



Cloud Computing First

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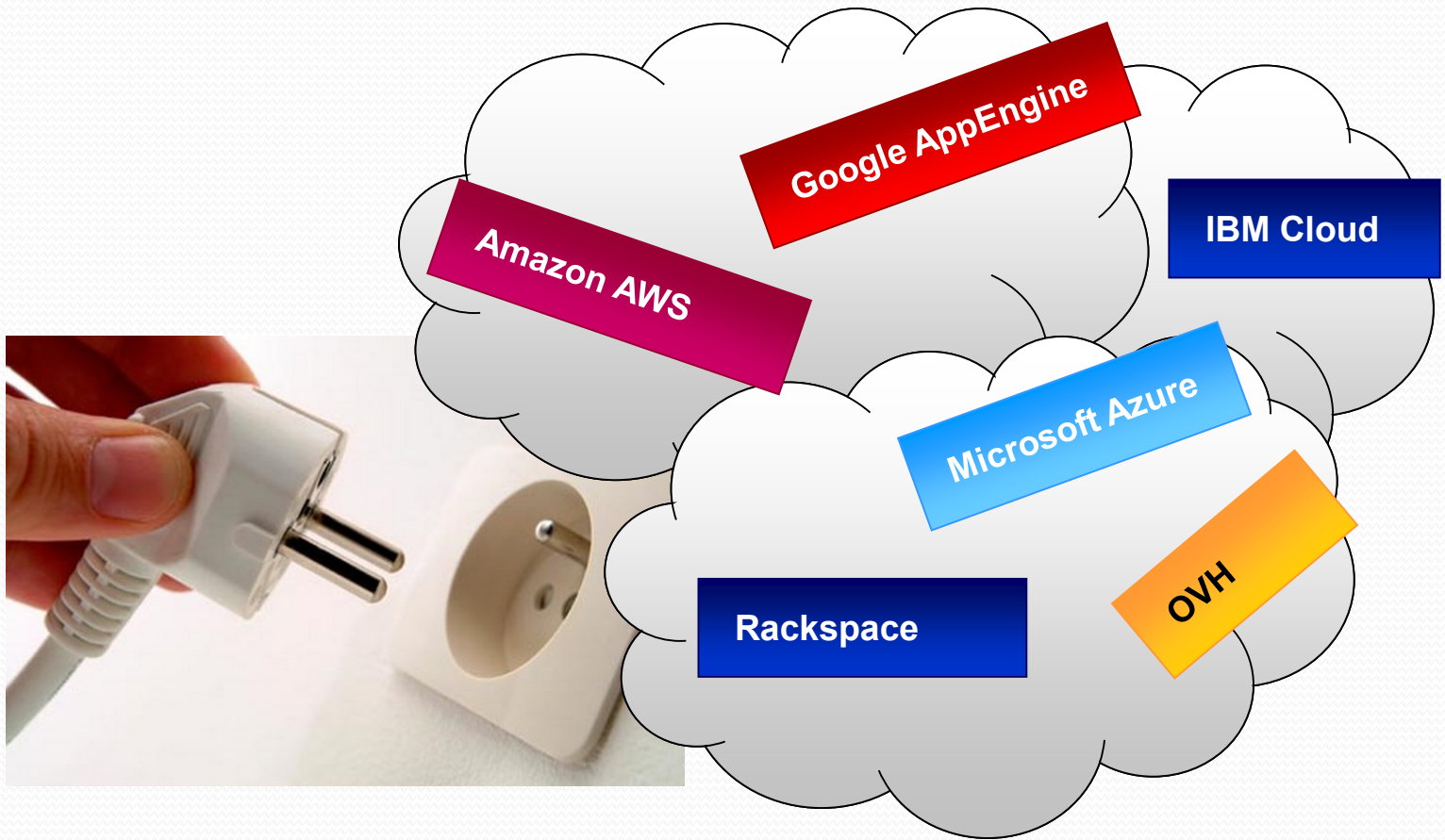
Outline

- Cloud computing : A computer utility
- State of the Arts in Cloud Adoption and Cloud Technologies (*session 2*)
- Main outcomes of the ALECSO-ITU study:
“Guidelines to improve the use of Cloud Computing Technology in Education in Arab Countries”
- Conclusion

Cloud computing

- A standardised IT capability (services, software or infrastructure) delivered on **demand** via Internet in a **pay-per-use**, self-service way* (NIST)
- 1969 – Leonard Kleinrock, ARPANET project
 - “As of now, computer networks are still in their infancy, but as they grow up and become sophisticated, we will probably see the spread of “**Computer Utilities**”, which, like present electric and telephone utilities, will service individual homes and offices across the country”
- A paradigm shift
 - From the Internet as a **Global Infrastructure**
 - To the Internet as a **Global Service**

Computer Utility



Cloud computing services

Software as a Service

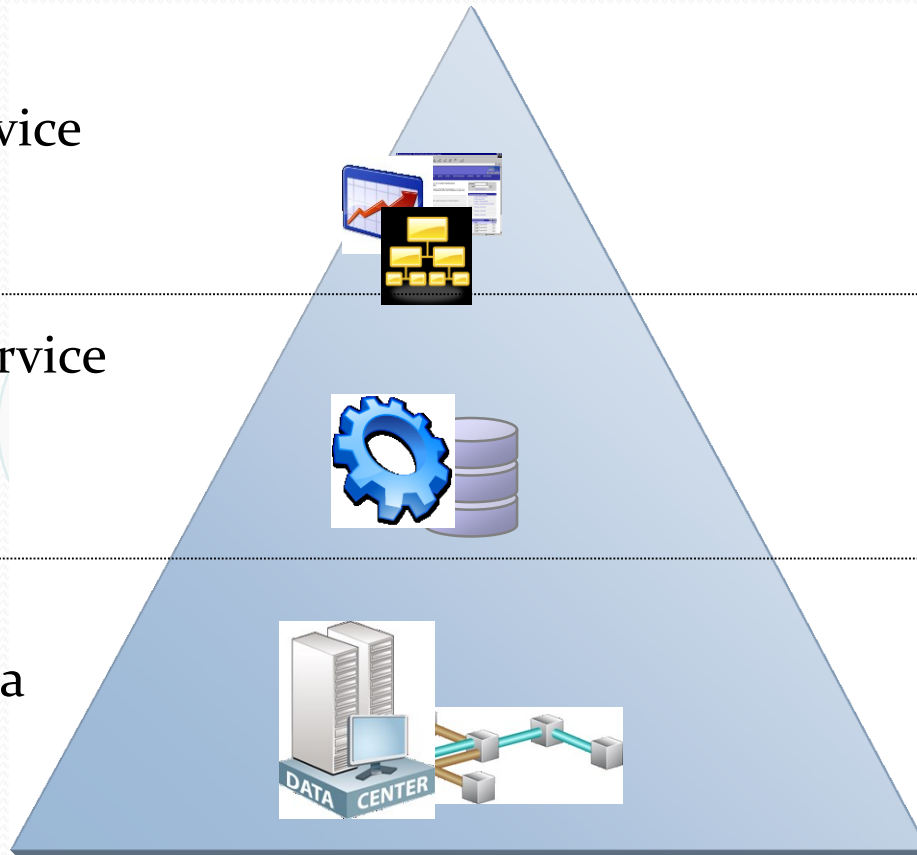
SaaS

Platform as a Service

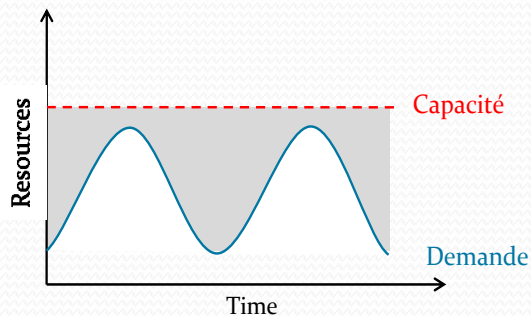
PaaS

Infrastructure as a Service

IaaS



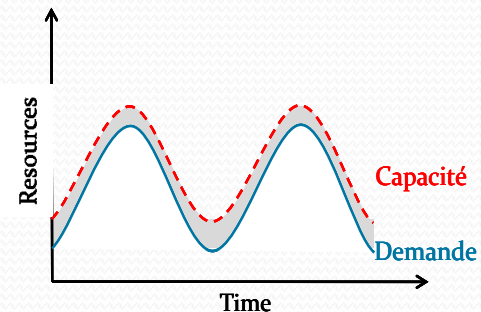
Server
Network
Storage
...



