

IIC Technologies

***Helping Chart Your World:
IIC and the Data Value Chain***

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Director, Hydrographic Operations*



IIC TECHNOLOGIES

Over the next 20 minutes and 20 slides...

- IIC Corporate Overview
- IIC Hydrographic Operations Overview
- IIC as part of the Charting Value Chain
- Summary



IIC Corporate Overview: Background

- Company Overview
 - *Established in 1992*
 - *Over 550 employees worldwide*
 - *A mapping and charting service bureau*
- Three Divisions
 - *Hydrographic Operations (focus of this presentation)*
 - *Mapping and GIS Operations*
 - *Solutions Division*
- Global footprint
 - *Canada, USA, India, Australia, UK*
- ISO 9001 : 2000 certified
 - *Means less time spent by client managing work and reviewing deliverables*

*A global leader in
digital mapping
services and
solutions since
1992*

*Recognized
worldwide for
quality,
professionalism
and customer
service*



IIC Corporate Overview: Service Offering

- **Offering the ability for clients to leverage existing in-house capacity...**
 - Increase product and service delivery by multiples over what would otherwise be possible.
- **...by providing a range of services...**
 - *Hydrographic services to government agencies*
 - *Mapping and GIS services to government agencies and commercial clients*
- **...within varied data and production environments...**
 - *Flat file or database production environments*
 - *Providing temporary surge capacity or increased operational capacity*
- **...resulting in increased productivity.**

“The Corps’ rapid development of IENCs for U.S. rivers was due, in large part, to IIC’s expertise, flexibility, and dedication to production tasks.”

US Army Corps



IIC Hydrographic Operations: Background

- Global client list
 - *IIC has worked extensively with two dozen HO's*
- Quality and reliability
 - *Large in-house capacity of trained technicians*
 - *Continual improvement and training is integrated in operation*
- Partnership relationships
 - *Trusted by Government for spatial data production, validation, maintenance, and consulting services*
 - *Focus on customer service*
 - *Over 80% of current contracts are with repeat customers*
- Reputation for innovative and effective solutions
 - *IIC's broad domain knowledge and expertise ensure high quality and practical solutions to complex requirements*
 - *Utilized by Hydrographic Offices for R&D and Pilot Projects.*
 - *Expertise on working within spatial database environments (especially HPD)*

“Our ENC program is very important to our agency and we place a high degree of confidence in IIC in allowing you to maintain our data.”

