

***ITU CBS-2016, Nairobi  
5 – 8 September 2016***

**Horses for courses:  
Adaptation and design for  
different  
university digital learning environments**

***Luci Abrahams,  
Director, LINK Centre, Wits University***



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Readiness

**Education and Human Resource Development:**  
Usage and innovation requires increasing orientation towards advanced knowledge for digital innovation in order to promote advanced utilisation (cyber security)

**Socio-Economic Advancement:**  
Research and Innovation: from sms to OTT services, mobile money, mobile Internet, lots of apps, reform of postal services, health, longevity, sport diagnostics, e-wearables (health Internet), education Internet, research Internet, big data analytics services, online culture and culture online  
**E-SERVICES IN SOCIETY (cyber trust)**

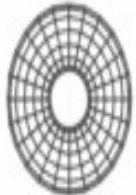
**DIGITAL AFRICA: TRANSFORMATION NEEDS "UNIVERSITIES WITHOUT WALLS"**

Development of economic sectors requires innovation in network infrastructures (power, electronic communication services), in apps and e-services, NRENs and RRENs linking to global cyber-infrastructure (cyber security)

**Policy + Regulatory Environment + Digital Leadership:**  
All conversations lead back to the weak role of key contributors to the enabling (or not disabling) environment and access strategies for ubiquitous access (competition, spectrum, cyber security)

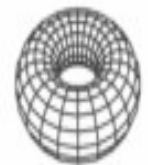
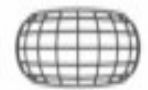
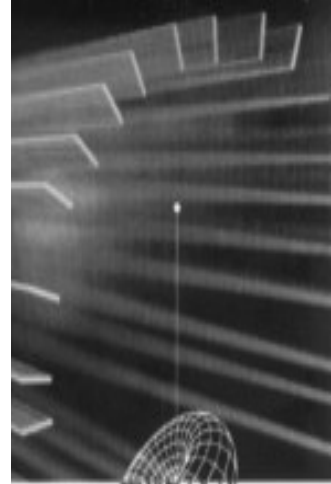
Readiness

Readiness



# Part I: Capacity-building for the digital Africa “complexity economy”

A> The future appetite for specific capacity building services either using digital media in the classroom or using online media is becoming more predictable! New ways of learning throughout the learning progression from certificated short courses (online or hybrid approaches) to upper postgraduate level (Masters, PhD)!



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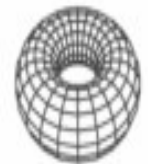
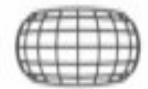
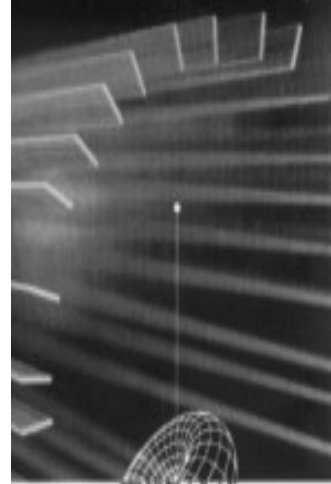
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# Part I: Capacity-building for the digital Africa “complexity economy”

A> Major challenges relate to the knowledge foundations of participants from practitioner, managerial, leadership and regulatory environments which cannot be effectively addressed through online learning:

readiness for postgraduate study required for effective management, leadership and regulation for the electronic communications and broader ICT sectors (eg. regulation for IoT and cloud computing), most participants have relatively narrow knowledge foundations related to their particular jobs eg. knowledge of the specifics of spectrum regulation or competition regulation, but limited knowledge of economics as a discipline or of theories of economic regulation

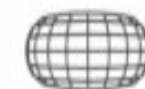
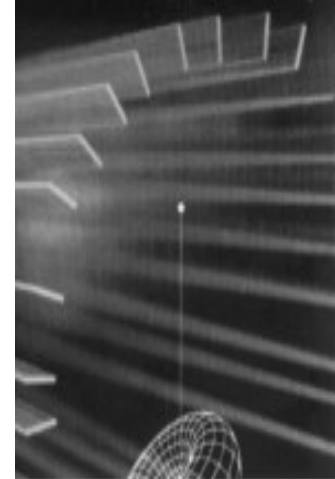




