CHS & HPD

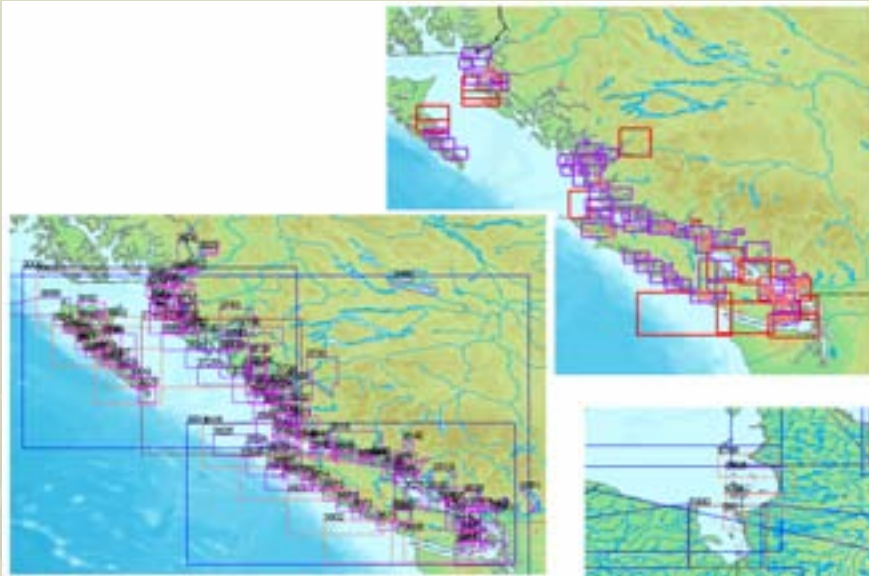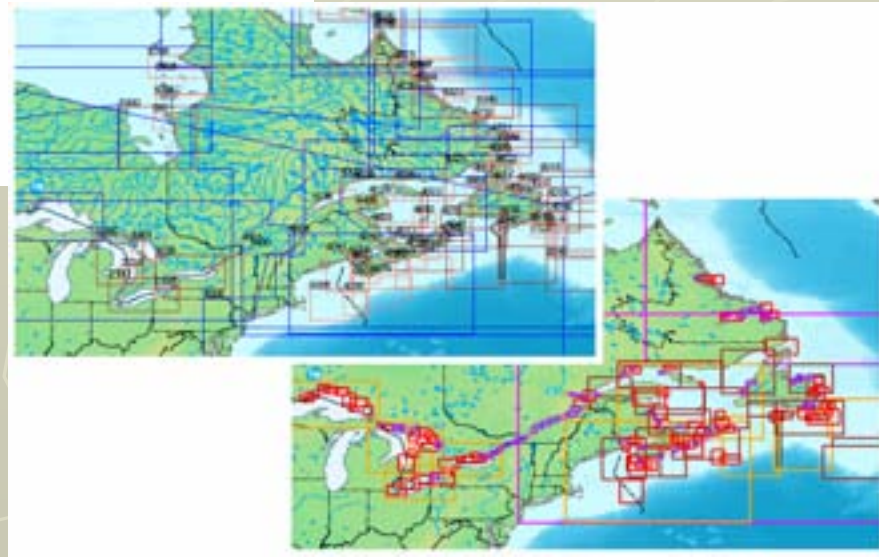## The New Hydrographic Production Environment