NOAA
United States



IIC Hydrographic Operations: Overview

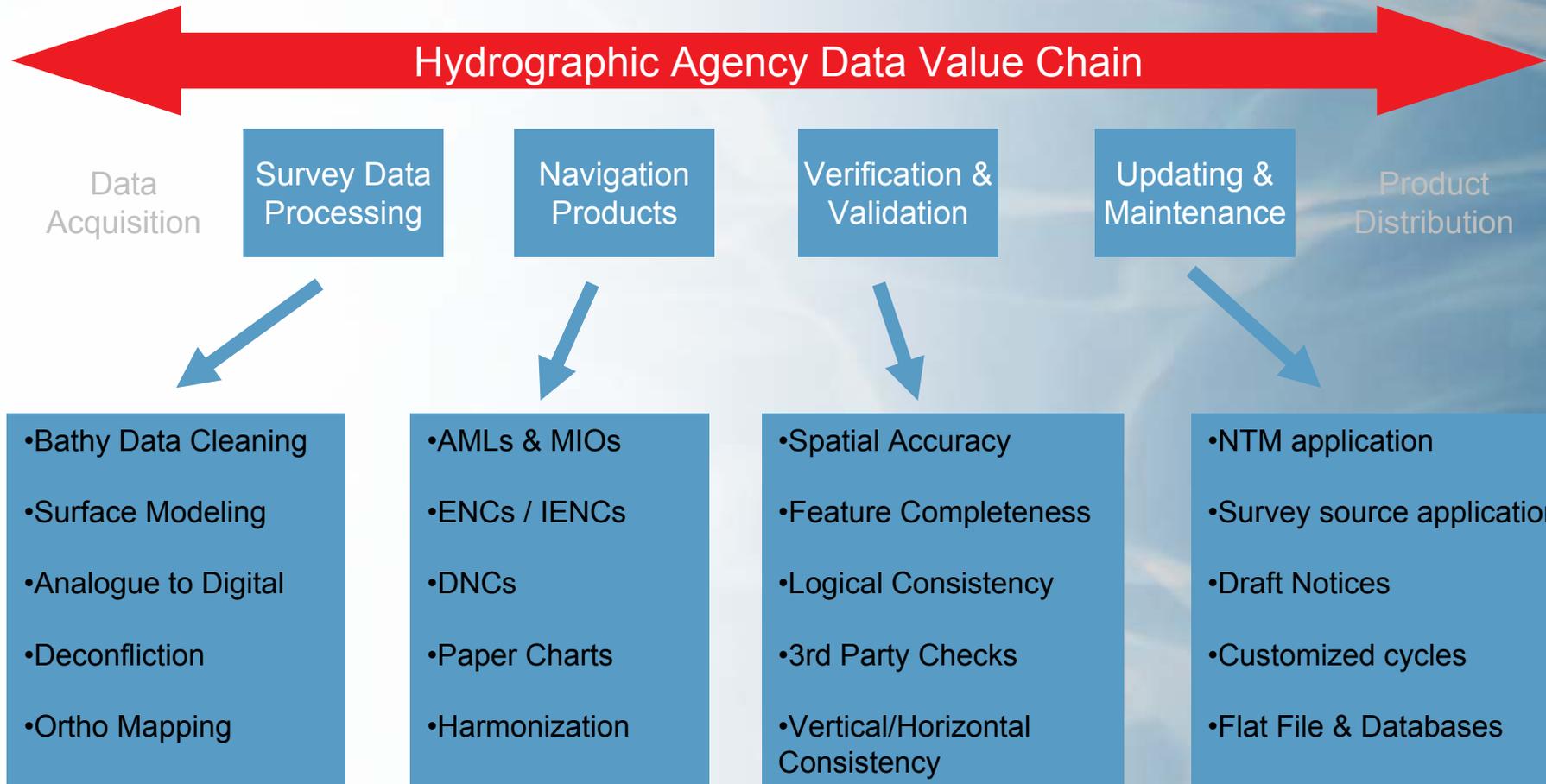
- Involved in International Standards Committees
 - *TSMAD (S57/S100/S101)*
 - *Inland ENC Working Group*
 - *MEP Working Group*
 - *HIHWG (ENC/DNC Harmonization Group - Complete)*
- Host of Biennial “Electronic Charting Workshop”
 - *Bringing together technical managers in a workgroup forum to discuss a selection of topics of shared interest.*
- Resources
 - *Hires a mix of recent graduates and those with deep domain knowledge*
 - *Emphasis on a large in-house training programme and a mentoring system to develop and challenge employees*
 - *Utilizes knowledge matrix to match specialized expertise with project requirements*
 - *Turnover approaching 0% per year*

“I will not hesitate to recommend your excellent services within the hydrographic community both nationally and internationally.”