# Part I: Capacity-building for the digital Africa complexity economy

B> Challenges of educational programmes designed for forward-looking regulation and regulatory certainty (certificate programmes, short courses, degree programmes) leading to identification of opportunities =

- § MOOCs seldom used, but increasing interest;
- § electronic libraries not widely used, opportunity for future educational investment;
- § visualisations used in a few programmes, should be extended to all courses and degree programmes, including gamification of learning including neuro-games;
- § GIS mapping used only in specific disciplines eg natural sciences, can be extended to programmes in the social sciences;



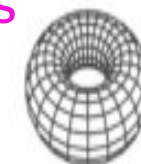
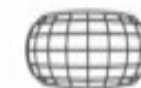
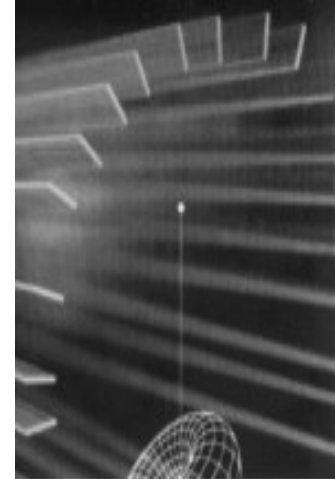
# Part I: Capacity-building for the digital Africa complexity economy

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§ other challenges eg slow creation of **local** digital training programmes, as compared to using Coursera and other content with no local specificity presents a major opportunity for taking “lectures” online = Digital Campus;

§ opportunities for digital tech hubs (approx 90 in Africa);

§ other GoPro and other photographic/video content



## Creating partnerships with digital tech hubs in more than 26 African countries



- iceAddis
- iHub Kenya
- JCSE Joburg

Approximately 90 digital tech hubs and co-working spaces where new forms of learning can take place and where digital innovation partnerships can be fostered

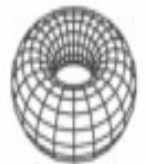
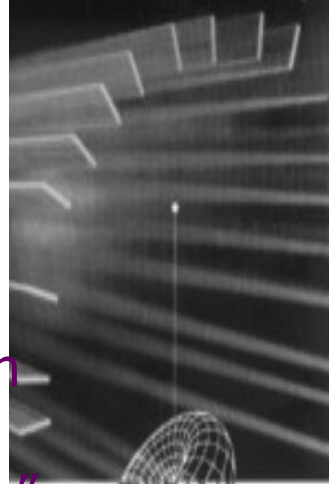


# Part I: Capacity-building for the digital Africa complexity economy

Building research and innovation capacity is a major contribution of universities, particularly with respect to building local knowledge stocks on digital transformation required for “reading” global trends, the most effective local application of global practices and the most valuable forms of local innovation in technology and in policy/regulation:

C> Undergraduate research capability (electronic libraries – foundational stage of utilisation – exploring journal databases, building access capacities and skills)

D> Postgraduate research capability (electronic libraries – advanced stage of utilisation – extensive utilisation, ability to create own repositories for scholarly articles and major global surveys and analytical reports)

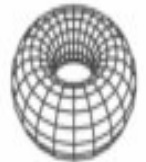
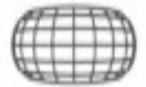
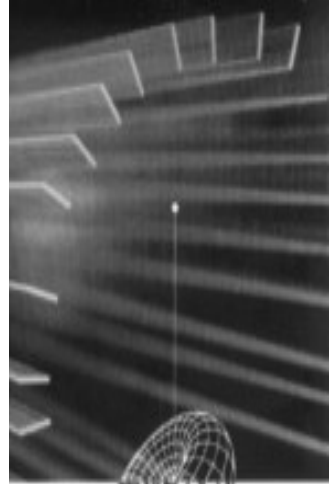




# Part I: Capacity-building for the digital Africa complexity economy

Building research and innovation capacity is a major contribution of universities:

E> Content and experimental/engineering focus on ICT sector innovation (digital/ultrabroadband markets, cloud computing), and innovation for Internet-enabled sectors (IoT regulation for digital public spaces/homes/business, digital marketing and transactions, cybersecurity regulation, e-health, e-education, data analytics for big data, software development and innovation through hackathons and other coding ventures, gaming and gamification, digital maker spaces, other)