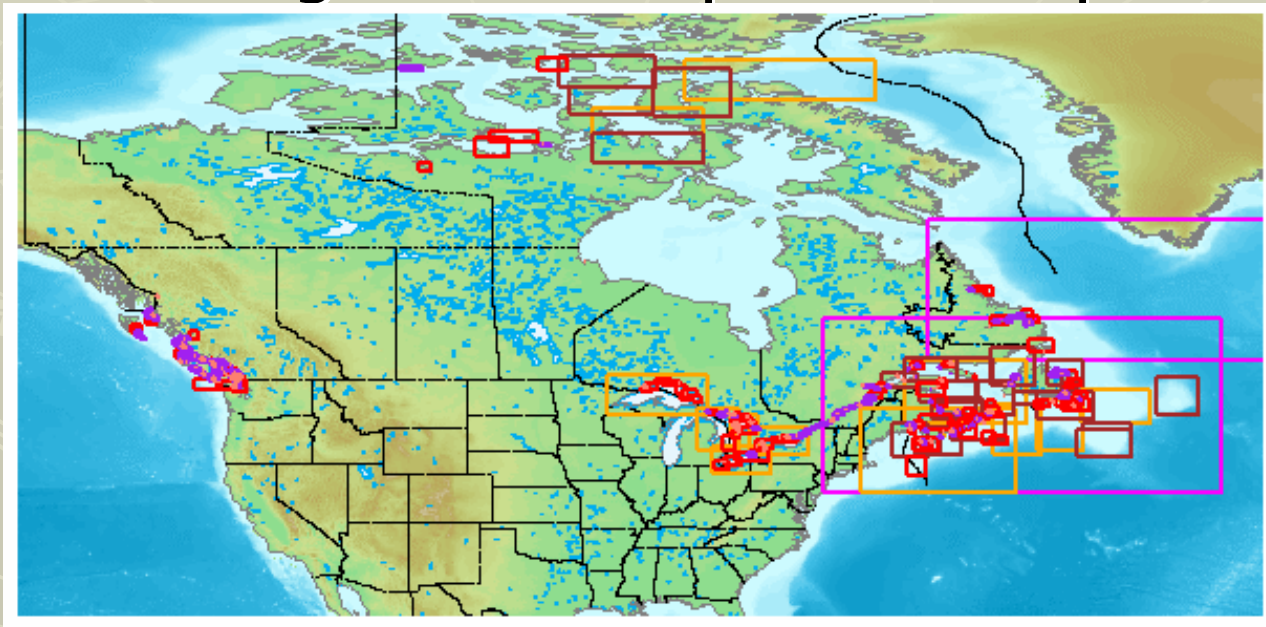# CHS ENC/Paper Products

Total paper
charts to date::
982

Total ENCs to
date:: **673**

Objective

► Find a better, more efficient way to produce ENCs and Paper Charts.

► Reduce duplication of effort.

► Find a better way to manage our data.

► Implement a single national production procedure.

How We Worked Before HPD

► Individual Products worked on separately by separate individuals.

► Paper produced by Paper Chart Units.

► ENC produced by ENC Units.

► Released Paper products used to produce ENCs, with maintenance done on both products.

► All Production is file based.

► Sources integrated into each product file for covering area.

Charts Compiled Independently From Each Other

For each chart, sources are::

