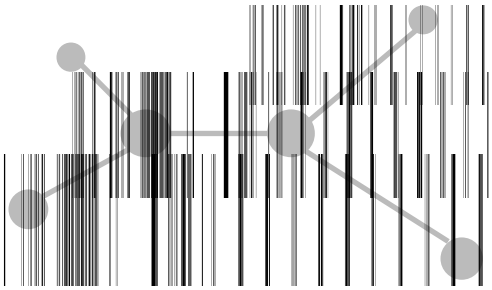
Liaison Report to IFAST Meeting #17



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Destination

International Forum on ANSI-41 Standards Technology

IFAST Meeting #17 (rescheduled)

October 23-24, 2001

Washington, DC, USA

Abstract

A report on activities in the TIA TR-45.2 subcommittee, 3GPP2 TSG-N and related TR-45/3GPP2 standards groups related to international applications of TIA wireless standards. Some activities in 3GPP2 and 3GPP are also reported.

This report specifically includes information on the status of cross-technology roaming, as requested by an IFAST letter to TR-45.2/TSG-N.

This report has been approved by 3GPP2 TSG-N. It was not approved by TR-45.2 due to a lack of quorum at the recent meeting.

Recommendation

For the information of IFAST members

Copyright Statement

Highlights!

Dialing Plan	A project has been initiated by TSG-N to investigate dialing plans. This is a possible opening for development of universal requirements.
International CNI and Callback	IS-875 (PN-4863) was published in May 2001. It clarifies network support for international calling number identification, '+' code dialing and storage of international numbers within phones.
TIA/EIA-41-E	TIA/EIA-41-E protocol documents are out for ballot, including definitions of all operations, parameters and data types. Text of procedures is undergoing V&V. Stage II (scenarios) is being integrated.
GSM (Cross-Technology) Roaming	A variety of projects have been created to enhance the capabilities that can be provided by an ANSI-41/GSM inter-working function (IIF).
Optimal Routing	This project has been cancelled by TR-45.2.
Location Services	Several standards are under development to support mobile positioning for emergency services or commercial services. These support both network-only and mobile-assisted forms of positioning.
Roamer Database Verification	The next revision of this standard will support queries of blocks of MIN's greater than 10,000, thanks to work by Aeris. This makes the RDV standard suitable for use with IRM's.
WG VI	Working Group VI has no active projects, and would appreciate suggestions from IFAST for important future work.
WIN	IS-771 is being modified to support global titles for international use.
Wiretap	The 'LAES' ad-hoc group has started to develop a revision to J-STD-025 to support packet data surveillance. There is some international involvement in this work. Not all countries are comfortable with having this in international standards.
3GPP2	A request has been sent out to all of 3GPP2 TSG's, requesting future input into this liaison report. Unfortunately, this initiative was not in time for this report.

Status of TIA TR-45.2/3GPP2 TSG-N Wireless Network Standards

TIA/EIA-41 - Intersystem Operations	
Status	Rev. D published December 1997.
International Support	There are several significant changes included in *TIA/EIA-41* that provide a greater degree of internationalization: i. The use of ITU (CCITT) Signaling System #7 (C7) SCCP and MTP is defined as a transport protocol (along with X.25 and ANSI SS7). ANSI TCAP is recommended for use with all transport protocols. ii. Modifications to the TLDN digits parameter (Digits(Routing)) to make it clear that a full *E.164* (international) directory number is valid as a TLDN. iii. Origination restrictions are defined in a way that is applicable outside the North American Numbering Plan area. iv. The definitions of Digits and RestrictionDigits were clarified to ensure that an international (*E.164*) number could be used to restrict calls to a group of numbers starting with a common prefix or to a single number ("hotline").
Status	Revision E operations and parameters are being balloted. Procedures are in V&V (Verification and Validation) prior to approval for ballot.
International Support	A new version of TIA/EIA-41 is under development. The changes being developed for *TIA/EIA-41-E* that are most relevant to IFAST are: • Support for IMSI (*E.212* International Mobile Station Identity) through the inclusion of IS-751 and its erratum. • Further internationalization through the incorporation of IS-807. • International presentation/origination from wireless phones based on recommendations in IS-875. The definition of operations, parameters, transport protocol information and data types are in ballot review. Procedures are in V&V. Stage II scenarios are being integrated.

