**MOD** USA/42A2/1

QUESTION 3/1

Access to emerging technologies, including cloud computing, m-services and Over-the-Top (OTT) offerings: Challenges and opportunities for developing countries

# 1 Statement of the situation or problem

Emerging technologies, including cloud computing, m-services and Over-the-Top (OTT) offerings, present new opportunities for economic development, particularly in developing countries.

Cloud computing is a concept in the world of multimedia, and one towards which the world is now gradually moving, in view of the many powerful advantages it offers. This concept can be summarized as a model enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g. networks, servers, storage, applications and services) that can be rapidly provisioned and released with minimal management effort or service-provider interaction.

For many countries, cloud computing represents a possible solution to the lack of adequate computing resources and it has achieved remarkable growth in many of the most developed countries, particularly after the adoption of this trend by mobile-telephone operators and manufacturers. Cloud computing is considered by key industry leaders to be the next technological revolution of the twenty-first century.

The main key characteristics of cloud computing are economies of scale (infrastructure sharing) and flexibility of use.

IP-based services are often offered by providers to users over an Internet connection, independent of the telecommunication network operator providing the Internet connection. These services are often referred to as "over-the-top (OTT)" offerings. Consumer demand for such offerings is rapidly growing as consumers want more of, and perceive large benefits from, these offerings. Consumers expect to be able to access legal content, applications and services and want information about their subscriptions. Such offerings create demand for broadband access and services but also are requiring network operators to seek new business models and arrangements, particularly in developing countries.

Increased broadband access also leads to the development and deployment of new services and applications, such as mobile money transfer, m-banking, m-commerce and e-commerce.

# 2 Question or issue for study

a) Discuss infrastructure needs for supporting and enabling access to cloud services, and highlight best practices for developing such infrastructure.

b) Examine definitions and characteristics of cloud computing and its future trends.

c) What are the features of networks that support effective access to cloud-computing services?

d) Building and developing a sufficient group of existing frameworks to support investment in infrastructure for cloud computing, taking into consideration relevant standards recognized or under study in the other two ITU Sectors.

e) Costs associated with the adoption of cloud computing.

f) Develop case studies of successful cloud-computing platforms used in developing countries.

g) The regulatory and market conditions necessary to promote the development and deployment of services such as mobile money transfer, m‑banking, m‑commerce and e‑commerce.

h) Impacts of the provisioning of IP-based applications and services offered by content providers to users over a broadband Internet connection, independent of the telecommunication network operator providing the internet connection, often referred to as "over-the-top (OTT)" offerings, including impacts on regulation, competition, network infrastructure and business models.

i) Identification of policy tools to facilitate the availability to consumers at local and national levels of competitive IP-based services and applications, so called "over-the-top" (OTT) offerings.

j) Identification of the best practices and policies that create incentives for investment in IP-based services and applications.

k) Evaluation of challenges and an overview of best practices and guidelines regarding legal frameworks and cooperation mechanisms among appropriate government entities seeking to facilitate, and avoid barriers to, the development and deployment of new services and applications, such as mobile money transfer, m‑banking, m‑commerce and e‑commerce.

# 3 Expected output

a) Yearly progress report on the above study items.

b) A progress report midway through the study cycle.

c) A final report for the Question that includes:

• Analysis of the factors influencing effective access to support emerging technologies, including cloud computing, m-services and OTT offerings.

• A set of guidelines, such as policy or technical approaches, among others, for facilitating infrastructure deployment, which could be delivered, *inter alia*, through training seminars in accordance with the ITU-D programme on Capacity building.

 • Draft Recommendation(s), as appropriate and if justified.

# 4 Timing

The interim report on this Question is expected by 2019. The final report is expected in 2021 at the end of the ITU‑D study period.

# 5 Proposers/sponsors

United States of America.

# 6 Sources of input

1) Results of related technical progress in relevant ITU‑T study groups, in particular Study Group 13.

2) ITU publications on emerging technologies, including cloud-computing services, m-services and OTT offerings.

3) Relevant reports of national and/or regional organizations in developing and developed countries.

4) Contributions on experiences with providing access to emerging technologies, including cloud-computing, m-services and OTT offerings in developed and developing countries.

5) Relevant inputs from service providers and manufacturers.

6) Relevant inputs from BDT programmes related emerging technologies, including to cloud computing, m-services and OTT offerings.

# 7 Target audience

a) Target audience

| Target audience | Developed countries | Developing countries[[1]](#footnote-1)1 |
| --- | --- | --- |
| Telecom policy-makers | Yes | Yes |
| Telecom regulators | Yes | Yes |
| Service providers/operators | Yes | Yes |
| Manufacturers | Yes | Yes |

b) Proposed methods for implementation of the results

The work of the rapporteur group will be conducted and publicized through the ITU‑D website as well as through documents and appropriate liaison statements. The results of the work will also be used by relevant BDT programmes as components of the toolkit BDT uses when solicited by Member States and Sector Members to support their efforts to develop and deploy emerging technologies, including cloud-computing, m-services and OTT offerings.

# 8 Proposed methods for handling the Question

The Question will be handled by a rapporteur group of ITU‑D Study Group 1.

# 9 Coordination and collaboration

In order to coordinate effectively and avoid duplication of activities, the study should take into consideration:

– outputs from the relevant ITU‑T study groups, in particular those made available by ITU‑T Study Group 13;

– the relevant outputs from ITU‑D Questions;

– inputs from the relevant BDT programmes.

# 10 Relevant programme

The relevant programme will be the programmes on Network infrastructure and services.

# 11 Other relevant information

As may become apparent within the life of the Question.

1. 1 These include the least developed countries, small island developing states, landlocked developing countries and countries with economies in transition. [↑](#footnote-ref-1)