



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

CORPORATE

**AfrinIC**

Cairo Ap

**21-22<sup>nd</sup> 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

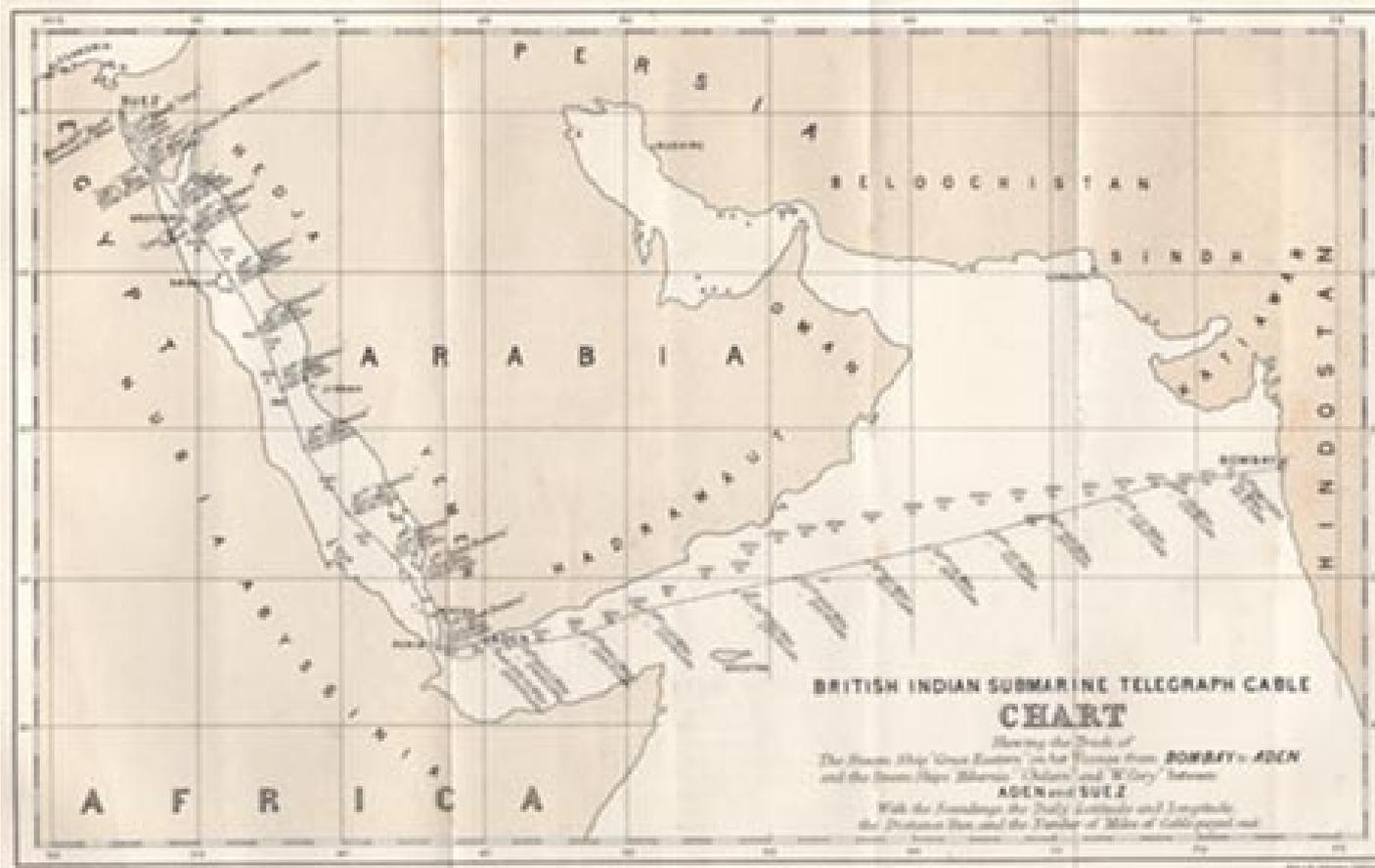
Teleglobe, Tyco, VSNL and VSNL International became Tata Communications on February 13<sup>th</sup> 2008

Tata Consultancy Services (TCS)

Major shareholder in Neotel



## High speed transmission circa 1870



## Cable landing stations back then



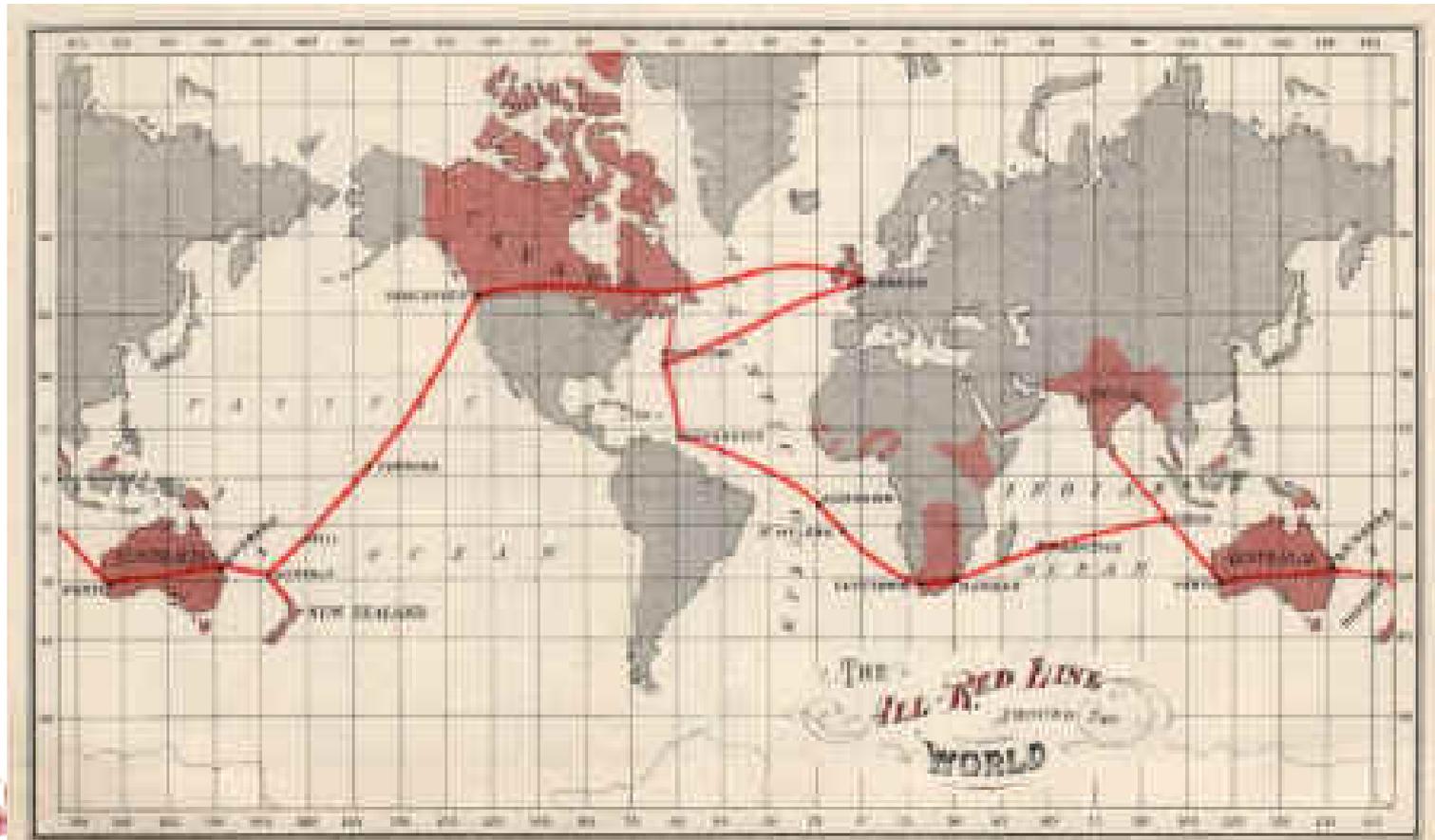
Mess Quarters, Aden  
Cable Station circa 1905



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

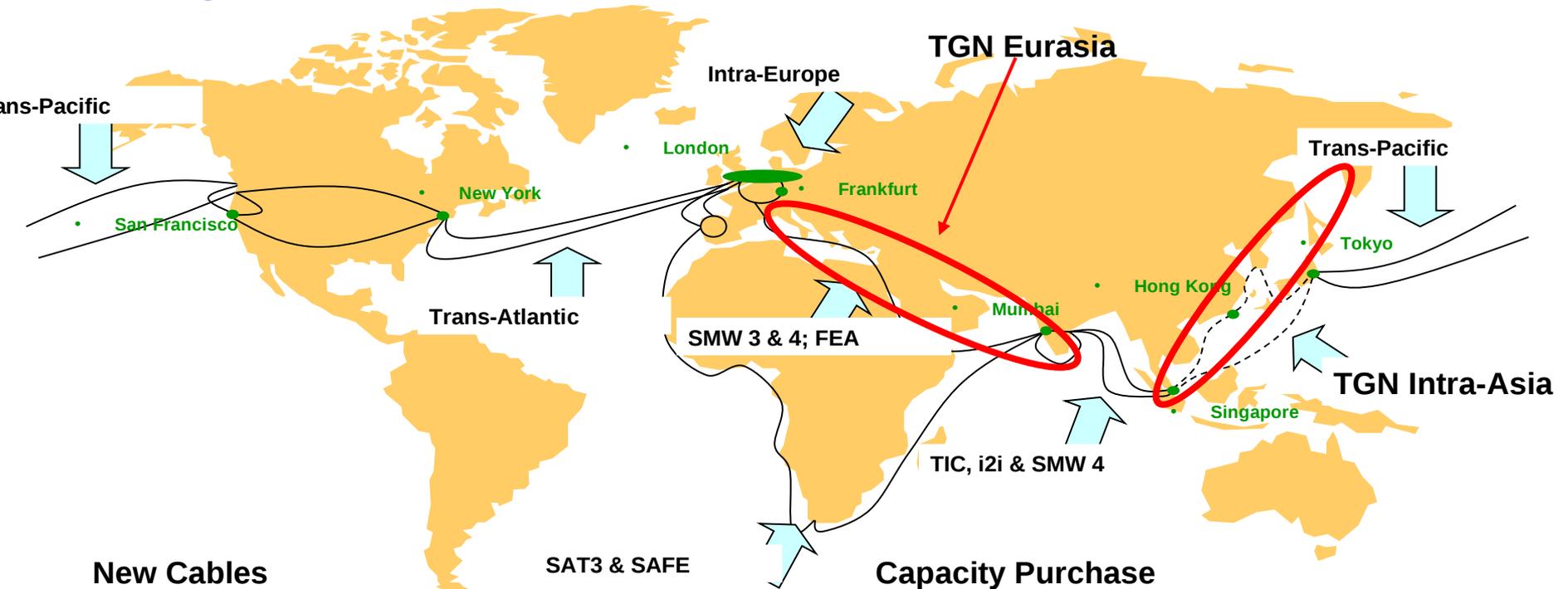
- 1986; First international subsea optical cable between U.K. and Belgium
- 1988: TAT-8 becomes the first transoceanic optical cable
- 1992: TAT-9 and TAT-10 with 565mb capacity each
- 1993: TAT-11 with 2x565mb, the first gigabit level transoceanic cable!
- 1994: Cantat-3 with 5gig!
- 1998: Atlantic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

# Circling the world on Tata Communication owned Submarine Cable



## New Cables

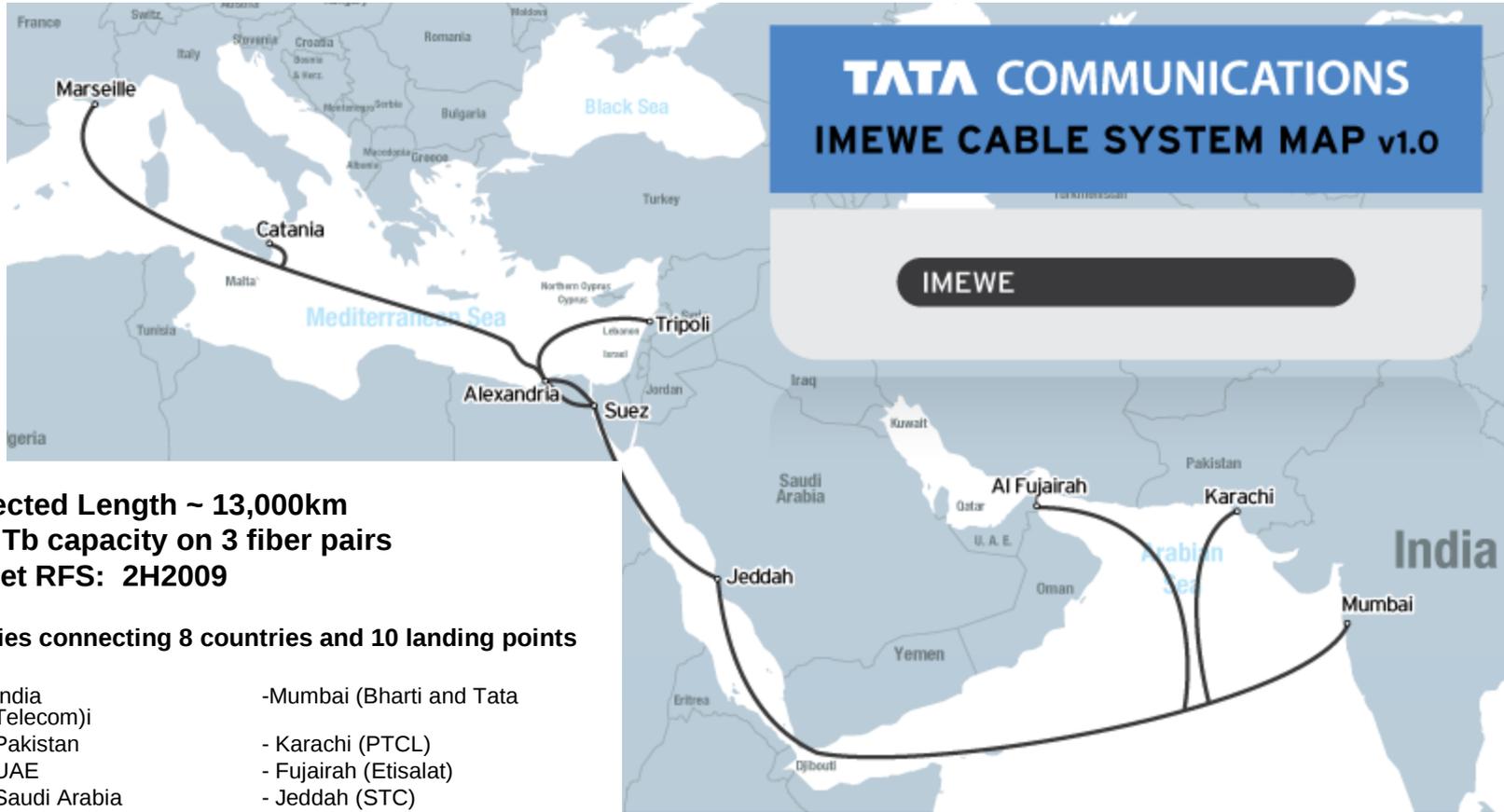
SAT3 & SAFE

Cable Name	Connecting	Ownership
TGN-Intra Asia	Singapore Hong Kong, Japan, Vietnam, Philippines	Majority Owner
TGN-Eurasia	India to France via Egypt	Majority Owner

## Capacity Purchase

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



**TATA COMMUNICATIONS**  
**IMEWE CABLE SYSTEM MAP v1.0**

**IMEWE**

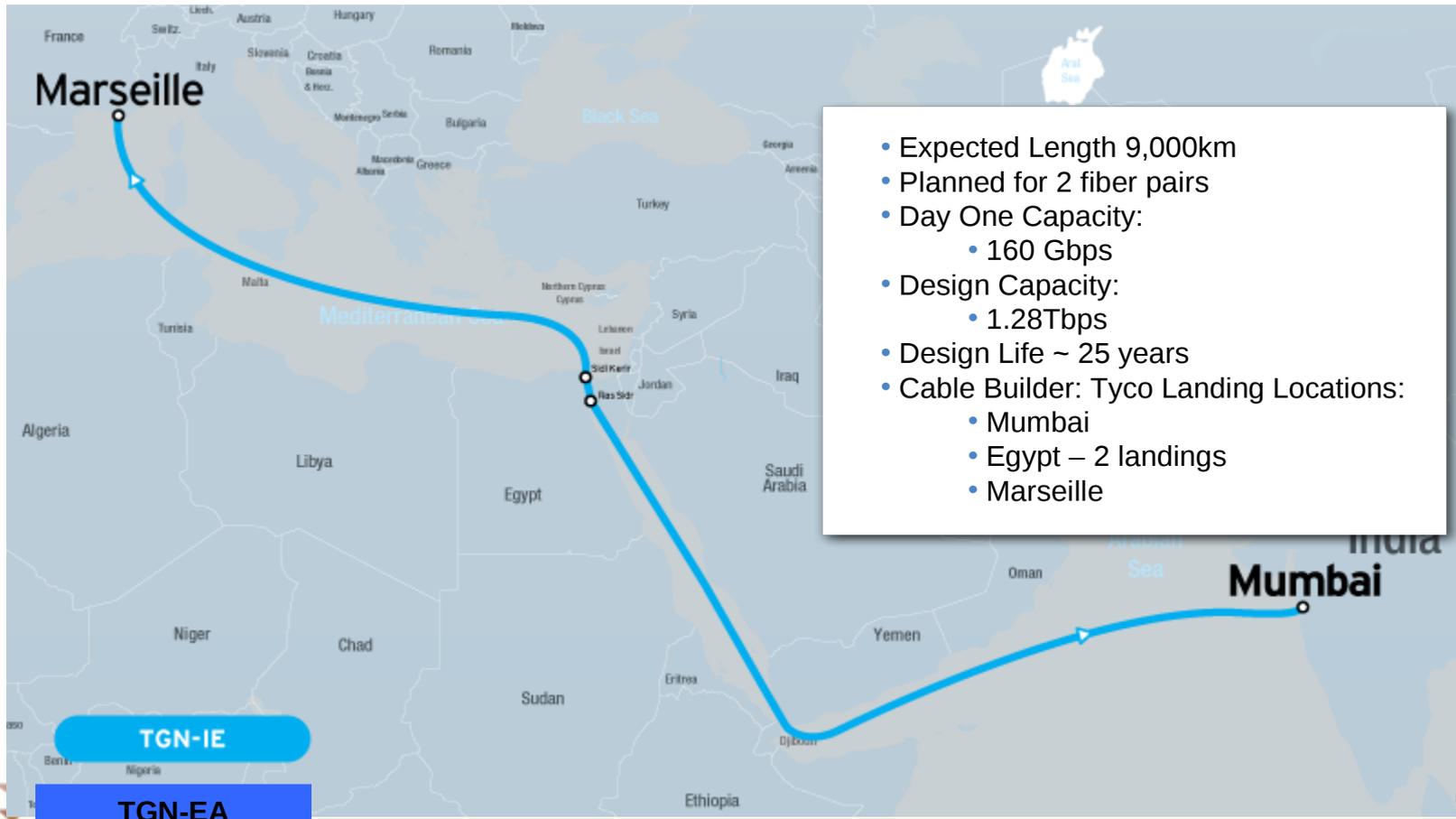
**Expected Length ~ 13,000km**  
**3.84 Tb capacity on 3 fiber pairs**  
**Target RFS: 2H2009**

