



Technical and regulatory aspects of QoS and QoE for popular OTT and content subscription services.

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TRC Jordan

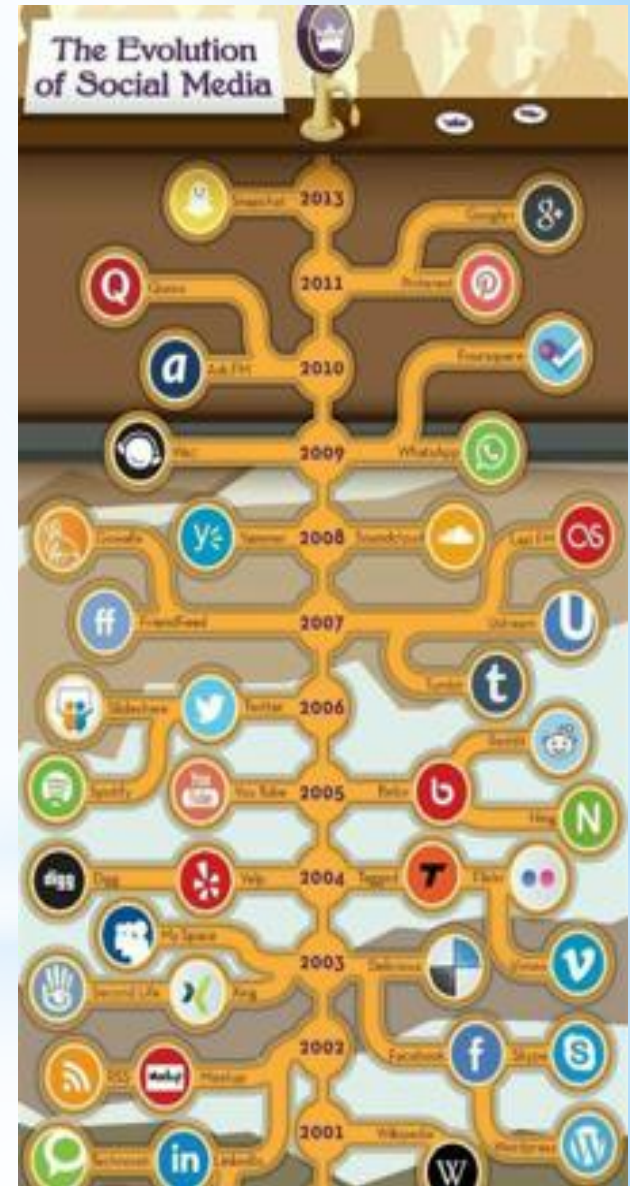
04 September 2018

Agenda

- Evolution of OTT
- Mobile “Apps” Testing Approach
- OTT KPIs

Evolution of OTT

- As known, Software and Hardware developments contributed in exponential smart phone usage, and Hence OTT availability and growth.
- Change of usage, For example:
 - Text & Audio Messages on WhatsApp
 - Video Streaming via YouTube and Facebook
 - Audio and Video Calling (many apps)
 - FTA or Paid TV- Entertainment over LTE



*Demand Evolution background

Causes behind the demand growth for OTT and content subscription services:

- Usage habits and recent growth for smart phone penetration.
- The recent Social media application uptake.
- Smart TV OTT Content streaming over LTE TDD Network.

Mobile “Apps” Testing Approach

OTT Apps provide different services, the following are some of them:

