

Application of Knowledge Technologies & Engineering in National Development



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Let's set the stage...

- ❑ There are many recognized value levers for driving national development
- ❑ This presentation will focus on the educational aspect (human capital) and how leveraging knowledge technology can help deliver better education and contribute to national development



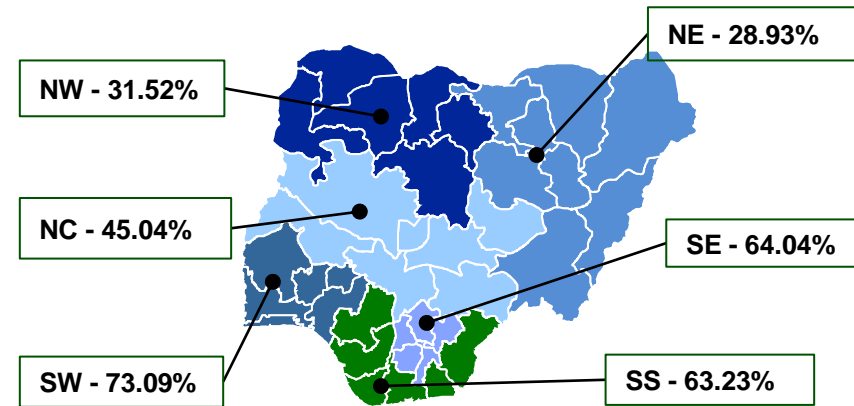
Literacy level of a population has direct impact on national development

- ❑ **There is an established correlation between economic growth and the literacy rates in a country**
 - “At the country level education improves the human capital of the workforce, as well as its productivity, leading to increased growth”*

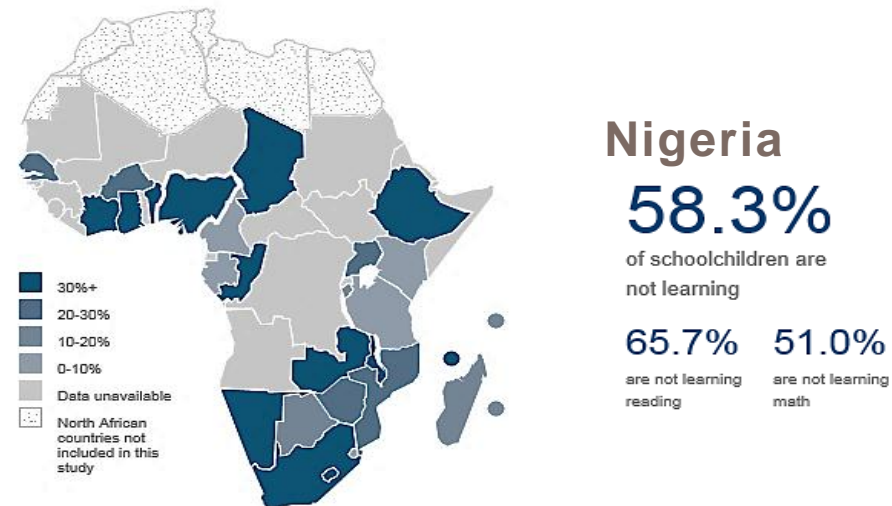
- ❑ **The World Bank recognises that Education is a driver of Development**
 - This has led to the establishment of Universal Primary Education by 2015 as a Millennium Development Goal

... The current situation in Nigeria

- ❑ Low literacy rate at 51%
- ❑ Poor education funding
- ❑ Dearth of teachers
- ❑ Obsolete educational content
- ❑ Little/no access to schools and educational resources in rural areas
- ❑ Growing young population with significant numbers not learning
- ❑ Increasing cost of education



Regional View of Literacy



Percentage of School Children not Learning

It's time to bridge the gap through technology innovation

- ❑ Need to strengthen educational systems and bypass/leapfrog the current challenges
- ❑ Support continuous learning post-graduation and professional development on the job
- ❑ Require paradigm shift from traditional to e-learning classroom environment for global competitiveness
- ❑ With focus on market and life relevant skills
- ❑ Alternative and more effective methods of skills and capacity building must be identified and applied

Response: Leveraging Technology as the tool to deliver growth in education & skill building and support the drive for national development

Technology as an Enabler of Knowledge and Capacity Building

First the Imperatives....