IS-751: IMSI (International Mobile Station Identity) Support	
Status	Published in February 1998.
International Support	This interim standard provides a list of modifications that are necessary to support IMSI in *TIA/EIA-41 Revision D*. It will be incorporated in *TIA/EIA-41 Revision E*.

IS-807: Further Internationalization of TIA/EIA-41	
Status	Published in August, 1999. An addendum was published in June, 2000 to support changes in ANSI SS7 global titles.
International Support	TR-45.2 has published IS-807 to further internationalize TIA/EIA-41, including the following items: • Modification of wording that refers to NANP-specific concepts (e.g. LATA). • Modifications to the PC_SSN parameter usage to ensure that a national SS7 address is not used across a boundary between two signaling domains (e.g. a national boundary). • Modifications to the PC_SSN parameter to support other point code formats (e.g. 14 bit point code format) for national TIA/EIA-41 signaling in countries outside the North American Numbering Plan area.. • International global titles required to support international routing of TIA/EIA-41 MAP signaling messages (E.164 and E.212). • It has recently been decided to identify wireless network elements with E.212 numbers, instead of E.164. E.212 global titles can then be used to route messages to them. • ANSI and ITU encoding for the SCCP layer for each global title. • Backward compatibility considerations for the international format of the TLDN and other digits transmitted in TIA/EIA-41 parameters. • The latest addition was text to clarify which address to use, when multiple addresses are available. • An addendum modifies the SS7 global titles to allow global title routing to function properly on systems that have a mixture of GSM systems, IS-41 systems and GSM-to-IS-41 gateways.

TSB-29: International Implementation	
Status	Rev. D has been approved for publication.
International Support	• Includes list of SID code ranges assigned to countries. • Includes list of SID conflicts. • *No longer includes* lists of assigned IRM codes. www.ifast.org is referenced instead. • Information on global titles may be removed in future versions, now that IS-807 has been published.

IS-875: International Number Handling	
Status	PN-4863 has been approved for publication as IS-875
International Support	Clarifies network and MS support for: • Calling number identification (international format unless caller, home and serving system are all in same country) • Plus code dialing (should be usable even for numbers within current country, with network responsible for removing international indicators when not appropriate) • Storage (international indicator should be preserved in phone)

GSM Interworking		
Status	Several projects are under consideration:	
	PN-4857	TR-46.3 (J-STD-038). Approved for publication in March, 2001.
	PN-4925	CDMA ANSI-41 network enhancements to support SIM roaming to GSM.
	PN-4926	Interworking and Interoperability Function (IIF) enhancements to support two-way SIM roaming CDMA ANSI-41 <-> GSM
	PN-4927	IIF enhancements for one way SIM roaming from CDMA ANSI-41 to GSM
	IS-833	A TR-45.5 standard designed to "define changes to Multi-Carrier (MC) CDMA needed to support operation with a core network that uses a version of the Global System for Mobile Communications (GSM) Mobile Application Part (MAP)". Published in March, 2000.
	J-STD-038 (PN-4857)	TR-46.3. Approved for publication in March, 2001.
	IS-868 (PN-4925, N.P0025)	CDMA ANSI-41 network enhancements to support SIM roaming to GSM. Scheduled for ballot in February, 2002.
	PN-4926, N.P0026	Interworking and Interoperability Function (IIF) enhancements to support two-way SIM roaming CDMA ANSI-41 <-> GSM. Scheduled for ballot in November, 2001.
	PN-4927, N.P0027	IIF enhancements for one way SIM roaming from CDMA ANSI-41 to GSM. Scheduled for ballot in November, 2001.
	IS-833	A TR-45.5 standard designed to "define changes to Multi-Carrier (MC) CDMA needed to support operation with a core network that uses a version of the Global System for Mobile Communications (GSM) Mobile Application Part (MAP)". Allows GSM application protocols to operate over a CDMA radio interface. Published in March, 2000.
International Support	The first phase of this development is to allow ANSI-41 based mobiles to use CAVE-based authentication in their smart cards, allowing much easier ANSI-41 to GSM roaming. This requires no changes to GSM, and the minimal changes to ANSI-41. A proposal to add a message has been withdrawn in favour of making minor modifications to Authentication and Registration messages in ANSI-41. It removes the need for inter-working functions to retain ESN data for mobiles.	