*German
Hydrographic
Office*



IIC and the Data Value Chain



Survey Data Processing Services

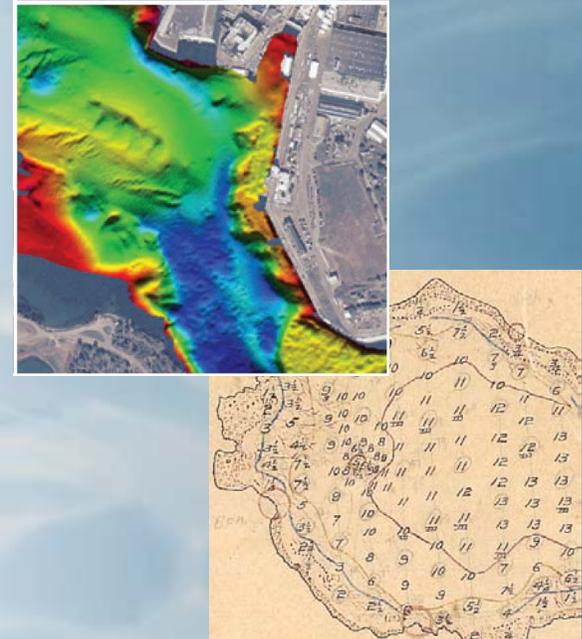
Hydrographic Agency Data Value Chain

Data Acquisition

Survey Data Processing

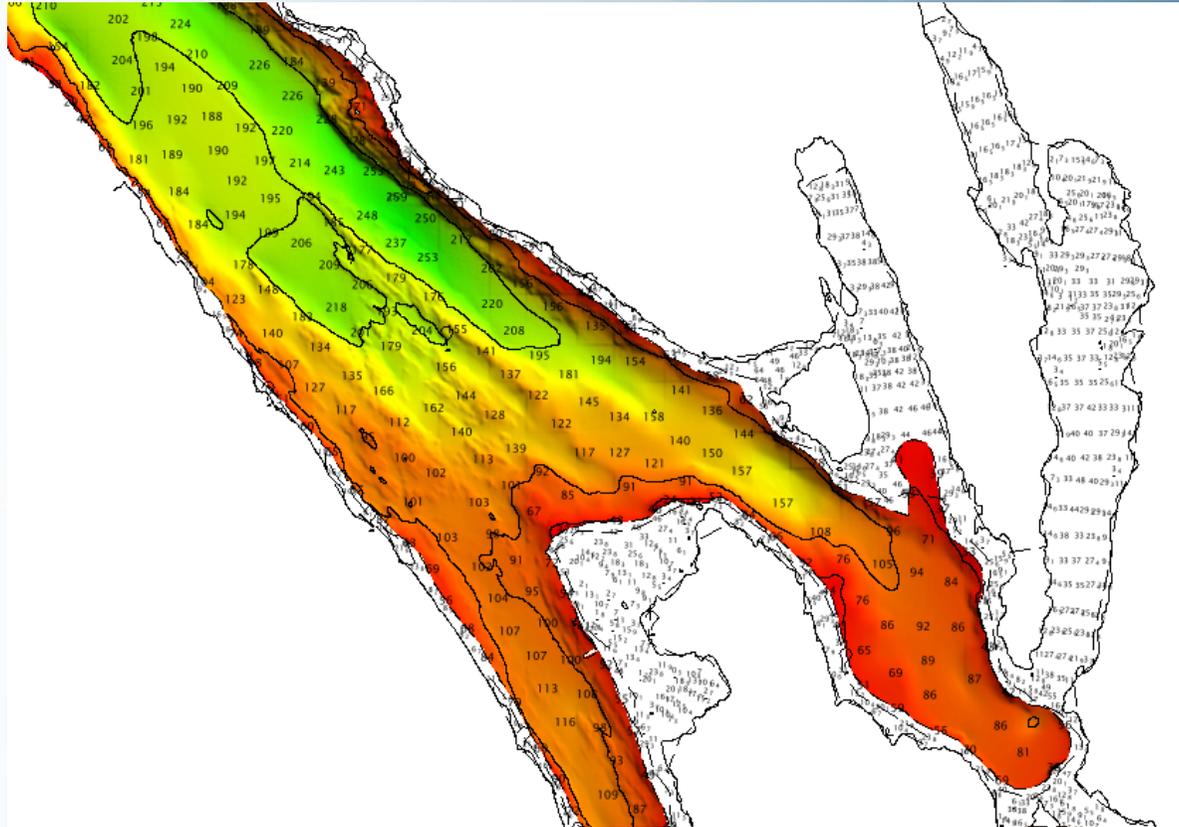
Product Distribution

- Singlebeam/Multibeam/LIDAR processing
- Scanning and digitizing of analogue field sheets
- Vertical/Horizontal datum conversion
- Surface modeling, bathy contour generation, sounding selection
- Draft notices
- Working within Hydrographic Production Databases:
 - *Source Loading and Deconfliction*



Example: Processing Source for CHS

- Cleaning multibeam data and creating a surface
- Digitizing and merging fieldsheet data, adjusting the vertical datum, deconflicting vs multibeam data
- Contouring and soundings selection
- Verification of resulting data



