



**Subsea cables:
Jugular veins for Africa's
Global Communications**

CORPORATE

AfriNIC

Cairo Ap

21-22nd 2009

Yves Poppe

Director Bus. Dev. IP services



Member of the Tata Group

125-year old largest private sector group

\$62.5 billion in revenues

Acquired VSNL in February 2002

- VSNL acquired Tyco in Nov 2004
- VSNL acquired Teleglobe in Feb 2006

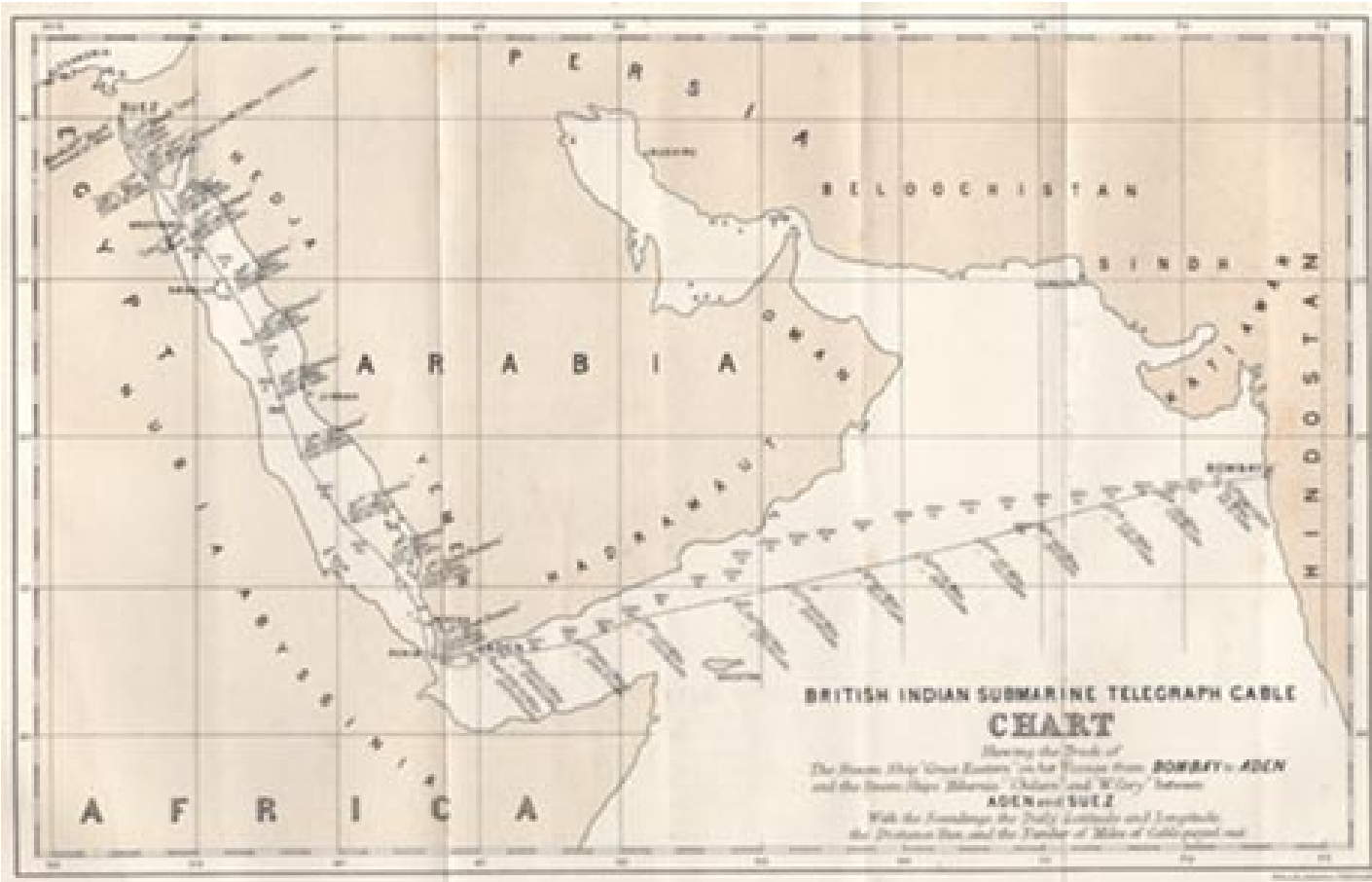
Teleglobe, Tyco, VSNL and VSNL International became Tata Communications on February 13th 2008

Tata Consultancy Services (TCS)

Major shareholder in Neotel



High speed transmission circa 1870



Cable landing stations back then



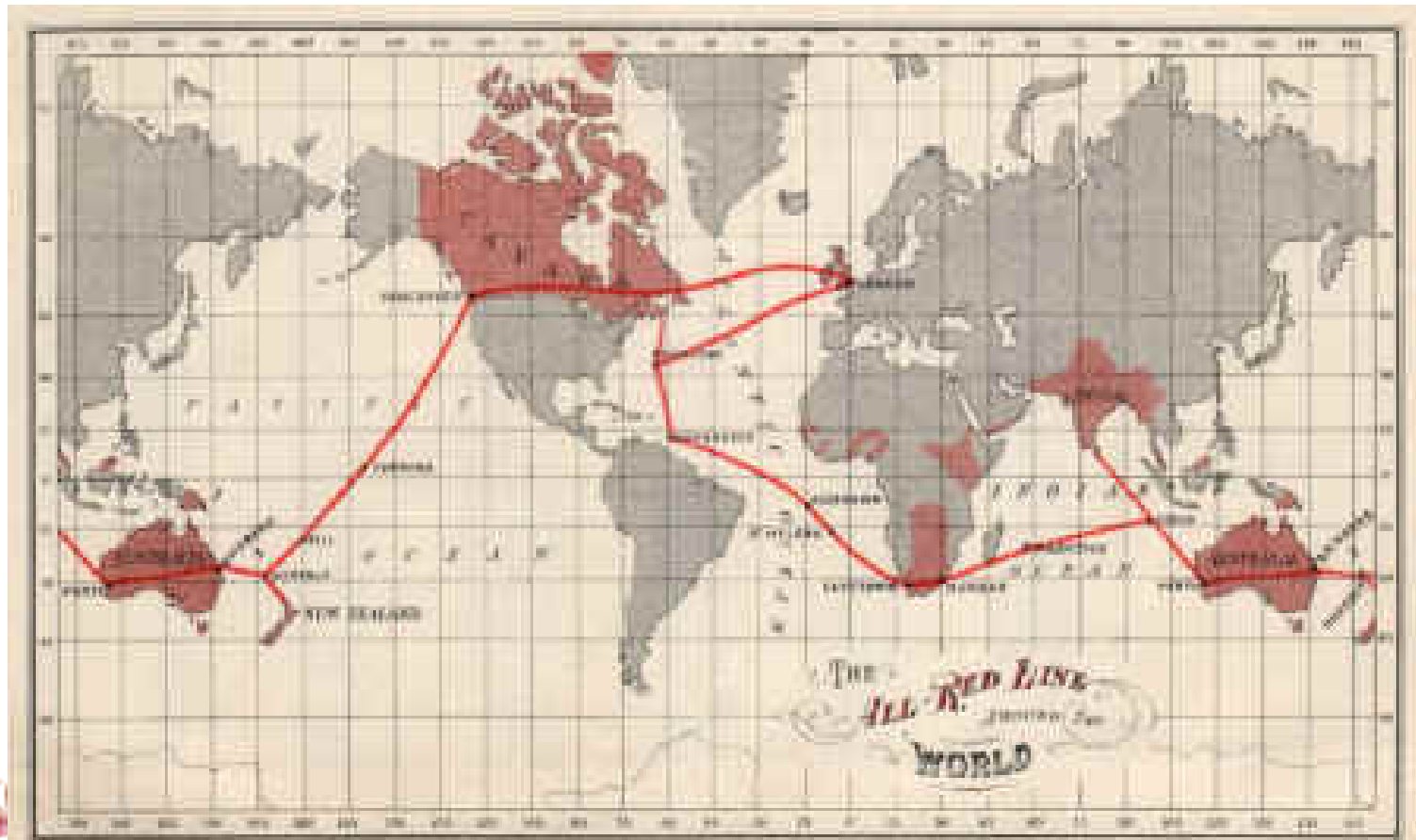
Mess Quarters, Aden
Cable Station circa 1905



