

HS3 DATA SYSTEM

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HS3 – The mission

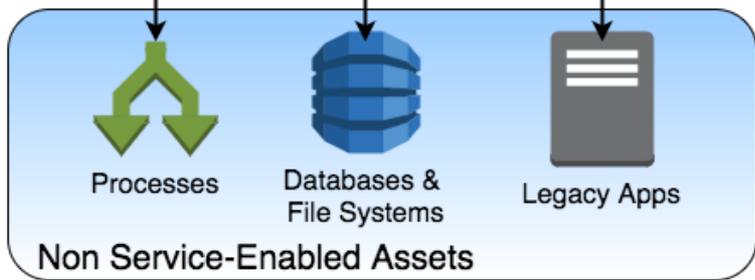
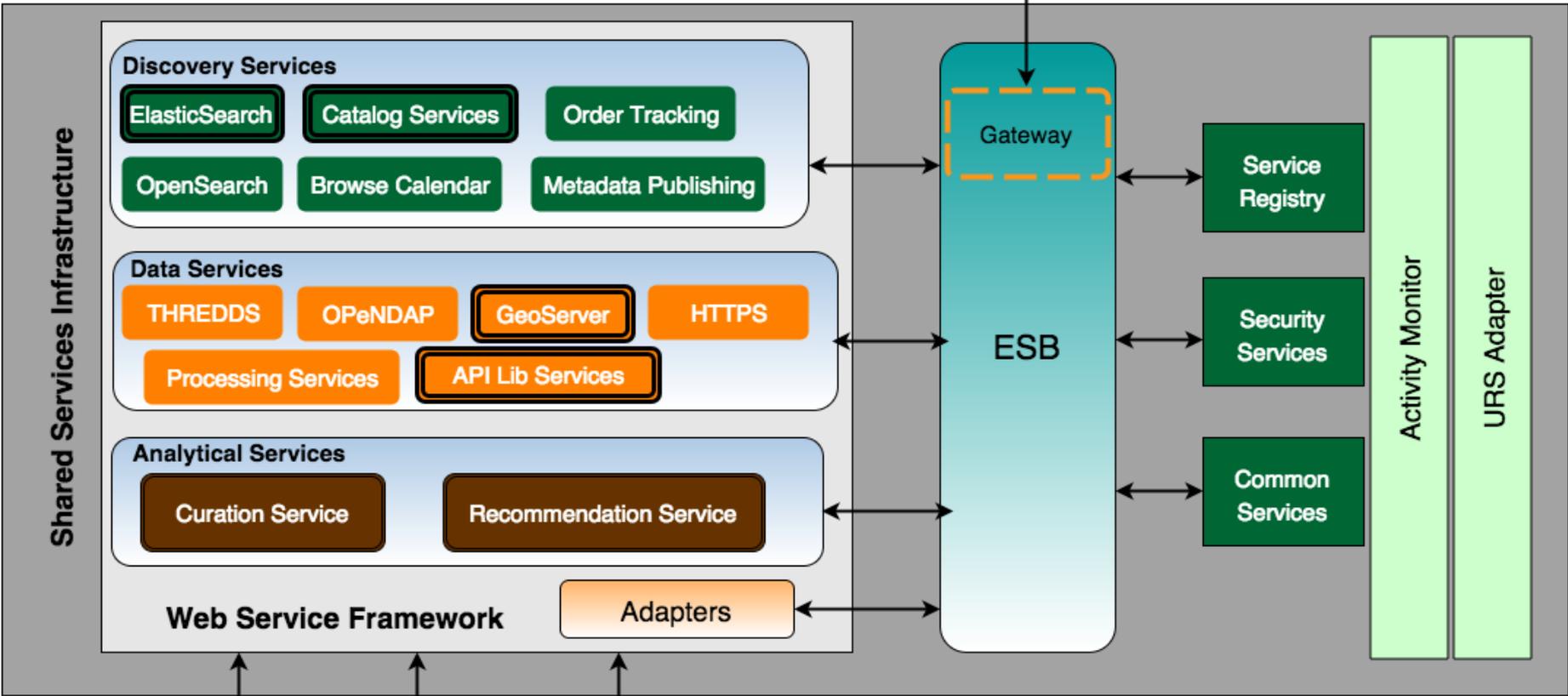
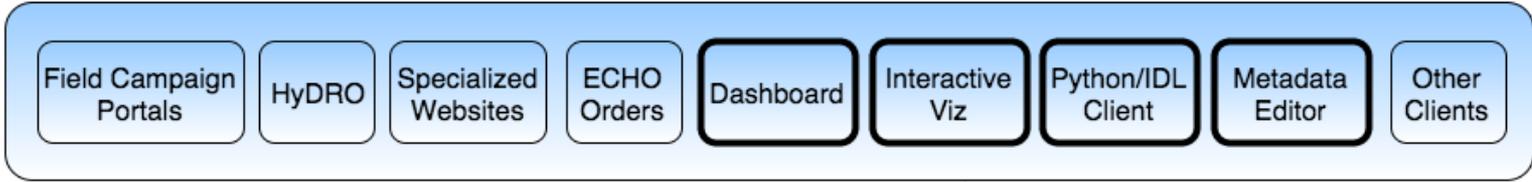
- **Hurricane and Severe Storm Sentinel**
 - Objective
 - Obtain critical measurements in hurricane environment
 - Identify the role of key factors – large-scale wind systems (troughs, jet streams)
 - Observe and understand 3D mesoscale and convective-scale internal structures of tropical disturbances and cyclones and their role in intensity change
 - Science Questions
 - **What impact does the large-scale environment have on intensity change?**
 - **What is the role of storm internal processes such as deep convective towers?**
 - **To what extent are these intensification processes predictable?**

