Mobile Wireless Services and Technology in Ubiquitous and Embedded Computing: Trends

Current Status and Trends of Wireless Mobile in Mexico

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Objective

Present an overview of the cellular industry in Mexico, as well as its trends and future expectations
Contents

- Current trends and situation
- Short term implications
- Global industry trends
- Long term implications
- Conclusions
We have seen a fast growth in the past

• Fast adoption of mobile voice communications, since it appeared in Mexico in 1989
• In the first half of 2006, the number of subscribers has surpassed 51 million 140 thousand (47.8 % penetration)
• 8% increase in penetration from 2004 to 2005, and 4% increase in penetration in the first half of 2006

* Mexican population ranges around 100 Million citizens; estimated by the end of 2005 is 107.5 million
Source: COFETEL (Federal Telecommunications Commission)
Mexico has potential for even more growth

- Mexico has a lower penetration than countries like Argentina, Brazil, Colombia & Venezuela; even though it has similar GDP.
- An 8% growth to reach 52% overall penetration implies 8.5 million additional subscribers; which (assuming low utilization of $10USD/month) imply additional income of ~85 million USD/month.

Source: UIT, COFETEL (Federal Telecommunications Commission)
What Mexican consumers look for?

Most popular market demands

• Pay few (low utilization), rather than low fares
• Easy to install and use
• Convenience to buy and add time
• Local coverage at low cost
• Added value features
  – Chat & messaging
  – Take/send pictures
  – Download/play music
  – Download/view photos, videos
  – Play videogames
  – Watch TV

94% choose the “prepaid” form of service, even if this option can be more expensive than the subscribed (“post payment”) form of service.
Five service providers, with one incumbent

Mobile line participation
100% = 46.6 Million lines in 4Q05

<table>
<thead>
<tr>
<th>Service Provider</th>
<th>Participation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Telcel</td>
<td>35.9</td>
</tr>
<tr>
<td>Telefonica</td>
<td>6.5</td>
</tr>
<tr>
<td>Iusacell</td>
<td>1.9</td>
</tr>
<tr>
<td>Unefon</td>
<td>1.4</td>
</tr>
<tr>
<td>Nextel</td>
<td>0.9</td>
</tr>
</tbody>
</table>

Source: The Competitive Intelligence Unit
Telcel (Telmex, AT&T) key success factors

- First player in the market
- Exploits 77% of cellular subscribers & coverage over 99% population
- Protected by regulation
- Aggressive marketing
- Promotion of loyalty and high utilization
- Extensive distribution chain: group retail stores, self stores, concession stands and stores, salespeople at the streets
- Leverages synergies & economies of scale, with group companies
Yet, there is a strong fight for the market

- Numeric portability
- Interconnection between providers (cost)
- Who calls pay
- Triple play

- Offer photos, music & videos, for download
- Mobile TV broadcasting
- Mobile internet and e-mail
- Subsidize cool cellular phones, and keep exclusivity
- Shopping, electronic payments & financial services

- Strengthening of brands
- Encourage utilization:
  The more you talk, the less you pay
Short terms implications

- Stronger adoption in the market
- Large investment
- Rich/complex services
  - MMS
  - TV to the cellular
  - Shopping and financial services
- Fast migration to new technologies
- Lower fees for interconnection between carriers and for fixed lines
- Facility to exchange service providers
However, the market is changing

<table>
<thead>
<tr>
<th>Changing worldwide trends</th>
<th>Implications for cellular industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>• New competing technologies:</td>
<td>• Globalization around the world</td>
</tr>
<tr>
<td>– VoIP</td>
<td>• Consolidation with other industries (e.g., consumer</td>
</tr>
<tr>
<td>– Wi/fi, WiMax</td>
<td>electronics, communication services, content providers),</td>
</tr>
<tr>
<td>– PLC</td>
<td>to:</td>
</tr>
<tr>
<td>• New complementary technologies:</td>
<td>– Support the establishment of wireless, smart, personal</td>
</tr>
<tr>
<td>– Bluetooth, WUSB</td>
<td>environment area networks</td>
</tr>
<tr>
<td>• Convergence of voice, data and video</td>
<td>– Provide mobile/fixed broadband access everywhere and</td>
</tr>
<tr>
<td>• Consolidation across countries, value</td>
<td>anytime, supporting triple play</td>
</tr>
<tr>
<td>chain, and industries, to offer better</td>
<td>– Provide rich content for the subscribers</td>
</tr>
<tr>
<td>improved services, gain synergies and</td>
<td></td>
</tr>
<tr>
<td>leverage economies of scale</td>
<td></td>
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</tbody>
</table>
Consolidation with other industries blurs the idea of cellular communications