Suez - The Eastern
Telegraph Company Ltd

<http://www.atlantic-cable.com/>

The Grandfather of Global Networks: All Red Line completed in October 1902



From undersea telegraph

to

undersea voice

In the 1950s new technology put cables ahead of radio. Small vacuum tubes that could operate under water for 20 years or more meant that amplifiers could be buried at sea with the cable. This boosted the cable's information capacity to the point that it could even carry telephone signals.

Small vacuum tubes like this could be buried at sea with the cable for years. They helped to increase a cable's information-carrying capacity by more than a thousandfold.

Borrowed from : The Underwater web, Smithsonian Institute

<http://www.sil.si.edu/Exhibitions/Underwater-Web/uw-credits.htm>



The first decade of transoceanic subsea fiber optics

- 1986; First international subsea optical cable between U.K. and Belgium
- 1988: TAT-8 becomes the first transoceanic optical cable
- 1992: TAT-9 and TAT-10 with 565mb capacity each
- 1993: TAT-11 with 2x565mb, the first gigabit level transoceanic cable!
- 1994: Cantat-3 with 5gig!
- 1998: Atlantic Crossing 1 with 840 gig design capacity!
- Then came the terabit years



Ten years later (end 2008)

- **Approx. 25 Terabit capacity under the atlantic**
- **13 Terabit circling South America**
- **23 Terabit under the Pacific; another 14.72Tb in 2009-2010(TPE,AAG, Unity)**
- **33Tb East and North-East Asia**
- **2.5Tb Europe-Asia; another 14.3Tb for 2009-2010 (IMEWE, EIG, MENA)**

- **Only 0.355 Terabit circling the west part of the African continent, nothing on the east-side but that will change considerably over the next three years starting with Seacom later this year.**

The map illustrates the geographical distribution of submarine cable capacity purchases. Key features include:

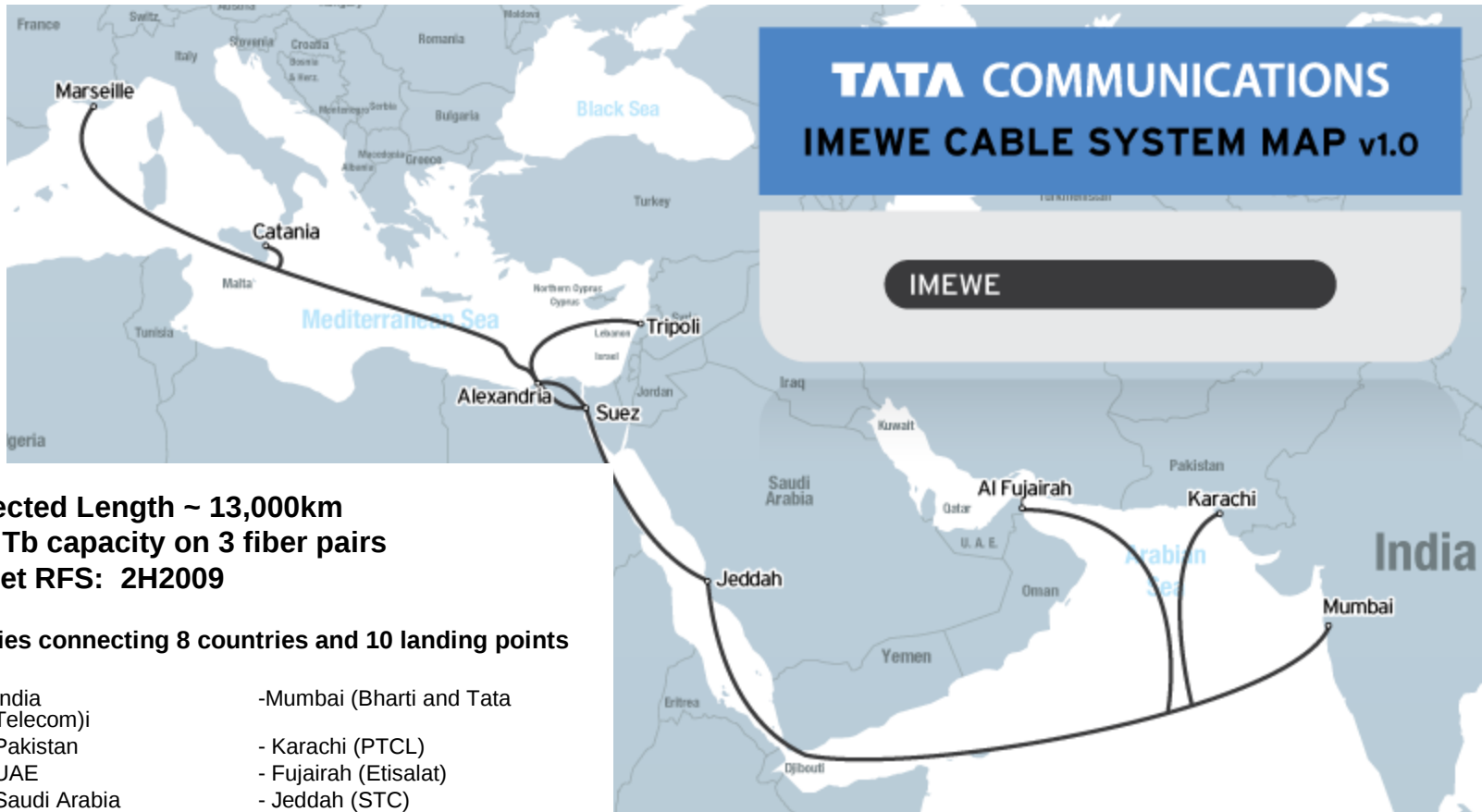
- Europe:** Major hubs like London, Frankfurt, and New York are marked. A green oval highlights the **SMW 3 & 4; FEA** area in the North Atlantic.
- Asia:** Major hubs like Tokyo, Hong Kong, and Singapore are marked. A red oval highlights the **TGN Eurasia** area in East Asia.
- Capacity Purchase Areas:** Indicated by colored ovals: green for SMW 3 & 4; FEA, red for TGN Eurasia, and blue for TGN Intra-Asia.
- Submarine Cable Routes:** Shown as black lines connecting major hubs across the Atlantic, Pacific, and Indian Oceans.
- Labels:** "New Cables" (bottom left), "SAT3 & SAFE" (bottom center), and "Capacity Purchase" (bottom right).