Status	TIA TR-46.3 is also developing ANSI-41/GSM interworking capabilities, as are the various sub-groups within GGRF, such as GAIT (for TDMA) and G-95 (for CDMA).

TIA/EIA-124: Call Detail Records	
Status	Revision C published August, 2000. Revision D under ballot review.
International Support	Although TIA/EIA-124 can support international identifiers (e.g. IMSI, IMEI) it does not properly support international directory numbers, using an NANP-centric method for indicating non-NANP numbers. Revision C added support for WIN Phase I. Revision D is being planned to add support for WIN Phase II (prepaid). Utilization of TIA/EIA-124 is still not widespread. Proprietary call detail records and CIBER billing records still carry the bulk of this information.

J-STD-025: Lawfully Authorized Electronic Surveillance	
Status	Rev. 0 published in December 1997 has been elevated to ANSI status. Rev. A published in May 2000.
International Support	J-STD-025 (Rev. 0) satisfied the telecom industry, but not US law enforcement. After an FCC ruling, J-STD-025 Rev. A was produced that included most of what law enforcement had asked for. However, the FCC ruling was overturned by the US Court of Appeals and another version is likely to be produced following a pending FCC ruling. Due to last year's US elections and pending changeover in the leadership of the FCC, a ruling may not be made until late in 2001. Rev. 0 was recently elevated to ANSI status. Rev. A is still at an interim standard status because of the legal uncertainties. A new project has been initiated to investigate requirements for intercept of packet data communications. There is some involvement by standards organizations with a scope outside of the US (e.g. 3GPP).

J-STD-034: Emergency Services Phase I	
Status	Published in December 1997.
International Support	A standard to support Phase I of US FCC requirements for emergency services. It provides both the mobile directory number and cell/sector location to the emergency services system, and also allows callback and reconnect. Although it is based on US requirements, other countries may very well have similar needs.

J-STD-036: Emergency Services Phase II	
Status	Revision 0 published in August, 2000. Addendum 1 has been sent to the TIA for publication. Revision A is under development.
International Support	Phase II E911 supports more accurate location determination, based either on network-based positioning or mobile-assisted positioning. An addendum enhanced support for mobile-assisted position for both TDMA (SAMPS) and CDMA. A second addendum has enhanced support for CDMA MOPD and has added support for TDMA MAHO for positioning. It is likely that the interface to emergency services will be defined as TCP/IP (as opposed to SS7) at least as an option.

J-STD-038: ANSI-41/GSM Interworking	
Status	Approved for publication in March, 2001.
International Support	The TR-46 standard for ANSI-41/GSM interworking. Consists of the following parts: Volume 0: Overview and Network Reference Model. Volume 1: Service Descriptions (e.g. 3-way calling, forwarding, call barring). Volume 2: Information flows (diagrams illustrating how messages flow from ANSI-41 to GSM via the IIF, and vice-versa). Voume 3: Message Mapping (i.e. ANSI-41 message to GSM equivalents and vice-versa).

