6th SG13 Regional Workshop for Africa on "Standardization of future networks: What opportunities for Africa?“

(Abidjan, Cote D'Ivoire, 26 – 27 March 2018)

Cloud Computing : Advantage and Obstacle

- African Countries -

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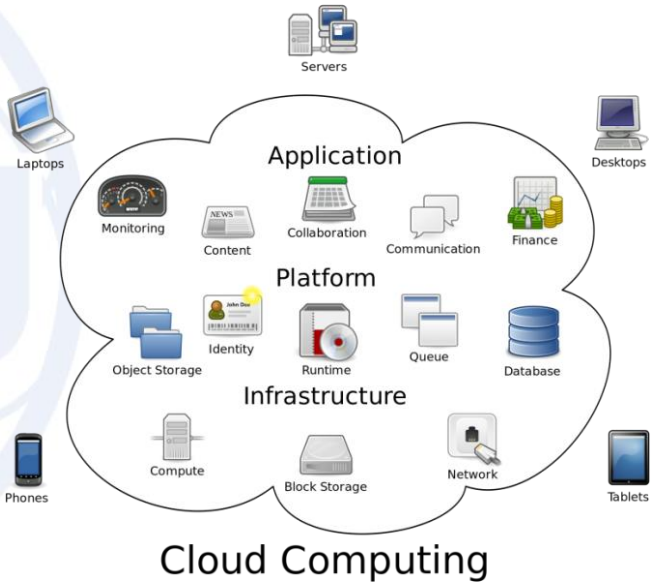
Cloud Computing

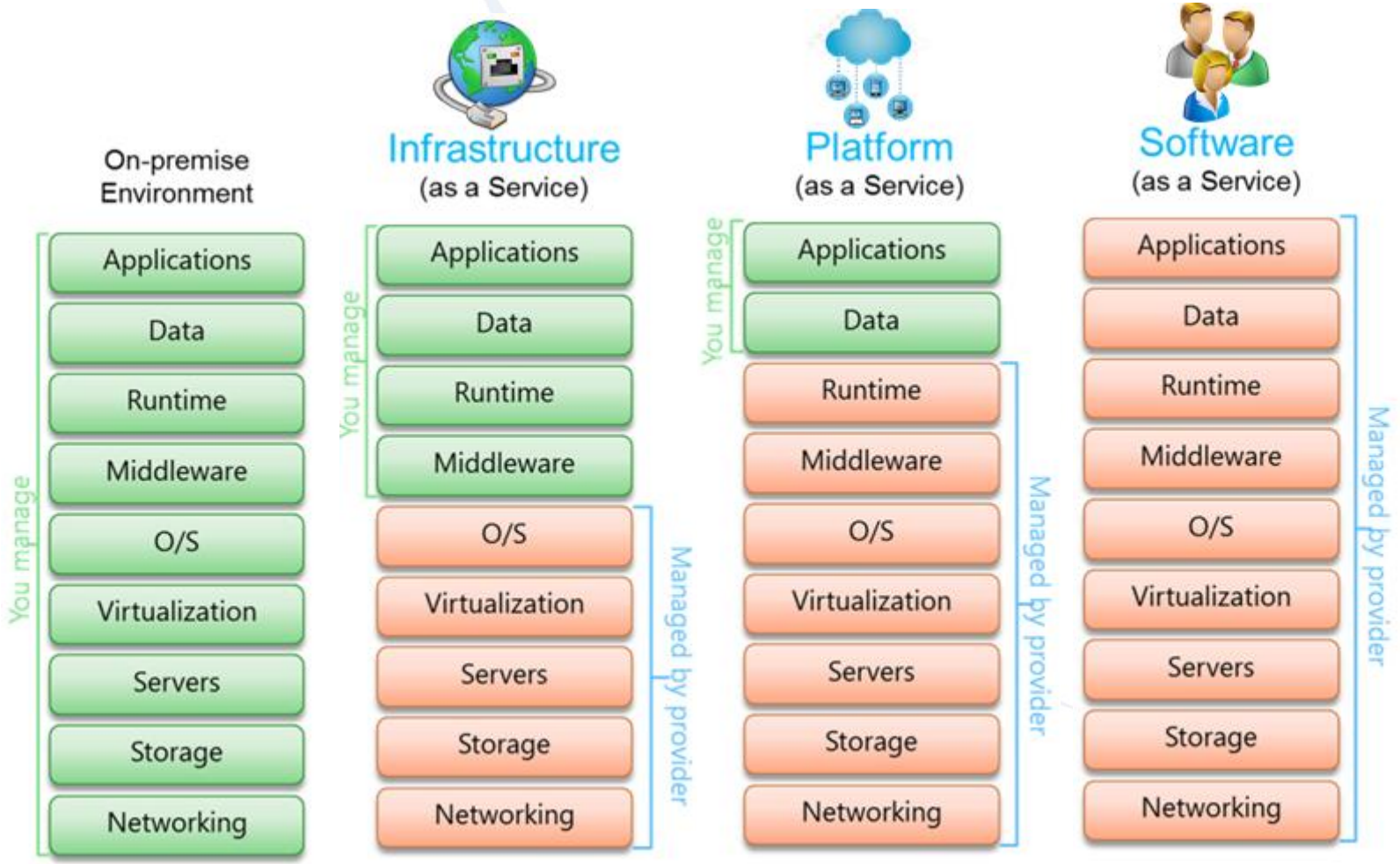
What's the Cloud Computing

Cloud computing is a paradigm for enabling network access to a scalable and elastic pool of shareable physical or virtual resources with self-service provisioning and administration on-demand.



