ITU Green standards week

Innovating today for a sustainable tomorrow_

Green Subsea Cable Systems

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Photos courtesy NEPTUNE Canada, from over 2000m wáter depth

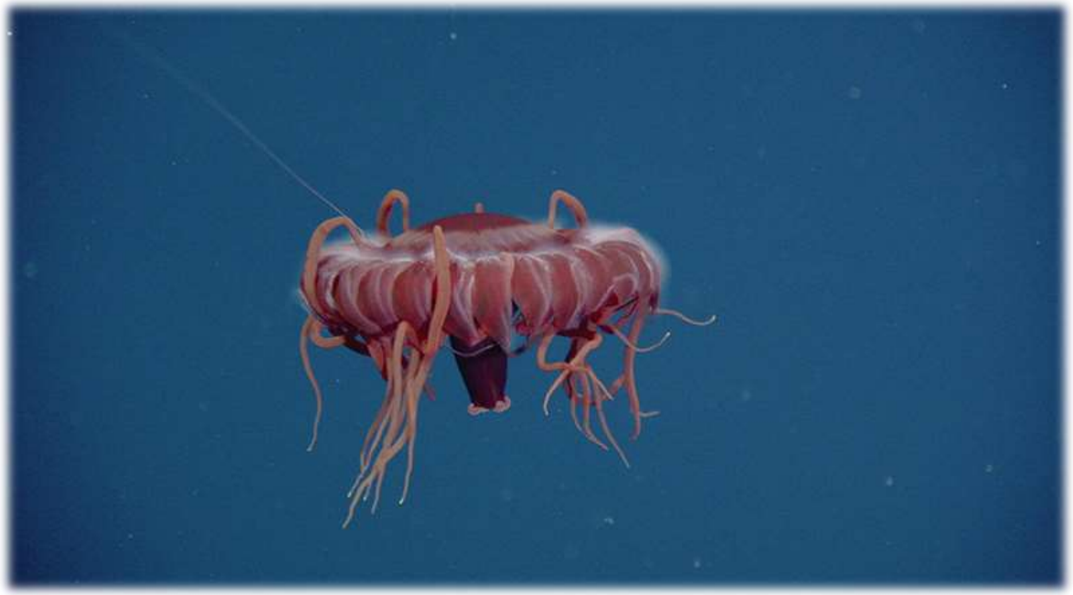
Presenter Profile

- Peter was responsible for the Hibernia and Globenet telecom system and for the NEPTUNE Canada observatory implementations.
- Mallin Consultants provides engineering project management services to owners and prospective owners of cable systems. We specialise in unconventional uses of subsea telecom technology

mallin Consultants Ltd.

Scope of this presentation

- Feedback from face to face meetings with Suppliers, Owners and associated companies
- Proposed response to that feedback
- Next Steps



Scope of presentations to Industry

1. Why sensors are required in the deep ocean
2. Current methodology
   A. Buoys, gliders and drifters
   B. Standalone sensors
3. Dedicated cabled observatories
   A. Benefits of cabled sensors proven
   B. Geographical restrictions
4. Sensor support built into systems – the “Green Subsea Cable System”

Sensor requirements as presented (1)

- Data Rate per sensor location
  - Temperature 0.06 kbps
  - Pressure 1 kbps
  - Accelerometer 15 kbps
  - Total including overhead ~ 20kbps
- Power
  - ~5W per sensor location total
- Time Stamping
  - 50µsec

Sensor requirements as presented (2)

- Physical
  - Small
  - Qualified for shock
  - Able to pass through cable engines
- Maintenance
  - None
- Calibration
  - No intervention
- No foreseeable impact on telecom system through failure of sensor or related equipment

Discussions with: System suppliers

Alcatel·Lucent

NEC

FUJITSU

TE connectivity

SUBCOM

HUAWEI MARINE NETWORKS

XTERA®

Discussions with: System owners

at&t

SouthernCross™ Cable Network

france telecom

verizon

Google™

vodafone

Discussions with: Others

Generalised Feedback - suppliers

- Overall
  - Appears viable
  - Need detailed requirements to evaluate solutions
- Specific
  - A lower data rate would be make more economic options feasible. Consider compression of data
  - Power demand appears viable
  - Time delivery at shore station may be required
  - Solutions likely to be different for each Supplier
  - Some solutions may not involve repeaters

Generalised Feedback – owners (1)

- Positive about the value of the data sought
- Confusion over:
  - scope and intent of initiative
  - Function and purpose of instruments
  - System requirements for instrument support
- Concern over:
  - impact on core business
  - Commercial implications (how will owners be compensated)
  - Viability of the Initiative with respect to consortium cables

Generalised Feedback – owners (2)

- Concern over:
  - impact on UNCLOS protection
  - Negative impact on permitting processes
  - Slow progress of the Initiative
- Positives:
  - Some Owners keen to support implementation of sensors if provided with detailed engineering interface requirements
  - Owners willing to listen

Outcomes from Feedback (1)

- Engineering & science requirements *(Suppliers)*
  - Consider the implications and effects of:
    - data compression
    - time stamping at shore station
    - no calibration
  - Green System (not Green Repeater)
    - Some suppliers will modify repeaters
    - Some suppliers will offer solutions independent of the repeaters

- Engineering & science requirements *(Owners)*
  - Need detailed requirements:
    - to understand potential impact of instrument support
    - To form the basis of costing

Outcomes from Feedback (2)

- Commercial *(All)*
  - Evaluate realistic costs for:
    - Development
    - First implementation
  - Propose cost reimbursement strategies
- Progress *(Owners)*
  - Set realistic goals and timelines
  - Establish overall Initiative timeline
- Communications *(All)*
  - Publish regular progress reports
  - Circulate to Industry beyond the JTF

Summary

- Initiative is viable
- Reasoned costed solutions must be established
- Preparation of costed solutions is a multi-step process
  - Suppliers must develop technology solutions as a basis for costing
  - Detailed engineering interface requirements must be developed as a basis for technology solutions
  - Independent preparation of engineering interface requirements must be funded
- Following preparation of costed solutions:
  - Viable funding sources for development and implementation must be identified
- Further communications and face to face discussions with Owners are to be encouraged

Engineering interface requirements (EIRs)

- Steps:
  - Prepare draft based on existing science requirements
  - Review draft with each system supplier with respect to:
    - Technical feasibility
    - Ballpark cost
    - Compromises required for significant cost reduction
  - Bring system supplier's feedback back to science users
    - Discuss impact of proposed compromises
    - Evaluate value lost or added
  - Prepare revised draft and review again with Suppliers
  - Finalise
- Outcome
  - Basis for business plan and funding source review

Funding for preparation of EIRs

- Independent of Suppliers
  - Funded by a neutral party
- Supplier funding
  - Equal contributions from each supplier
  - Funding suppliers would be primary sources of input to EIRs
  - By splitting the cost, each Supplier's contribution is very small

Conclusion

- Proceed with funding preparation of EIRs
- Prepare EIRs
- Following EIRs:
  - commence business plan
  - Commence seeking suitable funding sources for development and implementation
- Commence preparing scope for wet test(s)

Thank you