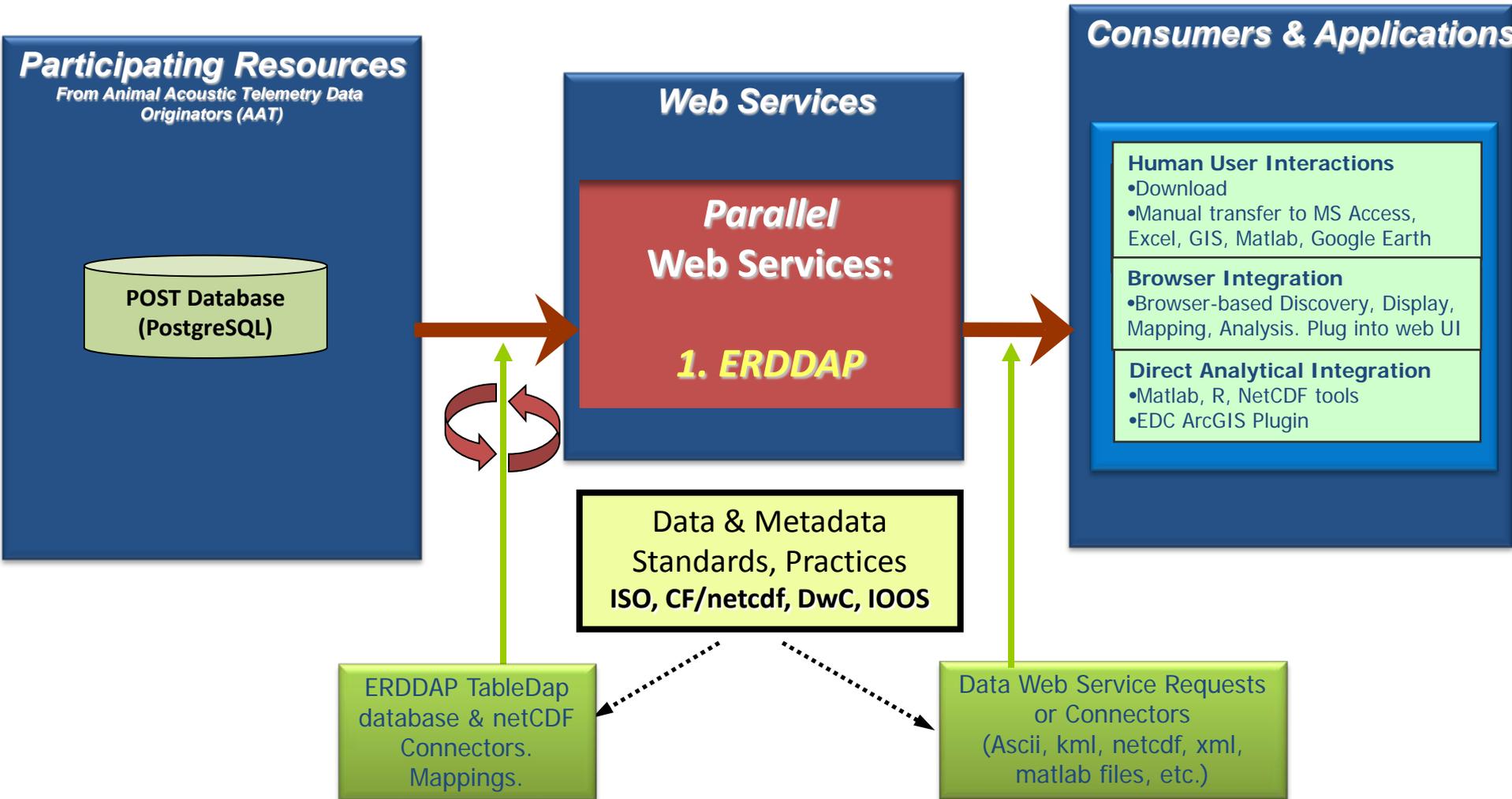
AAT Obs. – High-level System Design Diagram



