



# Naval Oceanographic Office



## ***Enterprise Geospatial Enablement of Hydrographic Department Resources***

**Matthew Thompson, Naval Oceanographic Office, Hydrographic Department  
Kristina Amacker, Naval Oceanographic Office, Hydrographic Department  
Donald Brandon, Naval Research Laboratory, Marine Geosciences Division  
Caitlyn Raines, Esri, Professional Services**

**US Hydro 2017**

*The views expressed in this presentation are those of the author and do not necessarily reflect the official policy or position of the Department of the Navy, Department of Defense, nor the U.S. Government.*

*This brief is provided for information only and does not constitute a commitment on behalf of the U.S. Government to provide additional information on the program and/or sale of the equipment.*

***Approved for public release; distribution is unlimited.***



# Naval Oceanographic Office



## ***Data Discovery and Recovery: “Where are my data?”***

**Matthew Thompson, Naval Oceanographic Office, Hydrographic Department  
Kristina Amacker, Naval Oceanographic Office, Hydrographic Department  
Donald Brandon, Naval Research Laboratory, Marine Geosciences Division  
Caitlyn Raines, Esri, Professional Services**

**US Hydro 2017**

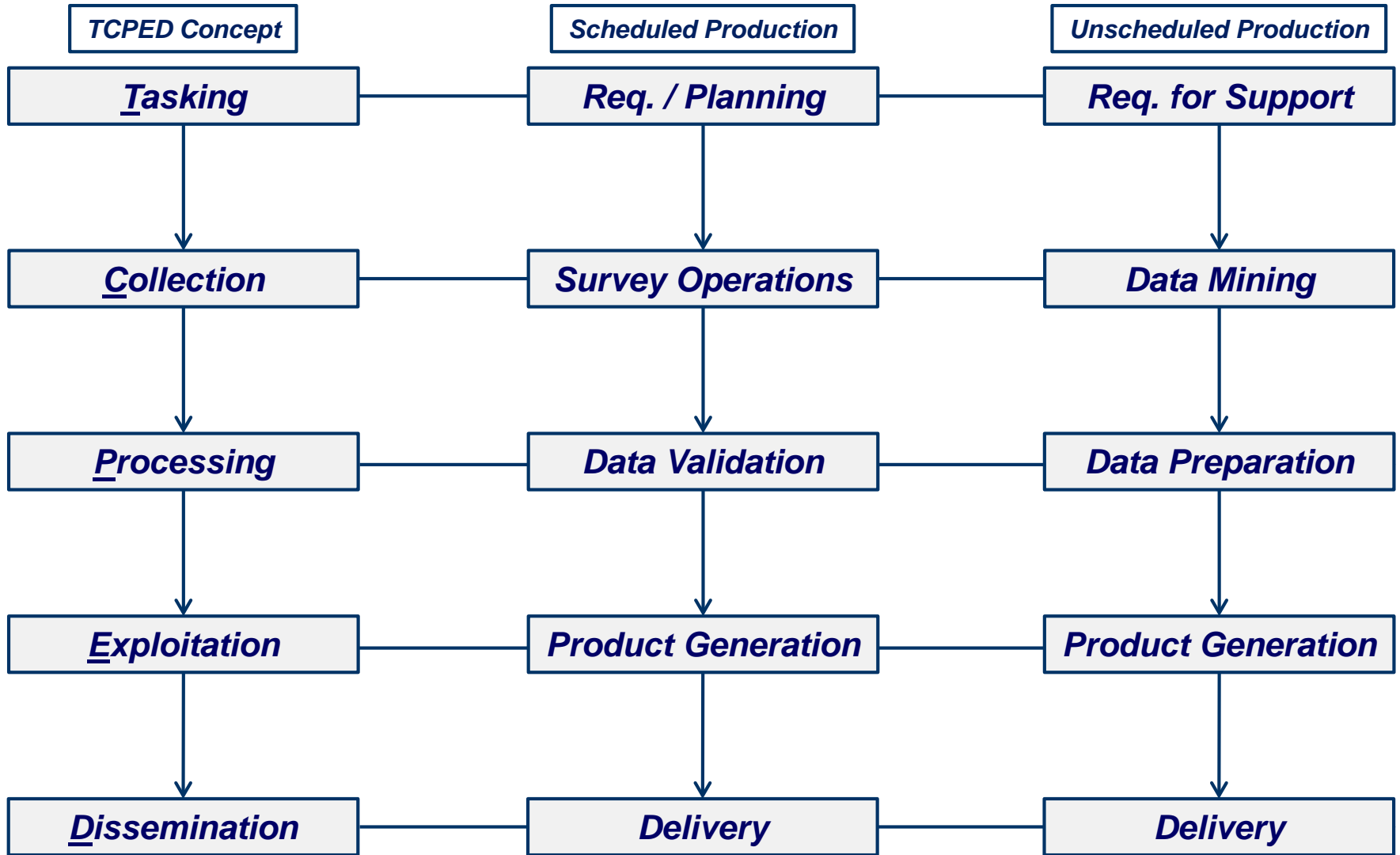
*The views expressed in this presentation are those of the author and do not necessarily reflect the official policy or position of the Department of the Navy, Department of Defense, nor the U.S. Government.*

