

The Importance of Data Engineering in Africa

Transforming data into economic power



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The African Data Paradox

600 million African internet users generate as much data as 300 million Europeans, but Africa hosts less than 6% of the world's data centers.

Region	Internet Users	Data Centers	% of Global
Asia	~2.9 billion	~1,598-2,068	18-24%
Europe	~750 million	~2,768-3,346	31-38%
Africa	~570 million	~121-494	1-6%
North America	~350 million	~5,767	~65%
South America	~470 million	~492-654	6-7%
Oceania	~30 million	~300-401	3-5%

The Value Gap



300M African users on Facebook

But servers in Europe/USA

→ *High latency, value leaves the continent*



Raw data without infrastructure

Like crude oil without refineries

→ *Potential wealth, zero value creation*

What is Data Engineering?

Building the highways through which data flows:

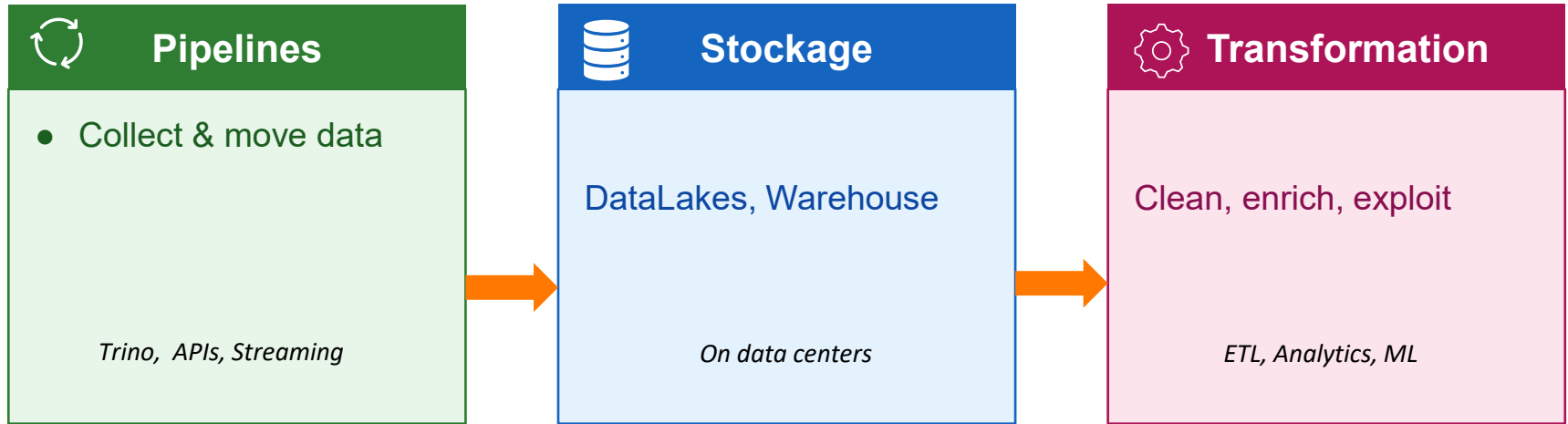
Collection • Storage • Transformation • Delivery

Example: Paying 500 FCFA with Orange Money

- ✓ Data engineering collects the transaction
- ✓ Validates in <2 seconds (even on 2G network)
- ✓ Makes it available in your history
- ✓ Feeds ML models (credit scoring)

Without solid data engineering: failed transactions, blocked money, no traceability

The 3 Pillars of Data Engineering



User → Collection → Storage → Transformation → Insight → Action

Strategic Role of Data Engineering

**"If we don't master our data infrastructure,
we don't master our digital economy."**

- 95% of African data hosted outside the continent
- Latency: 300-500ms vs 20-50ms locally
- Cost: International bandwidth = expensive
- Legal: GDPR, US Cloud Act = foreign access to data

Emerging solutions: Local data centers • More Submarine cables

Social Impact: the enablers

Financial Inclusion

66% unbanked

Mobile money provides access
Alternative credit scoring
Instant loans based on recharge history

Education

EdTech platforms

Learning analytics
Personalized education

Public Health

Epidemic tracking

Disease tracking (COVID) via telecom data
Medicine supply chain optimization

Governance

E-government

Taxes, civil status, elections
Transparency through data

Agriculture

Small farmers

Hyperlocal weather forecasts
Direct-to-market platforms

AI Models

Network deployment

Data engineering identifies rural network needs
No more nepotism required

Economic Impact

Job Creation

Data engineers in high demand (2-3x average salary)

Ecosystem: analysts, ML engineers, cloud architects

Revenue Growth

Orange Money: +15% revenue thanks to analytics

Micro-loans, insurance products

Investment Attraction

Fintech startups raising millions

Data infrastructure = investment criterion

Real World Impact

Before Data Engineering:

Local communities in rural areas often relied on internal advocates within the company to help advance their telecom network requests.”

After Data Engineering:

We directly identify where network implementation needs are, using data analytics to pinpoint underserved areas and population density patterns.

Data-driven decisions foster equity

Africa's Three Choices

1

Remain a consumer of technologies designed elsewhere

2

Become a provider of raw data for global tech giants (GAFA)

3

Master data engineering and create value locally

Choice 3 requires:

- Invest in training (bootcamps, universities)
- Build local infrastructure (data centers, cloud)
- Regulate intelligently (protect without stifling)

The Path Forward

West African platforms prove it's possible.

Orange processes billions of transactions (OrangeMoney, users' call, ...)

The know-how is here.

Now we must industrialize it.

"Data is the oil of the 21st century.

This time, Africa must own its refineries."