(Source : ISO/IEC 17788 | Recommendation ITU-T Y.3500 "Information technology - Cloud computing - Overview and vocabulary")

Cloud Computing services

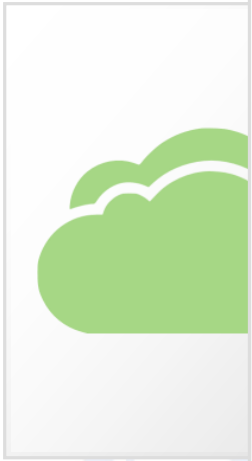


Cloud Computing Advantages

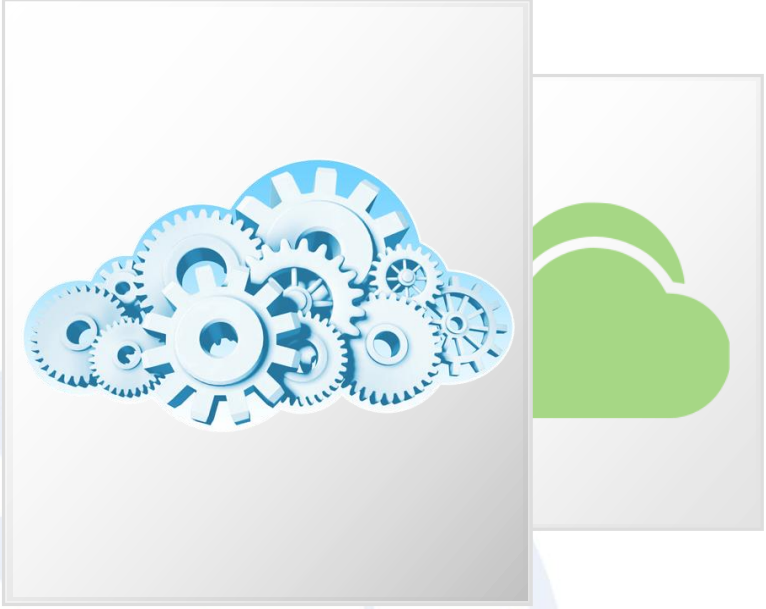
Cost efficiency

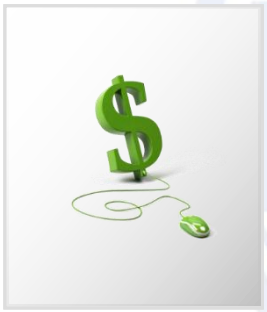
Cost efficiency → Pay per use

Cost efficiency → Pay per use → Faster time to market



Cost efficiency → Pay per use → Faster time to market → Innovation





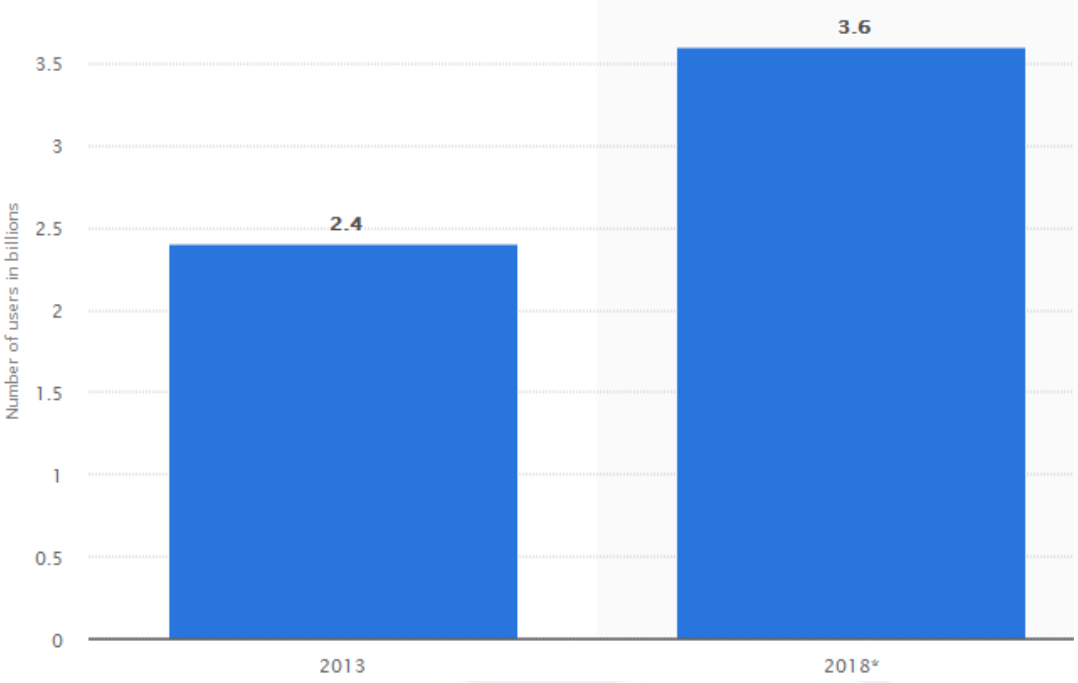
Cost efficiency → Pay per use → Faster time to market → Innovation → System automation

Cost efficiency → Pay per use → Faster time to market → Innovation → System automatization → Green computing

& MORE

Cost efficiency → Pay per use → Faster time to market → Innovation → System automatization → Green computing

Cloud computing by numbers



Source : Statista 2018

Number of cloud service users worldwide in 2013 and 2018 (in billions)