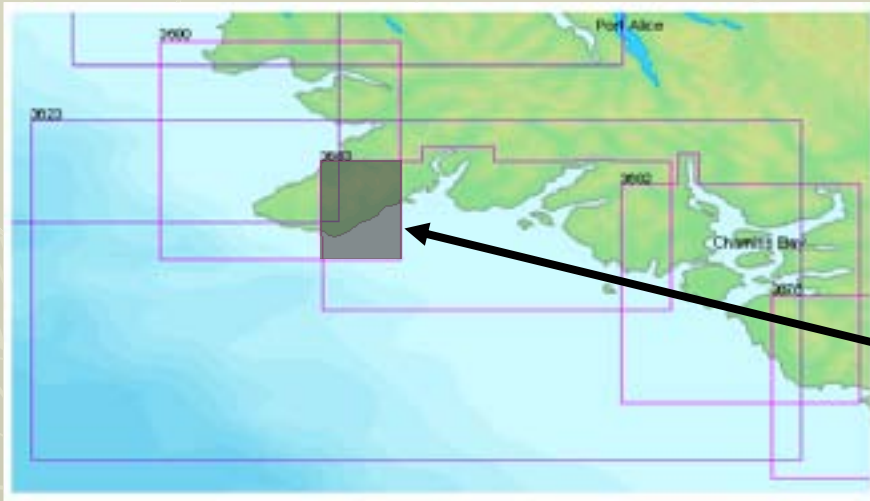Integrated,
Validated, and
compiled

Integrated,
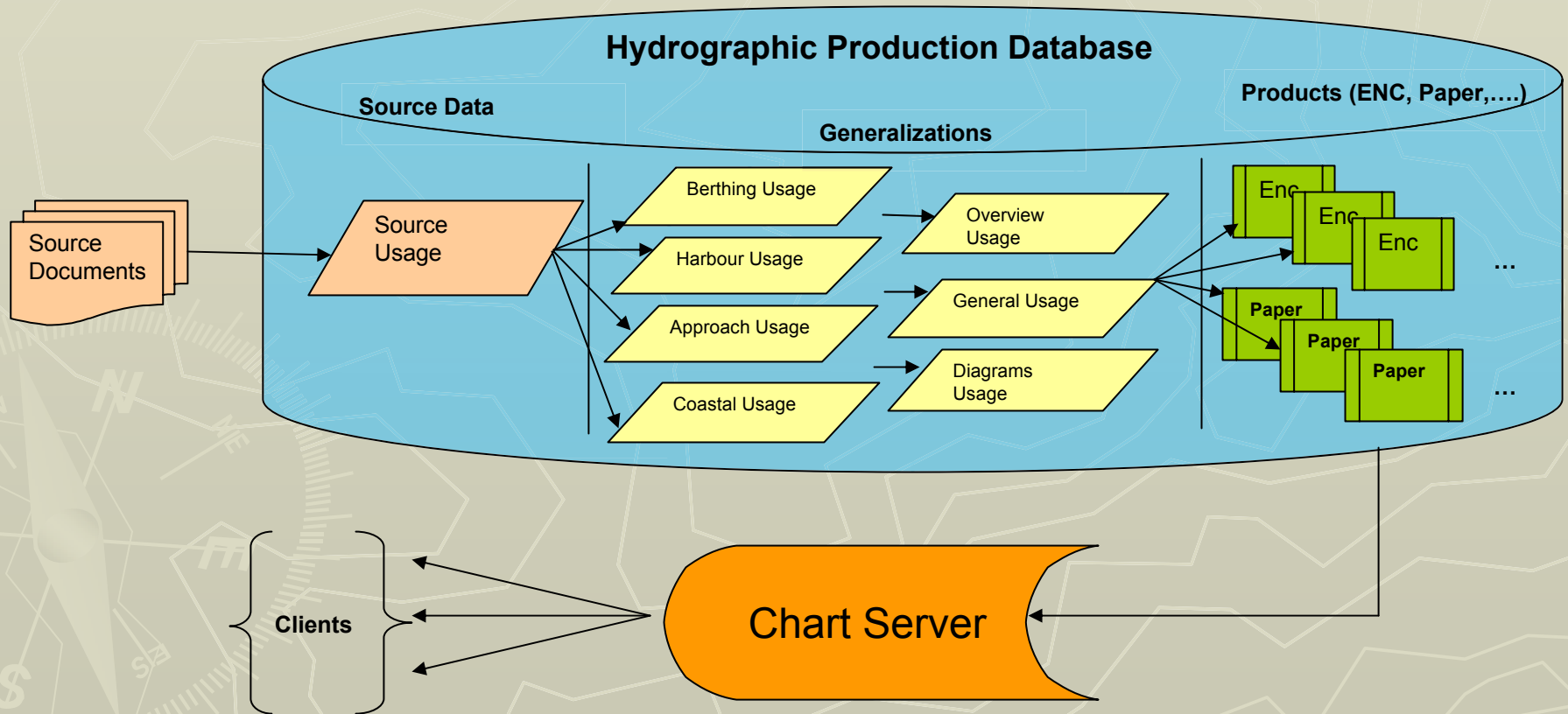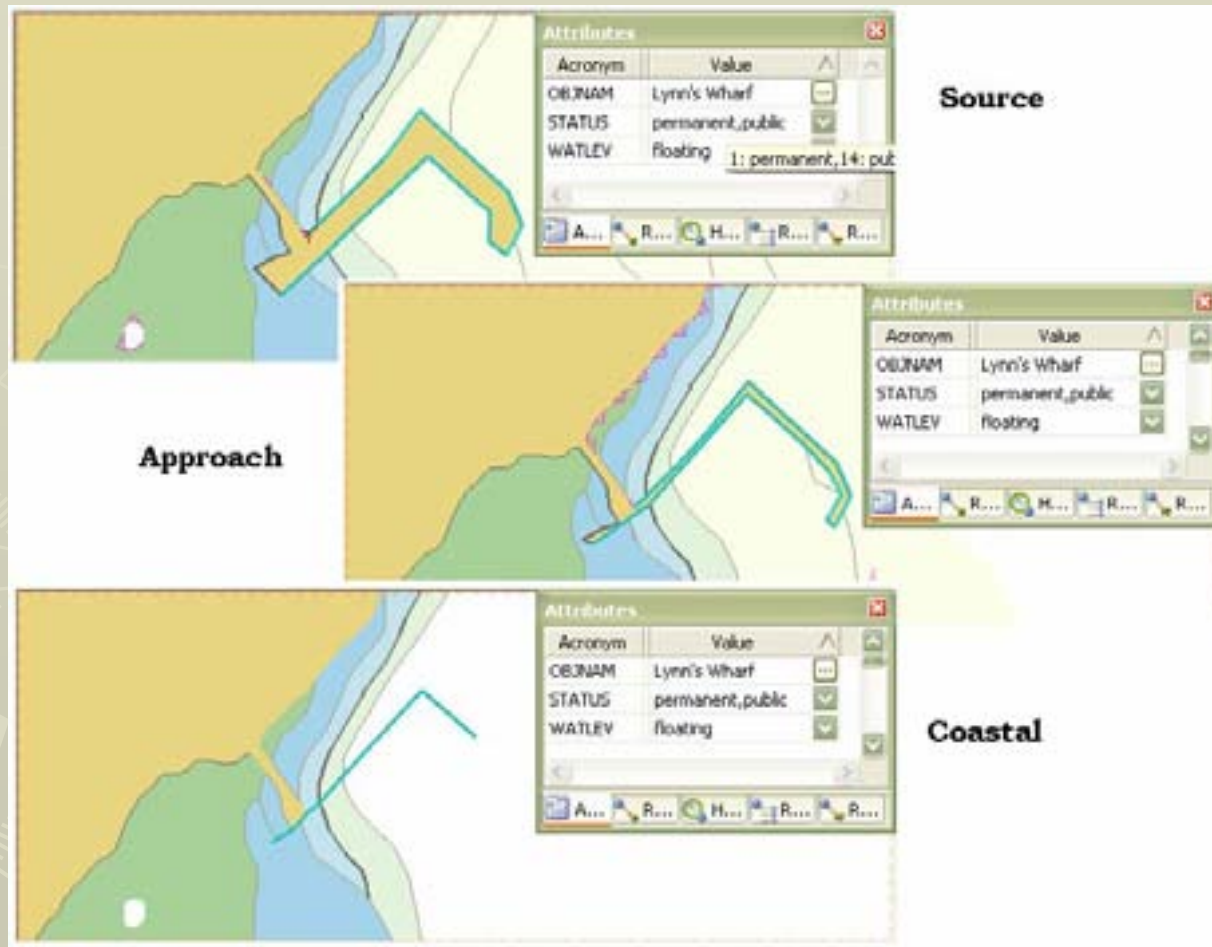Validated, and
compiled

Integrated,
Validated, and
compiled

Sources in overlap areas are Integrated Validated, and compiled for the first chart. Then are duplicated and integrated ::
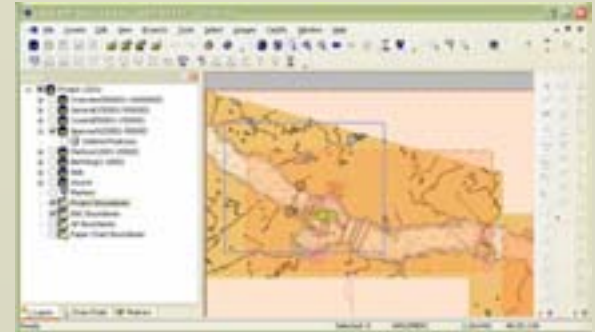
over and over
and over

What does our environment look like?

