



Industry Support for Capacity Building:

IIC Technologies

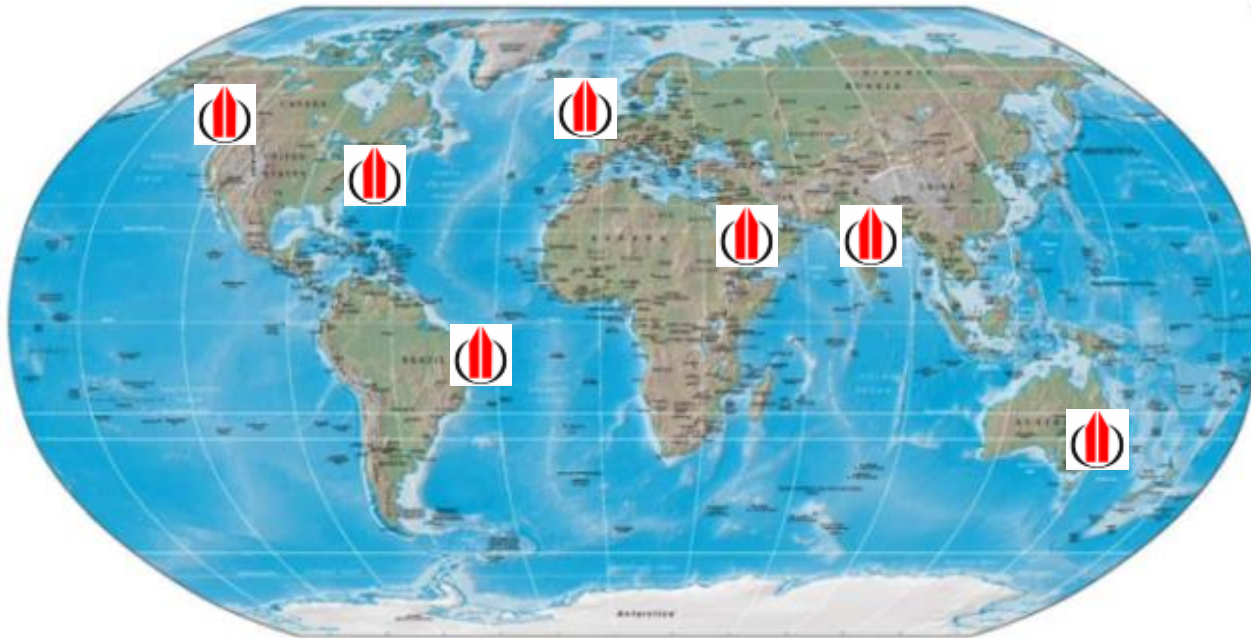
SWP HC
November 2016

Ron Furness

- Established in 1993, Headquarters in Hyderabad, India
- Focus on Geospatial Sciences
 - Marine Solutions & Charting
 - Terrestrial Solutions & Mapping
 - Geodetic and Cadastral
 - Specialty Mapping (Heritage, Geoid)
 - Software (Innovation Centre)
 - Training (IIC Academy)
- Capability: 2,000+ specialists and technicians
- Quality: ISO 9001 certified
- Performance: Successful projects with over two dozen government agencies around the world

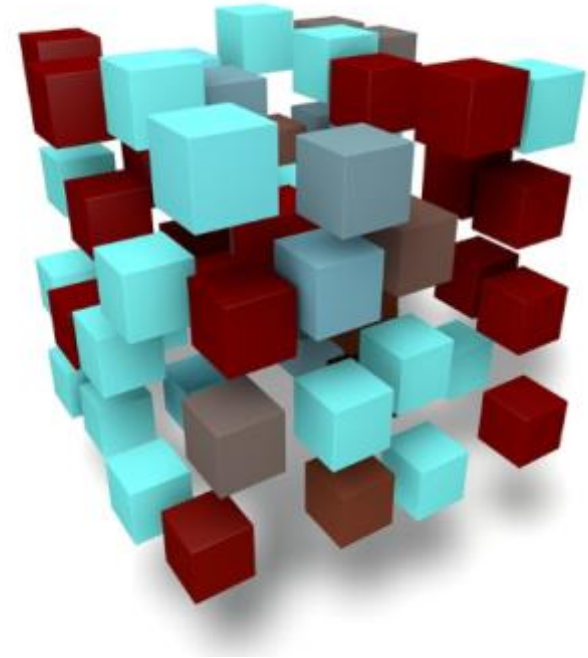


- Able to leverage specific expertise from across its offices worldwide while providing responsive, localized customer service and production capability
- Seven locations, Three production offices, six project support offices, two R&D offices, & one training Academy, all working seamlessly together