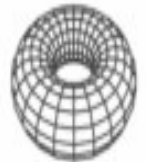
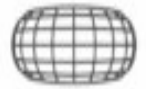
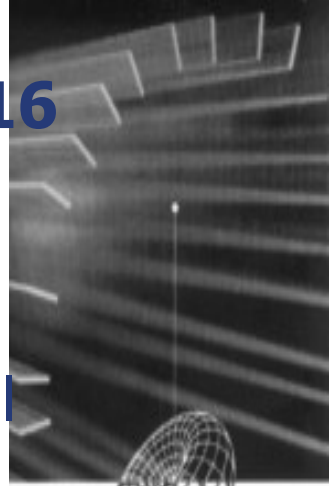


# Fak'ugesi Digital Africa Innovation Festival 2016

<http://fakugesi.co.za/event/fakugesi-soweto-pop/>

An interactive day of creative technology and live digital installations, offering an opportunity to get up close and personal with a range of avant-garde digital activities.

**Fak'ugesi 2016 Soweto Pop Up, Trackside Creative in Orlando East.** Projects include Oculus Rift Virtual Reality immersive theatre performance **The Cube** presented by Circa69 (UK) to the dynamic interactive video installation mixing neurogaming, film, technology and parkour; **Syncself 11: Focus or Fail** presented by Karen Palmer (UK); Maker Library Network Project **Making Time Capsules of Space** and much much more. **Come play with local and international makers and digital artists.**







# Fak'ugesi Digital Africa Innovation Festival 2016

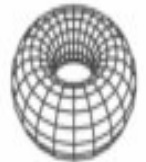
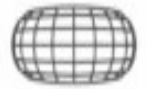
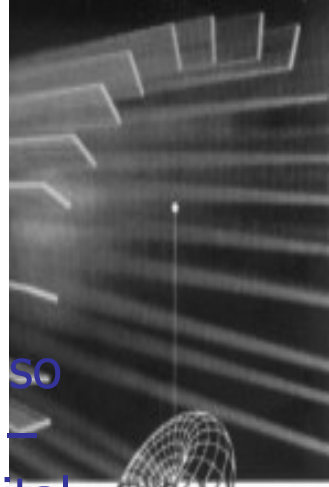




# Part I: Capacity-building for the digital Africa complexity economy

F> Digital markets are broader than ICT markets (entertainment, health, manufacturing and service sectors), so capacity building and curriculum content must be broad too – eg. engage regulators from multiple sectors for effective digital transformation = electronic communications sector regulators, competition regulators, consumer protection regulators, health professions regulators, other!

G> ITU study groups and ITU TIES accounts (study groups in radiocommunication, standardisation, development) (access to documents and current debates through academic membership, means of learning and foundations for postgraduate level research) eg. ITU-D study group 1: Enabling environment for the development of telecommunications/ICTs





## Part II: Challenges and opportunities of undertaking university and other learning online: Specific solutions for specific environments:

certificated short courses and undergrad programmes

[MOOCs can be used for individual learning exercises to support taught content, but should not be used as content on their own, major future evolution required to create real value and quality in interpretation of readings, applications and problem solving, assessment and self-assessment, availability of lecturer support = QOOCs?]

undergraduate research [electronic library access to scholarly articles = "Libguides" which places a pre-selection of relevant literature in the hands of students + own basic repository sourced from journal databases]



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## Part II: Challenges and opportunities of undertaking university and other learning online: Specific solutions for specific environments:

postgraduate research

§ electronic library access to multiple journal databases where students can search extensively, ranging from IEEE publications to Elsevier, Science Direct and open access journals and articles = very expensive, several million dollars per annum excluding the cost of bandwidth and access;

§ requires innovative approaches to access to knowledge, including federated identity management (FIDM) through entities such as UbuntuNet Alliance and the various NRENs on the continent

§ need to significantly exploit NRENs and RRENs to build universities without walls