*This brief is provided for information only and does not constitute a commitment on behalf of the U.S. Government to provide additional information on the program and/or sale of the equipment.*

***Approved for public release; distribution is unlimited.***



# Production Workflows



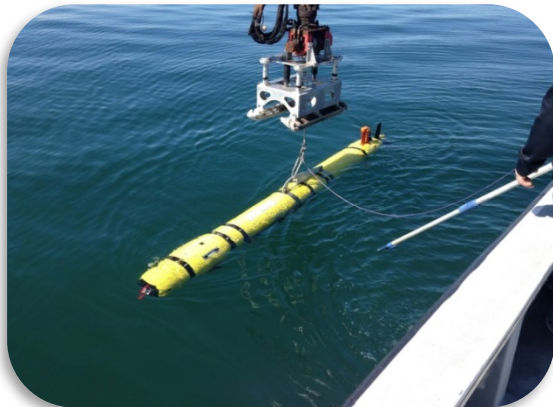


# Collection - Survey Operations



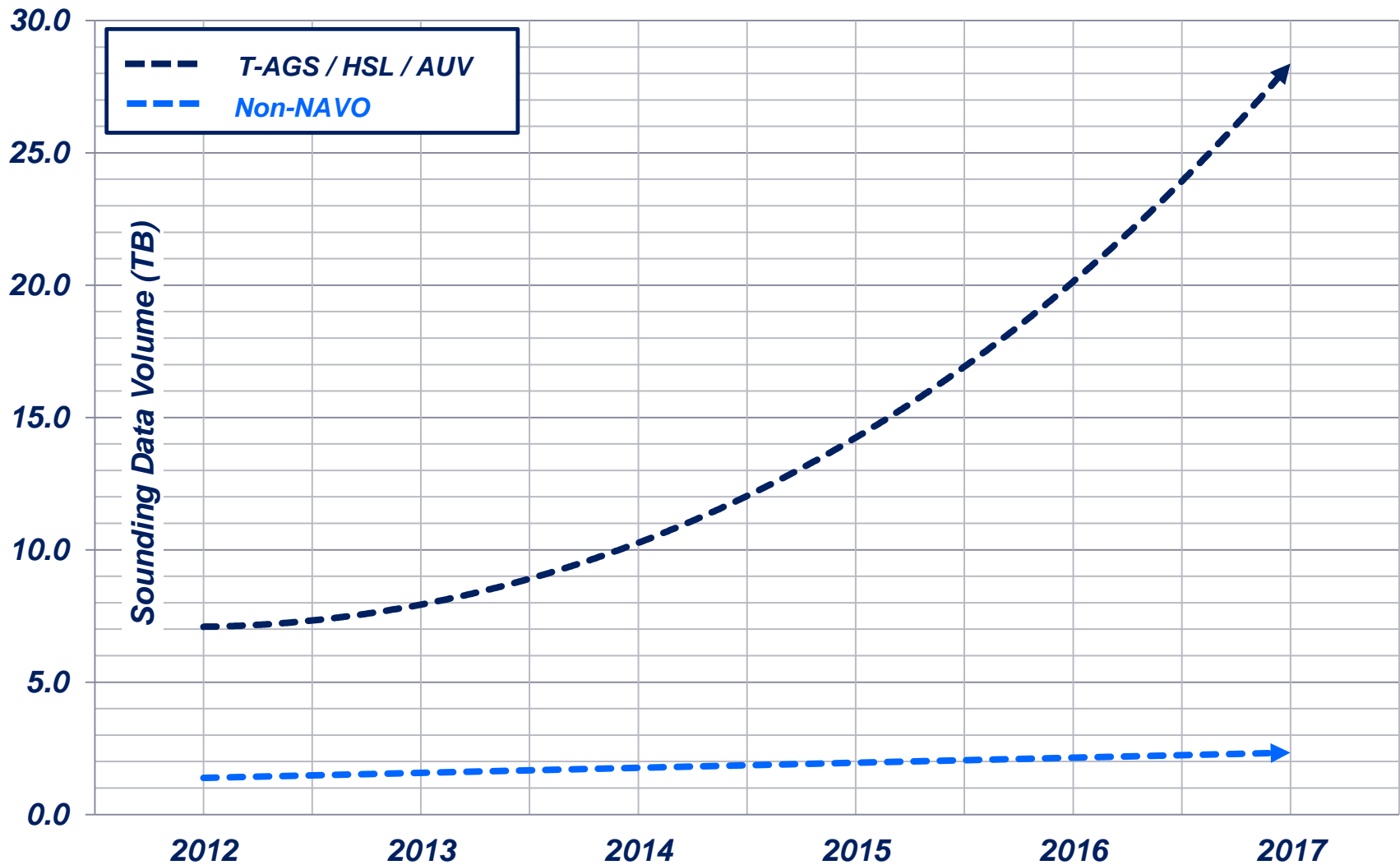
## NAVOCEANO Hydrographic / Bathymetric Survey Structure

- **NAVOCEANO conducts multidisciplinary surveys for DoD requirements**
  - **Multipurpose Survey Vessels (6), Hydrographic Survey Launches (6)**
    - *Forward deployed, continuous operations*
  - **AUV, CZMIL, Fleet Survey Team**
    - *Mobilized per requirement*
  - **Collection is maximized over survey period**
    - *Continuous collection, substantial data volume*
- **Data follow a “scheduled” production workflow**





# Collection - Data Mining





# Database Resources



- Survey datasets (NAVOCEANO and non-NAVOCEANO)
- Ship track and swath coverage geometry available per files
- Established metadata



- Best resolution gridded bathymetry generated per survey (BAG)
- Populated after dataset validation efforts
- Programs available for extraction / combination
- BAG metadata fully populated



- Seamless product resolution gridded bathymetry, variable resolutions
- Programs available for extraction / combination, API available
- Limited metadata (no direct tie to data source)



- Branch level products
- Unique implementation for each group, no standardization
- Limited metadata
- Reside in various locations, no central repository



# Scenario 1 – Current Tasks



- **Production Task:**

- **Produce a Navigation Delivery from a recent survey dataset and deliver to NGA in support of a new DNC library**

- **Data must have final navigation and water level corrections applied**
- **Data deliverables formats include BAG, attributed vector files, documentation**

- **Potential Issue:**

- **Generate the product from a preliminary dataset**

- **Finalized dataset was not “discoverable” within current holdings**

- **Risk / Result:**

- **Deliver an incomplete product that does not fulfill Fleet charting requirements**

- **Missing data, preliminary water levels applied, documentation incomplete**
- **Leads to re-work**