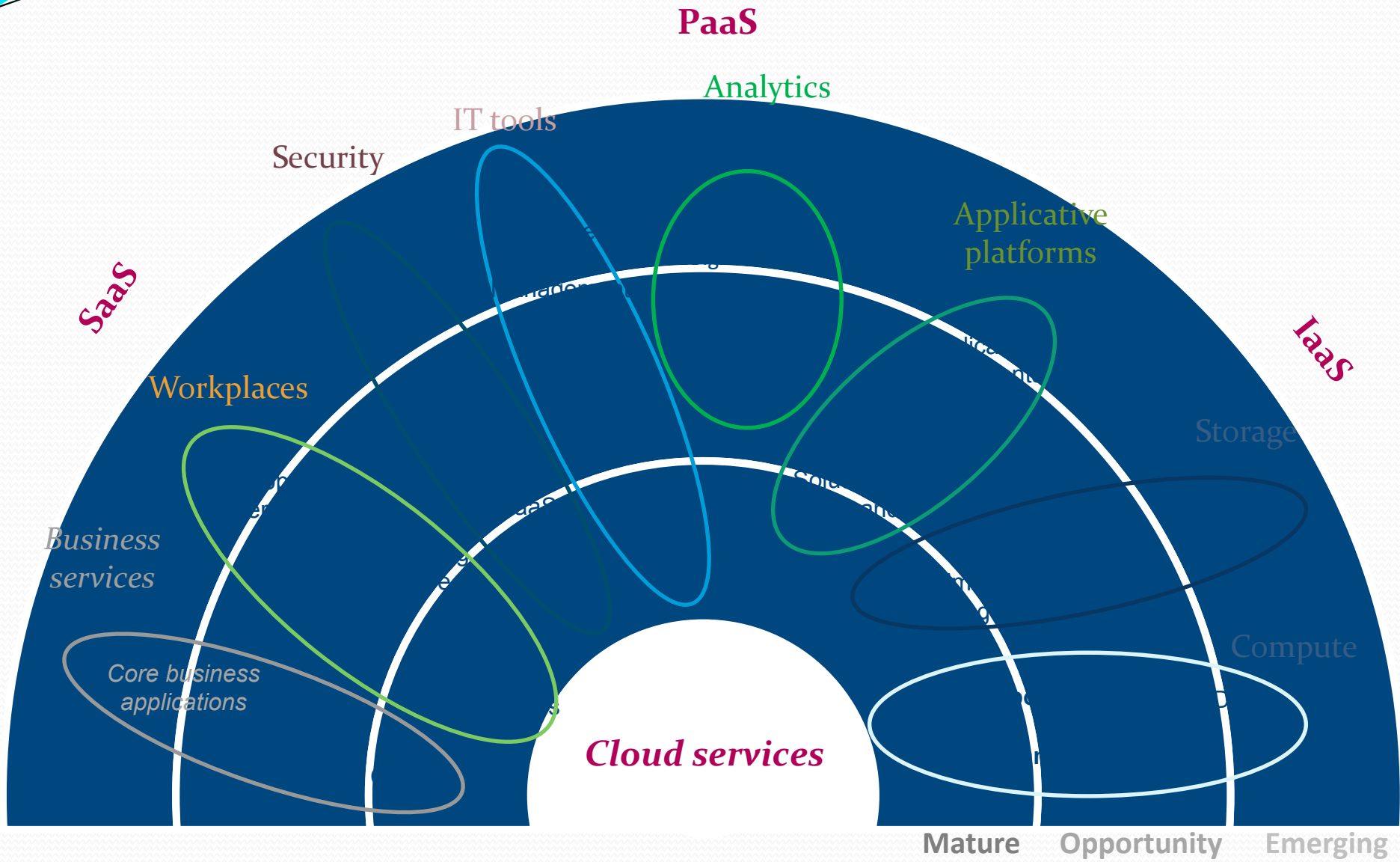
Important feature



Pay per use

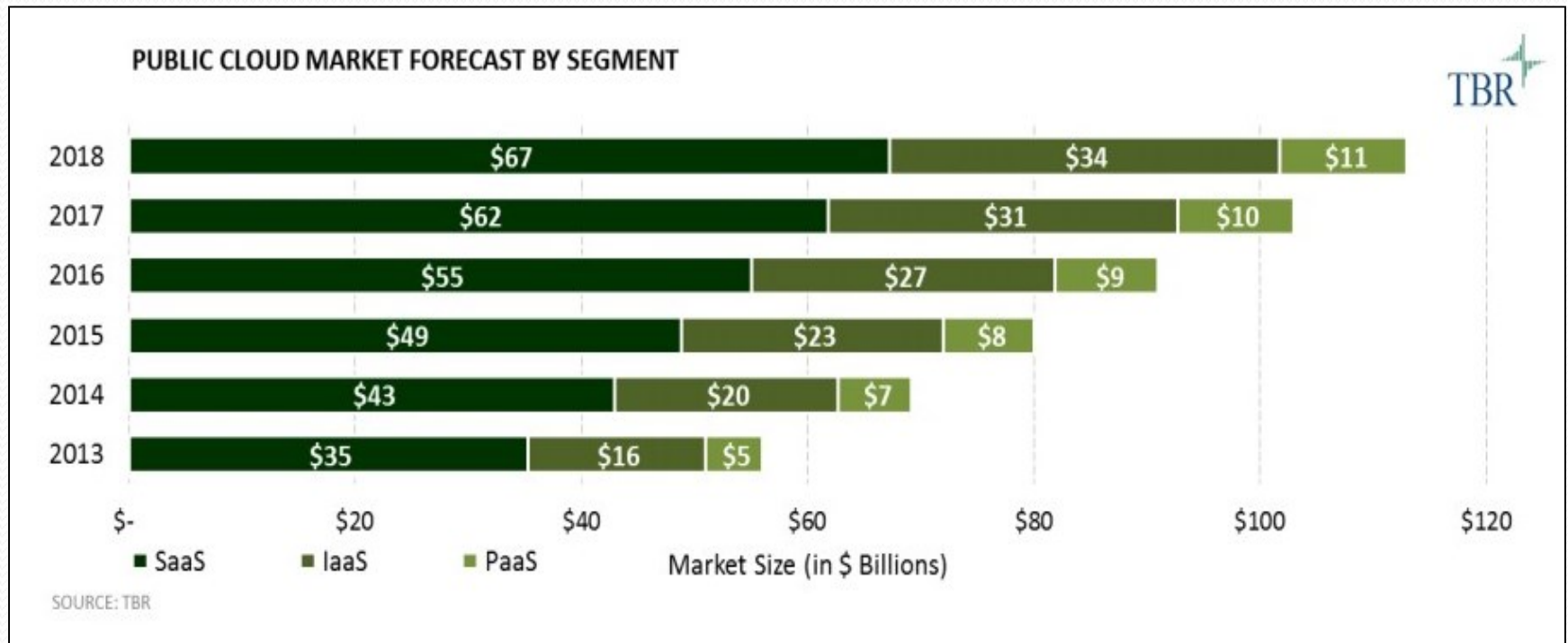


Cloud usage situations



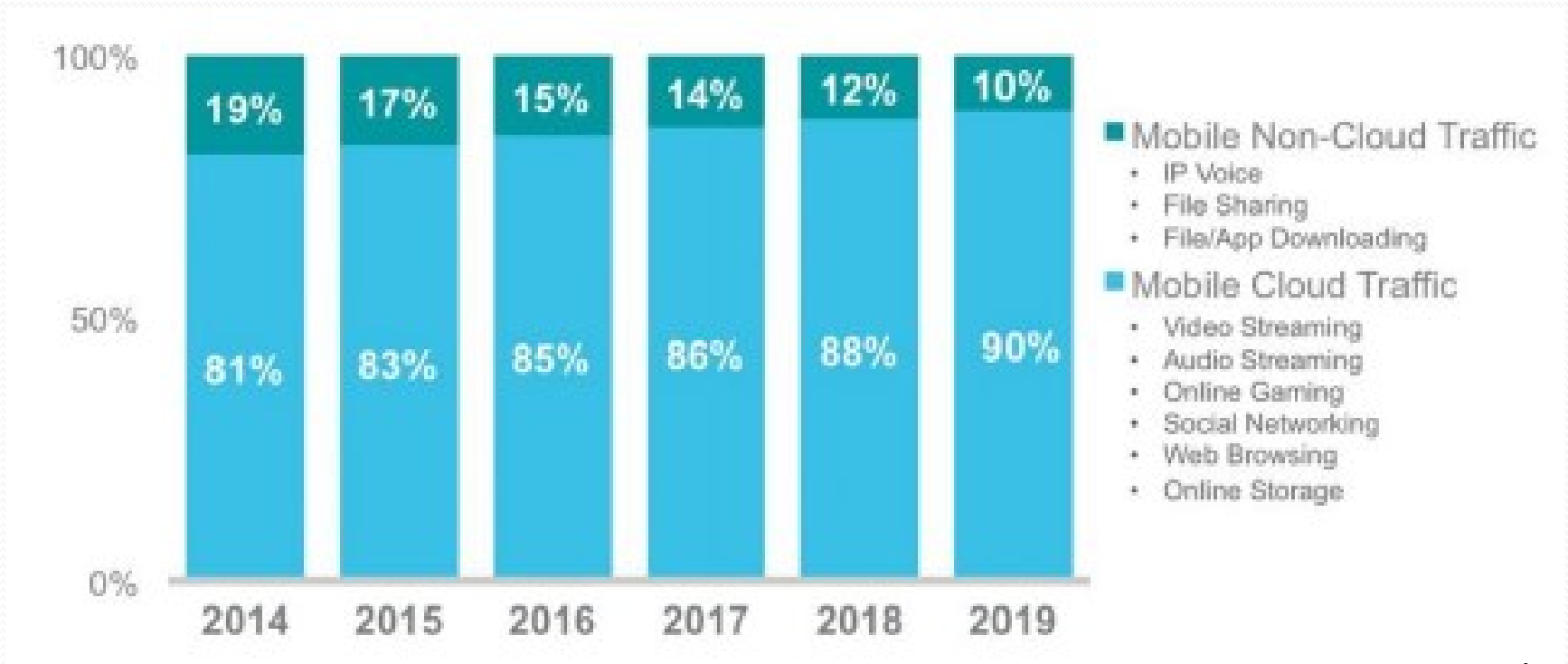
Public Cloud market

- Cloud infrastructure available as **affordable** services & as a **commodity**
- Public Cloud market has experienced a tremendous **growth**



