

Portuguese contribution to JTF SMART Cables

Lisbon, December 14th 2021

Management considerations to elaborate a Request for Tender for a SMART Cable

Abstract:

This contribution intends to present a management concept to facilitate the procurement process for a telecom submarine cable system with the integration of seismic and environmental detection sensors under the principles established by JTF SMART Cables.

It presents a general procedure to conciliate both a Request for Tender for a usual telecom submarine cable system and a Request for Tender for a SMART Cable.

Facilitating the procurement process of a SMART Cable is crucial for the benefit of both cable owners and manufacturers. For this purpose, inspired by the JTF SMART Cables principles, a general procedure is suggested to conciliate a Request for Tender (RfT) for a SMART Cable with the usual procedure for a telecom submarine cable.

The procurement process for a long distance repeatered telecom submarine cable is a mature procedure followed by submarine cable owners and submarine cable suppliers.

The model and structure of an RfT is well known by the effective participants in the process. Planning, technical, commercial, administrative, legal and financing aspects are considered in a specific format well understood during the past decades. Most probably, in general, there is no interest in changing the present "model" neither by the Operators nor by the Suppliers.

This model and structure, which is being used in the last decades, includes the "Requirements for Tender", the "Terms and Conditions of the Contract" and the "Technical Specifications", and has achieved a high degree of efficiency that allows the procurement teams and suppliers to manage and control the process in a stable and efficient manner.

For a SMART Cable it is important to keep unchangeable the current existing structure of the RfT document for a telecom submarine cable. This can be achieved by adding to the current RfT the requirements for a SMART Cable as a specific appendix for the "Observer Part".

If necessary, the constitution of two different teams should be considered to fulfil the requirements of a RfT for a SMART Cable:

- i. the "Telecom Submarine Cable System Part" team normally managed by the applicant (the cable owner), and
- ii. the "Observer Part" managed by a dedicated team.

All process should be run under the applicant supervision, allowing to conciliate the two teams.

Based on the aforementioned points, we believe that the elaboration of an RfT for a SMART Cable will be more effective if the following principles are considered:

1. the SMART Cable RfT should follow the traditional model of a telecom submarine cable system. All the planning, technical, commercial, legal and financial aspects can be considered as usual,
2. as described above, the "Observer Part" should consider the additional requirements for a SMART Cable,
3. For the purpose of sea bottom observation, some specific elements should be included in the submerged part of the telecom submarine cable or in the respective cable landing stations (CLSs); these Elements are:
 - the "**Sensing Element**" (includes sensors in the repeaters),
 - the "**Dedicated Terminal Element**" in the CLSs, and
 - the "**Communication Element**" allowing dedicated and autonomous communication between the "Sensing Element" and the "Dedicated Terminal Element".

The "Observer Part" is formed by these three Elements and will be integrated in a conventional telecom submarine cable system.

With the addition of the "Observer Part", the system is then considered a **SMART Cable**.

Bearing this in mind, the format of an RfT for a **SMART Cable** should include the following main usual documents:

- the "Requirements for the Tender, including the Statement of Compliance",
- the "Terms and Conditions of the Contract", and
- the "Technical Specifications".

To consider the inclusion of the "Observer Part" in the "Technical Specifications", the document should include a specific appendix for the "Observer Part", the "**Appendix for the Observer Part**".

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This appendix shall:

- include a description of the required location of the Sensors,
- detail Performances, Functionalities, Reliability, and all specific particularities for each of the three above-mentioned elements,
- include the information to be disclosed by the Tenderers, in the Tender, in order to clearly demonstrate, prove and fully satisfy the required functionalities, reliability and performances.

With the exception of the **“Appendix for the Observer Part”** all the above-mentioned documents are usually used in any RfT for a telecom submarine cable system.

This appendix should then be considered as just an additional item of the “Technical Specification” of the telecom submarine cable system.

In this way, the **“Appendix for the Observer Part”** which is an integrant part of the “Technical Specifications” of a standard telecom submarine cable system, can be developed in a similar process as other parts of an usual telecom cable RfT, such as the “Terminal Equipment”, the “Supervisory System”, the “Cable”, the “Route Selection”, the “Cable Laying”, the “Acceptance Testing Procedures”, etc.

