ITU-T
The leader in QoS and QoE standards

- The ITU-T Lead Study Group on QoS/QoE is Study Group 12
- ITU-T Study Group 12 is responsible for end-to-end transmission performance of networks and terminals
- Other ITU-T Study Groups with QoS related technical activities:
  - SG 2 (Operational aspects of service provision, networks and performance)
  - SG 4 (Telecommunication management)
  - SG 9 (Integrated broadband cable networks and television and sound transmission)
  - SG 11 (Signalling requirements and protocols)
  - SG 13 (Next Generation Networks)
  - SG 15 (Optical and other transport network infrastructures)
  - SG 16 (Multimedia terminals, systems and applications)
  - SG 17 (Security, languages and telecommunication software)
  - SG 19 (Mobile telecommunication networks)

Examples of ITU-T standards on QoS and QoE

G.1000 Communications QoS, gives a framework for a uniform approach regarding QoS needed in the market, especially in IP-related areas.

G.1010 End-user multimedia QoS categories, defines a model from an end-user viewpoint by considering user expectations (QoE) for a range of multimedia applications, based on tolerance to information loss and delay.

E.800 Terms and definitions for QoS and network performance, defines QoS as "the collective effect of service performance which determines the degree of satisfaction of a user of the service".

P.10/G.100 (Appendix) defines QoE (Quality of Experience) as "the overall acceptability of an application or service, as perceived subjectively by the end user".

P.862 Perceptual evaluation of speech quality (PESQ), defines an objective method for end-to-end speech quality assessment of narrow-band telephone networks and speech codecs. P.862.2 covers wideband speech.

Y.1541 Network performance objectives for IP-based services, defines classes of IP network QoS, intended to be the basis for agreements among network providers, and between end users and their network providers.

J.163 Dynamic QoS for the provision of real-time services over cable TV networks using cable modems.

X.140 defines a set of general QoS parameters for public data networks.

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QoS and QoE

Quality of Service

Quality of Experience

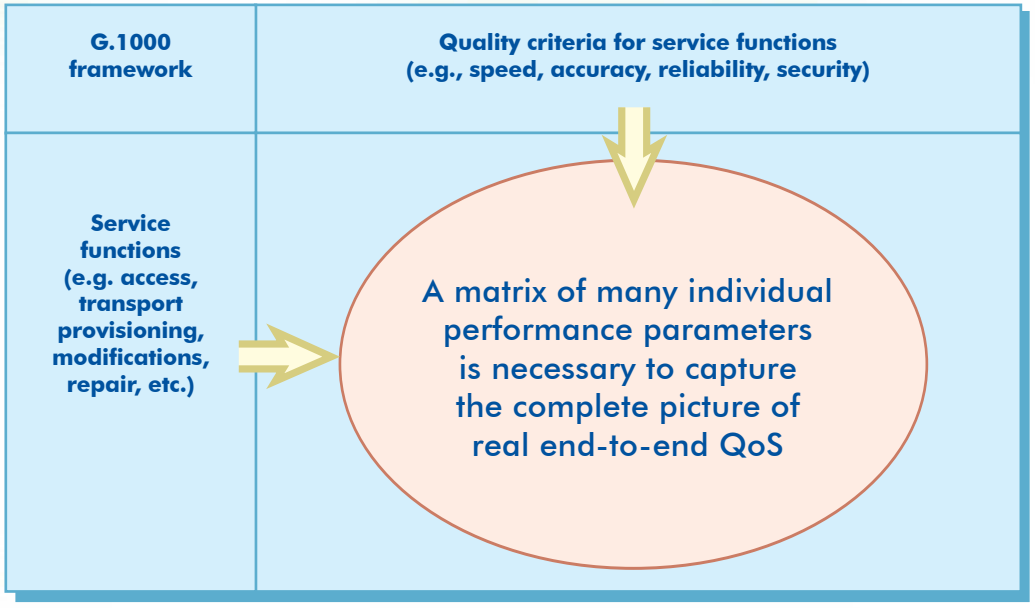
Turning communications services and technologies into compelling user experiences

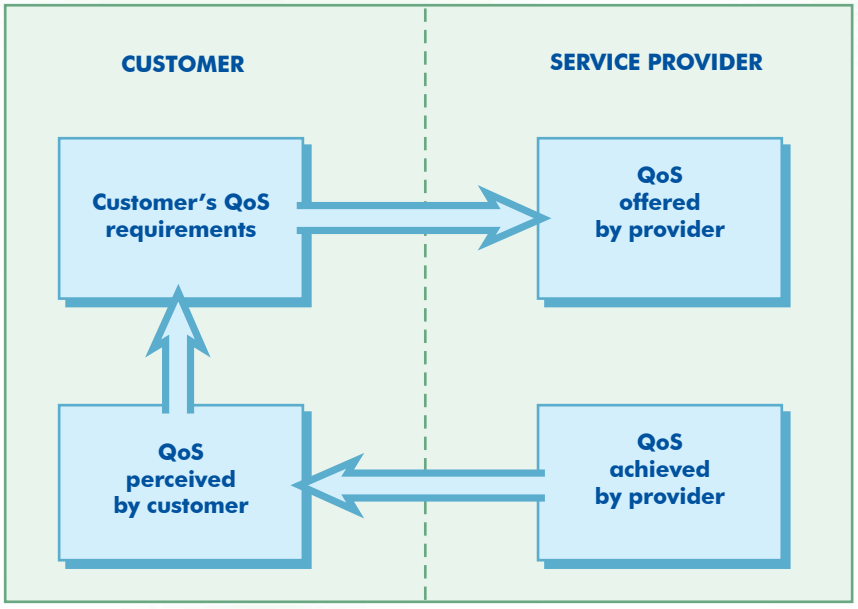
ITU-T

International Telecommunication Union

True Quality of Service captures the User Experience (QoE)

The G.1000 Framework helps capture the many QoS dimensions, and acknowledges that QoS can be viewed from four different perspectives





G.1010 presents user application needs as a function of error tolerance and sensitivity to overall delay (includes delay from servers, networks and applications):

Error tolerant	Conversational voice and video	Voice/video messaging	Streaming audio and video	Fax
Error intolerant	Command/ control (eg Telnet, interactive games)	Transactions (eg E-commerce, WWW browsing, Email access)	Messaging downloads, (eg FTP, still image)	Background (eg Usenet)
	Interactive (delay <<1 sec)	Responsive (delay ~ 2 sec)	Timely (delay ~ 10 sec)	Non-critical (delay >>10 sec)