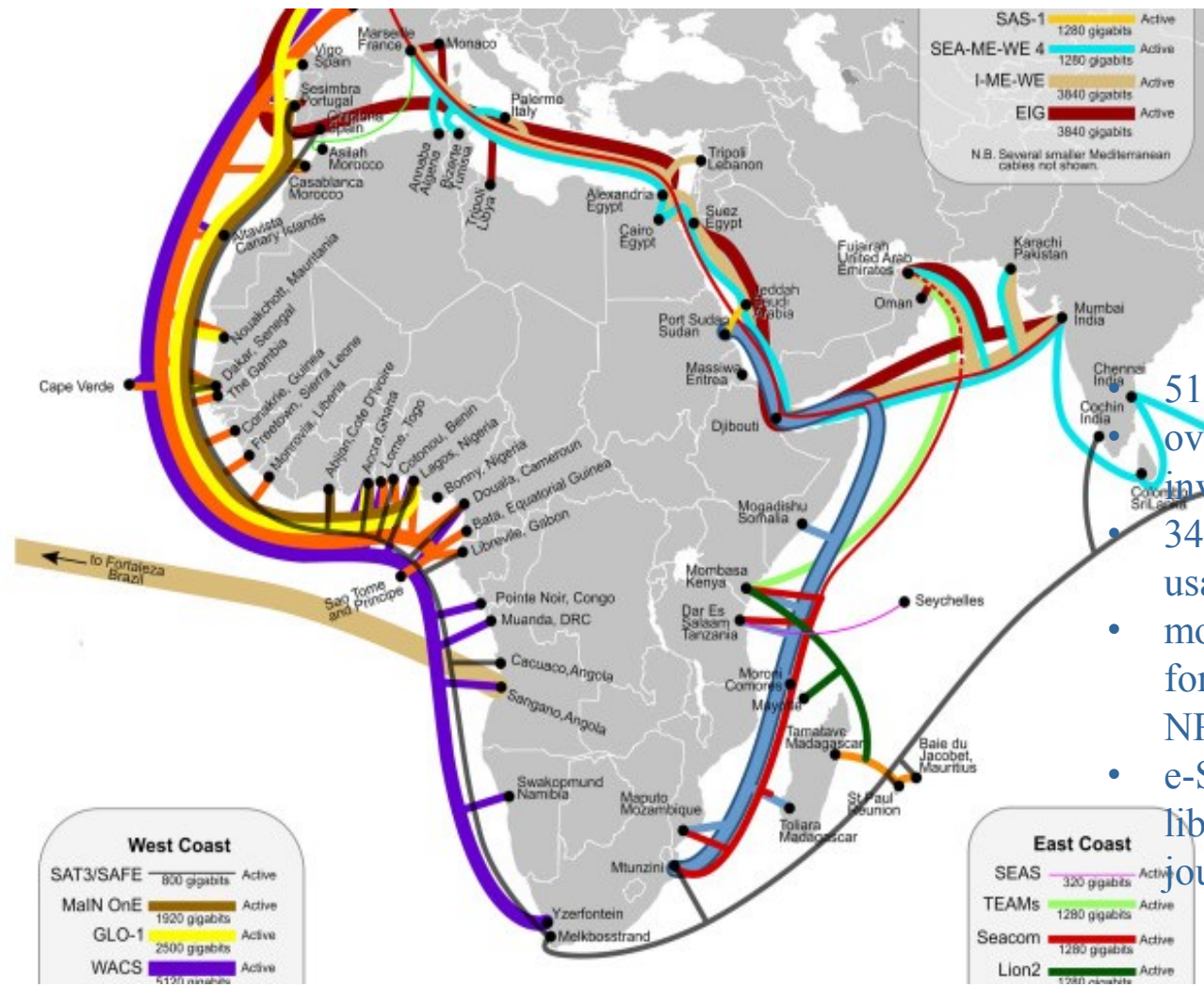
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# African undersea cable infrastructure/resources

## NRENs and RRENs for digital universities



51 landing points  
over USD4 billion  
invested

- 34.7 Tb/s capacity, low usage a problem for RoI
- more investment needed for research Internet – NRENs and RRENs
- e-Services – m-money, libraries and online journal databases



# Part III: Using MOOCs for online learning – experience at Wits

Professional Certificate in Chief Information Office Practice (CIO)

# running from 2005 to date, 15 – 25 participants per annum

# 7 modules in 3 weeks (over 3 months), highly content driven, with group exercises, exams and a “capstone” case study

# insertion of the Coursera MOOC on digital marketing or any MOOC based on own selection [2016] as an individual exercise