SAT3 & SAFE

Cable Name	Connecting	Ownership
TGN-Intra Asia	Singapore Hong Kong, Japan, Vietnam, Philippines	Majority Owner

Cable Name	Connecting	Ownership
IMEWE	India, Middle East, Egypt, Italy, France	Consortium Member
SEACOM	India, Egypt, South Africa	Initial Capacity Owner

I-ME-WE as currently under construction



Expected Length ~ 13,000km
3.84 Tb capacity on 3 fiber pairs
Target RFS: 2H2009

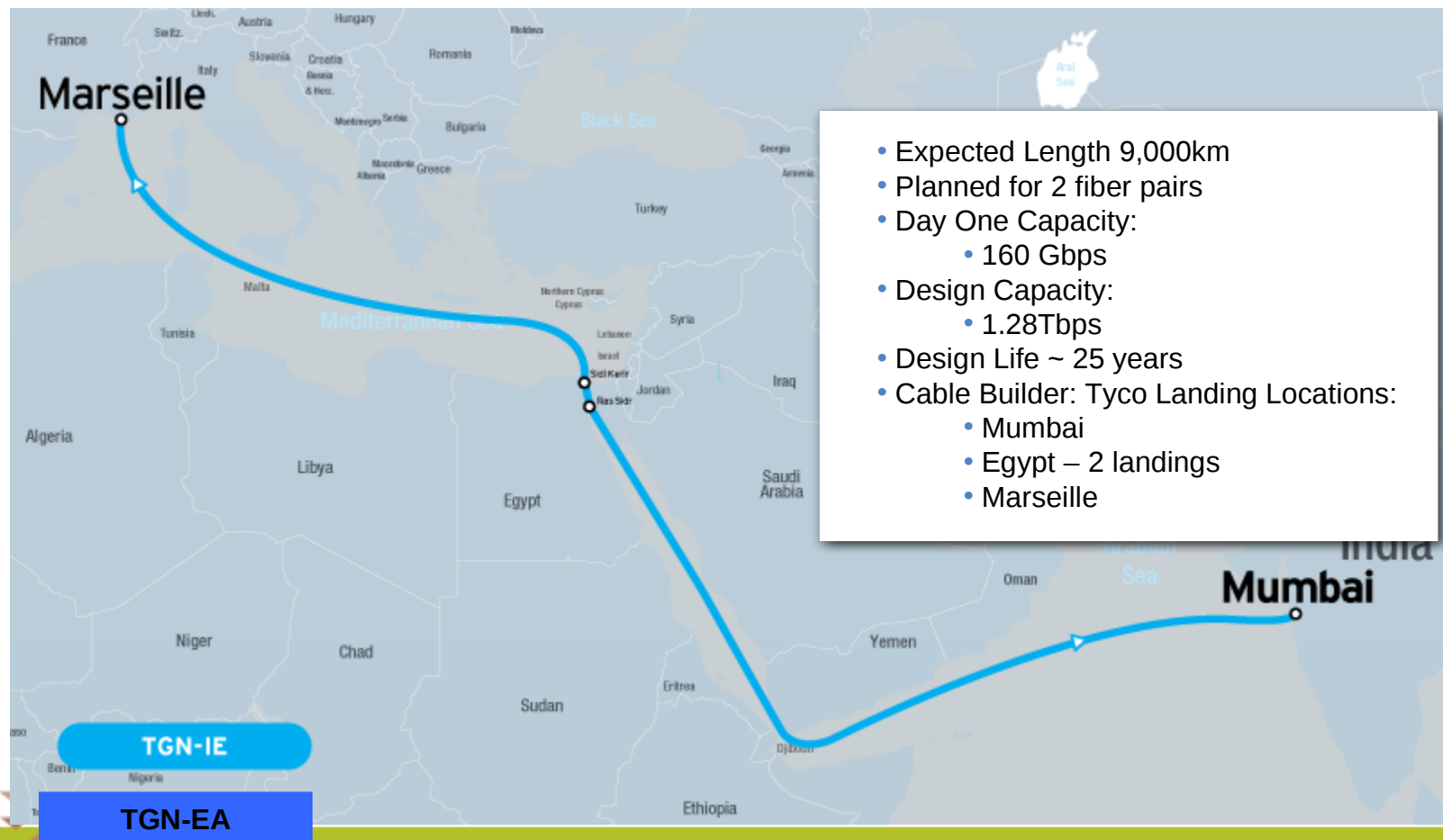
9 parties connecting 8 countries and 10 landing points

- India (Bharti and Tata)
- Pakistan (PTCL)
- UAE (Etisalat)
- Saudi Arabia (STC)
- Egypt (Ogero Telecom, Telecom Egypt)
- Lebanon (Sparkle)
- Italy (France Telecom)
- France (France Telecom)

