

The Case for Investing in ICT Infrastructure in Africa

Jabulani Dhliwayo, PhD
Senior VP/ICT Commission Chairman
NEPAD Council

Agenda

- Background
- Why Invest in ICT in Africa?
- NEPAD Supported Projects
- Summary
- Q&A


Background

- ICT Basics
- Commonly used terms
- Communication Networks
- Fiber Optics Basics
- Fiber vs Copper
- Fiber vs Satellite
- Cabled Fiber

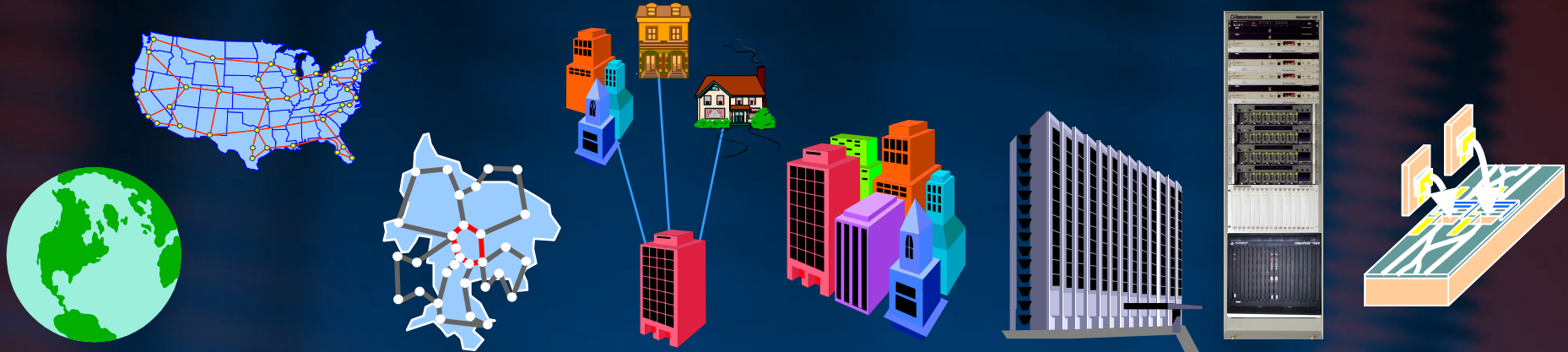
ICT Basics

- ICT – Information and Communications Technology
- Replaces IT by including the communication component
- IT Component is easier to implement
- Communication component consists of:
 - Local area networks
 - Metropolitan networks
 - Access networks
 - Long haul networks (city to city, country to country and continent to continent)
- Lot of work ahead to build long haul infrastructure
- Infrastructure development is a high NEPAD priority

Commonly Used Terms

- Bits - 
- Bps – B/s - Bits/second (also KBps, MB/s, GB/s, TB/s ...)
- Capacity – Transmission data rate Bits/s or Bps
- Bandwidth – Same as capacity
- BroadBand – High data rate connectivity e.g DSL & Cable
- VOIP – Voice over Internet Protocol
- Triple Play – Voice, video and data from one source
- Latency (or delay) – Time taken by a packet of data to get from one point to another
- DSL – Digital Subscriber Loop

Communication Networks



Global Nation Metro Access Campus Premises Racks Cards

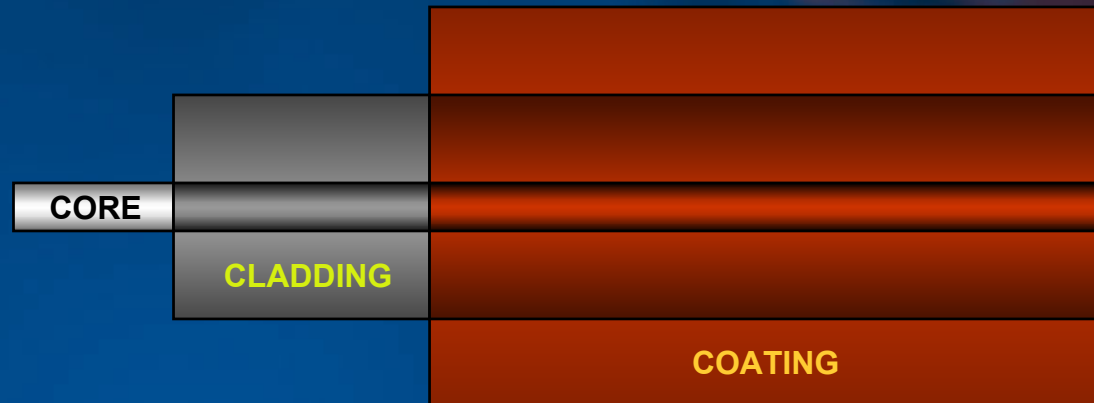
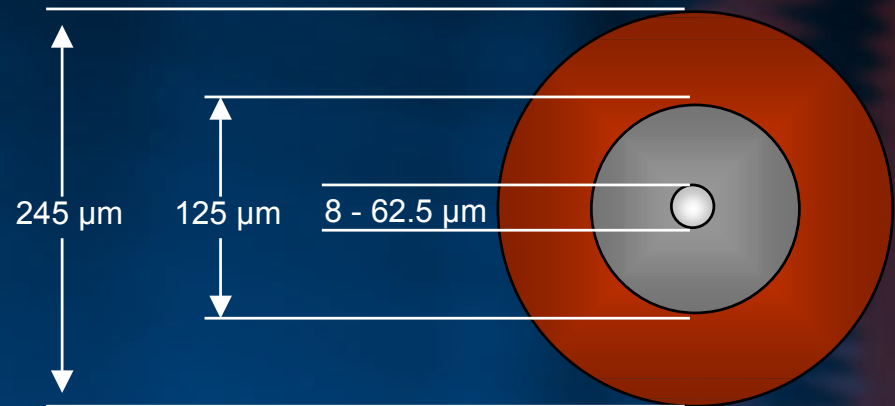
10,000km 1,000 km 100 km 10 km 1 km 100 m 10m 1 m

