

*ITU-T SG13*

**IMT-2020/5G Workshop and Demo Day**  
**Geneva, Switzerland, 11 July 2017**

**IMT2020:**  
**ITU-T SG13/WP1**  
**Contribution to 5G**

Luca Pesando, TIM  
SG13/WP1 Co-Chairman



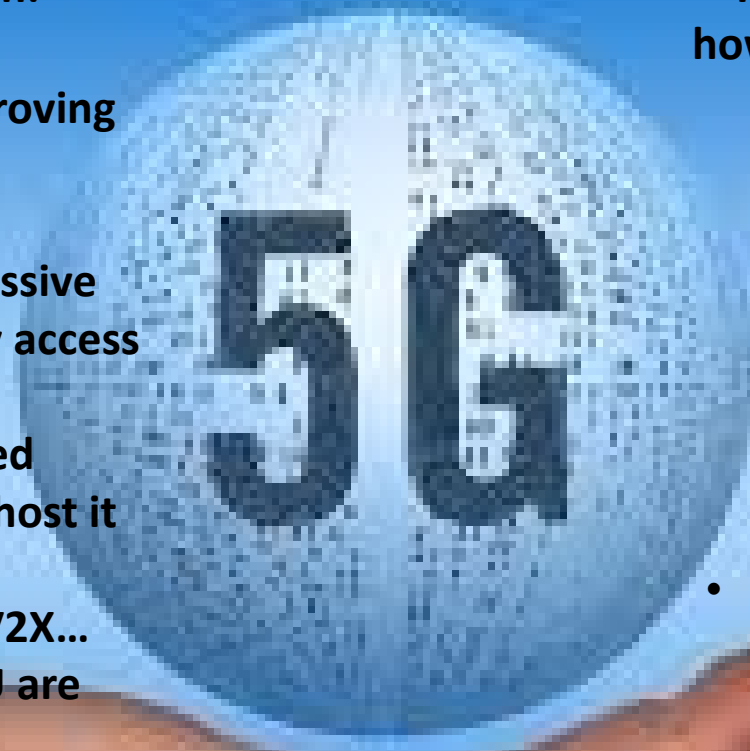
# Content

- IMT2020 in SG13: the commitment
- WP1: structure, workplan and objectives
- Internal process and external relationships
- Focusing deliverables: Technical Packages
- Conclusions

# IMT2020: the 5G challenge in ITU

## 5G, a multidirectional evolution:

- New Radio and always improving fixed access
- Backhaul and fronthaul technologies to support massive mobile and Ultra-BB on any access
- New Core and architecture
- Cloud becomes an integrated element of the network to host its functions
- All always connected: IoT, V2X...
- All the areas of study of ITU are involved



## IMT2020 Network in SG13: how ITU starts addressing 5G network challenge:

- FG IMT 2020 for pre-standard studies
  - Creation of WP1 to address IMT2020 network requirements and architecture in 2017-20 SP
- Focus on fixed line access and transport aspects
- Prepare the ground for following protocol specifications in other SG

# WP1/13 Structure

## Who does what on IMT2020

Question	Title
Q6	Quality of service (QoS) aspects including IMT-2020 networks
	Continuation of Q.6/13 from the last study period
Q20	IMT-2020: Network requirements and functional architecture
	Transformation from Architecture WG of FG IMT-2020
Q21	Network softwarization including software-defined networking, network slicing and orchestration
	Continuation of Q. 14/13 and 12/13 from the last study period
	Transformation from Softwarization WG and Network Management WG of FG IMT-2020
Q22	Upcoming network technologies for IMT-2020 and Future Networks
	Continuation of Q. 13/13 and 15/13 from the last study period
	Transformation from ICN WG of FG IMT-2020
Q23	Fixed-Mobile Convergence including IMT-2020
	Continuation of Q. 4/13, 9/13 and 10/13 from the last study period
	Transformation from FMC WG of FG IMT-2020



# Q6 Delivery plan for WP1 IMT2020

- Activity and documents in progress
  - Document (for Recommendation) on QoS monitoring for IMT2020 in plan (11/2017)

# Q6 WI (relevant highlighted)

Work item	Question	Equiv. Num.	Status	Timing	Approval process	Version	Liaison relationship	Subject / Title	Priority
<a href="#">Y.2111 Rev.1 Supplement</a>	Q6/13		Under study	2010-06	-	New	-	Supplement to ITU-T Recommendation Y.2111 (Resource and admission control functions in Next Generation Networks): Potential items for post-Revision 1	-
<a href="#">Y.CDNi-QoS</a>	Q6/13		Under study	April 2017	AAP	New	SG2, SG12	QoS Enablement Requirements and Mechanisms for Interconnected Content Delivery Networks (CDNs)	Medium
<a href="#">Y.IMT-2020.qos-mon</a>	Q6/13		Under study	2018-07	AAP	New	SG12/3GPP	IMT-2020 network QoS monitoring architectural framework	High

