

# Global approach of Internet speed quality measurement

# Why the global approach of the Internet speed quality measurement is needed?

- Internet plays the most important part in our life (social networks, OTT, etc.)
- Quality of Internet services is an important issue for customers (subscriber loyalty)
- Fixed and Mobile operators provide the access to Internet resources
- How the value of “speed/tariff” could be trustable

# The key features of the global approach

- **transparent to all ICT players and guarantees validity of the measured value**
- **independent and trustable for all ICT players (operator, customer, regulator, content provider, ISP, judge)**
- **unified for all ICT players**

# Existing Internet speed and Internet quality testing approaches

**Project of University Basco (Spain) and Telefonica -**

<http://www.velocimetro.org>

**Germany speed test systems -** <http://speedmeter.de>;

<http://www.initiative-netzqualitaet.de>

**Russian speed test system -** <http://myconnect.ru/speed>

**Global Internet services -** [www.speedtest.net](http://www.speedtest.net),

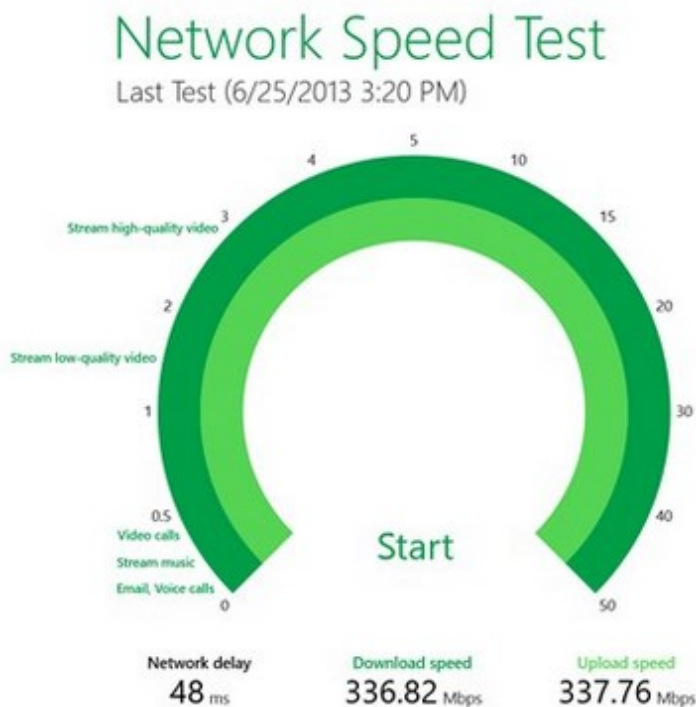
<http://www.speed.io>

**Estimation of different Internet services (voice, multimedia, etc.)**

- <http://mqnetwork.com>; <http://www.voiptest.org/>;

# Examples of applications for Internet speed measurement

## Microsoft Network Speed Test




DATE	DOWNLOAD Kbps	UPLOAD Kbps	PING ms
Feb 07, 13 09:49 AM	267.21	283.93	579
Feb 07, 13 10:22 AM	197.50	147.70	583
Feb 07, 13 11:43 AM	63.29	129.72	515
Feb 07, 13 11:54 AM	45.37	71.48	499
Feb 07, 13 12:01 PM	55.66	28.25	1502
Feb 07, 13 12:03 PM	71.14	31.45	547
Feb 07, 13 12:04 PM	59.30	29.76	338
Feb 07, 13 12:07 PM	57.95	44.63	498

## Apple speed test system

## The key obstacles of existing systems

- It can not be used by operators to maintain customer's SLA
- It is not transparent for all ICT Players (Regulators and Operators)
- It does not guarantee that testing results include only operator's networks

## ITU-T related works

**SG11 (February 2013)** – initial contribution (C44 “The Framework and protocol requirements for testing of Internet speed access and speed on interconnection among carriers networks”, Russia)

**JCA-CIT (April 2013)** – supported the development of the framework and methodology of Internet speed quality measurement usable by end-users (*Ref.: JCA-CIT-I-007, JCA-CIT-I-011, JCA-CIT-I-010*) (*involved: Administration, Operator, TL and Vendor*) (*Report ref.: JCA-CIT-O-1*)