Africa

North America and Europe

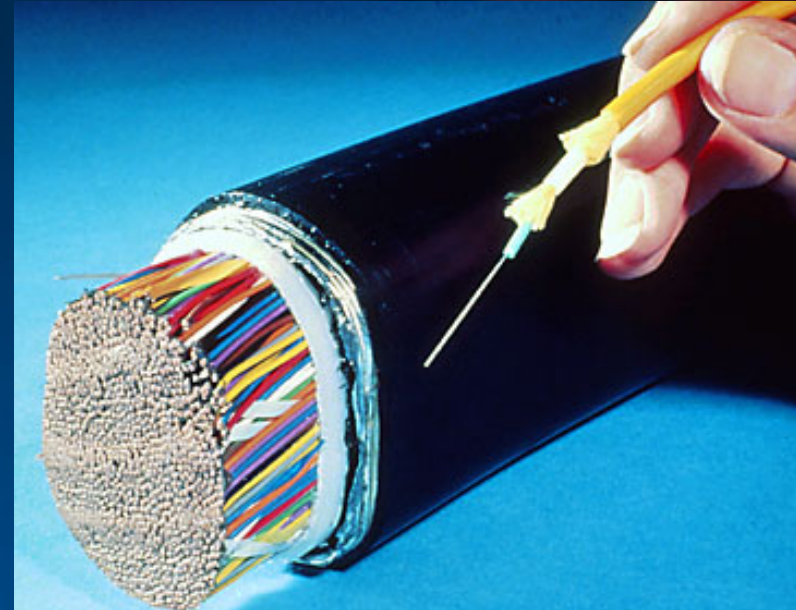
Fiber Optics Basics

- Core
 - Carries the light signals
 - Silica and a dopant to raise index of refraction
- Cladding
 - Keeps the light in the core
 - Pure Silica
- Coating
 - Protects the glass
 - Acrylate (plastic)



Fiber versus Copper

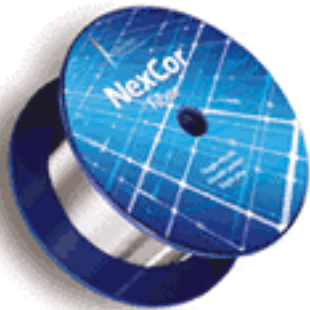
- A single copper pair is capable of carrying 6 phone calls
- A single fiber pair is capable of carrying **over 2.5 million** simultaneous phone calls (64 channels at 2.5 Gb/s)
- A fiber optic cable with the same information-carrying capacity (bandwidth) as a comparable copper cable is less than 1% of both the size and weight



Fiber vs Satellite

	SATELLITE	Fiber Optic Cable
Capacity	Limited – A single undersea cable has more capacity than the entire fleet of 220 GEO satellites.	High – Current technology allows up to 10.24 Tb/s in a single repeatered cable.
Cost/bit	High – limited capacity results in high cost/bit	Low – significant amount of bandwidth reduces cost/bit
Latency	High – ½ s from ground to satellite	Low – average of 1/50s transmission time
Life	12-15 years	25-30 years

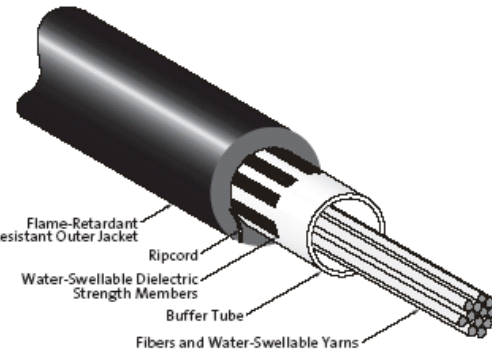
Cabled Fiber



**Single-Mode.
Double Power.
Triple Play.**

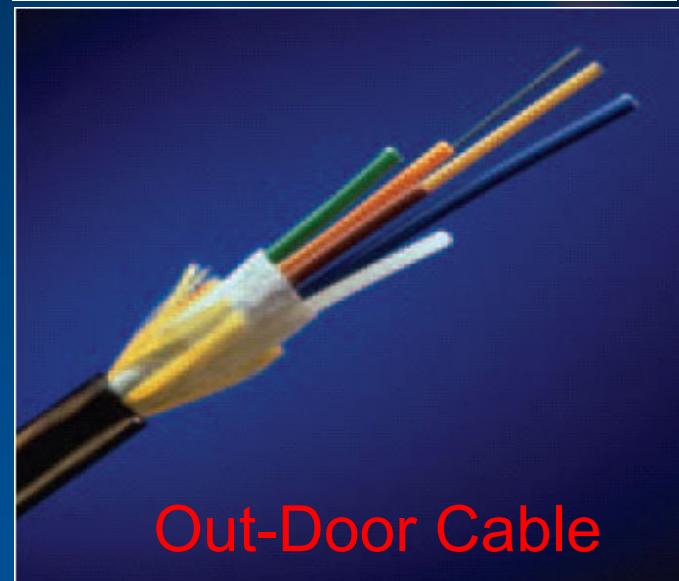
Corning Optical Fiber proudly introduces NexCor™ Fiber