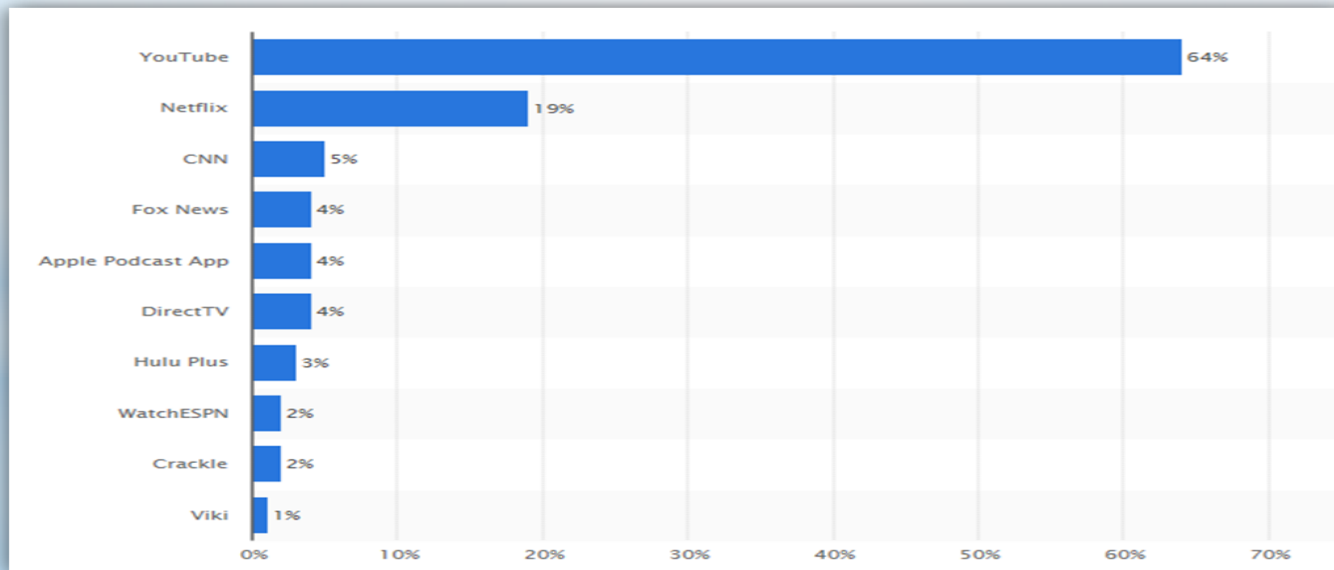
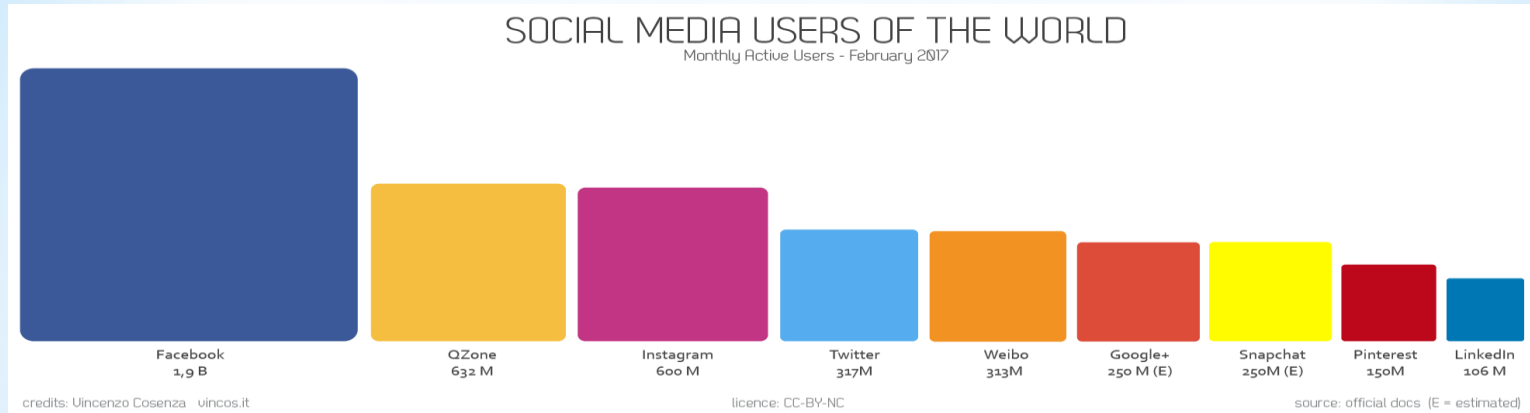
- Streaming Services Apps: YouTube, Netflix
- Messaging Services Apps: WhatsApp, Facebook Messenger
- Social Media Apps: Facebook, Twitter, LinkedIn, Instagram
- Cloud services Apps: Dropbox, Amazon, Google Drive.

