Capacity Building in the Region

Derrick R. Peyton
IIC Technologies

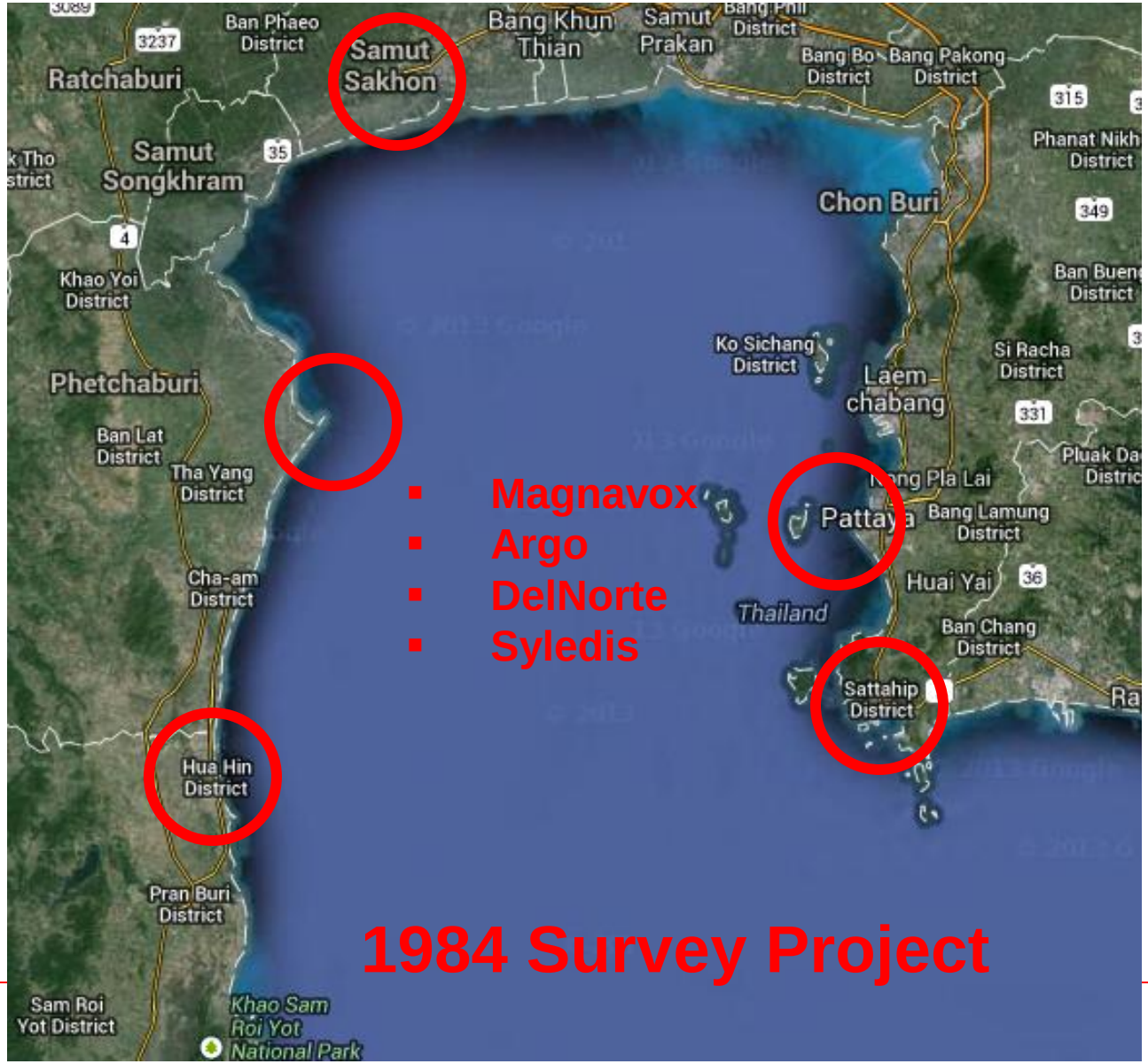
NIOHC, Bangkok, Thailand
February 26-28, 2014

Overview

- **Introduction to IIC Technologies & IIC Academy**
- **Capacity Building in the Region**
- **2015 Multibeam Course**

“it’s good to be back!”

