

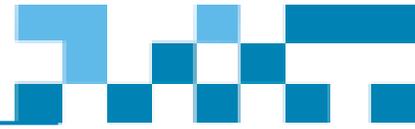


Implementing a Modern Maritime Charting Solution for the United Arab Emirates

Bayanat Hydrographic Charting System (HCS)

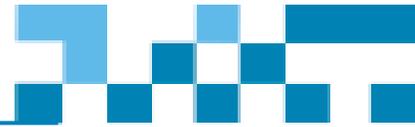
11th July 2013





- Bayanat is a wholly-owned Mubadala company that was born from the commercialization of the Military Survey Department (MSD) that was formed in 1974 to provide the UAE Armed Forces with dedicated mapping and surveying services
- Bayanat will continue this tradition of service by building on our heritage to deliver world-class geospatial services to better serve all our customers in the UAE and beyond.





Vision

Become the national leader in delivering maritime products and solutions.

Mission

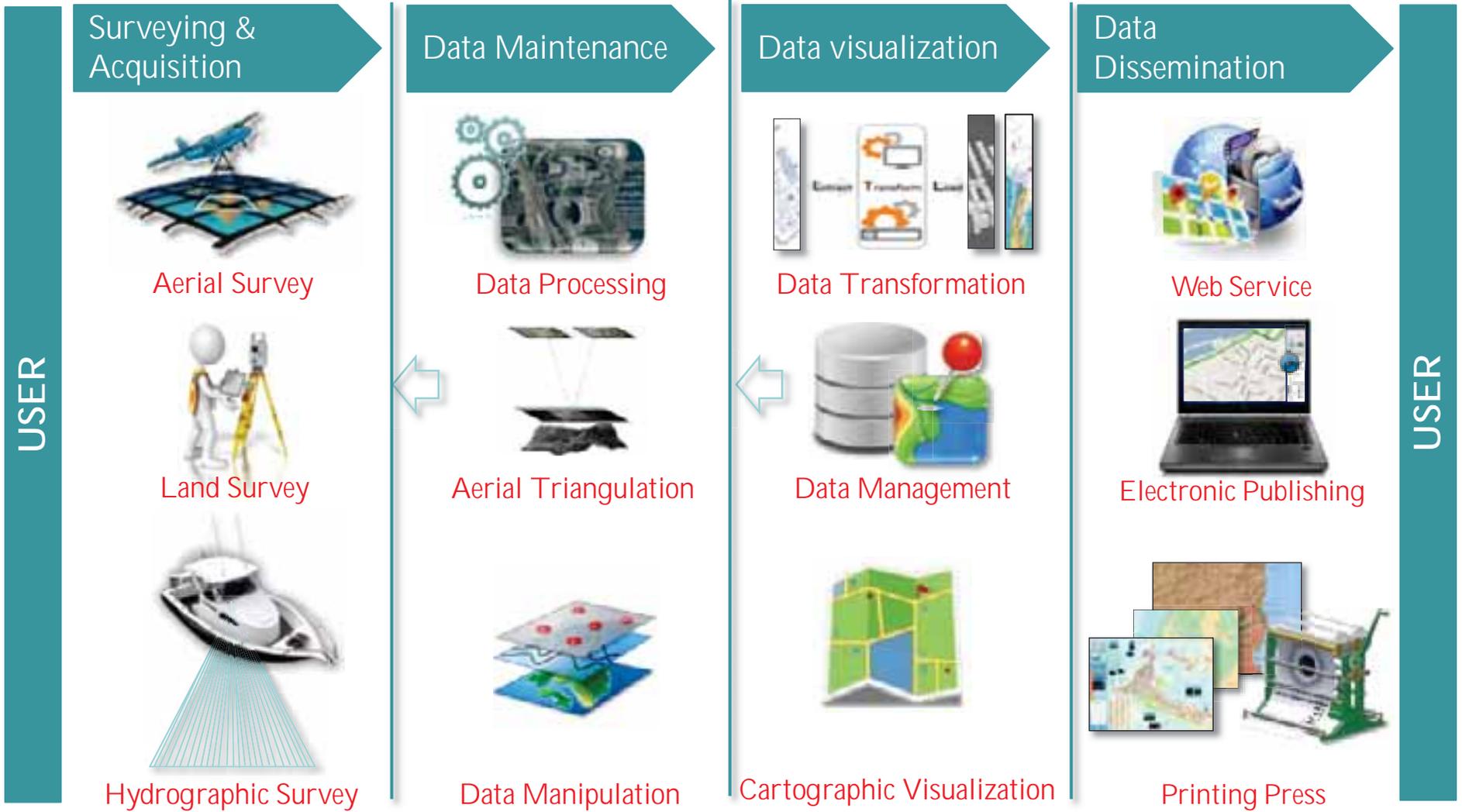
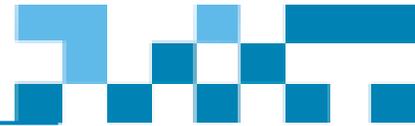
Complete production chain from survey to end product.

