

ATTACHMENT 3.5

Source: Rev. 1 to Doc. 8F/TEMP/254

Liaison Statement to ITU-R JTG 1-6-8-9, Working Parties 1B, 6E, 6M, 8A, 9B and JRG 8A-9B

Working Party 8F (WP 8F) was pleased to receive the Liaison statements (Docs 8F/494 and 8F/495, also contained in Attachment 5 to JTG 1-6-8-9/39) from ITU-R JTG 1-6-8-9 regarding "terrestrial wireless interactive multimedia systems", and noted that JTG 1-6-8-9 would welcome a response in time for the JTG 1-6-9-8 meeting of 16-24th May 2002. This contribution provides the response from WP 8F.

1 WP 8F has reviewed the liaison statement 8F/494 (Document 1-6-8-9/TEMP/10), and suggests a number of modifications and additions to the attachments:

- Annex 1 to this Liaison statement contains suggested modifications to the preliminary draft CPM text for Chapter 7.1;
- Annex 2 contains suggested modifications to the draft report on the possible trends in terrestrial wireless interactive multimedia over the next five to ten years;
- Annex 3 contains suggested modifications to the table of terminology and description of contents;
- Annex 4 contains information for IMT-2000 and Systems beyond IMT-2000, and some additional information that may assist JTG 1-6-8-9 in completing Table 1 in Section 3.2.2 of the preliminary draft CPM text.

2 WP 8F notes and accepts the preliminary working-description for the scope of the terrestrial wireless interactive multimedia (TWIM) concept:

- Systems that operate in one or more of the mobile, fixed and broadcasting services and are capable of supporting bi-directional exchange of information of more than one type (e.g. video, image, data, voice, sound, graphics) between users or between users and hosts.

NOTE - The bi-directional exchange of information may be provided with different degrees of interactivity and mobility.

3 WP 8F agrees with the Liaison statement from Working Party 1B, Doc 1-6-8-9/38 (8F/497), that:

- no changes be made at WRC-03 with respect to service definitions.
- no regulatory impediments have been identified to the development of TWIM applications.

4 In respect of the previous liaison statement from WP 8F to JTG 1-6-8-9 (1-6-8-9/20), WP 8F would like to clarify two of the points:

- WP 8F believes that IMT-2000 and systems beyond IMT-2000 could be regarded as forming a part of a future terrestrial wireless interactive multimedia concept.
- At this time, WP 8F sees no regulatory impediments related directly to IMT-2000. We believe that the distinctions between the Fixed, Mobile and Broadcasting Service, used to be clear and unambiguous, and the traditional national regulatory processes and the organization of the ITU-R were designed to reflect those distinctions. It is believed that the definitions of those three Services are still valid and applicable, however it should now be understood that systems are starting to appear, that are capable of operating within two or even all of those three Services. Whilst there is no evidence at this time that radio regulatory constraints will be a problem, this could be reviewed at a later stage. Radio regulatory impediments could be minimised by ensuring that sufficient flexibility is employed in the interpretation of existing regulation. It has been indicated that in some circumstances, there may be national regulatory restrictions on the nature of the content which may be supplied and/or received over the service, and those restrictions may vary depending on the nature of the service (e.g. broadcasting, web browsing, etc). Whilst this may be a valid concern which should be recognized, it is not clear whether or how this would impact on the work of the ITU-R.

5 Furthermore, WP 8F suggests that JTG 1-6-8-9 might like to investigate whether there are any measures within the scope of the current Radio Regulations that might facilitate the development of the terrestrial wireless interactive multimedia concept.

6 WP 8F has developed CPM text for Agenda item 1.22 (attached) and has included a section entitled 'Relationship with studies documented under CPM Sections 2.2 and 7.1'. JTG 1-6-8-9 may wish to consider adding a reciprocal section in the CPM text for Agenda item 1.21.

7 JTG 1-6-8-9 is invited to note that WP 8F is developing its vision for the future development of IMT-2000 and systems beyond, which is documented in IMT.VIS. WP 8F expects this Recommendation to be adopted at the next meeting of Study Group 8. The latest draft of this PDNR is attached for your information.