Under-Sea Cable



FREEDM LST Geopipe Cable | Drawing ZA-2470

In-Door Cable

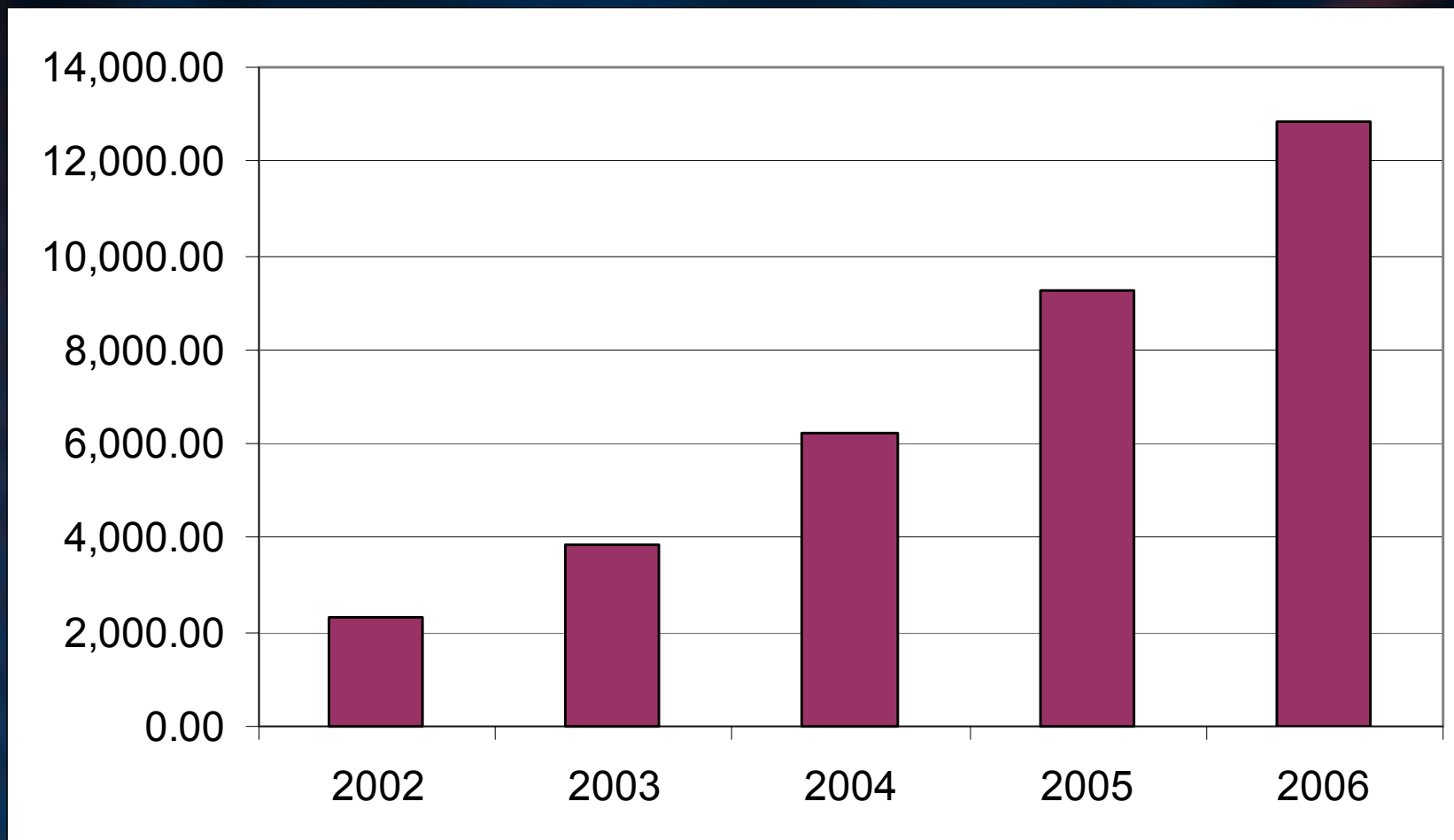


Out-Door Cable

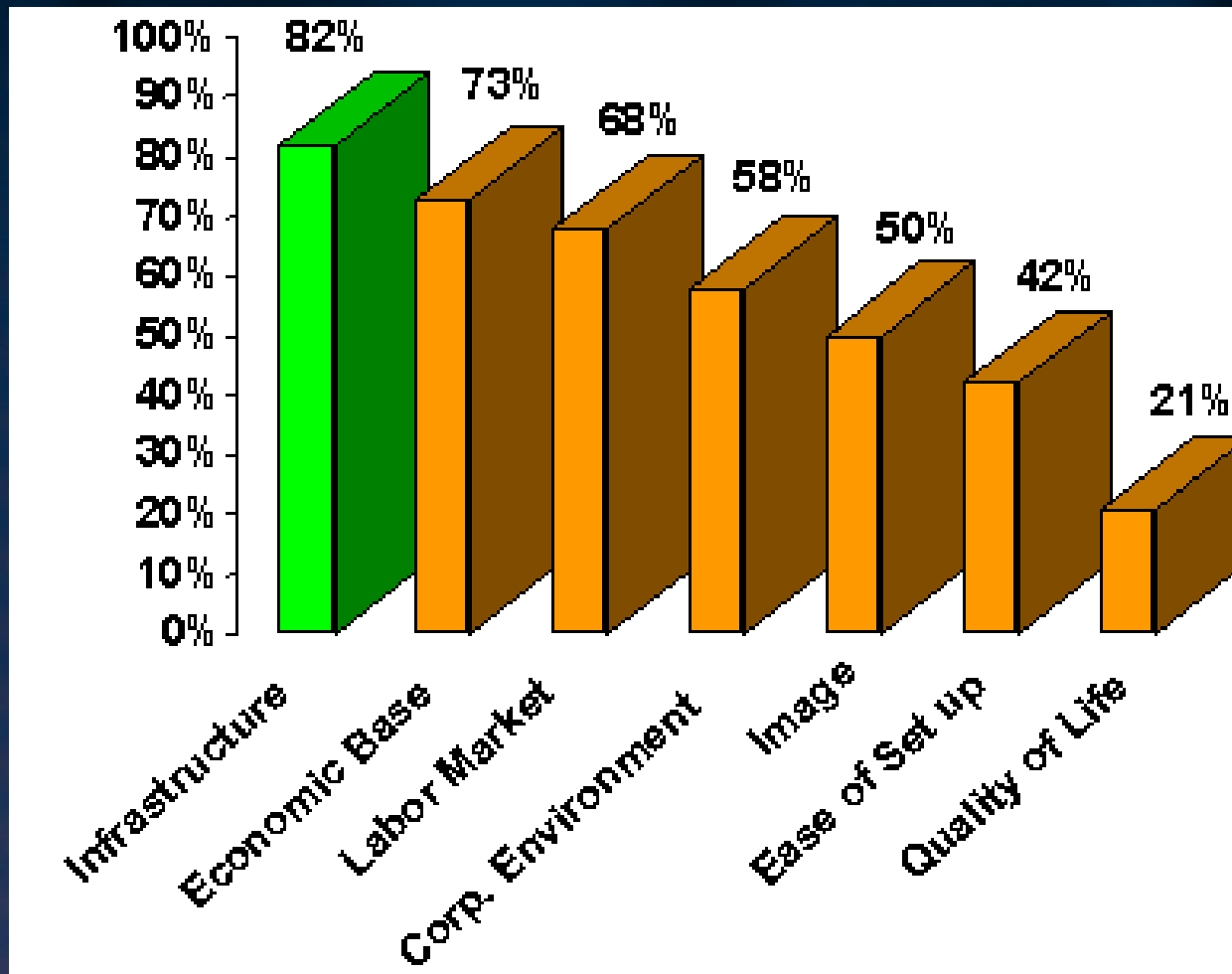
Why Invest in ICT in Africa?

Building wealthy through ICT
Very low internet connectivity
Low international bandWidth
Very high internet costs

