

International Hydrographic Organization

11th Meeting of the Inter Regional Coordination Committee (IRCC-11)

Genoa, Italy 3 – 5 June 2019

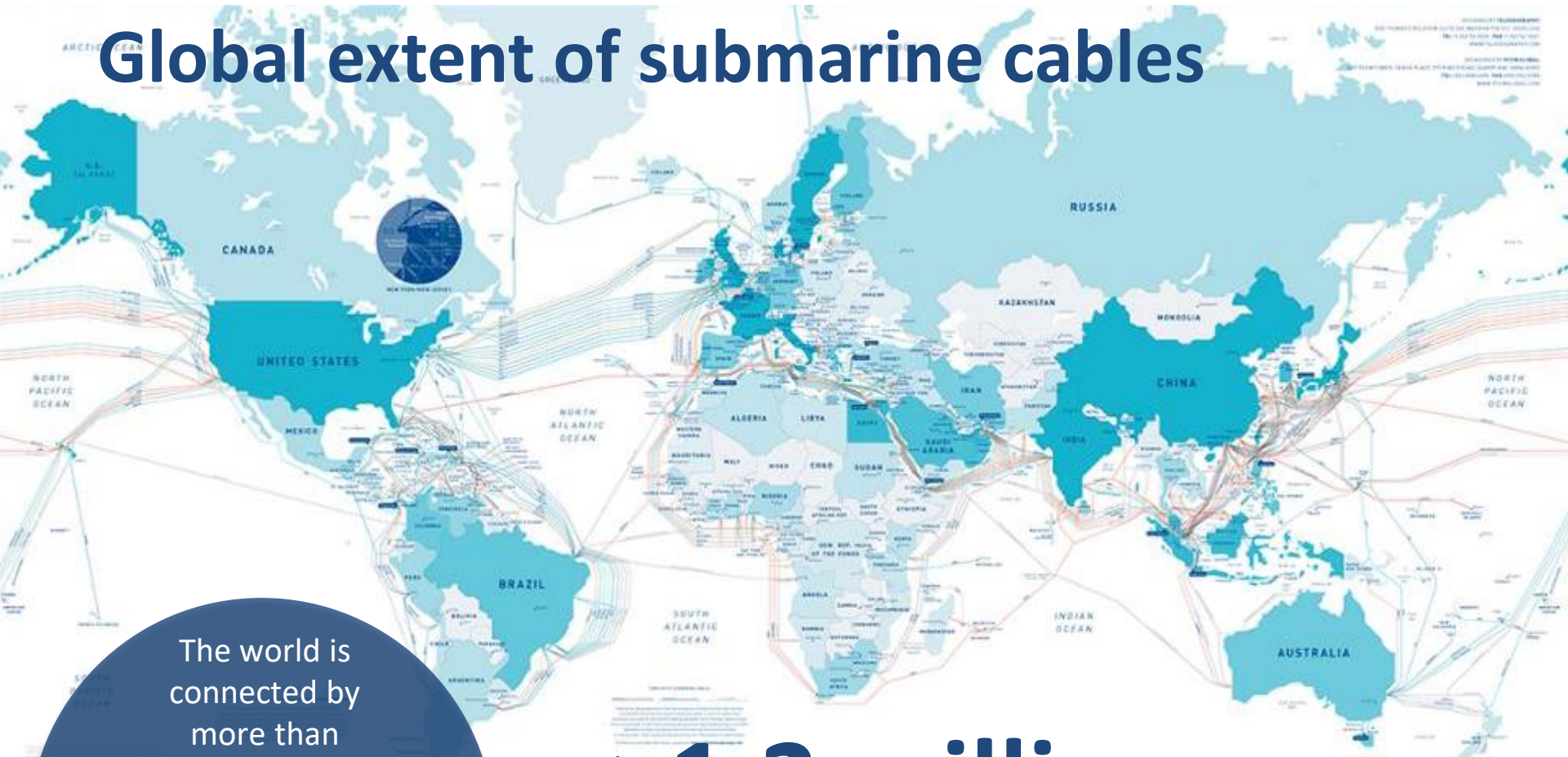
International Cable Protection Committee

IRCC11-09B ICPC Update & Activity Report

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Global extent of submarine cables



The world is connected by more than

400

SUBMARINE
CABLE
SYSTEMS

>1.2 million kilometers of cable installed

enough cable to circle the Earth **>25 times**



Global importance of submarine cables

>99%

of international Internet, voice, and data traffic travels via submarine fiber optic cables.