Cloud computing by numbers

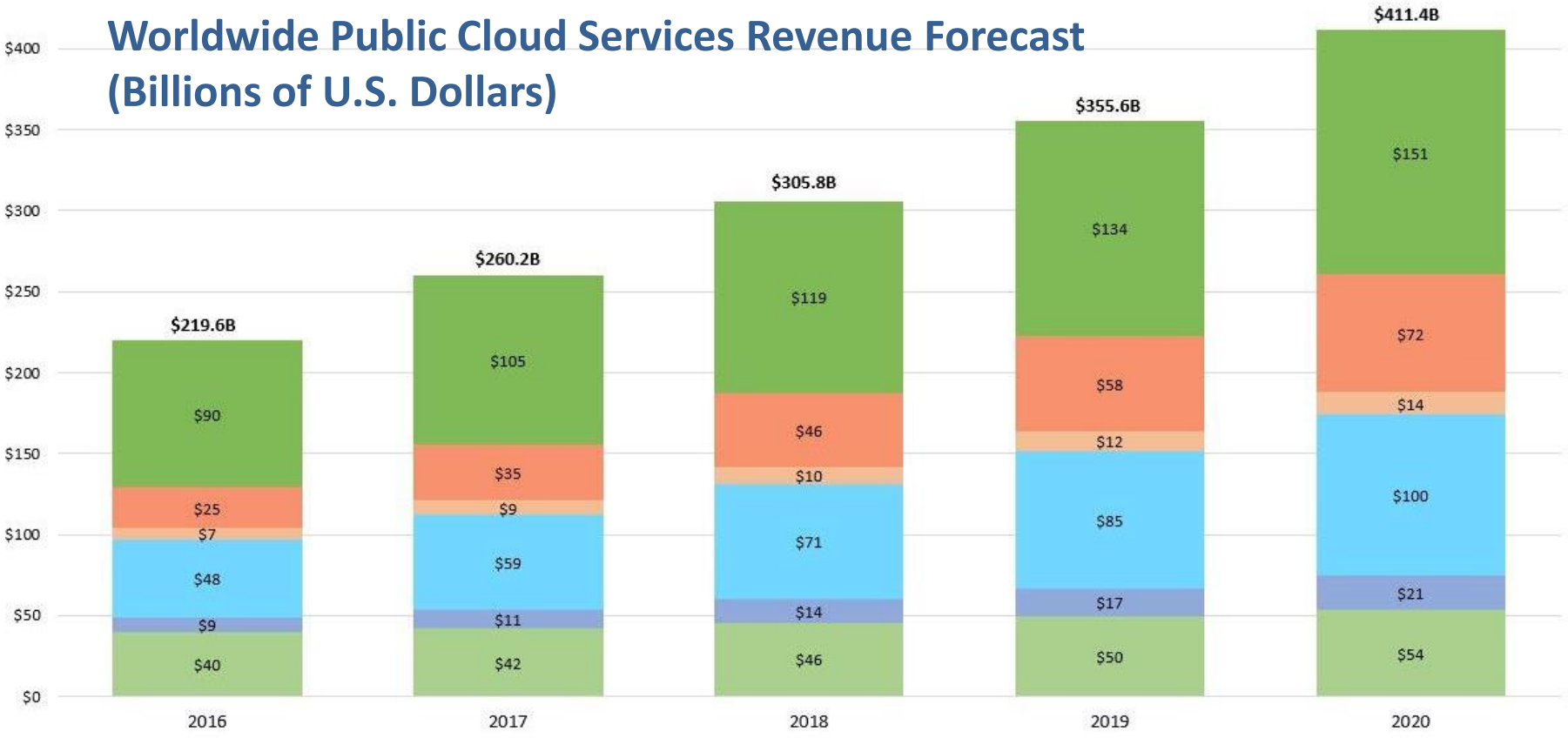
	2016	2017	2018	2019	2020
Cloud Business Process Services (BPaaS)	40,812	43,772	47,556	51,652	56,176
Cloud Application Infrastructure Services (PaaS)	7,169	8,851	10,616	12,580	14,798
Cloud Application Services (SaaS)	38,567	46,331	55,143	64,870	75,734
Cloud Management and Security Services	7,150	8,768	10,427	12,159	14,004
Cloud System Infrastructure Services (IaaS)	25,290	34,603	45,559	57,897	71,552
Cloud Advertising	90,257	104,516	118,520	133,566	151,091
Total Market	**209,244**	**246,841**	**287,820**	**332,723**	**383,355**

Source: Gartner (February 2017)

Worldwide Public Cloud Services Forecast (Millions of Dollars)

Cloud computing by the numbers

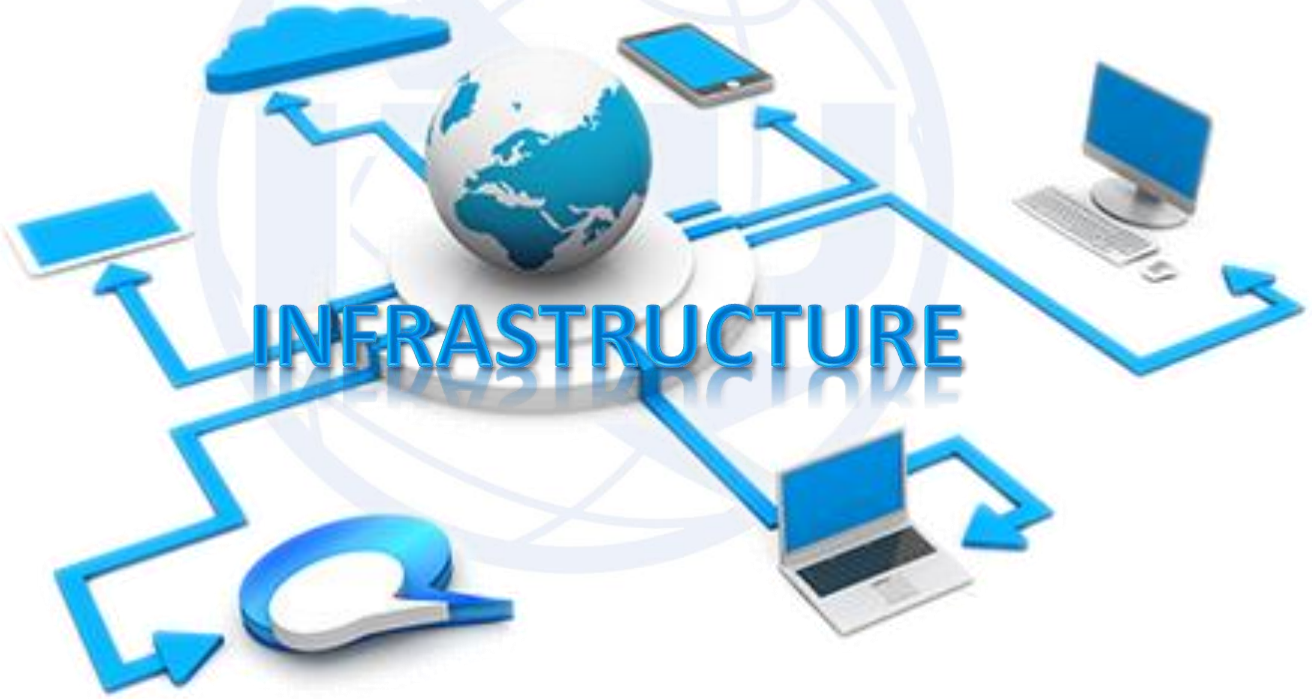
Worldwide Public Cloud Services Revenue Forecast (Billions of U.S. Dollars)