For Example : One Object 3 Looks

HPD Benefits

► Seamless database environment

► Ability to have multiple users working in the same area

► Features stored once, and used many

► Ability to have multiple cartographic representations for different scales

► Ability to create multiple products from same data

HPD Benefits…

► Data model is flexible enough to support many Nautical products types (ENC, AML,…)

► Built in history tracking

► Built in data certification

► Products know what version of the objects have been used.

► All data (Source → Product) in one location

► Significant reduction in duplication of work

Work flow With HPD

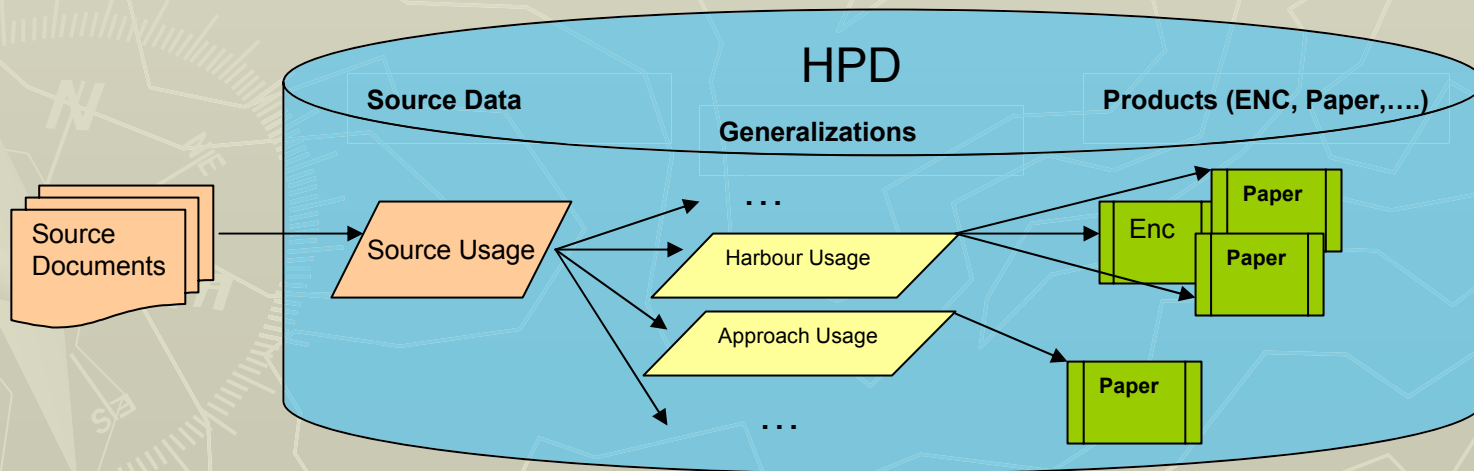▶ For new editions of products and maintenance::

New Sources, NTMs → Integrated, Validated, QC, Generalize → Generate 3680 Paper Product → Release