Considerations and Constraints

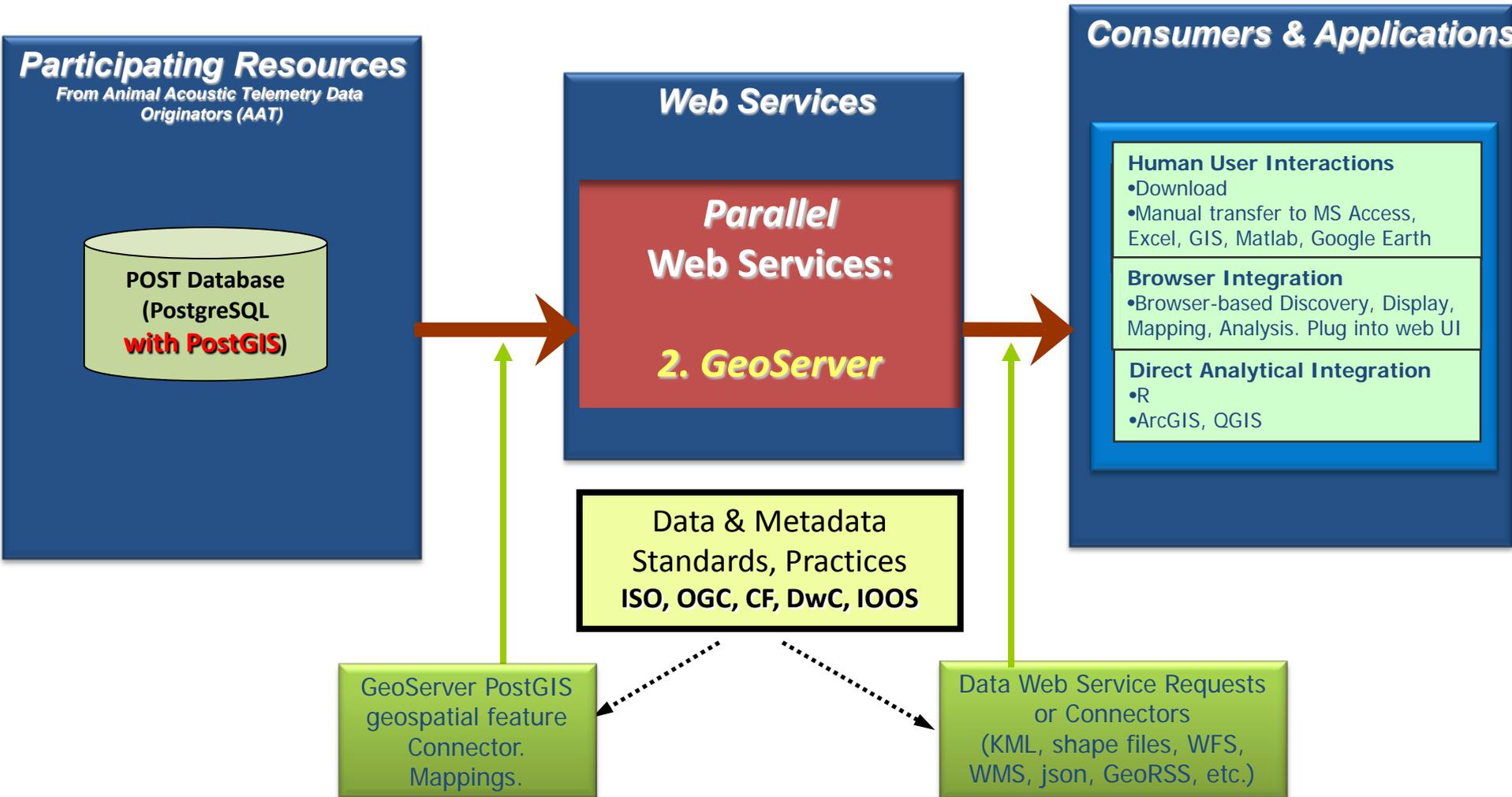
- **AAT Data Source?** (RDBMS or files? Admin restrictions? Etc)
 - Which source: POST data in OTN database, or original POST database? (Both are implemented in PostgreSQL RDBMS)
- **Metadata and Content (semantic) Standard**
- **Data/Information Model**
- **Cohesiveness with IOOS and Biological Data infrastructure**
- **Ease of implementation**, given existing resources and staff.
- **Ability to reproduce elsewhere**
- **Sustainability**, long-term benefits
- **Focus on solid, general architecture to support interoperability ...**
- **but enable & demonstrate access by typical users, as much as possible**

AAT Obs. System Design Diagram – Service Connections: #1: Database “Views” > netCDF files (CDM) > ERDDAP



AAT Obs. System Design Diagram – Service Connections:

#2: Database “Views” > GeoServer



OTN: POST Data in Google Earth. Dataset.

