

## How to make a simple supply contract in a complex world

### **Abstract:**

*The subsea industry has always battled with conflicting pressures in the process of getting a system into the water. Even if the very first systems in the mid 1800's were, astonishingly, private ventures, the need for cross-border risk and cost sharing led to the consortium approach and to an inevitable complexity in management structures and decision making. This in turn slowed down and impeded the projects, through all their phases – conception, contract forming, management and exploitation, including backhauling and eventual upgrading.*

*But surely the world has moved on? C&MA frustrations and a tech-driven push for lower project and life-cycle cost generated significant changes in the way systems are scoped and the way they are/ conceived and managed. However, it's not clear that these initiatives have always resulted in the wished-for gains at the supply contract level, often creating new inherent conflicts in the process.*

- 1. Open & disaggregated systems requiring technical and commercial definition of scope and handover points*
- 2. A disproportionate focus on cost that can lead to disjointed contracts with tightly defined technical terms and a price, and with residual – but still critical - commercial terms negotiated after the 'deal' has primarily been agreed.*
- 3. Spectrum and ROADM BU control – which rely on both independence and co-dependence of system purchasers*
- 4. The expedited rate of reaching contract agreement (primarily for marketing purposes in this day of social media 'Fake news'?) with a prolonged period before CIF – implying many changes to the system design in between*

*This paper will look at these four aspects of increased negotiation complexity over recent years and propose, where feasible, alternate approaches or evolutions without losing sight of the end goals that provoked these industry step changes.*

### **Introduction**

What if we were to finance the next transoceanic submarine cable by creating a Special Purpose Vehicle (SPV). Then crowdsource the equity, with a trading platform for the shares allowing visibility of the fluctuating price of the shares as the project proceeds, backed by 'take or pay' contracts from the key users of capacity for the 25 year design life of the cable, and with a price for the capacity that ensures an eventual dividend stream for the shareholders, but declines once payback is achieved....

This is not in fact a complex financing scheme dreamt up in the City of London and likely to feature in the sequel to the film *The Big Short*, this is how the first trans-Atlantic cable was financed in the 1850's. Sometimes it can be useful to remind ourselves that the world of submarine cables, their financing, their commercial exploitation, operation and maintenance and the contract structures around them has probably never been anything other than complex. There are common features to most submarine cables that drive complexity; they are large scale multi-disciplinary international projects, a product of cooperation between companies who ordinarily are competitors, they are inherently risky in their implementation and in a common early-adoption of new technologies and

yet each project is a one-off. They are also likely to have a significant focus within the customer organisation, given the levels of investment required, the wish to see early delivered benefits as anticipated in the business case, the potential for unwanted public attention in the press and so on.

### **170 years of complexity**

And yet.... there is now 170+ years of experience in the supply industry with a number of the present suppliers tracing their roots back to those original cables. The main elements of implementing a submarine cable have remained broadly the same; survey, cable manufacture, lay vessels, shore-ends, powering and systematic project planning. The last transoceanic cable in fact to fail to provide service was the first trans-Atlantic cable 170 years ago. The subsea cable industry had a probably unequalled record over the following 170 years of delivering turnkey projects that work, and that are typically within a few percent of their budget objective compared to, say, the Channel Tunnel (+80%) or the HS2 trainline in the UK (+71%, before work starts), or the global average across 52 so-called mega-projects in 1984 of +88%. So just how risky are subsea cables? And how complex does the contracting exercise still need to be? Why do we feel we often have to re-invent a wheel when those same wheels have been turning in this industry for many generations?

If we take a trip through time, we see constant experimentation and evolution of supply contract structures: single purchaser – consortium – mini-consortium – ‘Mini-consortium SPV’ (Gemini, SX, PTAT), consortium with embedded SPV (EASSy/WIOCC) and others. Conceptually, system developers fall into two groups; those who develop cables to commercialise them and make money from the cable as a business, which we can call Independent Infrastructure Providers or IIPs, and those for whom the cable is an OpEx cost line, where the new cable may reduce the existing cost base, or facilitate some other activity of the company which is where the money is really made. At the cable level, and even at the individual customer level, there are of course hybrid forms where, for example, a consortium cable which is principally built for ‘own-use’ capacity, also has customers reselling some or all of their capacity. Or, within the shareholders of an SPV, and certainly within the customer base, it is likely that some of the capacity is own-use and some for re-sale, potentially creating an interesting dynamic where the SPV, through fibre pair or spectrum sales, may create a competitor to itself.