# Q20/13 Delivery plan for WP1 IMT2020

- Activity and documents in progress
  - Terms and definitions 07/2017
  - General Requirements 11/2017
  - Framework 11/2017
  - Architecture 2018
  - Network capability exposure requirements 11/2017  
(in Q20 or in Q21...still tbd)

Requirements are considered the most urgent WI to be completed

# Q20/13 WI (delivery in July highlighted)

Work item	Question	Equiv. Num.	Status	Timing	Approval process	Version	Liaison relationship	Subject / Title	Priority
<a href="#">Y.IMT2020-terms</a>	Q20/13		Under study	2017-11	-	New	-	Terms and definitions for IMT-2020	High
<a href="#">Y.IMT2020-reqts</a>	Q20/13		Under study	2017-11	-	New	-	Requirements of IMT-2020 network	High
<a href="#">Y.IMT2020-frame</a>	Q20/13		Under study	2017-11	-	New	-	Framework of IMT-2020 network	High
<a href="#">Y.IMT2020-arch</a>	Q20/13		Under study	Q2 2018	-	New	-	Architecture of IMT-2020 network	High
<a href="#">Y.IMT2020-CE-Req</a>	Q20/13		Under study	2017-11	-	New	-	Requirements of capability exposure in IMT-2020 networks	High
<a href="#">Y.IMT2020-CEF</a>	Q20/13		Under study	Q2 2018	-	New	-	Capability exposure function in IMT-2020 networks	High



# Q21/13 Delivery plan for WP1 IMT2020

- Activity and documents in progress
  - TR (supplement) on standards and Softwarisation (07/2017)
  - Recommendation on High level characteristics/requirements on key aspects of softwarisation (11/2017)
  - Recommendation on IMT2020 network management req (07/2017)
  - Framework for IMT2020 network management requirements (07/2017)
  - Further Softwarisation aspects in 2018

Dependencies on the general Requirements (Q20) will need to be taken care of asap while work is progressing

# Q21/13 WI (delivery July highlighted)

Work item	Question	Equiv. Num.	Status	Timing	Approval process	Version	Liaison relationship	Subject / Title	Priority
<a href="#">ITU-T Y.3MO</a>	Q21/13		Under study	2017-11	AAP	New	-	Requirements and Architectural Framework of Multi-layer, Multi-Domain, Multi-Technology Orchestration	High
<a href="#">Suppl. To Y.IMT2020 serirs</a>	Q21/13		Under study	2017-07	AAP	New	-	Standardization and open source activities related to network softwarization of IMT-2020	High
<a href="#">Y.3MO</a>	Q21/13		Under study	2017-12	AAP	New	-	Requirements and Architectural Framework of Multi-layer, Multi-Domain, Multi-Technology Orchestration for SDN	High
<a href="#">Y.amc (ex Y.amnsa)</a>	Q21/13		Under study	2017-11	AAP	New	-	Requirements and Architectural Framework for Autonomic Management and Control of Future Networks	High
<a href="#">Y.dsn_sec_req</a>	Q21/13		Under study	2016	AAP	New	-	Recommendation on DSN Security Requirement	Low
<a href="#">Y.dsnmsg</a>	Q21/13		Under study	2016	AAP	New	-	Messaging service over DSN	High
<a href="#">Y.IMT2020-MultiSL</a>	Q21/13		Under study	Mid 2018	AAP	New	-	Framework for the support of Multiple Network Slicing	High
<a href="#">Y.IMT2020-mgmt-frame</a>	Q21/13		Under study	2017-07	AAP	New	-	IMT-2020 Network Management Framework	High
<a href="#">Y.IMT2020-mgmt-reg</a>	Q21/13		Under study	2017-07	AAP	New	-	IMT-2020 Network Management Requirements	High
<a href="#">Y.IMT2020-NetSoft</a>	Q21/13		Under study	2017-11	AAP	New	-	High level technical characteristic of network softwarization for IMT-2020	High
<a href="#">Y.NSOM</a>	Q21/13		Under study	2018-06	AAP	New	-	Network slicing orchestration and management	High
<a href="#">Y.SFCM</a>	Q21/13		Under study	Mid 2018	AAP	New	IETF	Recommendation on Network service function chaining in	High