HS3 Data System

- Move seamlessly from **data discovery** through **delivery** to **visualization** and **analysis**
- Move seamlessly from **visualization** and **analysis** to **data discovery**
- Provide access to programs and users – via **APIs** and **libraries**
- **Enhance current GHRC Data System**
- **Generally applicable across future field campaigns**

New Elements

- Enhanced Catalog Services
- Flight track-based data search
- Flight report-based data search
- Faceted search – aircrafts, instruments, campaigns, variables
- On the fly data preview and subsetting
- Libraries for direct data access – Python, IDL, R



Architecture

Components and Processes

- Field Campaign Visual Explorer
 - Extract information for all HS3 mission reports
 - Hurricane database and REST services
 - Visual hurricane analysis tool
 - Mission/flight information model
 - Browse image generation
 - Flight re-enactment/visualization
 - **Addresses Recommendation 12: Develop a single tool that can provide broad use to multiple field campaigns and data types**

- GHRC Enhancements
 - Catalog services
 - Python Library
 - Catalog search – Elasticsearch
 - Dataset specific recipes
 - **Addresses Suggestion 1: Ease of use should be paramount to GHRC. Supplying APIs in both IDL and Python that allow users to download datasets from their local machines is highly desirable**

Web-based Field Campaign Visual Explorer

- Study historical hurricanes using various measurements
- Drill down to a particular hurricane
- Re-enact mission flights
- Explore mission reports
- Get data – subset by flight segments
- On-the-fly visualize subsetted data*

Web-based Field Campaign Visual Explorer



GHRC Python Library

- Easy install
 - Download ghrc python library
 - >>python setup.py install
- Interact with catalog
- Get granules – download or use OPeNDAP
- Dataset specific modules to be part of Dataset Landing page
- Dataset “playground” for users to explore before download (initially an ipython notebook service)

Python lib usage



Discussion

THANK YOU

for your attention!



Questions?

- Are the libraries helpful for easy access of data?
- Is visual subsetting of data helpful?
- Should we build a data playground for scientist?
- Any other data access mechanisms would you like to see?

Please contact **GHRC User Services** for any help or questions
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