ICTs and how they influence economic development in Africa

Universities, Entrepreneurship and Business Development in Africa
Hochschule Bonn-Rhein-Sieg University of Applied Sciences

Bitange Ndemo, University of Nairobi

Key Policy Proposals

1. Universal Access to ICT Infrastructure
2. Local Content, Application, Innovation and necessitating Big Data through Open Data
3. Capacity Building
4. Public Private Partnerships
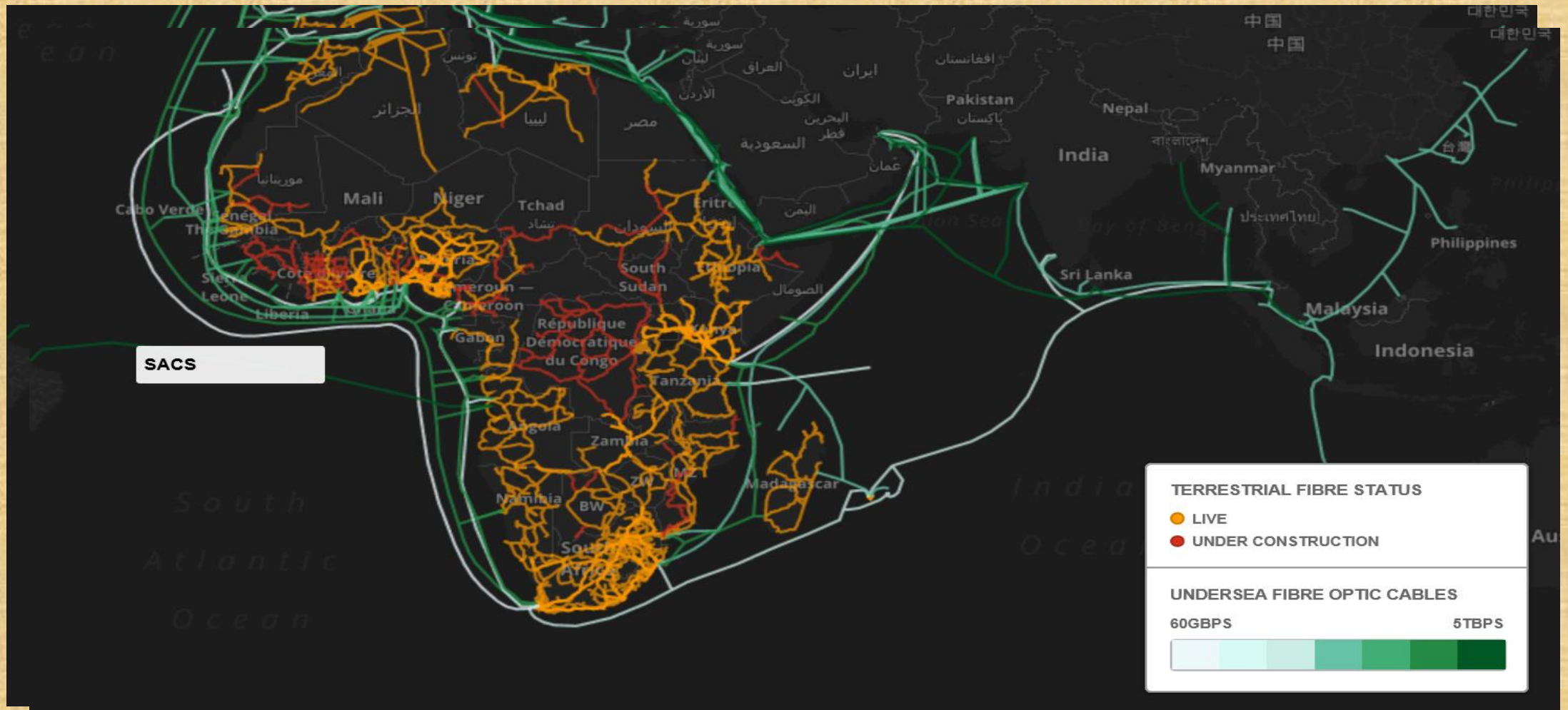5. Create opportunities for employment by focusing on internal efficiencies