Global e-Commerce Estimates and Focus Forrester – Billions of \$



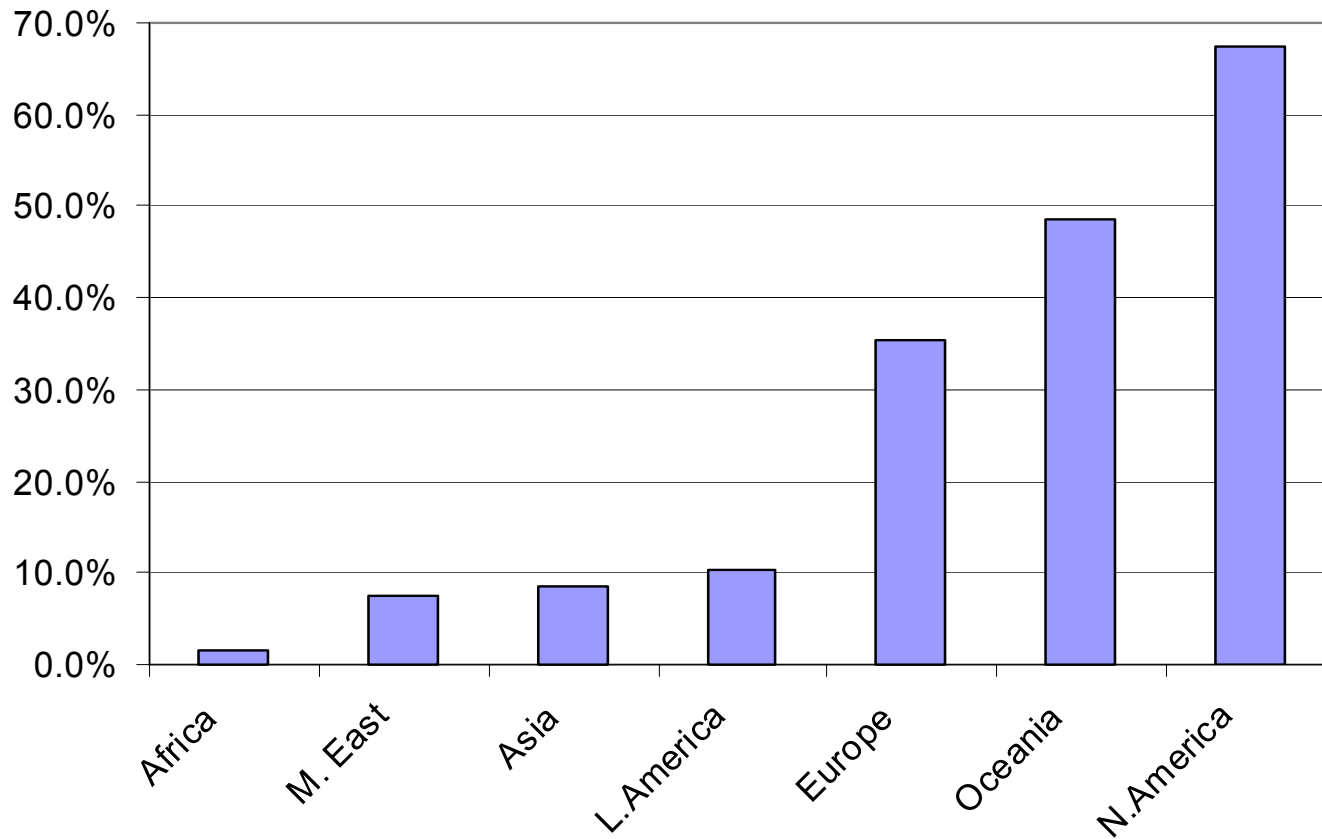
Most important requirements for Foreign Direct Investment (FDI)



