

TOWARD AN INDUSTRY STANDARD TO REPRESENTATION DURING SUBMARINE CABLE IMPLEMENTATION

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Abstract: The submarine cable industry has in recent years experienced a shift whereby legacy Project Management Offices (PMOs) of many Cable Owners have been reduced from a fully integrated, standalone implementation capability to ad-hoc performance oversight activities, requiring the increased utilization of external, subcontracted representatives at key phases of a system's design, manufacture, and installation execution.

Representatives are increasingly utilized by prospective Cable Owners to deliver quality assurance to the in-factory and onsite management of submarine cable projects, ensuring specifications, schedules, and safety objectives are suitably realized; the aim of which is to ensure that projects are effectively managed in the field by professional, experienced, and accountable personnel, integrated within a project management delivery service.

As such, the submarine cable industry has not developed the tools nor codified the standard policies for representation during submarine cable implementation.

Topics that need to be explored by the industry include:

1. What is the minimum reporting details prospective Cable Owners require?
2. What technologies are available or need to be developed to deliver effectively and expeditiously such reporting?
3. How can decision-making from the field be better communicated, accomplished and managed?
4. How is data handled and protected for future referral and archival retrieval?

This paper identifies the implementation areas requiring development and available procedures and technologies to remedy, as well as suggests policies that the submarine cable industry in general and SubOptic Association in particular should consider adopting.

1. INTRODUCTION

In years past, cable owners and developers employed in-house project management organizations to accomplish submarine cable system implementation. Today, many owners subcontract in-field representation on an ad-hoc basis instead of providing their own personnel. In addition, many prospective cable owners do not possess the in-house expertise to manage a cable system implementation without calling on the services of industry experts to act as client representative. In 2018, for instance, approximately 20 in-process cable system

builds required client representation on associated survey boats and cablesips.

A client representative is the person responsible for managing the planning and execution of the implementation of a submarine cable project on behalf of the client. This may be an individual from within the client organization or it may be a consultant, such as a surveyor, engineer, or project manager. The client representative behaves as if he or she is the client or as part of the client's organization, even if they are in fact an external resource; it is important that their role and delegated authority be

clearly defined. (Designing Buildings Wiki, 2019)

Client representatives are used at the key phases of a system's design, manufacture, and installation execution, ensuring that projects are effectively managed in the field by professional, experienced, and accountable personnel, and integrated within an effective project management delivery service. According to Jawaharnesan and Price:

“The traditional role of the client representative varies from one of simply designing to the full monitoring of the project. It may also include project management activities such as planning, scheduling, coordinating and motivating.” (Price, 2019)

Companies have previously developed proprietary web-based reporting templates for managing the implementation of submarine systems. In 2013, for instance, WFN Strategies initiated a codifying of all implementation reporting into a single cohesive, integrated company policy system that could be updated and modified as projects and clients required, as well as was reproducible with an ever-changing technical support base. Since 2017, the company has worked with an Over-The-Top (OTT) client to develop a dynamic database and reporting system for all client representation activities, namely system manufacturing, system installation, and system commissioning and acceptance. The resulting PM 2.0 database system has been used by various client representatives on two transoceanic, as well as multiple regional submarine cable projects.

2. MINIMUM REQUIRED REPORTING DETAILS

The client representative is responsible to ensure that the supplier conducts the operations in line with the agreed procedures, and adequate records are taken to ensure that a sufficiently detailed report can be compiled

for permitting requirements, long-term system reliability and future maintenance purposes. As an observer, the client representative does not make decisions regarding the operation or the performance and protection of the system. In some cases, the Client may delegate authority to the client representative, as the on-site acting client.

The client representative provides Daily Progress Reports (DPRs) of activities to the client. The purpose of the DPR is to provide a real-time review of the supplier effort on behalf of a client. A client representative is positioned at a factory or onboard an applicable survey boat or cables ship to observe the testing, marine survey or cable installation, respectively. The client representative performs representation for the duration of the operations. He reviews the contractor's mobilization and reports prior to commencement of activities and provides the Client a written report, identifying issues impacting quality, schedule, and/or cost.

As such, DPRs should typically contain at a minimum the following information:

- Location
- Activities
- Incidents
- Weather
- Schedule of activities
- Crew changes

In addition, activities for any site audits are generally identified in a Scope of Work (SOW) for audit activities, namely:

- Manufacturing process and equipment maintenance
- Q&A process and activities
- Procurement process
- Loading and unloading operation processes and locations

- Specific requirements and activities in SOW

The client representative completes DPRs as required for each project, submitting it to the client and, when applicable, submitting it to the Project Manager, Prime Contractor and/or other contractors if corrective actions are necessary. He reviews all documentation submitted by the supplier and ensures it is completed properly, suggesting corrective actions as necessary, and following up to ensure corrective actions have been implemented. The client representative ensures the supplier is conducting operations that will result in the best possible project. (Client Representative Qualifications, 2019)

3. REPORTING TECHNOLOGIES NEEDED

The client representative should be given access to a private email account onboard the survey boat or cables ship and when necessary be provided the use of a satellite telephone. In addition, the client representative should be given access to a sufficient internet link, where possible, so as to sync with applicable databases he may utilize during the effort.