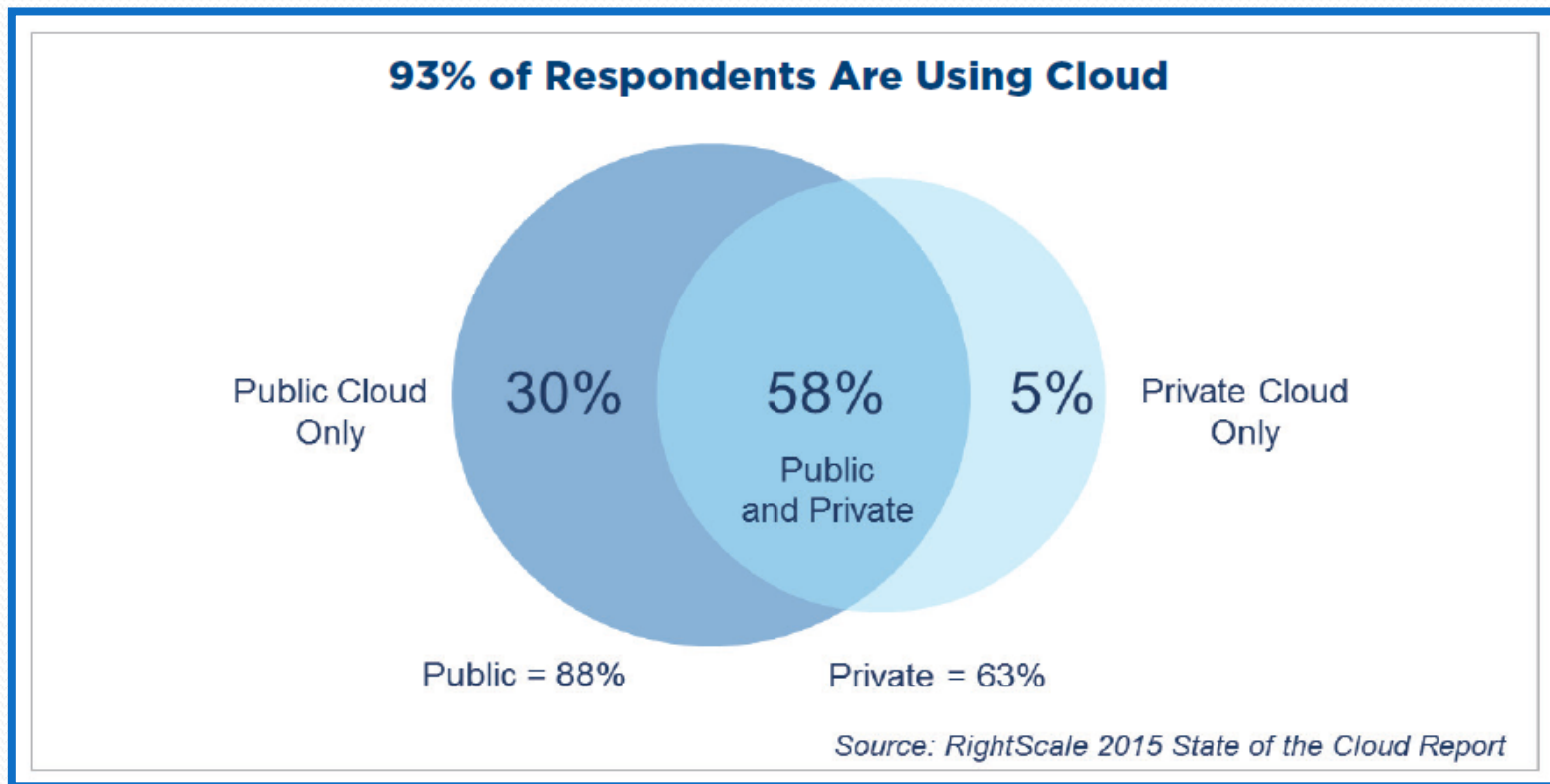
Mobile data traffic

- Cloud applications will account for **90%** of worldwide **mobile** data traffic by 2019, compared to 81% at the end of 2014



Cloud adoption

- RightScale's survey (2015) on a sample of **930** organizations
- Cloud is a **given** and **hybrid** cloud is the preferred strategy of the respondents

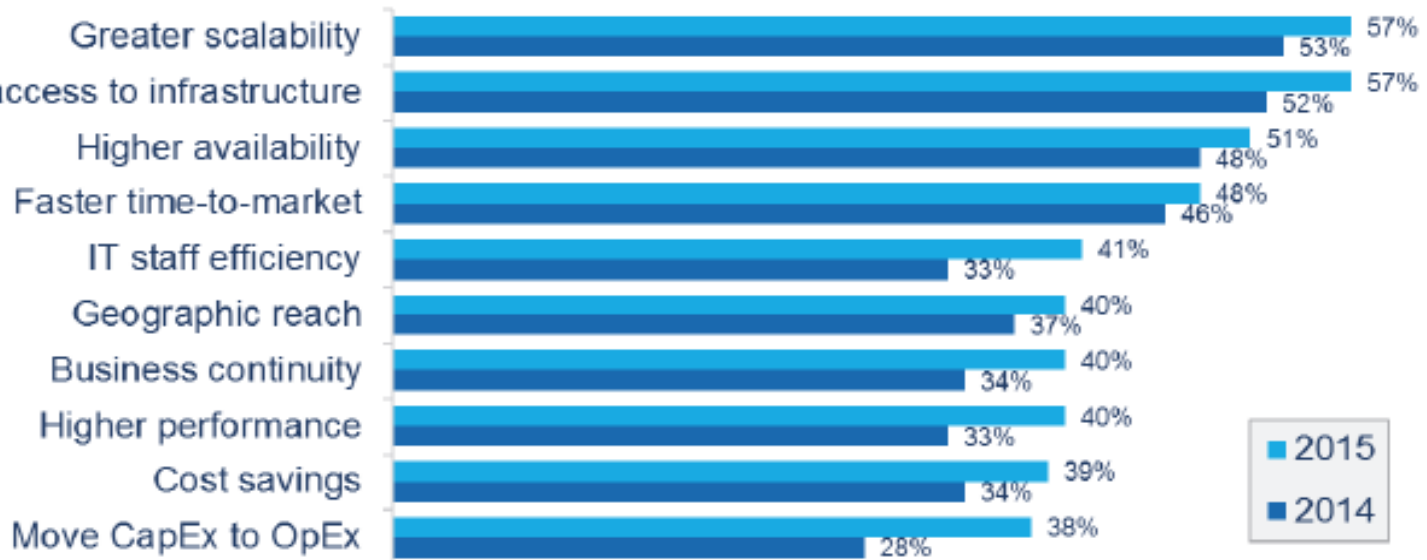


Cloud Benefit

- Top 3 **benefits**: scalability, faster access to infrastructure, availability
- Top 2 **challenges** : security and lack of cloud resources and expertise
- Central IT teams are increasingly offering **self-service portals** as a central hub to broker cloud services to the enterprise