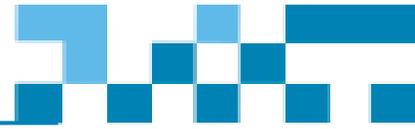
Conform to international standards.

Supply Hydrographic Community with the following products:

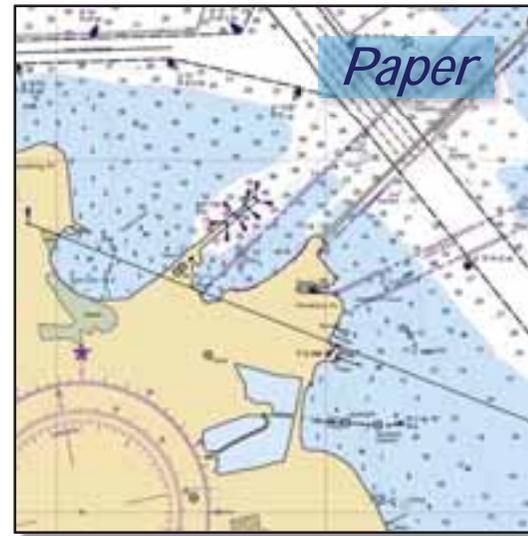
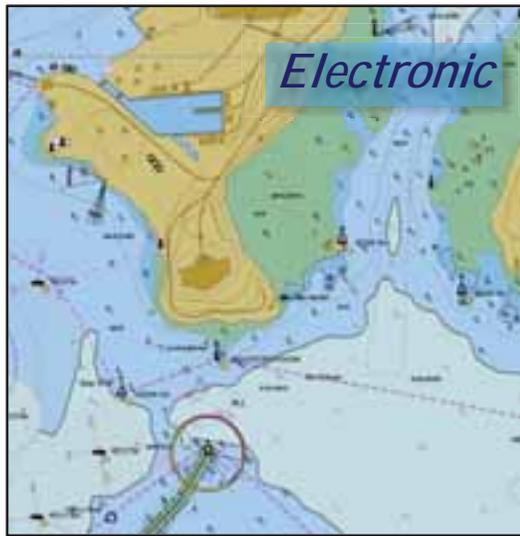
Paper charts	Tide Tables
ENC	List of Lights
RNC	Sailing Directions
AML	Notice to Mariners



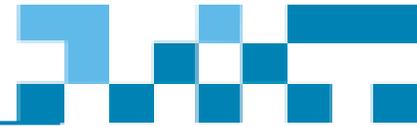




“provide a COTS-based enterprise Hydrographic Charting System that will be the authoritative source for maritime information in the UAE, supporting the government and customers”



History - *Legacy to state of the art*



➤ Time Line:

1995

- Joint Project
- Qty: 8
- Different scales
- Esri ArcInfo v7

1999

- In-house.
- Qty: 2
- Different scales
- Hydro special works
- ArcInfo v8

2010

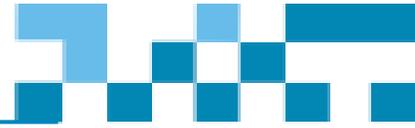
- In-house
- 1:10,000
- 1:45,000
- Khalifa Port (ADPC)
- Al Sila Area (GHQ-ADPC)
- Qty: 15 N. charts
- +20 Bathymetric charts