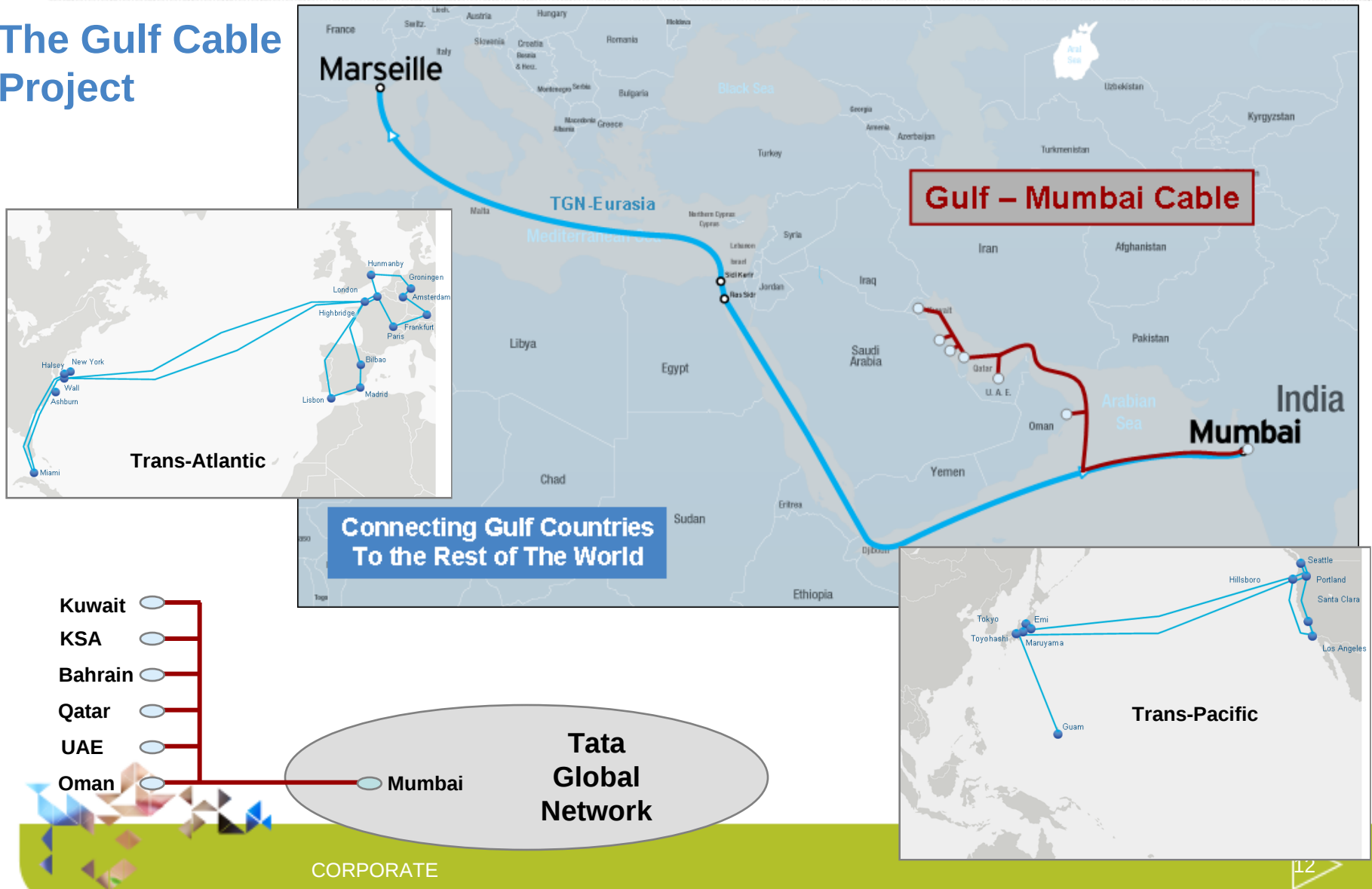
CORPORATE

TGN – EurAsia

Tata Communications Joint Build for an express route cable from India to Europe

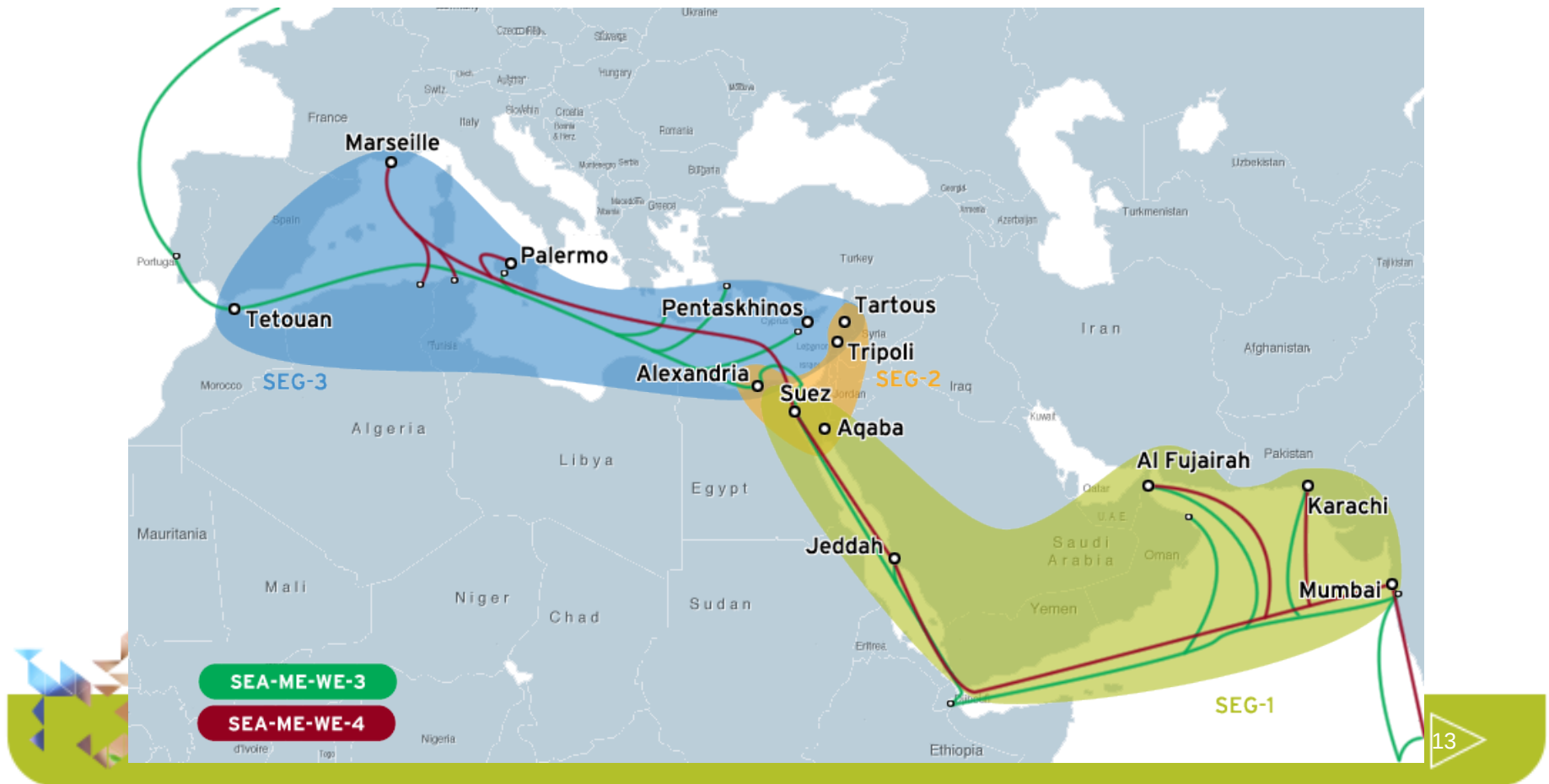


The Gulf Cable Project

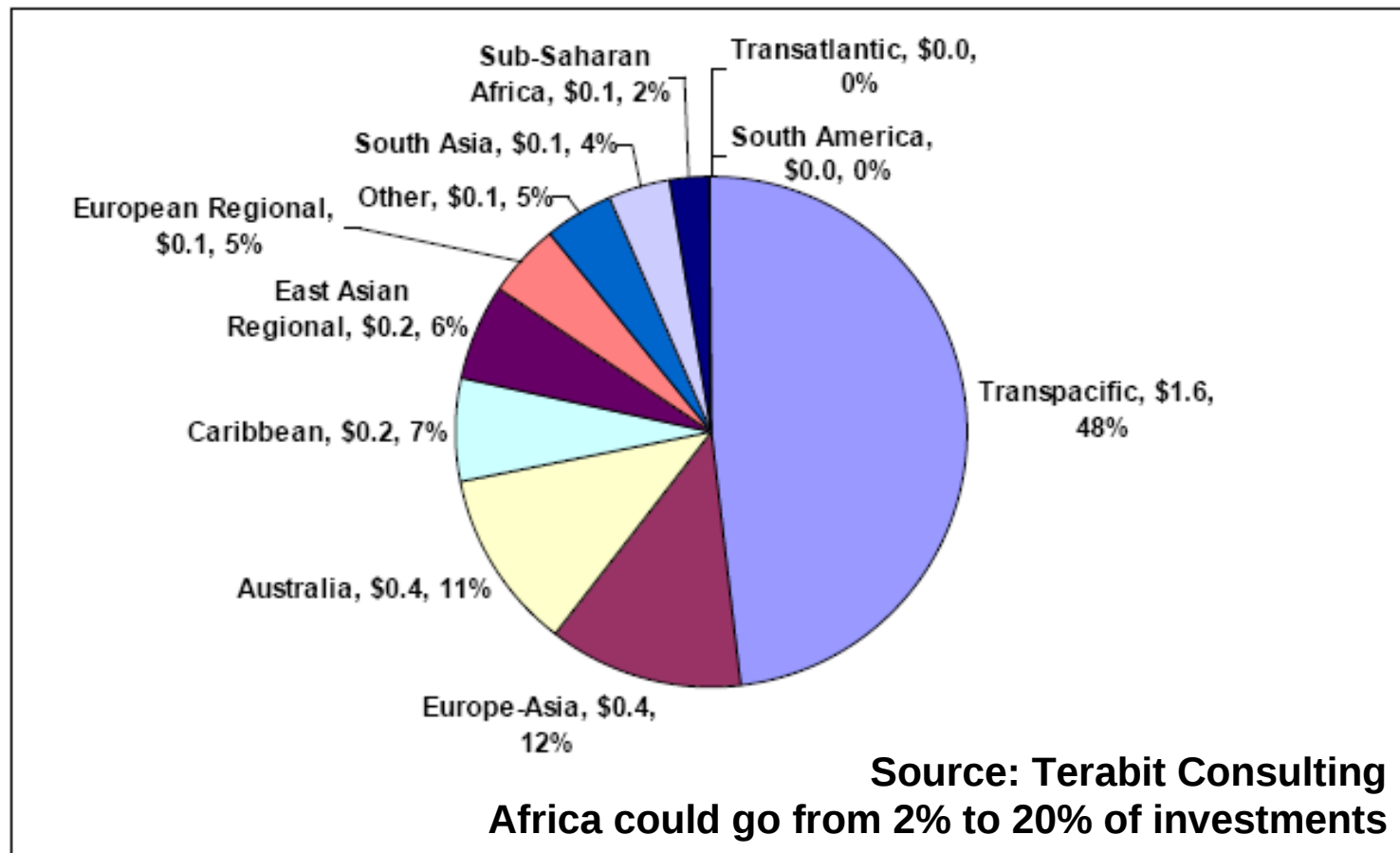


South Asia - Gulf States/Middle-East- Europe Network Diversity

In addition to FLAG, SMW-3 and SMW4, the upcoming IMEWE, TGN-EA, Orascom's MENA and EIG will provide the region vastly increased South Asia – Middle East – Europe capacity and diversity and help circle the African continent

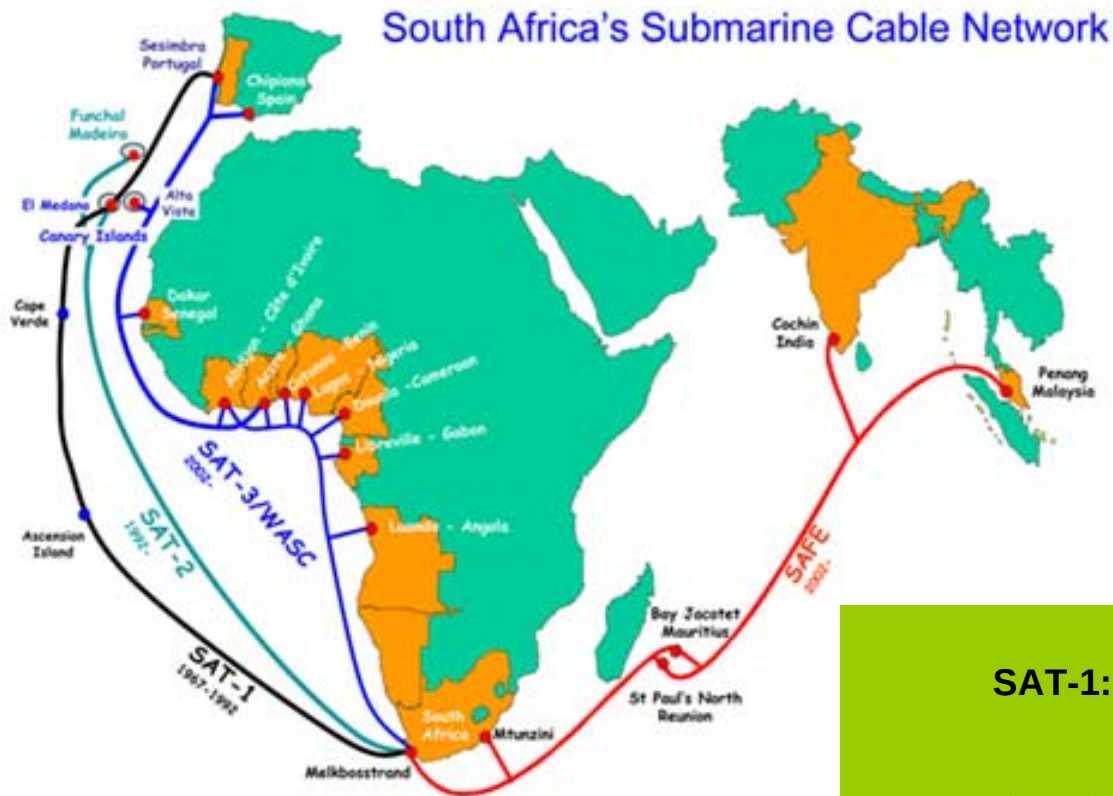


Global investments in subsea cables 2006-2008



during next 4 years.

Africa: the three SAT's



SAT-1: 1968

SAT-2: 1993

SAT-3: 2001

WASC/SAFE: 2002

See: <http://atlantic-cable.com/CableCos/SouthAfrica/index.htm>

East Africa: The missing link

EASSY:

The original project consisted of two fibre pairs with a capacity of 640 Gigabit; estimated cost of \$200 million ; 8840 km

Unfortunately, disagreements nearly derailed and delayed the project by around five years.