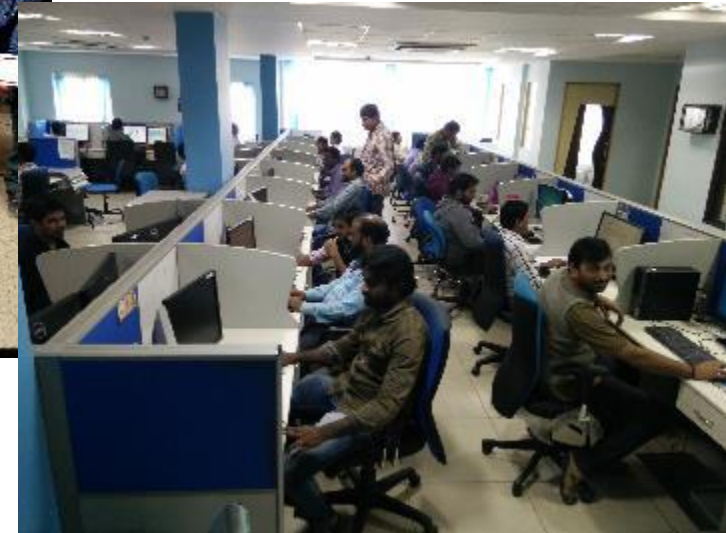


How we are structured

- Matrix of Business Development and Project Management
- “Engine room” in Hyderabad and Vizag
- Field Offices throughout India, the Middle East and UK
- Specialist production facilities UK & US
- Services provided centrally
 - Aviation Services
 - Distribution
 - Innovations Centre
 - Training (IIC Academy)



Headquarters



IIC Headquarters, Hyderabad, India



IIC Innovations Centre embedded within the International Institute of Information Technology, Hyderabad



IIC Office UK – York University
Security cleared facility , storage,
people and IT,
up to NATO Secret



“Industry Ready”

Capacity Building with Internationally Recognised Programmes



- Oman
- Saudi Arabia
- UAE
- Denmark
- Brazil
- Korea
- New Zealand
- US
- Bhutan
- India
- International Maritime Organization
- International Hydrographic Organization



Cartography



Surveying



Capacity Building Evolving to blended learning



- **Marine Solutions & Charting**
 - MBES, Bathy Lidar, SubBottom, Source Data Management
 - ENC, Paper Chart, AML, Data Management, MSDI
- **Terrestrial Mapping**
 - Aerial surveys, Satellite Imagery, Ortho Mapping
- **Geodetic and Cadastral Mapping**
 - Geodetic and Cadastral Surveys
 - Geoid Modernization
- **Specialty Mapping**
 - Heritage Mapping
 - Engineering Surveys
- **Software Solutions (Innovation Centre)**
- **Training (IIC Academy)**

Hydrographic Value Chain



Data Value Chain

Data Acquisition

- Hydrographic
- Geophysical
- Oceanographic
- Airborne Lidar
- Satellite

Survey Data Processing

- Bathymetry Data Cleaning
- Surface Modeling
- Image processing
- Deconfliction

Marine Products

- ENC's / IENC's
- Military Overlays
- Paper Charts
- Geophysical Products

Verification & Validation

- Spatial Accuracy
- Feature Verification
- Logical Consistency
- 3rd Party Checks
- Vertical/Horizontal Consistency

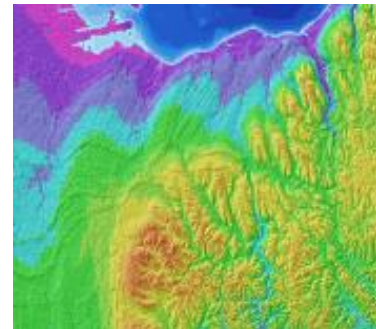
Updating & Maintenance

- Database maintenance
- Data Assessment
- Data critical updates
- Data management
- Data warehousing

Education & Training

How Do We Do It?