Cloud Computing Requirements

Cloud Computing requirements

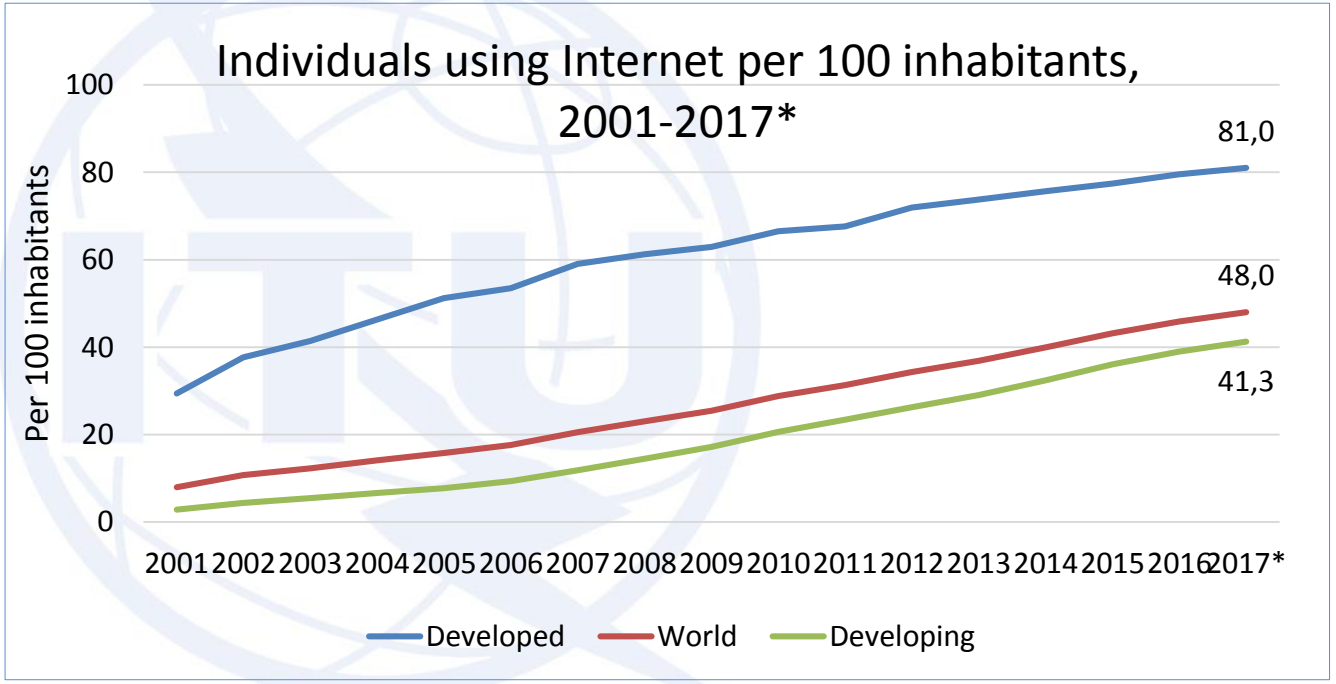
Cloud Computing Requirements



Internet penetration

The number of internet users globally will have reached almost 3,7 billions in 2017 equaling 50% penetration.

Two-thirds of the world's internet users are from the developing world.