The Application of knowledge technologies must be:

❑ Accessible

Knowledge resources need to be accessible to all who need them. This includes the historically under-served demography especially within the rural areas

❑ Cost Effective

A key feature impacting accessibility is cost, and in order to ensure that the target users are able to access the resources, it must also be low cost in order to be affordable

❑ Easy to Use

Solutions must be easy to use in order to facilitate adoption. The scenario where valuable resources are not utilized due to complexity is a common one, and must be avoided

❑ Relevant

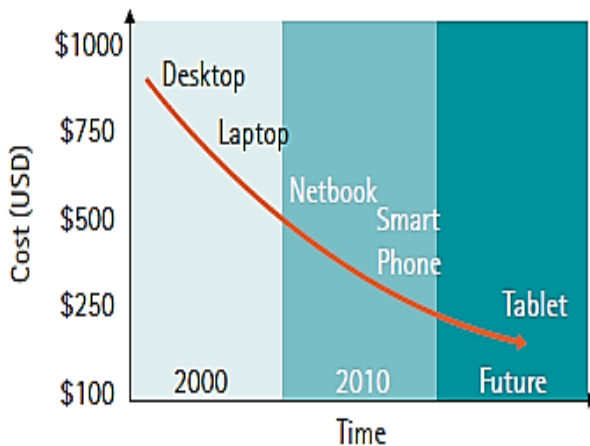
Knowledge resources must be relevant both within the local and national contexts. Focus should be placed on skills that will benefit the individual, the community, and ultimately the nation.

Global trends...

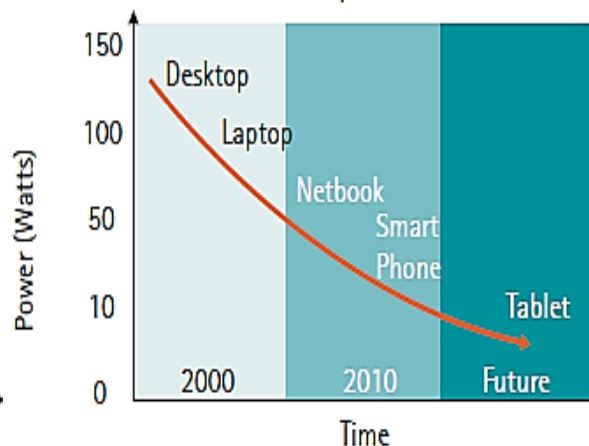
3 key trends are reducing the historical challenges of lack of power and cost of technology required for practical implementation

- ❑ **Cost of Devices**
- ❑ **Device Power Consumption**
- ❑ **Solar Power Cost per Watt**

