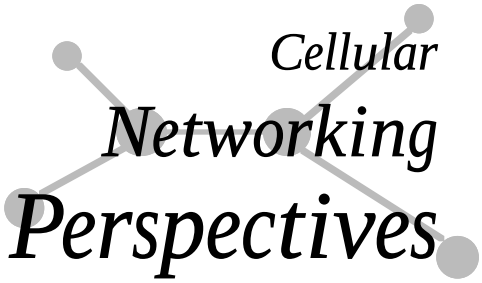
Draft Liaison Report to IFAST Meeting #15



Cellular Networking Perspectives Ltd.
2636 Toronto Cresc. NW
Calgary, AB T2N 3W1
Canada
Phone: +1-403-289-6609
Fax: +1-403-289-6658
E-Mail: crowed@cnp-wireless.com
Contact: David Crowe

Destination

Telecommunications Industry Association
Engineering Subcommittee TR45.2
Intersystem Operations

Abstract

A report on activities in the TIA TR-45.2 subcommittee and related TR-45 standards groups related to international applications of TIA wireless standards.

Recommendation

Review, and approve as the official TR-45.2 liaison to IFAST, with any necessary modifications. This cover page will be removed before presentation to IFAST.

Copyright Statement

January 19th, 2001

TELECOMMUNICATIONS INDUSTRY ASSOCIATION

To: Fred Gaechter, IFAST Chairman

cc: Ed Hall, ATIS and Syed Hosain, Aeris: IFAST convenors
Megan Hayes, ATIS: IFAST Secretariat
IFAST Participants

Subject: TR-45.2 Liaison Report to IFAST

From: Cheryl Blum, Chair TIA TR-45.2

TIA subcommittee TR-45.2 is pleased to provide the following information as a liaison report to the IFAST meeting. Please contact me or David Crowe if you need further information.

Regards,

Cheryl Blum

2500 Willson Blvd. • Suite 300 • Arlington, VA 22201
703/907-7700 • FAX: 703/907•7727

Highlights!

International CNI and Callback	PN-4863 standardizes procedures for international calling number identification, storage and callback. It is soon to be published.
TSB29-D	Approved for publication. IRM information has been removed.
GSM Roaming	New projects have been initiated to allow CAVE-based authentication to be used in ANSI-41-based mobiles when roaming in GSM networks.
ESN	TIA is considering re-using old ESN manufacturer codes to avoid exhaustion of this resource.
Prepaid	IS-826, the WIN Phase II prepaid standards was published in September, 2000.

Status of TIA TR-45.2 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 in V&V. The remainder of the document is still being integrated.
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. Integration of this document is proceeding, and it likely will be approved in pieces.

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. http://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 ballot 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)

TIA/EIA-124: Call Detail Records	
Status	Revision B published July, 1999. Revision C published August, 2000. Revision D under development.
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. Rev. A published in May 2000.
International Support	The first version of this satisfied the telecom industry, but not US law enforcement. After an FCC ruling, a second version 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. However, due to the resignation of the FCC chairman (Kennard), and many other expected personnel changes, it may be several months before this is produced.

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. Addendum 2 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 may convert the Wireless/Emergency Services interface (ESP) from ASN.1 to XML.

IS-756: 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 is approved for ballot.
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 will support Message Centers that are based on Mobile Directory Numbers (MDN) and not Mobile Identification Numbers (MIN). The schedule for implementation of Wireless Local Number Portability has been delayed until November, 2002.

IS-847: Roamer Database Validation	
Status	IS-847 has been balloted.
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.

GSM Interworking	
Status	Several projects are under consideration: PN-4925 ANSI-41 network enhancements to support SIM roaming to GSM. PN-4926 Interworking and Interoperability Function (IIF) enhancements to support two-way SIM roaming ANSI-41 <-> GSM PN-4927 IIF enhancements for one way SIM roaming to GSM.
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 addition of one simple message to ANSI-41. It removes the need for inter-working functions to retain subscription data for mobiles.
Status	TIA TR-46.3 is also developing ANSI-41/GSM interworking capabilities.

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)

ESN Issues	
Status	No project active at this time
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). Any action on this may require FCC approval of an industry consensus.

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. 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 TIA 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	Created January 27, 1999 to develop specifications for the 3rd generation evolution of standards defined in TR-45.

Activities	The following TSG's are now meeting:	
	TSG-A	"A" Interface (IS-634)
	TSG-C	3G CDMA systems, including 1XRTT, 1xEV-DO, etc.
	TSG-N	TIA/EIA-41 and WIN
	TSG-R	Integration with W-CDMA (no activities at this time)
	TSG-P	Packet Data
	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	• none to report

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, international calling number identification, storage and callback.

TIA TR-45.3 Subcommittee	
Purpose	Standardization of TDMA (ANSI-136) digital cellular and PCS radio interfaces.
Activities	• Nothing to report.

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

TIA TR-45.5 Subcommittee (and 3GPP2 TSG-C)	
Purpose	Standardization of CDMA digital cellular and PCS radio interfaces.
Activities	• Revising their UIM specification (IS-820).

TIA TR-45.6 Subcommittee (and 3GPP2 TSG-P)	
Purpose	Created in 1997 to standardize CDPD cellular digital packet data technology, and is now developing 3G packet data standards.
Activities	• Completed the development of 3G packet data standards (IS-835/TSB-115). • Will be promoting CDPD to an ANSI standard.

TIA TR-45.7 Subcommittee	
Purpose	Created in 1998 to standardize network management protocols.
Activities	• This subcommittee is being disbanded.