2011-2013

- Esri - HCS
- Coverage: UAE
- Multiple scales
- Charting
- ENC
- Qty: +35

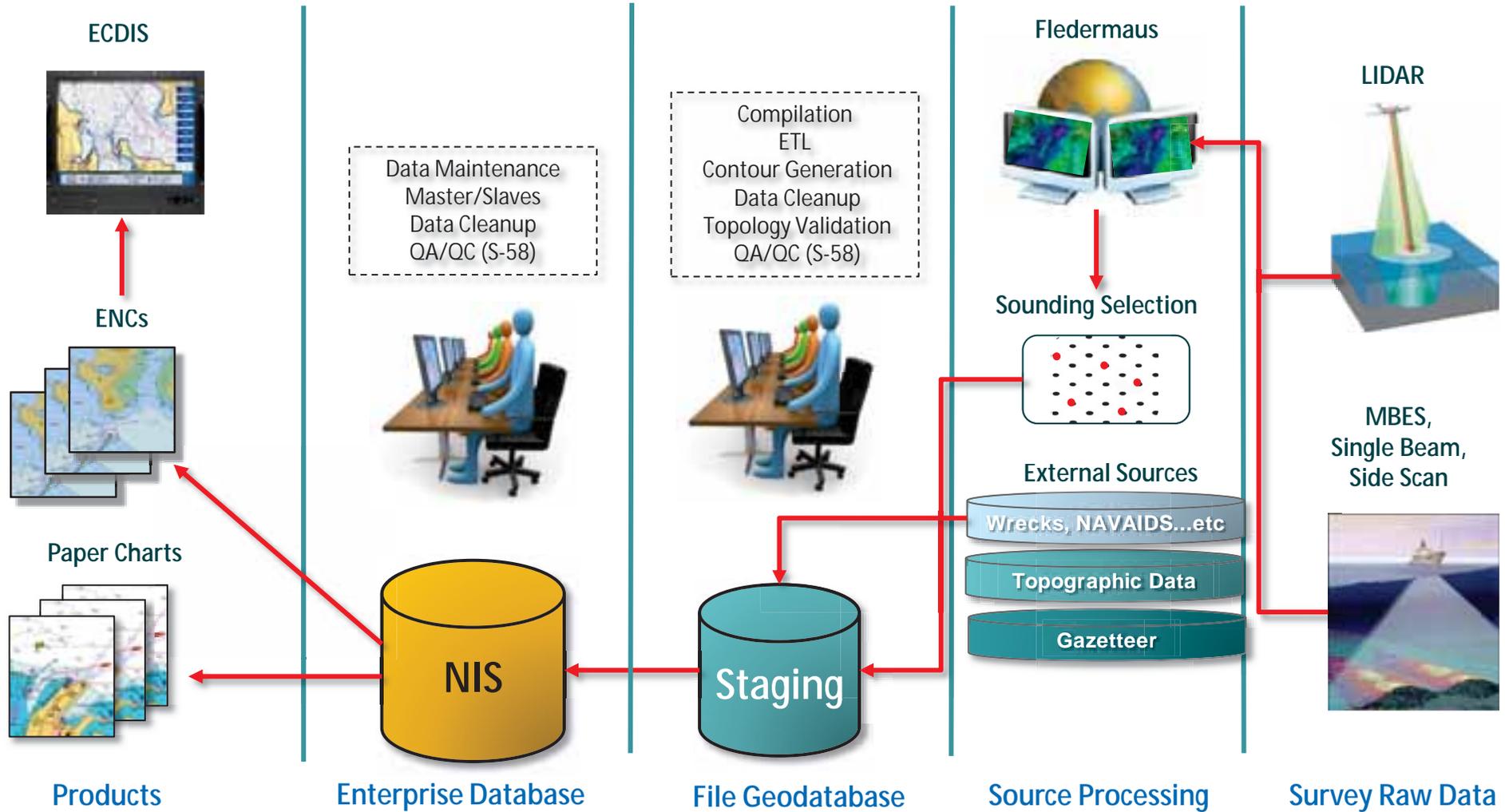
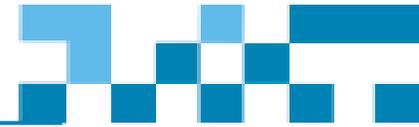