**9 parties connecting 8 countries and 10 landing points**

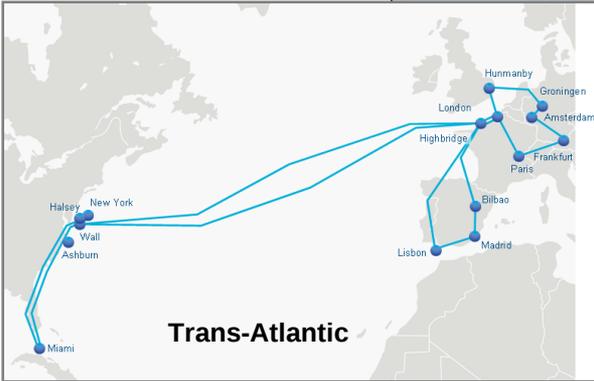
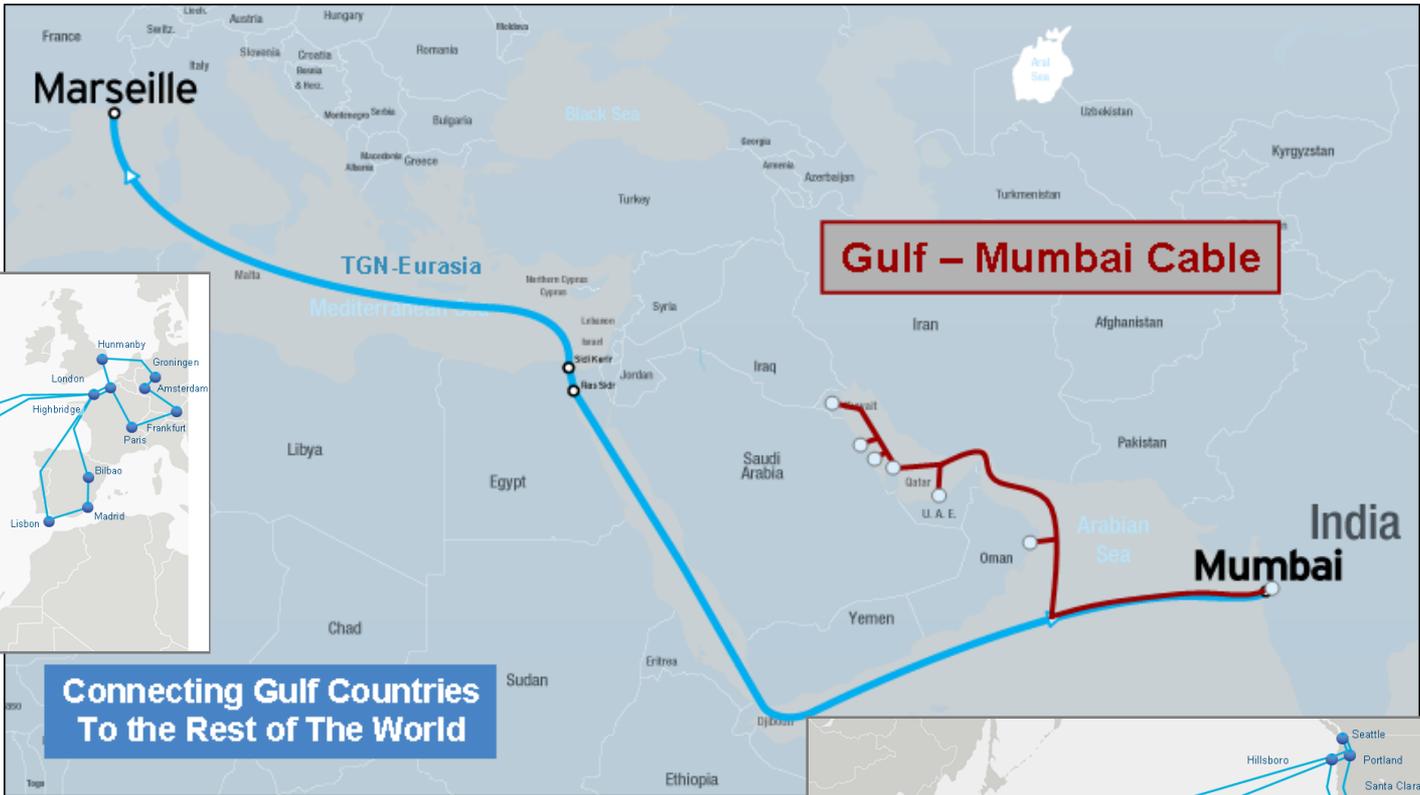
- India - Mumbai (Bharti and Tata)
- Pakistan - Karachi (PTCL)
- UAE - Fujairah (Etisalat)
- Saudi Arabia - Jeddah (STC)
- Egypt - Suez and Alexandria (Ogero Telecom, Telecom Egypt)
- Lebanon - Tripoli
- Italy - Catania (Sparkle)
- France - Marseille (France Telecom)