Again, tracing the history right back to the first cables, variations in finance structures and the cost of finance are wide, and are driven by the ability or otherwise to leverage the equity funding in an area of infrastructure investment that should provide a utility-type yield and yet rarely does, or at least rarely with sufficient certainty. This difficulty in raising debt and the associated extended due diligence requirements plus an uncertainty of timing and outcome, mean that an unexpected proportion of submarine systems are entirely equity-financed. This pattern goes back to the start of the industry and is obviously particularly true of consortium cables where the lack of a cable-owning legal entity combined with the capex/own-use nature of the spend has meant that consortium cables have traditionally sat, inefficiently, on the balance sheets of the purchasers. Notwithstanding these inherent constraints, the consortium model has endured and is still the vehicle of choice for complex joint traditional operator (PTT) investments.

### **A Shifting Industry**

However, since the 90s, there has been widespread frustration with the consortium model that goes beyond the considerations around system financing. These frustrations stem from the convoluted and at times tortured decision-making processes in consortiums, from the way the commercial framework of a consortium cable, including station access, backhaul and interconnection can be distorted to the benefit of one, or a few, dominant members of that consortium, and from the often extended launch period, dealing with the C&MA, system configuration, RFQ drafting and issue, and supplier selection and negotiation. The late 90’s turned the industry into a financial wild west,

documented in Om Malik's book, *Broadbandits* (amongst others), where he describes in his words the '\$750billion dollar telecoms heist' running in parallel with and fuelled by the dot com bubble. In some respects, we still live with the fall-out of that period as banks and investment funds remain shy of investing in a sector with such well publicised and career-ending losses.

This fall-out continues to un-balance the industry as it favours those customers with cash against those who need to raise finance. A number of recent SPV systems that have Come into Force are a testimony to the persistence of their sponsors who can spend five years (or considerably more) putting in place the pre-conditions for financing which frequently make the deal a favourable one-way bet for the financiers. An SPV ought to be a financially and time-efficient way of building a network that then typically offers open access to any operator or other user of capacity. Funded with a mix of debt and equity, it ought to be easy to launch a good project in a global market where there are more funds available than good projects to absorb them but, sadly for the industry, it remains a minority sport dealing, for the most part, with niche routes.

### **What is New?**

So there is no lack of complexity in the history of the subsea industry but it is apparent that, in some respects, new models of doing business, new entrants and new challenges to the long-standing technical conservatism of the industry are serving to 'complexify' still further the process of supply contract drafting, negotiation and closure.

New entrants are principally the content providers, building networks for their own use and increasingly swapping to obtain route diversity or gain an operating partner, but rarely selling. It would be wrong to be critical of the approach taken by the content providers. They are rational businesses optimising shareholder returns within the regulatory context they are presented with. Subsea systems are approached as a purchasing decision like any other because they represent simply a cost of doing business so the imperatives are to cut cost, reduce the implementation period, obtain a firm fixed price and support innovation where it lowers the cost of the chosen metric. Long-standing and tested specifics of the industry and of risk allocation are often ignored, with the new generation of purchasers having the power to impose. The content providers also find themselves in the role of kingmaker when considering anchor tenant purchases from an SPV and this, combined with the rate of build out by the content providers (or threatened build-out), can undermine an SPV business case making financing an uphill struggle.

In the last decade, a further trend has been the difficulty for the PTTs to monetise their subsea networks. This is visible in the progressive disbanding of the PTTs specialist subsea departments, with many of the skilled personnel moving across to where the activity is; with the content providers. These two factors have accelerated the decline of the consortium for non-data-centre builds, and even limited the ability of the PTTs to invest alongside the content providers. There are other elements that reinforce the shift of buying power, such as the varying route drivers (point to point data centre connections or connectivity to population centres) or the necessity to participate at fibre pair level. The irony is that all players in the supply chain would claim to want fair prices, a quick negotiation process leading to early exploitation/profits and a healthy supply industry. However, this concentration of power has visibly resulted in lower margins for the suppliers and the growing participation of PE funds rather than industrial shareholders on the supply side.