The client representative should provide a daily summary synopsis of the project status in his emailed daily reports contained in the DPRs. Detailed information in DPR should then be emailed to the client, as well as captured in a depository or document data storage system that can be easily accessed by the clients.

The submarine cable industry needs to move away from static MS Word/PDF reporting to a more robust database approach to client representation. DPRs that are created in a static format cannot be easily retained or retrieved. Nor can they be easily used after the fact. A dynamic database allows retention, retrieval and, most importantly, analysis for single or multiple DPRs from a project. According to John Swift:

Let's start by talking about the difference between dynamic and

static webpages. A static webpage is one that you're probably more accustomed to seeing. It's information that is unchanging, that is simply a snapshot of whatever you created inside of your Access database. Dynamic information is alive. When you publish an object from Access in a dynamic format, it remains editable and viewable with a much similar interface to the one that you're used to inside of Access. (Swift, 2019)

As such, the submarine cable industry needs to move away from static client representation reporting to an approach encompassing a dynamic database.

4. MANAGING DECISION-MAKING WITH THE FIELD

In the past, it was difficult to communicate with the client representative directly when on the high seas. With the advent of better at-sea telecoms, decision-making with the in-field client representative can be enhanced.

There is generally a key principle that the client representative should not make decisions that obligate the client, except in the case of emergencies or risk to personnel or property. According to Alford:

In politics specifically and society generally people are often in a position where either they make decisions on behalf of someone else or someone else is making decisions on their behalf. But empirical social science research has provided little information on the extent to which decisions are different when they are made on behalf of others. (Alford, 2005)

Regular phone conversation, where possible, between a designated Purchaser and the client representative can greatly enhance such communication. In other cases, an emailed DPR might suffice, appreciating that

problematic ship communications can slow reporting and the decision-making chain of command.

5. TECHNOLOGIES REQUIRED FOR REFERRAL AND RETRIEVAL

A client representative Database System should be developed for data protection for future referral and eventual archival retrieval. Such a database should better control the DPR development process and overall consistency of final product formatting, as well as house in the cloud data for factory and marine operations. It should be a subset of the company's project management system where information is managed as a database, is purpose-built by a database developer and is hosted on a suitable cloud-based platform, e.g., Microsoft Azure.

The client representative database system should have the following attributes:

- Should utilize a technology that allows offline and sync to cloud, such as MS Access database
- Light user interface covering all required data entries in the field. User interface to allow for the data entry of all the data items in the daily progress reporting
- Automated/default data entry for items carrying over from the prior day on report no 2,3,4, etc., on a given project same as the previous day information to carry over
- The ability to optimize attached images for slow link transmission
- Dropdowns for list of value items
- Emphasis on user friendly form for data entry
- Form and report data bound to local tables
- Sync button to sync local database to the cloud SQL database

- One to many child tables, including planned events, work summary, diary of events, etc.
- Ability to print daily progress reporting to pdf in polished format
- Ability to send report pdf by email to various contacts identified in the distribution area

6. PROPOSED REPRESENTATION POLICIES

6.1 MINIMUM REPRESENTATIVE QUALIFICATIONS

Purchasers expect client representatives to adhere to their requirements and ensure that all work conducted is completed with the primary intention of acquiring high quality results. client representatives are the Purchasers eyes in the field and are utilized to observe operations and report any action, decision, or behavior by the supplier that could jeopardize the safety, data quality or costs or the project. (Client Representative Qualifications, 2019)

Typically, all shipboard client representatives are required to comply with a company's shipboard fitness for duty policy and IMO-recognized STCW Basic Safety Training requirements or BOSIET certification (Basic Offshore Safety Induction and Emergency Training), or equal to the training. Client representatives who will be onboard supplier vessels will be required to meet the US Coast Guard standard, or equivalent, Fitness For Duty, and will be required to provide documentation certifying Fitness for Duty. Additional information regarding the STCW Basic Safety Training is typically provided for reference, which provides a hands-on training experience with safety equipment combined with classroom instruction and is designed for all seafarers with duties at sea.