## TGN – EurAsia

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



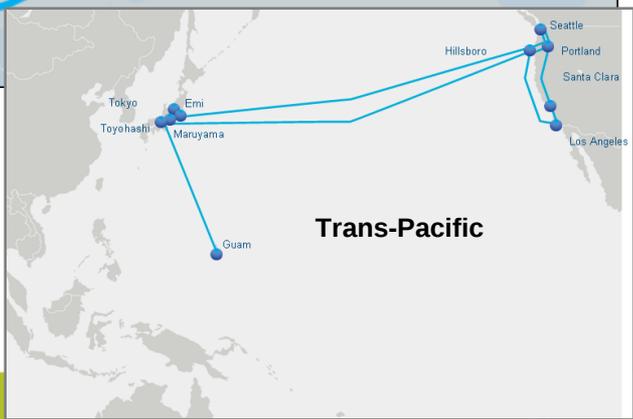
# The Gulf Cable Project



**Gulf - Mumbai Cable**

**Connecting Gulf Countries To the Rest of The World**

- Kuwait**
- KSA**
- Bahrain**
- Qatar**
- UAE**
- Oman**

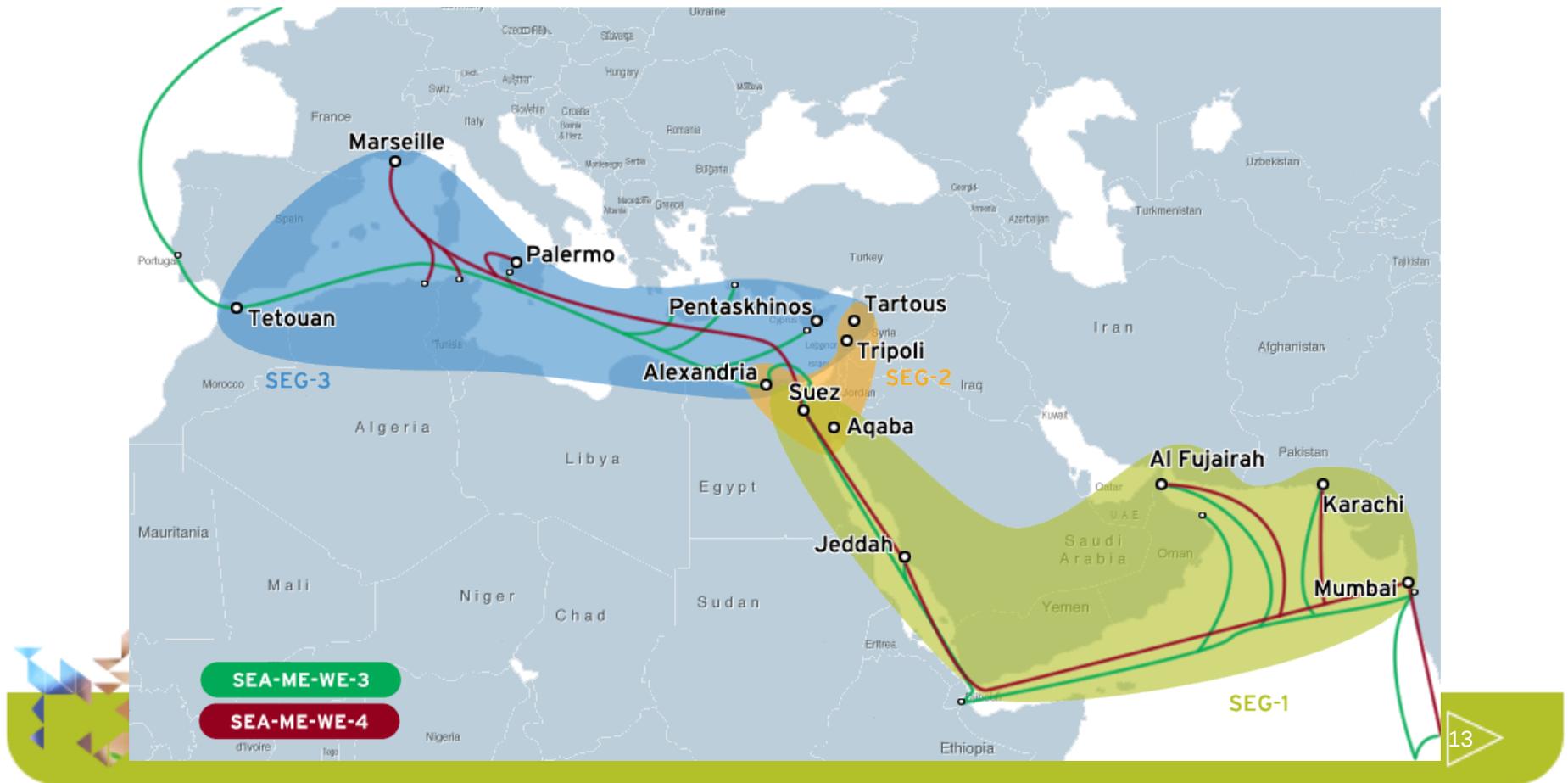


CORPORATE

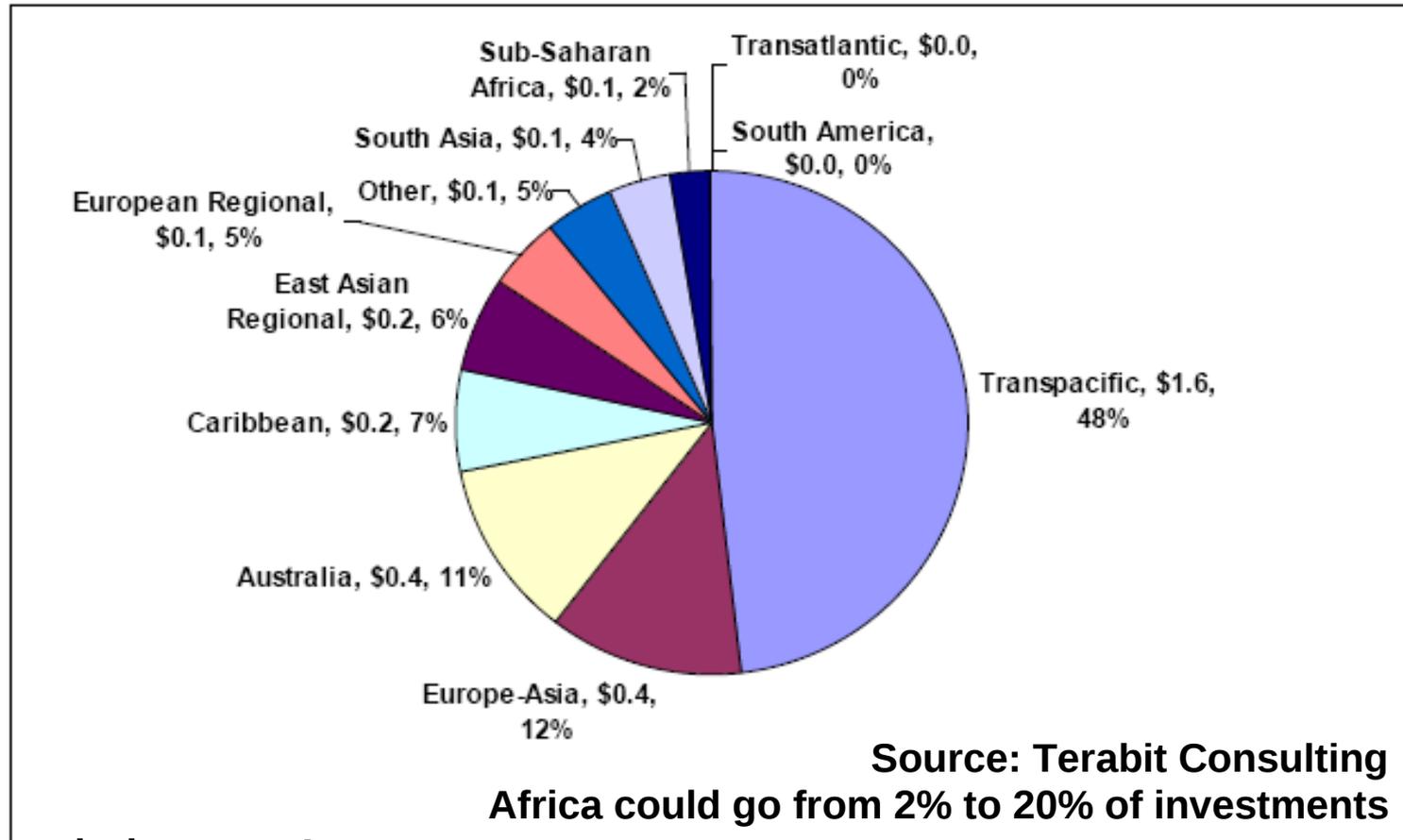