Submarine cables are the **BACKBONE OF THE INTERNET**, garden hose-sized cables carrying vast amounts of traffic over glass fibers.

AND A GROWING GREEN POWER NETWORK

through international power cables

- Submarine telecom cables ensure access to **Facebook**, **Instagram** photos, **YouTube** videos, **Google** search results, and **Office365** documents and email, whether from a laptop computer, tablet or mobile phone.
- Submarine telecom cables backhaul most of the world's **international mobile network traffic**.
- Submarine **power** cables are increasingly internationally transmitting **GREEN POWER**.



Submarine cables are critical infrastructure

- Governments designate submarine cables as critical infrastructure.
- Governments use critical infrastructure designations to highlight asset criticality and identify and mitigate vulnerabilities and threats.
- Critical infrastructure is frequently defined as:



- Assets that are **essential for the functioning of society and the economy**, and
- Damage or destruction of which would harm national and economic security, public health, and public safety.

Submarine cables are critical infrastructure

- Submarine cables carry >5.4 petabytes (10^{15}) of data per minute, >4 million YouTube views; >400 minutes of video uploaded every minute; 4 million Facebook posts per minute
- Each day the Society for Worldwide Interbank Financial Telecommunications (SWIFT) transmits \approx 15 million messages to more than 8300 banking organizations, securities intuitions, and corporate customers in 208 countries
- The United States Clearing House for Interbank Payment System (CHIPS) process over US\$ 1 Trillion per day to more than 22 countries for all manner of commodity exchanges, investments, and securities
- World Bank study indicated a 10% increase in broadband penetration results in a 1.38% increase in GDP growth in low and middle income countries

