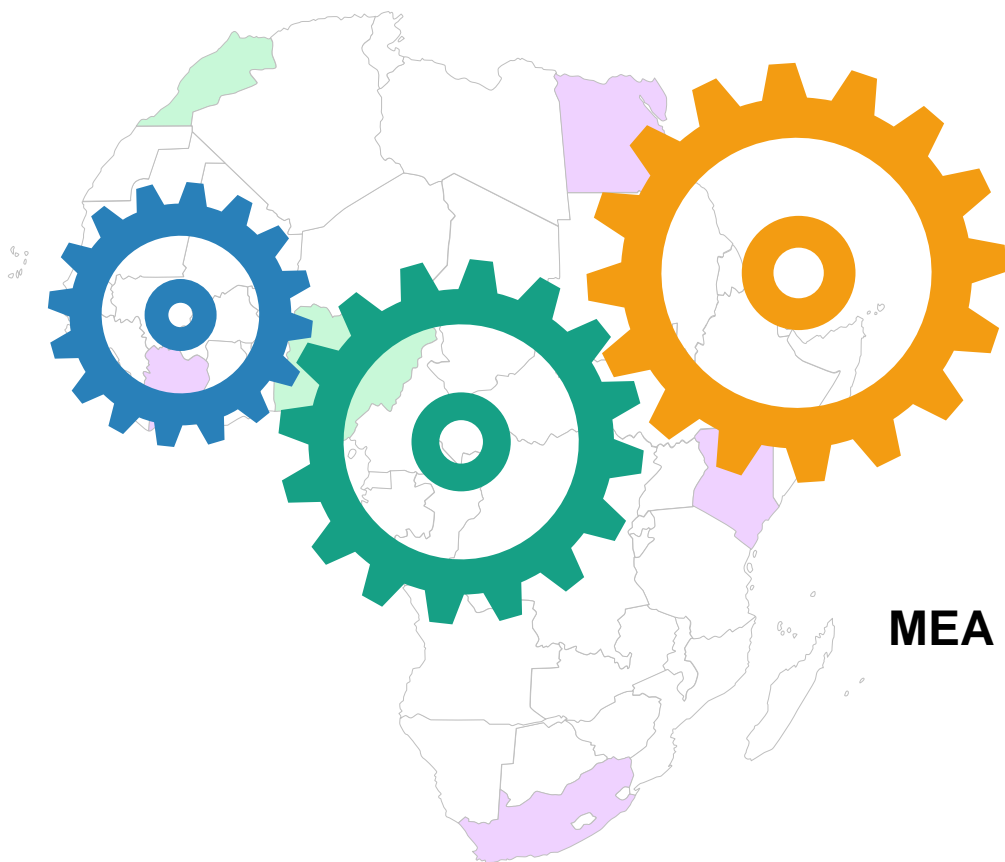# IBM Africa Skills Enablement Program – Cloud adoption best practices for universities in Africa
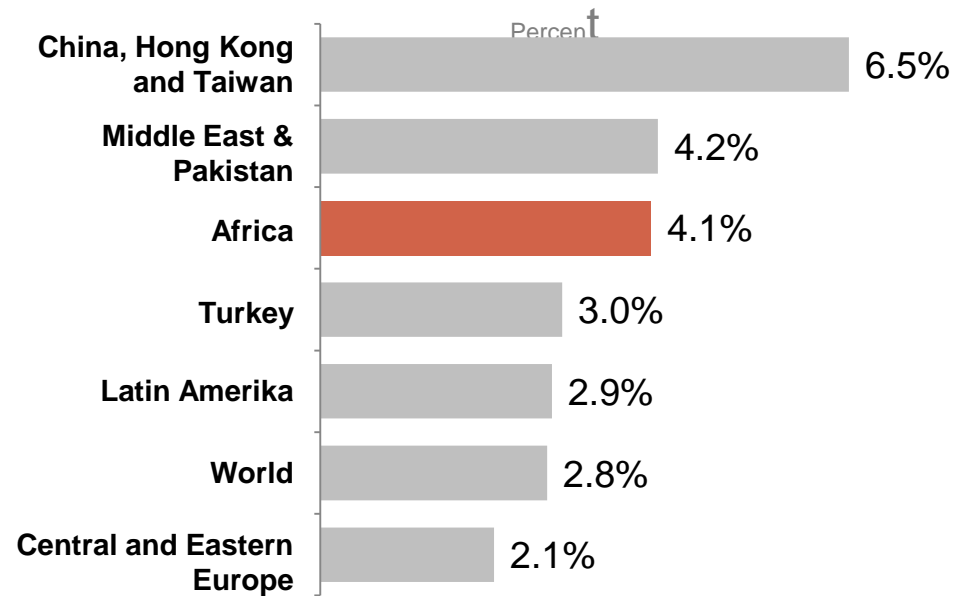
Juan Pablo Napoli
MEA University Program Manager
IBM Middle East and Africa
juan.napoli@ae.ibm.com

Africa - a continent of immense breadth and complexity presents a remarkable long term opportunity

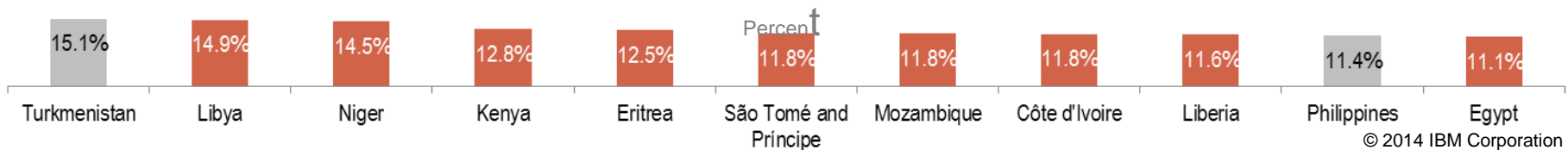It is amazing how China, India, US and half of Europe can fit within the land mass of Africa

Africa is the world's third-fastest growing region…

Compound Annual Real GDP Growth, 2013–18(f)

Percent

Region	Growth
China, Hong Kong and Taiwan	6.5%
Middle East & Pakistan	4.2%
Africa	4.1%
Turkey	3.0%
Latin Amerika	2.9%
World	2.8%
Central and Eastern Europe	2.1%

… with the IMF predicting that eight of the 10 fastest growing economies from 2013 to 2018 will be located in Africa

Compound Annual Current Prices GDP Growth, 2013–18(f)

Percent

Turkmenistan	Libya	Niger	Kenya	Eritrea	São Tomé and Príncipe	Mozambique	Côte d'Ivoire	Liberia	Philippines	Egypt
15.1%	14.9%	14.5%	12.8%	12.5%	11.8%	11.8%	11.8%	11.6%	11.4%	11.1%

2

© 2014 IBM Corporation

Lagging ICT Infrastructure in Africa

"Since man had first tamed the horse, we had never moved as quickly or as consistently as when the railroad was created. It was a true changing of the world."

"Physically connecting people and things was the great challenge of their time. Digitally connecting people and information is the great challenge of ours."

Relative IPv4 utilization observed using ICMP Ping requests   Source: Carna Botnet

Africa's Railroads

The real digital divide

http://afterfibre.net

Source: http://whiteafrican.com/2013/10/29/railway-lines-of-internet-connectivity-in-africa/

Feb 2014 - IBM opens access to SaaS portfolio to help African Universities with next-generation IT skills

IBM expects to reach thousands of African students for big data, analytics and cloud skills training, education and recruiting

Source: https://www-03.ibm.com/press/us/en/pressrelease/43122.wss

Virginia M. Rometty

CHAIRMAN, PRESIDENT AND CHIEF EXECUTIVE OFFICER

We choose to go to the moon in this decade and do the other things, **not because they are easy, but because they are hard**, because that goal will serve to organize and measure the best of our energies and skills
--
John F. Kennedy

MEA University Program – *Africa skills for the future*

Focuses not on products, but on job role certifications aligned to the Middle East and Africa IT industry needs. Building local capability with international standards in new IT areas. Providing an environment for continuous technical update.

ACADEMIC TRACKS	TRAIN-THE-TEACHER	UNIVERSITY PORTAL	IBM CLOUD LABS
Academic oriented roadmaps, aimed for industry recognized certifications aligned to high demand jobs in the IT Market	IBM Instructor-led training enables selected faculty members to educate students over an academic semester	IBM LMS offering providing access to IBM training resources in the selected track for faculty and students.	IBM cloud offering giving access to lab environment to run the latest IBM enterprise software as a SaaS solution.
Structure: • Foundation • 2 Concentrations • Cross-skill	Approach: • Two weeks on-campus training for faculty members • Faculty to train classes of 25 students every semester	Purpose: • Provide a training roadmap • E-Learning content • Certification Test Engine	Purpose: Access to IBM software in a lab environment using virtual machines to perform the course exercises
Student Benefits: 120hs IBM Training 2 IBM Academic Certificates 1 IBM Track-based Certificate	Faculty Benefits: 80hs IBM Training 2 IBM Academic Certificates 1 IBM Track-based Certificate 2 IBM Professional Certifications 1 IBM Instructor Certification	Students & Faculty Benefits: +20hs Self-paced training Track-based foundations course IBM Official Course material Tests for each unit and exercise Academic Practice Test Academic Final Test Videos and Serious Games	Students & Faculty Benefits: • E-learning course images • Instructor-led course images • Teachers self-service portal • Students remote-home access • Administrators monitoring and reporting

IBM Cloud Labs

TRADITIONAL INFRASTRUCTURE
High-end PCs in a Physical Lab

10% hardware utilization
240 man hours per semester

CHALLENGES
- HW - Constant Upgrades (RAM, CPU, disk space)
- HW – Maintenance (repairs, bios upgrades)
- OS - licenses cost and maintenance upgrades
- OS – security (virus, antivirus, firewalls)
- Software (databases, web servers, development IDEs).
  - Bulky software downloads over internet
  - Installation, configuration and testing in each PC
  - Maintenance and troubleshooting in each PC

CLOUD INFRASTRUCTURE
Lightweight devices access a Virtual Lab

90% hardware utilization
20 man hours per semester
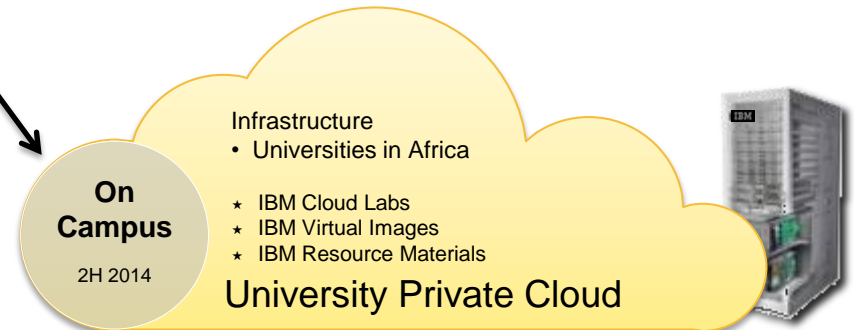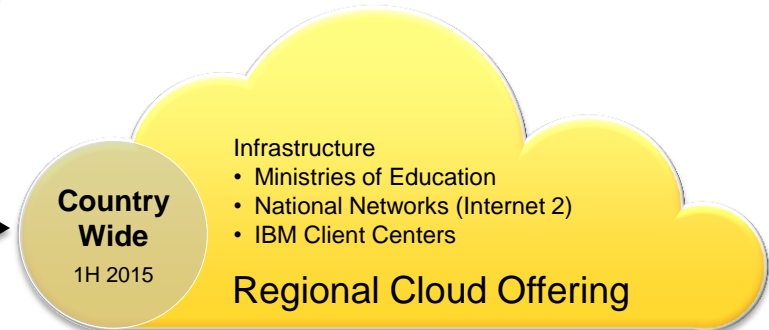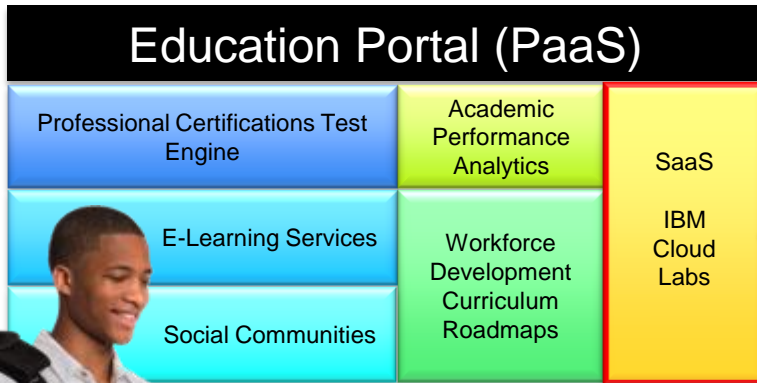
BENEFITS
- Bring your own device (tablets, laptops, thin client)
- Anytime anywhere access (class, library, home)
- Self-service Portal for teachers and students
- Automated Software Provisioning (enterprise software provisioned to each student in minutes)
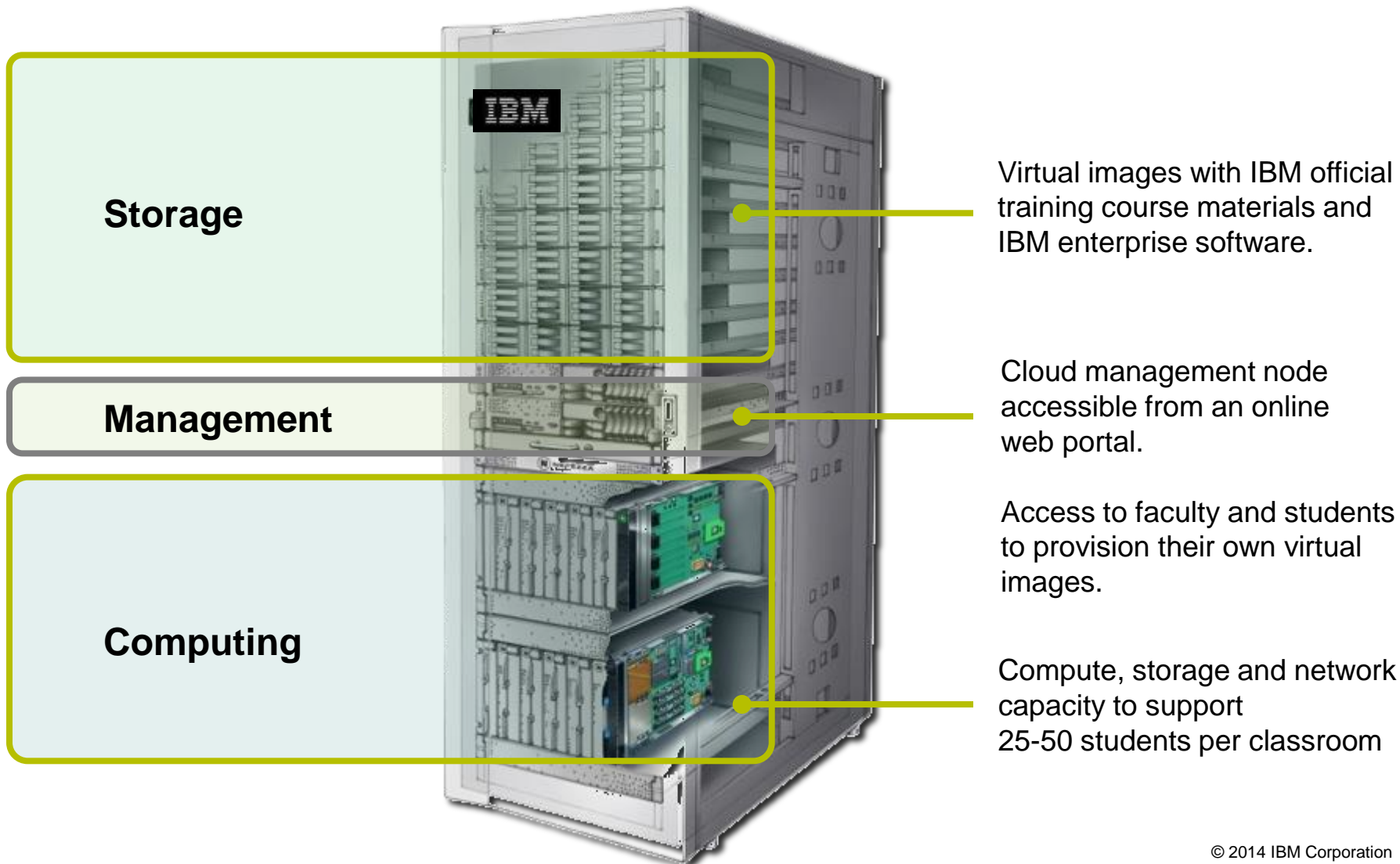
IBM Cloud Labs - Implementation Models

Students & Teachers

Education Portal (PaaS)

Professional Certifications Test Engine	Academic Performance Analytics	SaaS IBM Cloud Labs
E-Learning Services	Workforce Development Curriculum Roadmaps	
Social Communities		

World Wide
2H 2015

Infrastructure
• IBM Softlayer

SOFTLAYER®

Education Global Offering

Country Wide
1H 2015

Infrastructure
• Ministries of Education
• National Networks (Internet 2)
• IBM Client Centers