<table>
<thead>
<tr>
<th>Devices</th>
<th>Access</th>
<th>Services</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>PC</td>
<td>Fixed access</td>
<td>Local voice</td>
<td>Broadcast TV</td>
</tr>
<tr>
<td>Laptop</td>
<td>– Telephone line</td>
<td>Long distance</td>
<td>Video on demand</td>
</tr>
<tr>
<td>Telephone</td>
<td>– Cable TV line</td>
<td>Mobile voice</td>
<td>Music on demand</td>
</tr>
<tr>
<td>Cell phones</td>
<td>– Power supply line</td>
<td>VoIP</td>
<td>Photos</td>
</tr>
<tr>
<td>Camera</td>
<td>– Mobile phone cells</td>
<td>SMS, MMS</td>
<td>Movies</td>
</tr>
<tr>
<td>TV</td>
<td>– WiFi/WiMax cells</td>
<td>Voice messages</td>
<td>Gaming</td>
</tr>
<tr>
<td>DVD, VCR</td>
<td>– Wireless (3.4GHz)</td>
<td>Video calls</td>
<td>Applications</td>
</tr>
<tr>
<td>Music player</td>
<td></td>
<td>Internet &amp; e-mail</td>
<td></td>
</tr>
<tr>
<td>PDA´s</td>
<td>Mobile access</td>
<td>Shopping</td>
<td></td>
</tr>
<tr>
<td>...</td>
<td>– Mobile phone access</td>
<td>Banking</td>
<td></td>
</tr>
<tr>
<td></td>
<td>– WiFi/WiMax access</td>
<td>Financial services</td>
<td></td>
</tr>
</tbody>
</table>

* Software and application developers included in devices
Cellular providers in Mexico begin to compete and establish alliances with other industry players.

- Compete with access & service providers
- Establish alliances with equipment and content providers
Long term impacts for Mexico

- Mobile/fixed broadband access anywhere, supporting the triple play
- Pricing based on mobile/fixed amount of bits
- Intelligent Personal devices that conform user environment area networks; and optimize communication resources transparently to the user
- Few consolidated groups of companies that offer complete solutions including: devices, access, services and content
Conclusion

• Mexico is an attractive market for cellular communications

• There are four players, but one dominates the market

• Current competition stands on legal fights, marketing and value added services

• Due to worldwide technology and industry changes, cellular industry is being incorporated into a larger one, that includes: devices, access, services and content

• Consolidation and globalization will bring to subscriber a whole new experience around their personal electronic devices, and communication capabilities
APPENDIX

SUPPORT SLIDES
While 99.9% of the population has access to the cellular signal, penetration is low.
Mobile has become the preferred option for voice communications

Mobile lines have reached 50 million subscribers, substituting the use of fixed lines

Source: COFETEL (Federal Telecommunications Commission)
## Prices reflect current competition framework
(Prices for prepaid plans, in pesos, without 15% Tax)

<table>
<thead>
<tr>
<th></th>
<th>Local</th>
<th>Long distance (US, Canada)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cell to cell Same Co.</td>
<td>Cell to cell Other Co.</td>
</tr>
<tr>
<td>Telmex</td>
<td>$0.7 - 1/min (+1yr)</td>
<td>$4/min</td>
</tr>
<tr>
<td></td>
<td>$5/min (new)</td>
<td></td>
</tr>
<tr>
<td>Telefónica</td>
<td>$5 unlimited</td>
<td>$3/min</td>
</tr>
<tr>
<td>Iusacell</td>
<td>$0*</td>
<td>$3.5/min</td>
</tr>
<tr>
<td>Unefon</td>
<td>$1**/min</td>
<td>$1/min</td>
</tr>
<tr>
<td>Nextel***</td>
<td>$0.8 – 1.8/min</td>
<td>$0.8-3/min</td>
</tr>
</tbody>
</table>

* Only with prepaid cards of $200; otherwise ± $4.5
** Only with prepaid cards of $300; otherwise goes up to 3.48/min
*** Does not offer prepaid plans, so the rates are only with plan
Globalization explains aggressive investments in Mexico and L. America

- Telefónica has invested ~ 100,000 million Euros in Latin America (since 1993), to earn a strong position in such a global market.
- Telmex, partnering AT&T, is also continuously investing to sustain a position that goes beyond the Mexican border.
- Nextel, partnering with Sprint, is also in the fight.

Source: COFETEL (Federal Telecommunications Commission)
Smaller competitors go for different strategies

- Technology: 3G
- Coverage: All the country
- Huge investments to gain penetration with low fees and aggressive marketing*
- Encourage utilization
- Constant fight for regulation that encourages competition

- Belong to the same owner
- Technologies: 3G (Iusacell), CDMA2000 (Unefon)
- Coverage: All the country (some regions with agreements)
- Marketing
- Constant fight for regulation that encourages competition

- Partner with Sprint (USA service provider)
- Technology: 3G
- Coverage over main cities
- Focus on the corporate/business market
- Long distance as local (Mexico, USA & Canada)

* 95,000 Million Euros in Latin America, between 1993 and 2005; and planning to invest 7,000 million USD in Mexico in 2006
Steps taken Telmex/AT&T

• Small investments to try and learn about new technologies
• Be prepared for fast deployment of potential technologies
• Invest in large scale deployment only when necessary
  - Only provider with EDGE technology
  - Came up with Mobil TV two weeks after its competitors
• Take maximum advantage of a protective regulation
TV on the Cellular

$125.- + TAX

$173.- + TAX
User Environment Area Networks

- TV, VCR, DVD
- Equipos de audio
- Bocinas
- Teléfono
- PC, LapTop
- Impresoras
- Handheld
- Celular
- Videojuegos
- Cámara digital
- MP3 players/IPod
- Actuadores remotos?
- Memoria central?
- Servidor central?
- