

THE ACE PROJECT: HOW TO MANAGE ALL CHALLENGES THAT ARISE TO ENSURE A SUCCESSFUL DELIVERY

Cynthia Perret, Olivier Ségalard, Patrick Soen (France Telecom Orange), Amadou Tidiane Diaw (Sonatel)

Email: cynthia.perret@orange.com

France Telecom Orange – IBNF/NISBO/NSS – 61 Rue des Archives 75003 Paris

Abstract:

June 2010 saw the launch of construction for the ACE Cable, an ambitious two-phase Africa to Europe project with more than 15 landing points and 19 parties involved, and a major step in reducing the digital divide in West Africa. ACE brings seven countries access for the first time to a submarine cable, while the others have gained diversity, enhancing their connectivity to the global internet.

In a project of this size, even with the most careful planning, new challenges were bound to arise regularly. This paper reviews these various challenges and the solutions put in place by the stakeholders to successfully deliver the first phase of the cable.

1 A BRIEF DESCRIPTION OF ACE

1.1 Overall context and objectives

Initiated by France Telecom-Orange, and administered by a consortium of 16 operators, the Africa Coast to Europe (ACE) cable is an ambitious project that links Europe to West Africa, which became a reality in October 2012. As it benefits from the latest technologies, ACE is a major step in reducing the digital divide in Africa, by bringing access to an international broadband network at a lower cost. For seven countries, namely Mauritania, Gambia, Guinée, Sierra Leone, Liberia, Equatorial Guinea and Sao Tomé and Príncipe, ACE is a first access to an international submarine cable, while the others have gained diversity, enhancing the reliability of their network and their connectivity to the internet. Two landlocked countries, Mali and Niger, have also taken part to the consortium, allowing them to benefit from an increase of capacity.

The strategic aspect of ACE was recognised in the early stages of the discussions, with the involvement of the World Bank, which agreed to support

many countries making their first cable, by offering loans. This involvement of the World Bank, while it has eased the funding of the cable, also brought additional expectations, such as regulatory reforms to ensure access to all operators in the supported countries, or additional environmental requirements to be observed by the consortium. The expectation was high that ACE meets its deadline for delivery, in the second half of 2012. With a contract signed in June 2010, this was an ambitious target, and the project team had to be fully involved and coordinated, which is not always an easy task when people are working from more than 15 different countries!

1.2 System Description

ACE is a 2 fiber pair system, linking France to South Africa through 4 segments:

- Segment 1 links France to Senegal, with branches to Portugal and Mauritania. In a second step, a branch to Canary Island is planned to be built.
- Segment 2 links Senegal to Côte d'Ivoire, with branches to Gambia, Guinée, Sierra Leone, Liberia

- Segment 3 links Côte d'Ivoire to Sao Tomé and Príncipe, with branches to Ghana, Nigeria, Equatorial Guinea and Gabon. In a second step, branches to Benin and Cameroon are planned to be built
- Segment 4 is to be built, linking Sao Tomé and Príncipe to South Africa, with potential branches to Democratic Republic of Congo, Angola and Namibia.

consortium), the delivery of the project on time and on budget was itself a challenge. And as in every project cycle, new unexpected elements were regularly arising, that had to be carefully handled to remain on track. Here are a few of the challenges that were met during the construction phase and that could have jeopardized the project. For all these points, the workaround solution will be presented in the next chapter.

2.1 Funding

The prerequisite to all contracts coming into force is obviously the funding. With a total budget of 700MUSD, the investment was significant for all parties. For most of the consortium members, Bank guarantees had to be put in place to ensure the coming into force of the project. Should a party fail to provide such guarantee, or to secure a loan, the entire project would have been impacted, either by being delayed or by being reduced in terms of the geographical area served, reducing therefore the commercial interest of ACE. The aim of the project team was to ensure that despite such unfortunate situations, the project would go live, and that its strategic interest would be preserved.

2.2 Stations availability

With 11 new stations for the first phase of ACE, coordination was a key point to ensure delivery on schedule. Should one station be late, the entire planning would have to be revised, with potential consequences for the RFPA date. Building from the start these 11 stations in less than two years became at an early stage of the project part of the critical path, with close monitoring required. There were many uncontrollable elements that could lead to delays: bad weather and the rainy season for example did impact construction work. Customs were another source of concern for equipment delivery, or the lack of national power grid in some places, where