IS-756/IS-841: Number Portability	
Status	Phase I published as IS-756 in April 1998. Phase II was published as IS-756-A in December 1998. Phase III (MDN-based Message Centers) was published in September, 2000 as IS-841. Further work may be required for number pooling support.
International Support	IS-756 contains no specific international support, but other countries may also be implementing number portability, and may be interested in the contents of this document. Phase I supports MSC routing to ported wireline numbers. Phase II supports portable Mobile Directory Numbers using the same method as for wireline systems (LRN - Location Routing Number). This phase will force the *separation of the MIN and Mobile Directory Number (MDN) and requires the establishment of a MIN Assignment Authority.* Phase III supports Message Centers that are based on Mobile Directory Numbers (MDN) and not Mobile Identification Numbers (MIN). It was published as IS-841. The schedule for implementation of Wireless Local Number Portability has been delayed until November, 2002. There is some talk that Number Pooling (sharing a block of 10,000 numbers between carriers) may require enhancements to LNP standards. No action yet.

IS-847: Roamer Database Validation	
Status	IS-847 has been balloted. Revision A is out for ballot.
International Support	This project allows a HLR to query a serving system to determine whether its roamer agreement table can correctly support its subscribers roaming. A second project is being initiated to extend this project to other network elements. It has been agreed to extend queries from ranges of 10,000 or fewer numbers (suitable for North American MIN's) to an arbitrary range (suitable for IRM codes, IMSI and directory number ranges outside North America).

IP-Based Signaling Networks	
Status	PN-4762 is under development
International Support	IP-based signaling could potentially replace SS7. This has some advantages, including: • Lower cost equipment • No international signaling barriers • Higher speed signaling links • One network for voice, user data and signaling. Considerations are: • Transport protocols • Routing (e.g. STP versus IP router) • Address translation (e.g. global title versus DNS) Although there is much interest in IP, it looks as though this project may be abandoned in favor of work on 'All-IP' systems.

ESN Issues	
Status	TSG-S has a project to examine issues with the uniqueness of the ESN. A TR-45 ad hoc is also looking at these issues.
International Support	There is growing concern that 32 bit ESN codes will be exhausted in the next few years, and little desire to migrate to 56 bit replacements. One of the potential solutions is to re-use older ESN codes, as most of the codes assigned to manufacturers in the mid-1980's were never used. Even if duplicate ESN's do occur, no problems arise as long as at least one of the mobiles affected is analog (which is true for virtually all ESN's assigned in the 1980's). A letter has been sent by the TIA to the FCC requesting permission to reuse blocks of ESN codes that were assigned, but for which the likelihood of mobiles still existing is low. The first 14-bit manufacturer codes have been assigned. This will extend the life of the ESN resource. There has been some talk about migrating future standards to the GSM IMEI identifier which is much larger. 3GPP2 TSG-S and TR-45 ad hoc on UIM/ESN are also looking at the mobile equipment identifier issues.

WIN: Wireless Intelligent Network	
Status	WIN Phase I was published as IS-771 in July, 1999. WIN Phase IIa (Prepaid) was published as IS-826 in September, 2000. WIN Phase IIb (e.g. freephone) was approved for publication as IS-848. WIN Phase III is under development
International Support	WIN Phase I provided triggers for voice controlled services and incoming call screening. It is being modified to better support global titles (e.g. for international communications). WIN Phase IIa supported prepaid systems that do not require loopback trunks or routing calls through external switches. WIN Phase IIb supports other services that integrate special billing services with call processing (e.g. wireless freephone). WIN Phase III will provide support for commercial location-based services.

Relevant Activities of Standards Bodies

3GPP	
Purpose	To develop specifications for 3G systems, largely for current users of GSM and ANSI-136 TDMA systems.
Activities	The following TSG's are now meeting: TSG-CN Core network (MAP) TSG-GERAN GSM standardization (inherited from ETSI). Includes GPRS and EDGE. TSG-RAN 3G Radio Access Networks (UTRAN, W-CDMA) TSG-SA Service and system aspects (Stage I descriptions, administration) TSG-T Terminal specifications Partners in this project are: CWTS Chinese Wireless Telecommunications Standards organization (http://www.cwts.org) TTA Korea Telecommunications Technology Association (http://www.tta.or.kr) ARIB Japanese Association of Radio Industries and Businesses (http://www.arib.or.jp) TTC Japanese Telecommunication Technology Committee (http://www.ttc.or.jp) ATIS North American Alliance for Telecommunications Industry Solutions (http://www.atis.org) ETSI European Telecommunications Standards Institute (http://www.etsi.org)