Project Overview

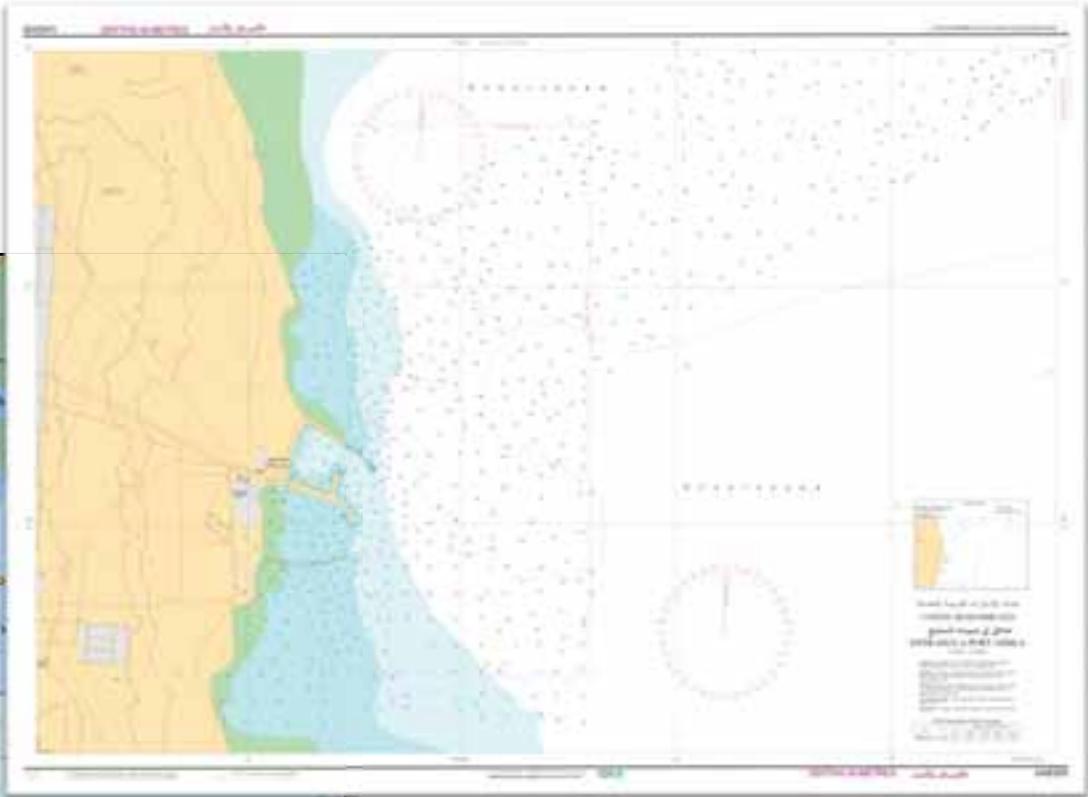


- ✓ Provide end-to-end system from survey to products
- ✓ Develop fully integrated macro and micro workflows
- ✓ Deliver COTS-based system with minimal customization
- ✓ Prove system by conducting pilot to produce real products