**SG11 (14-20 November 2013)** – discussions of the framework and principles of Internet speed quality measurement

# Background of ITU C&I Programme

**ITU-T Study Group 11 is a lead group on test specifications, conformance and interoperability testing (C&I Programme) (WTSA-12)**

## **Key tasks:**

- **identify key technologies for which there is a market demand for C&I programme**
- **run a pilot projects for key technologies**



# The type of testing

- Testing of equipment and network functionality
- Testing of QoS, QoE and Network Performance (NP)
- ICT services testing
- Service interoperability testing
- Benchmarking

*Ref.: Rec. ITU-T Q.3900, 2006 Handbook "Testing of Next Generation Networks", 2011*

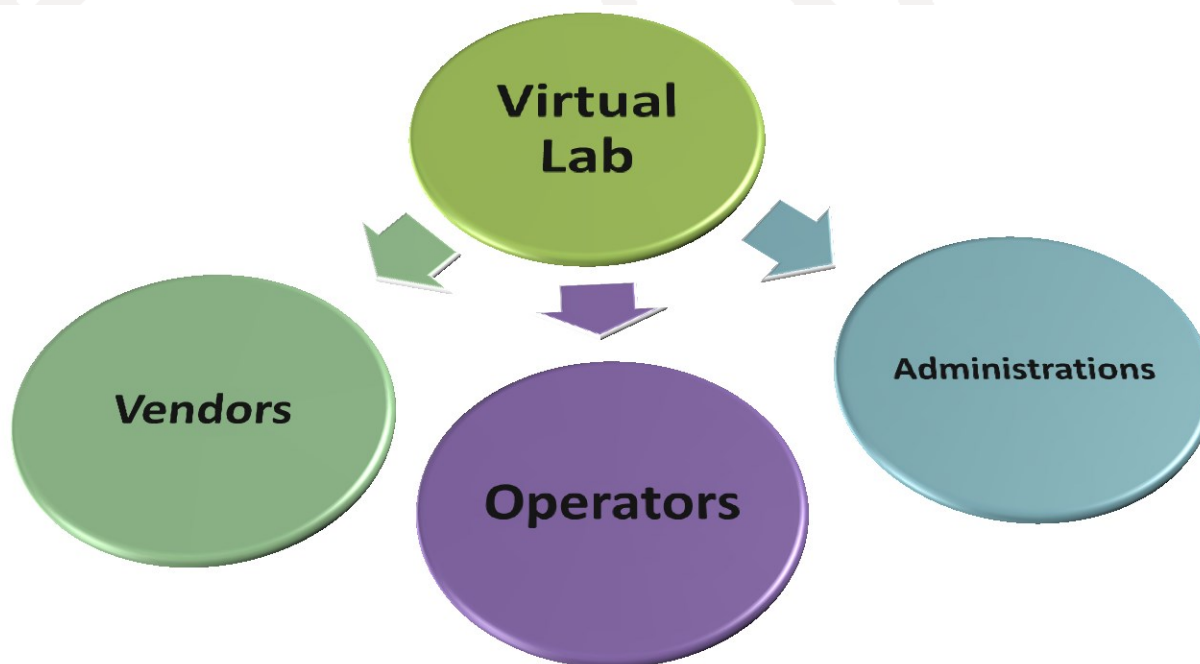
# The key issues of JCA-CIT discussion

- **Key technologies are suitable for conformance and interoperability testing**
- **New type of testing/measurements (benchmarking, interconnection, services, QoE/NP/QoS)**
- **Type of measurements which can be used for the estimation of useful values (speed, benchmarking, etc.)**

## THE JOINT ITU-ZNIIS PROJECT ON THE CREATION OF THE VIRTUAL LAB

The remote access of developing countries to the measurement systems for remote NP/QoS/QoE assessment. The remote testing of the Internet access's speed (developing the testing framework)