Regional Cloud Offering

On Campus
2H 2014

Infrastructure
• Universities in Africa

★ IBM Cloud Labs
★ IBM Virtual Images
★ IBM Resource Materials

University Private Cloud

IBM Cloud Labs - University Private Cloud

Unique Cloud Training Environment to Provide Leading-edge training to Students

Storage

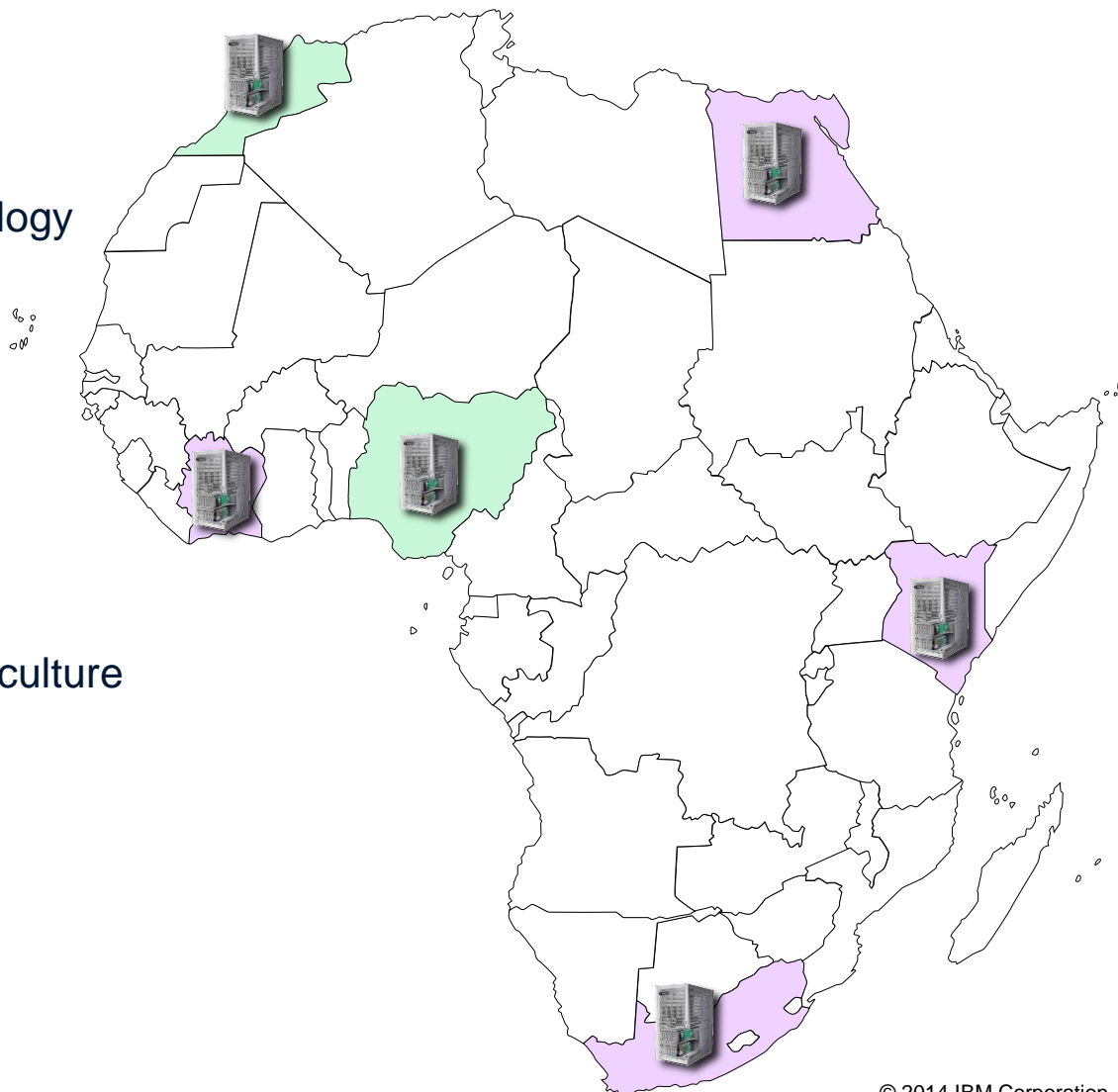**Management**

Computing

Virtual images with IBM official training course materials and IBM enterprise software.

Cloud management node accessible from an online web portal.

Access to faculty and students to provision their own virtual images.

Compute, storage and network capacity to support 25-50 students per classroom

IBM MEA University - Status Report Nov 13th 2014

Working with 7 African Universities and 2 in ME

- Cape Town University of Technology

- Mohamed V University, Rabat

- University of Ghana

- Lagos State University

- University of Lagos

- Kenyatta University

- Jomo Kenyatta University of Agriculture and Technology

+ King Saud University

+ Ankabut, UAE

Ankabut NREN in UAE

+100,000 students
70 campuses
27 universities
6 cities across UAE
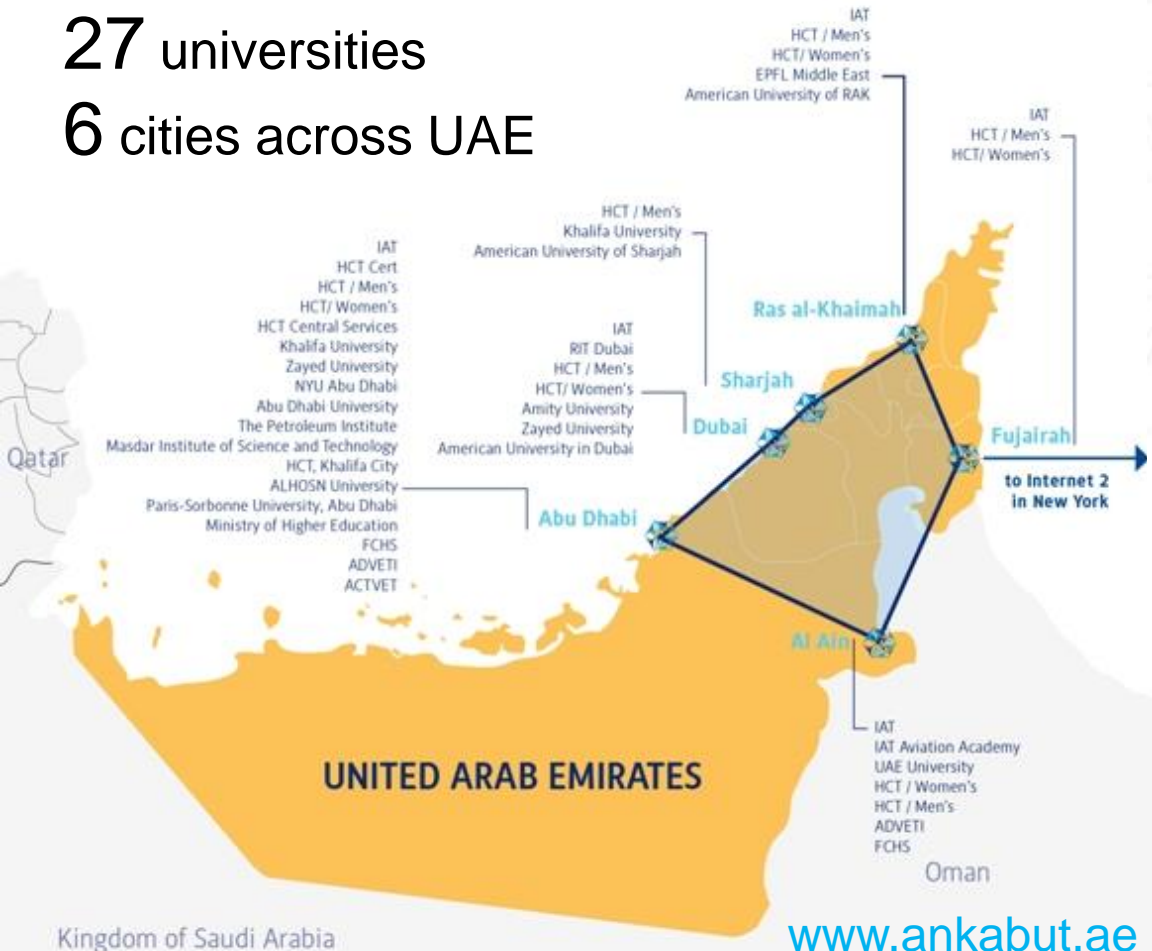
ankabut عنكبوت   Discover Ankabut   Services   Membership

You are here: Discover Ankabut » CEO & Senior Management »