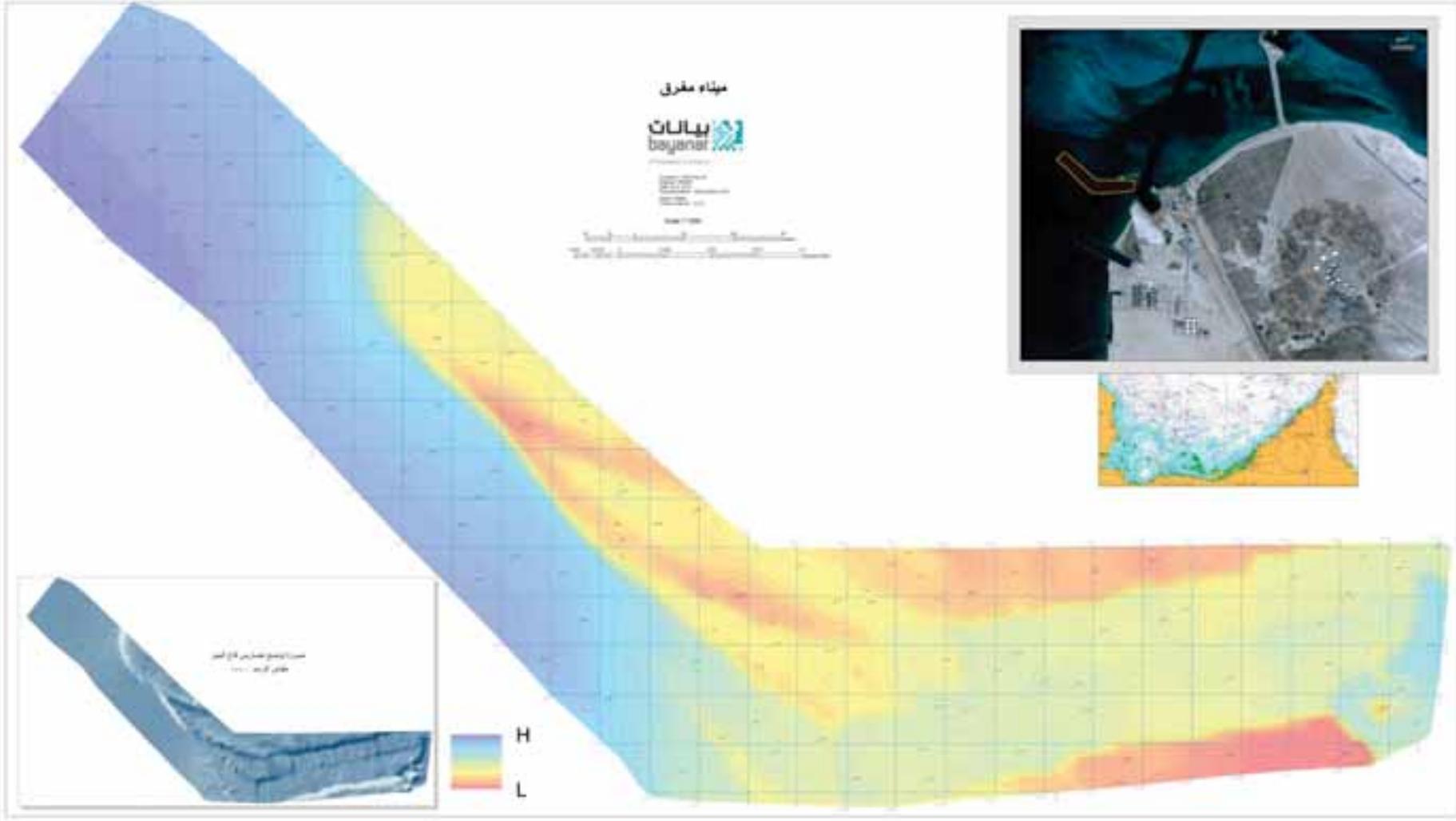
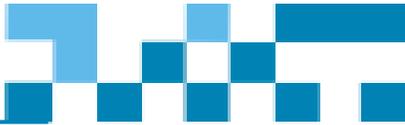
HCS Workflow