8 In respect of the three questions asked in the liaison statement 8F/495 (Document 1-6-8-9/TEMP/9):

- WP 8F did not identify any concepts in the three attachments to the LS (Docs. 1-6-8-9/24, 1-6-8-9/25 and 1-6-8-9/35) that need to be addressed in the draft CPM text.
- WP 8F did not identify any specific text elements that it would like to be particularly considered by JTG 1-6-8-9.
- WP 8F did not identify any issues in the documents that it wished to draw particularly to the attention of JTG 1-6-8-9 at this time.

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Annexes: 4

- 1 Modifications to the Preliminary draft CPM text for Chapter 7.1 (Attachment 1 to Doc. 8F/494).
- 2 Modifications to the Report on the possible trends in terrestrial wireless interactive multimedia over the next 5-10 years (Attachment 2 to Doc. 8F/494).
- 3 Modifications to the List of terms and description of concepts (Attachment 3 to Doc. 8F/494).
- 4 Suggested information for inclusion in Table 1 of Attachment 1

Attachments: 2

- 1 PDNR [IMT.VIS] (See Attachment 3.2)
- 2 Proposed CPM text for Agenda item 1.22 (See Attachment 7.14)

ANNEX 1

PROPOSED AMENDMENTS TO ATTACHMENT 1 OF DOC. 8F/494

Preliminary draft CPM text for chapter 7.1

MOD 1

3.1 Scope of terrestrial wireless interactive multimedia systems

Modify the first paragraph:

The terrestrial wireless interactive multimedia (TWIM) is a concept that is emerging in the marketplace and is ~~should not synonymous~~ be confused with any existing or planned system; it is, rather, more of a vision of future wireless applications. It may be regarded as a multi-network, multi-access and multi-service arrangement containing convergence in access, core network, management, content, information exchange and database functions and capabilities. These functions and capabilities will likely include integral seamless broadcasting, mobile and fixed wireless access, location and navigation functions, on demand, supporting person-to-person, person-to-many persons, many persons-to-person, person-to-machine and machine-to-machine communications. It is end-user centric in that it is the end-user that is the recipient of the multimedia applications.

Modify the fourth paragraph:

~~Many multimedia applications delivered by broadcasting services are expected to deliver larger amounts of multimedia data in the downlink direction compared to the amount of data carried from the user in the uplink direction, thus making such broadcast based multimedia applications different from those provided through other telecommunications services.~~

MOD 2

3.3.1 Current use and future trends for spectrum

Since it is anticipated that there will be many different types of terrestrial wireless interactive multimedia systems, they will inevitably operate in many different frequency bands, typically, but not exclusively, across the range up to 66 GHz, with higher mobility systems tending to favour the lower frequency bands.

The frequency bands ~~which that~~ are currently allocated to broadcasting ~~are already fully utilized for broadcasting but, in time,~~ will be more efficiently used through the conversion from an analogue to digital transmission mode. ~~This may facilitate, amongst other things, which will also permit the~~ introduction of interactive multimedia services to the end user.

~~Since broadcasting is a one-to-many service which may have the capability for some personalized addressable applications, the downlink data from interactive multimedia and datacasting applications may be combined with conventional broadcasting applications and therefore use the same channel. If the uplink and downlink channels share the same frequency band, this could provide some economies of scale due to re-use of some existing user equipment, such as the antenna. In principle, multimedia applications provided by broadcasting operators may use a variety of spectrum bands in particular for the uplink channel in the fixed and mobile services.~~

It is believed that the current broadcast bands can provide most of the requirements for the downlink path ~~for broadcast services with interactive multimedia capabilities when they are intended for the general public.~~ However, with the expected evolution of these multimedia services,

consideration will be needed to make sure that sufficient spectrum becomes available to accommodate anticipated future demand.

For the mobile service, the spectrum used by mobile applications and technologies is heavily used, and studies are underway to both increase the spectrum efficiency of those systems, and the identification of additional spectrum that could be used.

