Building Networks Through a Pandemic

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Bienvenue à Montréal !

- Parlez-vous français? English? Frenglish?
- Born, raised, educated, in Montreal, (my) gateway to the world
- Starting point of my International telecommunications journey and NANOG
  - 1993 Teleglobe Canada
  - 1996 Launched AS6453
  - 2013 Cofounded QIX

- NANOG and me
  - 2003 first attended NANOG30 in Miami
  - 2007 presented at NANOG39 Taiwan Earthquake Fiber Cuts: a Service Provider View
  - 2009 Programme Committee
  - 2011 -2013 Board of Directors
  - How many Nanog: >40 (?)
Pre-pandemic

High sense of purpose and meaning.
Nourished by getting to know new people and building together (joint purpose)

During pandemic...

At home 24x7x 800 days
Loneliness, powerlessness
Screen fatigue
Feeling ‘unconnected’
Every encounter is ‘a meet’
Sense of purpose intact
Outline

● Why Africa?
● The role of submarine cables in connectivity
● What is Equiano?
  ○ connectivity
  ○ the economy
Why Africa?

- Big and hot I think?
- Feel like there might be pyramids up around here.
- Desert?
- You can safari anywhere right?
- Patterns and masks must be around...
- I think Nelson Mandela hung out over here.
- Drums?
Africa lags in internet penetration

Source: World Bank Open Data, Individuals using the Internet (% of population) - North America, European Union, Latin America & Caribbean, South Asia and Sub-Saharan Africa.
Rapid population growth and urbanisation

87% population growth in Africa between 2020 and 2050

2019: 1.3B
2050: 2.5B

45%
Urban population expected to grow by 190 million people, leading to 45% of Africans living in a city by 2025

79%
Consumers in large urban areas spend 79% more than the national average on goods and services

Africa as an engine of growth

Africa’s economy has significantly expanded over the past decade.

Key takeaway: Gross domestic product (GDP) grew by 4% per year between 2010 and 2019, more than twice that of the EU-28 (1.7%) and Latin America (1.7%) over the same period.

Pro-innovator regulation

The African Continental Free Trade Area (AfCFTA)

● **Largest** free trade area by number of members
● **1.3 billion people**
● Combined GDP of **USD 3.4 trillion**

The AfCFTA enables Africa’s regional economic communities to become more integrated and easier to access.

The digital economy’s potential

By 2025, the Internet economy has the potential to contribute $180 billion to Africa’s economy growing to $712 billion by 2050.

COVID-19 delayed economic growth both in Africa as well as the rest of the world. However, the resilience of the internet economy, coupled with private consumption, strong developer talent, public and private investment, investments in digital infrastructure, and new government policies and regulations will continue to drive this growth in Africa.

The submarine connectivity value chain

Source: Google Cloud, 2021.
Africa’s connectivity infrastructure challenges

- **Data centres** are predominantly outside the continent
- **Existing submarine cables** are ageing
- **Edge locations** on the continent are not fully developed
- **Middle-mile infrastructure** is underdeveloped
- **Last-mile infrastructure** is not sufficiently dense
Africa’s fibre infrastructure
Equiano Subsea Cable Route
Equiano landing in Rupert’s Bay (St. Helena) – August 2021
Equiano landing in Lomé (Togo) – March 2022
Equiano landing in Lisbon (Portugal) – May 2022
Equiano landing in Lagos (Nigeria) – 4 June 2022
Why did Google invest in Equiano?