Source: Booz, Allen, & Hamilton

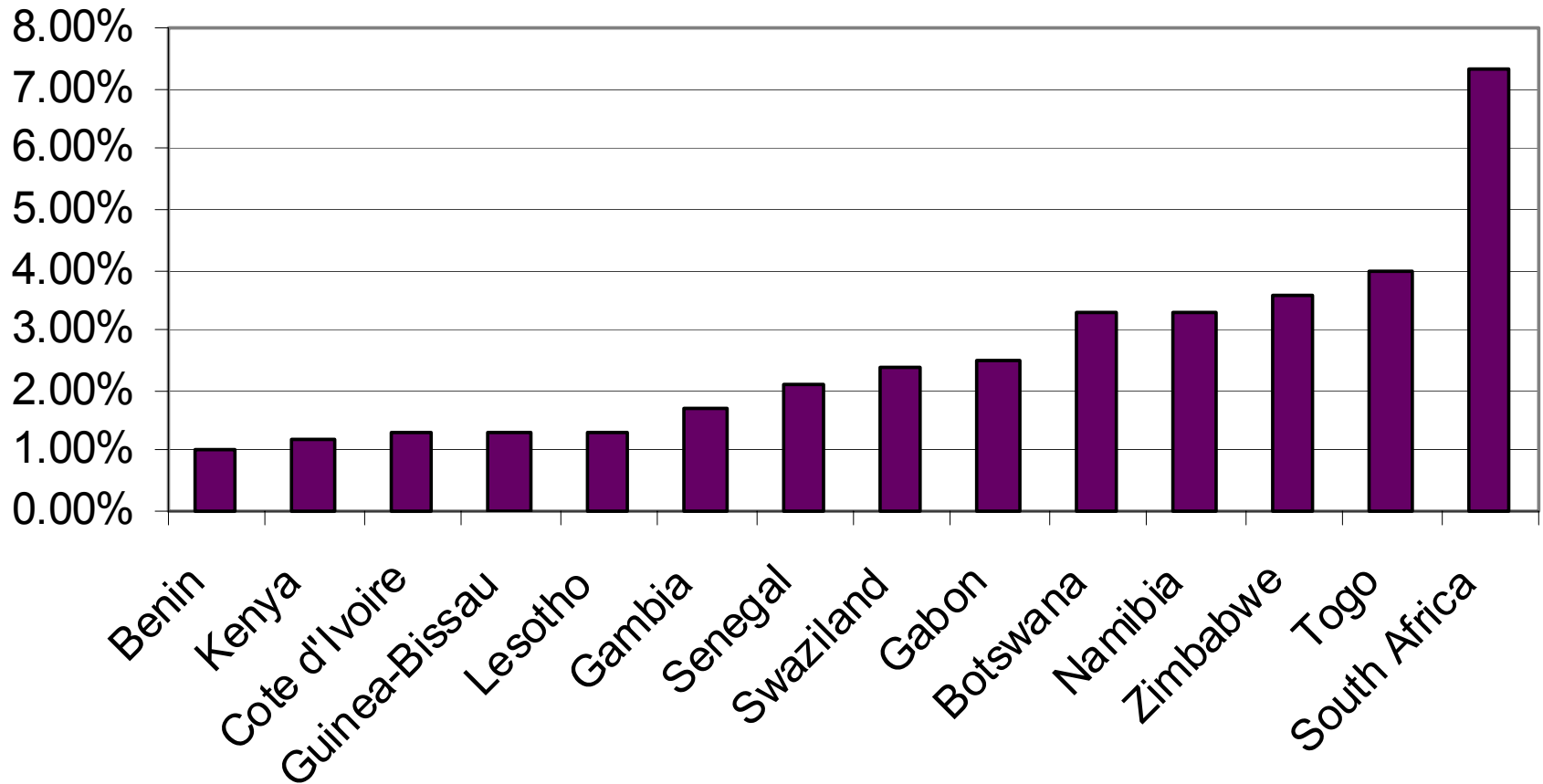
Global Internet Penetration

Global Internet Penetration

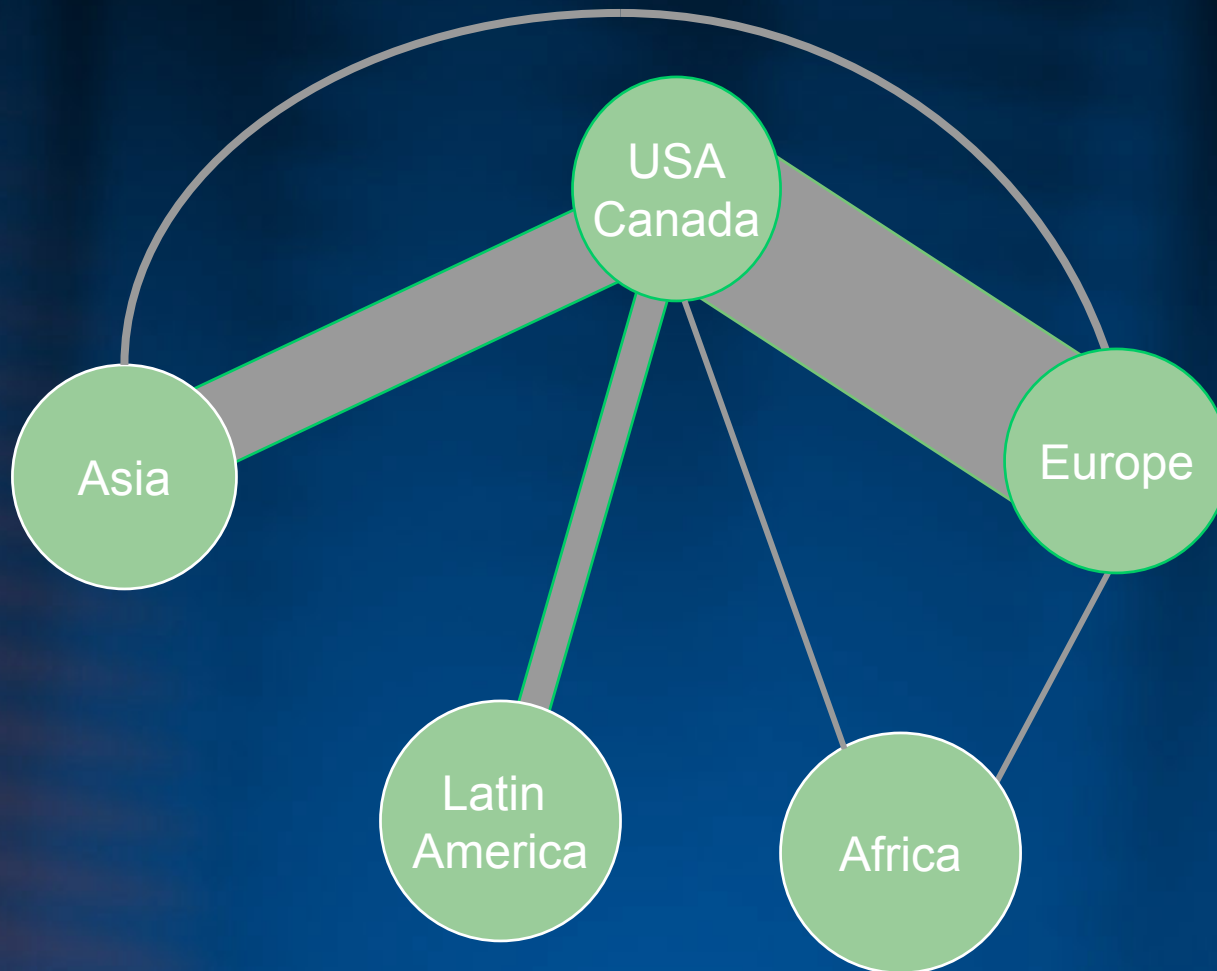


African statistics is dominated by South Africa, Mauritius, Seychelles and Reunion

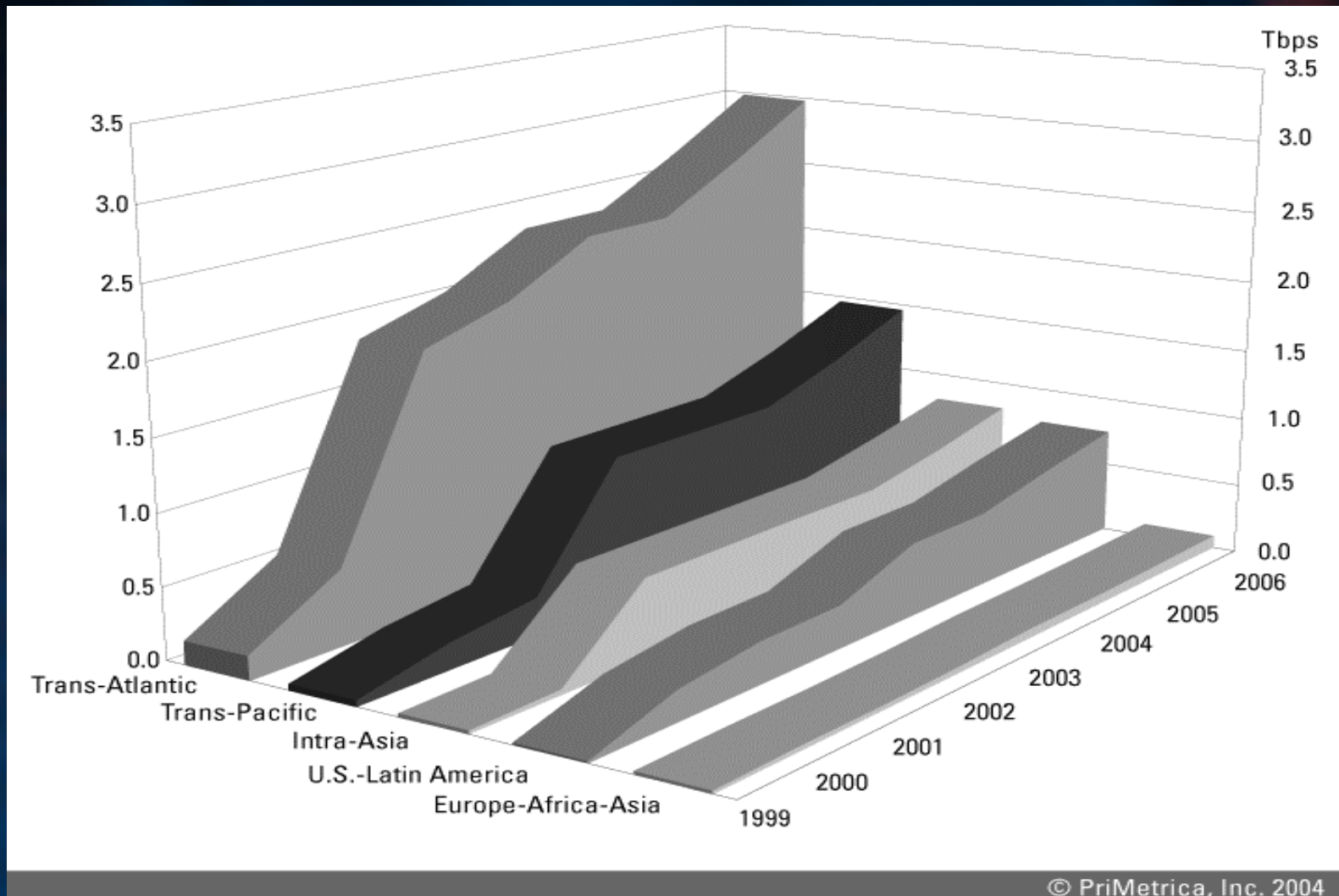
Internet Penetration Selected Sub Saharan African Countries