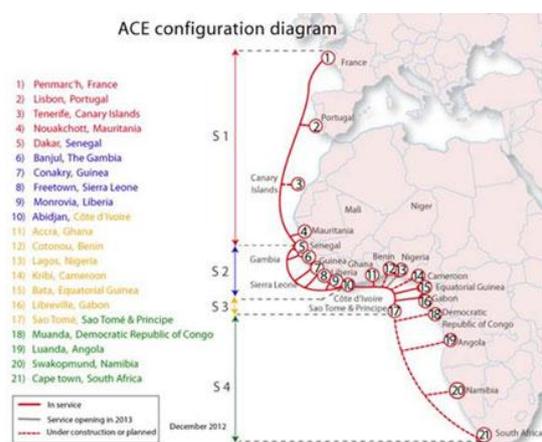


Figure 1 : The ACE Cable

With a deployed length of 11 000km in the first phase (and total length of 17 000km once the system is complete), ACE has been designed to be compatible with 40G technology to be implemented at day 1. With the current state of the art, the achievable capacity is 64*40G at a minimum, which will undoubtedly cover the needs of West Africa for the forthcoming years.

2 THE CHALLENGES ENCOUNTERED

Because of its strategic interest, ACE was destined to succeed. With its size, its geographical extents and the number of its stakeholders (with many of them involved for the first time in a submarine

equipment (both telecoms and non telecoms) had to run permanently on generators. In terms of safety, these were obviously not the best conditions, and specific attention was needed to ensure that fuel levels would be sufficient at all times to avoid fuel shortages and power cuts.

The challenge was to mitigate the delay encountered by one station or another by modifying the planning continually, but still with some human resource constraints to be considered. We will see that flexibility from all stakeholders was the key point to successfully manage this critical path.

2.3 Marine & Permits

One of the most difficult points to handle during a cable deployment remains the marine portion, including the obtaining of permits. On the African coast, in addition to the standard Permits in Principle and Operational Permits, the issue was also to get the agreement of the oil concession owners, as the area is covered with such concessions.

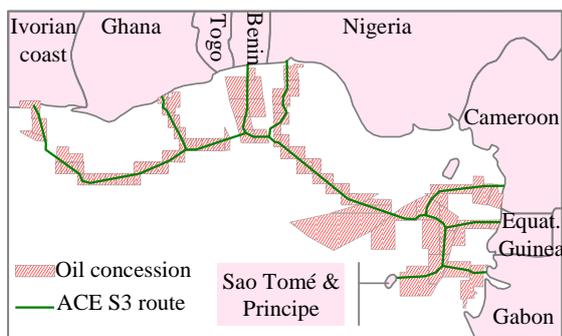


Figure 2 : Oil concessions on Segment 3

While ACE was quite fortunate in its discussion with oil concession owners, in some cases, misunderstanding between the parties led to situation that could have had serious consequences. How to handle the request of a third party to move the cable when it has been laid months before, with no cable ship in the area? When this situation arose, in April 2012, ACE faced one of its most difficult moments. The

network commissioning period was about to start, the RFPA date was publicly announced for 6 months later, when ACE was faced with a demand to modify its marine route. Both in terms of costs and planning, the impact on ACE could have been enormous. This was, next to the civil unrest encountered in Côte d'Ivoire described in the next chapter, one of the most critical parts of the project to overcome.

2.4 Outside events

If there is one thing on which, despite all best effort, we have no control over, it is everything related to political events or decisions. During the deployment period of ACE, many countries were to go through elections. While in most cases, such elections took place smoothly, in Côte d'Ivoire, the presidential election at the end of 2010 soon gave way to civil unrest. The fighting had multiple consequences, human, political and economic.

For ACE, the period was a difficult one too. On the one hand, the most important thing was to support our partners from Côte d'Ivoire. On the other hand, the project had to move on despite the difficult situation. As Abidjan was a double landing and thus a key location for ACE, when facing the embargo and the prohibition to enter territorial waters, import equipment and for our contractor, an inability to discuss with certain authorities the permitting process, the project was at risk. Should we suspend the work and wait for the situation to get better, with no visibility on the timing? Or should we try to find ways to mitigate the impact, to avoid jeopardizing the participation of Côte d'Ivoire in the consortium, and with a minimum of additional cost for the project? Contrary to any other topic, the solving of the crisis was out of our hands, and we had to adapt and find the best way to move forward.

3 HOW TO MINIMISE THE IMPACT OF ALL THESE EVENTS – THE WORKAROUNDS

Notwithstanding some technical issues and the cable cuts encountered before the RFFPA, the events described above were probably the most challenging to deal with during the deployment phase of ACE. Nevertheless, and despite these challenges, the project team managed to deliver the project on time and on budget. Here are some of the workarounds implemented, and some of the reasons why the project was a success, despite the unexpected events encountered.