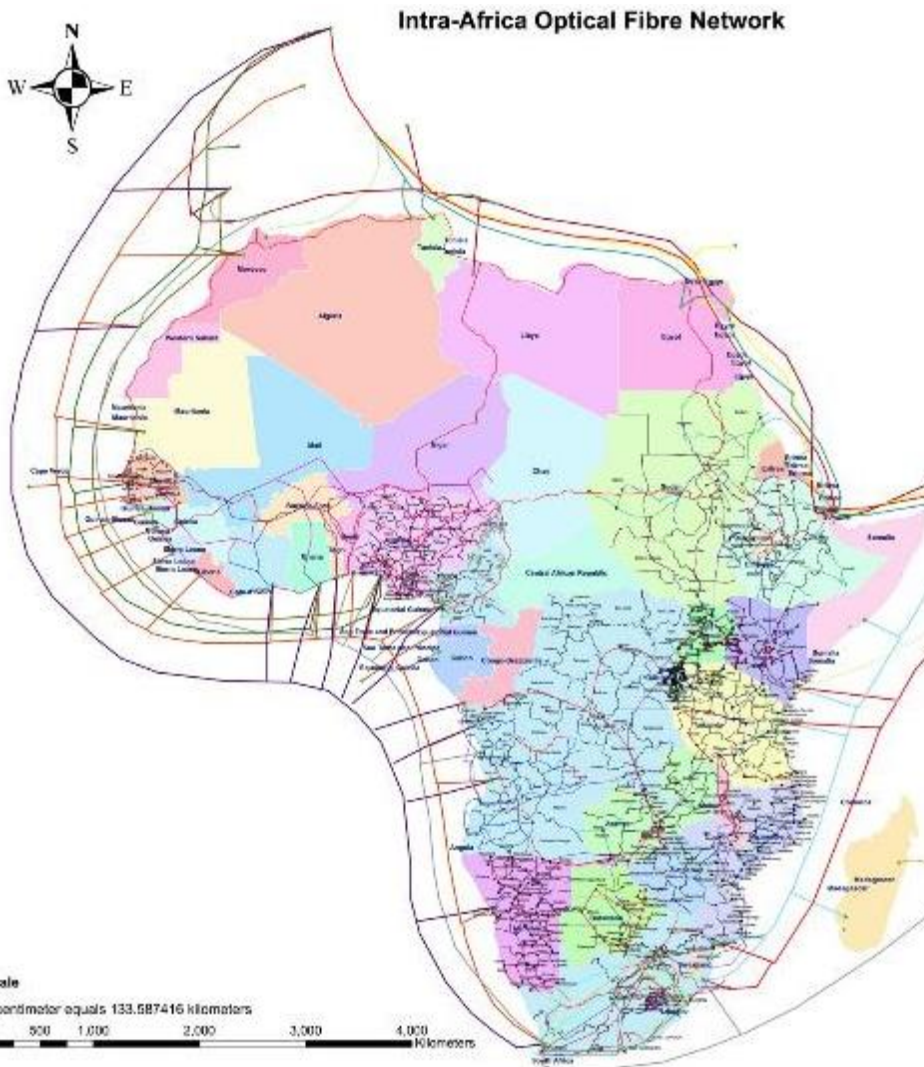## CEO & Senior Management

Fahem Al Nuaimi

Fahem Al Nuaimi is Chief Executive Officer of Ankabut and assumed his duties in December 2011. Fahem is responsible for the overall direction and vision of the network. Under his dynamic leadership Ankabut has increased services and connectivity to nearly 70 campuses and non-profit organizations throughout the United Arab Emirates.

For twenty one year's Fahem while at Etisalat served in various roles within the UAE telecommunications industry including network, program management and budgeting. He led the introduction of fiber-to-the-home networking in Etisalat and was the launch director for the latest version of IPTV. He also established the first PMO office for engineering and IT within Etisalat. He most recently served as Vice President of Technology Strategy Planning.

Fahem graduated with a Bachelors of Engineering from United Arab Emirates University, and an MBA from Southern New Hampshire University – USA.
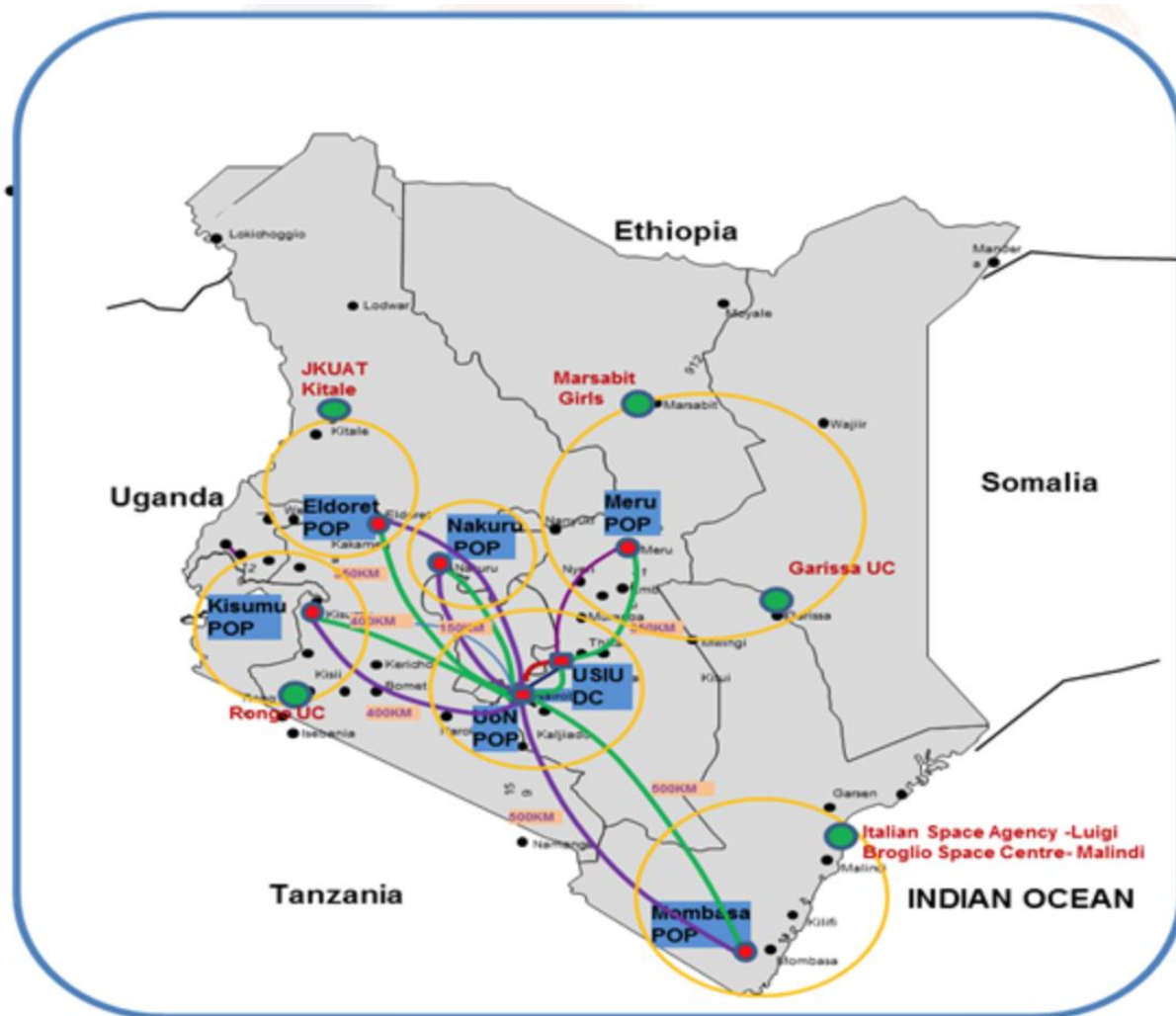
IAT
HCT / Men's
HCT/ Women's
EPFL Middle East
American University of RAK

IAT
HCT / Men's
HCT/ Women's

HCT / Men's
Khalifa University
American University of Sharjah

IAT
HCT Cert
HCT / Men's
HCT/ Women's
HCT Central Services
Khalifa University
Zayed University
NYU Abu Dhabi
Abu Dhabi University
The Petroleum Institute
Masdar Institute of Science and Technology
HCT, Khalifa City
ALHOSN University
Paris-Sorbonne University, Abu Dhabi
Ministry of Higher Education
FCHS
ADVETI
ACTVET

IAT
RIT Dubai
HCT / Men's
HCT/ Women's
Amity University
Zayed University
American University in Dubai