# Scenario 2 – Current Tasks

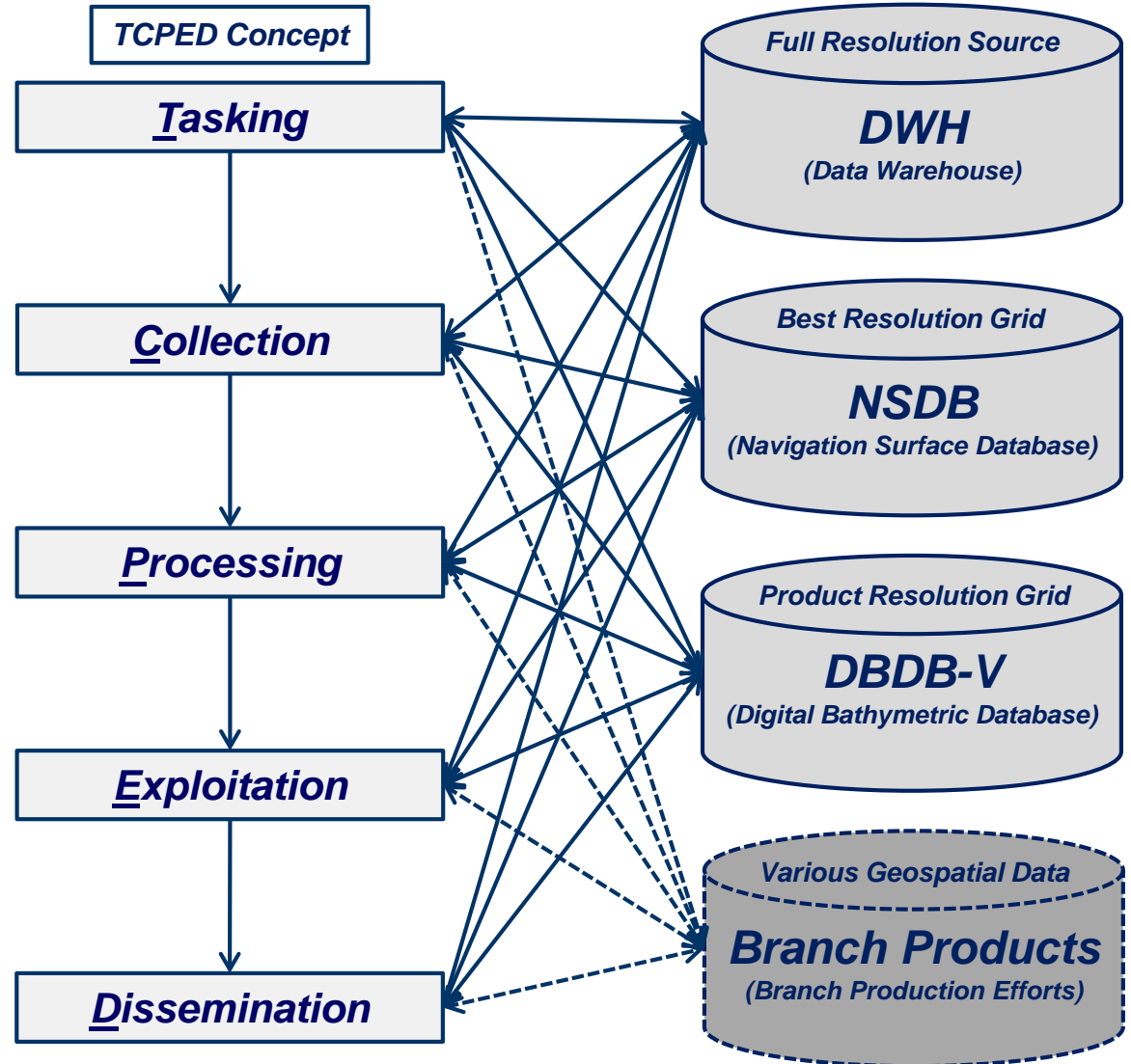


- **Production Task:**
  - **Generate a Survey Plan to support an emergent requirement**
    - *All available data sources to be considered*
    - *Do not resurvey areas with suitable coverage*
    - *Implies data quality is known or can be determined from existing metadata*
- **Potential Issue:**
  - **Omit a survey because it was not readily available**
    - *Trusted partner dataset was not “discoverable” in current holdings*
- **Risk / Result:**
  - **Resurvey area that already has data suitable for product generation**
    - *Operations cost of a survey ship is thousands of dollars per day*
    - *Access to some survey areas can be problematic, difficult to quantify monetarily*