3.1 Be proactive and flexible at all time

While it seems obvious that being proactive is mandatory to successfully deliver a project, in reality, when so many parties are involved, this is not always the spontaneous behaviour. Fortunately, on ACE, all parties were aware of the importance of the project, and their commitment was total. Therefore, and thanks to the implication of all, it was relatively easy to elaborate workaround solutions – implemented or not – to allow the project to continue. The best example remains the situation encountered in Abidjan between the end of 2010 and April 2011. As already stated, Abidjan was a key landing point. Had the civil unrest continued, the entire system was at risk, with two segments that could not be deployed and all ACE stakeholders potentially impacted. Design was fixed, technical configuration was agreed, and changing the double landing was not a possibility. The technical team, aware of the risk, worked on alternate temporary configurations that would first, not delay the deployment of the remaining part of the cable and second, allow Côte d'Ivoire to come back at any time in the configuration. Surveying was going on at that time, and the decision was taken to go for an

additional survey that would by-pass Abidjan, with a temporary configuration that would be degraded compared to the technical specification, by merging two segments. The aim was to save time: should the crisis be resolved before the lay, the initial configuration would be kept. Should this not be the case, the by-pass would minimise the overall delay, and the initial configuration could be implemented at a later stage. By having a solution for each situation, the project team remained confident in its ability to progress.

The same anticipation was required for the stations: with one station being late, how could it be managed to avoid an overall delay? In one landing, it was decided to loop the cable in the BMH and to accept some temporary limitations for the system powering. In other stations, additional boards to manage the chromatic dispersion map were bought so that a loop in the BMH of the adjacent potentially delayed landing could be made without impacting the other branches' performance. Here again, even if a station were late, a solution was ready to enable the project to move forward.

One of the main points where flexibility was necessary was the coming into force of the contract. While bank guarantee were requested two months after the contract signature, some parties did not manage to fulfil their commitments in time. However, instead of blocking the entire project, discussions took place to allow a "Coming into Force" by phase. Thanks to this agreement and contract revision, nobody was penalised: parties who fulfilled their obligations knew they would be part of the phase underway, and those with difficulties were given additional flexibility and time to provide guarantees, allowing them to remain part of the project.

3.2 Keep moving forward

If flexibility on such projects is mandatory, it has to be linked to a will to keep progressing, and sometimes, to accept some risks that could have at some stage blocked the project.

As it is often the case, the permits aspect is typically the subject that leads to delays, and that could block a project. ACE didn't escape these issues. But instead of waiting for all permits to be obtained, it was sometimes decided to keep going and revise the marine planning "live" to ensure delivery on time. For example, the permitting process in France is known to take a long time. When it was apparent that the permits in principle would not be available as per the initial planning, instead of postponing the entire lay, it was decided to keep going, beginning outside French territorial waters and to lay the final portion later on. On Segment 3, the marine planning was revised many times by laying stubbed BUs and returning later on, instead of stand-bying waiting for permits that could have taken weeks to obtain.

This willingness to keep going was never more needed than when the consortium was requested to re-route part of the cable by a concession owner. As soon as the request came, the project team worked on a technical solution that could be implemented in parallel to the dispute with the concession owner. Even though the dispute was not solved, even though the responsibility for extra costs was an issue, the decision was taken to keep going and re-route the cable, so as not to jeopardize the RFPA date.

3.3 The key point: the project team

Whatever external events may arise, the key point for project success remains the project team. Without good communication, flexibility and confidence among all stakeholders, managing a project

such as ACE would have been simply impossible.

Since the beginning of the project, one of the main points was to ensure that contractor and purchasers functioned as a single team, all working in the same direction. By building this strong relationship, ACE managed to get through the challenges encountered. Should one of the stakeholders have decided to show inflexibility or have failed to communicate on the various incidents that are part of the life of a project, ACE would probably not have succeeded in going live as planned, before the end of 2012. Project team cohesion remains the major factor of success to overcome most issues or at least to minimise the impact of external events. Thanks to the support of all parties, the leadership of experienced parties and the trust put in them by newcomers to the submarine world, ACE deployment was a technical success, and a wonderful human experience.

4 CONCLUSION

When they conceived ACE, the parties involved were all aware that they were entering a strategic project that would be a major step forward for Africa in terms of access to international bandwidth. The deployment was not expected to be easy, but despite the difficulties and unexpected events, the project team managed to complete its task. Having deployed ACE and having being able to provide answers and solutions to all these challenges makes us feel proud and confident in the future of the system.

5 REFERENCES

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