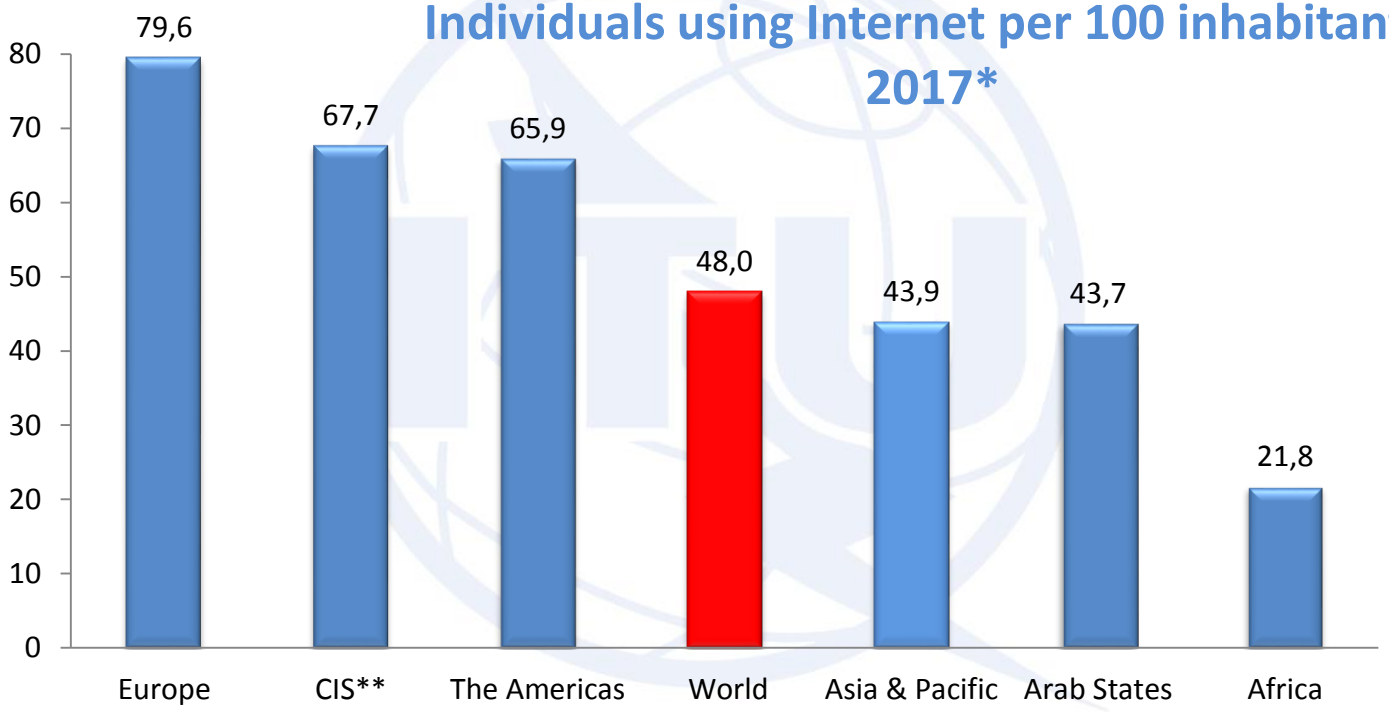


Source: ITU World Telecommunication /ICT Indicators database

However, 7 of the 10 fastest growing internet populations in the world are in Africa

Internet penetration

Individuals using Internet per 100 inhabitants, 2017*



Regions are based on the ITU BDT Regions, see: http://www.itu.int/en/ITU-D/Statistics/Pages/definitions/regions.aspx
Note: * Estimate ** Commonwealth of Independent States
Source: ITU World Telecommunication /ICT Indicators database

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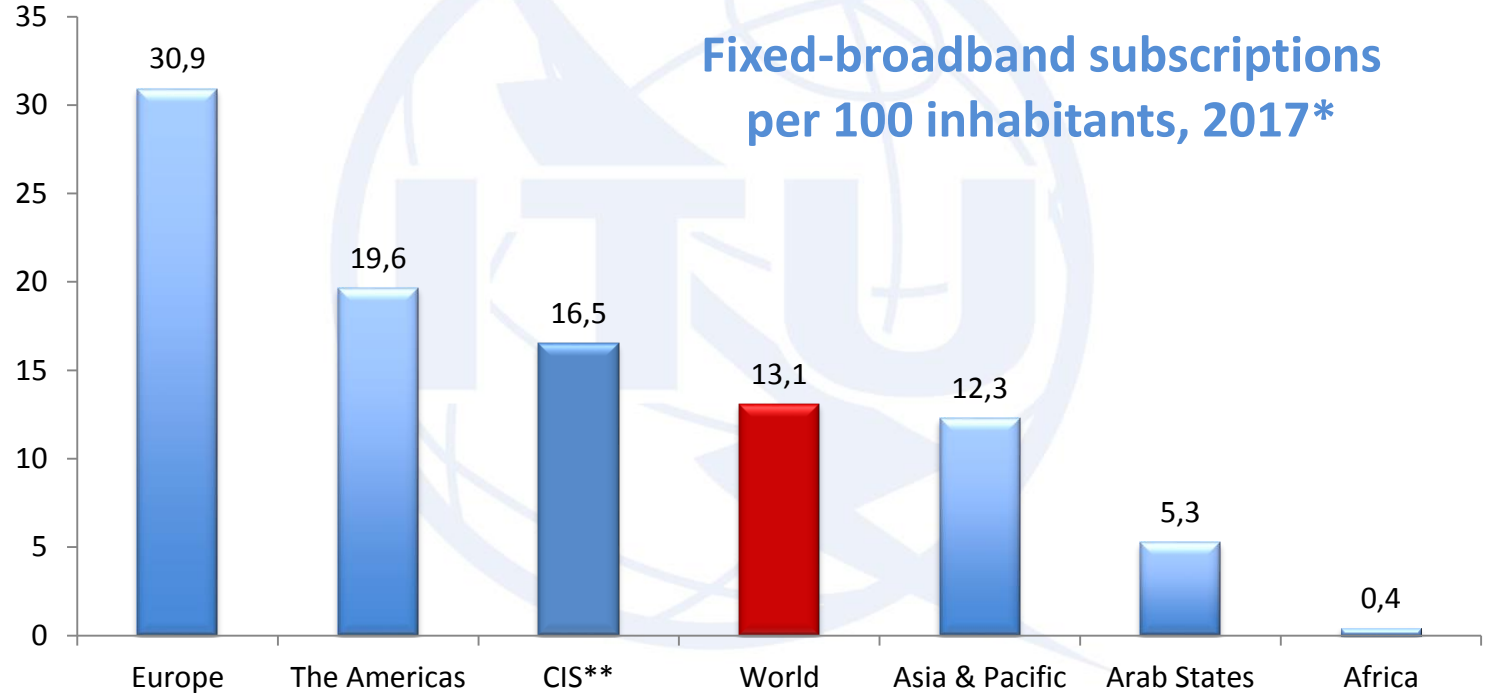
Broadband



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Source: ITU World Telecommunication /ICT Indicators database