# Data Discovery Web

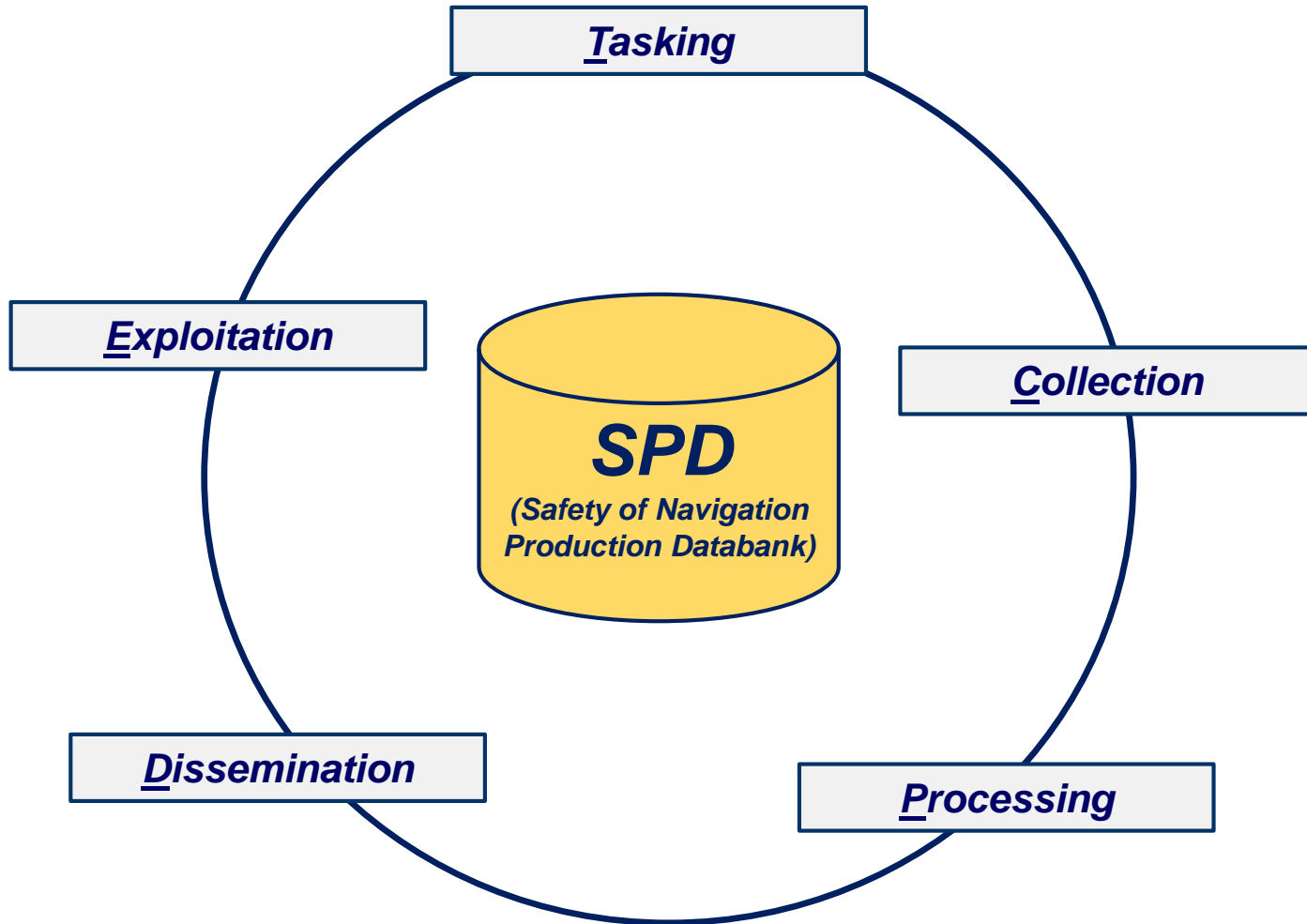


- **Challenges:**

- User in each phase must access multiple databases to discover data / information
- Each established database has a unique user interface
- Branch products are organized locally, various formats exist, some not geospatially enabled