The **“Appendix for the Observer Part”** should be developed by a dedicated team, naturally with the incorporation of expertise on geophysics, oceanography and environmental, to define the critical aspects of the scientific requirements of the Sensors including their location, testing, use, and data format.

As part of an RfT of a standard telecom submarine cable system, the document “Requirements for the Tender” should normally request the Tenderers to present in the Tender a complete “System Description Handbook” and a complete “Statement of Compliance” in which they must mention the compliance, or non-compliance, with each the clauses of the “Terms and Conditions of the Contract” and “Technical Specifications” or an alternative consideration.

A similar approach should be done in the **“Appendix for the Observer Part”** in the scope of a SMART Cable.

The conciliation between the “Observer Part” team and the “Telecom Submarine Cable System Part” team should be facilitated taking in consideration a few number of aspects:

- i. use of common denominations in the overall list of the “Terms and Conditions of the Contract” and “Technical Specifications”, and
- ii. a common approach in both teams regarding the inclusion, whenever applicable, of a reference to the “Observer Part” or to the “Appendix for the Observer Part” in the “Terms and Conditions of the Contract” and in the “Technical Specifications”; the same is required to be done for all the other items of the submarine cable system (e.g., Plan of Work, Billing Schedule, Acceptance Procedures, etc.).

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This approach would facilitate a common RfT for SMART Cables, formed by two documents:

- the usual RfT for the standard submarine cable system, and
- the "Appendix for the Observer Part".

The elaboration of these two documents requires a minimum conciliation between the "Observer Part" team and the "Telecom Submarine Cable System Part" team and allows a parallel and mostly autonomous work.

This procedure is expected to facilitate the Procurement process for a SMART Cable, maintaining the usual documental structure and the procurement team for the telecom submarine cable and a specific teamwork to elaborate the "Appendix for the Observer Part" and follow the particular aspects of the "Observer Part", having in mind a minimum applicable harmonization between them.

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Annex: The following three figures present a synopsis of the presented concept:

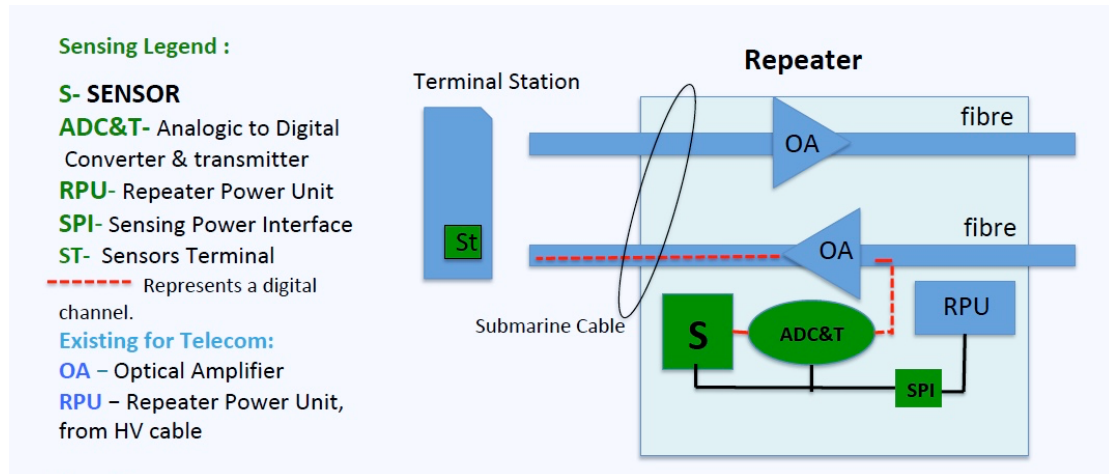


Fig 1: Basic parts for the “Telecom Submarine Cable System Part” (represented in blue) and “Observer Part” (represented in green and red).