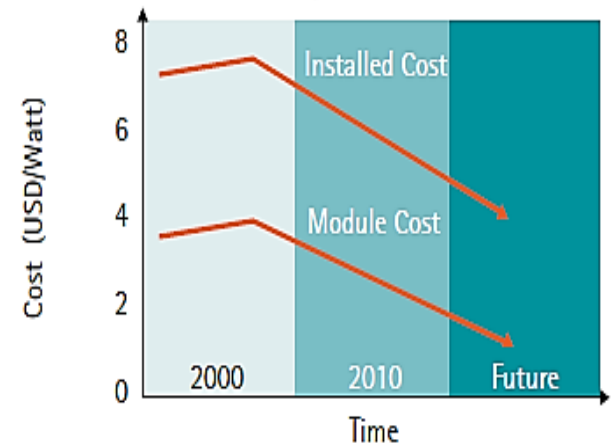
Trend in Cost of Devices



Trend in Device Power Consumption



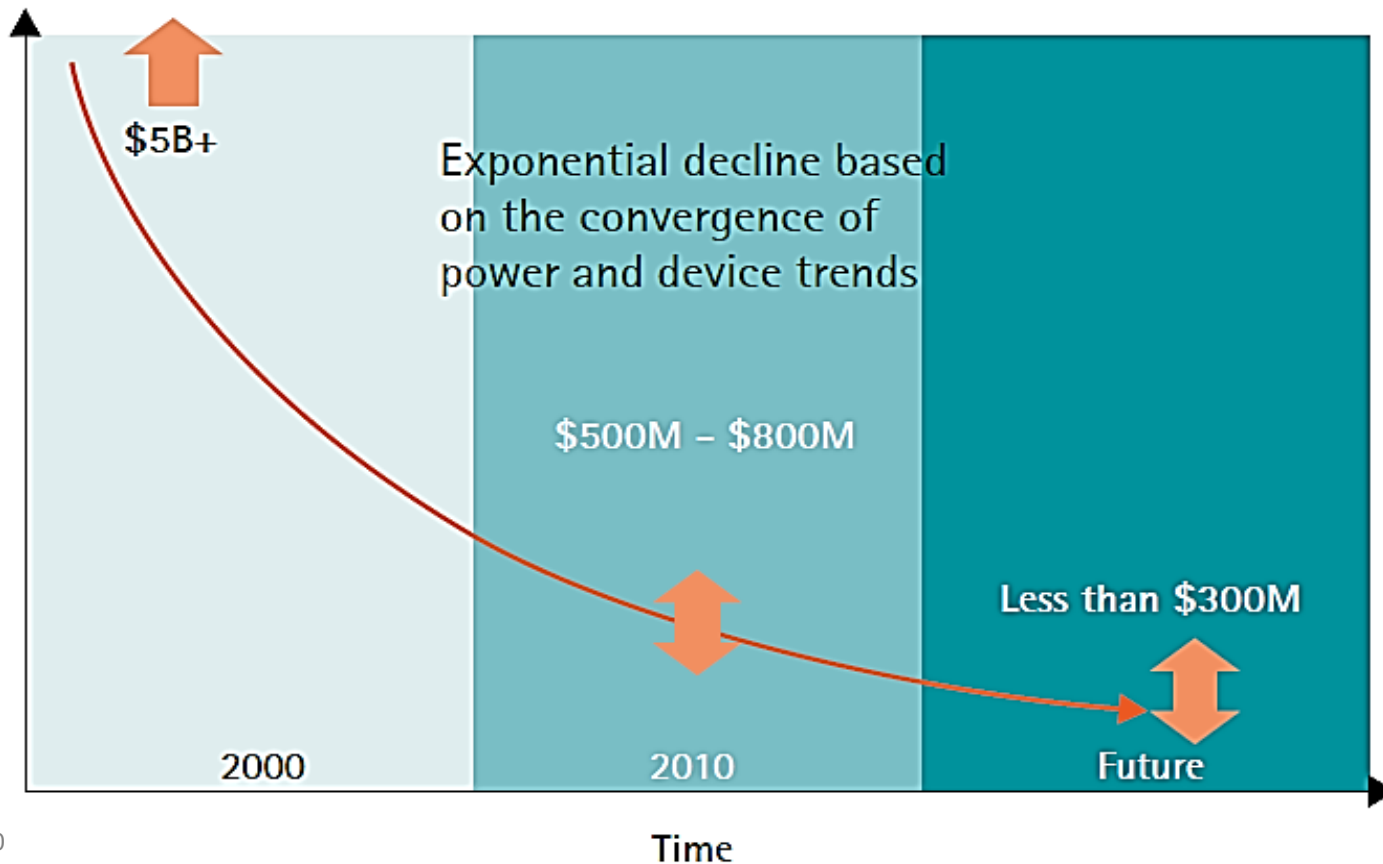
Trends in Solar Power Cost per Watt



Global trends (continued)...

