Opportunities for CDMA2000 in India

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CDMA2000 Air-Interface

IS-856
- Rev 0 (1x EV-DO)
  - Data only
- Rev A
  - VoIP

IS-2000
- Rev 0 (1xRTT)
  - Integrated voice and data
- Rev A
- Rev D (1x EV-DV)
  - Integ. voice and data or VoIP

2002 2003 2004 2005 2006 2007

CDMA2000 1X
CDMA2000 1xEV-DO
CDMA2000 1xEV-DV
Increase Revenue with High-Speed Packet Data

• Lower cost will allow operator to offer cheaper services and reach a broader customer base

• Better user experience with 1xEV-DO will allow services which will attract new users

• Wireless data market is a brand new market allowing the operator to act as Wireless ISP
1xEV-DO Rev A

- Advantages over 1xEV-DO Rev 0
  - Improved Forward Link from 2.4 Mbps to 3.1 Mbps
  - Improved Reverse Link from 153.6 kbps to 1.8 Mbps
  - Improved Support of low latency applications, i.e. VoIP, Gaming

- Ericsson Strengths with 1xEV-DO Rev A
  - Available across entire Ericsson portfolio
    - Compact Equipment
    - High Capacity
    - Common Platforms
    - True 3G
### 1xEV-DO Capacity

<table>
<thead>
<tr>
<th>USER TYPE</th>
<th>FL</th>
<th>RL</th>
<th><em>CAPACITY</em></th>
<th>USAGE ASSUMPTION PER USER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobile User</td>
<td>&gt; 200 kbps for 80% of the users</td>
<td>&gt; 40 kbps</td>
<td>300 active subs</td>
<td>2 MB during the busy hour</td>
</tr>
<tr>
<td>Residential Broadband</td>
<td>Cell edge data rate = 300 kbps for 90% of the users</td>
<td>Cell edge data rate = 40 kbps</td>
<td>160 active subs</td>
<td>2 MB during the busy hour Usage per month = 350 MB</td>
</tr>
<tr>
<td>Residential Dial-Up</td>
<td>Cell edge data rate = 76.8 kbps for 90% of the users</td>
<td>Cell edge data rate = 19.2 kbps</td>
<td>360 active subs</td>
<td>2 MB during the busy hour Usage per month = 150 MB</td>
</tr>
</tbody>
</table>
Reducing Cost with 1xEV-DO: Link Budget Improvement

**FOR EXISTING NETWORKS**
Higher data rate within the same cell radius

- 614.4 kbps* with 1xEV-DO
- SAME CELL RADIUS
- FASTER
- 38.4 kbps* with 1X

**FOR GREENFIELD OPERATORS**
Same data rate with twice the cell size

- 153.6 kbps* with 1xEV-DO
- INCREASED CELL RADIUS
- WIDER COVERAGE
- 38.4 kbps* with 1X

* AT CELL EDGE
Potential 1xEV-DO Customers

**RESIDENTIAL BROADBAND**
- DSL Alternative

**RESIDENTIAL DIAL-UP**
- Dial-Up Alternative

**MOBILE PROFESSIONAL**
- E-mail, Internet and corporate application access
- Proven willingness to pay

**MOBILE CONSUMER**
- E-mail, Internet and streaming applications
- Devices: PCMCIA cards, phones

Easy provisioning through OTA • 1xEV-DO access module or PCMCIA cards for laptops • “Always On” feature • Limited mobility
CDMA2000 1xEV-DO Market Overview

- Nearly 12M Subscribers on 18 Networks
  - Commercial Networks
    - SK Telecom, KT Freetel, KDDI, Verizon, VIVO, PT Wireless, APBW, Alaska Wireless, Bell South Guatemala, Vesper, Eurotel, Smartcom PCS, Pelephone, Telecom New Zealand, Verizon Puerto Rico, Telemobil, Telstra, Movilnet
  - Approximately 20 more networks planned
  - At least 6 trials ongoing
- Over 100 Devices
  - Handsets and PC Cards
- Achieved Data Rates
  - Between 300 and 500 kbps average
  - 2.4 Mbps peak

7 of the World’s 10 largest CDMA operators have launched or plan to launch 1xEV-DO

1xEV-DO Data Market Segments

- **Residential Broadband**
  - High speed home service
  - Easy deployment
  - Cover areas that lack cable/DSL

- **Mobile Professional**
  - Premium, differentiated service for laptops
  - Target mobile professionals (healthcare, sales)

- **Mobile Consumer**
  - New market beyond PC/Laptop access
  - Largest target market
  - Photos, video, broadcast, gaming

Source: CDG, 3G Today, Press Releases
Benefits of 1xEV-DO and Advantages for End-Users

OPERATOR:
- Global uptake of DO
  - Global support and experience
  - Broad handset support
  - Roaming
- Expand services offered to users
- Address hotspots (incl. WLAN)
- Focus on target markets
  - Enterprise
  - Youth – e.g. University Campus
- Graceful evolution from CDMA2000 1X
- Market leadership

END-USER:
- Higher data speeds
- Broader service offering
  - VOD, MOD, internet access, broadcast, gaming
- Backward compatible with 1X
- Supported by 1X voice
- Mobility – wireless data
- Hotspot coverage
Higher Data ARPU with 1xEV-DO

- 1xEV-DO ARPU compared to 1X data service for SK Telecom, KTF, KDDI and Verizon.
- Vesper service plan compared to premium dial-up Internet access plan offered by Brazil’s leading ISP, UOL.
- Data ARPU calculated using data subscribers only.

Notes

Sources: Airvana, company websites, investor presentations
Opportunities for India - based on global trends

- Voice services remain prime contributor to ARPU
- Growing data demand and ARPU
- Expanding subscriber and operator base
- Increase in ARPU after each technology step
- Instant Talk
  CDMA2000 1xEV-DV
- Enterprise applications, LBS, MMS, video
- International roaming, handsets – volume and variety
- CDMA2000 1xEV-DO
  CDMA2000 1xEV-DV
In summary –

- India should see similar trends....

- Market adaptations for customized application would act as a catalyst....

- Data in rural areas would play a big role....

- Low cost handsets will influence penetration to a large extent....