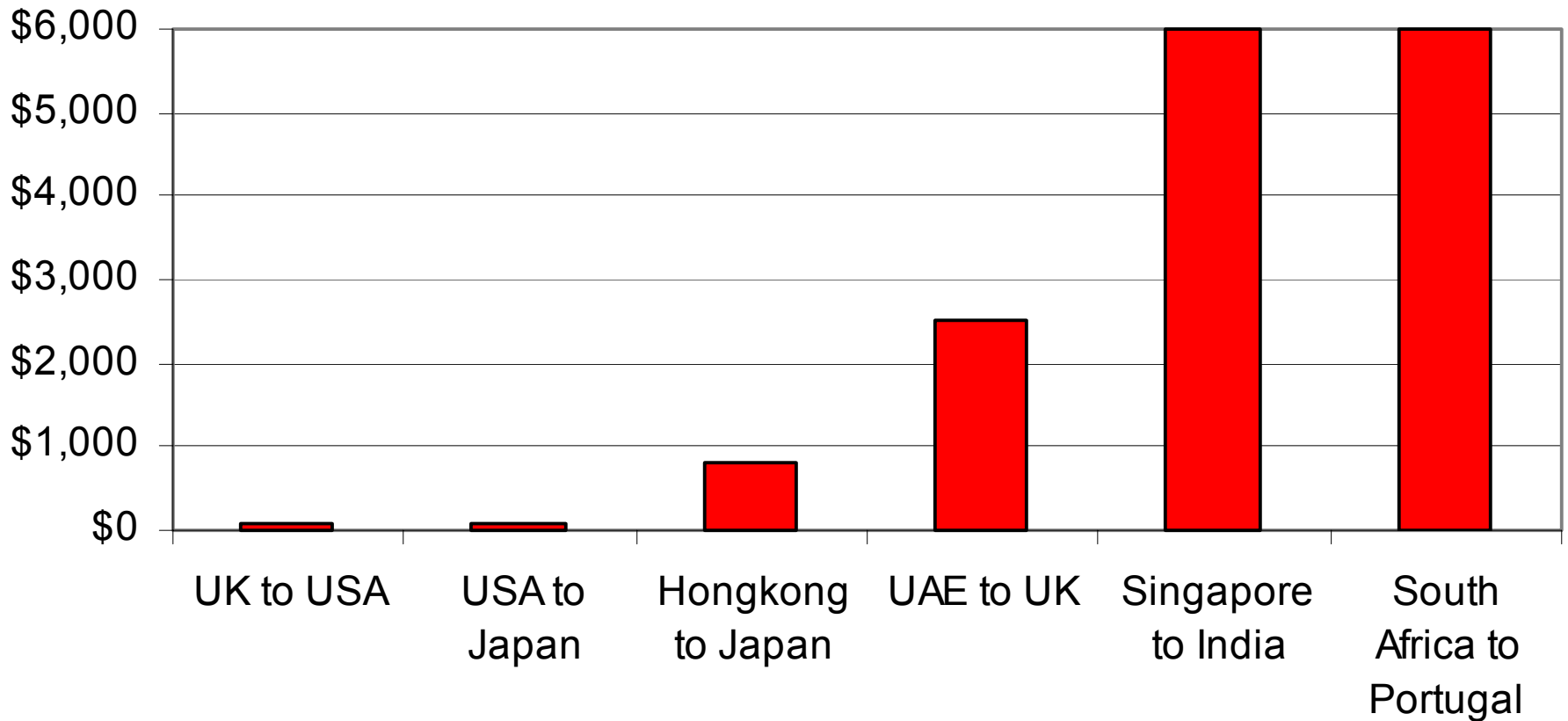
Intercontinental Bandwidth



Lit Submarine Cable Capacity Trends by Route, 1999-2006



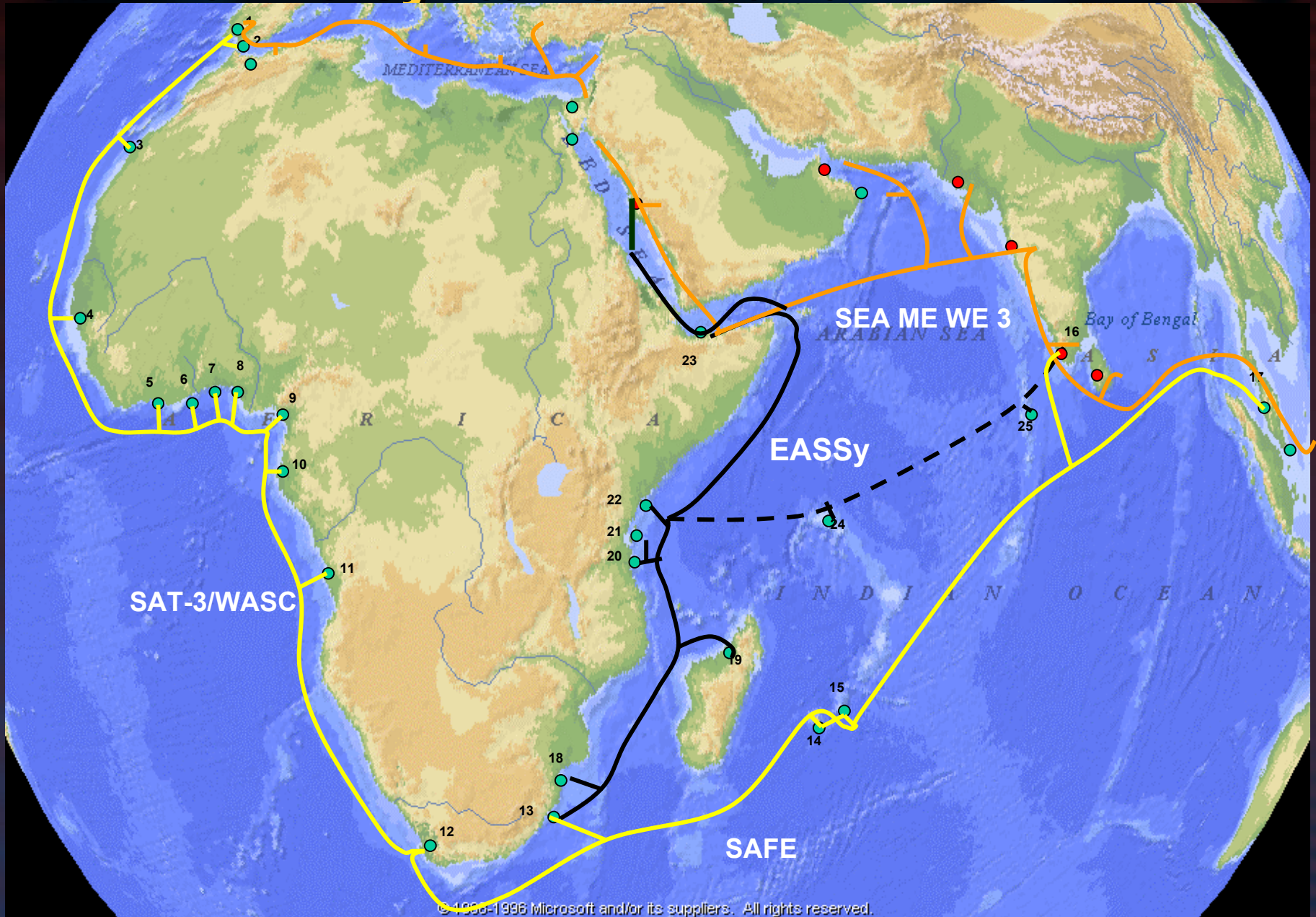
Selected International Bandwidth Prices (Approximate) /Mbps/Month