To become an approved client representative, several qualifications should be documented:

- CV or resume with applicable experience identified
- Training certifications (e.g., Basic ROV Operations Certification, BOSIET, T-BOSIET, FOET, HUET, Marine Medical Certificate, MMD, PMP®, QMED, Rig Pass, STCW, TWIC)
- Copy of applicable insurance policies
- Identification of any conflicts of interest
- Executed non-disclosure agreement

6.2 Minimum Representation Technical Requirements

Any project management system needs to provide an exceptional, best-of-industry framework for accomplishing the development and execution of complex telecoms projects, while meeting or exceeding applicable Project Management Professional® (PMP®) requirements and standards. It should employ rigorous project control to ensure and document that work performed achieves the highest required standards and level of quality. It should have developed tablet tools, video, and superior digital reporting for in-field operations, as well as enhanced web-based client communications and Quality Control of multifaceted tasks.

In-factory and in-field activities should be standardized and accepted throughout the submarine cable industry. Client representatives should have minimum standards that have been submitted to the client prior to work commencing. A common Method of Procedure for client representation should also be developed. Any project management system that manages client representation needs to be applicable in all the major cable implementation activities, including:

- System Manufacturing
- System Installation
- System Commissioning and Acceptance

- Project Close-out

6.2.1 DAILY PROGRESS REPORTING

Project implementation reporting deliverables need to be developed and agreed. Daily progress reporting needs to be agreed and standardized throughout the industry. Information required by one client is like to be needed by another. Basic information fields should be considered in an industry-wide standard. Client representatives should only be signing their own paperwork and not paperwork generated by the contractor.

Reporting should be more comprehensive and not necessarily just a duplicate of owner documents or DPRs. Deviations or items that are out of the ordinary should be picked up quickly. One of the critical issues is that the client cannot see or fully grasp any incidents that may happen - quality control mishaps or health and safety, etc. Client representatives need to be their eyes and ears to determine and report issues of incidents, as well as any ensuing mitigating resolutions.

In WFN Strategies' PM 2.0 Database System for both survey and cableship-based projects, the following functions are available to the client representative in DPR generation:

- Change/Add Project
- Project Details
- Weather
- Upload Picture
- Planned Events
- RPL and Planned Segment
- Time Analysis
- Summary of Work
- Diary of Events
- Other Activities
- PDF Report
- Send Emailed PDF Report

- Sync to Cloud
- Project Management
- Dashboard

6.2.2 DIGITAL FORMATTING AND ARCHIVING OF DIGITAL REPORTING

A client representative Database System should better control the DPR development process and overall consistency of final product formatting, as well as house in the cloud data for factory and marine operations. The client representative would complete the applicable DPR form, which would then be printed as a PDF and forwarded to various recipients. The DPR would be synced to a cloud-based database, which imports data fields directly from the DPR. The client representative should accomplish the DPR daily.

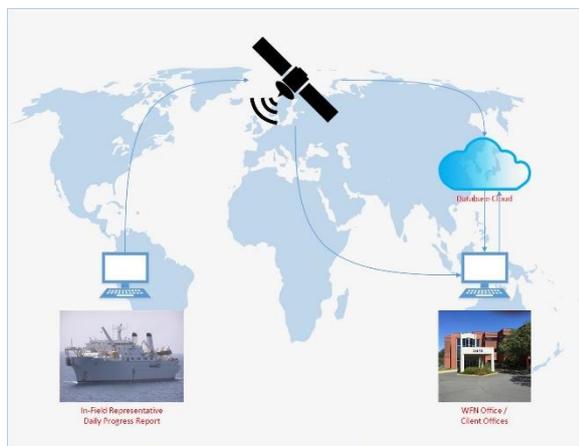


Figure 1: In-Field Communications Process

A SQL project database should be hosted on a Microsoft Azure or similar platform and available ad infinitum, or for the life of the submarine cable system. The database should be made available to the client throughout the life of the system with applicable as-designed, as-manufactured, as-installed, as-commissioned implementation information through a secured web interface.

At a minimum, archives should be kept for the following digital reporting:

- GIS database
- Project documentation management
- Enterprise content management system
- Project filing system
- Master document register
- Project FTP site

7. CONCLUSION

Many cable owner PMOs have been reduced from a fully integrated, standalone implementation capability to ad hoc performance oversight activities, augmented by the increased utilization of external, subcontracted client representatives at key phases of a system's design, manufacture and installation. client representatives are increasingly utilized by the industry to deliver quality assurance to the in-factory and onsite management of submarine cable projects. In a typical project year, approximately 20 cable system builds are utilizing client representative support.

The submarine cable industry needs to move away from static MS Word/PDF reporting to a more robust database approach to client representation. DPRs that are created in a dynamic database can be easily retained and retrieved, as well as easily used after the fact. A dynamic database allows retention, retrieval and most importantly analysis or a single or multiple DPRs from a project.

As such, the industry needs to develop standardized policies for Client Representation during submarine cable implementation outlining the following:

- Minimum technical representation requirements for both in-factory and in-field activities
- Daily progress reporting requirements
- Digital formatting and archiving of such reporting

The submarine cable industry in general and SubOptic Association in particular should develop such policies and database

requirements for Client Representation activities during submarine cable implementation.

8. REFERENCES

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