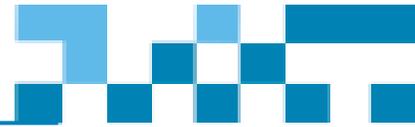


HCS Deliverables – Charts/ENC



HCS Deliverables – Hybrid Charts

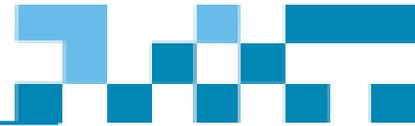




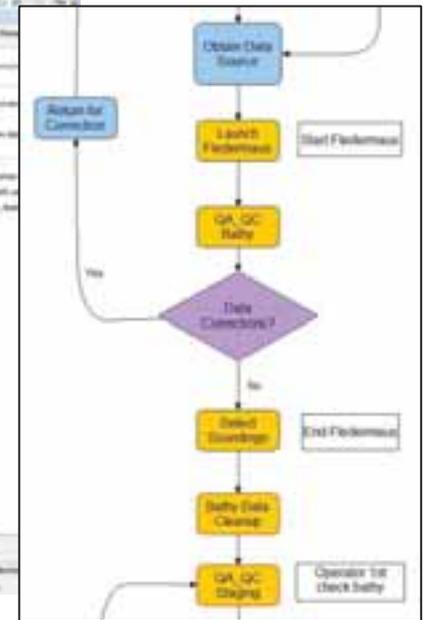
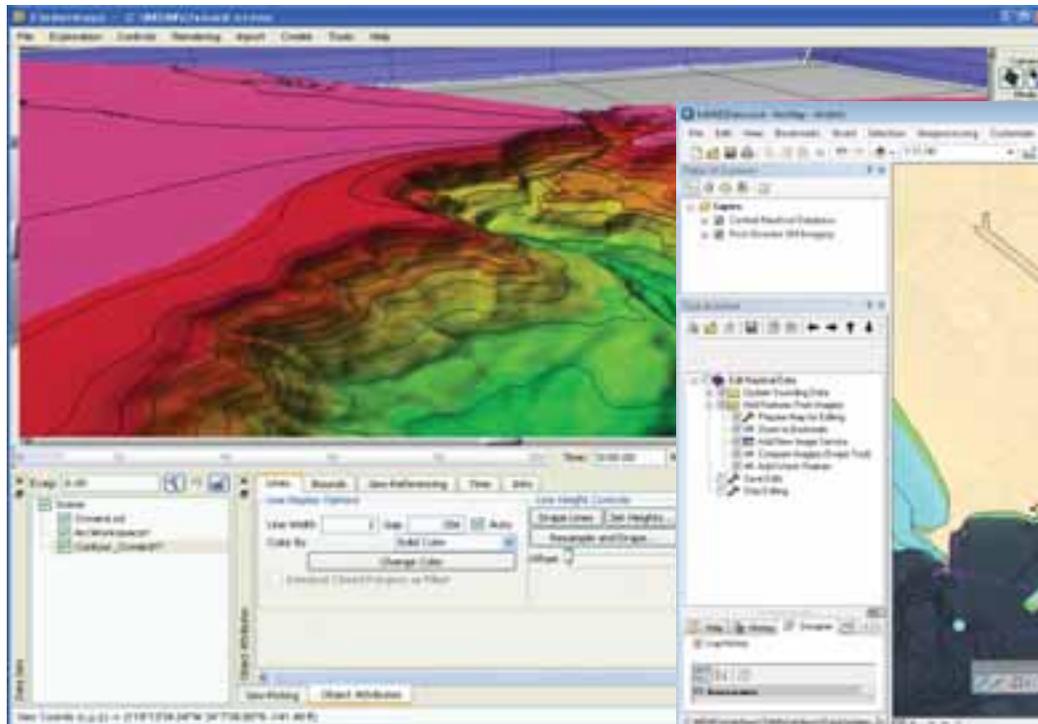
- Follow International Hydrographic Organization ([IHO](#)) Standards
 - ✓ S-57: IHO Transfer Standard for Digital Hydrographic Data
 - ✓ S-58 : Recommended ENC Validation Checks
 - ✓ S-63 : Data Protection and Authentication (planned)
 - ✓ INT1 : Symbols and Abbreviations
 - ✓ INT2: Borders, Graduations, Grids and Linear Scales