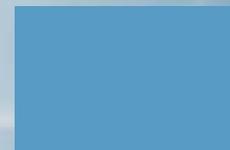
Navigation Product Services

Hydrographic Agency Data Value Chain

Data Acquisition

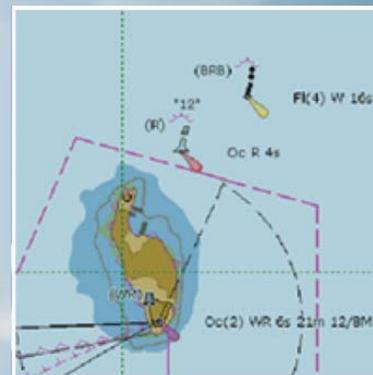


Navigation Products



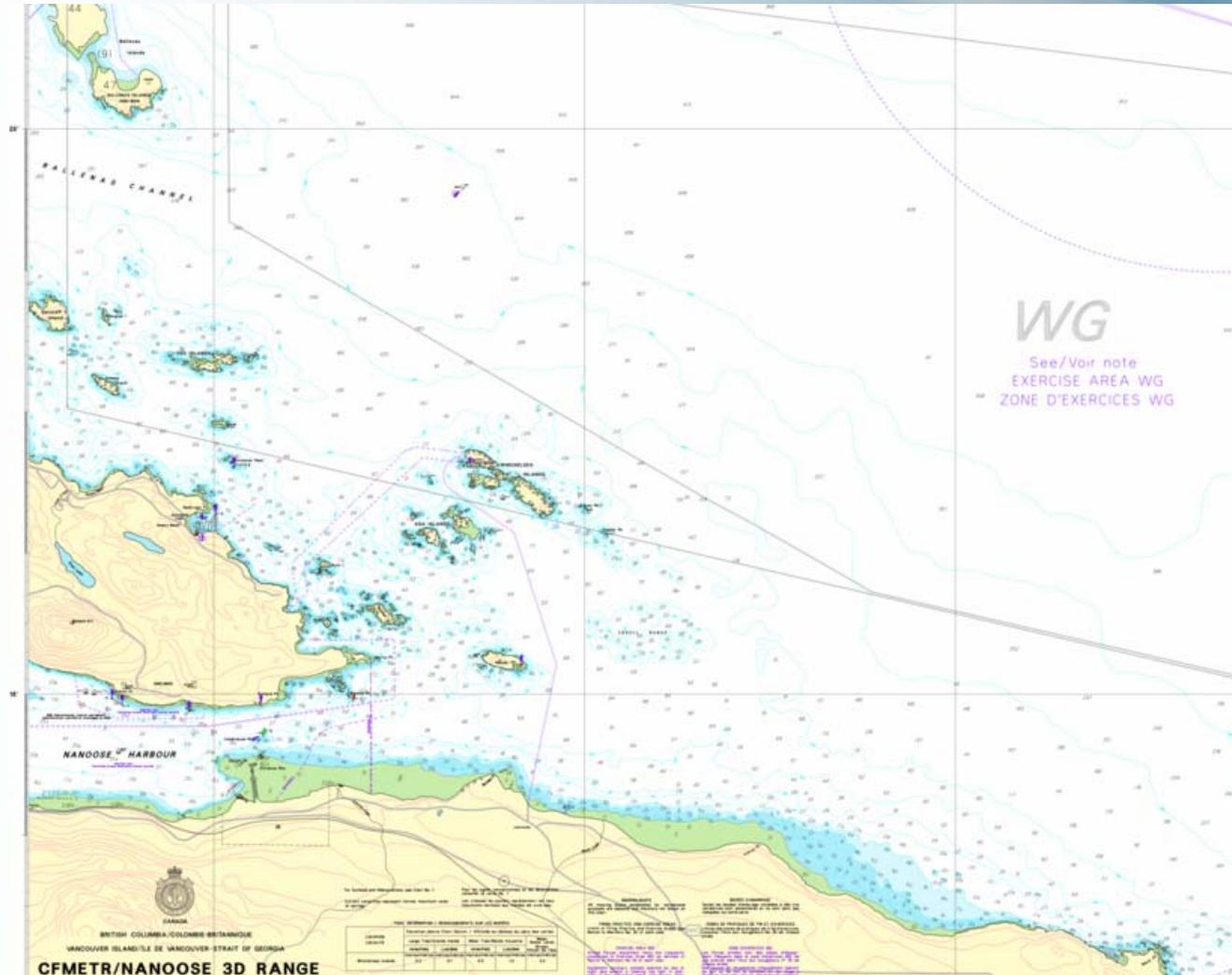
Product Distribution

- Digital chart products
 - *Paper chart compilation from source*
 - *ENC & IENC production*
 - *AML, MIO production*
 - *DNC production & ENC<>DNC Conversion*