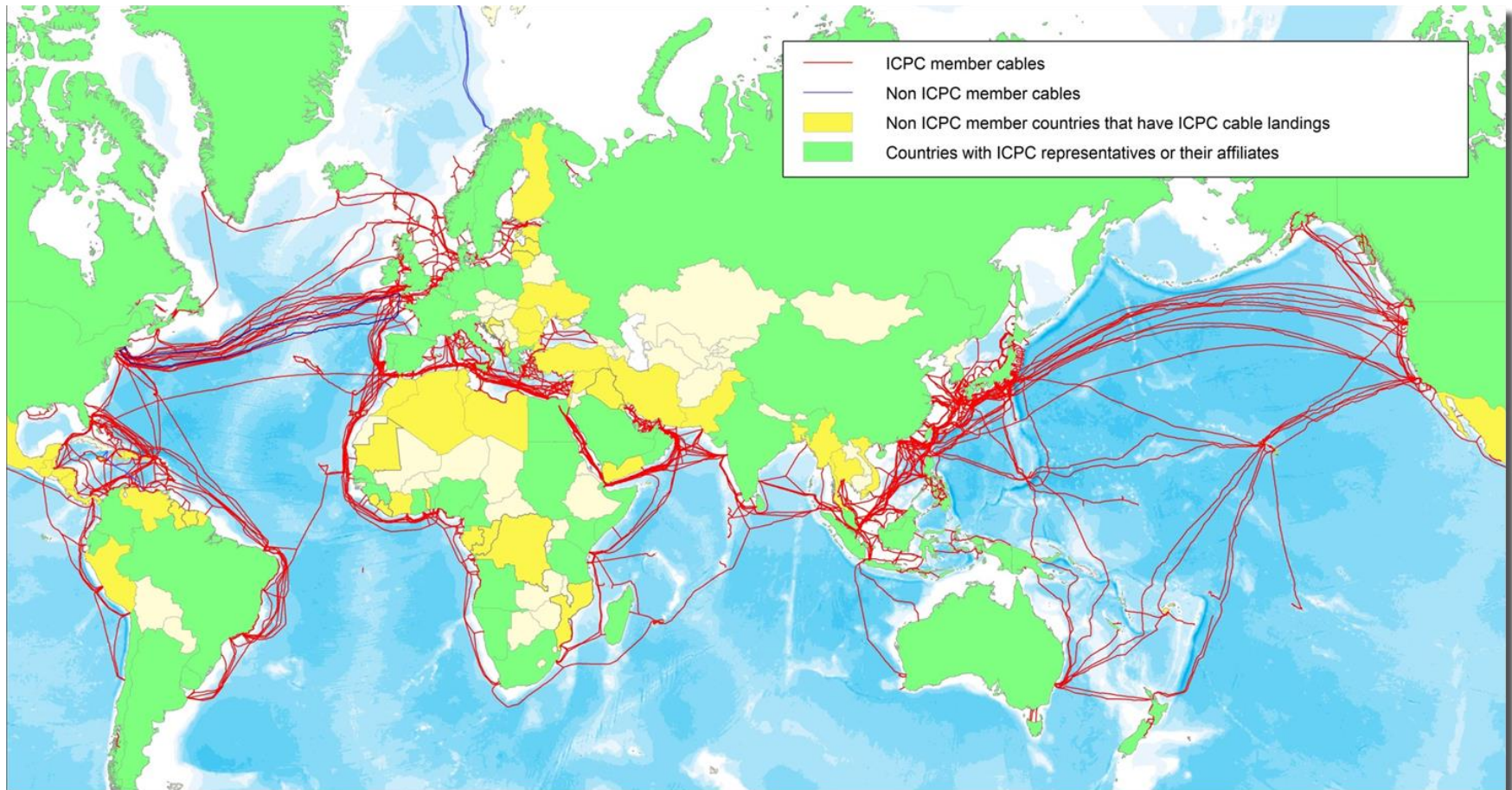


About the ICPC

- Founded in 1958, ICPC is the world's preeminent global organization for:
 - Advancing freedoms to install and maintain submarine cables, and
 - Mitigating risks of damage to those cables.
- ICPC has more than 180 private-sector and government members from more than 60 countries and:
 - Works with governments, other marine industries, international organizations, and NGOs to promote cable awareness, cable protection legislation, and effective international agreements;
 - Commissions peer-reviewed research on the environmental characteristics of cables; and
 - Promulgates recommendations for cable operators.
- ICPC accorded NGO Special Consultative status by ECOSOC
- Liaises with UN Bodies including UNEP, ISA, ITU and IMO and regional Cable Protection Committees (CPCs)
- Actively participating at UN IGC sessions related to BBNJ