THE START OF DIGITAL TRANSFORMATION
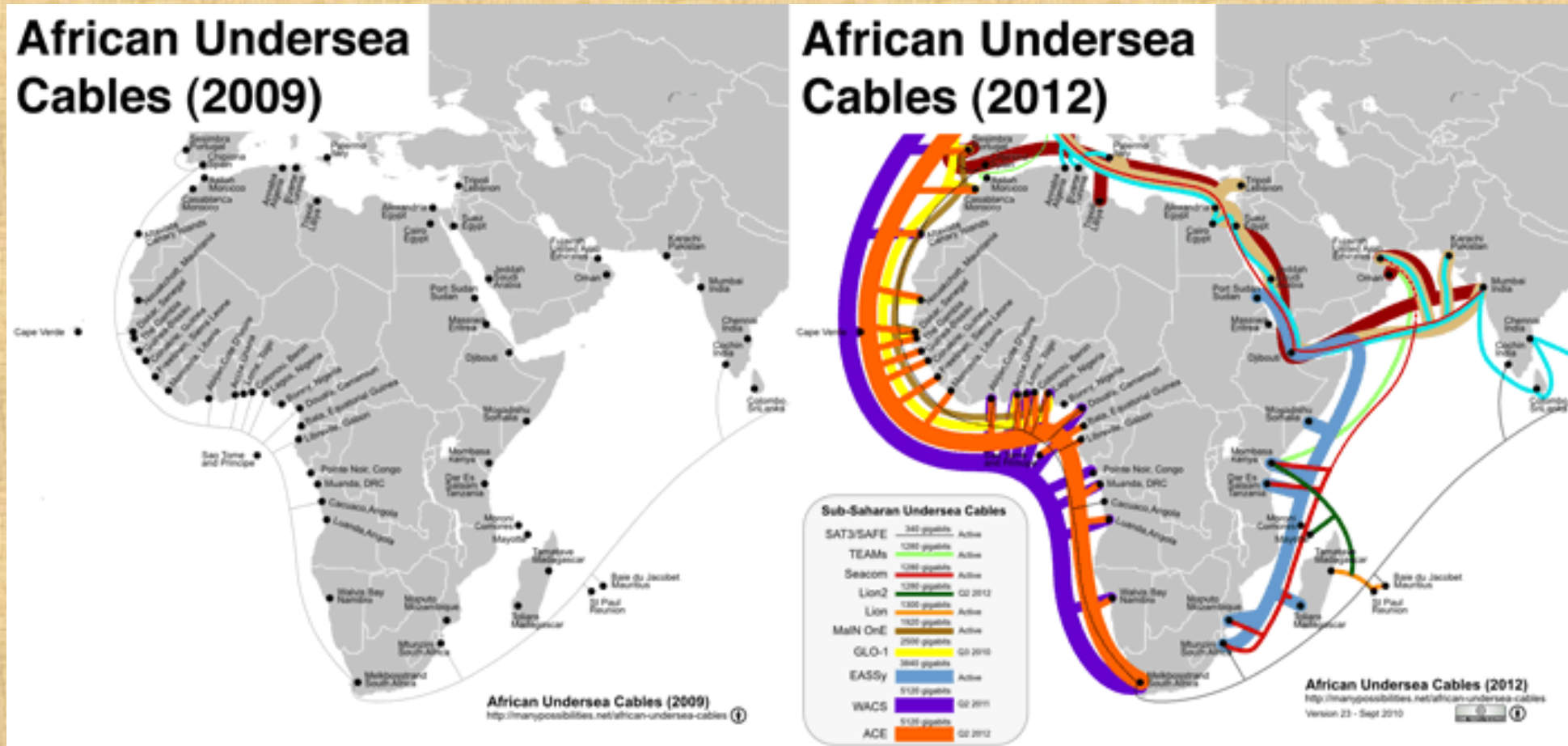
Connectivity Infrastructure

Opportunities

- Demographic dividends/opportunity
- More educated young people.
- Infrastructure
- E-Commerce

Challenges

- Quality jobs remain an exception for Africa's youth.
- Skill mismatch, both under-qualification and over-qualification, is more prevalent in Africa than elsewhere.
- MSMEs account for the bulk of jobs, but they face multiple constraints to grow.