- **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, challenge, and retain employees.
 - Utilizes knowledge matrix to match specialized expertise with project requirements
 - Leverage skills of resources across multiple offices to suit project
- **Involved in International Committees, including:**
 - IHO S100WG, ENCWG / ISO 19100 Standards Series
 - NATO Geospatial Maritime Working Group (GMWG)
 - Regional Commissions
- **Partnership Relationships with our Clients**
 - Continually working together to find solutions and to do things better
 - Invest in Quality (ISO 9001 Quality System since 1997)
- **Host of “Electronic Charting Workshop”**
 - Bringing together technical managers and decision makers from hydrographic offices in a workgroup forum in Vancouver to discuss a selection of topics of shared interest.



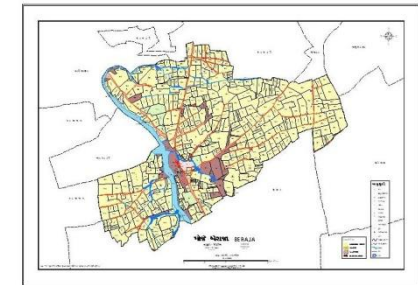
Who We Do It For



Some current clients (this list represents 30 separate projects)

- Australian Hydrographic Service (AHS)
- NOAA
- GeoInt New Zealand (GNZ)
- US Army Corps of Engineers (USACE)
- Land Information New Zealand (LINZ)
- Brazilian Navy Hydrographic Office
- UK Hydrographic Office (UKHO)
- Ordnance Survey (UK)
- UK Ordnance Survey (UK OS)
- Danish Geodata Agency
- UK Ministry of Defence (MOD)
- Indian Hydrographic Office
- Canadian Dept. of Defence (DND)
- Indian Survey & Mapping Organization
- Canadian Hydrographic Service (CHS)
- Government of Chile (Latitude)
- Natural Resources Canada (NRCAN)
- French Hydrographic Office / Navy
- Norwegian Hydrographic Office
- Panama Canal Authority

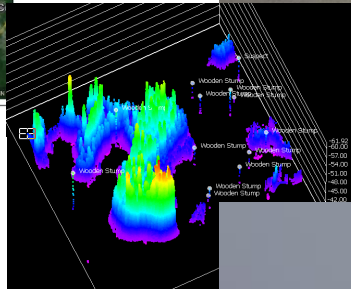
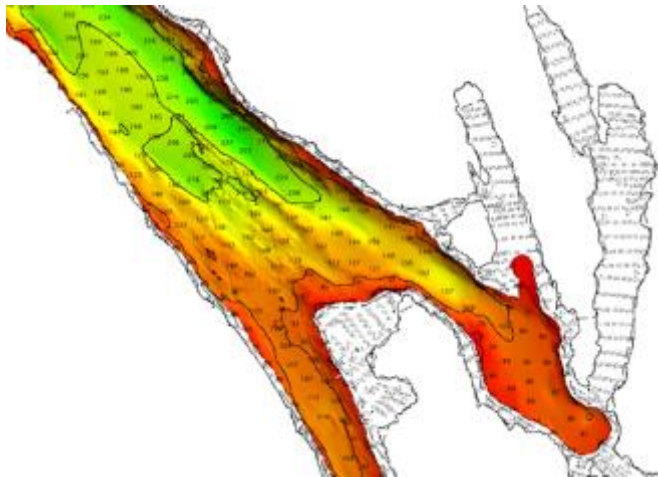
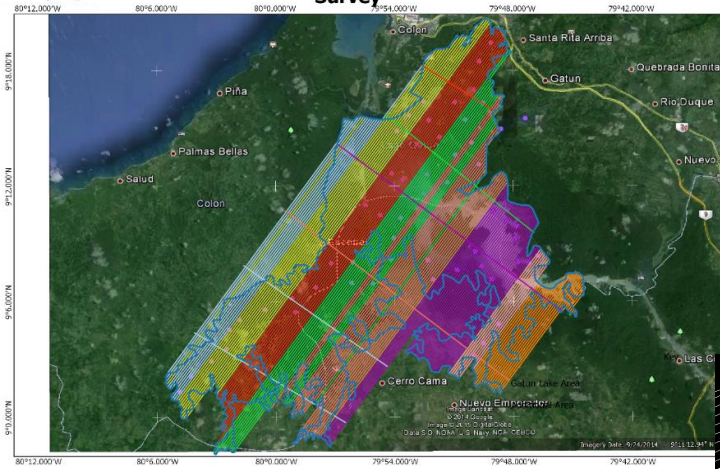
- Photogrammetry
 - Aerial Data Acquisition
 - Aerial Triangulation (MGCP)
 - Planimetric (3D Feature) & Topographic (MGCP)
 - Digital Orthophotography (MGCP)
- Feature Extraction & Editing (MGCP)
- LiDAR (DEM, DSM, Vertical extraction)
- Remote Sensing – Satellite Imagery Processing (MGCP)
- Flythrough modeling
- AM/FM – Utilities (water, sewer, electric, gas, telecom)
- Int. defense standards mapping (VPF/MGCP)
- Airport Mapping DB and Aeronautical Mapping (AMDB)
- Automated feature data extraction