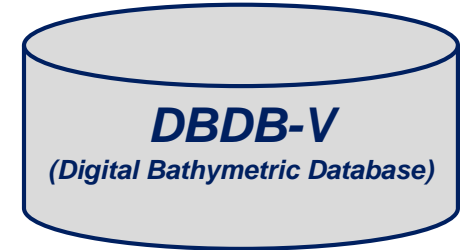
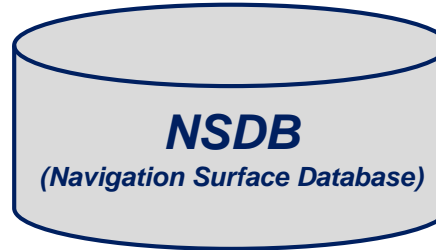
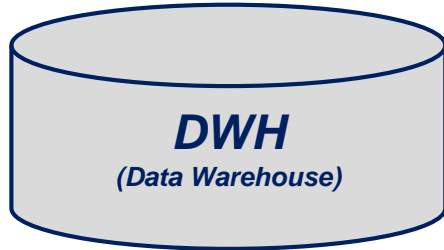


# Data Discovery Web - Untangled





# Data Discovery Web - Untangled



## • Goal:

- Develop a comprehensive solution that reduced data discovery timelines
- Ensure all relevant hydrographic data and products are geospatially enabled

## • Requirements:

- Solution must be accessible from a single interface
- Solution must be agile
- Solution must be fast and user friendly, and final





# The Plan



- **Define formats, metadata, schema**
  - Look at all sources, define the structure per product line (not per Branch)
  - Gather user input, develop buy-in
- **Generate geospatial databases**
  - Convert current formats to “production ready” formats
  - Develop population tools and populate solution
- **Transition “prototype” solution to users**
  - Gather and implement feedback / suggestions
- **Portal development**
  - Design and develop a Portal front-end for the solution
  - Documentation and training included
- **Transition “final” solution to users**
  - Gather and implement feedback / suggestions

2017

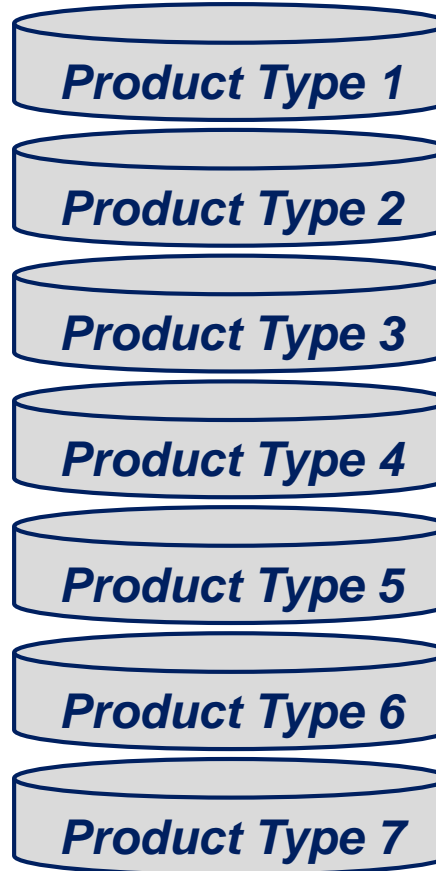
2018  
2019



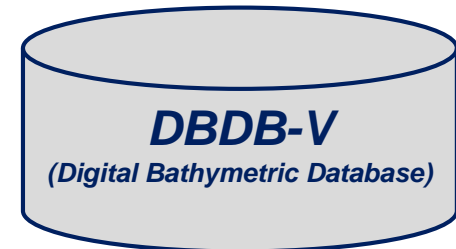
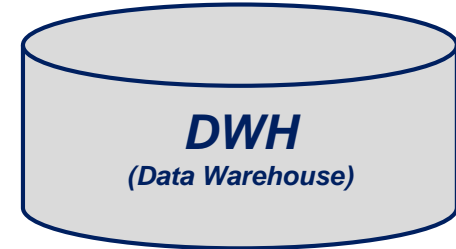
# Today (22 March 2017)



