

DEVELOPING AND IMPLEMENTING SUB-OPTIC ICT INFRASTRUCTURES

CASE STUDY: THE EASSy / WIOCC MODEL

John Sihra (West Indian Ocean Cable Company Limited – WIOCC)

Email: Hentelint@eircom.net

Address: 127 Upper Leeson Street, Dublin 4, Ireland

Abstract: This Abstract relates to the Eastern Africa Submarine Cable System (EASSy) - a sub-optic ICT infrastructure which provides communications connectivity for the whole of the eastern Africa seaboard to the rest of world. The EASSy cable initiative heralded the implementation of other sub-optic cables around Africa, which today has reached a combined total investment in excess of US\$6.5 Billion.

The abstract describes the unique consortium model of ownership and funding incorporating Public Private Partnerships (PPP) and equity leveraged financing from the International Development Funding Institutions (DFIs). A model such as EASSy may form the basis of, and be readily adapted for, implementing other sub-optic cable systems around the world without unduly constraining the much-needed financial resources of the implementing entities for their respective upfront contributions.

1 DEFINITIONS

“C&MA” means the EASSy Construction & Maintenance Agreement

“DFI / DFIs” means singular or plural, the International Funding Institutions comprising:

- World Bank – IFC Group
- African Development Bank - AfDB
- French Development Agency – AFD
- German Development Agency – KfW
- European Investment Bank – EIB

“DFS” means Detailed Feasibility Study

“ENTITY” means telecom service provider

“E&SIAS” means Environment & Social Impact Analysis Studies

“EASSy” means the Eastern Africa Submarine Cable System

“ISPs” means Internet Service Providers

“PFS” means Preliminary Feasibility Study

“PPP” means Public Private Partnership

“PIM” means the WIOCC Preliminary Information Memorandum

“RFCS” means Ready For Commercial Service

“SPV” means Special Purpose Vehicle

“TELCO” has the same meaning as an Entity

“WIOCC” means the SPV duly incorporated as the West Indian Ocean Cable Company Limited

2 EASSY BRIEF DESCRIPTION

2.1 The System

The map in **Figure 1** shows the EASSy cable system route (RFCS August 2010) on the eastern seaboard of Africa - from Port Sudan in North Africa, extending

southwards to South Africa, terminating at Mtunzini, with nine landings at:

- Port Sudan – Sudan
- Djibouti – Djibouti
- Mogadishu – Somalia (planned to be implemented in 2013)
- Mombasa – Kenya
- Dar es Salaam – Tanzania
- Moroni – Grand Comore
- Maputo – Mozambique
- Toliary – Madagascar
- Mtunzini – South Africa

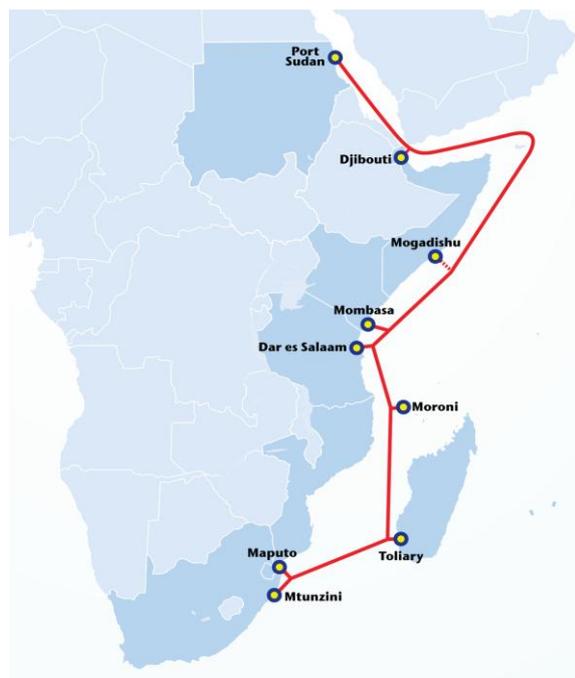


Figure 1: EASSy Network

The EASSy route provides for multiple onward connectivity points at Port Sudan, Djibouti, Mombasa, Dar es Salaam and Mtunzini, from where diversified access is available around Africa and worldwide via other sub-optic cable systems.

The EASSy, 2 fibre pair, system is configured as a collapsed ring which provides resilience in the event of branch cable damage or cuts, or equipment

failures. **Figure 2** illustrates the collapsed ring configuration.