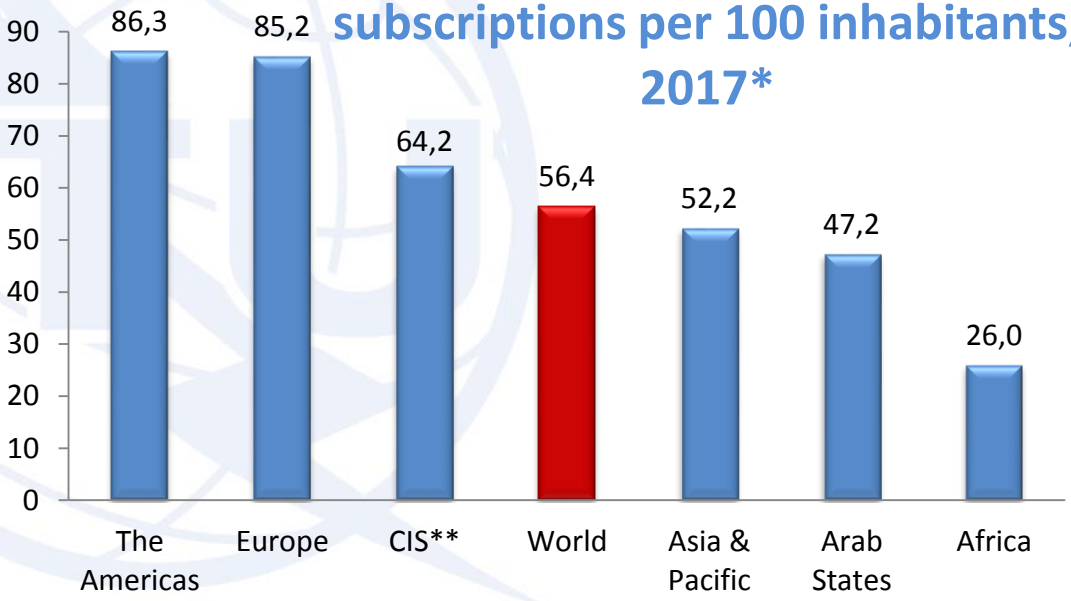
Broadband

The mobile data will be the primary driver behind the rapid growth in the African telecoms market.

Across the African continent mobile broadband connections will more than double from the 419 million in place today to 1.07 billion by 2022.