Integrated, Validated, QC, Generalize → Generate CA470431 ENC Product → Release
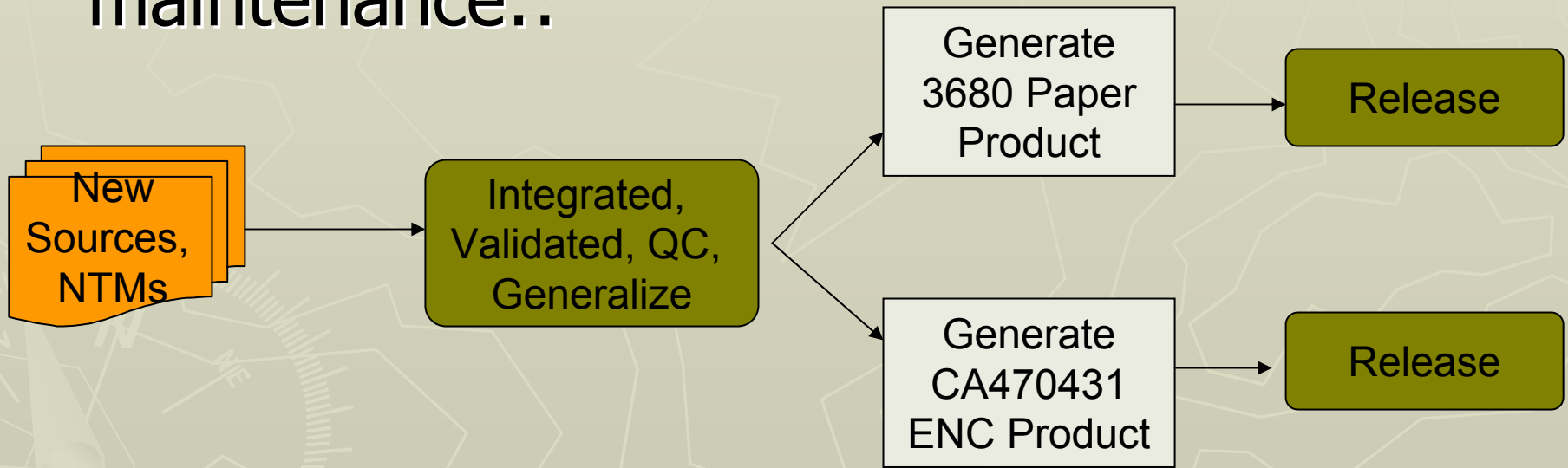
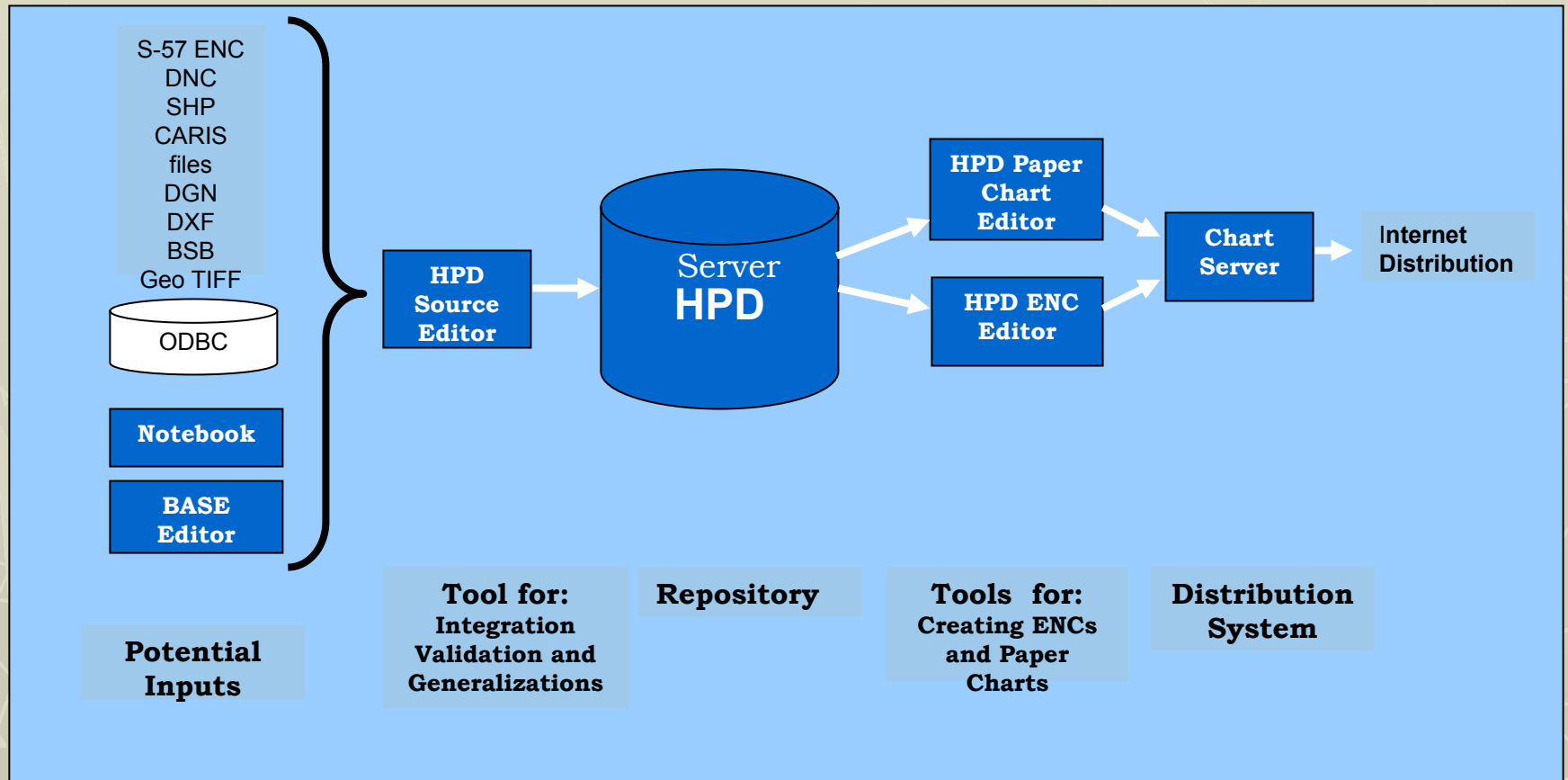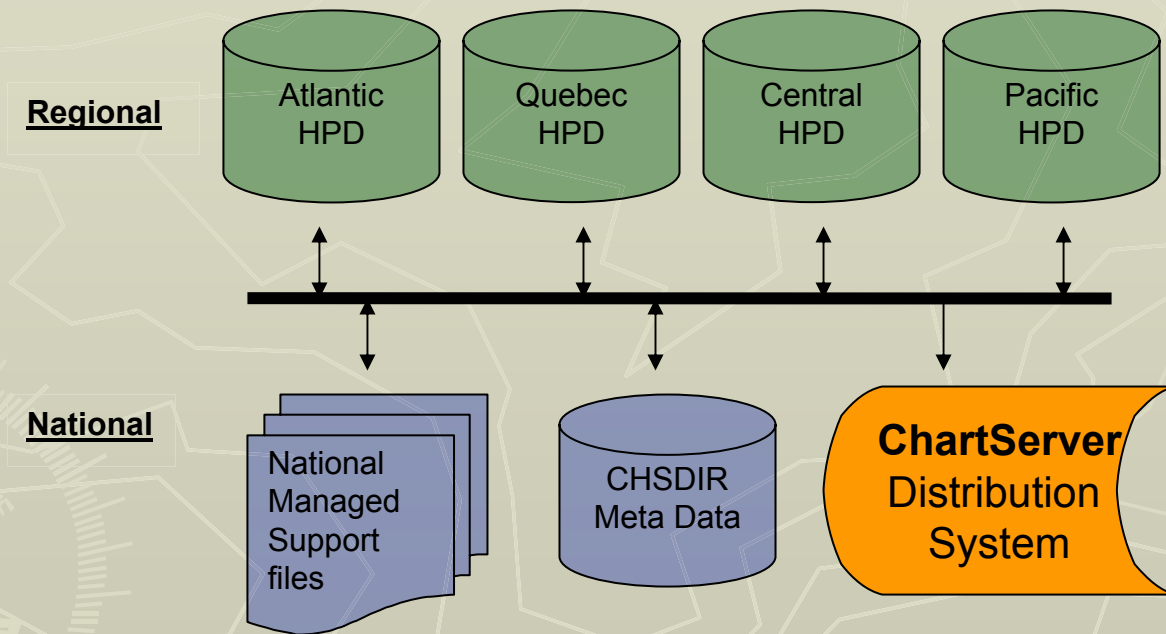# How has this changed how CHS Works?

▶ New Sources drive product updates.

▶ New sources are integrated and validated ONCE!

▶ Producing multiple products from the same data.

▶ Removed most of the duplication of efforts

HPD — Source Data — Generalizations — Products (ENC, Paper,….)

Source Documents → Source Usage → Harbour Usage / Approach Usage → Enc / Paper / Paper / Paper

Some Tools used at CHS

Potential Inputs:
- S-57 ENC
- DNC
- SHP
- CARIS files
- DGN
- DXF
- BSB
- Geo TIFF
- ODBC
- Notebook
- BASE Editor

HPD Source Editor → Server HPD → HPD Paper Chart Editor / HPD ENC Editor → Chart Server → Internet Distribution

Potential Inputs

Tool for: Integration Validation and Generalizations

Repository

Tools for: Creating ENCs and Paper Charts

Distribution System

How CHS' Data is Organized

Regional

Atlantic HPD | Quebec HPD | Central HPD | Pacific HPD

National

National Managed Support files

CHSDIR Meta Data

ChartServer Distribution System
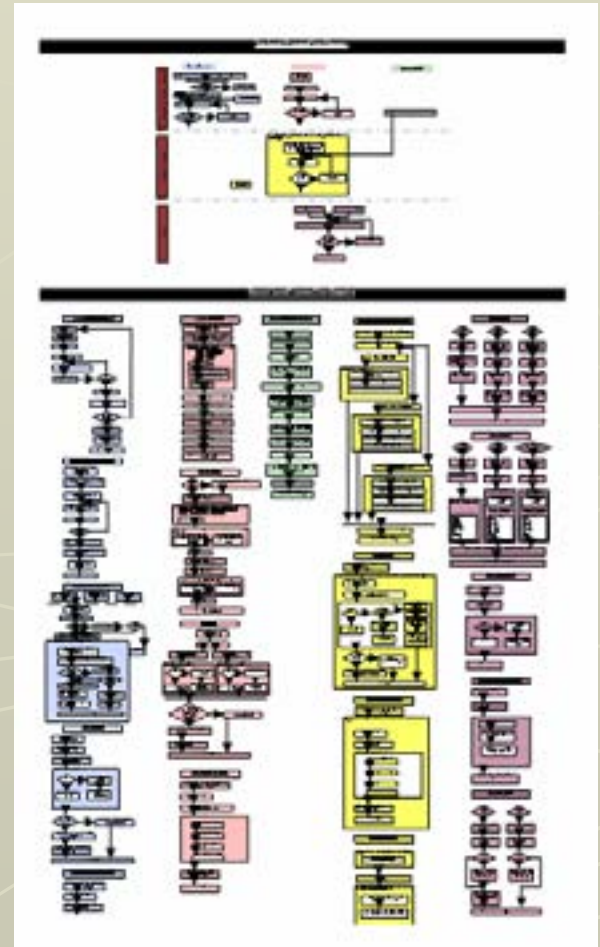
How did we start?

► The CARIS HPD software was introduced to the regions (2003/2004)

► Each region participated in a pilot project.

► A single production procedure was created for all of Canada. (now formal ISO docs)

► Production began in 2005.

What has happened since production began?

► CHC 2006 - the official release of the first Paper Chart from the HPD

Canada, Chile and Mexico Join to Announce Publication of First Chart from HPD

Fredericton, NB, Canada — June 26, 2006 — Canada, Chile and Mexico joined together during the 2006 Canadian Hydrographic Conference (CHC 2006) held in Halifax, Nova Scotia on June 8, 2006 to announce the release by each of these three countries of their first paper chart produced using CARIS Hydrographic Production Database (HPD).