For the fixed service, the ITU-R is currently considering certain bands in the range 5 - 20 GHz range with a view to accommodating FWA applications in bands where there is little growth of traditional point-to-point systems. Moreover, work is being undertaken to identify spectrum in bands above 70 GHz for short-range, broadband FWA applications. Further, studies are also ongoing on how to use mobile derived technologies for FWA systems underlining the convergence process.

A challenge in the future may be to find sufficient suitable spectrum, under-in bands below 1 GHz, to support broadband fixed wireless systems in rural and remote areas. New access to spectrum in this range would help service providers to reach non-line-of-sight subscribers in areas of difficult terrain to provide multimedia services.

The demand for spectrum for broadband NWA is increasing and this matter is now being studied by the ITU-R. WRC-03 Agenda item 1.5 addresses a possible new allocation to the mobile (and fixed) service in certain bands in the 5 GHz range. According to ongoing studies in the ITU-R, it is currently believed that frequency spectrum of the order of at least several hundred MHz megahertz is possibly required to meet future demands for broadband NWA around year 2010.

MOD 3

3.3.2 Band sharing scenarios with other users

Modify the second paragraph:

The sharing scenarios will depend on the technologies used in different bands, wideband vs. narrowband, high power vs. low power etc.; the nature of the terminals and the type of modulation in the radio link may significantly affect the sharing scenario. However, it is not believed that the sharing scenarios for terrestrial wireless interactive multimedia systems will be significantly different to those for a broadcasting system, a high-density public land mobile telecommunications system or a high density fixed wireless access system.

MOD 4

5 Regulatory and procedural considerations

The distinctions between the Fixed, Mobile and Broadcasting Services have been clear and unambiguous, and the traditional national regulatory processes and the organization of the ITU-R were designed to reflect those distinctions. It is believed that the definitions of the three radiocommunication services are still valid and applicable; however it should be understood that systems are starting to appear that are capable of operating within two or even all of the three radiocommunication services.

There is no evidence at this time that there are any regulatory impediments to the development of TWIM systems applications. It will be necessary to review the traditional boundaries between existing radiocommunication services to determine if there are any impediments. If any appear in the future they could be minimised by ensuring that sufficient flexibility is employed in the interpretation of the regulations.

The further development of convergence raises the fundamental question of whether current service definitions will continue to make sense by the end of the decade when voice has turned into data

streams and television may be delivered on-demand via a broadband interactive Internet. This may require studies on whether modifications to ITU radiocommunication service definitions are necessary and how they may impact -the future use of frequency bands. It may also be necessary to review the impact any such modifications may have on the existing international frequency coordination procedures.

Harmonization of spectrum is an important factor in the success of TWIM systems and there are potential equipment cost advantages through economics of scale. Studies are required to assess the benefits of global and regional harmonization of spectrum for these systems and the need for any recognition within the Radio Regulations.

Most bands that are allocated to the fixed service are also allocated to the mobile service (and vice versa), and may be candidate bands for terrestrial wireless interactive multimedia applications. Studies may be required to evaluate the possibility of adding the mobile service to bands -allocated to the fixed service (and vice versa) with the view to increasing the flexibility, in light of studies on service definitions.

ANNEX 2

PROPOSED AMENDMENTS TO ATTACHMENT 2 OF DOC 8F/494

Report on the possible trends in terrestrial wireless interactive multimedia over the next five to ten years

MOD 5

Market Trends

Modify the fourth paragraph, third indent:

- demand for greater data rates for residential and business ~~IP~~-applications using packet-based protocols;

MOD 6

Technology Trends

Modify the second and third paragraphs:

A challenge in the future may be to find sufficient suitable spectrum to support broadband fixed and mobile wireless systems. With regard to rural and remote areas new access to spectrum below 1 GHz would help operators reach non-line-of-sight subscribers in areas of difficult terrain to provide multimedia services.

