Third-Generation (3G)
Mobile Broadband

US Standards Bodies & US Industry -
-Their Roles in Making 3G Happen
August 10, 1999, Dan Bart, TIA
Telecommunications Industry Association (TIA)

- A Full Service Trade Association representing 1,000 member companies that provide communications and information technology products, materials, systems, distribution services and professional services in the United States and around the world
Telecommunications Industry Association (TIA)

- Services to members include:
  - Trade Shows
  - Domestic Public Policy
  - Foreign Affairs, Policy, Trade Missions, Reverse Trade Missions, Trade Promotion
  - Marketing Statistics
- An ANSI-accredited Standards Development Organization (SDO)
Telecommunications Industry Association (TIA)

- TIA Standards and Technology Department comprised of five product Divisions
  - Wireless Communications Division
  - Satellite Communications Division
  - Fiber Optics Division
  - User Premises Equipment Division
  - Network Equipment Division

www.tiaonline.org
TIA Engineering Committees

- **TR-8**
  Mobile and Personal Private Radio Standards

- **TR-14**
  Point-to-Point Communications Systems

- **TR-29**
  Facsimile Systems and Equipment

- **TR-30**
  Data Transmission Systems and Equipment

- **TR-32**
  Personal Radio Equipment

- **TR-34**
  Satellite Equipment and Systems

- **TR-41**
  User Premises Telephone Equipment Requirements

- **TR-42**
  Telecom. Cabling Infrastructure

- **TR-45**
  Mobile and Personal Communications Systems

- **TR-46**
  Mobile and Personal Communications

- **FO-2**
  Optical Communications Systems

- **FO-6**
  Fiber Optics
Standards Participation

✦ Approx. 1,500 individuals listed in TIA database
✦ Approx. 250 member companies of TIA are represented
✦ Approx. 150 companies which are not members of TIA are represented

✦ Participation is open to any party having a direct and material interest, Int’l liaisons
✦ At present, voting limited to organizations that have a permanent place of business in the U.S., Mexico, or Canada
Telecom Standards Developers in the US who are major US contributors to ITU

- In the United States, there are two major accredited standards developers for telecommunications
  - TIA
  - Committee T1

- Both are accredited by the American National Standards Institute (ANSI)
Telecommunications Standards
More Global than Ever

✦ NAFTA
✦ CITEL
✦ APEC
✦ ETSI
✦ GSC
✦ RAST
✦ ITU/IMT-2000
✦ 3GPPs
Players in the international standards arena

- ITU is the “Pre-eminent” global standards developer for telecommunications
  - Most countries/regions of the world do not contribute to standards development in ITU

- International Organization for Standardization (ISO) and International Electrotechnical Commission (IEC) and Joint Technical Committee 1 (JTC1), Information Technology, are other sources of international standards. Recently, IETF.
Global Standards Collaboration (GSC)

- GSC5 will be hosted by TIA/T1 in Williamsburg, VA in 8/99. Invitees include:
  ACIF, TSACC, TTA, TIA/T1, TTC/ARIB, ETSI, ITU-T, ITU-D, ITU-R, IISP, ATMF, IETF, JTC-1, China, Mexico, India, CITEL
- 3G/IMT-2000 topics on the agenda
RAdio STandardization (RAST)

- Basically same SDOs (countries) as GSC
- Similar purpose to GSC, except radio
- Meets about every 9 months
- RAST7 meeting just held in January, 1999, next meeting, RAST8, will be co-located with GSC5 in Williamsburg, VA in 1999
Global Market for Mobile Communications

✦ According to ITU, expected to grow from approximately 200 million users in 1998 to nearly 2.4 billion by 2015

✦ Current Market Saturation Less Than 10%

✦ 3G Systems Intended to Provide “Anytime, Anywhere” Services
IMT-2000

- International Mobile Telecommunications-2000
- The ITU vision of global wireless access in the 21st century, including mobile and fixed access, IMT-2000 is aimed at providing direction to the many related technological developments in this area to assist the convergence of these essentially competing wireless access technologies.
- A/k/a Third Generation or “3G”
IMT-2000

International Mobile Telecommunications 2000 (IMT-2000) Initiative with User Benefits to Include:

- Advanced Multi-Media Services
- Data Rates up to 2 Mbps
- Next-Generation Mobile Internet and Advanced Packet Services
- Global Roaming
# IMT-2000 June 1998 Proposals

<table>
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<tr>
<th>Proposal</th>
<th>Type</th>
<th>Description</th>
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<td>UWC-136</td>
<td>Terrestrial</td>
<td>Universal Wireless Communications</td>
<td>USA TIA TR-45.3</td>
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<tr>
<td>WIMS W-CDMA</td>
<td>Terrestrial</td>
<td>Wireless Multimedia and Messaging Services</td>
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<td>cdma2000</td>
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<td>SAT-CDMA</td>
<td>Satellite</td>
<td>49 LEO Satellites in 7 planes at 2000 km</td>
<td>South Korea TTA</td>
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<td>Terrestrial</td>
<td>Digital Enhanced Cordless Telecommunications</td>
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<td>TD-SCDMA</td>
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<td>Time-Division Synchronous CDMA</td>
<td>China Academy Telecommunications Technology</td>
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<td>SW-CTDMA</td>
<td>Satellite</td>
<td>Satellite Wideband Hybrid CDMA/TDMA</td>
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<td>ICO RTT</td>
<td>Satellite</td>
<td>10 MEO Satellites in 2 planes at 10,390 km</td>
<td>ICO Global Communications</td>
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<td>W-CDMA</td>
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<td>Inmarsat</td>
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Figure 1. Access Technology Categories