Ras al-Khaimah

Sharjah

Dubai

Fujairah

Abu Dhabi

to Internet 2
in New York

Al Ain

IAT
IAT Aviation Academy
UAE University
HCT / Women's
HCT / Men's
ADVETI
FCHS

Qatar

UNITED ARAB EMIRATES

Oman

Kingdom of Saudi Arabia

www.ankabut.ae

27 National Research and Education Networks in Africa

Intra-Africa Optical Fibre Network

East and Southern Africa
1. UbuntuNet Alliance for Research and Education Networking - the Alliance of NRENs of East and Southern Africa
2. Eb@le - DRC NREN
3. EthERNet - Ethiopian NREN
4. iRENALA - Madagascan NREN
5. KENET - Kenyan NREN
6. MAREN - Malawian NREN
7. MoRENet - Mozambican NREN
8. RENU - Ugandan NREN
9. RwEdNet - Rwanda NREN
10. SomaliREN - Somali NREN
11. SudREN - Sudanese NREN
12. TENET/SANReN - South African NREN
13. TERNET - Tanzanian NREN
14. Xnet - Namibian NREN

15. ZAMREN - Zambian NREN

North Africa
1. TUREN - Tunisian NREN
2. MARWAN - Moroccan NREN
3. ENREN - Egyptian NREN
4. ARN - Algerian NREN
5. SudREN - Sudanese NREN

West and Central Africa
1. WACREN - West and Central African Research and Education Network
2. GARNET - Ghanaian NREN
3. MaliREN - Mali NREN
4. NgREN - Nigerien NREN
5. RITER - Côte d'Ivoire NREN
6. SenRER - Senegalese NREN
7. NgREN - Nigerian NREN

Scale
1 centimeter equals 133.587416 kilometers

Source: http://en.wikipedia.org/wiki/National_research_and_education_network

© 2014 IBM Corporation

KENET – Kenya Education Network

POP	Number of Campuses Connected
Nairobi POP	83
Kisumu POP	20
Mombasa POP	13
Eldoret POP	16
Nakuru POP	11
Meru POP	11
Total Campuses connected	152

IBM's Unique Position in Africa
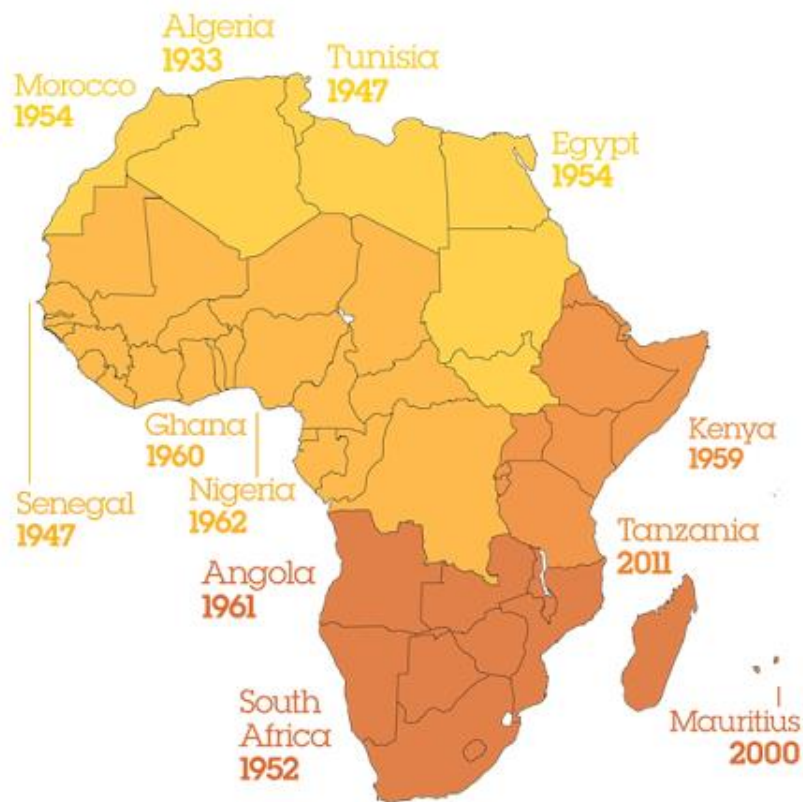
24 IBM Offices

1. Algeria,
2. Angola,
3. Burkina Faso,
4. Chad,
5. Congo,
6. DRC
7. Egypt,
8. Gabon,
9. Ghana,
10. Kenya,
11. Madagascar,
12. Malawi
13. Mauritius,
14. Morocco,
15. Niger,
16. Nigeria,
17. Senegal,
18. Seychelles,
19. Sierra Leone,
20. South Africa,
21. Tanzania
22. Tunisia,
23. Uganda,
24. Zambia.

IBM Centres

1984: Arabic Competence Centre, Cairo
1984: Technology Development Centre, Cairo
2004: Global Service Delivery Centre, Joburg
2008: Global Service Delivery Centre, Joburg
2008: Africa Innovation Centre, Joburg
2008: Global Service Delivery Centre, Cairo
2009: Global Process Delivery Centre, Cairo
2009: Africa Innovation Centre, Cape Town
2010: Global Software Competency Centre, Cairo
2011: Global Hardware Competency Centre, Cairo
2013: IBM Research Lab, Nairobi
2013: IBM Innovation Centre, Nairobi
2013: Global Delivery Centre, Casablanca
2013: Business Continuity & Resiliency Centre, Tunis
2014: IBM Innovation Centre, Lagos
2014: IBM Innovation Centre, Casablanca
2015: IBM Research Lab, Johannesburg
2015: IBM Digital Sales Centre, Cairo

Paving the Road to Cloud – NREN Government Alignment

MoU signing by Karim Mokaddem, CGM of IBM Tunisia, and Jilani Lamloumi, President of UVT

MOU with Ministry of Education of Rwanda for a country-wide cloud education program

The IBM delegation with the Vice Chancellor of Mount Kenya University

14

2015 Africa University Program - Cloud Adoption

2014

7 Universities in Africa

2015

70 Universities in Africa

1000% adoption increase rate for the MEA University program in the African continent

MEA University Program – *Africa skills for the future*

IBM

Focuses not on products, but on job role certifications aligned to the Middle East and Africa IT industry needs. Building local capability with international standards in new IT areas. Providing an environment for continuous technical update.

ACADEMIC TRACKS

Academic oriented roadmaps, aimed for industry recognized certifications aligned to high demand jobs in the IT Market

Structure:
• Foundation
• 2 Concentrations
• Cross-skill

Student Benefits:
120hs IBM Training
2 IBM Academic Certificates
1 IBM Track-based Certificate

TRAIN-THE-TEACHER

IBM Instructor-led training enables selected faculty members to educate students over an academic semester

Approach:
• Two weeks on-campus training for faculty members
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UNIVERSITY PORTAL

IBM LMS offering providing access to IBM training resources in the selected track for faculty and students.

Purpose:
• Provide a training roadmap
• E-Learning content
• Certification Test Engine

Students & Faculty Benefits:
+20hs Self-paced training
Track-based foundations course
IBM Official Course material
Tests for each unit and exercise
Academic Practice Test
Academic Final Test
Videos and Serious Games