With some exceptions, the subsea demand world has therefore broadly split into two camps (often represented by a single or individual customer in each case, whether SPV, or content provider) with different issues for the vendors, but similar consequences. It might be wrong to say that the subsea world is more complex now than it has been in the past, but it is certainly facing new types of complexity, with fresh challenges. The next section of this paper will assess a number of these,

originating respectively from the concerns of content providers, consortiums and SPVs, but with inevitable overlap.

### **1. Open & disaggregated systems**

This industry trend has been driven largely by the content providers although its roots are in a change of technology. This trend requires original thinking around the technical and commercial definition of scope and handover points.

It arises from a mix of two things:

- a) The Shannon Limit constraint and the consequent limited technological leaps in submarine line terminal equipment (SLTE) compared to previous generations. This has resulted in a progressive commoditisation of previously complex electronics, which has limited the proprietary nature of systems. This, coupled with a long-present commercial mismatch between system and SLTE implementation timelines and the pace of development of SLTE, means that a Purchaser risks being one or two generations out of date if the SLTE is ordered too early.
- b) A belief amongst some purchasers that the value-add of a system integrator is minimal and risk is either manageable with a competent team, or that the cost impact of any bad decisions is containable or non-material.

The challenge here for the buyer is to define the parameters of the subsea system and the transmission equipment coming from different sources in an effort to avoid 'finger-pointing' when the system goes live. There is certainly a view, however, that the extent of this problem is overstated. Firstly, there are not two moving targets in specification terms, which for sure would make the challenge far harder to achieve. The transmission equipment is, as we've said, largely commoditised so if, for some reason, there is a technical peculiarity with one brand, others are available that will avoid the issue. Secondly, although every system is unique, the components of the system are usually familiar and have a track record. Rather than trying to define a piece of third-party test equipment to measure a parameter (G-OSNR) on which different parties may hold different views, why not define a 'golden repeater' which when combined with a certain fibre and a certain system design can be demonstrated on a test bed to produce a satisfactory system result. This keeps the challenge 'in-house' for the suppliers and would therefore speed up the negotiation of the supply contract and remove doubt at the system acceptance stage. Additionally, each repeater would be accepted against the 'golden repeater', and other sub system level tests would take place, as an interim reassurance. The industry does not have a history of 'epic fails' of the type that could only be caught by a G-OSNR measurement, nor is there a variability of output of system design that requires definition by an interface specification that is itself hard to define.

There are also early signs of further disaggregation of the turnkey system. The shorter business time horizon of the content providers is linked to a different view of risk and the impact of risk, meaning that more courageous purchasing decisions are possible. We are seeing the industry in general move from the 'IBM buyer' approach to a more dynamic and experimental view of what turnkey can mean and a re-appraisal of the magnitude and impact of risk.

It is of course possible that this will be a continuing trend until a well-publicised error of coordination (operational or technical) becomes industry folklore and dampens enthusiasm. It should be noted that subsea suppliers come in different flavours, with some maintaining a near-insistence on turnkey supply and others being open and willing to take on a system integration role on behalf of the buyer, relieving the buyer of the uncertainty in an area where he may lack competence.

Without doubt, a move in the direction of disaggregated systems will throw more focus on interface specifications and generate more challenges in a similar vein to the definition and use of G-OSNR.

The buyer who takes this route to system procurement needs to weigh up their technical (and commercial) ability to act as system integrator – and importantly being able to take the risk associated with being a system integrator. The opportunity is available due to the closeness of different manufacturers' designs and lack of proprietary obstacles, but if the buyer remains fundamentally nervous about the risks, then the time lost in attempting to ensure that no interface parameter escapes definition in the supply contract(s) specification will negate some or all of the benefit of procuring in this way. Time to market or being ahead of the competition is often the most important parameter to the buyer's Board, and this can easily get lost in an attempt to ensure that the delivered system is defined to within +/- 0.5% of the planned outcome.

## **2. A disproportionate focus on cost**

It is usually the case that too much pressure on one single aspect during a contract negotiation will generate conflict and potential exposure elsewhere – an effect that can be likened to trying to squeeze a balloon into a smaller space. In an industry where systems are sold for 25 years with long warranties there is also a partial case to be made in support of its traditional conservatism, with at least a balance to be struck against creative disruption.