# Q22 Delivery plan for WP1 IMT2020

- Activity and documents in progress
  - Focus on ICN
  - One Reccom. consented in February Y.DAN-reg-arch
  - One WI from the input document from the FG
  - Alignment with FMC is important
  - Workplan under definition
  - Requirements for 1<sup>st</sup> H 2018

Harmonisation with General Requirements (Q20) and other specific requirements will need to be taken care of asap while work is progressing

# Q22/13 WI

Work item	Question	Equiv. Num.	Status	Timing	Approval process	Version	Liaison relationship	Subject / Title	Priority
<a href="#">Y.PTDN-M-interface</a>	Q22/13		Under study	2017-11	AAP	New	-	M interface in Public packet Telecom Data Network (PTDN)	High
<a href="#">Y.PTDN-OAM</a>	Q22/13		Under study	2017-11	AAP	New	-	OAM functions and mechanisms for Public packet Telecom Data Network (PTDN)	High
<a href="#">Y.PTDN-T-interface</a>	Q22/13		Under study	2017	AAP	New	-	T interface in Public packet Telecom Data Network (PTDN)	Medium

# Q23 Delivery plan for WP1

- Activity and documents in progress
  - Recommendation on requirements for FMC (07/17)
  - Recommendation on FMC high level architecture (early 2018)
  - Consented recommendation on FMC-PCM

Harmonisation with General Requirements (Q20) and other specific requirements will need to be taken care of asap while work is progressing

# Q23/13 WI (delivery July highlighted)

Work item	Question	Equiv. Num.	Status	Timing	Approval process	Version	Liaison relationship	Subject / Title	Priority
<a href="#">Y.FMC-ARCH</a>	Q23/13		Under study	2018-Q2	AAP	New	-	Functional Architecture for supporting fixed mobile convergence in IMT-2020 networks	High
<a href="#">Y.FMC-REQ</a>	Q23/13		Under study	2017-07	AAP	New	-	Requirements of IMT-2020 fixed mobile convergence	High
<a href="#">Y.MC-VCC</a>	Q23/13		Under study	2017-07	AAP	New	-	The Voice and Video Call Continuity over LTE, Wi-Fi and 2G/3G	High
<a href="#">Y.MM-RN</a>	Q23/13		Under study	2017 Q4	AAP	New	-	Mobility management framework over reconfigurable network	Medium
<a href="#">Y.MobileP2P</a>	Q23/13		Under study	2017 Q4	AAP	New	-	Mobility supporting architecture for mobile P2P service in heterogeneous wireless networks	Medium
<a href="#">Y.Suppl.MM-SDN (ex Y.Sup.MMsdn-usecase)</a>	Q23/13		Under study	2017 Q4	Agreement	New	-	Supplement on use cases of mobility management over SDN	High