These trends will allow leapfrogging by utilizing e-content, low cost devices, cloud computing, and renewable energy sources.

Cost of National-Scale eLearning Implementation
(Including power, hardware, systems for 10,000 schools)



Technology enabled options which will deliver faster and broader benefits to the population include the following:

E-Learning

E-learning utilizes electronic media, and information and communication technologies (ICT) to deliver educational material to users

Mobile Learning Solutions

Due to the proliferation of mobile devices, mobile learning has become a viable option, enabling educational content to be consumed using mobile phones and other portable devices

Knowledge repositories

Locally relevant knowledge repositories which capture, organize and categorize knowledge in computerized systems can be implemented in partnership with NGOs and other organizations with strong community ties (e.g. churches and mosques as well as public libraries)

Social Media Platform

Mobile and web-based technologies which creates highly interactive platforms through which individuals and communities can share, co-create, discuss, and modify user-generated content

... enabling improved capacity building to foster national development

- ❑ **Enables the 4 'C's required for knowledge management**
 - **Contents:** creation and management of contents
 - **Communication:** Interactions between relevant parties
 - **Collaboration:** partnering with others to promote national development
 - **Communities:** creation of communities of people focused on interacting, partnering and supporting each other to achieve a common goal

- ❑ **Promotes knowledge management by enabling:**
 - Identification of information and knowledge materials
 - Information classification, storage, security, access and retrieval

- ❑ **Create platforms to foster knowledge creation/sharing and to promote national development (Social Media tools)**

Social Services Examples from Kenya

- ❑ **Mzalendo (Swahili: "Patriot")**: Sought to increase government accountability by systematically recording bills, speeches, MPs, standing orders, etc. in the Kenya parliament

- ❑ **Ushahidi (Swahili: "Witness")**: Uses text messages and Google Maps to collect data from the crowd for monitoring political unrest, measuring the impact of natural disasters, uncovering corruption, and empowering peace makers.

The technology has since been adapted for other purposes including monitoring elections and tracking pharmaceutical availability

...Similarly in Nigeria

- ❑ **The reclaimnaija.net platform:** set up as a mechanism for grassroots people to get their voices heard on issues of electoral transparency and governance. Uses SMS and voice calls to dedicated lines to monitor the electoral process and report incidents of electoral fraud
- ❑ **Passnownow.com** an education and social networking website that seeks to promote and support flexible learning for secondary school students. It provides users with access to past question papers pertaining to subjects in the comprehensive national curriculum for education. In addition, users have virtual access to tutors who provide learning support. Passnownow.com can be accessed via an array of devices including desktop PCs, laptops, tablets and mobile phone
- ❑ **Project 2011 Swift Count:** countrywide project aimed at using ICT to monitor and report elections. Uses SMS to obtain and share with the Nigerian public both qualitative and quantitative data and analyses regarding the 2011 elections in real time

Benefits of Technology Enabled Learning solutions

- ❑ Supplements traditional teaching by leveraging digital materials (eg via laptops and projectors). The use of computer-based games and simulations also enhances engagement
- ❑ Extends education beyond the classroom via mobile devices, mobile schools, personal computers or Internet kiosks with the capability to reach wider audiences
- ❑ Provides students and users the ability to select individual, self-paced training tailored to specific needs and goals
- ❑ Enables collaboration across communities via connected classrooms

... In Closing

- ❑ Make no mistake, the gaps are huge. We have only scratched the surface of the problem
- ❑ Government is looking for innovative ways and smart ideas to resolve the issues
- ❑ Some of the ideas mentioned are already been implemented
- ❑ The challenge to us as technologists is how far can we take this forward to help along the process in shaping the right models of knowledge technologies that can work in our environment

Thank
You