Development of cdma2000 1xEV-DV/1xEV-DO in 3GPP2
Current Overall Status

• 1xEV-DO
  – Standards published
    » Air interface specification, C.S0024
    » Performance specifications, C.S0032 and C.S0033
    » A interface (IOS) modifications, A.S0007
    » Several other areas of modifications (e.g., OTA)
  – Currently in maintenance mode

• 1xEV-DV
  – Currently in progress
  – Working to updated ITU-R date of May 31, 2002 for transposition to be completed by at least one SDO
  – Will be part of Revision C of cdma2000
Basic 3GPP2 Process

TSG-C

TSG-S
Stage 1 Process

WG 5 Proposal Development

WG 1, 2, 3 Specification Development

WG 4 Performance Specification Development

TSG-A, N, and P Specification Development
Developed a set of requirements for 1xEV-DV, S.R0026
Requirements were a set of requirements; no verification done could be met
Main requirements
- Relative to cdma2000, at least two times the number of concurrent voice calls for a single radio channel
- Peak data rates (data only): at least 2.4 Mbps on the forward bearer channel
- Peak data rates (data only): at least 2 Mbps (1.25 Mbps in a vehicular environment) on the reverse bearer channel
- Average throughput per sector (data only) 600 kbps on both forward and reverse bearer channel
- Multiple traffic types, support for QoS
Main constraints
- Rates and throughputs to be measured with standard BS antenna configurations and with existing speech codecs in normal modes
- Channel used to support 1xEV-DV must be able to support IS-95 and cdma2000 mobiles
TSG-C WG 5 Process

- Provide technical assessment, evaluation, and consolidation of proposals
- Select an air interface framework, architecture, and component technologies
- Satisfy the requirements contained in the 1xEV-DV Stage 1 Description developed in TSG-S
Decision Criteria Matrix

- Develop what is required in Framework Evaluation Package
- Takes TSG-S requirements and turn them into greater technical detail
  - Data rates
  - Capacity and throughput
  - Coverage (link budgets)
  - . . .
- Adds additional information that is needed to understand and analyze the proposal
  - Peak-to-average ratios
  - Required $E_b/N_t$, $E_b/I_{or}$, etc
  - . . .
- Want proposers to provide sufficient information so that
  - Other companies can fully understand the proposal and perform analyses to verify others’ results
  - Comparison matrices can be developed
Performance Evaluation Strawman

- To provide common methods (and necessary technical details) to analyze the performance of proposals
- Agreed upon analysis methods permit the results from different companies to be compared
- Link layer simulations including
  - Power control delays
  - Interference characterization
- System simulations including
  - Number of cells
  - Interference characterization
  - Mobility modeling
  - Computation of path losses
  - Modeling of feedback mechanisms
  - Modeling of required $E_b/N_t$s
  - Modeling of antenna characteristics
- Required outputs
TSG-C WG 5 FL Status

- FL framework proposals submitted results in accordance with decision criteria and evaluation methodology strawman documents
- Worked to resolve inconsistencies in simulation differences
- Decided upon a path proceed forward, primarily consisting of one proposal, with
  - Incorporation of CDM/TDM
  - A number of open study items; targeted closure December 2001
- Currently in process of
  - Resolving all open study items
  - Incorporating component proposals
- Once closed, will hand off to Working Groups 2 and 3 for detailed text development
TSG-C WG 5 RL Status

- Currently in the process of analyzing proposals
- Once basic design is developed and refined, then will hand off to Working Group 2 and 3 for detailed text development
Working Group 5 Deliverables

• 1xEV-DV system design
• Description of requirements that are believed to have been met or not met in framework
• Analysis of expected performance
• Open items or minor components (can be integrated in Working Group 2 and 3)