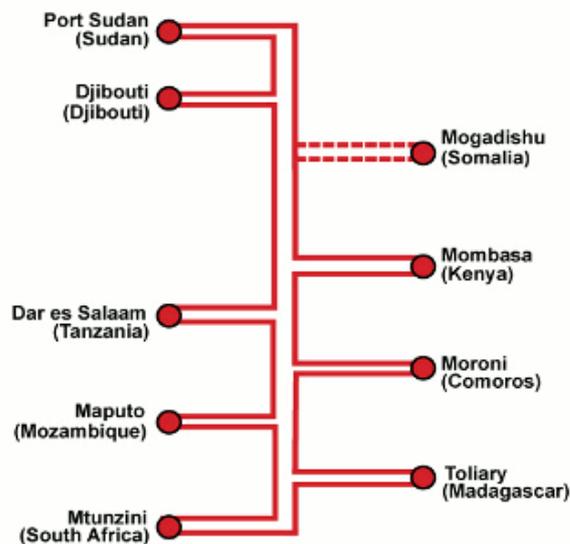


Figure 2: EASSy Fibre Pair Distribution

2.2 Objectives

The eastern half of the African continent was, until recently, the only major region of the world not served by sub-optic cables. External access was only possible via expensive, low capacity satellites. The hold-up in implementing submarine fibre-optic cable systems was due to the lack of will, funds and experience in the region.

In 2003, a skillfully coordinated initiative brought together an initial handful of regional stakeholders to carry out a PFS to examine the possibility and viability of implementing a multi-country project together with international participation. The main objectives of the stakeholders were:

- Cost-effectively meet the pent-up and growing demand for broadband capacity in the region for voice, data, internet and related services
- Realize a sub-optic fibre ring around the continent of Africa in conjunction with other existing or planned optical fibre submarine cable systems

- Create a conducive environment that would encourage the implementation of national and cross-border terrestrial networks in eastern and southern Africa to access the hinterlands and landlocked countries, as well as develop “last mile” access
- Adopt an “Open Access” approach to ensure a level playing field and uninhibited access to the capacity on the new cable system
- Find resources to fund the development and implementation of EASSy, including collaboration with and support of the DFIs

2.3 Basic System Features

- State of the art technology delivering scalable capacity – at launch EASSy was the highest capacity submarine cable system serving sub-Saharan Africa. Subsequent increases in design capacity have kept it at the forefront of developments
- Route length - 10,500 Km
- 25-year system design life
- 2 fibre pairs
- Design capacity: 4.8Tbps – 11.2Tbps
59x 40Gbps wavelengths (with probable upgrade capability to 100Gbps wavelengths)

3 OWNERSHIP STRUCTURE

EASSy is a Consortium ownership approach mainly comprising African telcos, together with some non-African telcos.

No	Entity Name
1	WIOCC
2	MTN International Group
3	Sudatel, Sudan

4	SPV2 (Vodacom/Telkom SA)
5	Telma, Madagascar
6	Neotel, South Africa
7	Botswana Telecom, Botswana
8	France Telecom, France
9	Mauritius Telecom, Mauritius
10	British Telecom, UK
11	Etisalat, United Arab Emirates
12	Zambia Telecom, Zambia
13	Saudi Telecom, Saudi Arabia
14	Comores Telecom, Comoros
15	Bharti Airtel, India
16	TTCL, Tanzania

Table 1: EASSy Consortium Members

Funding for EASSy was provided directly by some Entities, whilst others chose to pursue this collectively via the WIOCC SPV.

The Entities that chose to collectively provide their funding as Shareholders of the SPV are listed in **Table 2**, below.

No	Shareholder Entity Name
1	Telkom Kenya
2	Uganda Telecom
3	Mozambique Telecom
4	Dalkom, Somalia
5	Zanzibar Telecom, Tanzania
6	Onatel, Burundi

7	U-COM, Burundi
8	Botswana Telecom Corporation
9	Lesotho Communications Authority
10	Djibouti Telecom
11	Gilat Telecom, Israel
12	SCS, Seychelles
13	LPTIC, Libya
14	TelOne, Zimbabwe

Table 2: WIOCC SPV Shareholders

4 FUNDING

It is the unique ownership and funding model of EASSy that led to the implementation of the cross-border, multi-country EASSy cable infrastructure – an approach encompassing “Public Private Partnerships” (PPPs) together with support of the DFIs.

The PPP hybrid model brought to the fore, cooperation between the regional entities in the form of an SPV – incorporated as WIOCC.