Source : ITUNews - November 8, 2017

Active mobile-broadband subscriptions per 100 inhabitants, 2017*

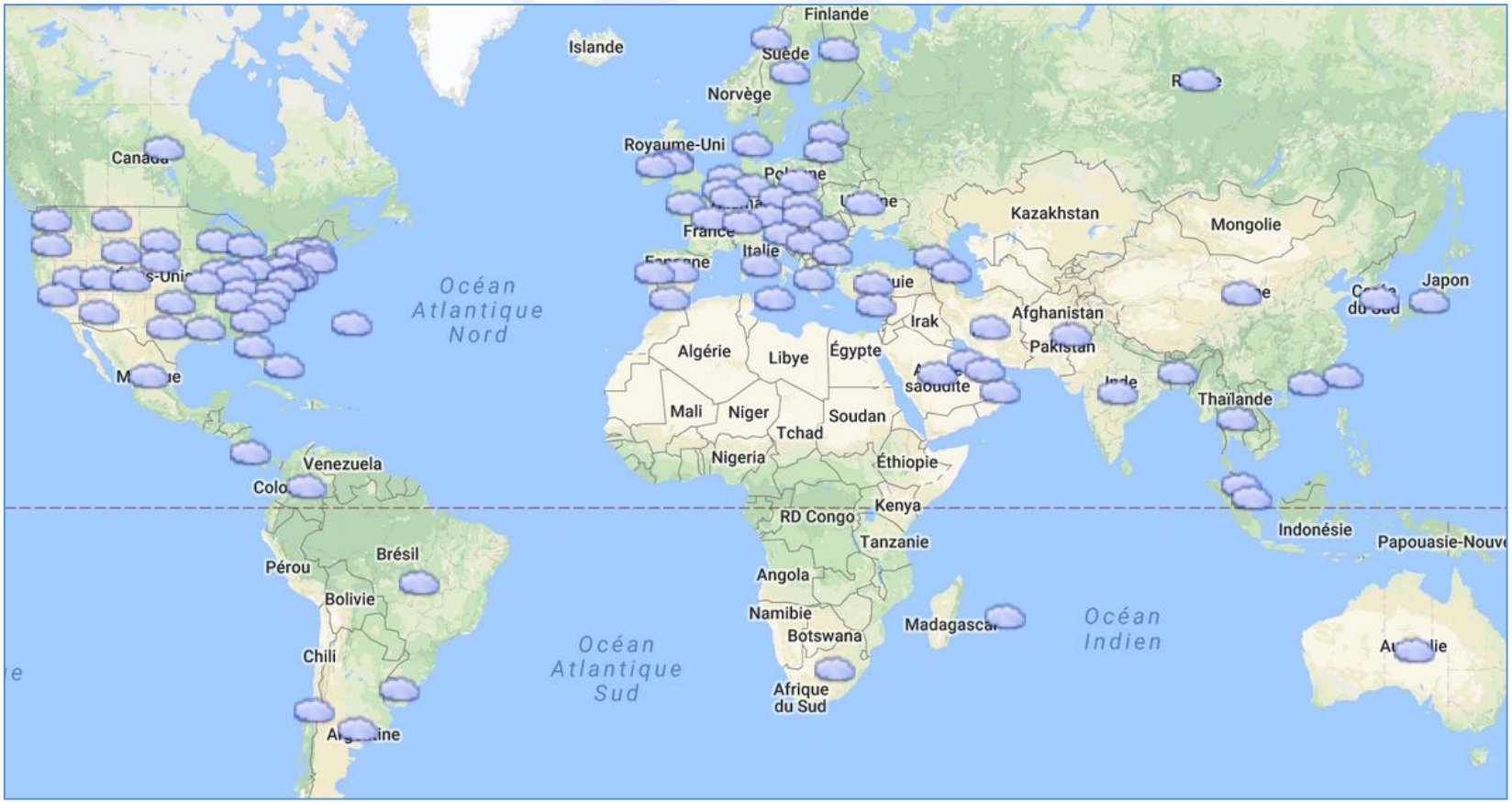


Source: ITU World Telecommunication /ICT Indicators database

Datacenter Map

Source: Datacenter Map

Cloud Server Map



Source: Datacenter Map

Datacenter Map

1. The Citadel — Reno, Nevada, United States

2. Facebook — Prineville, Oregon, United States

3. NSA — Bluffdale, Utah, United States

4. Lakeside Technology Center — Chicago, Illinois, United States

5. Microsoft — Dublin, Ireland

Cloud Computing Requirements

LEGISLATION

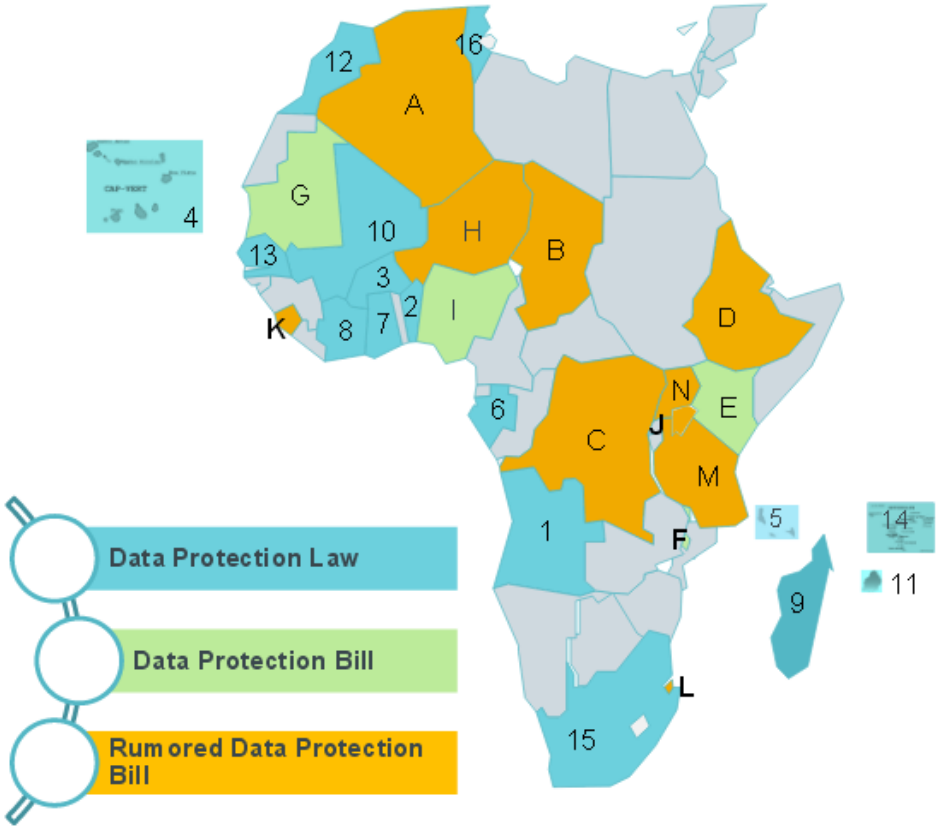
Data protection law in Africa

- African organizations
  - African Union
  - ECOWAS
- African countries having adopted a DP regulation

1.	Angola	10.	Mali
2.	Benin	11.	Mauritius
3.	Burkina Faso	12.	Morocco
4.	Cape Verde	13.	Senegal
5.	Comoros	14.	Seychelles (Not in force)
6.	Gabon	15.	South Africa
7.	Ghana	16.	Tunisia
8.	Ivory Coast		
9.	Madagascar		

- DP Bills (and rumoured bills)

A.	Algeria	I.	Nigeria
B.	Chad	J.	Rwanda
C.	DRC	K.	Sierra Leone
D.	Ethiopia	L.	Swaziland
E.	Kenya	M.	Tanzania
F.	Malawi	N.	Uganda
G.	Mauritania		
H.	Niger		



Source: Emerging Data Protection regulations in Africa
http://www.elexica.com/~/media/Files/Training/2015/05%20May/Emerging%20data%20protection%20regulations%20in%20Africa.pdf

Cloud Regulation – Algeria

Executive decree No.15-320 of 13 December 2015 : establishing the operating regime applicable to each type of network, including radio and various telecommunication services.

Art.3 : Subject to the granting of an authorization issued by the postal and telecommunications regulatory authority, the establishment and operation of :

" hosting and content storage services as part of cloud computing services "

Cloud Regulation – Algeria

Postal and Telecommunications Regulatory Authority Council Decision No.48/SP/PC/ARPT/2017 of 29 November 2017

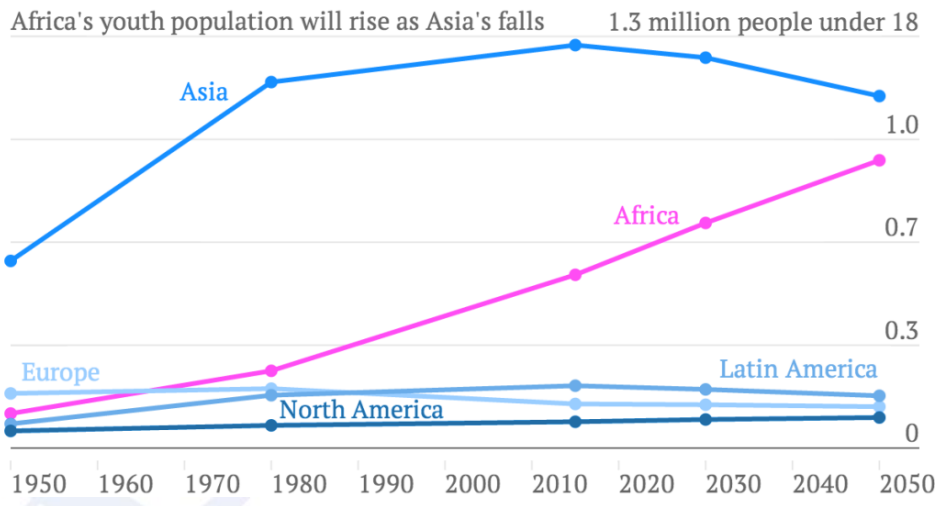
Specifications defining the conditions and procedures for establishing and operating hosting and content storage services for users of cloud computing services. https://www.arpt.dz/fr/