This announcement commemorates the successful transformation of these hydrographic organizations to a fully integrated hydrographic data management and production environment.

HPD provides a higher degree of consistency between product types (e.g. ENC and Paper Chart) because all products are derived from a common source. It also removes duplication of work and lowers maintenance costs relative to previously separate production

The CHC 2006 HPD Paper Chart announcement presided by (from left): LCDR Rafael Ponce, Mexican Navy Hydrographic Office; LCDR Juan Cuneo, Chilean Navy Hydrographic and Oceanographic Service; Dr. Salem Masry, CARIS President & CEO; Dr. Savi Narayanan, Dominion Hydrographer, Canadian Hydrographic Service; CPT Fernando Angli Rodriguez, Director of Hydrography, Mexican Navy; and LT Boris Argandoña, Chilean Navy Hydrographic and Oceanographic Service.

lines. Updates can be done once on the source data and included into the appropriate products. Status of updates can be tracked from source to product and the history of changes recorded allowing better management of liabilities. New products which share some or all of the common data can be introduced (e.g. Additional Military Layers (AML)). Work can be planned and managed in a common multi-user environment allowing the agency to overcome the limitations of a file-based or segregated approach.

This announcement is significant and indicates the success of this revolutionary concept which will help modernize the hydrographic offices' operations.

2 Years Later?

Region	# ENCs Released	# ENC Updates	# Paper Released		# Sources Registered in HPD	# ENCs Under Construction	#Paper Under Construction
Atlantic	4	2			2	10	2
Quebec	11	10	10		205	34	1
Central	5		1		102	3	6
Pacific	1		1		70	3	1

➢ Central is loading all new digital Sources into the HPD

➢ Quebec is moving another 1/3rd of production to HPD.

➢Pacific has now devoted a unit entirely to only HPD production

➢Atlantic has begun loading all their sources into the HPD.

Performance improvements?

For the first Chart area compiled in the HPD (Chart 1316)

► 48% reduction in time required to produce a new edition paper chart. (504h → 261.5h)

► 66% reduction in time to produce corresponding ENCs (147h → 50h)

For Maintenance

► Areas of no overlapping products, there is only a slight improvement.

► Areas of overlap, significant reductions in effort are realized, which is magnified with each additional overlapping product.

Paper Chart

Reduction

ENC

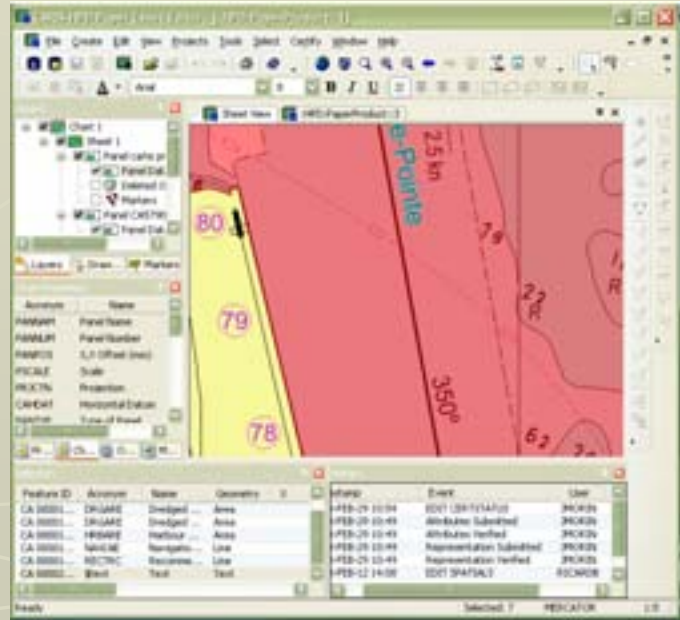Reduction
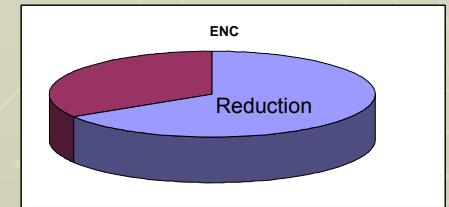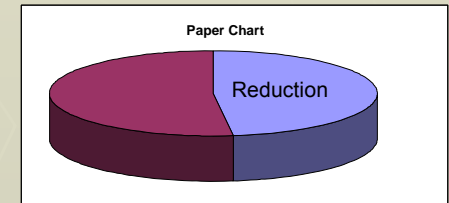
Smooth Transition?

No!

- Performance issues (Old hardware, Database configuration)
- Organizational structure must be source driven not product driven.
- Training is required for both software and new procedures.
- Bug fixes and work-arounds for various issues
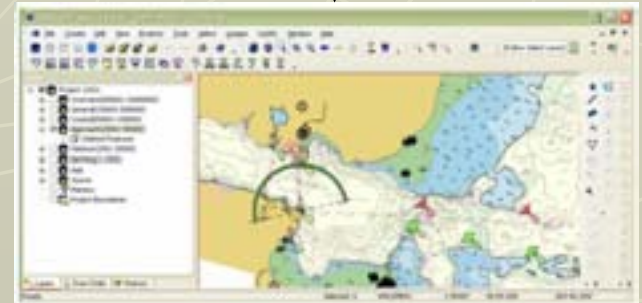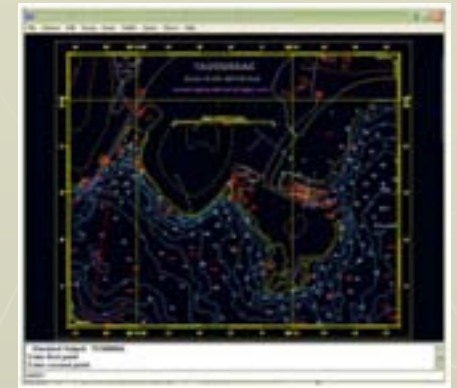
Is the new environment worth the effort?

