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SERIES G: TRANSMISSION SYSTEMS AND MEDIA,
DIGITAL SYSTEMS AND NETWORKS

Multimedia Quality of Service and performance – Generic
and user-related aspects

**Quality of service and quality of experience
aspects of digital financial services**

Recommendation ITU-T G.1033

ITU-T

ITU-T G-SERIES RECOMMENDATIONS
TRANSMISSION SYSTEMS AND MEDIA, DIGITAL SYSTEMS AND NETWORKS

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Recommendation ITU-T G.1033

Quality of service and quality of experience aspects of digital financial services

Summary

Recommendation ITU-T G.1033 highlights important aspects related to quality of service (QoS) and quality of experience (QoE) that require consideration in the context of digital financial services (DFSs).

History

Edition	Recommendation	Approval	Study Group	Unique ID*
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* To access the Recommendation, type the URL <http://handle.itu.int/> in the address field of your web browser, followed by the Recommendation's unique ID. For example, <http://handle.itu.int/11.1002/1000/11830-en>.

FOREWORD

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The World Telecommunication Standardization Assembly (WTSA), which meets every four years, establishes the topics for study by the ITU-T study groups which, in turn, produce Recommendations on these topics.

The approval of ITU-T Recommendations is covered by the procedure laid down in WTSA Resolution 1.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

NOTE

In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

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Recommendation ITU-T G.1033

Quality of service and quality of experience aspects of digital financial services

1 Scope

This Recommendation highlights important aspects related to quality of service (QoS) and quality of experience (QoE) which shall be considered in the context of digital financial services (DFSs).

NOTE – This Recommendation builds upon the discussions in the (now closed) DFS Focus Group and on [b-ITU-T DFS TR]. The continuation of work on QoS and QoE aspects is undertaken by the Financial Inclusion Global Initiative (FIGI) [b-FIGI 2019a], [b-FIGI 2019b], [b-FIGI 2019c].

2 References

The following ITU-T Recommendations and other references contain provisions which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision; users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published. The reference to a document within this Recommendation does not give it, as a stand-alone document, the status of a Recommendation.

- | | |
|-------------------|--|
| [ITU-T E.811] | Recommendation ITU-T E.811 (2017), <i>Quality measurement in major events</i> . |
| [ETSI TS 103 296] | ETSI TS 103 296 V1.1.1 (2016), <i>Speech and multimedia transmission quality (STQ); Requirements for emotion detectors used for telecommunication measurement applications; Detectors for written text and spoken speech</i> . |

3 Definitions

3.1 Terms defined elsewhere

None.

3.2 Terms defined in this Recommendation

None.

4 Abbreviations and acronyms

This Recommendation uses the following abbreviations and acronyms:

2G	second Generation
3G	third Generation
CPU	Central Processing Unit
DFS	Digital Financial Service
DTMF	Dual Tone Multi Frequency
E2E	End-to-End
FEC	Forward Error Correction
GSM	Global System for Mobile communications
HLR	Home Location Register

HTML	Hypertext Markup Language
HTTP	Hypertext Transfer Protocol
HTTPS	Hypertext Transfer Protocol Secure
IP	Internet Protocol
IPTV	IP Television
IVR	Interactive Voice Response
KPI	Key Performance Indicator
KQI	Key Quality Indicator
MMS	Multimedia Messaging Service
MOS	Mean Opinion Score
OTT	Over The Top
P2P	Person to Person
QoE	Quality of Experience
QoS	Quality of Service
QoSE	QoS Experienced
QoSP	QoS Perceived
RTP	Real-Time Protocol
SIP	Session Initiation Protocol
SLA	Service Level Agreement
SMS	Short Message Service
SMSC	Short Message Service Centre
SSL	Secure Sockets Layer
TCP	Transmission Control Protocol
TLS	Transport Layer Security
UMTS	Universal Mobile Telecommunications System
USSD	Unstructured Supplementary Service Data
VoIP	Voice over IP
VoLTE	Voice over Long-Term Evolution
WAP	Wireless Application Protocol
WML	Wireless Markup Language
XML	extensible Markup Language

5 Conventions

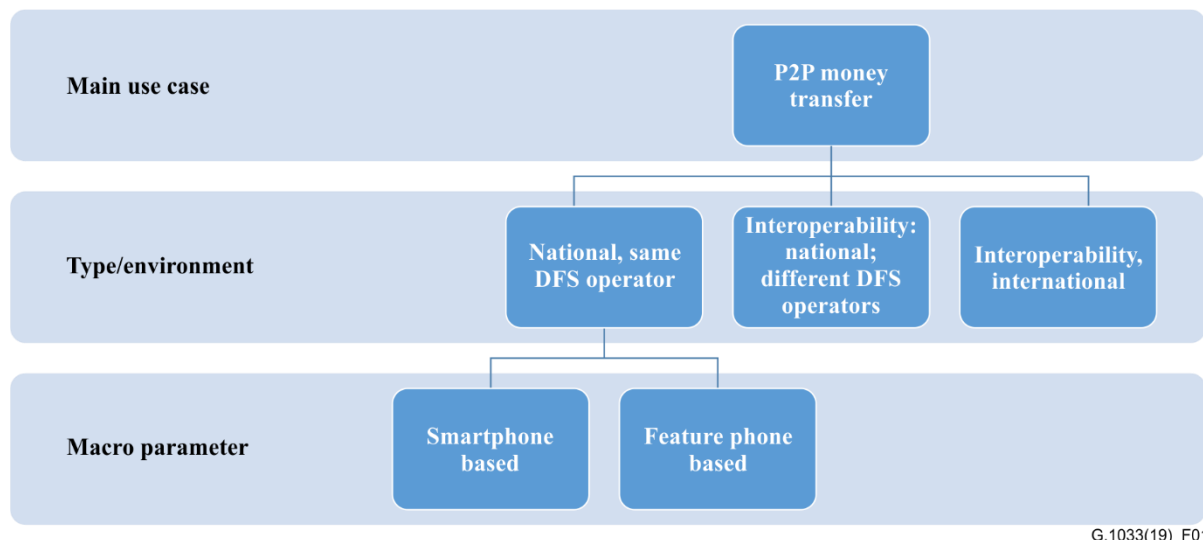
None.