Cloud Computing Requirements

Humain Potentiel

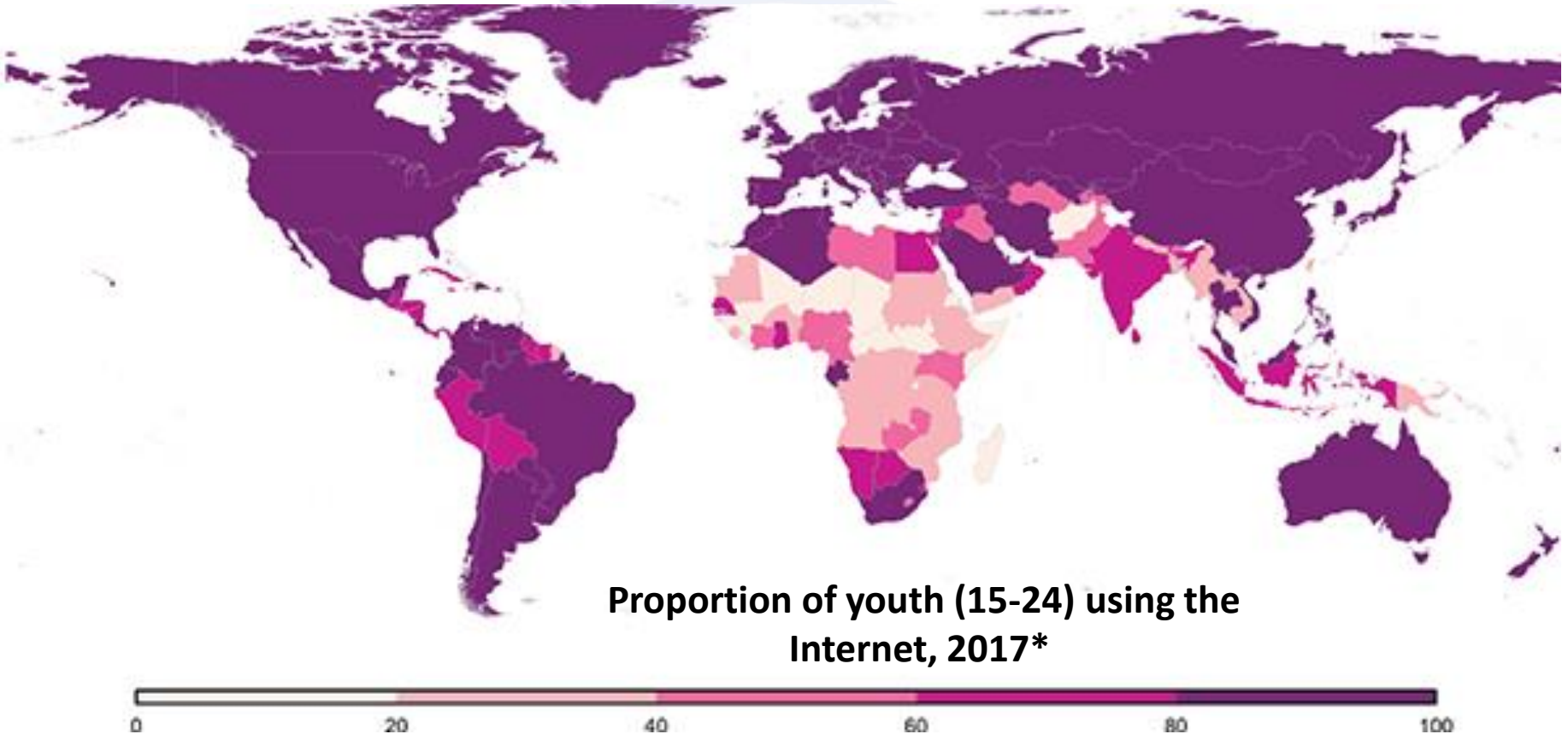
The majority of the African Countries have the chance to have young population who need to be formed and to get experience.

This population represent the future of theses countries and the government, In addition, the company need the invested in this young population.



Generation 2030 / AFRICA Report
Source: UNICEF

Humain Potentiel



Proportion of youth (15-24) using the Internet, 2017*

Note: * Estimates.
Source: ITU.

Africa Cloud Projects

Projects

E-education

- The Higher Education Alliance for Leadership Through Health Alliance, a consortium of 7 universities from Kenya, Ethiopia, Congo, Tanzania and Uganda, is working with industry experts to extend education through virtual computing labs that students access remotely.

Projects

E- health

- University of Pretoria, South Africa uses the cloud for the next - generation medical research. Students in the university use the cloud in the development of drugs, which are expected to cure Africa - specific serious illnesses.

Recommandations

Recommandations

Developing infrastructure, particularly through partnerships

Introducing cloud computing into university courses

Awareness on the benefits of Cloud Computing by organizing workshop as those organized by the ***ITU*** or ***IEEE***

Collaboration and work together to create a secure and good environment for the development of cloud computing

Encouraging the participation of African countries on international work and studies on cloud computing like the ITU-T SG13 RG-AFR.

Thank you for your attention

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