East Africa : 4 or 5 cables instead of just one?

FLAG NGN

Full capacity:
2.56Tbps
RFS: ?



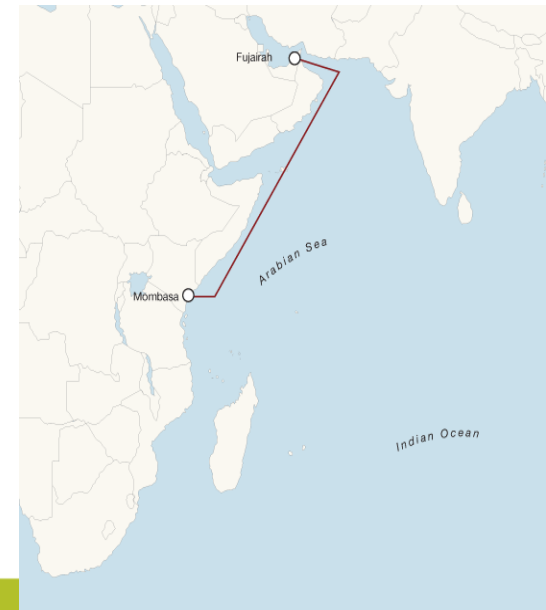
EASSY

Full capacity:
320Gbps
RFS: mid 2010



TEAMS

Full capacity:
320 Gbps
RFS: mid 2009



SEACom Cable System

First Cable system connecting E. Africa to S. Africa, India and Europe



- Length: 13,000km Cable
- Locations:
 - **South Africa (Mtunzini)**
 - **Mozambique (Maputo)**
 - **Madagascar (Toliary),**
 - **Tanzania (Dar es Salaam)**
 - **Kenya (Mombasa)**
 - **India (Mumbai)**
 - **Djibouti (Djibouti)**
 - **France (Marseille)**
- Ultimate Capacity: 1,280 Gbps
- City-to-City Connectivity onto the Tata Communications Networks in Europe, India, & USA
- Full Range of Service Offerings including:
 - **E1, DS-3, STM-1 through STM-64**
- Lease and IRU Contracts available
- Expected RFS: 2H2009

And on the African West Coast : WACS is going forward

The 14,000km submarine cable will run from Cape Town to the UK with landings in Namibia, Angola, the Democratic Republic of Congo, the Republic of Congo, Cameroon, Nigeria, Togo, Ghana, Cote d'Ivoire, Cape Verde, the Canary Islands and Portugal.

The WACS consortium comprises eleven companies that signed the WACS Construction and Maintenance Agreement: Angola Telecom, UK-based Cable & Wireless, Portugal Telecom, SOTELCO (Congo), Telecom Namibia, Togo Telecom, India's Tata Communications and four South African firms - Broadband Infracore, Telkom SA, MTN and Vodacom.

3.84Tb design capacity, RFS 2011

US\$600 million investment

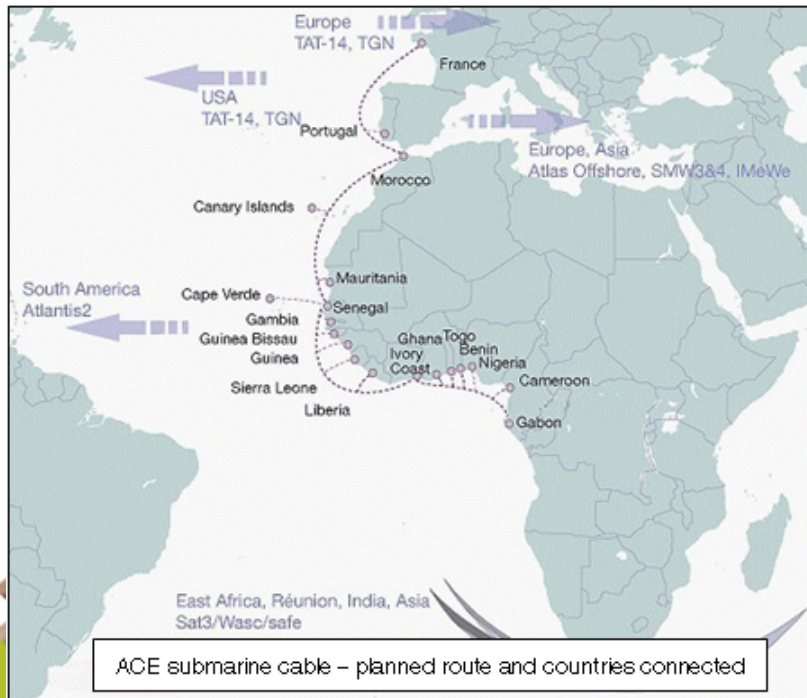
April 2009: contract awarded to Alcatel

Other West African projects: MainOne, Glo-1, ACE

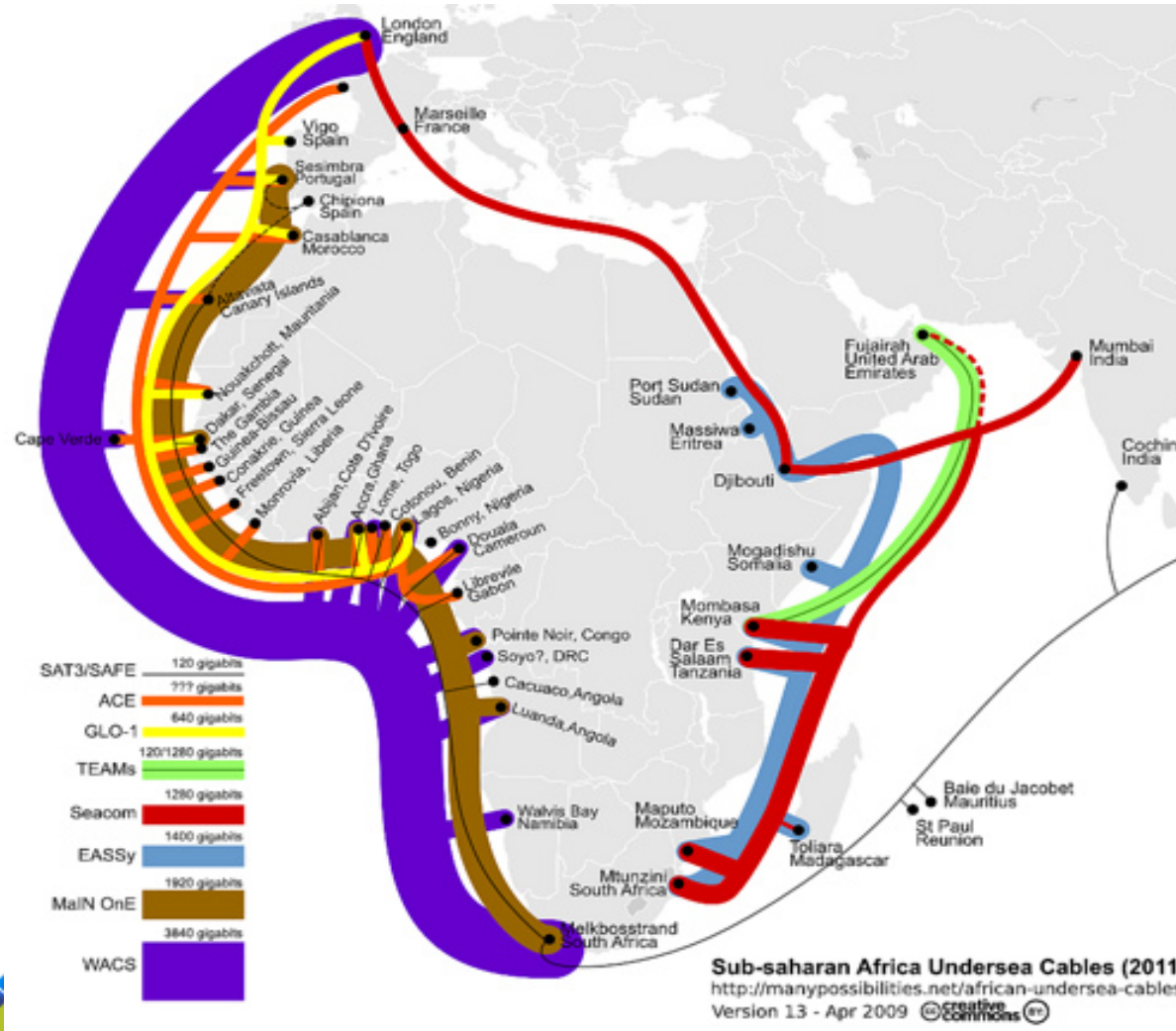
**Main One: Nigerian initiative RFS end 2010
1.2Tb design capacity**