ICPC Membership Coverage



ICPC represents 98% of installed International Cable Kilometres

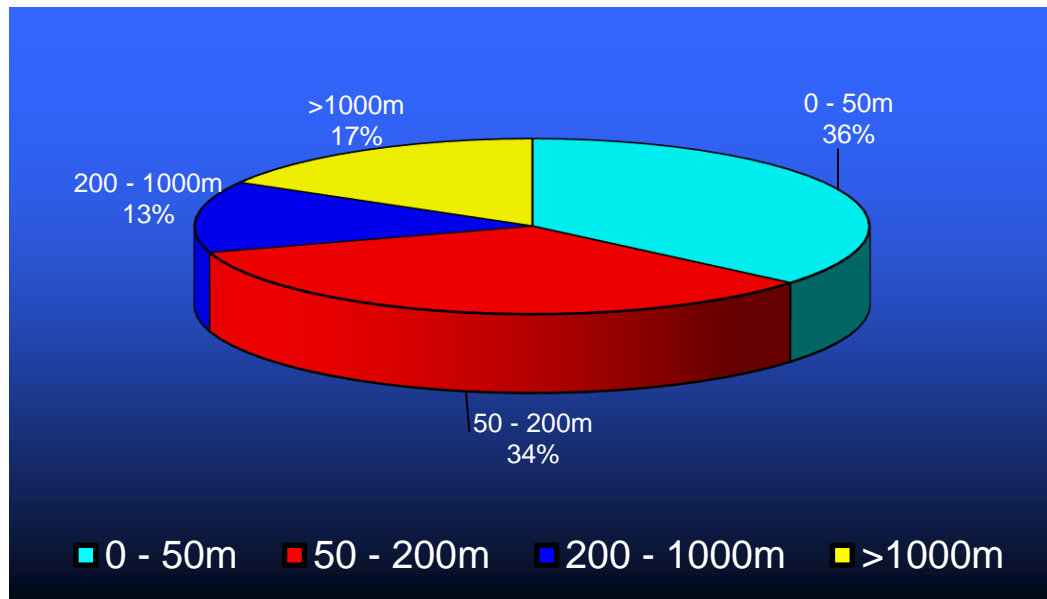


Cable Protection & Cable Awareness

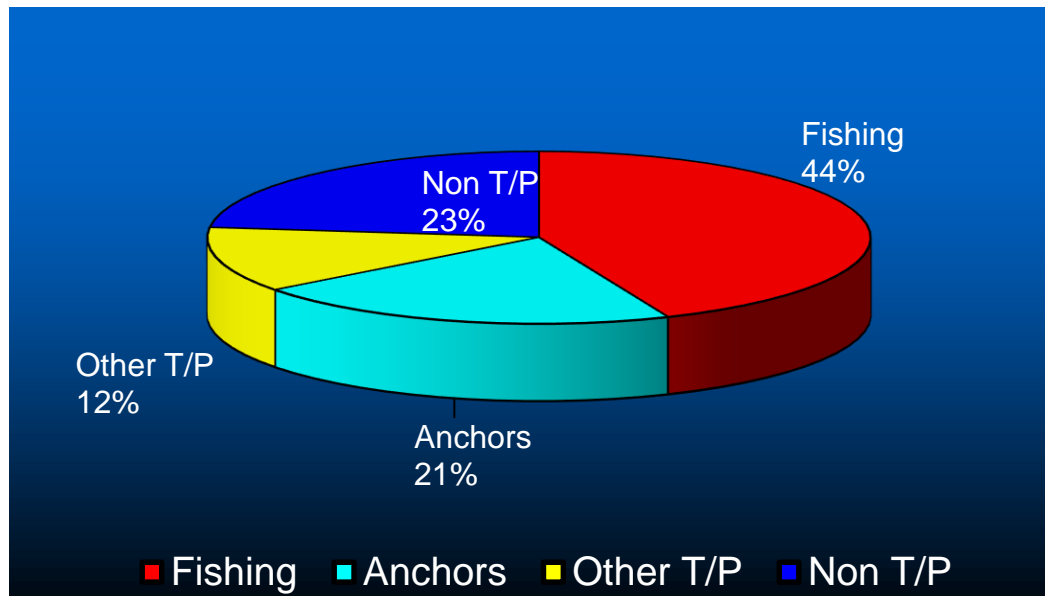
- Cable protection can be engineered through armouring and cable burial
- However, cables do remain vulnerable to third party actions particularly from anchors, fishing activity and increasingly from deep sea mining and renewable energy activities
- Cable awareness initiatives have been developed by regional Cable Protection Committees (CPCs) for example KIS-ORCA for UK/Europe
- Otherwise cable awareness relies on published navigational charts
- The accuracy charted cables is critical; occasional discrepancies occur when comparing charted position with as-laid position; possibly resulting from the use of the 10 point rule employed in some cases
- Cable awareness plays a critical role not only in the protection of the submarine cable infrastructure
- Cable awareness also plays a key role in Safety at Sea as not only power cables but also telecom cables can carry very high voltages.