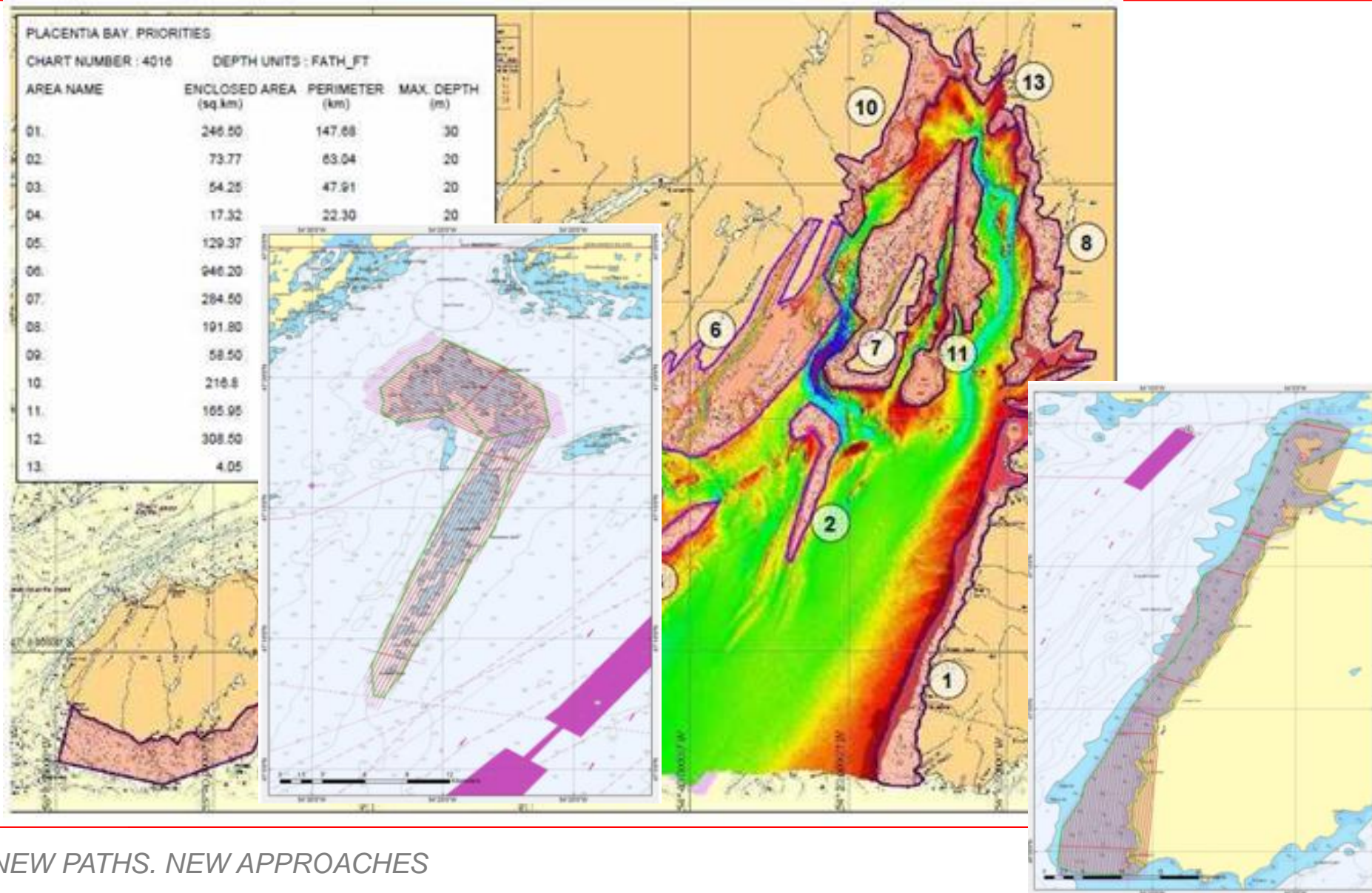
Hydrographic Services



Gatun Lake LiDAR Bathymetric & Topographic Survey