Mobile OTT “Apps” Testing Approach

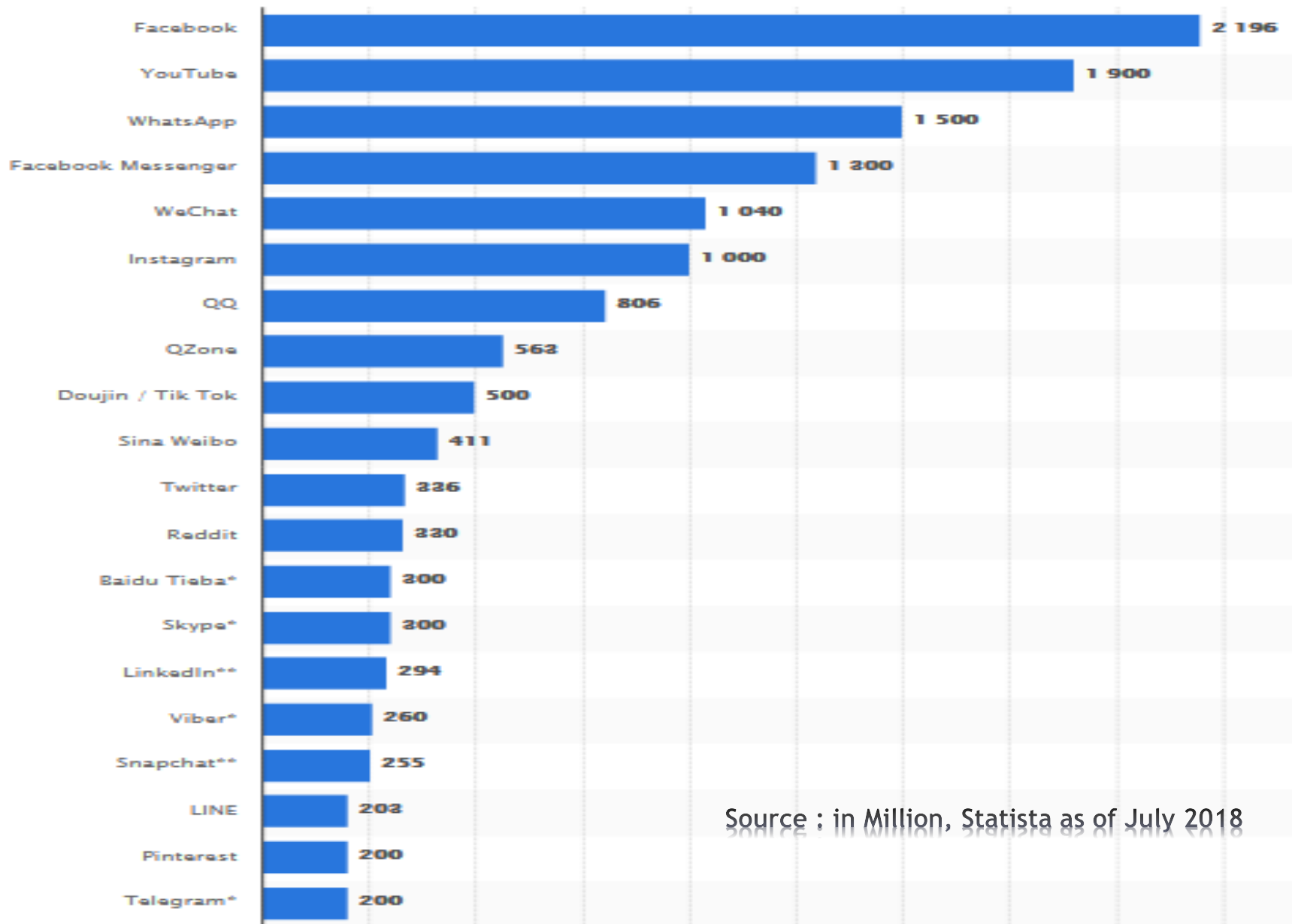
- 1) Test the quality of service behind the “App”
Not the App itself on the smartphone.
- 2) Priority testing depends on each
country/region OTT popularity and use.
- 3) Mimic end-user behavior and measure related
KPIs
- 4) Stationary Vs. Mobile Testing Mode

OTT Statistics

80% of internet traffic would be video streaming by 2019 (Cisco) , 7 out of 10 users in the US, would watch OTT video.