# strengths – ease of introduction to new concepts

eg. digital co-creation suppliers with consumers, digital price monitoring, pay-what-you-want, 3D printing hubs; available 24/7

# weaknesses – limited volume and quality of reading material, exercises do not demand good academic writing or depth of analytical capability

# MOOCs are not a substitute for teaching, learning or research, they are supplementary

# building a 3-level CIO programme, with level 1 fully digital (8 “modules”) = experimental phase



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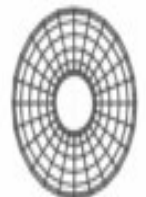
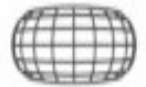
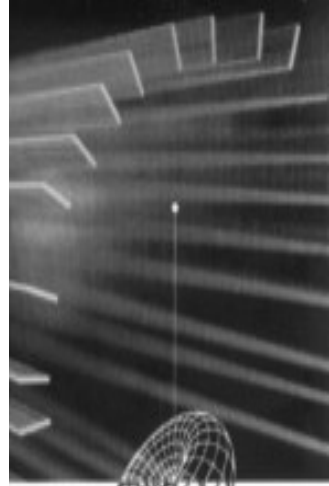


# REALITY CHECK

Many African regulators do not have sufficient broadband capacity to use Skype for business

**AND**

*Many African universities and training institutions do not have sufficient broadband capacity to provide access to online learning and published research*



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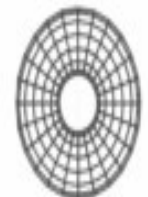
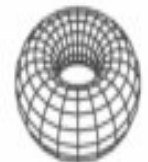
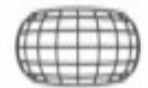
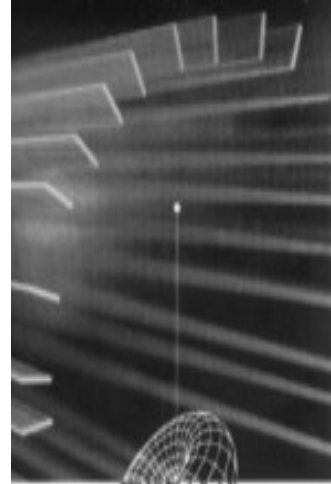
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# DIGITAL UNIVERSITY ORIENTATION

## SARUA Digital Universities Programme

(Southern Africa Regional Universities Association)

*“Critical elements for digital universities: while ICT infrastructure and Internet access are both critical on-campus requirements, many university campuses in the SADC region have limited access and low levels of bandwidth. However, the limitations of on-campus access should not be a stumbling block to the transition to digital learning. In all SADC countries, Internet cafes and other affordable forms of Internet access are available off campus, thus academics should require students to access online content, guiding them to the most suitable materials for particular purposes, whether for writing essays, for laboratory work, or for postgraduate research purposes.”*



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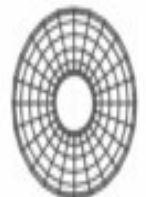
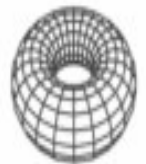
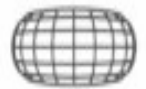
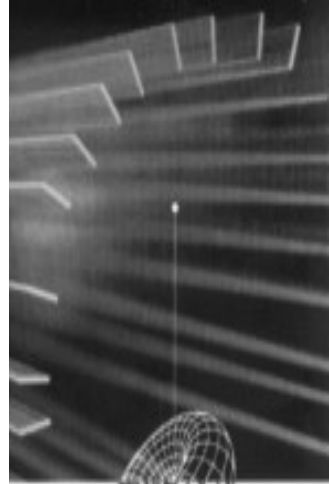
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# DIGITAL UNIVERSITY ORIENTATION

Next phase of NREN and RREN development must focus on digital knowledge services, local apps, African curriculum and knowledge content, knowledge partnerships for universities without walls...



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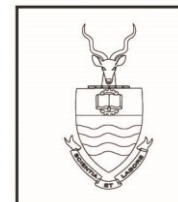
**We must build...  
powerful African  
*digital universities*  
with rich content!**

**Thank you!**

**Questions+Contributions...**



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