Glo-1: Lagos –London expansion

ACE: France Telecom initiative RFS 2011

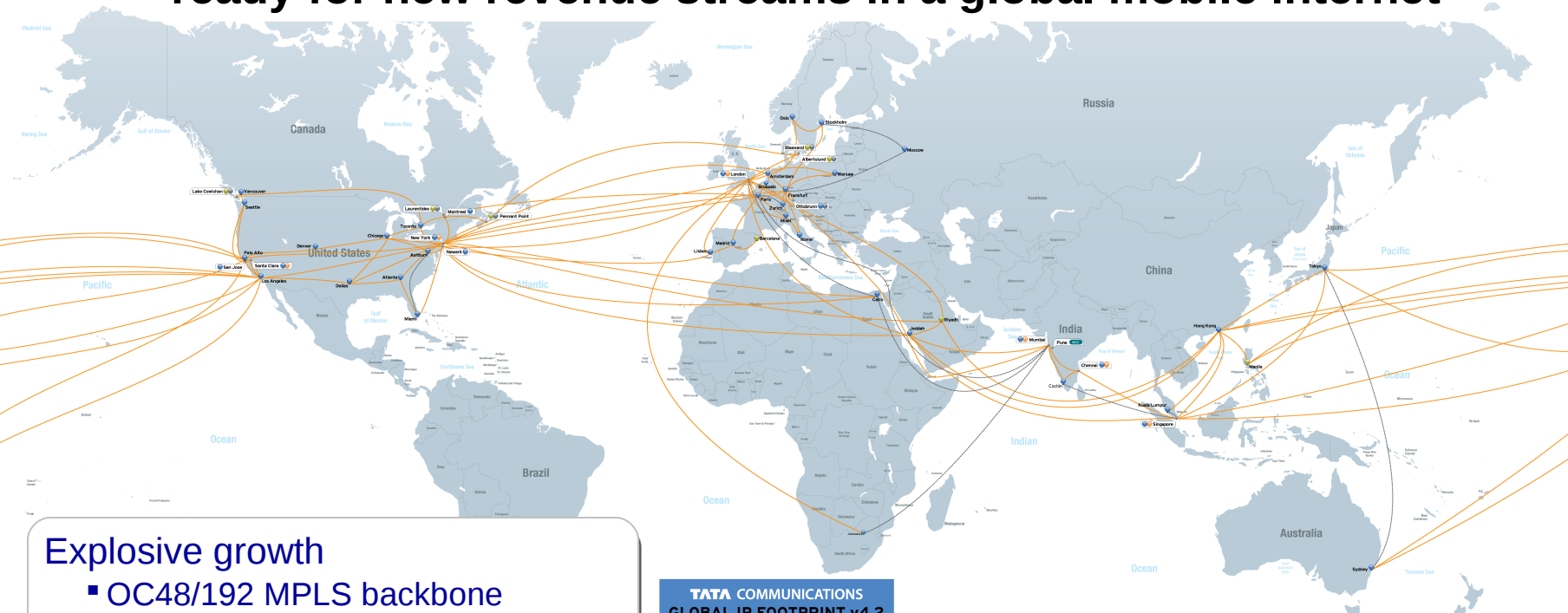


Situation in 2011 if all these projects materialize....



AS6453: Globe spanning dual stack IPv4/IPv6 Tier-1 IP Backbone

We are ready, join us, surf the transition wave and be ready for new revenue streams in a global mobile internet



Explosive growth

- OC48/192 MPLS backbone
- 70% year over year traffic growth
- Courtesy of User generated Content and p2p: Youtube, Myspace etc