for discussion purposes only

## 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.



## 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: ?



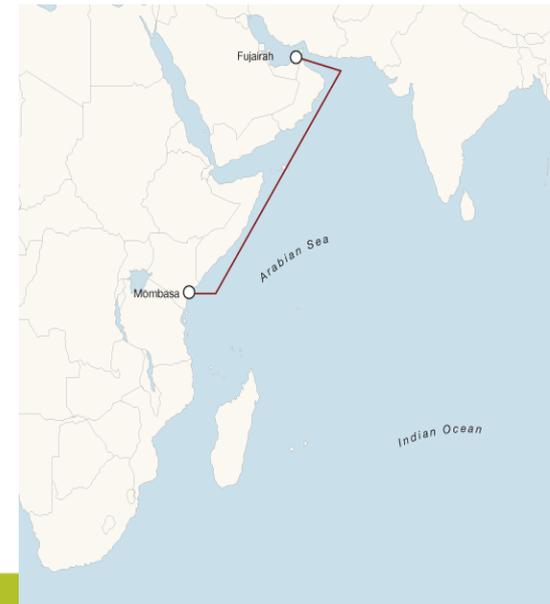
### EASSY

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**

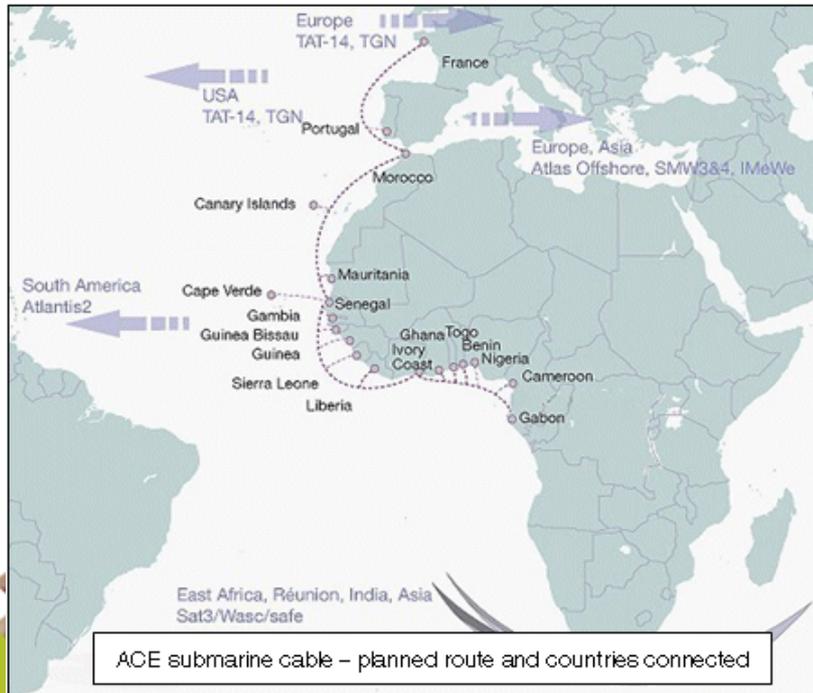
**April 2009: contract awarded to Alcatel**