Cloud Benefits 2015 vs. 2014

% of Respondents Reporting These Benefits



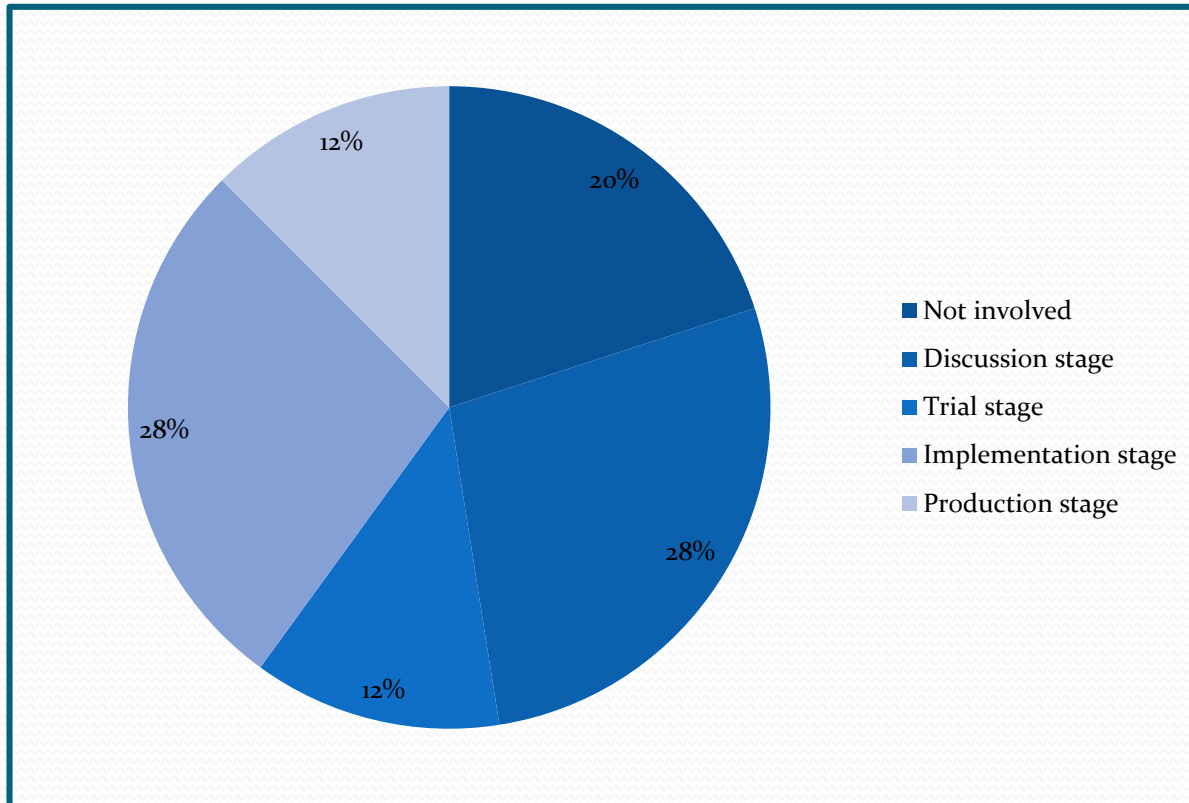
Source: RightScale 2015 State of the Cloud Report

Main outcomes of the ALECSO-ITU study: “Guidelines to improve the use of Cloud Computing Technology in Education in Arab Countries”

- Edited by :
 - Prof. Mohamed Jemni and Dr. Koutheair KHRIBI, ALECSO.
 - Mr. Slaheddine Maaref, ITU Arab Regional Office
- Prepared by Study team :
 - - Prof. Farouk Kamoun, President SESAME University, Tunisia
 - - Prof. Christophe Cerin, University of Paris 13, France
 - - Eng. Karim Chin, United Kingdom –
 - Dr. Heithem Abbes, University of ElManar, Tunisia
 - - Dr. Wajdi Louati, University of Sfax, Tunisia

Cloud utilization in Arab Educational institutions

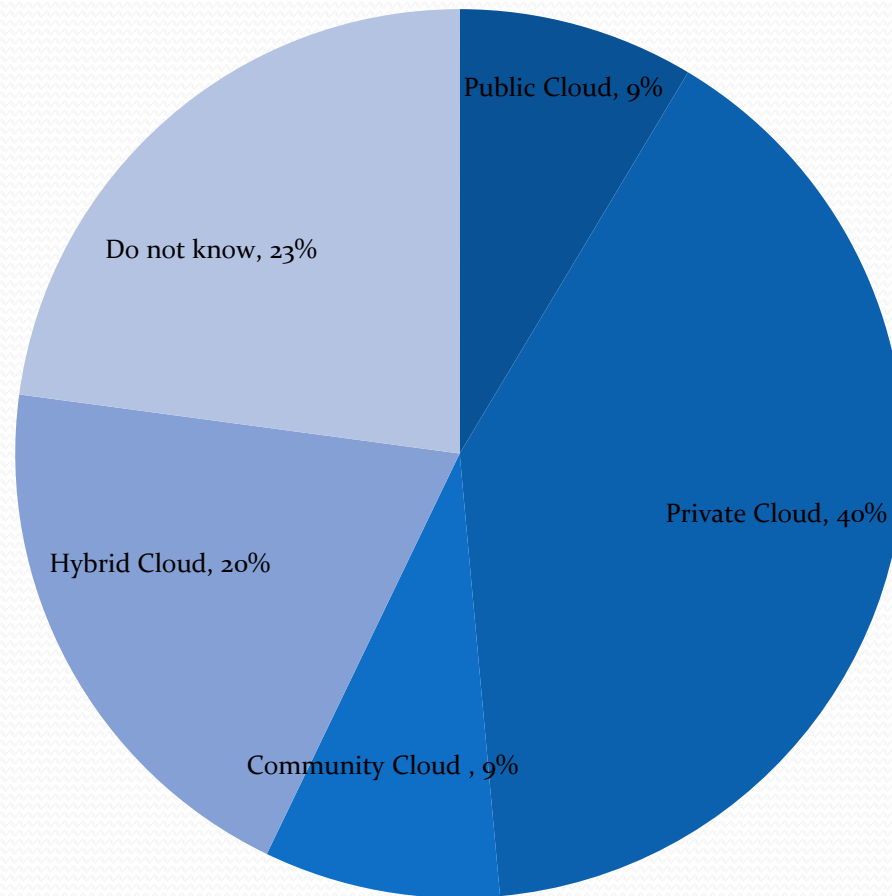
- Survey : 40 valid responses from 10 countries
- **A clear move toward cloud adoption:** 52% of surveyed institutions are either in the production, implementation or test phase



5 cloud adopters
(production stage)
35 non cloud adopters

Type of cloud in case of migration

- Only 9% of non cloud adopters prefer public cloud!!!!