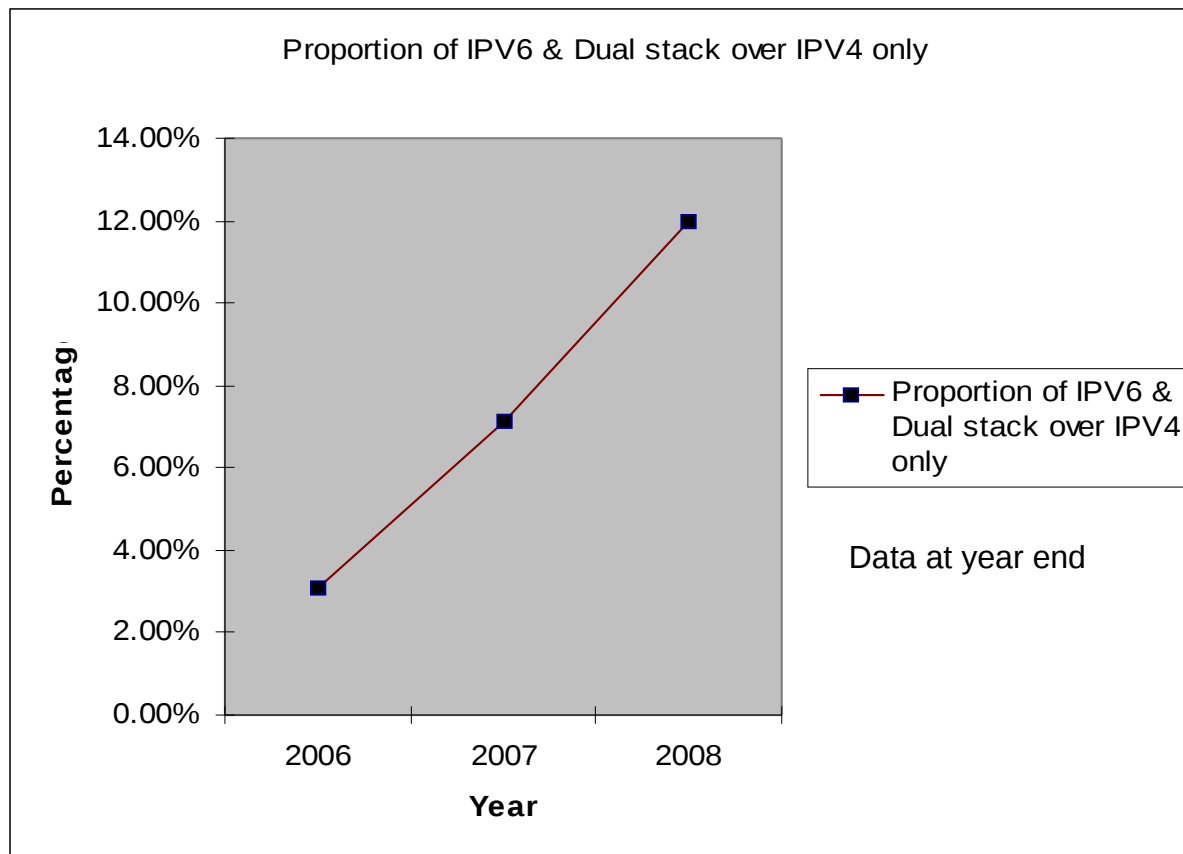
TATA COMMUNICATIONS GLOBAL IP FOOTPRINT v4.2



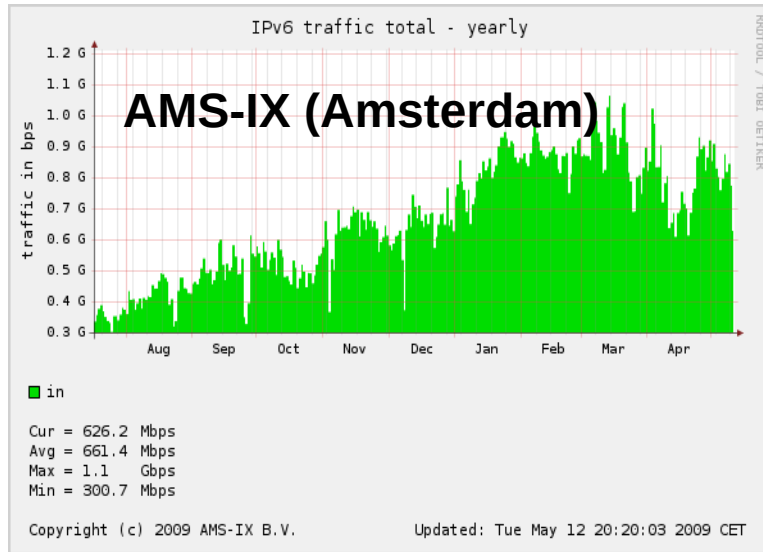
IP Network at a glance

- 1500+ Gbps of Backbone Capacity
- Carries 750+ Petabits globally per month;
- Fully dual stack IPv4 and IPv6

Proportion of customers AS'es connecting in dual stack to AS6453

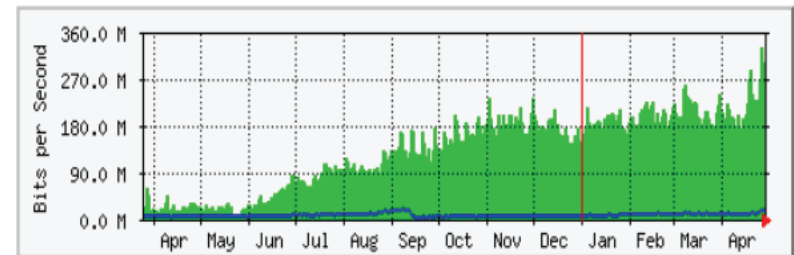


IPv6 traffic : from some drops to a trickle, the IPv4 dam is leaking

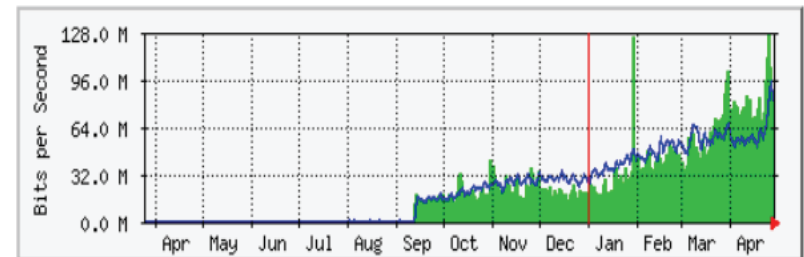


Free (France)

- 6rd-gw1 Yearly Traffic (1Day AVG) :

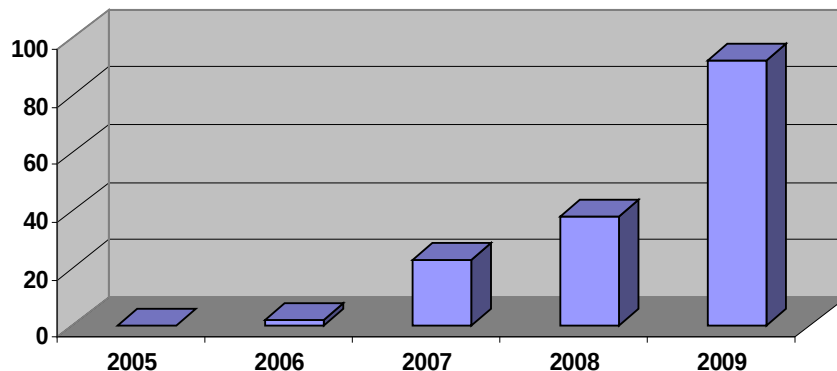


- 6rd-gw2 Yearly Traffic (1Day AVG) :



As presented at RIPE

Freenet 6 traffic level in Montreal (95th percentile)



Some final thoughts

Technological evolution of subsea cable capacity has been astounding

Ownership of subsea cable capacity and cable build initiatives has shifted dramatically from the West to the East over the last five years.

Rapid shift from mature western markets to emerging economies.

Satisfying customers in a mobile internet and multimedia world will necessitate considerable amounts of global bandwidth

Start transition to IPv6 now; internet fragmentation is just unthinkable in a global economy betting its telecommunications future on IP convergence.

Farther
is the place
where value
is born.



**« These days all competitive advantages are
fleeting. So the smartest companies are learning
to create new ones – again and again and
again »**

Robert D. Hof , Business Week,

BUSINESS

www.tatacommunications.com