The public participation is directly and indirectly by regional governments’ involvement via respective semi-private and or wholly government owned Entities.

EASSy took due cognizance of the various in-country telecommunications regulatory regimes, national sector development plans and other related policy matters.

As indicated in **Table 2**, WIOCC is comprised of 14 telecom Entities as its Shareholders. These Entities too are private companies, semi-private parastatals and/or wholly government owned.

Other Entities of the EASSy Consortium are international telecom service providers

such as Etisalat, British Telecom, Saudi Telecom, France Telecom, Bharti Airtel, etc. Some of these again, are either private and or semi- private having affiliations to their respective government(s).

The non-WIOCC Shareholders, were in a position to directly invest significant amounts upfront ranging from US\$2.6m to US\$32 - 34m to implement EASSy, as is the case in typical Consortium-owned cable systems. In comparison, the WIOCC Shareholder entities’ individual investments in WIOCC ranged from a mere US\$0.55m to \$1.0m.

Collectively, the WIOCC Shareholders raised the minimum equity required to leverage Equity / Debt funding in the form of 30/70 % from the DFIs. This, when related to the overall budget of EASSy, enabled WIOCC to secure almost one-third ownership of EASSy, making WIOCC the single largest member of the EASSy Consortium.

As may therefore be surmised from this, within the terms of the EASSy Construction and Maintenance Agreement, C&MA, WIOCC, has a very significant say in the day-to-day management of EASSy over the lifetime of the system on behalf of entities that would otherwise not have had such a significant position.

This, when further related to the WIOCC Shareholders’ individual investments compared to those of the direct Consortium members, clearly provides a very level playing field across the entire Consortium, *a significant achievement*.

WIOCC Shareholders sought support of the International Financial Institutions (DFIs). The WIOCC SPV / EASSy Ownership Structure conformed with the DFIs regional developmental requirements. The uninhibited open access concept offering a level playing field was the right ingredient for the DFIs to provide support in the form of a medium-term attractive

interest bearing loan. In addition, the DFIs provided outright grants to carry out the DFS to validate the PFS, preparation of WIOCC's business model / Preliminary Information Memorandum, E&SIA Studies of the shore cable landing points and the planned deep sea cable route.

WIOCC, on behalf of its Shareholders, is the recipient of the loan from the DFIs and custodian of its Shareholders' equity and funds. WIOCC is an incorporated entity, has its own by-laws, enabling corporate documents, Chairman and Board of Directors and a professional management team that manages its day-to-day activity. WIOCC functions as a commercial entity.

5 HOW DOES THE WIOCC MODEL WORK?

WIOCC:

- owns almost 30% of the EASSy cable system
- operates purely in the wholesale sector selling capacity to any appropriately licensed entity in addition to its Shareholders
- aggressively sells capacity based on the varying prevailing market conditions of the region
- supports its Shareholders in their respective markets to secure business
- embraces the developmental objectives of the DFIs and sets pricing at levels aimed at stimulating the various markets

Figure 3 provides a schematic overview of the EASSy / WIOCC "hybrid" ownership structure & capacity management.

6 WIOCC PRODUCT OFFERING

WIOCC has built the first truly seamless, diversity-rich, low latency, high-capacity, international connectivity 'ring' around Africa, linking countries in north, east,

south and west Africa with Europe, and beyond.

Already the owner of almost 30% of EASSy, WIOCC has extended its capability through strategic investments in two new submarine cables - EIG (Europe India Gateway), connecting Africa's northern coastline to Europe, the Middle East and India; and WACS (West Africa Cable System), linking the west African seaboard to Europe. Through the integration of terrestrial networks deployed by WIOCC's 14 African telco shareholders and selected partners, WIOCC has created an unrivalled pan-African network spanning over 400 locations in 30 African countries. It currently encompasses 40,000km of submarine fibre-optic cable and more than 50,000km of terrestrial fibre – see **Figure 4** below. With a global network reach extending to more than 700 cities in 70 countries, WIOCC offers international and African carriers resilient, affordable and reliable, high-speed international capacity into, within and out of Africa. This capacity supports their own network build-outs and offerings to customers.

As well as serving Africa's coastal regions, WIOCC's unparalleled network now enables businesses and individuals in landlocked countries such as Botswana, Burundi, Democratic Republic of Congo (DRC), Lesotho, Malawi, Rwanda, Uganda, Zambia and Zimbabwe to benefit from reliable and affordable international connectivity.