 - *Raster chart production*
 - *Nautical publications support*
- Working within Hydrographic Production Databases:
 - *Product Harmonization*
 - *Product Master Generation*



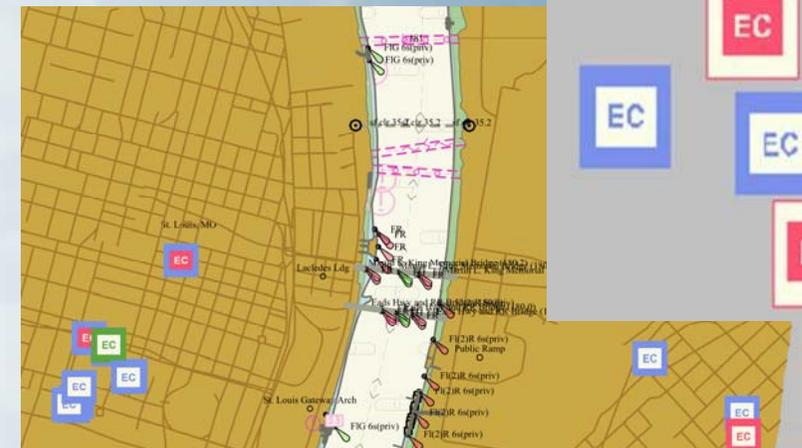
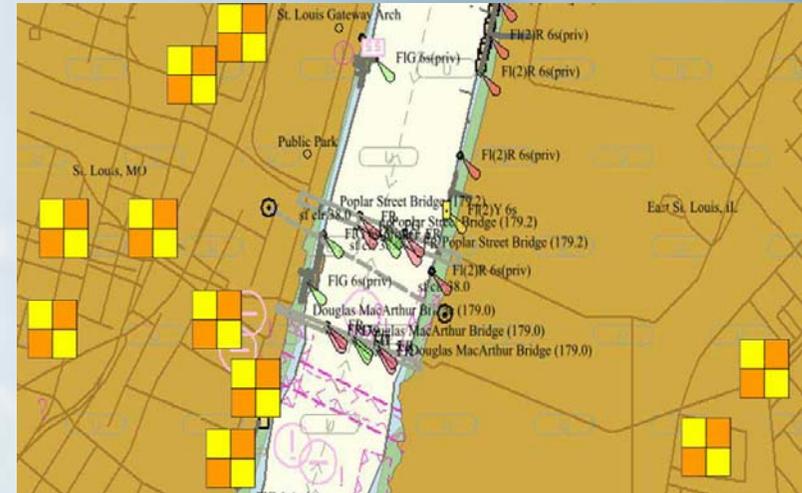
Example: Chart Compilation for DND

- Defining optimum product layout
- Compiling & Combining sources
- Chart Compilation
- Verification of product