IIC TECHNOLOGIES



IIC Technologies: Overview

IIC TECHNOLOGIES

IIC Technologies

Vancouver, Canada
Washington, D.C.
Taunton, UK
Sydney, Australia
Hyderabad, India

IIC Academy

Training

Marine

Charting

Geospatial

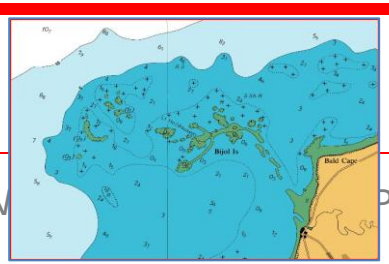
Terrestrial Mapping

Geosurveys

Survey Operations

Strategic Solutions

Software Development



VT-IIC

Hydrographic Data Value Chain

IIC TECHNOLOGIES

Data Value Chain

Data Acquisition	Survey Data Processing	Marine Products	Verification & Validation	Updating & Maintenance
• Hydrographic • Geophysical • Oceanographic • Airborne Lidar • Satellite	• Bathy Data Cleaning • Surface Modeling • Image processing • Deconfliction	• ENCs / IENCs • Military Overlays • Paper Charts • Geophysical Products	• Spatial Accuracy • Feature Verification • Logical Consistency • 3rd Party Checks • Vertical/Horizontal Consistency	• Database maintenance • Data Assessment • Data critical updates • Data management • Data warehousing

Capacity Building

IIC Academy

Headquartered at Visakhapatnam, the Academy seeks to be an international center of excellence offering customized programs on nautical cartography, terrestrial and marine surveys, GIS, photogrammetry and LiDAR.

IIC TECHNOLOGIES

2011 – 2014 Progress Report

Trained over 1200 participants, in areas related to marine and land survey, nautical cartography, GIS, photogrammetry, and LiDAR, both in India and abroad.

IHO Cat B S8 (Nautical Cartography)

IIC Academy Philosophy

Foundation: **"*earning while learning*"**

Industry Ready: practice component is executed in the production floor using realistic case studies. Employable and productive

Scalability & Modular: The development of course content is highly modular. This enables customization of courses to meet the specific requirements of the end-users.

Flexible: The delivery of programs are highly flexible, delivered anytime, anywhere.

Results: Employable and productive.

Recognized Programs: The Academy has made positive impact on capacity building in geospatial related areas, which has been recognized by international bodies.

Full IHO Cat B S8 (Nautical Cartography)

M.128

FIG - IHO - ICA International Board on
Standards of Competence for Hydrographic Surveyors
and Nautical Cartographers

CERTIFICATE OF RECOGNITION

The FIG-IHO-ICA International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers, having reviewed the course programme **"Marine Geospatial Information"** submitted by the IIC TECHNOLOGIES ACADEMY (INDIA) against the "Standards of Competence for Nautical Cartographers" S-8 (3rd edition), and being satisfied that it meets the requirements prescribed for a category B course, hereby awards this certificate of recognition for a period of 6 years.