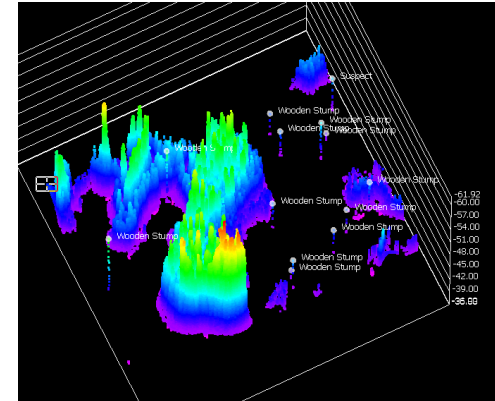
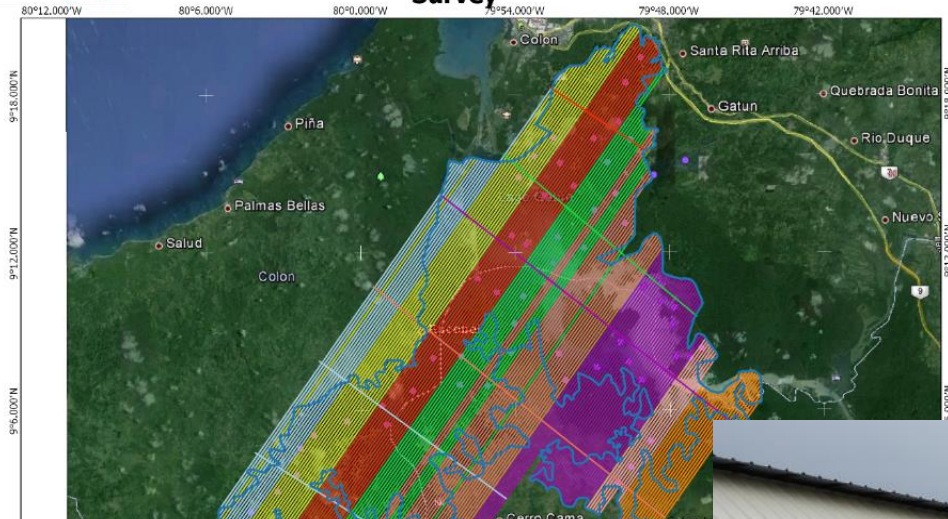
Airborne Bathymetry Lidar— Canada