IBM CLOUD LABS

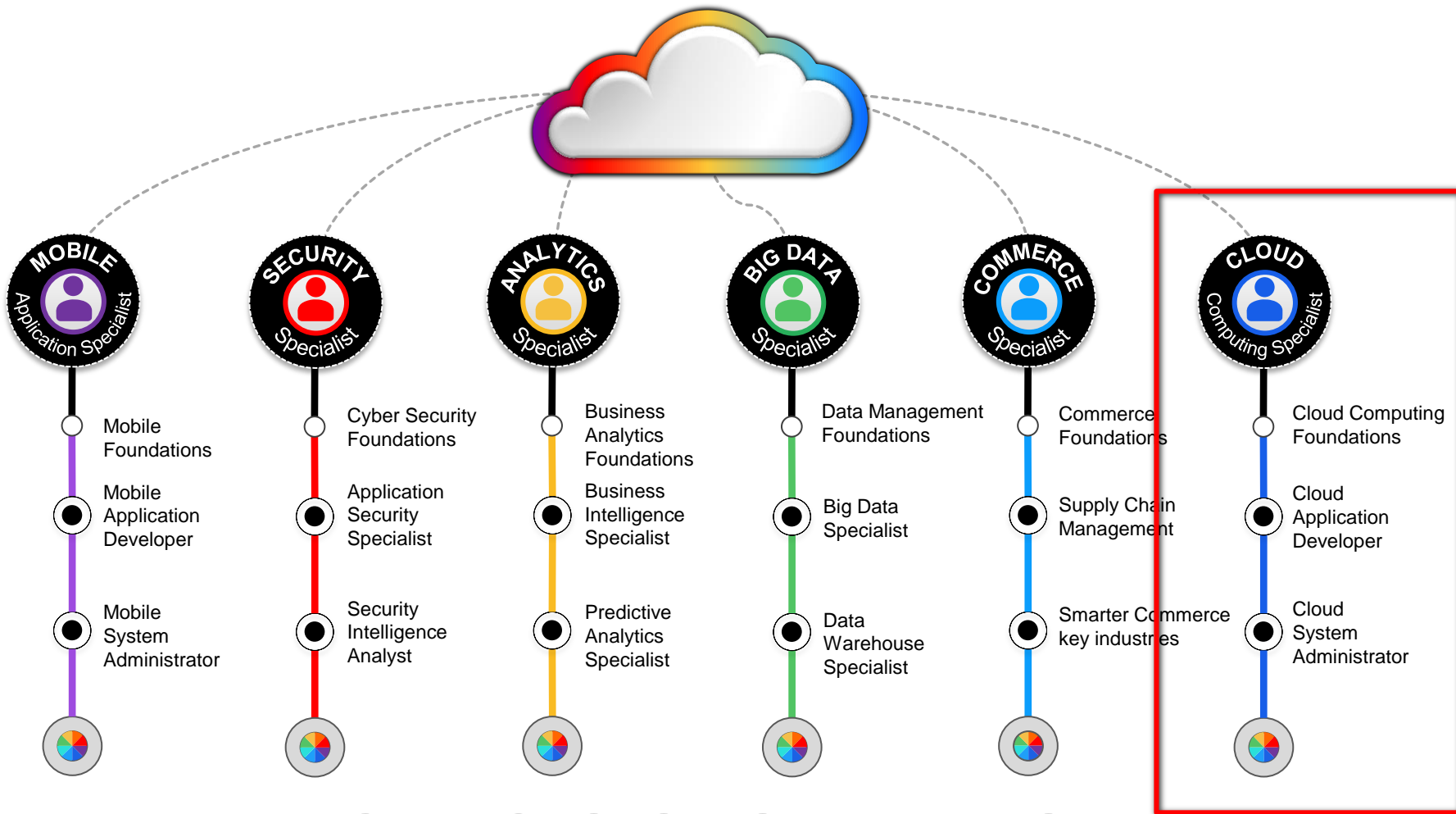IBM cloud offering giving access to lab environment to run the latest IBM enterprise software as a SaaS solution.

Purpose:
Access to IBM software in a lab environment using virtual machines to perform the course exercises

Students & Faculty Benefits:
• E-learning course images
• Instructor-led course images
• Teachers self-service portal
• Students remote-home access
• Administrators monitoring and reporting

IBM Academic Roadmaps – Fast track into your dream job

MOBILE Application Specialist	SECURITY Specialist	ANALYTICS Specialist	BIG DATA Specialist	COMMERCE Specialist	CLOUD Computing Specialist
Mobile Foundations	Cyber Security Foundations	Business Analytics Foundations	Data Management Foundations	Commerce Foundations	Cloud Computing Foundations
Mobile Application Developer	Application Security Specialist	Business Intelligence Specialist	Big Data Specialist	Supply Chain Management	Cloud Application Developer
Mobile System Administrator	Security Intelligence Analyst	Predictive Analytics Specialist	Data Warehouse Specialist	Smarter Commerce key industries	Cloud System Administrator

CROSS SKILLS

The cross-skills section provides an overview of the relationship between technology trends

IBM Cloud Computing Specialist

Cross Skills
Understanding the relevevance of the skills learned when applied to other domains.

Cloud Application Developer
Hands-on training on the development tools to become a cloud computing specialist.

Cloud Application Admin
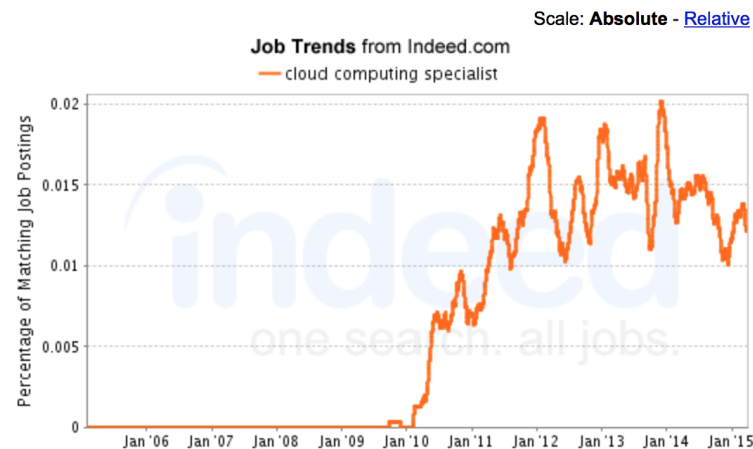Hands-on training on the administration tools to become a cloud computing specialist.

Foundations
Understanding of the cloud industry domains and technologies underpinning leading solutions in the market

Why become a
Cloud Computing Specialist?

cloud computing specialist Job Trends

Scale: **Absolute** - Relative

Indeed.com searches millions of jobs from thousands of job sites.
This job trends graph shows the percentage of jobs we find that contain your search terms.

IBM Cloud Computing Specialist – *Academic Roadmap*

Cloud Computing Specialist
Complete Academic Certification Track Overview

Cloud Computing Foundations

Cloud Application Developer

Cloud System Administrator

Cross Skills

- Systems
- Mobile
- Security
- Business Analytics
- Data Management
- Commerce
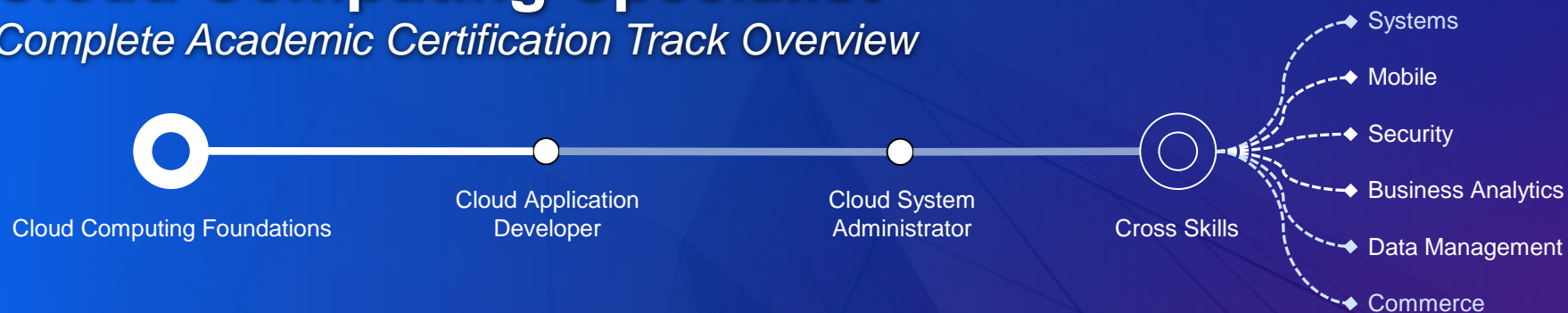
Cloud Computing Foundations
Understanding of the cloud industry domains and technologies underpinning leading solutions in the market

Cloud Application Developer Specialist - Hands-On: IBM BlueMix
Academic Certificate: Cloud Application Developer Specialist – BlueMix concentration

Cloud Computing System Administrator – Hands-On: IBM SoftLayer
Academic Certificate: Cloud Computing System Administrator – SoftLayer concentration

Cloud Computing Cross Skills
- Mobile Application Development (Worklight)
- Cyber-security (AppScan vulnerability assessment)
- Big Data Hadoop and BigInsights
- Analytics R Programming

IBM Cloud Computing Specialist – *Academic Roadmap*

Cloud Computing Foundations

You are here

▼

○ Cloud Computing Foundations ── ● Cloud Application Developer ── ● Cloud System Administrator ── ◎ Cross Skills