One trend that is anticipated over the coming years is the integration of low power broadband RLANs with wide area cellular mobile systems to support hot-spot coverage. This results in more efficient use of the spectrum and the delivery of high-speed wireless access services. A further trend that supports the convergence of systems is the increasing use of packet-based transport and in particular the use of packet-based Internet protocols (IP), for most end-user and enterprise-based applications. In addition, it is foreseen that the core network will increasingly become packet-based IP-centric, supporting a wide variety of different user speed/mobility/coverage scenarios and also support such requirements as security, authentication and billing. This will facilitate the convergence of systems which we now consider as being distinct (e.g. MWA, FWA, NWA, RLAN, IMT-2000, broadcasting, narrowcasting, etc.). In the future this will form part of a web of systems and networks supporting a large variety of wireless interactive multimedia services. Therefore, rather than considering any one particular type of system as a terrestrial wireless interactive multimedia system, it will be used to describe a collection of systems.

ANNEX 3

PROPOSED AMENDMENTS TO ATTACHMENT 3 OF DOC 8F/494

Terminology and description of contents**MOD 7****List of terms and definitions**

Modify the definition of “Downlink channel”:

Downlink channel	A unidirectional transmission channel from central station to terminal station. Also referred to as downstream <u>channel</u> .	Recommendation ITU-R F.1399-1	Also defined in I.224
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Reason: To align this definition with that of “uplink channel”.

MOD 8**List of terms and definitions**

Add the term “Data stream” and its definition:

<u>Data stream</u>	<u>A sequence of digitally encoded signals used to represent information in transmission.</u>	<u>Telecom Glossary</u>	
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ANNEX 4

SUGGESTED INFORMATION FOR INCLUSION IN TABLE 1 OF
 ATTACHMENT 1

Preliminary draft CPM text for chapter 7.1

In the Table below, WP 8F has added information for IMT-2000 and systems beyond IMT-2000 for inclusion in Table 1 of Attachment 1 in Section 3.2.2 of the Liaison statement (Applications and technologies). The other information was included in a contribution to WP 8F. It may be useful to JTG 1-6-8-9 in completing the table.

TABLE 1

Some typical technical characteristics of example systems

System		Transmitted data rate	Typical frequency range	Information data rate (TBD) ³
Cellular/MWA	Pre IMT-2000 systems ⁴	14.4 kbit/s	0.8-2 GHz	<u>14.4kbit/s</u>
	IMT-2000	2 Mbit/s (pico cells) 384 kbit/s (micro cells) 144 kbit/s (macro cells)	0.8-2.7 GHz	<u>2Mbit/s (pico)</u> <u>384kbit/s (micro)</u> <u>144kbit/s (macro)</u>
	Systems beyond IMT-2000	(under study)	(under study)	(under study)
TICS ⁵				
RLAN/wireless home networks		Up to 54 Mbit/s	0.9-6 GHz	
Personal area networks		(under study)	(under study)	
FWA/BWA ⁶		56 kbit/s up to 312 Mbit/s	1 to 66 GHz ⁷	
LMCS/LMDS/MMDS/MVDS/MCS/MWS ⁸		up to 156 Mbit/s	2 to 6 GHz, above 20 GHz ⁹	
Broadcasting	Sound (digital) <u>System A (DAB)</u> ¹² <u>System F (ISB-T)</u> ¹²	up to 1.8 Mbit/s (static) 448kbit/s (mobile)	<u>30 – 3000 MHz</u> ¹⁰ TBD	
	Television (digital) S DTV/ E DTV/ H DTV <u>System A (ATSC)</u> ¹³ <u>System B (DVB)</u> ¹³ <u>System C (ISDB-T)</u> ¹³	up to 32 Mbit/s (static) 500 kbit/s (mobile)	TBD ¹¹	

- 3 Additional information requested from all WPs.
- 4 It is recognized that some pre-IMT-2000 systems can provide some Internet browsing and an interactive channel for broadcasting systems.
- 5 Additional information requested from WP 8A.
- 6 BWA: Wireless access in which the connection(s) capabilities are higher than the primary rate.
- 7 Systems operating at a lower frequency range have typically lower data rate.
- 8 It is noted that there are also other abbreviations used for these systems.
- 9 Systems operating at a lower frequency range have typically lower data rate.
- 10 Additional information requested from WPs 6E/6M.
- 11 Additional information requested from WPs 6E/6M.
- 12 Recommendation ITU-R BS.1114-2
- 13 Recommendation ITU-R BT.1306-1