We are in Transition Again

- *First Industrial Revolution used water and steam power to mechanize production.*

- *The Second used electric power to create mass production.*

- *The Third used electronics and information technology to automate production.*

- *Now a Fourth Industrial Revolution is building on the Third, the digital revolution that has been occurring since the middle of the last century. It is characterized by a fusion of technologies that is blurring the lines between the physical, digital, and biological spheres.*

World Economic Forum 2018

Industrial Transformations
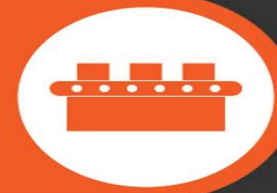
Fourth Industrial Revolution Technologies
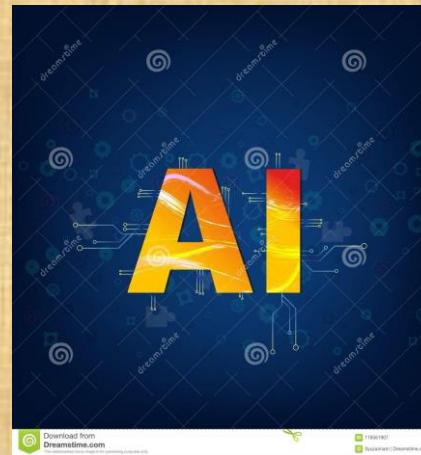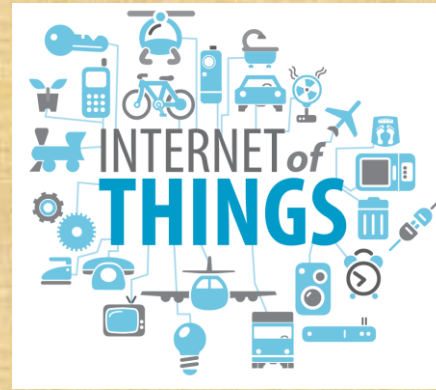
Most Valued Soft Skills in 2019

1. Creativity
2. Persuasion
3. Collaboration
4. Adaptability
5. Time Management

LinkedIn Data 2019

Most Valued Hard skills in 2019
LinkedIn Data

Translation Sales Leadership

Artificial Intelligence Video Production Analytical Reasoning

People Management UX Design Mobile Application Development

Audio Production Natural Language Processing

Cloud Computing Game Development

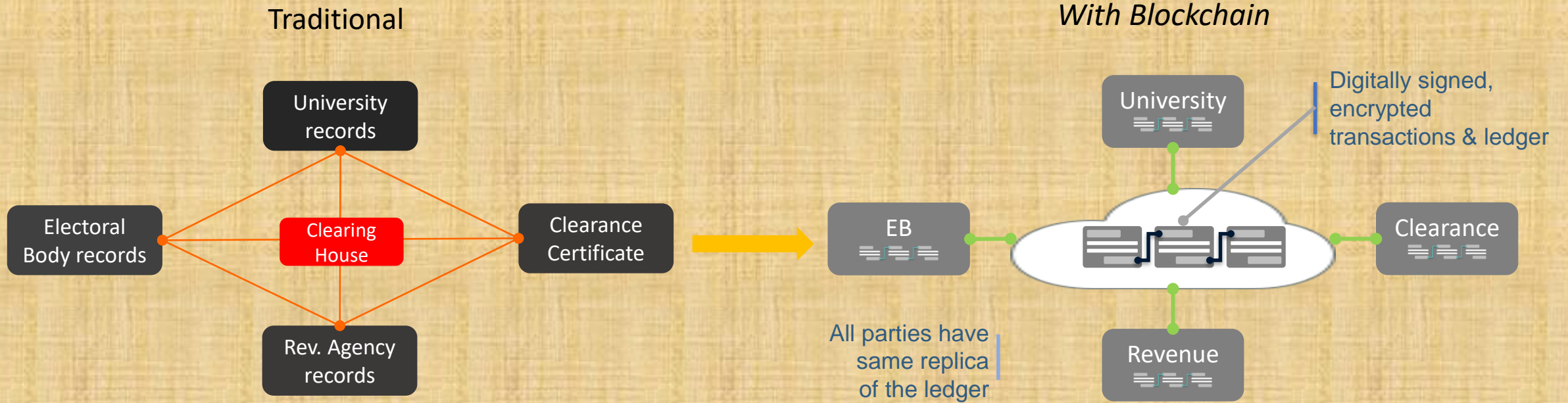Social Media Marketing Animation Business Analysis Journalism Digital Marketing Industrial Design Competitive Strategies Customer Service Systems Software Testing Data Science Computer Graphics Corporate Communications