- ◆ Systems
- ◆ Mobile
- ◆ Security
- ◆ Business Analytics
- ◆ Data Management
- ◆ Commerce
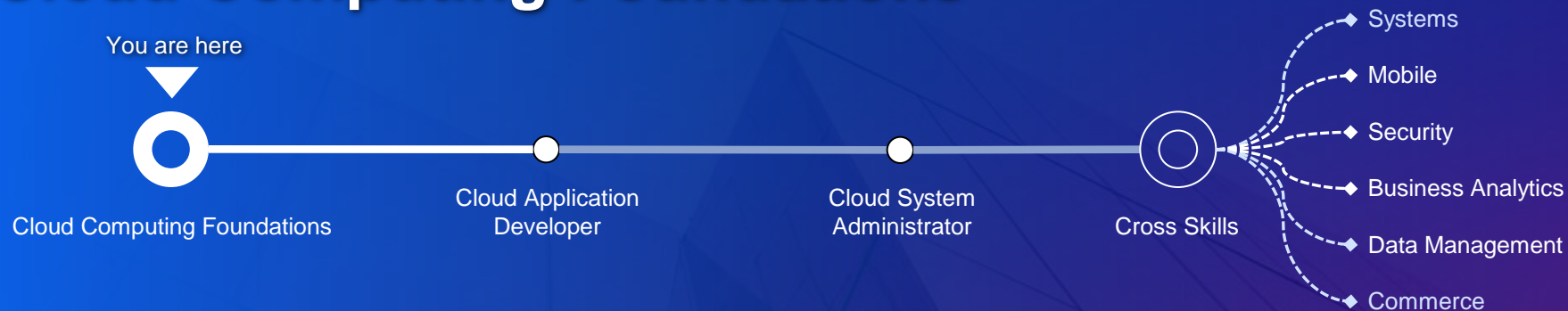
Cloud Computing Introduction (3 hs instructor-led)

Cloud Computing Foundations Course
- Cloud Overview
- Cloud Trends (Past, Present and Future)
- Cloud Marketplace (major players and solutions)
- Cloud Technologies
- Cloud Enterprise (engine for business)
- Cloud Industry Framework
- Industry Domains
- Case Studies

Textbook

DevOps For Dummies – 2nd IBM Limited Edition

Agile for Dummies

Pre-requisite Skills (10-20 hs self-paced)

ZU370 - Introduction to HTML5 and JavaScript programming
- Web development fundamentals (HTML, JavaScript)
- Web user interface development
- Coding HTML 5 web pages and basics of JavaScript code

Understanding Cloud Development Course
- Basics of the Agile Methodology
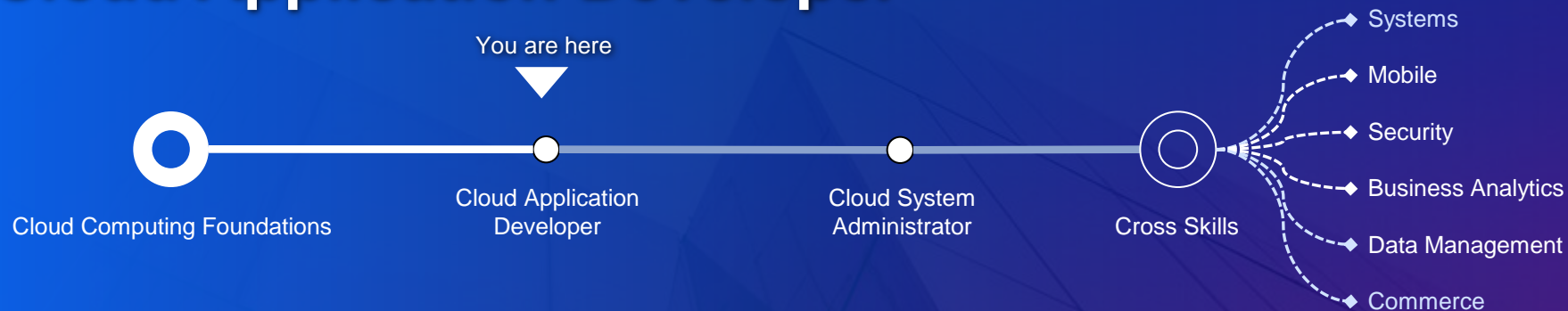- Cloud-based application development fundamentals

Underlying Cloud Computing Technologies Course
- Understanding Cloud Foundry technologies for BlueMix
- Understanding Open Stack technologies for SoftLayer

IBM Cloud Computing Specialist – *Academic Roadmap*

Cloud Application Developer

You are here

Cloud Computing Foundations

Cloud Application Developer

Cloud System Administrator

Cross Skills

- Systems
- Mobile
- Security
- Business Analytics
- Data Management
- Commerce

IBM Official Courses (32 hs instructor-led)

VY301 - Essentials of Cloud Application Development on IBM Bluemix (under development Agata Muszycka-Jones)
- Describe the underlying components of IBM Bluemix
- Identify the runtimes and services offered by Bluemix
- Describe the features of IBM SDK for Node.js
- Create a node.js application that runs on Bluemix
- Describe the characteristics of REST APIs
- Identify the data services that are available on Bluemix
- Implement a Bluemix mobile data application

VY102 - Developing BlueMix applications with IBM SDK for Node.js
- Explain the purpose and scope of the IBM SDK for Node.js
- Build a web application as a JavaScript function
- Build a web application with the Express framework

VY103 - Working with Liberty Profile on Bluemix (BYOE)
- Use WebSphere Development Tools to deploy applications to a server

- Configure applications resources such as JMS messaging and JPA
- Use tools to monitor, tune, and troubleshoot Liberty profile

IBM Textbooks

Accelerate Development of New Enterprise Solutions for the Cloud with Codename BlueMix
http://www.redbooks.ibm.com/abstracts/redp5011.html?Open

IBM Exams

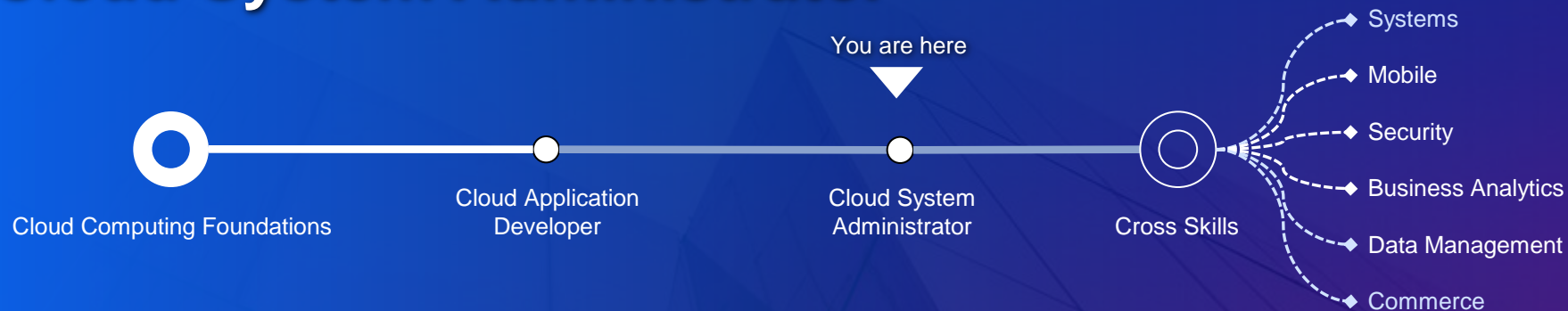**IBM Academic Certificate** (to be released in July'05)
IBM Academic Certificate – Cloud Application Developer

IBM Professional Certification (to be released in July'05)
IBM Cloud Application Developer with Bluemix

IBM Cloud Computing Specialist – *Academic Roadmap*

Cloud System Administrator

You are here

- Cloud Computing Foundations
- Cloud Application Developer
- Cloud System Administrator
- Cross Skills
  - Systems
  - Mobile
  - Security
  - Business Analytics
  - Data Management
  - Commerce

IBM Official Courses (32 hs SPVC and ILT)

Cloud Administration Fundamentals Course
- UNIT 1 - SoftLayer approach to IaaS
- UNIT 2: SoftLayer platform architecture
- UNIT 3: SoftLayer server offerings
- UNIT 4: SoftLayer storage options
- UNIT 5: SoftLayer network options
- UNIT 6: Hands-on Lab: Ordering and deploying a SoftLayer IaaS environment
- UNIT 7: Softlayer servers advanced topics
- UNIT 8: Softlayer storage advanced topics
- UNIT 9: Softlayer networking advanced topics
- UNIT 10: Securing Softlayer cloud environments
- UNIT 11: Monitoring Softlayer cloud environments
- UNIT12: SoftlayerAPIs
- UNIT 13: Designing a Softlayer cloud solution for industry-specific scenarios