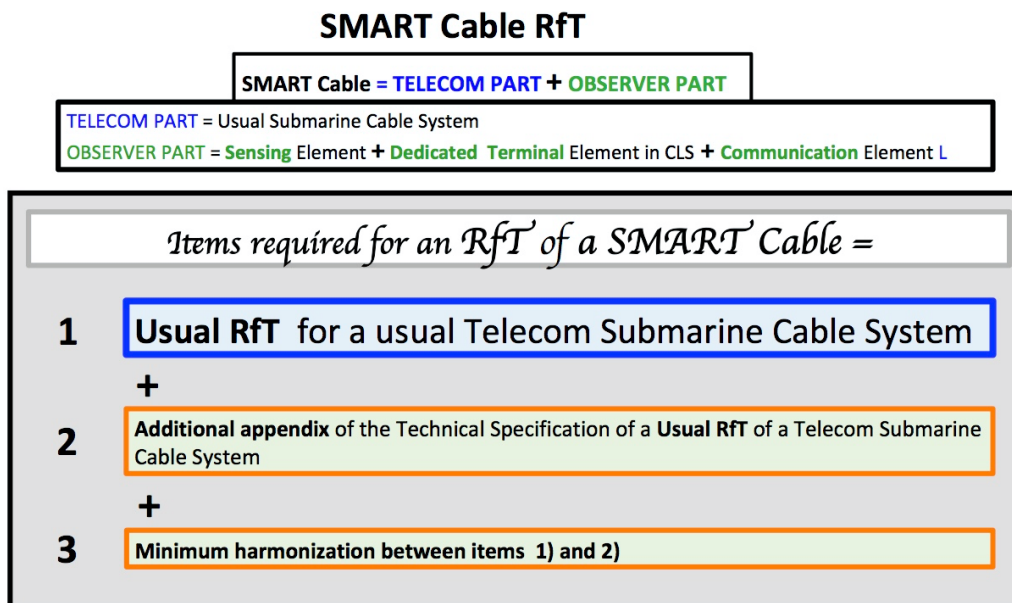


Fig. 2: Presentation of the parts forming a SMART Cable “Telecom Submarine Cable System Part” (the usual Cable) + “Observer Part” and the items required for the RfT of a SMART Cable.

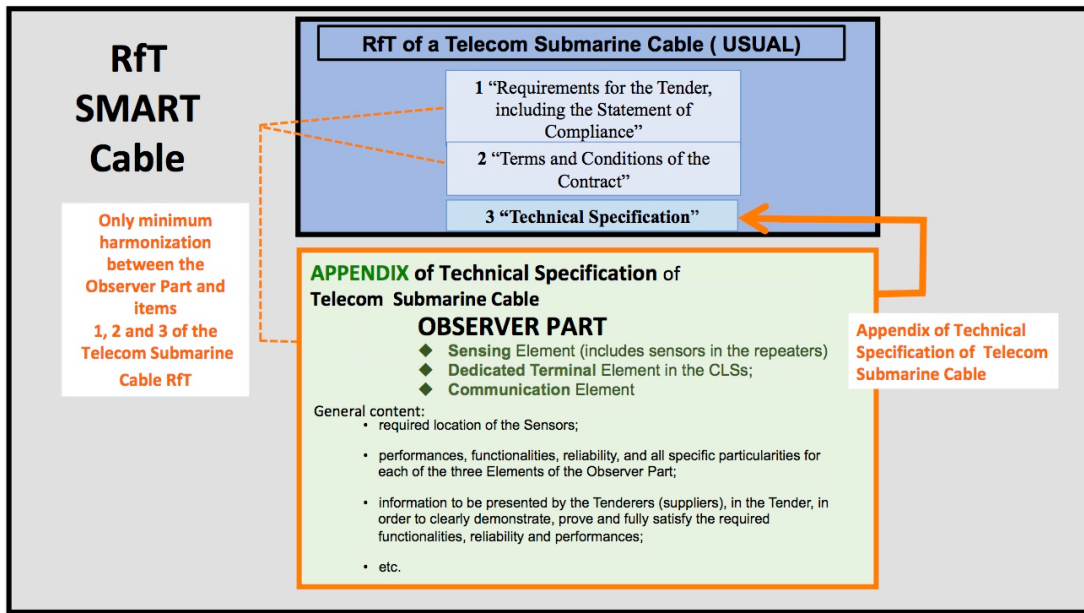


Fig. 3: The additional appendix, the “Appendix for the Observer Part”, is mentioned in the light green rectangle and the blue rectangle refers to the main documents (usual for any telecom submarine cable) that also form the RfT for a SMART Cable (with the addition of the before mentioned “Appendix for the Observer Part”).