Blockchain is disrupting business processes and enabling new ones

Traditional

With Blockchain

University records

Electoral Body records

Clearing House

Rev. Agency records

Clearance Certificate

EB

University

Digitally signed, encrypted transactions & ledger

Clearance

Revenue

All parties have same replica of the ledger

… Inefficient, expensive, vulnerable

… provenance, immutability, finality

| Shared Ledger | Smart Contracts | Consensus | Permissions |

Blockchain Classification by Objective

1. Tracking an asset on its journey

- Speed/predictability of delivery
- Digital Processes reducing cost of paper
- IoT for object state

- *Exports/Imports logistics (Maersk)*
- *Agriculture / Manufacturing supply chain*

2. Proof & Transfer of an asset

- Immutability / Single source of truth
- Consensus / Smart contracts

- *Medical Records*
- *Know Your Customer (KYC)*
- *Digital Wallet/Payments*
- *Exchanges / Marketplaces (Commodities, Risk...)*
- *Ownership Registries (Lands, Auto...)*

3. Collaboration to establish matters

- Consensus/ Smart contracts
- Network
- Immutability / Single source of tru

- *Parametric Insurance*
- *Insurance Subrogation networks*
- *Complex Risk/Multinational insurance*

4. Collaborative development of an asset through its lifecycle

- Network
- Single source of truth

- *Building design, development, maintenance*
- *Medical Clinical trial development*

5. Traceability & Provenance of an asset from its source

- Immutability
- Manufacturing components
- Maintenance of machinery, equipment

- *Food & Drug traceability*
- *Manufacturing components*
- *Maintenance of machinery, equipment*

6. Increasing understanding of a value chain

- Single source of truth
- Collection of new information
- Risk assessment

- *Credit Financing (Twiga Foods)*
- *Trade and Supply Chain Finance*

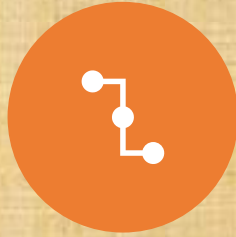## Common Building Blocks

| APIs | AI / Analytics | Identity | Onboarding | Security / Privacy |

Blockchain, AI Adoption Challenges

RESISTANCE TO CHANGE

CAPACITY BUILDING

ENABLING INFRASTRUCTURE

ENABLING LEGAL FRAMEWORKS

DATA PROTECTION LAW

UNITING AFRICA INTO ONE ECONOMIC BLOCK

REGULATORY CHALLENGES

Skills for a digital Economy

	Consumer Skills The minimum level of skills required to function in a digital society. The skills you need to be an effective consumer and citizen in a digital economy.	Productive Skills Skills required to apply existing digital technologies for productive purposes both as an employee and an entrepreneur	Developer Skills Skills required to develop or modify digital technologies	e-Leadership Skills Skills and experience required to develop business models that utilize existing or develop digital technologies as the core elements of the business model.
Handling Information: This pertains to the ability to acquire and process information over digital channels	• Browsing the Internet • Filtering Data Sources	• Data Analytics • Cloud Computing	• Coding • Big-data processing	• Evaluating digital solutions applicable to enterprises
Digital Interaction: This is the ability to use digital channels to engage with individuals /systems	• Social Interaction on digital platforms • Transacting	• Digital Marketing • Networking on Social Media	• Managing remote devices • Mirroring devices	• Implementation of organizational communication platforms
Content Creation: To create and edit digital contents in different formats	• Creating social medial posts and sharing media(pictures & videos • Basic Word Processing	• Digital graphic design • Desktop publishing	• Mobile Application development • Software development	• Creating digital-innovation-based businesses • Research
Problem Solving: Finding digital solutions for personal or work-related problems	• Using digital platforms to access services • Keep up to date with digital evolution	• Using digital platforms to upskill(e.g. Coursera) • Evaluating digital solutions relevant to sector (e.g. appropriate data analytics software	• Software & System testing • Resolving bugs in digital interfaces	• Integrating digital solutions with business models
Safety: Protecting devices and digital content, awareness of risks and knowledge on mitigation action	• Creating Passwords • Scanning for Viruses	• Managing Firewalls • File encryption	• Developing firewalls • Access restrictions	• Guiding organizational security access protocols

Thank you