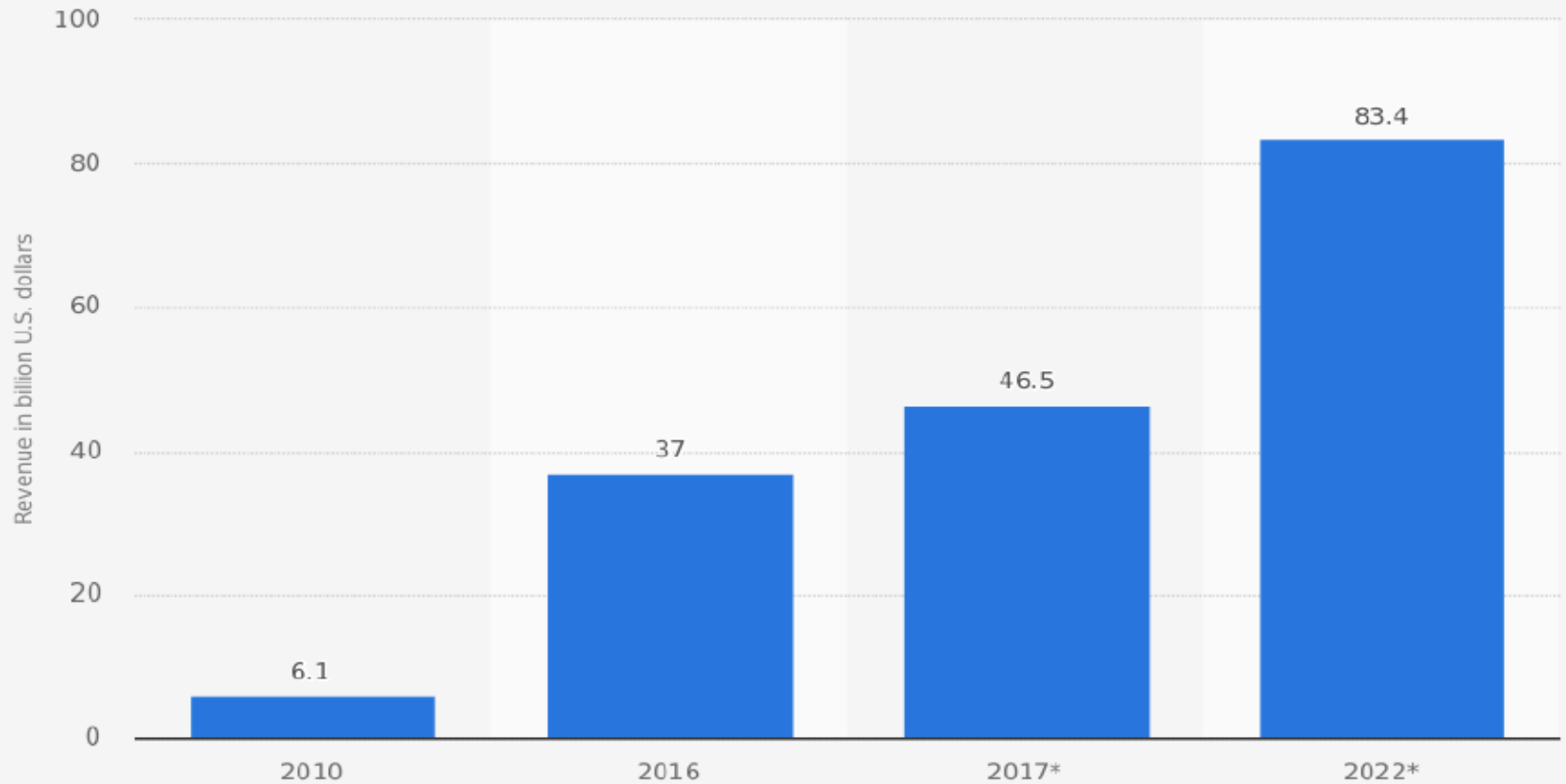
Source: Statista., monthly visitors in US.