IBM Textbooks

SoftLayer IaaS for Administrators Redbook

IBM Exams

IBM Academic Certificate
IBM Academic Certificate – Cloud System Administrator

IBM Professional Certification
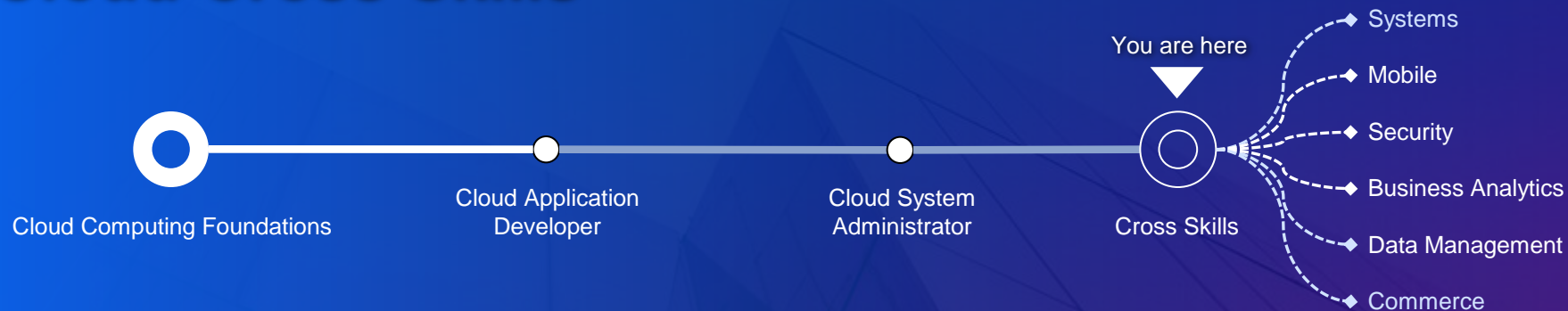IBM Cloud Application Administration with Softlayer

Redbooks

http://www.redbooks.ibm.com/residents.nsf/ResIndex/

IBM Cloud Computing Specialist – *Academic Roadmap*

Cloud Cross Skills

- (Mobile) IBM Bluemix mobile Lab
- (Security) Cyber-security (AppScan vulnerability assessment)
- (Data Management) Introduction to Analytics for Hadoop Service in Bluemix
- (Analytics) Analytics Using R and R Studio in Bluemix with dashDB Analytics Warehouse

THANK YOU
Merci

شكراً

Juan Pablo Napoli
MEA University Program Manager
IBM Middle East and Africa
juan.napoli@ae.ibm.com

BACKUP

MEA University Program – *Africa skills for the future*

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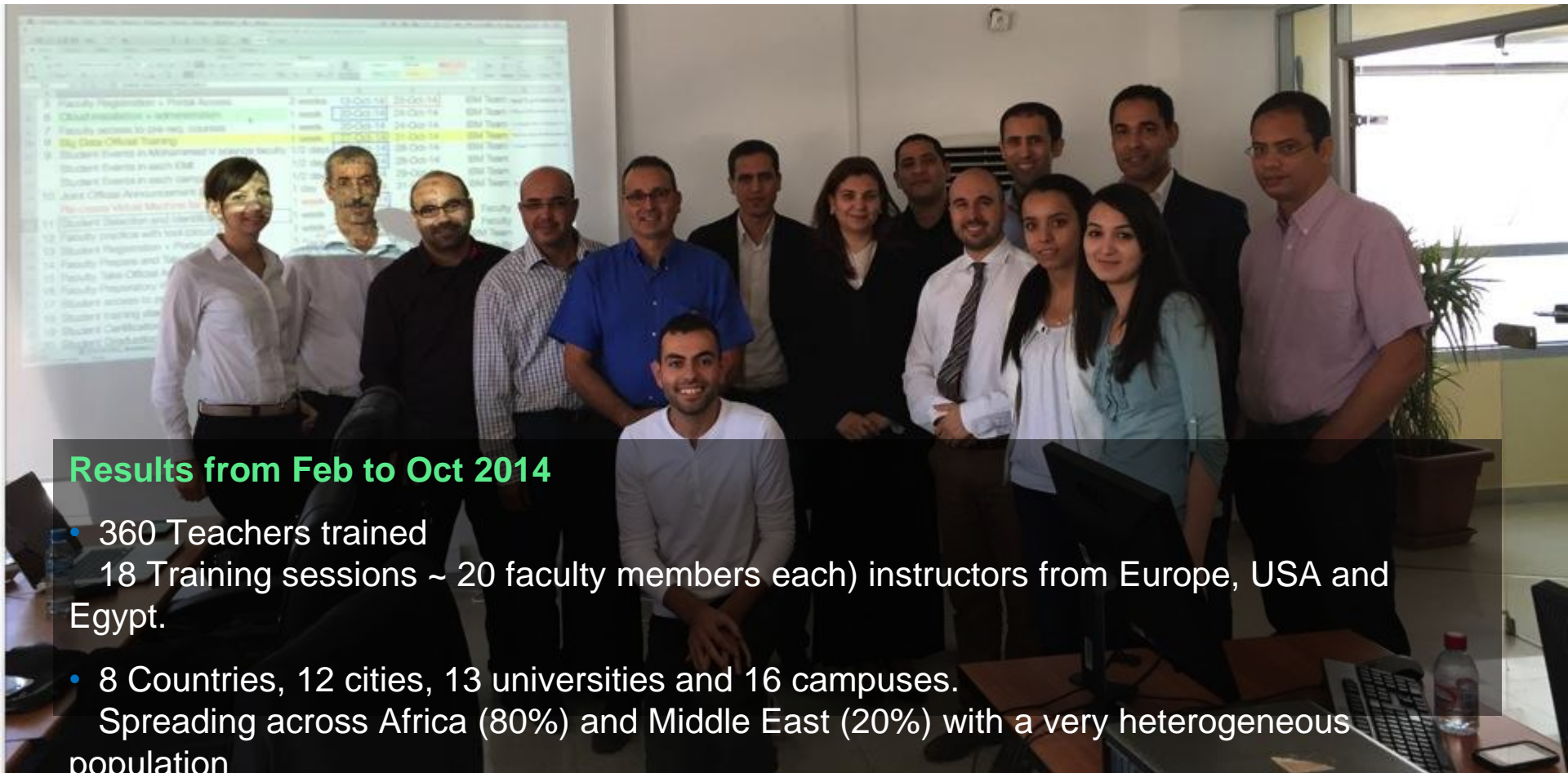
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MEA University Program – *Results 2014*

Results from Feb to Oct 2014

• 360 Teachers trained
  18 Training sessions ~ 20 faculty members each) instructors from Europe, USA and Egypt.

• 8 Countries, 12 cities, 13 universities and 16 campuses.
  Spreading across Africa (80%) and Middle East (20%) with a very heterogeneous population

Targets by 2017
62 Universities & **34,000 students**

Teacher Training Workshops

Building local expertise trough a real world-class international experience.

IBM's **Best** Technical Training **Experts | Cloud**

More than 2,400 students are studying at ADWC

MEA University Program – *Africa skills for the future*

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Videos and Serious Games

IBM CLOUD LABS

IBM cloud offering giving access to lab environment to run the latest IBM enterprise software as a SaaS solution.

Purpose:
Access to IBM software in a lab environment using virtual machines to perform the course exercises

Students & Faculty Benefits:
- E-learning course images
- Instructor-led course images
- Teachers self-service portal
- Students remote-home access
- Administrators monitoring and reporting

Academic Roadmaps – E-learning engine

Academic Roadmaps – Tracking and Assessment System

1. Progress bar on each section to track the student's progress

Prerequisite skills progress track

Foundation progress track

Mobile Application Developer progress track

2. Checkpoint tests in the Foundation and concentration course to assess the knowledge of the students before advancing.

Academic Certificates – Practice test engine

IBM Mobile Application Specialist - Mobile Application Developer practice exam

| Introduction | Test Overview | Questions | Help |

★ Not answered yet

Time Remaining:

44:37

Status

Answered Questions:

0 of 31

★ 1. Which two steps should a developer take to create an application that combines web and native code? (Choose two.)

★ 2. You are using Worklight Studio on your PC.

★ 3. You are developing a new Android application and want to use the Mobile Browser Simulator to test aspects of your new

★ 4. Which action should you perform in the index.html file to accommodate different device screen sizes?

★ 5. At a minimum, what do you need to install to develop an Android application?

★ 6. You are testing an Android application.

★ 7. You plan to use the WL.SimpleDialog in your application.

★ 8. Your application needs to retain a local copy of its data, even when offline.

★ 9. Which computing platform is used for the server side component of Application Center?

★ 10. You are using Apache Cordova. What is an example of a device lifecycle event that a Cordova function can listen for?

★ 11. You are writing a new version of an existing mobile application for Android devices.

★ 12. Which two components must you create when creating an Apache Cordova plug-in for iOS? (Choose two.)

★ 13. Dojo that is contained in the Worklight project is optimized for which type of application?

★ 14. What results from successful use of the Worklight Service Discovery Wizard?

★ 15. Which statement is true about using a Worklight HTTP adapter to access SOAP services?

★ 16. You are configuring a Worklight SQL adapter. Which two parameters must be declared in the adapter XML file? (Choose

★ 17. What must you do to add custom Java code to a Worklight adapter?

Submit Test