NEW PATHS. NEW APPROACHES



Gatun Lake LiDAR Bathymetric & Topographic Survey



Hydrographic Surveys – Saudi



Airborne Bath Lidar

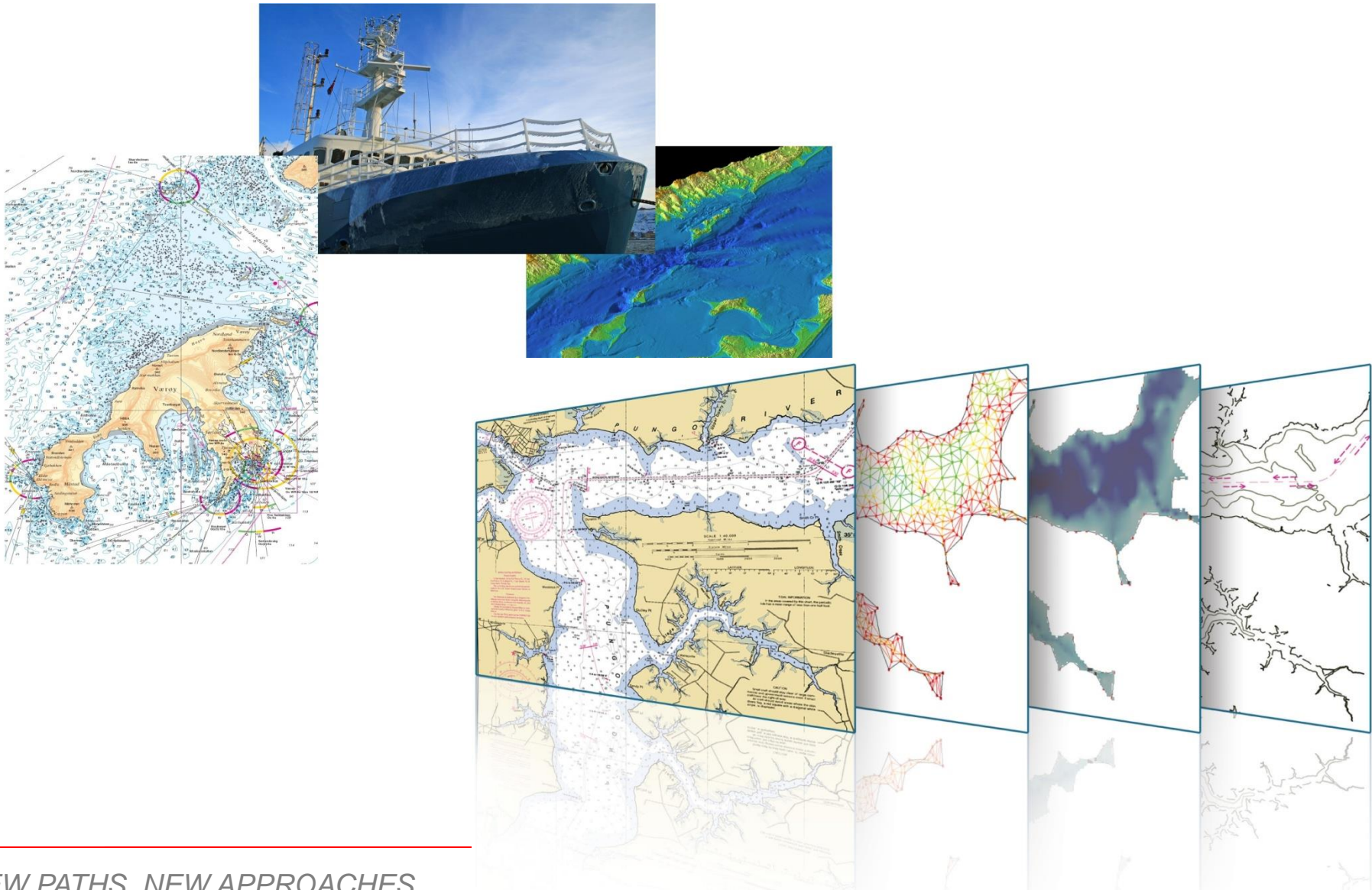


Multibeam, Sidescan,
Sub-bottom Profiling



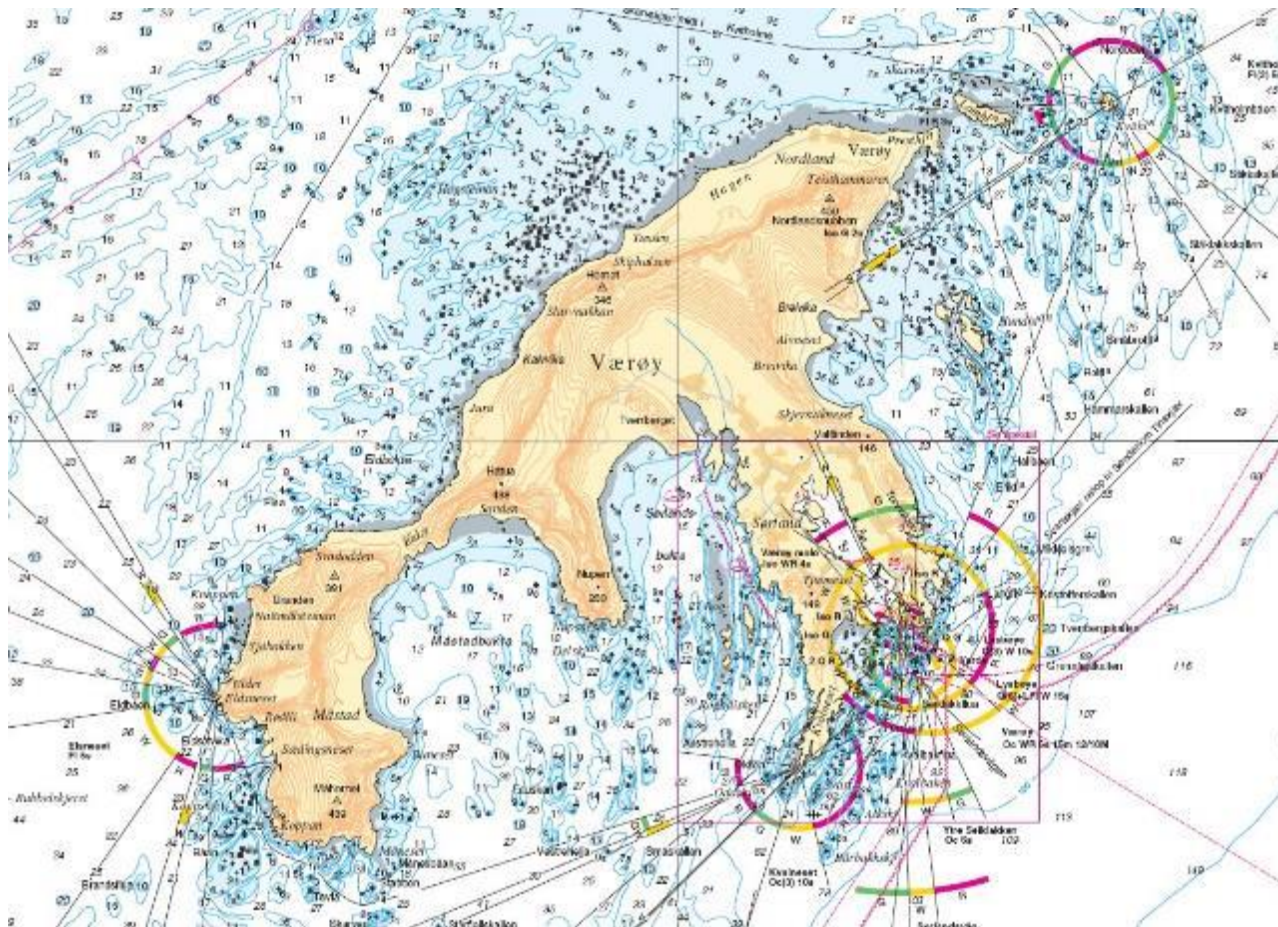
Geodetic & Tidal Control

Cartographic Services



NEW PATHS. NEW APPROACHES

- Awarded First Prize at the 2009 International Cartographic Conference
- Paper chart No.71 produced for the Norwegian Hydrographic Service





Category B

S5 (Hydrographic Surveys)

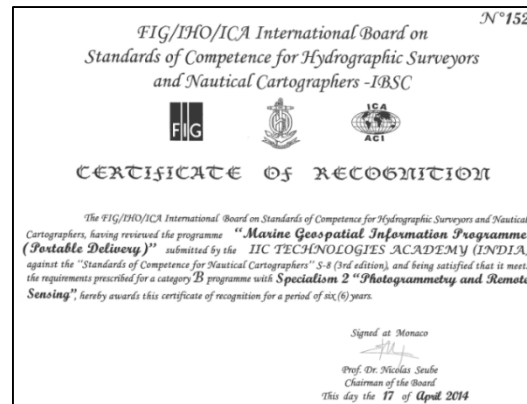
S8 (Nautical Cartography)