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

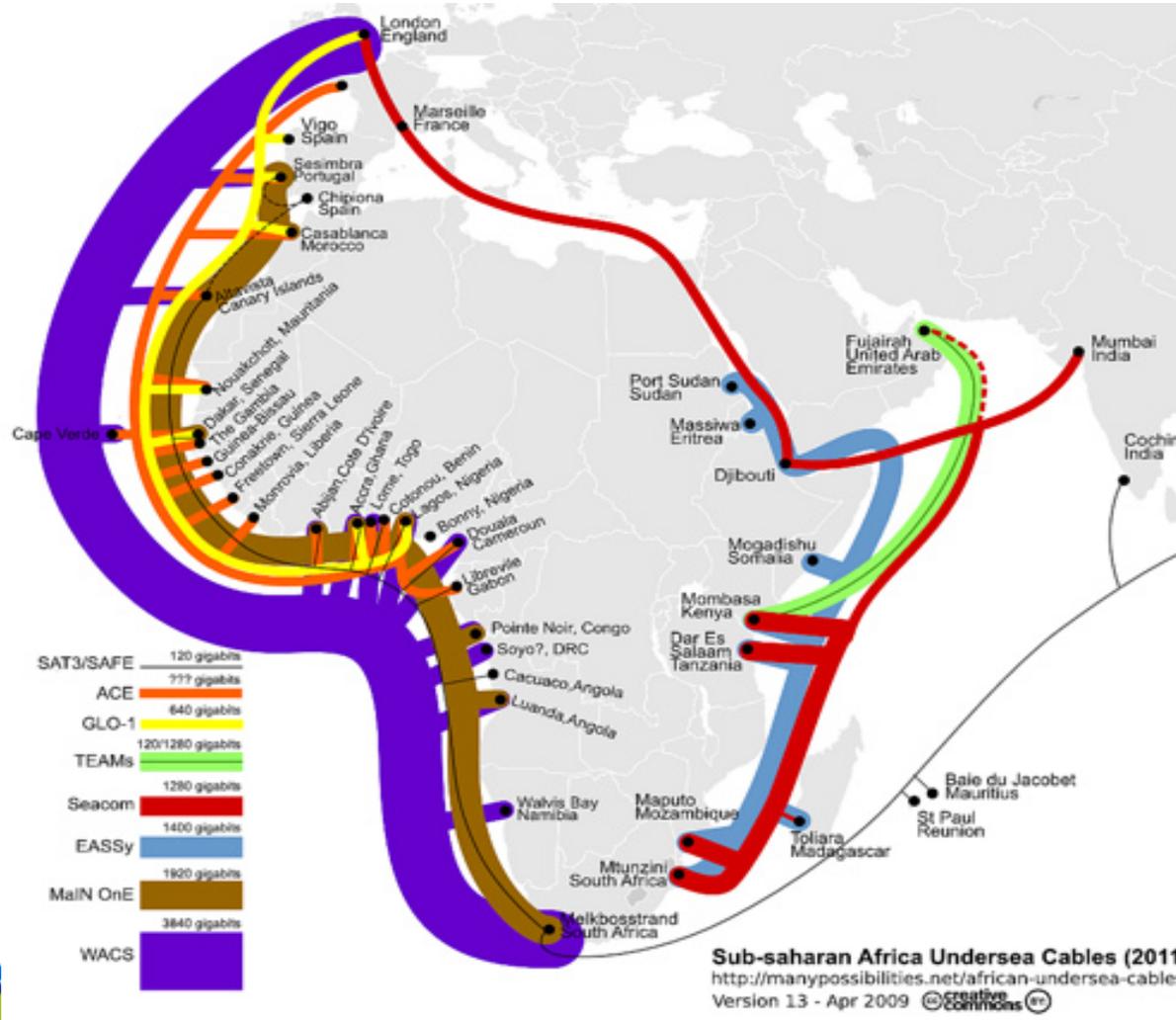
**Main One: Nigerian initiative RFS end 2010  
1.2Tb design capacity**