Software Components

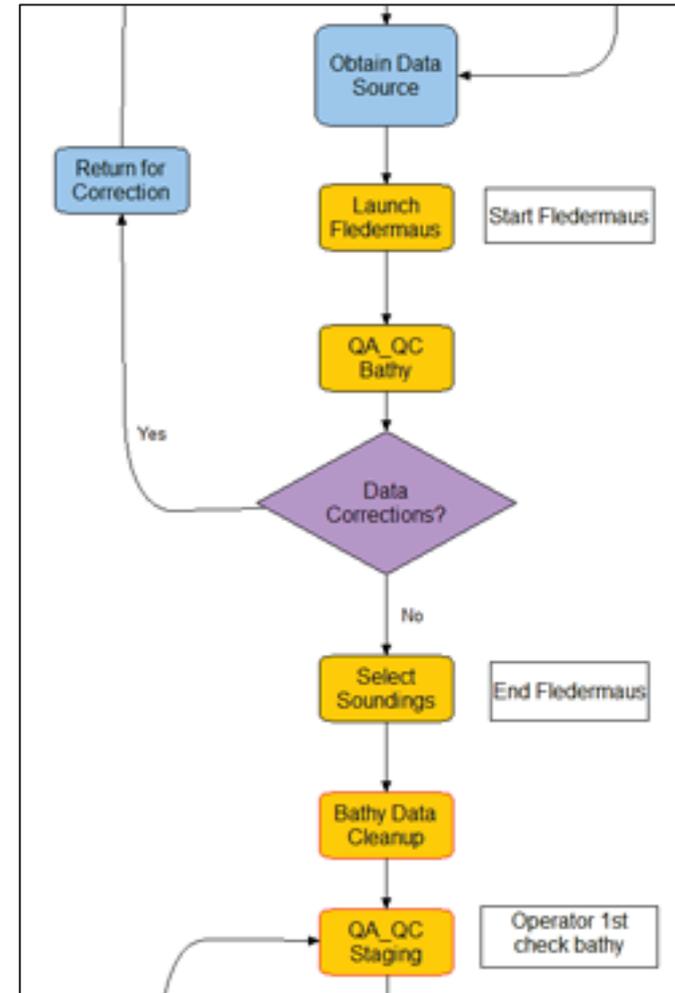
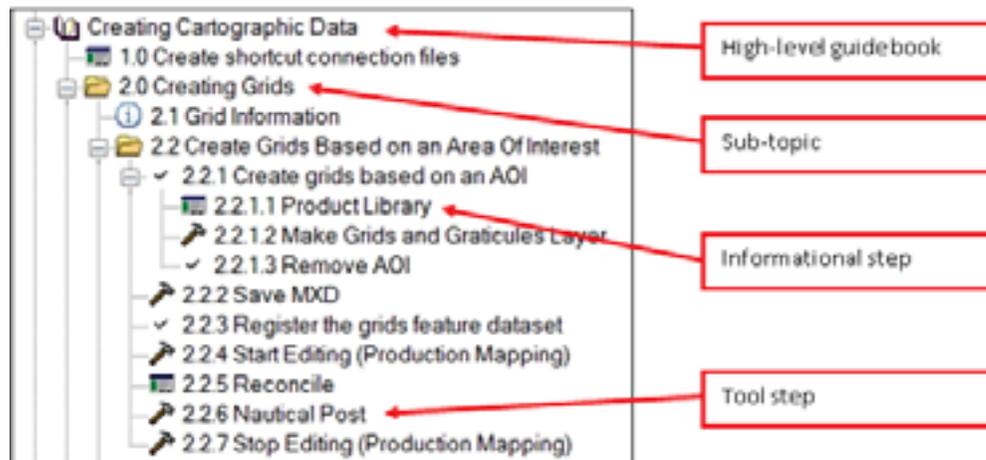


- QPS Fledermaus Professional
- Esri Maritime Charting Solution 10.1
- Workflow Manager and Task Assistant Manager
- SevenCs ENC Analyzer for 3rd party validation

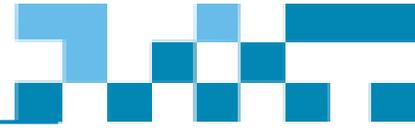


Sample HCS Workflows

- Workflow Manager captures high-level (macro) workflow
- Specific steps launch corresponding Task Assistant Manager (TAM) workflow (micro)

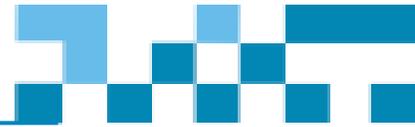


Unique Project Characteristics



- ✓ First Maritime: Charting implementation fully integrated with Workflow Manager and Task Assistant Manager
- ✓ First implementation to leverage QPS Fledermaus integration with ArcGIS (direct geodatabase writing)
- ✓ COTS-based implementation, except for a few key custom tools:
 - Contour Generation Python Add-In
 - Fully integrated QA/QC Checklist in Workflow Manager