3GPP2	
Purpose	Mandated to develop specifications for the 3rd generation evolution of standards based on cdma2000.
Activities	The following TSG's are now meeting: TSG-A "A" Interface (IS-634). Associated with TR-45.4. TSG-C 3G CDMA systems, including 1XRTT, 1xEV-DO, etc. Associated with TR-45.5. TSG-N TIA/EIA-41 and WIN. Meets with TR-45.2. TSG-P Packet Data. Associated with TR-45.6. TSG-S Requirements definition, OA&M, Network Reference Model, etc. Partners in this project are: CWTS Chinese Wireless Telecommunications Standards organization (http://www.cwts.org) TTA Korea Telecommunications Technology Association (http://www.tta.or.kr) ARIB Japanese Association of Radio Industries and Businesses (http://www.arib.or.jp) TTC Japanese Telecommunication Technology Committee (http://www.ttc.or.jp) TIA North American Telecommunications Industry Association (http://www.tiaonline.org)

TIA TR-45.1 Subcommittee	
Purpose	The development of analog air interface standards, including the "core" analog control channel standard used by dual-mode digital air interface standards.
Activities	• Still balloting IS-817 (mobile-assisted position determination).

TIA TR-45.2 Subcommittee (and 3GPP2 TSG-N)	
Purpose	The development of standards related to the network support of cellular and PCS systems based on TIA air interfaces.
Activities	• Development of ANSI/TIA/EIA-41 Rev. E, completing the internationalization of intersystem operations. • Development of a R-UIM standards for, among other things, better interoperability with GSM systems. • Roaming between ANSI-41 and GSM systems, particularly one-way ANSI-41 to GSM. • PN-4720 for CDMA packet data network support. • WG VI activities, see below.

TIA TR-45.2 Subcommittee Working Group VI	
Purpose	Development of standards to assist with the implementation of TIA intersystem standards outside the United States and Canada.
Activities	• Development of *TIA TSB-29 Revision D.*. • Development of PN-4863/IS-875, international calling number identification, storage and callback. • CDMA Packet Data (PN-4720) is out for ballot. • Positioning for commercial services (PN-4747) is under development. • Several projects for GSM/ANSI-41 interworking are under development.

TIA TR-45.3 Subcommittee	
Purpose	Standardization of TDMA (ANSI-136) digital cellular and PCS radio interfaces.
Activities	TIA/EIA-136 Revision D is being planned for publication in 4Q'2001. Plans are to include a reduced list of capabilities: i. Enhanced GHOST. ii. Addition of signaling on the analog Control Channel to support System Assisted Mobile Positioning through Satellite (SAMPS). iii. Multilingual Enhancements (e.g. for SMS). iv. R-UIM Application Toolkit Enhancements. v. Hand-off Improvements. vi. Tandem free operation (no voice coders on some mobile-to-mobile calls). The importance of this committee is declining, as most of its North American promoters have decided to implement GSM systems in future.

TIA TR-45.4 Subcommittee (and 3GPP2 TSG-A)	
Purpose	Standardization of the BS/MSC "A" interface.
Activities	• Nothing report.

TIA TR-45.5 Subcommittee (and 3GPP2 TSG-C)	
Purpose	Standardization of CDMA digital cellular and PCS radio interfaces.
Activities	• Nothing to report

TIA TR-45.6 Subcommittee (and 3GPP2 TSG-P)	
Purpose	Created in 1997 to standardize CDPD cellular digital packet data technology. Now developing 3G packet data standards in conjunction with TSG-P.
Activities	• Nothing to report.

3GPP2 TSG-S	
Purpose	Created in 1997 to standardize CDPD cellular digital packet data technology. Now developing 3G packet data standards in conjunction with TSG-P.
Activities	• Nothing to report.