Cloud adoption: Policy guidelines

Four key policies

Key policy one: high quality network

- *A prerequisite:*

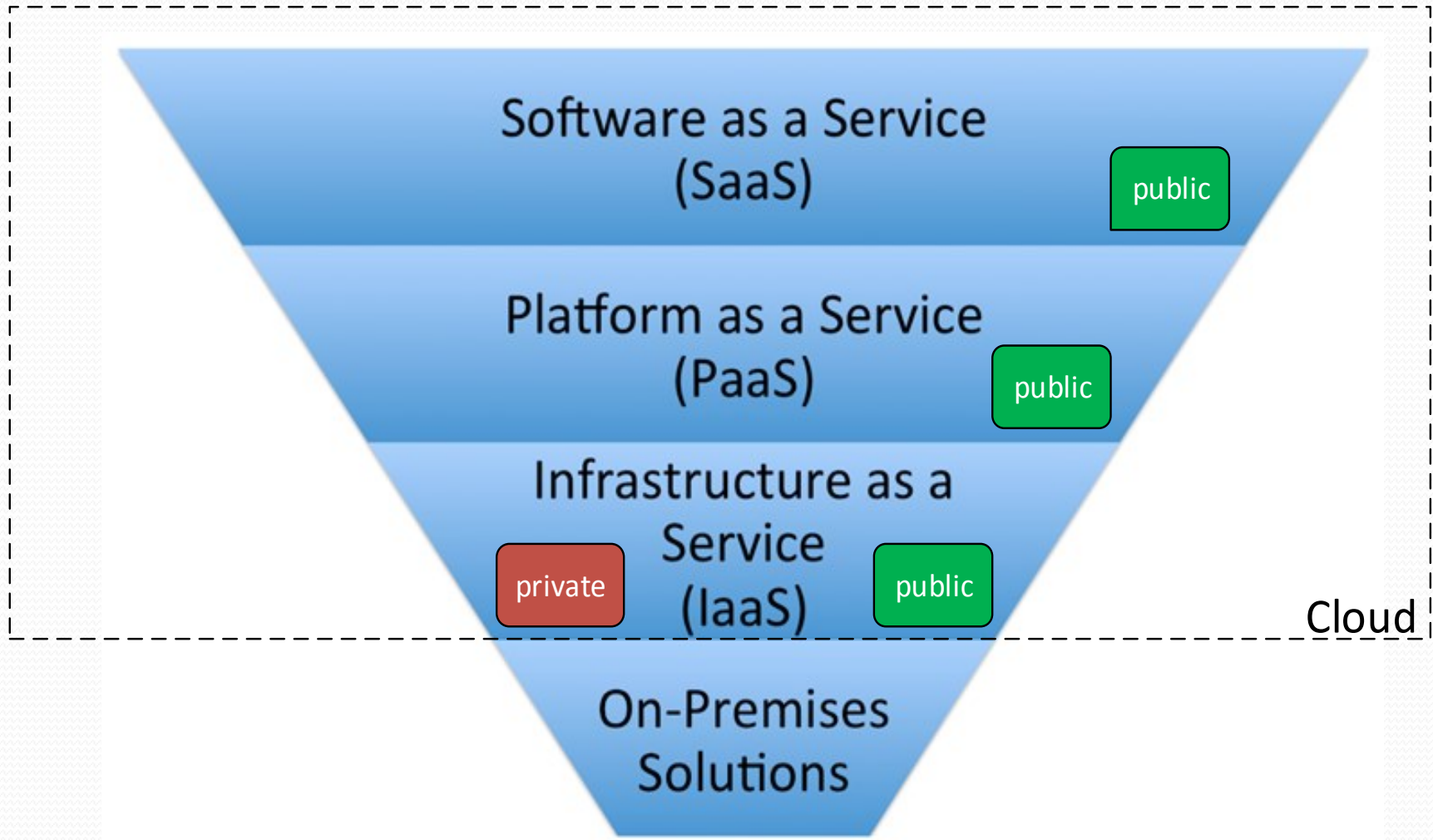
Give to investment in a high quality network (intranet+access to Internet) the highest priority

Key Policy 2

Always public cloud first

- use of public cloud as the first choice wherever possible and hence enabling educational institutions **fast access to advanced IT**, adoption of **cutting-edge IT solutions catching** up with international practice
- Always SaaS first and Use Pubic PaaS/IaaS instead of local infrastructures
- Existing on-premise applications that (i) have critical constraints or (ii) wouldn't benefit from public or private clouds or (iii) can't be **cloudified** should continue operating on-premises

Public/private cloud Services



Key policy 3

“Cloudify” the existing local infrastructures and applications at institutional level