Signed at Monaco

Prof. Dr. Lysandros Tsoulos
Chairman of the Board
This day the 1st of July 2012

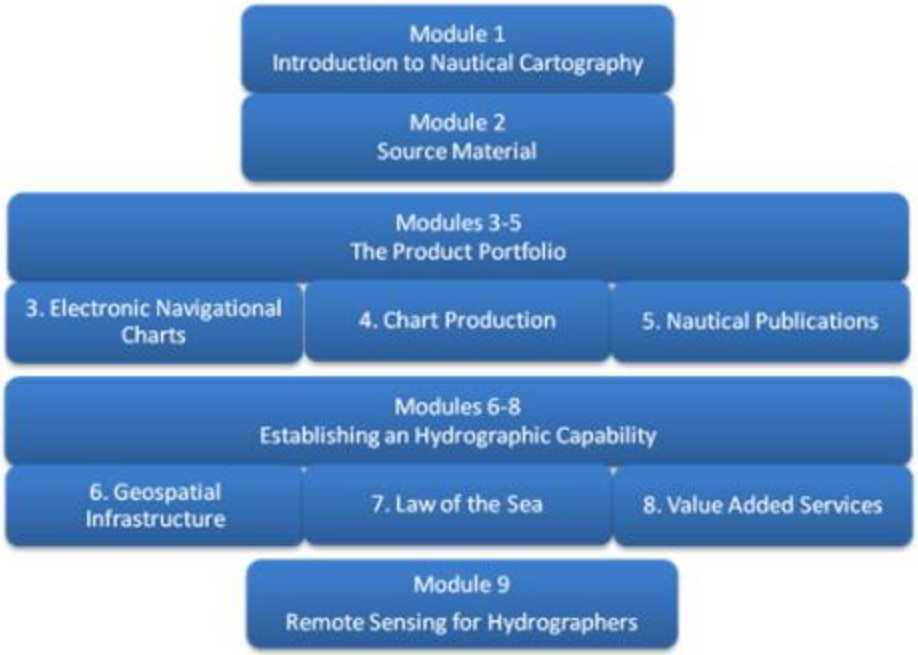


Figure 2. The modular design of IIC's S8 nautical cartography course.

Planned for 2014 - IHO Cat B S8 (Nautical Cartography) (Portable)….
(recognition pending)

S8 Cat B MGI course - India

IIC TECHNOLOGIES

IHO Cat B S8 - Oman

The course was conducted between 06 May and 08 Nov 2013. Seven participants from the Royal Navy Oman attended the course. Six participants have already received their end-of-the-course completion certificate, and the seventh officer who had discontinued the course being on the family-way has rejoined and continuing. She is expected to complete the course on 17 Mar 2014.

Cat B S8 Capacity Building: Saudi Arabia

IIC TECHNOLOGIES

Training & Modular Courses Abroad

On site training

Secondments of skilled staff to provide onsite, on the job training and mentoring

Customised training drawn from the full range of course content within the S5 and S8 syllabi.

Brazil, DHN	2 Data Production Cartographers	6 Months
LINZ, New Zealand	1 Data Production Cartographer	9 Months
GCS, Saudi Arabia	6 Hydrography, 10 Cartography	1+ Years
KIOST, Korea	Establish Cat B S8 Program	2 year

S5 & S8 (GCS Saudi Arabia)

S8 MI & M3 (AHO Australia)

Module M4 (Courtesy of LINZ)

Hydrographic Operations

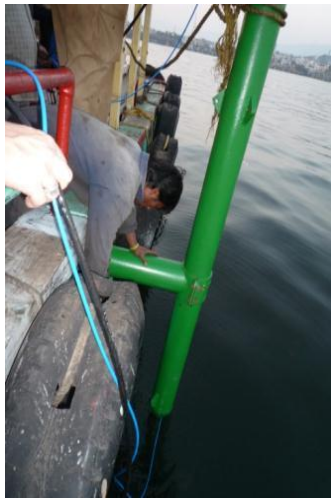
Annual Multibeam Training Course
(February 2012, 2013, 2014… 2015)

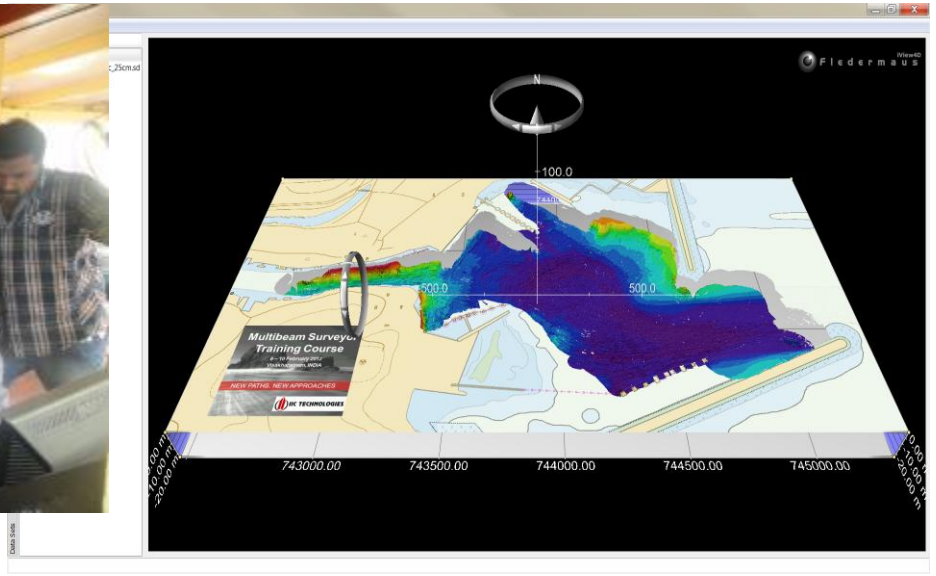
IIC TECHNOLOGIES

IIC ACADEMY
TRANSFORMING BUSINESS - ENRICHING LIVES

Annual Multibeam Training Course
(February 2012, 2013, 2014… 2015…)