- Ageing cable infrastructure
- Growing demand for data
- Better performance
- Redundancy
- Creating diverse and scalable paths to reach more users
A project built on partnerships

Equiano
Google partners with wholesale backbone providers to bring Equiano’s additional bandwidth inland

Wholesale backbone providers
Wholesale backbone providers carry this bandwidth and sell capacity to consumer-facing ISPs

ISPs
ISPs sell internet access to end users, including businesses and individuals

End users
Individuals and businesses ultimately and indirectly benefit from Equiano's additional capacity
Measuring Equiano’s expected impact

- **Outputs (Supply-side impact):** Improved internet speeds and reduced latency, IP transit price decline, declined retail mobile and fixed broadband prices.
- **Outcomes (Demand-side impact):** New internet use cases, increased internet usage, increased broadband penetration.
- **First-order economic impact:** Growth of the ICT sector, growth in the digital economy and periphery sectors, improved productivity throughout the economy.
- **Second-order economic impact:** Overall growth in GDP and GDP per capita, growth in number of jobs, reduction in greenhouse emissions.
Equiano’s impact on connectivity – international bandwidth

International bandwidth capacity in Togo (2016 - 2025)

- Additional cumulative bandwidth capacity from Equiano
- International bandwidth capacity before Equiano

Sources: TeleGeography, 2021, Global bandwidth services | Genesis Analytics, 2022, team analysis
Note: **Equiano impact analysis period
Equiano’s impact on connectivity – affordability

Equiano’s impact on retail internet prices in Togo (2021 - 2025)

Decline in IP transit prices: 41%
Reduction in retail internet prices: 14%

Source: Africa Practice and Genesis Analytics, 2022, Equiano Subsea Cable: Togo Economic Impact Assessment.
Equiano’s impact on connectivity – speeds

Equiano’s impact on average internet speeds in Togo (2021 - 2025)

Source: Ookla, 2022, Global Index | Genesis Analytics, 2022, team analysis
Note: **Equiano impact analysis period
Equiano’s impact on connectivity – internet penetration

**Reduction in Retail Fixed and Mobile Broadband Prices**

- A reduction in retail fixed and mobile broadband prices will boost adoption and usage of the internet through:
  - New internet subscribers, more so for fixed broadband, who previously could not afford the cost of a subscription
  - Increased internet usage by subscribers who will be able to get more data or improved speeds at the same or a lower price
  - Increased adoption of new internet use cases which have high data requirements and were previously too costly

**Improved Speeds and Latency**

- Faster internet speeds and lower latencies are likely to enable new internet use cases, such as online learning and videoconferencing, which have greater broadband requirements

**Narrowing of the Digital Divide through Expanded Access to the Internet and Better User Experiences**

- 5.1% increase in internet penetration (2021-2023, % points)

Source: Africa Practice and Genesis Analytics, 2022, Equiano Subsea Cable: Togo Economic Impact Assessment.
Equiano’s impact on the economy and job creation

Between 2022 and 2025, average year-on-year real growth to be higher by:

0.5% points

By 2025, real GDP expected to be higher than it otherwise would have been by:

USD 193 million

Additional total economic output due to Equiano amounting to:

USD 351 million

Source: Africa Practice and Genesis Analytics, 2022, Equiano Subsea Cable: Togo Economic Impact Assessment.
Equiano’s impacts elsewhere on the continent

A boost for connectivity

- Average internet speeds are set to rise following Equiano’s landing
- Equiano will also result in major price reductions for consumers, improving affordability of access
- Improved speeds and affordability will result in greater internet penetration

A catalyst for growth, job creation and sustainability

- By 2025, real GDP expected to be higher than it otherwise would have been by:
  - Nigeria: USD 10.1 billion
  - South Africa: USD 7 billion
  - Namibia: USD 260 million

- Equiano will boost job creation (2022 - 2025)
  - Nigeria: 1.6 million jobs
  - South Africa: 180,000 jobs
  - Namibia: 21,000 jobs

- Tonnes of CO₂ emissions to be saved (2022 - 2025)
  - Nigeria: 2.8 million tonnes
  - South Africa: 2.3 million tonnes
  - Namibia: 21 kilotonnes

Equiano Video 1m40s

Learn about the Equiano submarine cable
Takeaways to the NANOG community - (all non technical)

● You get what you give, pay it forward
  ○ NANOG provided work and volunteer opportunities to have an impact
  ○ A community of caring colleagues, some are friends for life
  ○ Get involved

● My challenge to you - nurture your connections
  ○ Connect15
  ○ Reachout5

● Go for impact

● Go for meaning

● Thank you and take care of yourself and each other