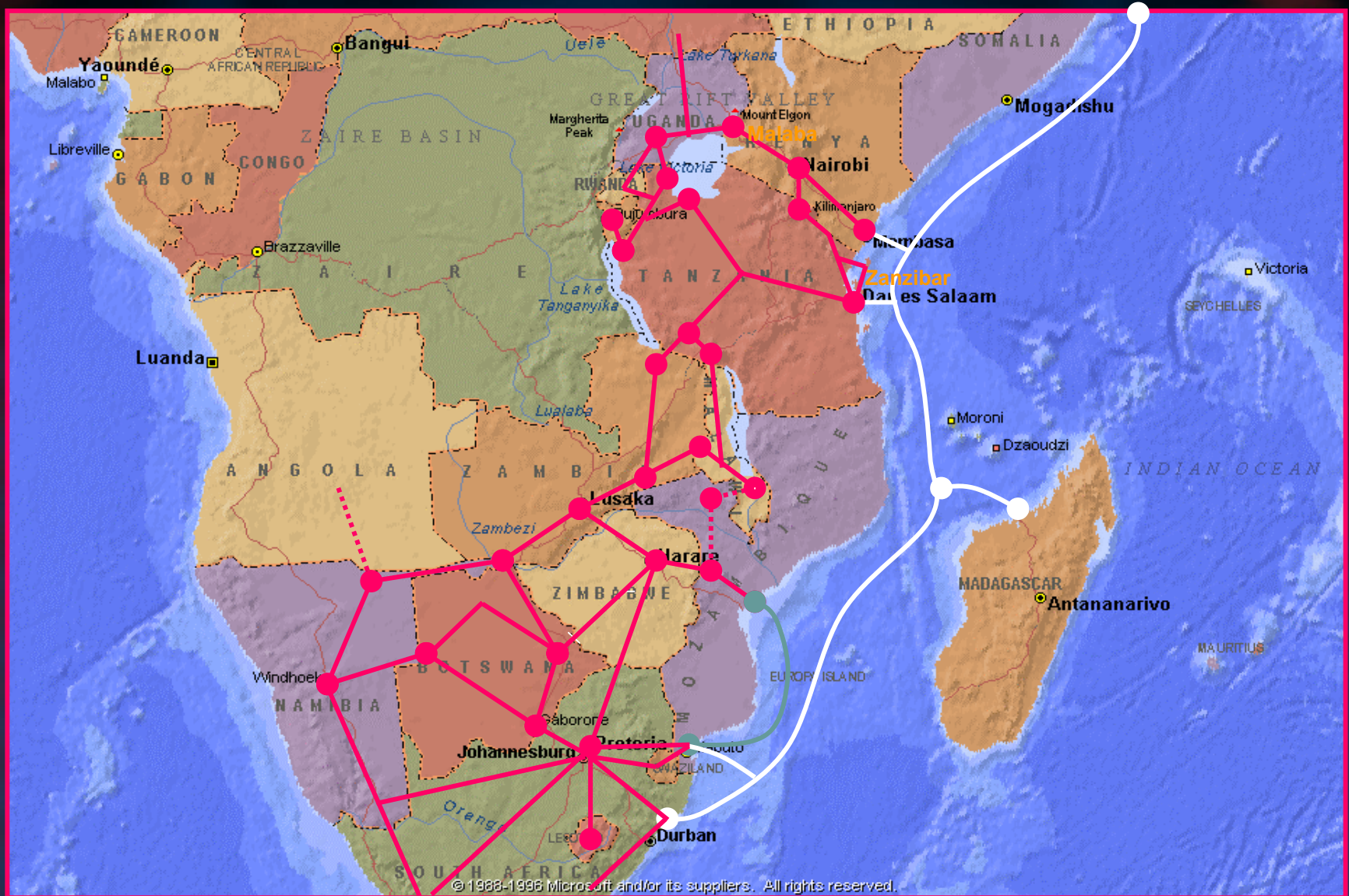
NEPAD Supported Projects

- E-Schools Initiative
- EASSY
- COM7
- SRII

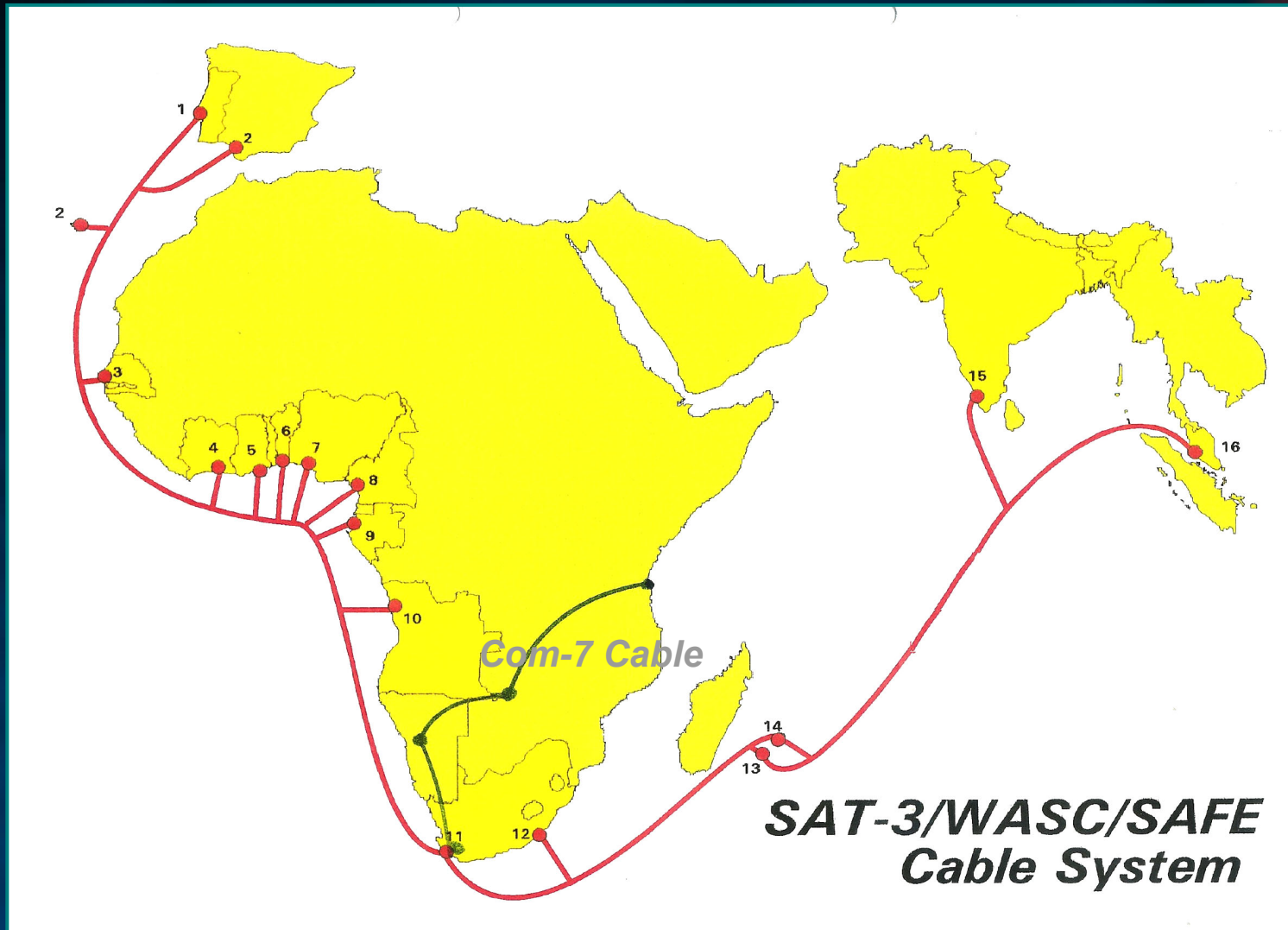
Submarine Systems Around Africa



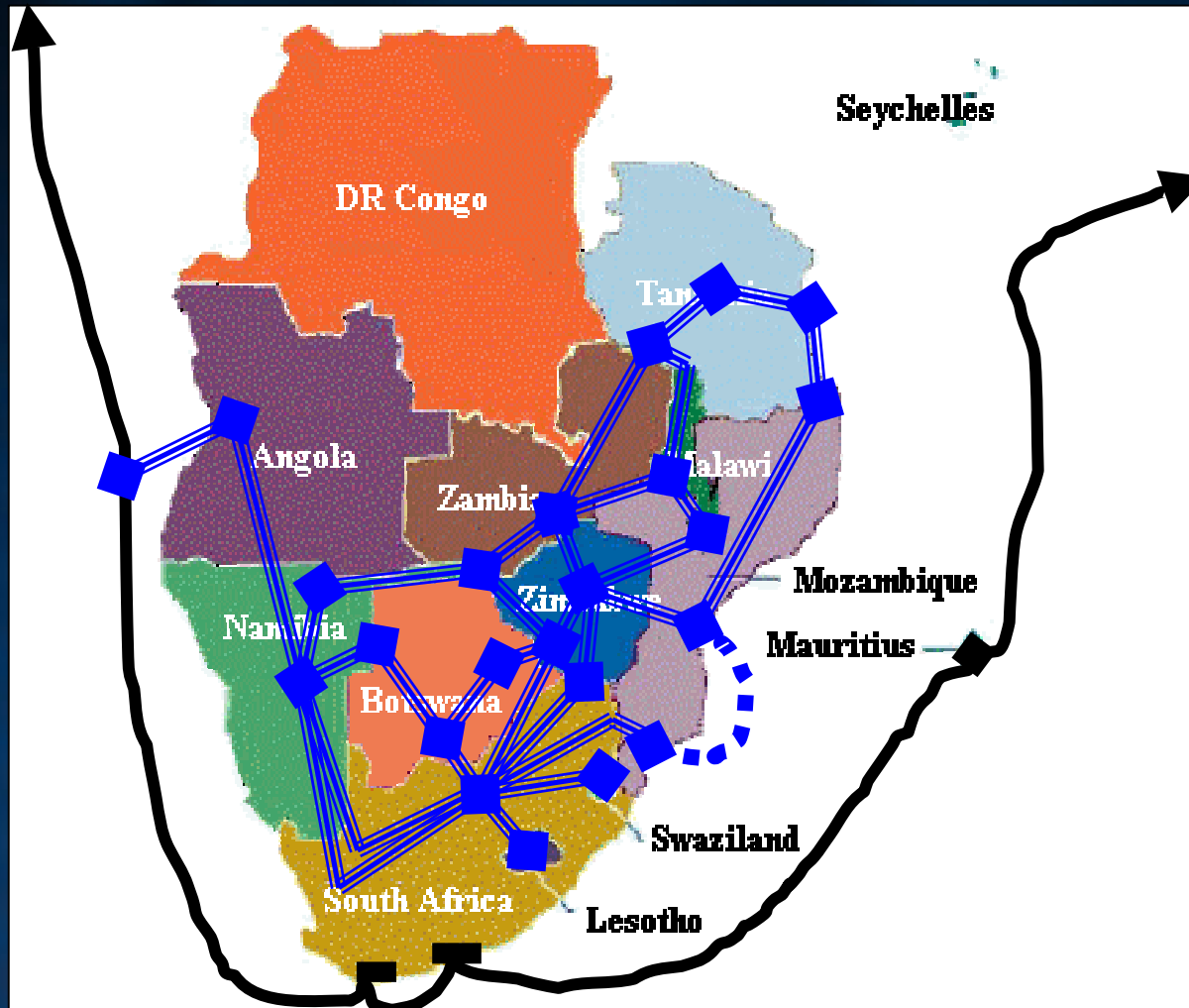
Backhaul links to EASSy Cable



COM -7



(SRII) SADC Region Information Infrastructure:



Summary

- Potential of building wealthy through:
 - e-Commerce
 - e-Jobs
 - Attracting foreign firms
- Modern ICT infrastructure should be priority # 1
 - Improve connectivity
 - Reduce bandwidth cost
- Support NEPAD planned and ongoing projects

Important Contacts

- Dr. Jabulani Dhliwayo – NEPAD Council –
jdhliwayo@nepadcouncil.org
- Dr. Henry Chasia – e-Africa Commission (NEPAD)
HChasia@aol.com
- Brian Cheesman – e-Africa Commission (NEPAD)
bcheesman@eafricacommission.org