IIC TECHNOLOGIES





Cat B S5 Capacity Building: Saudi Arabia

IIC TECHNOLOGIES

Multibeam processing - Nigeria

A two week course on multibeam processing and analysis was conducted for the Geo-Lab Technical Services, Harcourt, Nigeria. Twelve participants attended the course.

Courseware Developed

- **Hydrographic survey S5 Cat ’B’;**
- **Marine Geospatial Information S8 Cat ’B’;**
- **Cartographers Training Program on ENC Production;**
- **Basic of Charts, ENC Production and Navigation Displays**

Multibeam Course February 2015

IIC TECHNOLOGIES

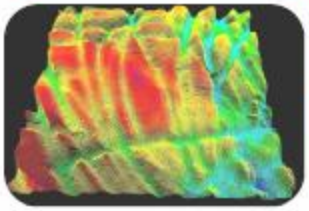
IIC ACADEMY
www.iicacademy.com

MULTIBEAM HYDROGRAPHIC SURVEYOR TRAINING COURSE, VISHAKHAPATNAM, INDIA
FEBRUARY 2015

International Centre Promoting Excellence in Geospatial Sciences

Course fee exempted for members of NIOHC

Practical Training for Surveyors and Hydrographers



Who should attend?
Ideally suited for hydrographic surveyors and users of hydrographic survey data from port and harbor authorities, the defense sector, oil and gas industries, hydrographic offices, and research and government agencies.

About the Program

What is included?
- Faculty comprising FIG/IHO/ICA SS Cat 'A' qualified experts
- IHO standards for data collection
- Interactive tutorials supported by course manual
- Practical onboard experience for collecting data
- Guidance on post processing techniques from experts
- Mentoring and assistance to develop in-house capability

Instructor-led seminars include:
- Bathymetric sonar theory and practice (multibeam & interferometric)
- Depth, position and attitude errors
- Adjusting for true bothy and tidal corrections
- Backscatter
- Survey planning
- Calibration: theory and best practice techniques
- Data processing
- Quality control: 3D visualization and editing
- Bathymetric surface compilation

Practical onboard experience:
- Multibeam mobilization
- Data collection software
- Conduct a patch test and compute results
- Sound velocity profile acquisition
- Completion of a survey area – data collection and processing

Program Fee and Accommodation :
- Program fee: No fee for the members of NIOHC

Accommodation, travel and visa charges will be borne by the sponsoring member or participant.

IIC will arrange for discount rates at the local hotels; details and booking assistance will be provided upon request. Visakhapatnam is well connected by air and train from most cities in India, including Hyderabad.

"A very good and useful course with practical elements."
– Syed Khamis Syed Al Eidi
Royal Navy of Oman (RNO)

About IIC Academy:
IIC Academy is the educational arm of IIC Technologies Limited. The mission of the Academy is to provide industry-focused, world-class, accredited programs on geospatial sciences and undertake related applied research that has a significant societal and environmental impact.

For more information:
Tel +91 770 224 4410
academy@iictechnologies.com
www.iicacademy.com

About Visakhapatnam (a.k.a Vizag)
Often called "The Jewel of the East", Vizag is an important port situated on the east coast of India. Nestled among the hills of the Eastern Ghats facing the Bay of Bengal, Vizag is both the district's administrative headquarters and home of the Eastern Naval Command of the Indian Navy.