YES!

- Severe reduction in the amount of duplication of work

- Accountability has greatly increased, we now know who did what, when, and the project that initiated the changes

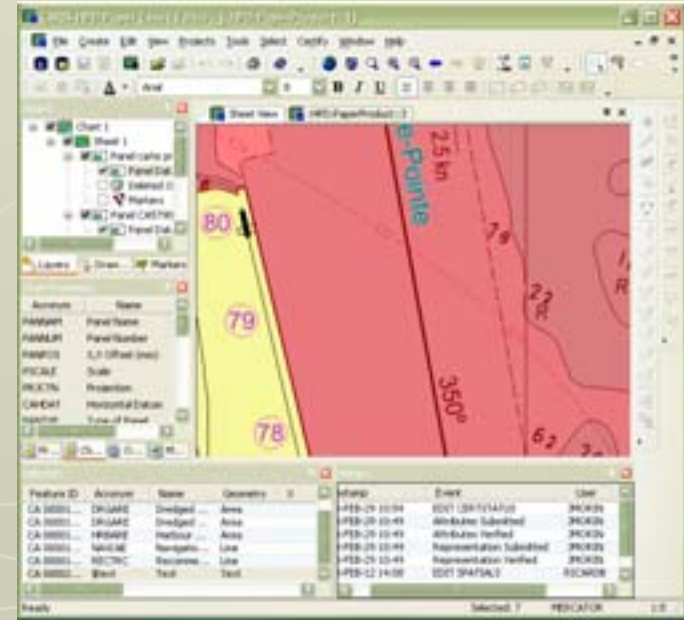- Average of 51% reduction in the time required to do the same work for ENCs and Paper

Conclusions:

► There is a learning curve to implement and use the new HPD environment.

► HPD environment is more efficient

► Greatly reduces the number of times you have to handle each source (Integrate once, use many)

► Manages all the data from Source to Product in a DB environment

► The transition to the new environment has not been painless, but it has definitely been worth it!
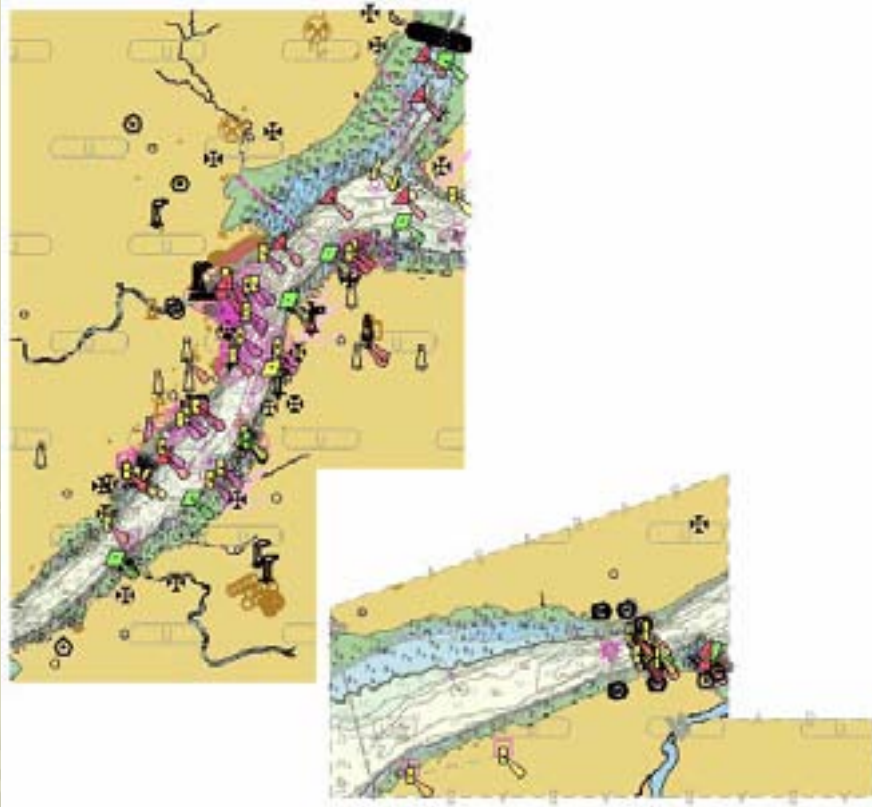
What does the Future hold?

► ALL ENC and Paper production moved to HPD in 2-4 years!

► S-100 compliant products!

► Enhanced capabilities for the production of BSB products from a common HPD data store.

► Production of NTMs

► Production of S100 based PUBS

With many, many possibilities to come.

Questions?

CA579003

CA579081

ch1316