Find Businesses Directions

to e.g., 37 25.818' N, 122 05.36' W

Places

- My Places
- Temporary Places
- POST Series
 - Please [review our data policy](#). If you do not agree with our policy then do not
- Resources
 - with Data
 - by Status
 - ongoing
 - proposed
 - postunit:otn_resources_...
 - otn_resources_metad...
 - Legend
 - completed
 - Stations
 - All Stations
 - By Instrument Type
 - By Model
 - History
 - Maps and Charts
 - Here we give maps from public sources or regional collaborators.

■ Deployment Collaborations
■ Tracking Collaborations
■ Data Collaborations
■ Undefined
▲ Active Acoustic Stations
▲ Vacant Acoustic Stations
▲ Other Active Stations
■ Planned Stations
■ Closed Stations

JDF: Strait of Juan de Fuca

Title	JDF: Strait of Juan de Fuca
Citation	Welch, D., 2004 In: Bolger, James, J. Payne. 2011. Pacific Ocean Shelf Tracking (POST) Program. Retrieved: August 21, 2012 from GlobalOceanTrack.org .
Status	Ongoing
Taxonomic Coverage	Scientific Name(s): Acipenser medirostris, Hexanchus griseus, Hydrolagus colliiei, Oncorhynchus clarki, Oncorhynchus keta, Oncorhynchus kisutch, Oncorhynchus mykiss, Oncorhynchus nerka, Oncorhynchus tshawytscha, Squalus acanthias. Common Name(s): Chinook salmon, chum salmon, coastal cutthroat trout, Coho salmon, green sturgeon, sixgill shark, sockeye, kokanee, spiny dogfish, spotted ratfish, steelhead trout.
Geographic Coverage	Ocean(s): NEPACIFIC Country(s): CANADA
Temporal Coverage	StartEndDates: 2004 to 2011
Data Summary	DETECTIONS=70162 MOORINGS/INSTRUMENTS=582 TOTAL=70744.
Scientific Contacts	John Payne

[More Detail ...](#)

Directions: [To here](#) - [From here](#)

OTN: POST Data in Google Earth. Station Deployments.

My Places

- My Places
- Temporary Places
- POST Series
 - Please [review our data policy](#). If you do not agree with our policy then do not use.
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Legend

- Deployment Collaborations
- Tracking Collaborations
- Data Collaborations
- Undefined
- Active Acoustic Stations
- Vacant Acoustic Stations
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- Planned Stations
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NORTHARM-RKm22.3_02