Multibeam Course February 2015

IIC TECHNOLOGIES

	DAY 1	DAY 2	DAY3		DAY 4		DAY 5
MORNING	1.1) Welcome Ceremony – *0.5 to 1h* 1.2) Introduction – *0.5h* ▪ Introduction ▪ Health & Safety orientation ▪ Learning objectives 1.3) Multibeam System I – *2h* ▪ Background, operation and functionality ▪ Sensors ▪ Example equipment 1.4) Acquisition Software) – *0.5h to 1h* ▪ Principles of data acquisition ▪ Workflow	2.1)Vertical Control: Tide and Sound Velocity Profile – *1h* ▪ Purpose (water column, oceanography, referencing) ▪ Deployment and practices ▪ Processing considerations ▪ Equipment examples 2.2) Attitude, Heading- Inertial Measurement Unit (IMU) – *1h* ▪ Sensor theory (how it works) ▪ Configurations and usage ▪ Processing considerations ▪ Long Period Heave 2.3) POS Pac software – *1.5h*	*GROUP A* *In Class:* ▪ *Introduction to data acquisition software* ▪ *Vessel File* ▪ *Calibration Tool* ▪ *Attitude Editor* ▪ *Navigation Editor* ▪ *SVP, load tide (zero) Merge* ▪ *Manual cleaning*	*GROUP B* *Field work on training launch* ▪ *Review of set-up* ▪ *Review software configuration* ▪ *Patch test (inc. SVP, draft)* ▪ *Hands-on practice*	*GROUP B* *In Class* ▪ *Data processing of historical dataset* ▪ *Manual and automatic filters (subset editor, CUBE)* ▪ *SVP (advanced)* ▪ *Tide, GPS Tide* ▪ *3D editing* ▪ *BASE Surfaces* ▪ *Advanced system functionality* ▪ *Output products*	*GROUP A* *Field Work on Training Launch* ▪ *Performing a complete minor survey* ▪ *Review on data acquisition software - questions*	5.1) Processing Training Vessel Data – *2.5h* ▪ Review of workflow ▪ Review of concepts ▪ Uneding data ▪ Processing ▪ Creating a final surface 5.2) Export functions – *1h* ▪ ASCII export ▪ Other formats 5.3) Questions & Review – *0.5h* ▪ Discussions ▪ Trainee special cases ▪ Reflection on survey exercise ▪ Couse critique
AFTERNOON	1.5) Survey Basics - *1.5h* ▪ Best practice ▪ Source of errors ▪ Vessel mobilisation (layout, alignments survey, calibrations) ▪ Principles of patch test ▪ Survey plan 1.6) Positioning – *1.5h* ▪ Theory and functionality (GPS, historical) ▪ Configurations and usage ▪ Processing ▪ Equipment examples ▪ Transformations (coordinates, horizontal and vertical datum) ▪ Installation considerations ▪ Integration	2.4)Multibeam System II – *1.5 h* ▪ Systems specific ▪ Configurations and usage ▪ Backscatter (introduction) 2.5) Bathymetric Model – *1h* ▪ Total Propagated Uncertainties (TPU) ▪ CUBE 2.6) Survey Organization – *1 h* ▪ Survey planning ▪ Choice of equipment ▪ Mobilisation ▪ Site selection ▪ Surveying ▪ System calibration 2.7) Fieldwork review – *0.5h* ▪ Presentation of vessel ▪ Plan for Day 3	*GROUP A* *Field work on training launch* ▪ *Review of set-up* ▪ *Review software configuration* ▪ *Patch test (inc. SVP, draft)* ▪ *Hands-on practice*	*GROUP B* *In Class:* ▪ *Introduction to data acquisition software* ▪ *Vessel File* ▪ *Calibration Tool* ▪ *Attitude Editor* ▪ *Navigation Editor* ▪ *SVP, load tide (zero) Merge* ▪ *Manual cleaning*	*GROUP B* *Field Work on Training Launch* ▪ *Performing a complete minor survey* ▪ *Review of data acquisition software questions*	*GROUP A* *In Class* ▪ *Data processing of historical dataset* ▪ *Manual and automatic filters (subset editor, CUBE)* ▪ *BASE Surfaces* ▪ *SVP (advanced)* ▪ *Tide, GPS Tide* ▪ *3D editing* ▪ *Advanced system functionality* ▪ *Output products*	5.4) Data processing software – *1.5h* ▪ Overview ▪ Workflow ▪ Hands-on practice 5.5) Optional Topics – *1h to 1.5h* ▪ Fairsheet production ▪ Introduction to Water column Imaging (theory and resource) ▪ Trainee dataset questions ▪ Further Readings 5.6) Closing Ceremony – *0.5 to 1h*

IIC TECHNOLOGIES

"India extends visa-on-arrival facility to 180 countries"

IIC TECHNOLOGIES

Thank You

www.iictechnologies.com