**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

**ICONS**

- IPV4 POP
- NATIVE IPV6 & IPV4 POP
- NDCC NETWORK OPERATIONS CENTER
- EARTH STATION
- DATA CENTER

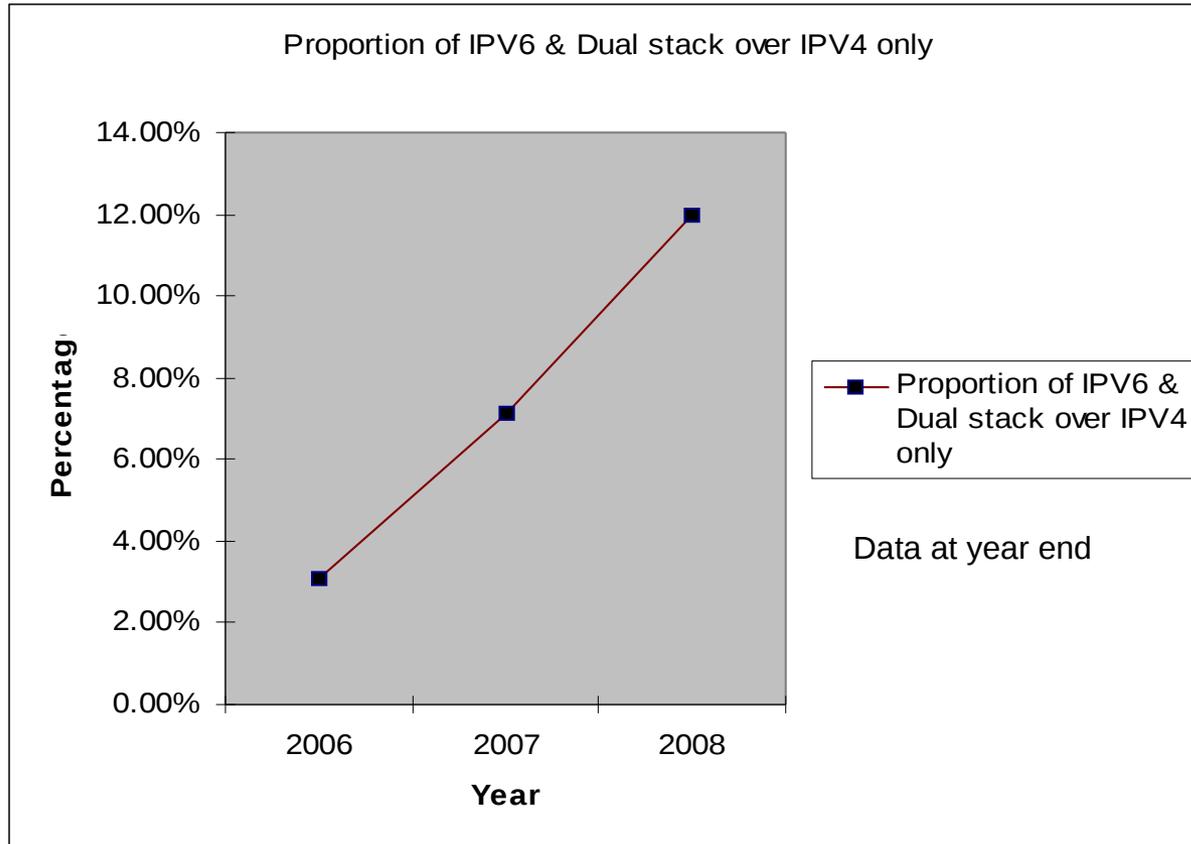
**LINKS**

- IP LINK
- PLANNED IP LINK

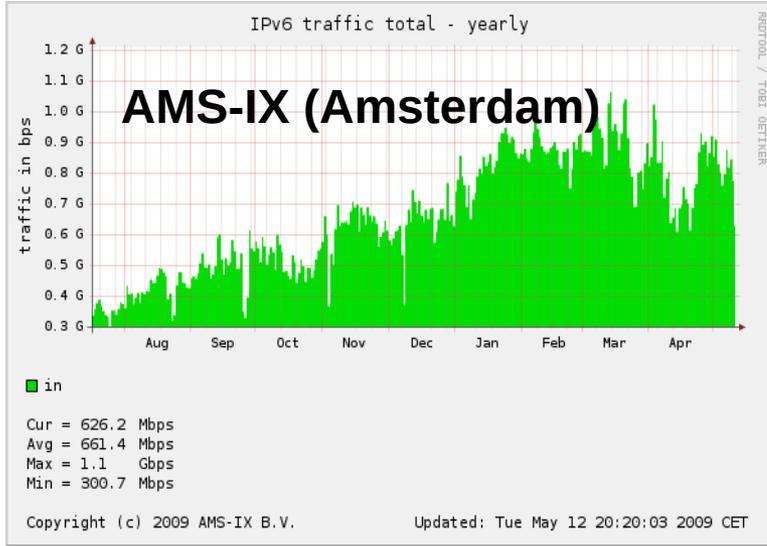
## IP Network at a glance

- 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

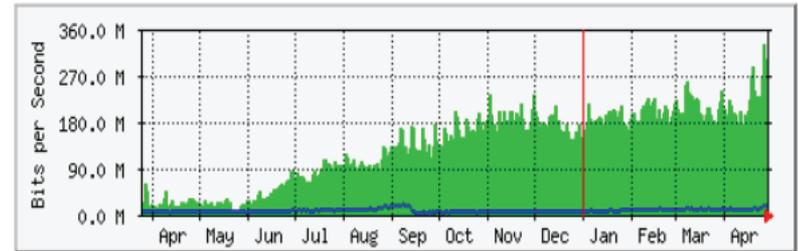


# IPv6 traffic : from some drops to a trickle, the IPv4 dam is leaking

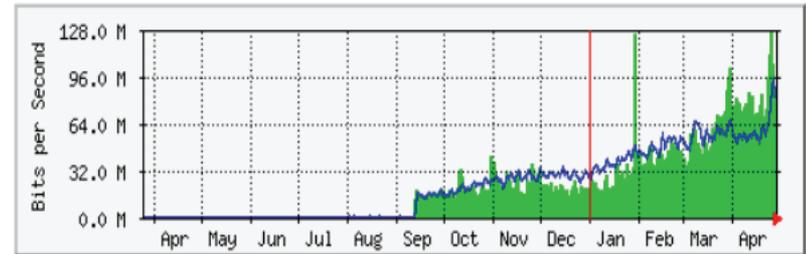


## Free (France)

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

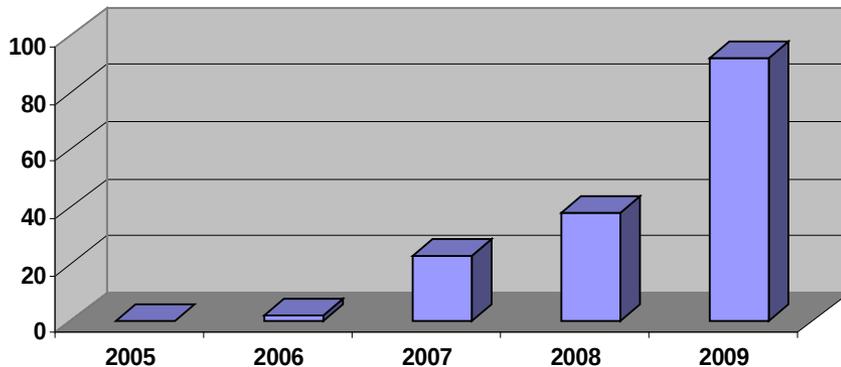


- 6rd-gw2 Yearly Traffic (1Day AVG) :



As presented at RIPE

Freinet 6 traffic level in Montreal (95th percentile)



## **Some final thoughts**

**Technological evolution of subsea cable capacity has been astounding**

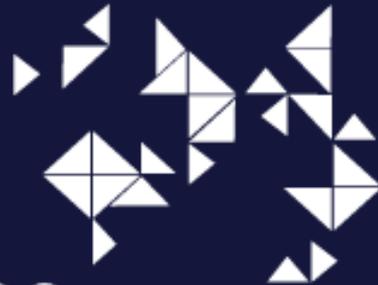
**Ownership of subsea cable capacity and cable build initiatives has shifted dramatically from the West to the East over the last five years.**

**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](http://www.tatacommunications.com)