Worldwide Cable Faults by Depth



Total Faults <1,000m by Cause



Fault Analysis - Conclusions

- 83% of all faults occur in <1,000m water depth
- 71% of faults occur in <200m
- All submarine cable systems transit this aggression zone
- Although there is a need to focus on shallow water cable security, an increasing risk to telecommunication cables is being posed in water depths exceeding 2,000m beyond which cables are currently not routinely charted (IHO S4 B-443) by:
 - Deep sea mining activity
 - Frontier block oil and gas developments

ICPC & IHO

- ICPC invited to participate at HSSC-7 in Busan November 2015
- IHO/ICPC MoU signed April 2016
- Key MoU objectives:
 - Develop uniform cable charting standards for submarine cables adopted globally by HOs
 - Understanding compatible digital input formats for as-laid cable data that address IHO charting requirements
 - Reduction of lead times from as-laid cable data availability
 - A global approach to the issuance of Notices to Mariners for new cables
 - Develop standardized information for nautical publications highlighting necessity to protect cables against damage caused by ship operations
 - Charting policies that address hazards to submarine cables from deep sea mining, oil and gas activities and renewable energy developments
 - Provision of survey data, or metadata, collected as part of cable laying or maintenance activities, to the IHO Data Centre for Digital Bathymetry (DCDB)



ICPC & IHO

- Key MoU objectives – Short Term:
- Charting policies that address hazards to submarine cables from deep sea mining
 - As a minimum S4 B-443 and S4 C-408.1 requirements for charting of cables to 2,000m should be uniformly applied by all HOs
 - Where ISA deep sea mining tenements are demarcated cables should be charted to full ocean depth
 - Charting standards should align with new ICPC Recommendation 17 on Deep Sea Mining



Activities & Achievements to-date

- Adoption by Assembly of Text Box related to Submarine Cables – IHO Resolution 4/1967 as amended by IHO A-1 supported by Germany
- ICPC attended NCWG-4 and resubmitted a proposal to adapt S-4 charting specifications for submarine cables taking into account deep sea mining (amendments to S-4 B-443 and C408) to align with IHO Resolution 4/1967
 - Reported that HOs saw no problem to chart cables providing reliable information provided (as laid routes not planned routes)
 - Reported that no effect to S-57/S-100 standards identified
 - No requirement to change the chart text box (Germany) considering that instruction is provided via the Mariner Handbook
 - In order to avoid new Member States approval on new proposed wording, where possible, reference to resolution 4/1967 will be made.
 - Draft text has/will be circulated around for approval.



Activities & Achievements to-date

- ICPC Action HSSC9/53 – Submarine Cables and Deep Seabed Mining
- Engagement with the ISA continuing under ICPC/ISA MoU:
 - Meeting between ICPC Chair and International Cable Law Advisor at UN New York in February 2018 following invitation by Secretary General Lodge to discuss matters related to submarine cable awareness in deep sea mining areas in light of Exploitation Regulations under consideration
 - ISA see ICPC engagement with IHO as positive and supports ICPC objective to chart cables in the deep ocean
 - ICPC participated ISA 24th Session at Parts 1 and 2 holding side event
 - Joint ISA/ICPC 2 day workshop October 2018 in Bangkok



Activities & Achievements to-date

- Action HSSC9/54 – ICPC to comment on the GEBCO Roadmap for “Seabed 2030”
- Paper submitted at HSSC-10; key points:
 - ICPC recognizes the value of more complete and accurate seafloor mapping in promoting the development and protection of submarine cables and supports the goals of the Seabed 2030 initiative as expressed in the Roadmap
 - ICPC needs to correct the perception that there is a large trove of bathymetric data associated with cable route surveys that could be used to fill in material gaps in existing bathymetric data
 - ICPC believes that there is much less meaningful route survey data, in aggregate, than assumed, and that any disclosure of such data would be much more complicated as a practical and legal matter than assumed
 - The data gathered during cable route surveys is linear in nature with a typical swathe width no more than three times water depth and in most cases no more than 10 kilometres in breadth
 - Even with hundreds of such surveys carried out over decades, data likely to represent <1%