A focus on cost may lead to disjointed contracts with tightly defined technical terms and price, but with residual, and still critical, commercial terms negotiated after the outline deal has primarily been agreed. It may also lead to a supply base intent on clawing back lost ground and building in opportunities to do so during the negotiation. Pushing the supply base to the point where its sustainability may be called into question is ultimately counter-productive even if the high from the short-term gain appears hard to resist. It is probably true too that the suppliers are armed with a better knowledge of the 'known unknowns' in system design and implementation than the buyers, and excessive pressure in one area will lead to these being commercially exploited. Employing very experienced system supply negotiators is one defence for the buyer, but a better approach is to maintain a balanced view of the short vs long term impacts of a given procurement strategy.

A disproportionate focus on any one aspect will also tend to invoke the law of unintended consequences. As an example in the technical domain, and without it being a deliberate choice or even a debated strategy by buyers, active supervisory has largely become history (only one system supplier now maintains active supervisory). There is the gain in the short term, but these are systems acquired for 15 to 25 years, and the O&M teams attempting to understand the ageing of the subsea plant ten years from now may have a different view on this almost accidental shift in the industry offer.

## **3. Spectrum and ROADM BU control**

Of more relevance to consortiums, which are inevitably structured around both an independence and co-dependence of system purchasers, there is a need to maintain flexibility of system configuration through the system life, to deal with the uncertainty of bandwidth growth and traffic flows between the consortium members and externally. 'Hard points' in the system design, where flexibility is not provided may impose unwanted commercial constraints later in the system life. Subsea system and component design has recognised the issue and the availability of ROADM BUs, whether band switchable or WSS-based, of fibre gateways that deal with third party terminal or spectrum allocation, and of the necessary elements for complex powering schemes to take account of sovereignty issues without impacting system reliability, have all eased the commercial problems of writing a supply contract that deals with not just the system design on day 1, but the need for the system to evolve over several decades.

Many issues on consortium systems, however, stem not from a lack of technical solutions or from the supply contract restrictions, but from constraints embedded in the C&MA. Technical solutions exist to upgrade the capability of a BU – for example from a fixed OADM to a WSS with a relatively low cost/low risk/short outage marine operation (which doesn't touch the power-switching BU itself) – enhancing the capability of the network and thereby potentially dealing with an unanticipated evolution of traffic and bandwidth. These upgrade possibilities need to be taken into account from day one in the inter-purchaser contracts (C&MA, Landing Party Agreements, etc.) as well as in the supply contract if the already existing technical flexibility is to be available to the purchasers through the life of the network.

#### **4. The expedited rate of reaching supply contract agreement**

This issue principally affects SPVs (or project-financed systems) which for both marketing and financial due-diligence purposes are obliged to push for supply contract closure when many aspects remain to be defined or at a point where their importance is less clear. There is then often a prolonged period before CIF – implying many changes to the system design in the interim, or to the regulatory framework or weather window, and so on. This is a tough issue to manage because the fundamentals of the issue are relatively immovable. Taking more time or employing more people to try and define more tightly the supply contract doesn't help as it a) delays the project, b) costs more money at a time when money is often very finite and c) the now tightly defined issues will inevitably be the wrong ones.

In many ways it may be better to accept the inherent fluidity of the contract in these situations and adapt the relationship with the supplier accordingly. The success of the project will depend on the teamwork between supplier and customer. The supplier typically needs to be patient and provide a lot of support in dealing with an often very iterative process of project configuration and definition. The flipside of this is that the supplier to customer relationship cannot be that of the hard-nosed purchasing department. The customer and supplier need to work in a partnership – both will succeed, or both fail, together.

#### **Conclusion**

The subsea industry has a long and proud history and has always dealt with a complex world by offering innovative solutions in the technical, commercial and financing areas, visible even in the 1850's. This has always been balanced with an innate conservatism, driven by a 25-year design life and the importance and long-term nature of the investment decisions. It is possible however that we are now seeing, in this industry as in so many, a greater level of disruption and challenges to established thinking than we have seen in the past. This creates new problems for the suppliers and the purchasers alike, but there is always a commercial answer even if the weight of industry custom and practice can mitigate against the early adoption of available solutions. The objective of a simple supply contract, meaning one that is quick to negotiate and yet one that deals with risk allocation efficiently requires that the framework of the contract is aligned to its newly disrupted environment, which requires fresh thinking. Attempting to adapt something that is not fundamentally aligned will lead to an increasingly dense supply contract that grows in scope and reach but still fails to control the supplier and more importantly fails to provide customer satisfaction.