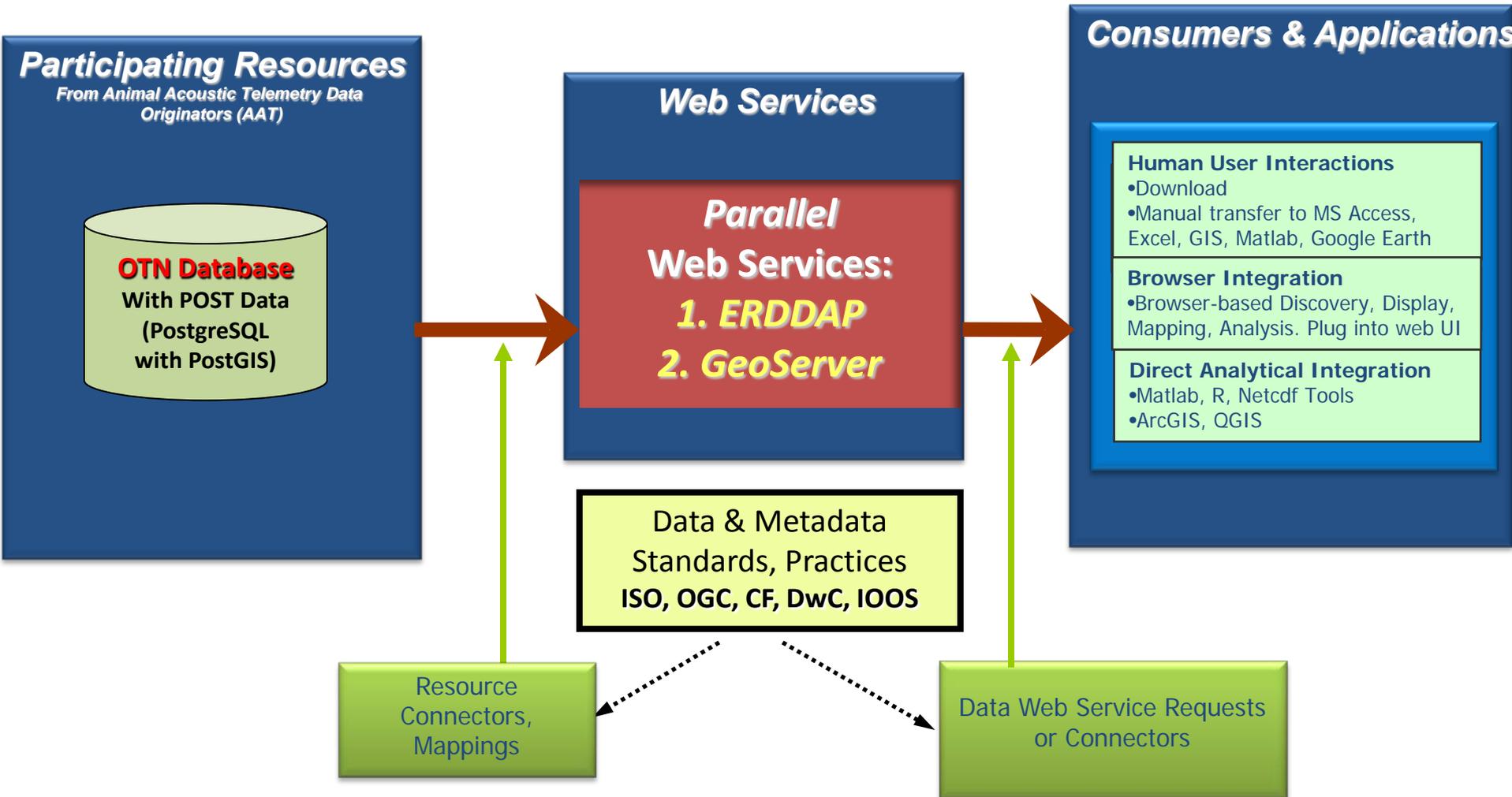
collection code: FRASER
 station type: Acoustic
 line: active
 state: deployed
 local area: Fraser River
 depth: 1.8
 latitude: 49.19653
 longitude: -122.94757

instrument	type	deploy date	last download	recovery date	downloads	drift
VR2	rcvr	2006-04-08	2006-08-02	2006-08-02	1	0.0 m
VR2	rcvr	2006-08-02	2006-12-12	2006-12-12	1	0.0 m
VR2	rcvr	2007-03-29	2007-07-29	2007-07-29	1	21.9 m
VR2	rcvr	2007-07-29	2007-10-11	2007-10-11	1	17.5 m
VR2	rcvr	2007-10-11	2008-10-16	2008-10-16	1	9.2 m
VR2	rcvr	2008-10-16	2009-12-14	2009-12-14	1	9.2 m
VR2	rcvr	2009-12-14	2010-07-06	2010-07-06	1	9.2 m
VR2	rcvr	2010-07-06	2011-03-26	2011-03-26	1	45.8 m
VR2W	rcvr	2011-03-26	2011-07-11	2011-07-11	1	48.3 m
VR2W180	rcvr	2011-03-26	2011-07-11	2011-07-11	1	48.3 m
VR2W	rcvr	2011-07-11	2011-08-14	2011-08-14	1	48.3 m

Directions: [To here](#) - [From here](#)

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 Data SIO, NOAA, U.S. Navy, NGA, GEBCO

AAT Obs. System Design Diagram – Service Connections: Parallel Development: OTN Database, at OTN Servers



Identical deployment as one based on POST DB on NANOOS servers, Except for Participating Resource (OTN DB) and Resource Connectors ¹⁰

Questions & Comments?
Likes & Dislikes?

“Content Standards”

An **initial** discussion

John Payne