✓ **Gather input /  
develop buy-in**



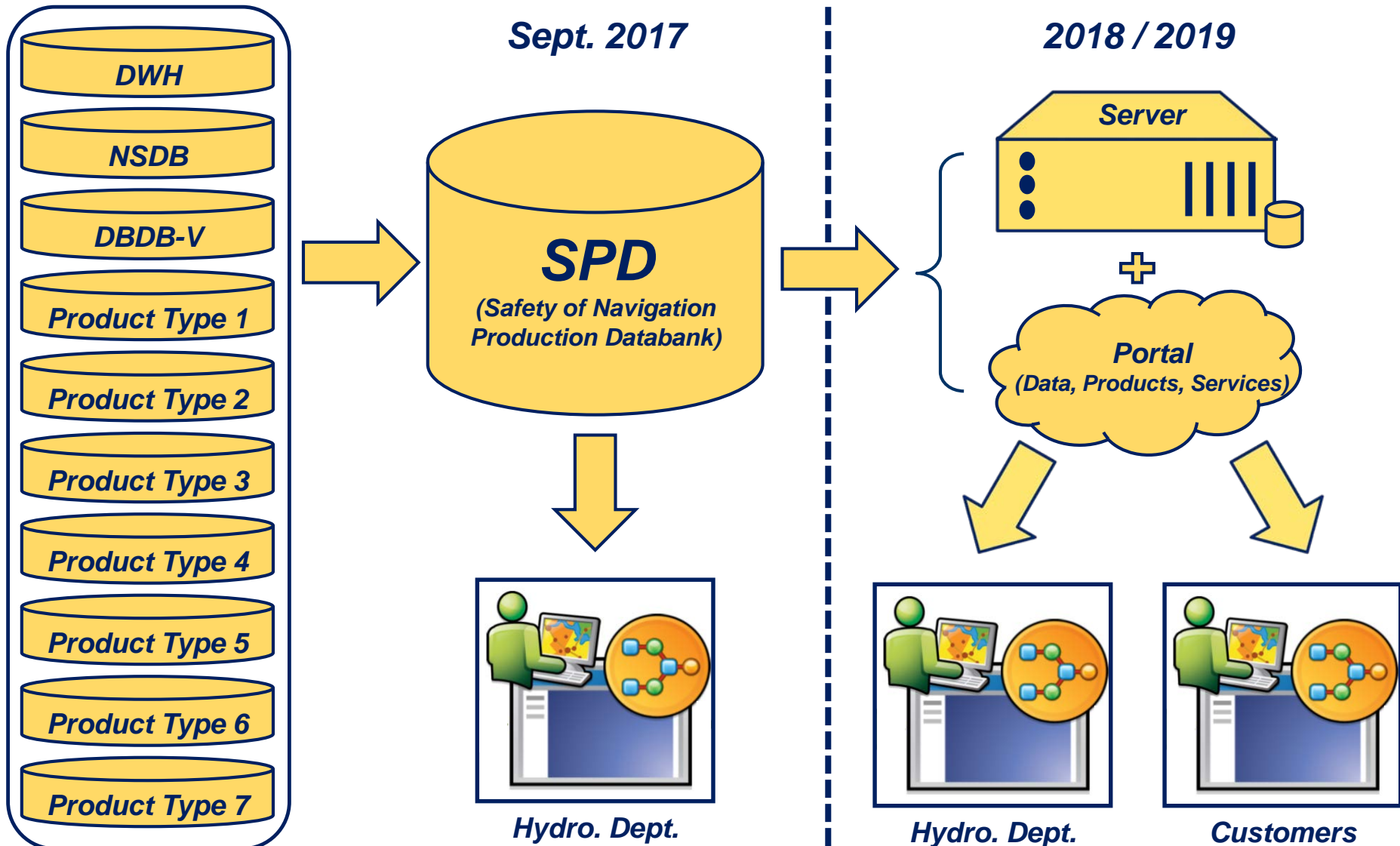
✓ **Define formats,  
metadata,  
schema**