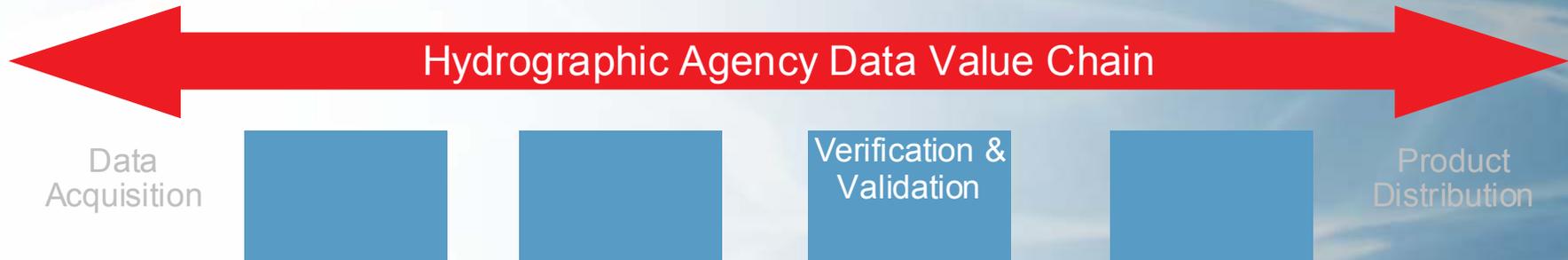


Example: MIOs for USACE

- A proactive emergency planning and on-the-fly response management tool
- Hazardous Facilities MIO
 - *Type of facility*
 - *Contents*
 - *Owner & Status*
 - *Contact Information*
- Emergency Contacts MIO
 - *Colour Coded Contact Type*
 - *Services Available*
 - *Broadcast Frequency*
 - *Facility Name & Address*
 - *Contact Information*
 - *Operational Hours*



Verification and Validation Services



- IIC's approach to Verification and Validation is based on a three pillar system supported by detailed documentation:

Accuracy

- *Checks for spatial accuracy and for missing or extraneous features against latest relevant sources*

Completeness

- *Features correctly represent corresponding real world object, and attribution is complete and accurate*

Integrity

- *Automated checks ensure logical consistency of data elements*



Example: Verification and Validation / QC

- Verification and validation deficiencies documented against specifications
- Verification and validation observations documented against specifications
- Corrective Actions performed and checked
- Deliverable signed off by QC and delivered to client

Error Num	Description of V&V errors and emissions	Position	Comments	Status
		Lat/Long		
1	For the ACHARE Revise CATAACH=1,7 to 1 and delete STATUS	7.32°S 106°51'5		
2	For the ACHARE Revise CATAACH=1,7 to 1 and delete STATUS	5.49°S 106°52'3		
3	For the BCNLAT revise BCNSHP=UNKNWN,delete HEIGHT,STATUS,CONRAD,CONVIS,MARSYS	0.49°S 106°53'4		
4	For the LIGHTS objects delete CATLIT,EXCLIT,STATUS,MARSYS INForM=K1076-9	0.48°S 106°53'4		
5	For the TOPMAR object delete STATUS	0.47°S 106°53'47.94"E		
6	For the BCNLAT BCNSHP=UNKNOWN,delete HEIGHT,STATUS,CONRAD,CONVIS,MARSYS and add INForM=Coulmn	8.95°S 106°53'1		
7	For the LIGHTS objects delete CATLIT,EXCLIT,STATUS,MARSYS and add INForM=K1076-4	8.92°S 106°53'1		
8	For the TOPMAR object delete STATUS	8.92°S 106°53'1		
9	For the BCNLAT revise BCNSHP=UNKNWN,delete HEIGHT,STATUS,CONRAD,CONVIS,MARSYS	1.26°S 106°51'46.44"E		
10	For the LIGHTS objects delete CATLIT,EXCLIT,STATUS,MARSYS INForM=K1073-2	1.26°S 106°51'46.44"E		
11	For the TOPMAR	1.26°S 106°51'46.44"E		
12	For the BCNLAT r HEIGHT,STATUS,			
13	For the LIGHTS of			
14	For the TOPMAR			
15	For he BOYLAT d			
16	For the LIGHTS of			
17	For the BCNLAT r HEIGHT,STATUS,			
18	For the LIGHTS de			
19	For the TOPMAR			
20	For the BCNLAT r HEIGHT,STATUS,			
21	For the LIGHTS de			
22	For the TOPMAR			
23	For the BCNSPP HEIGHT,STATUS,			
24	For the LIGHTS of INForM=K1073.5			
25	For the BCNSPP			
26	For the LIGHTS of			
27	Revise LNDMRK t CATSPM=16,BCN			
28	For the LIGHTS of and add TOPMAR			
29	For the BCNLAT r			
30	For the LIGHTS de			
31	For the BCNSPP			