- To **speed up cloud migration**, intermediate solutions may be adopted to improve the management of the existing IT infrastructure without disrupting the operation of the applications used by educational institutions. 2 options :
 - Use **containers** for applications deployment
 - Use a mature **open source cloud toolkit** (OpenStack, OpenNebula)

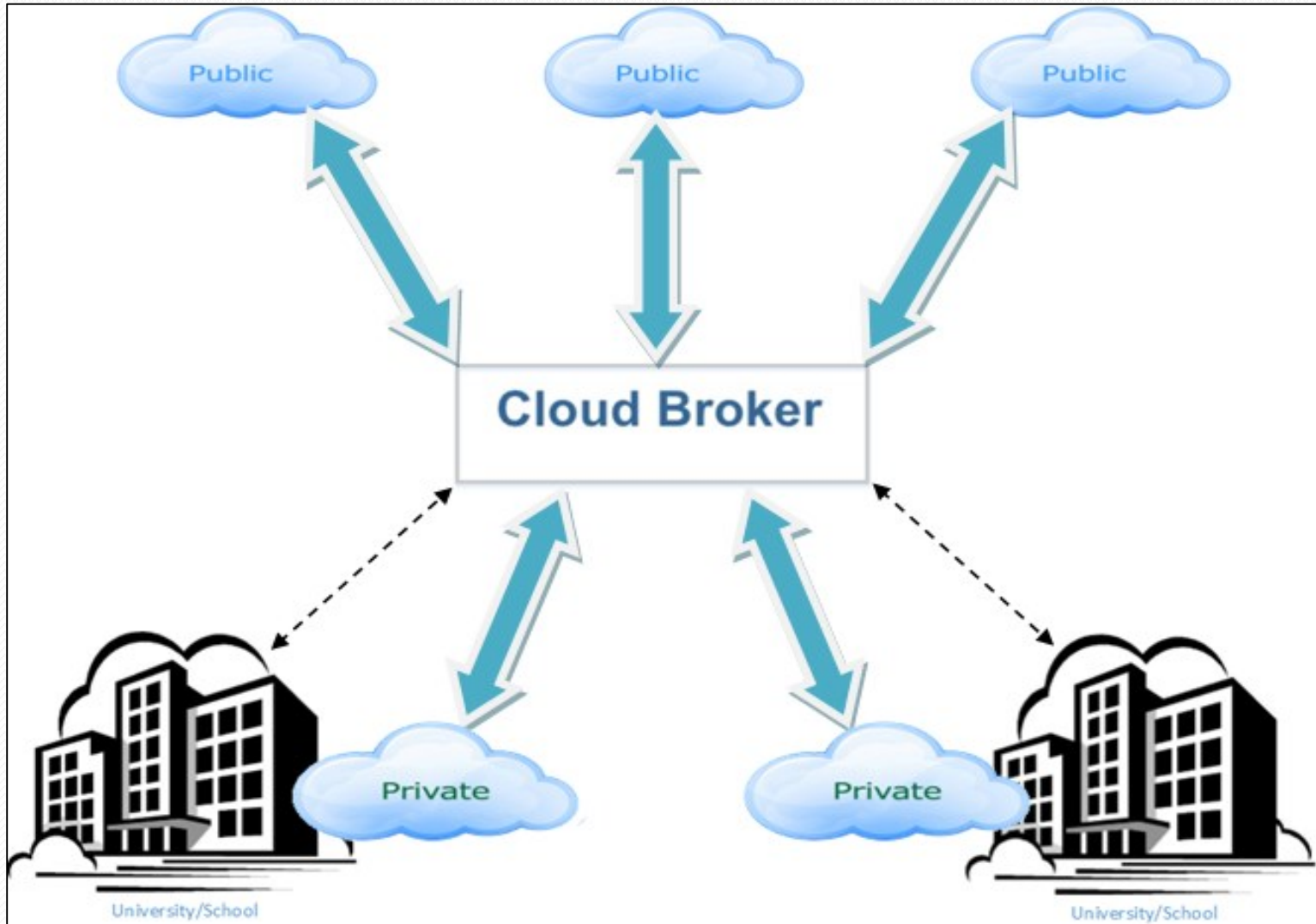
Key policy 4

- The migration to the cloud requires a change in IT governance models and practices. Offers to be made available to users must meet two main requirements: *ease of use and flexibility*.

Adopt a cloud friendly governance model for IT

- Hence it is advisable to:
 - **Redefine** the role of the IT department to become a **service** and support provider without limiting the scope of initiatives that users may want to take
 - Create an **entity at national**, regional or institutional level that deals with **brokerage** and procurement in a centralized way

Cloud Broker



Caution

- Overcome most significant perceived **barriers** to cloud adoption
 - **Security** issues
 - **Integration** with Existing systems
 - data **protection** and / or privacy Concerns
- How
 - Adopt a **vision & develop a strategy** for Cloud migration associating all stakeholders (**Guidelines in Report**)
- Components of strategies to break barriers
 - **Capacity** building
 - **Change** management
 - Change **mindsets** by creating opportunities to learn through experimentation at different levels

Conclusion

- **Adoption** of cloud global & strong
- Trend supported by major national and regional initiatives
- Fairly high Interest in cloud computing from arab countries educational institutions but not sufficient!
- Need to **accelerate the trend** through proactive programs giving a strong signal to stakeholders
- Adopt policy at all levels :

Public Cloud Computing First

References

- ALECSO-ITU Guidelines to improve the use of Cloud Computing Technology in Education in Arab Countries/
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