Source : in Million, Statista as of July 2018

Number of active users in millions

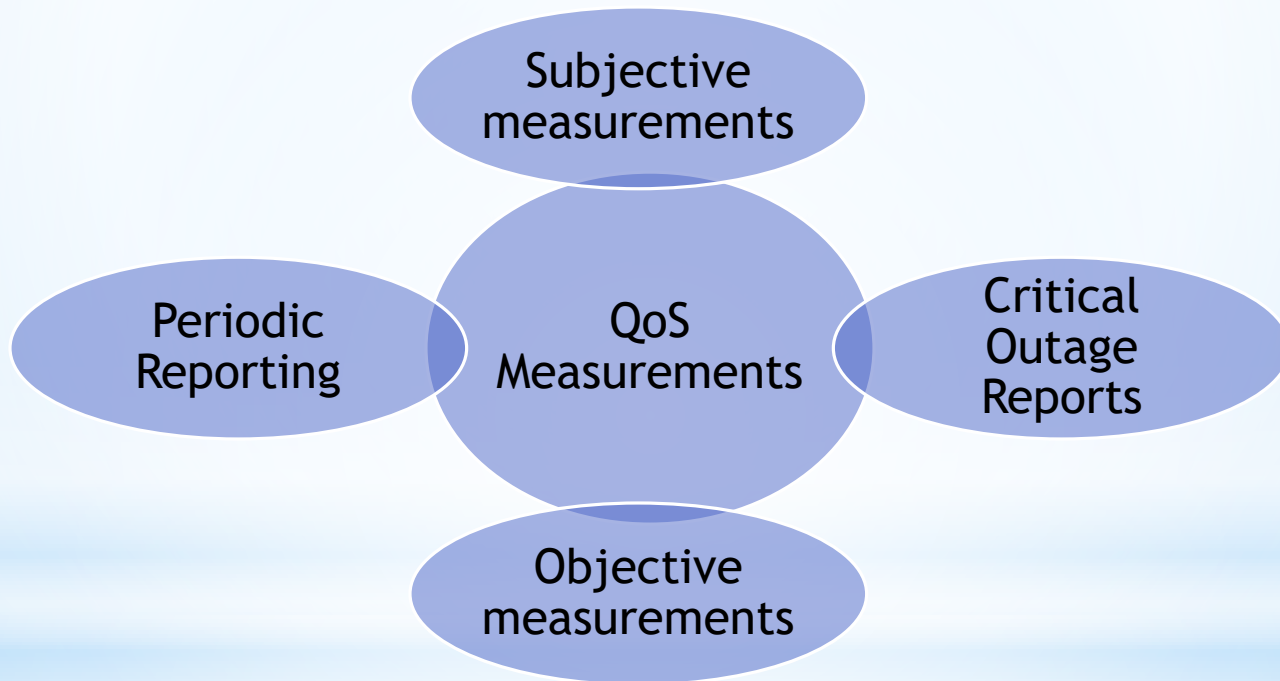
Over-the-top (OTT) revenue worldwide from 2010 to 2022 (in billion U.S. dollars)



Source
Digital TV Research
© Statista 2018

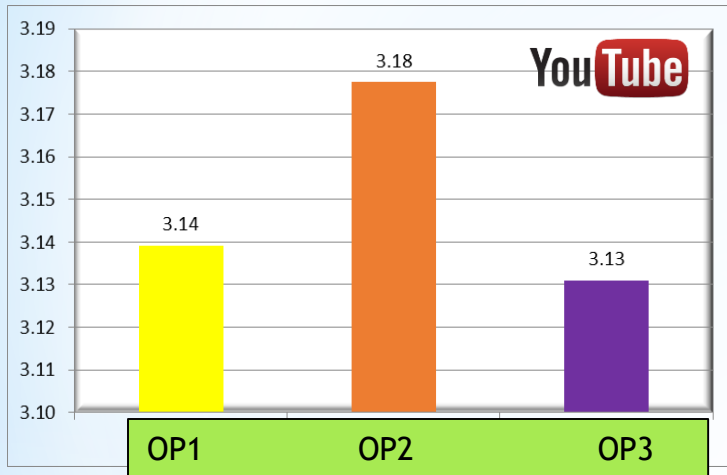
Additional Information:
Worldwide; Digital TV Research

QoS Measurements Sources



OTT QoS Jordan Case - Streaming Test

Amman- YouTube (Start Time in S)



- **Video Session Freezing rate (VSF):** %0 to 2%
 - o Represent play outs without interruptions.
- **Start Time (S)** Time to the First Picture (TTFP): 2 s to 5s
 - o Time in seconds needed to have the first frame of video appear & play
- **Video Quality (VMOS):** usually between 3.2 and 4.2
 - o Represent a video mean opinion score based on standardized scale.

OTT KPIs - Example: Facebook App

Mimicking the end-user behavior

Main Actions measured in Seconds

- Log In/Log Out
- Open Home Page
- Posting
- Create Post
- Like Post
- Comment Post
- Delete Post



OTT KPIs - Example: Dropbox App



KPIs can be for DL and UL Activity

- Throughput DL & UL (different file Size)
- OSSR, Over All Success Rate
- Time Duration