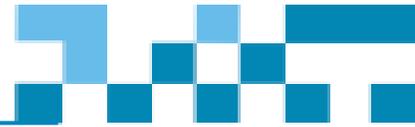
Integrated QA/QC Checklist



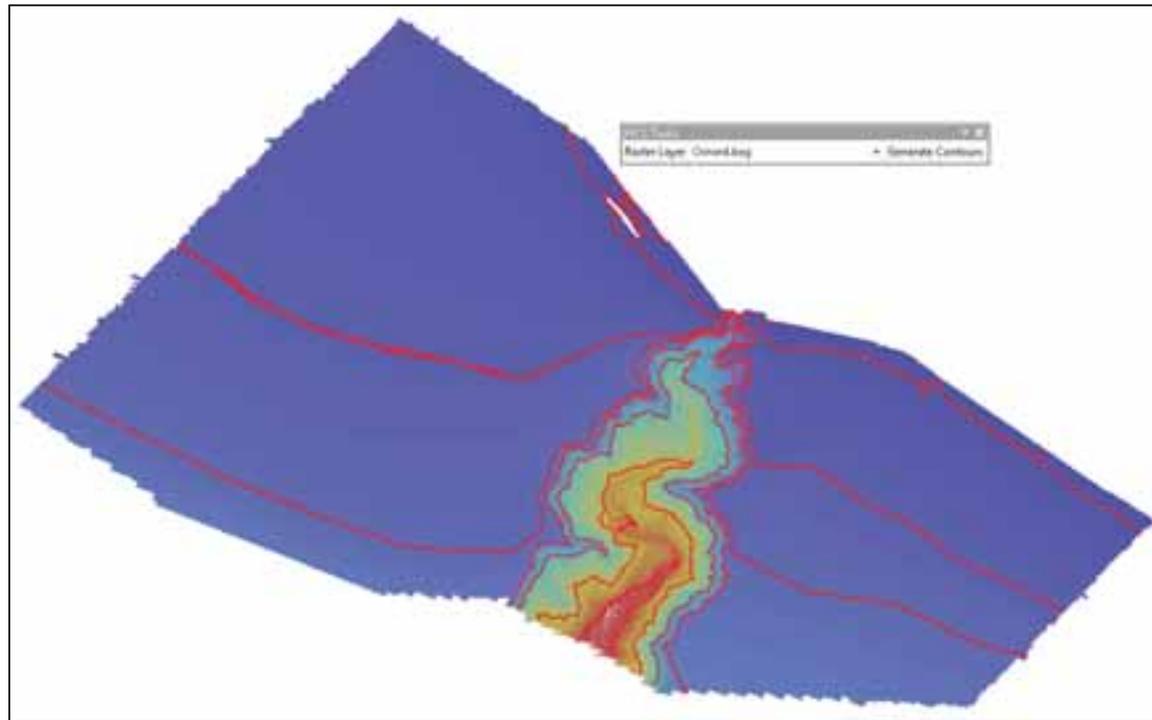
- Replaces paper check list, launched automatically from Workflow Manager
- Captures multi-tier review cycle of products (Analyst, QA/QC Manager, sign-off by Production Manager)
- Built using WMX extended properties – configurable without code
- Stores user name and timestamp in database for chain of custody
- Prevents advancing workflow if check is rejected

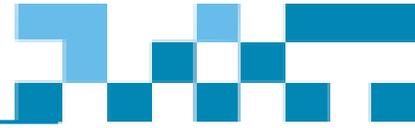
Check	First	Second
Features collected and encoded to the specification and bulletins	Approved	Approved
Soundings cleaned and thinned to agency specification for the product scale	Approved	Approved Rejected
Depth contours are correct per the specification for the product scale	Approved	
All Data Reviewer errors have been corrected and verified	Approved	
Depth contours are free of topology errors (e.g. self-intersecting lines)	Approved	

Contour Generation Tool



- Tool to automate contour generation process
- Built using new Python Add-In capability in 10.1 (no install/registration of DLLs)
- Automates numerous operations:
 - ✓ Resamples gridded surface, inverts depths, generalizes lines, writes to NIS schema, etc.





➤ Benefits:

- ✓ Building UAE level seamless Maritime database
- ✓ Product Neutral database to support future products
- ✓ Conform to International Standards (IHO)
- ✓ Workflow-driven solution for consistent outputs and standard processes
- ✓ Shorter production time and cost.
- ✓ Quality improvement

Thank You

Explore the Possibilities

www.bayanat.co.ae