6 Problem statements

QoS and QoE aspects depend in particular on the use case under consideration and related aspects like environment and detailed macro parameters.

6.1 Different use cases

Use cases of DFSs can be easily categorized and analysed when applying the hierarchy concept depicted in Figure 1.



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Figure 1 – Hierarchy of use cases, types, and macroscopic parameters

Other main use cases are, for example, transfers between a mobile device and a bank account, or bulk transfers such as payment of wages by an employer. The hierarchy also allows the introduction of higher-level classifications (transfer types), e.g., one-to-one, one-to-many, many-to-one

NOTE – The use case hierarchy shown in Figure 1 displays some variants that are for further study.

QoS aspects of DFSs need to be assessed for two different service categories that are, with reference to Figure 1, macroscopic parameters of a main use case, namely person to person (P2P) money transfers.

- 1) In service category 1, the targeted group of users is limited to the use of (cheap) basic feature phones. This excludes for example browser-based DFS solutions.
- 2) In service category 2, the additional QoS aspects are assessed when the minimum requirements to the phones used for DFSs are raised and basic smartphone functionality can be assumed.

6.2 Legal entities

It is important to accept that in reality the provision of a service offer ("service") is – as a general rule – independent of the physical operation of a telecommunication network.

Whereas for most service offers there is – beside the general legal framework – no specific regulation, DFS "services" are under the close control of banking sector regulators, whereas operators of telecommunication networks are under the control of telecom sector regulators.

Therefore, legal aspects (from a QoS perspective) need to assess two different legal cases:

- 1) in legal case A, the provider of a DFS "service" and the operator of a physical telecommunication network are two distinct and different legal entities;
- 2) in legal case B, the provider of a DFS "service" and the operator of a physical telecommunication network are the same and identical legal entity.

NOTE – This Recommendation is without prejudice regarding actual legal actions or situations or conclusions or any combination thereof.

6.3 Mobile network QoS affecting all services

Figure 2 (adapted from [b-ITU-T E.804] and [b-ETSI TS 102 250-2]) shows a model for QoS parameters. This model has four layers, each of which provides the necessary precondition for the next layer, i.e., that a property belonging to layer N needs the presence of the properties of layer $N - 1$.

The first layer is network availability, which determines QoS from the viewpoint of the service provider than the service user. The second layer is network access. From the service user's point of view, this is the basic requirement for all the other QoS aspects and parameters. The third layer contains the other three QoS aspects: service access, service integrity and service retainability. The different services are located in the fourth layer; the performance of these services is characterized by service specific QoS key performance indicators (KPIs).

The first three layers (with green highlights) are common to all mobile services or applications.

They are characterized typically by the following parameters (KPIs):

- network availability;
- network accessibility;
- service accessibility;
- service integrity;
- service retainability.

In cases where the KPIs in layers 1, 2 and 3 are not maintained at a stable high level, it is useless to attempt to assess the QoS of any kind of service, because prerequisite conditions are not met and the relevance of QoS figures received will be close to zero.

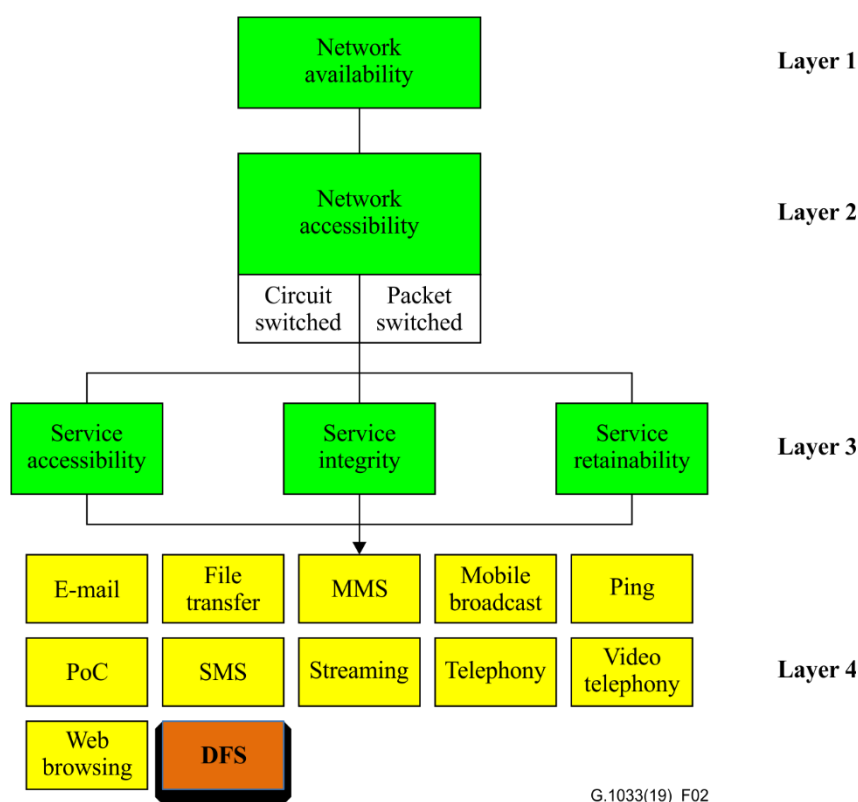


Figure 2 – Model for quality of service parameters