*(Ref.: JCA-CIT-I-007)*



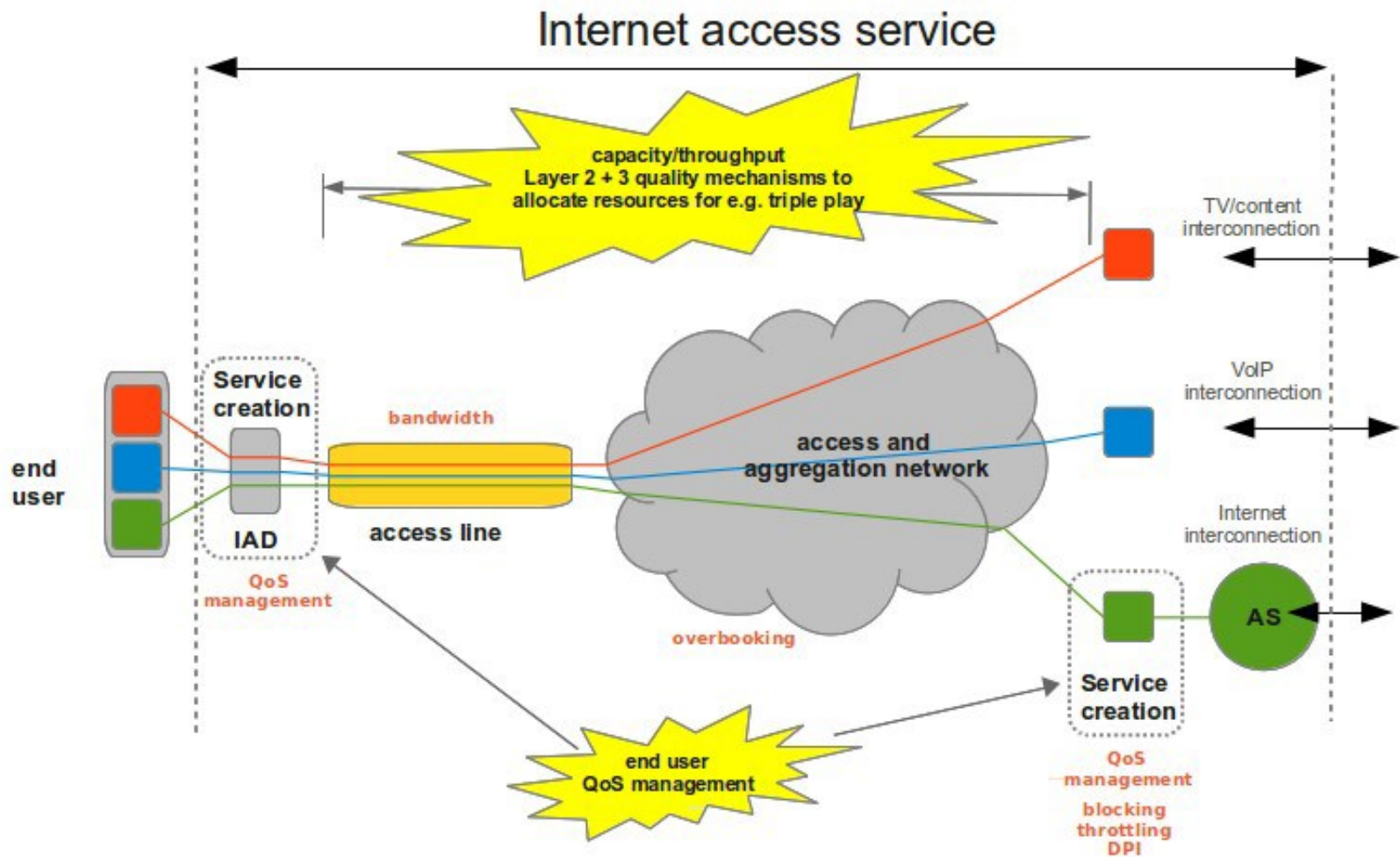
## **JCA-CIT discussion (2/4)**

**Federal Network Agency of Germany presented the Germany's approach to the study on the quality of broadband Internet access services which serves to provide detailed information on:**

- status quo of received Internet access speed compared to advertised/contracted broadband speeds**
- possible degradation of Internet access quality due to in parallel offered services via the same broadband access service (e.g. Triple Play with IPTV, VoIP)**
- different achievable throughput ratios with respect to destinations, content and applications used (net neutrality)**
- fundamental considerations for the development of a quality measurement methodology usable by end-users**

*(Ref.: JCA-CIT-I-011)*

# Scope of study



<http://www.initiative-netzqualitaet.de>

(Ref.: JCA-CIT-I-011)

## JCA-CIT discussion (3/4)

**Universal Service Directive EU [Directive 2002/22/EC](#), including the following regulations:**

### **Article 20 Contracts**

- **Information on conditions limiting access to and/or use of services and applications**
- **Minimum service quality levels offered**
- **Information on any procedures to measure and shape traffic and information on how those procedures could impact on service quality**