Division by Access Technologies

ITU Standards

CDMA (three modes)

Direct sequence Mode

Multi-carrier Mode

TDD Mode

WP-CDMA

Global CDMA I TTA

Global CDMA II TTA

WIMS TIA TR46

WCDMA/NA TIP1

cdma2000 TIA TR45

UTRA ETSI SMG

W-CDMA ARIB

TD-SCDMA CATT

UWC-136 TIA TR45

DECT EP DECT

IMT-2000 Family of Systems
Radio Transmission Technologies

Suggested Starting Point in March

Proposals as of 6/30/98

CDMA (three modes)
U.S. Standards Process
Terrestrial Wireless (2G, 3G)
Standards
TIA WCD 3G ad hoc achieved its mission

- Given complexities of USA system, at request of TIA Board, WCD established 3G ad hoc to work:
  - harmonization,
  - communication to government on 3G, and
  - spectrum

- 3 Task Groups established

- By March 1999 WCD meeting, work finished and ad hoc proposed to be disbanded.
European Telecommunications Standards Institute (ETSI)

- Born in 1988 - less than 10 staff
- 10th Anniversary 1998, 100 staff, $30M
- An ESO like CEN, CENELEC
- Big push to make ETSI standards, Global Standards
- In 1998, proposed new “Partnership Project” approach for 3G
Third-Generation Partnership Projects (3GPPs)

- ETSI proposed 3GPP in March 98 to TIA/T1
- Accelerate Specifications for 3G
- ETSI focus GSM/UTRA
- Launched in Dec 98
- 5 SDOs
- Then 800K Euro support, now 7 ME

- ANSI International Committee reviewed
- Urged ANSI SDOs to participate
- TR-45 decision in Sept 98, ANSI-41 and related RTTs
- Meetings 9/98, 10/98, 12/98 with SDOs
- 3GPP2 launched 1/99
  - 4 SDOs
Definition of the Third-Generation Partnership Project

The 3GPP2 will provide globally applicable technical specifications for 3rd generation mobile systems based on evolved IMT 2000 technologies, to be transposed by relevant standardization bodies (Organizational Partners) into appropriate deliverables (e.g., standards). WWW.3GPP2.ORG
Overview

3GPP2

Steering Committee

Technical Specification Groups

Support Functions

Partners’ Standardization Process

Partner deliverables

International Recommendations

ITU

3GPP2

Organizational Partners

Market Representation Partners

Regulators/Governments

Mandates

INDIVIDUAL MEMBERS

IMT 2000 Contributions

Technical Contributions

Technical Specifications

Technical Contributions

Partners’ Standardization Process

Partner deliverables

International Recommendations

International Recommendations
Participants in 3GPP2

- USA (TIA – Telecommunications Industry Association)
- Korea (TTA – Telecommunications Technology Association)
- Japan (TTC – Telecommunication Technology Committee)
- Japan (ARIB - Association of Radio Industries and Businesses)
- China (CWTS - China Wireless Telecommunication Standard group)
- Observers also, ETSI, TSACC, Australia
Operators’ Harmonization Group (OHG)

✦ Series of meetings to define what Operators need from 3G
✦ Status reports to ITU, 3GPPs, SDOs
✦ Manufacturers invited to last meetings
✦ May 1999
   Recommendations for 3- Mode CDMA

✦ OHG Recommendations accepted by US TABD in June 1999
✦ OHG accepted in Beijing by TG 8/1 June 1999
✦ 3GPP in Nice in July
✦ 3GPP2 in Montreal in July
Workshops Planned for August and September

- Direct Sequence (DS) on evolved ANSI-41
- Multicarrier (MC) on evolved GSM/MAP
- Network interworking requirement of OHG recommendations
- www.3gpp.org and www.3gpp2.org for more information
3G Family of Standards

RF Interface
- TDMA
- UWC-136

Core Network
- ANSI-41
- GSM MAP

CDMA
- cdma2000, W-CDMA, TDD
Internet and IETF involvement in International Standards

- ITU-T has adopted referencing Recommendation for IETF documents
- TIA and T1 working with IETF
- ETSI TIPHON working with IETF
- TIA and T1 working with TIPHON
- ITU-T SG 13 lead on Internet/Telephony
CONCLUSIONS

✦ For the Telecom Sector, Global Standards are what the market is demanding, especially 3G

✦ The world’s telecom SDOs including T1, ETSI, and TIA are cooperating more than ever to meet the market demand

✦ ITU is pre-eminent, but the ITU process needs acceleration

✦ All key SDOs and industry players need to be part of the process
Questions??
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