✓ **Generating  
geospatial  
databases**



# Tomorrow

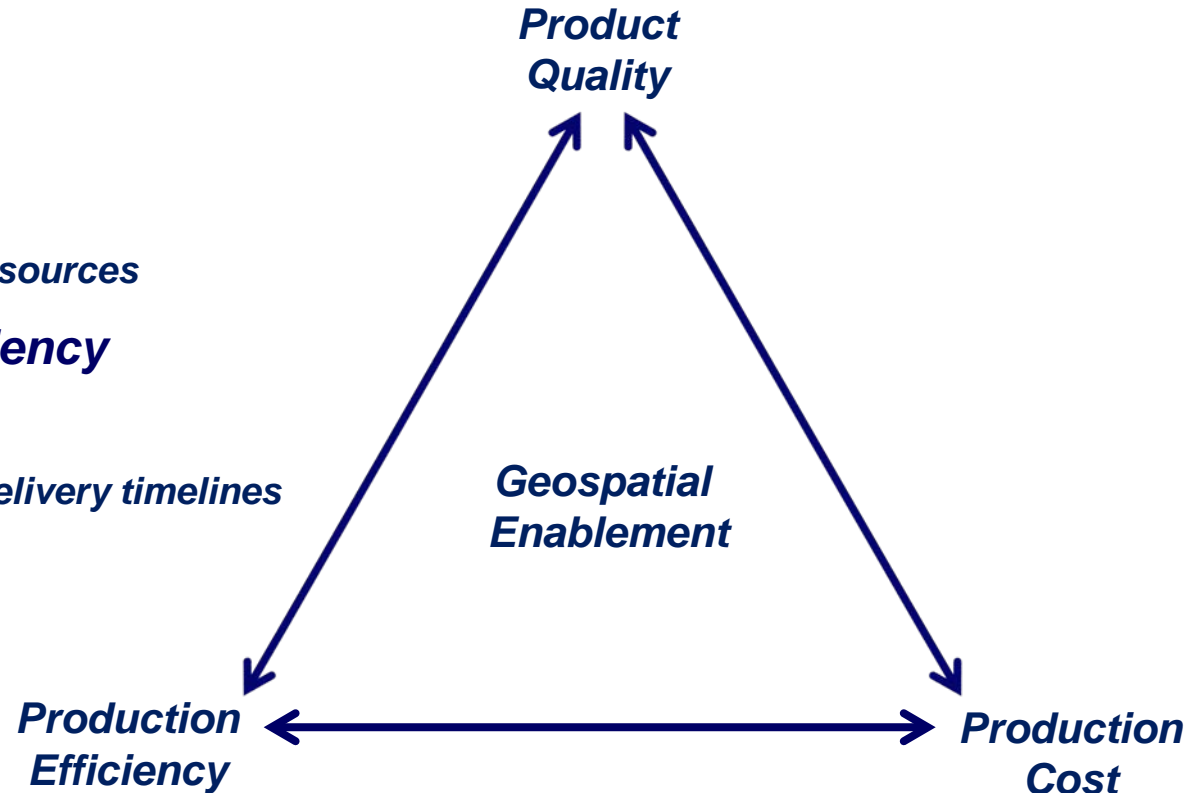




# Geospatial Enablement



- **Improves product quality**
  - Reduces product uncertainty
  - Allows production from best sources
- **Improves production efficiency**
  - Data are “production ready”
  - Reduces data / information delivery timelines
- **Reduces production cost**
  - Eliminates re-work



✓ **Expands the application of hydrographic data**