Updating and Maintenance Services

Hydrographic Agency Data Value Chain

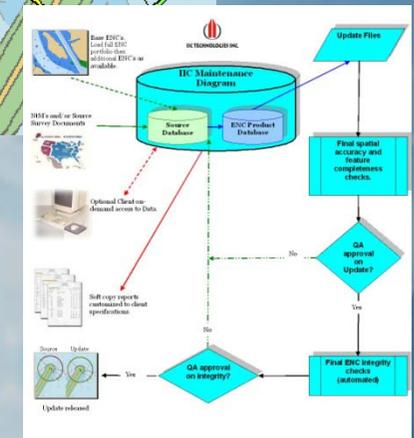
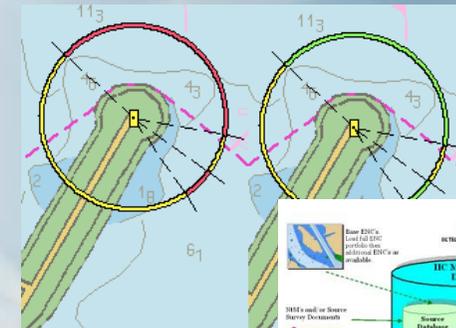
Data Acquisition



Updating & Maintenance

Product Distribution

- Complete, customized solutions for maintaining hydrographic products and portfolios for hydrographic offices
- Features include:
 - *Critical corrections (i.e. NTMs) applied at any frequency*
 - *Options to include non-critical survey source integration*
 - *Detailed logging and history information on updates (product history)*
 - *Hydrographic database system or flat-file configurations*



Example: Maintenance (NtM & Survey)

- Critical Correction (right)
- Survey application (bottom)



Summary: IIC on the Value Chain

Hydrographic Agency Data Value Chain

Acquisition

Survey Data Processing

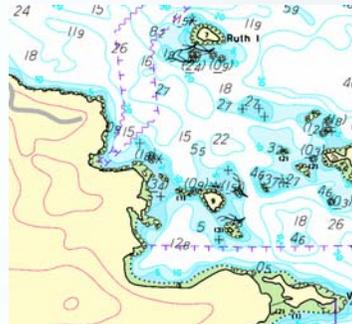
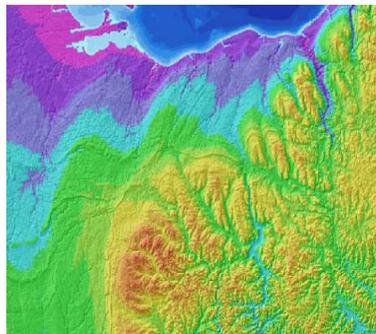
Navigation Products

Verification & Validation

Updating & Maintenance

Distribution

IIC Service Offering



Summary: A Few Sample Highlights

- Has produced over 500 AMLs and several thousand ENC's
- Trusted for paper chart compilation by several hydrographic offices
- Involved in large scale ENC/IENC Maintenance
- Provided Verification/Validation services for ENC's & DNCS on hundreds of datasets for hydrographic offices
- Trusted by the hydrographic community for consulting, standards, and test data related services
- Cost effective ENC<->DNC conversion process
- First company to offer a range of data services using CARIS HPD (5 years of experience with product)

Our team of cartographers, GIS technicians, data standards experts and QC technicians ensure capacity and expertise in every domain



Summary: Some of our Customers

- UK Hydrographic Office
- Norwegian Hydrographic Office
- French Hydrographic Office
- German Hydrographic Office
- Canadian Navy Hydrographic Service
- Australian Hydrographic Service
- Royal Danish Navy HO
- Indian Hydrographic Office
- Land Information New Zealand
- NOAA
- Canadian Hydrographic Service
- New Zealand Defence Force
- US Army Corps of Engineers
- Canadian Centre for Maritime Com.
- Brazilian Navy Hydrographic Office
- US Coast Guard
- Turkish Navy Hydrographic Office
- US Naval Oceanographic Office



In Closing...

A global leader in providing marine mapping services and solutions to HOs since 1992

Recognized worldwide for quality, professionalism and customer service

Solutions that can be depended on, backed by industry-leading professionals



IIC Technologies

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