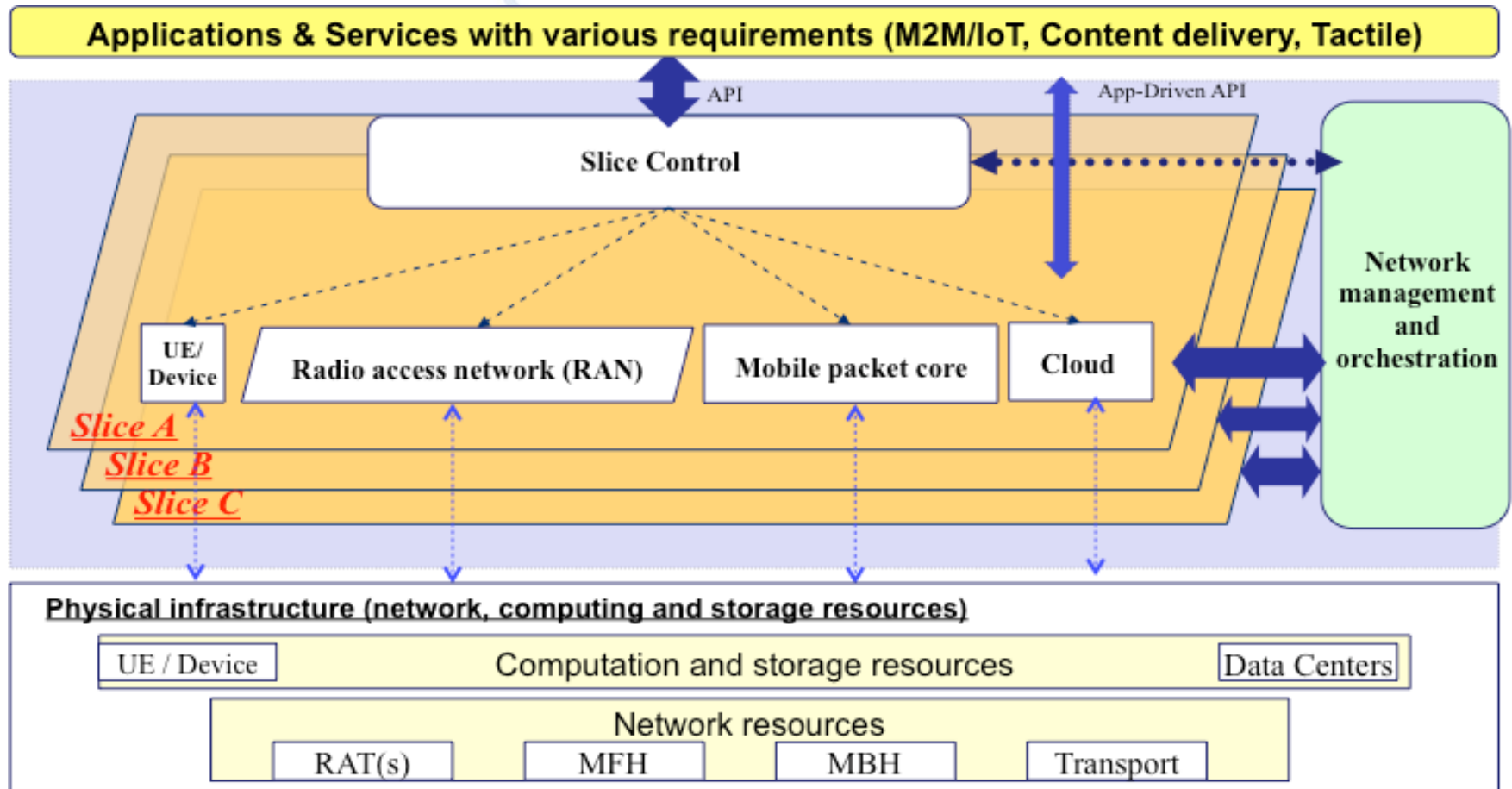
# WI assignment: ought to be carefully done !

Question	TDs	Title
	TD(GEN)-68	TR: Terms and definitions for IMT-2020 in ITU-T
	TD(GEN)-69	TR: Application of network softwarization to IMT-2020
	TD(GEN)-70	Requirements of IMT-2020 from network perspective
Q6	TD(GEN)-71	Framework for IMT-2020 network architecture
	TD(GEN)-72	Requirements of IMT-2020 fixed mobile convergence
Q20	TD(GEN)-73	TR: Unified network integrated cloud for fixed mobile convergence
	TD(GEN)-74	IMT-2020 network management requirements
	TD(GEN)-75	Network management framework for IMT-2020
Q21	TD(GEN)-76	TR: Application of information centric networking to IMT-2020
		Transformation from Softwarization WG and Network Management WG of FG IMT-2020
		Upcoming network technologies for IMT-2020 and Future Networks



In many cases WI cannot be handled by a single Question as they require expertise on different aspects

# One of the most complex aspects in IMT2020: Slicing





# (REAL)Collaboration is fundamental: inside...

- Work and deliverable organisation according to Technical Packages to offer the market greater benefits

Synchronise recommendations and TRs according to the technological area (slicing, FMC, ICN ...)

Prioritise the most important areas

Join forces between different questions and work together as needed

SLICING an FMC are the TP which we are working on so far

## Technical Packages

They are more than the simple sum of different documents

- Almost 30 incoming liaisons per meeting: collaboration is essential!....

# ....also outside

## **Cooperation on FMC with the BBF and 3GPP**

- Assure alignment and coherence of specs and coverage of all needed aspects
- Based on member contributions in each organisation and not on formal collaboration
- Evaluate success in 8-12 months

## **What it means in detail**

- Overcome difficulties due to different meeting periodicity, document management, IPR rules, resource availability
- Assure alignment and coherence of specs (starting from language) and coverage of all needed aspects with little or no confusing overlap
- Start with reference architecture and interfaces N1, N2, N3 ... defined by 3GPP and provide input to match fixed access needs
- Add innovative approaches (like cloud based convergence)

# Conclusions

- **IMT2020 is attractive and challenging**
  - Every SDO and innumerable projects and fora work on it
  - Need to avoid the overlap risk
- **5G is an immense field of development**
  - Select and prioritise what can be done effectively
  - Keep coherence under control: WP1 Technical Packages
- **Cooperation is essential**
  - Between different Qs in the same WP
  - With other SGs and external entities
  - Go beyond the usual very formal LS exchange with, in too many cases, little real cooperation
  - Try to adapt in terms of timing and work schedule also with other groups