The proliferation of international and terrestrial links offers carriers and ISPs considerable opportunity to improve resilience and performance, by building additional diversity into their networks. However, managing the provision of such diversity can increase network complexity and complicate carrier relationships. WIOCC addresses these challenges with an attractive one stop shop, end-to-end

managed service solution that is simpler and more convenient, shielding customers from much of the complexity associated

with delivering high-performance international connections into, out of, and within Africa.

EASSy / WIOCC OWNERSHIP STRUCTURE & CAPACITY MANAGEMENT

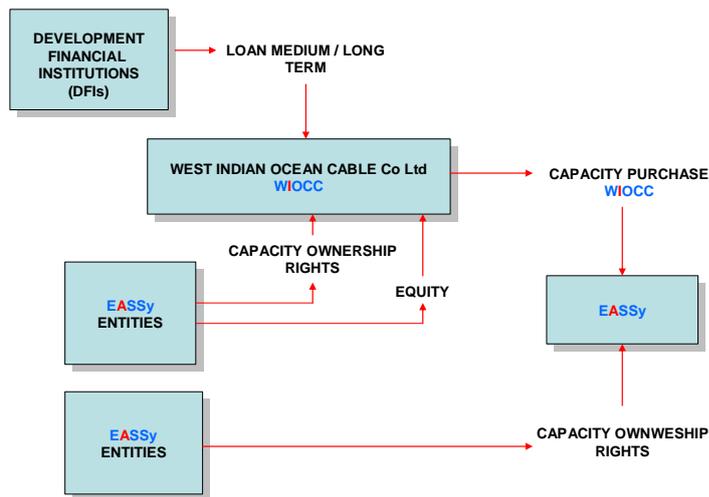


Figure 3: EASSy/WIOCC Ownership Structure & Capacity Management

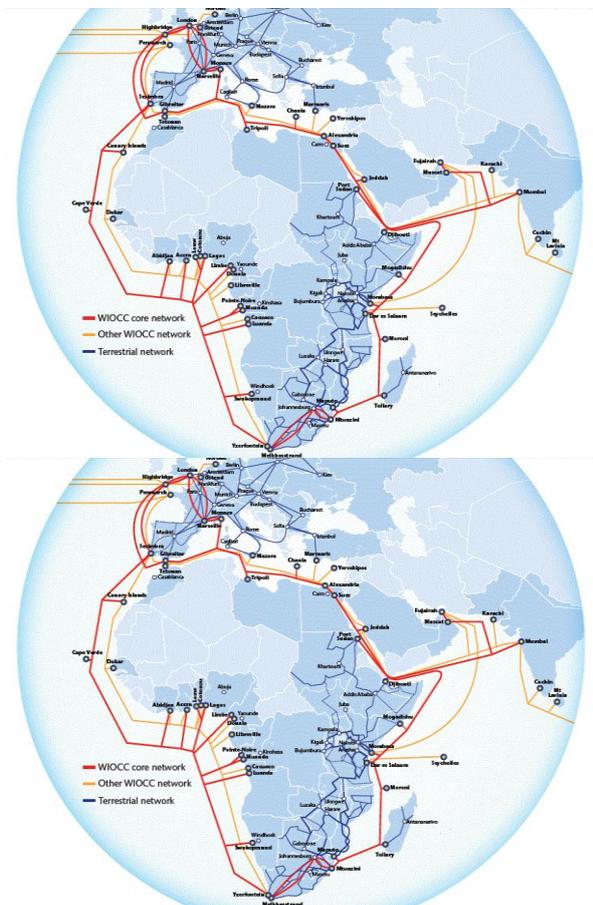


Figure 4: WIOCC's International Network

7 SUMMING UP...

WIOCC and indeed EASSy, has had a very significant macro socio-economic regional development impact, as is being witnessed since the launch of the system and the opening up the continent of Africa to rest of the World.

Such a basic model may readily be adapted/modified as deemed necessary to implement similar sub-optic cable systems.

Fully funded sub-optic initiatives will stabilise, strengthen and stimulate the sub-optic industry from a manufacturing perspective.

The WIOCC/EASSy model is a shining example of a Private, Public Partnership (PPP) that has demonstrated the ability of African and global telecommunications entities to work together in harmony towards realizing an important step and a building block in pursuit of the

development and improvement of the African ICT infrastructures.



A glorious sea bed....no development of mankind, as its custodian, ever warrants its damage, ruin or