Activities & Achievements to-date

- Action HSSC9/54 – ICPC to comment on the GEBCO Roadmap for “Seabed 2030” continued:
 - Survey companies do not own or have any right to disclose data collected during cable route surveys
 - ICPC itself does not collect or have access to such data
 - Roadmap rightly recognizes that the disclosure of such data may raise sensitivities regarding security and competitive advantage; however, the principle impediment to sharing is a matter of contractual ownership of the data
 - Notwithstanding these issues, ICPC will encourage its members to provide the data for this initiative wherever possible
 - Action HSSC9/55.2 related to crowd sourcing also falls within the framework of Seabed 2030 comments, this action is now considered complete



Activities & Achievements to-date

ICPC was represented at the IHO Crowdsourced Bathymetry Industry Workshop held in Quebec in February 2019 hosted by the IHO and Canadian Hydrographic Service

- ICPC re-stated its position contained in the paper submitted at HSSC-10 in response to action item HSSC9/54
- Participants accepted the confidentiality and ownership of data collected during cable route surveys
- In response to the ICPC comment regarding the limited and linear nature of cable route survey data sets; the view was expressed that any data contribution was valuable
- The suggestion was made that maybe seabed features of interest could be highlighted and not the entire data set
- Provision of cable route survey data to support crowd sourced bathymetric data is an ongoing topic within the ICPC
- One concept to be explored is to provide a data provision opt in or opt out option in survey contracts



Activities & Achievements to-date

- ICPC has created a Charting Working Group comprising a cross section of members from system owners/operators; maintenance companies; route planners and survey companies
- Working Group Terms of Reference have been drafted and agreed
- Terms of Reference address both MOU and Road Map objectives
- Open Geospatial Consortium (OGC) and UK HO could be involved in this.
- Need for budget to cover an Interoperability Experiment followed by Pilot
- Objective to develop an S4XX cable product specification
- If cables not charted insurance coverage and liability of the damaging party may be compromised



Problems & outstanding issues

- Definition of parameters and way forward for pilot project with MSDIWG/OGC remains outstanding
- Budget from OGC for Interoperability Experiment and Pilot received
- Following questions outstanding
 - Where does MSDI fit in the OGC proposed process?
 - The objective is to define an S100 compliant product specification, what are the steps to achieve this?
 - Is it necessary to go through the Interoperability Experiment and Pilot Project process to achieve S4XX product specification?
 - UK HO are interested in discussing the inclusion/integration of cable data into their geospatial platform; where does OGC fit within this development flow?
- On-going debate within the ICPC regarding cable charting policy driven by concerns over security/malicious acts by state and non state actors

Future Work Plan

Activity	Target Schedule
ICPC to work with IRCC to promulgate IHO/ICPC MoU objectives	2019 onwards
Define parameters for pilot project with MSDIWG/OGC	2019/20
ICPC to develop data exchange protocol	2019/20
Develop data standards	2019/20
Complete pilot project with focus on deep sea mining areas	2020
Develop submarine cable product specification for S-4XX	2020
Migrate submarine cable data to S-4XX	2022
Develop on-going cable data maintenance protocol	2020-2022

Actions requested of IRCC

- As this is the first time participating at an IRCC meeting; IRCC is invited to note this ICPC update and report
- IRCC is invited to note ICPC IHO/ICPC MoU objectives and to promulgate these objectives with Regional Hydrographic Offices and Regional Hydrographic Commissions
- IRCC is invited to note the growing threat to submarine cable infrastructure from uncoordinated deep seabed mining activity and the need to chart cables to full ocean depth in these areas, recognising the need for ICPC members to provide as-laid cable data in a timely manner
- As requested of HSSC; IRCC is invited to consider including seabed mining licenced boundaries on nautical charts
- IRCC is invited to note the ICPC Work Plan
- IRCC is invited to note dialogue with OGC with respect to commissioning an Interoperability Experiment and future Pilot project the objective of which is to develop an S4XX submarine cable product specification.





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Sharing the seabed in harmony