### **Article 22 Quality of Service**

- **In order to prevent the degradation of service and the hindering or slowing down of traffic over networks, Member States shall ensure that national regulatory authorities are able to set minimum quality of service requirements**

# JCA-CIT discussion (4/4)

## The Key outputs

JCA-CIT decided to extend the list of testing against ITU-T Recs. to:

- **ICT's equipment (signalling protocols, interfaces, codecs, etc.)**  
*Benefit: the possibility to reduce the test attempts (tested once - accepted everywhere)*
- **Telecommunication Services**  
*Benefit: increasing type of interconnection among operators network (interconnection on the service level), to facilitate the distribution of nomadic services provided on the fixed and mobile networks*
- **The performance of system/network/equipment (benchmarking)**  
*Benefit: to reduce the operator's risk of the purchasing equipment with unexpected performance*
- **QoS/QoE/NP**  
*Benefit: to increase the level of customer loyalty for services provided by operators*

**The JCA-CIT agreed to encourage the related SGs to develop a unified methodology of Internet speed quality measurement usable by end-users**

*Ref.: JCA-CIT-O-001*



## SG11 Action plan on C&I Programme

- **key technologies (ITU-T Recommendations) to be tested for conformance and/or interoperability**
- **pilot projects of conformance testing against ITU-T Recommendations**
- **reference table of ITU-T Recommendations and relevant parameters to be tested for conformance/interoperability**



# The living list of Recommendations and related specifications within key technologies suitable for C&I testing

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## ITU-T SGs outputs:

Living List of key technologies to be tested on C&I (SG11 output, 25 February - 1 March 2013)

JCA-CIT updates (25 April 2013)

#	Title	Focal Point	Other SDOs	ITU-T SGs	References to SDOs docs	References to ITU-T Recs.
13	Internet speed access	Andrey Koucheryav (Russia) <a href="mailto:akouch@mail.ru">akouch@mail.ru</a> Dmitry Tarasov (Russia) <a href="mailto:tarasov@zniis.ru">tarasov@zniis.ru</a> Victor Shalaginov (Russia) <a href="mailto:shalaginov@zniis.ru">shalaginov@zniis.ru</a>	-	SG11	-	ITU (Requirements) - ITU (Test suites) Q.InSpMs (draft)
14	Internet Access as perceived by user	Eva Ibarrola (Spain) <a href="mailto:eva.ibarrola@ehu.es">eva.ibarrola@ehu.es</a> Armando Ferro (Spain) <a href="mailto:armando.ferro@ehu.es">armando.ferro@ehu.es</a> Jose Luis Jodra (Spain) <a href="mailto:joseluis.jodra@ehu.es">joseluis.jodra@ehu.es</a> Eduardo Saiz (Spain) (Spain) <a href="mailto:eduardo.saiz@ehu.es">eduardo.saiz@ehu.es</a>	ETSI	SG12 SG11	ETSI (Requirements) EG 202 057-4 V1.2.1 (2008-07)  ETSI (Test suites) -	ITU (Requirements) G.1000  ITU (Test suites) -

## Conclusion

- 1. Nowadays Internet are playing the one of the important part in our life and customers take into consideration the quality of Internet resources**
- 2. Customers trust to the bitrate of the Internet speed which is advertised by operators, but they can't be guaranteed that the measured value of the Internet speed is correct**
- 3. Regulators should protect the interest of user but also should rely to the reasonable approach (perhaps unified international approach)**
- 4. All ICT players should be in the equal terms and should trust the testing results which are performed based on the unified International approach**
- 5. ITU-T was involved to this discussion and all countries are invited to make their impact to this important topic**



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JCA-CIT: [tsbjcacit@itu.int](mailto:tsbjcacit@itu.int)

# ITU web sources related to C&I Programme

## ITU C&I resources

**C&I Portal** - <http://www.itu.int/en/ITU-T/C-I/Pages/default.aspx>

**JCA-CIT** - <http://www.itu.int/en/ITU-T/jca/cit/Pages/default.aspx>

**SG11 (lead group on testing)** - <http://www.itu.int/en/ITU-T/studygroups/2013-2016/11/Pages/default.aspx>

## Newslog

[New ITU-T work to give end-users the tools to test internet access speed](#) 07 June 2013