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Cat B – Practical Knowledge

Cat B - Portable Programme

Cat B - Taught at IIC Adademy



15 weeks theory/practice & 11 week final project

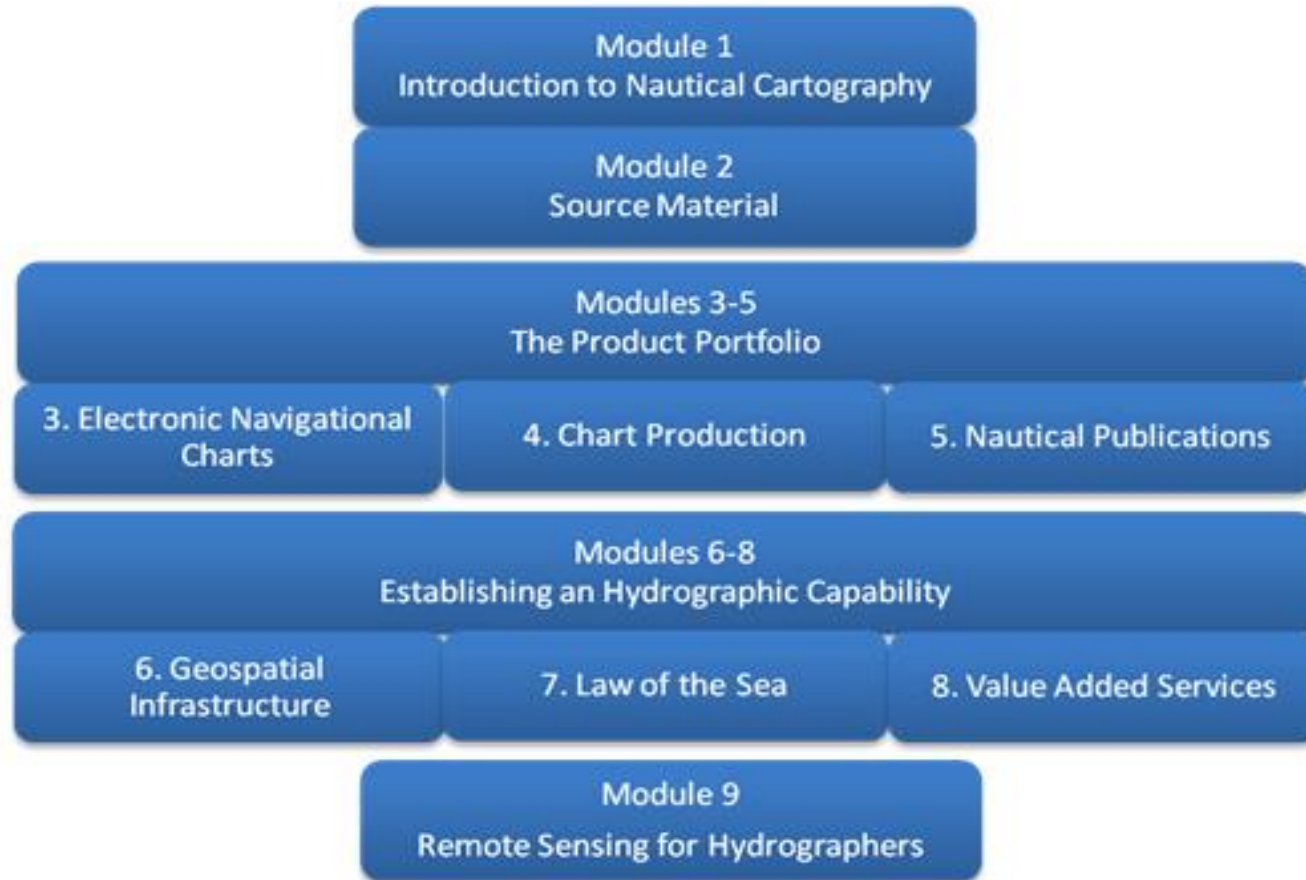


Figure 2. The modular design of IIC's S8 nautical cartography course.

- **IIC Technologies has experience in**
 - Hydrographic Surveying Data Acquisition
 - Data Cleaning and Processing Workflow
 - ENC & Paper Chart Production
 - Verification & Validation
 - Database Maintenance
 - Workflow
- **IIC Academy provide training & education**
 - Onsite and offsite
 - Transferable training skills and courses
 - Assist with IHO/FIG/ICA recognition
 - Provide ongoing mentoring and assistance (**CPD, SMEs**)
 - Provide ongoing course maintenance and upgrades

“....we have enough capacity to do our job.....”

NOAA.... *“until we have a hurricane Sandy or Katrina, a Horizon oil spill, a super tanker named EXXON Valdez hit a reef, the QEI finds a shoal....”*



Chile *“... we were hit with a tsunami and all our hydrographers are focused on one area...”*

Canada *“... the ice cap is melting and there is not sufficient chart coverage in the north.... and we are about to have the budget of a thousand cuts”*

Others... *“but everyone is retiring”.... “but no one wants to go to sea”*

***Sometimes the capacity builders do not
have enough capacity***

Government – Industry - Academia

Thank You

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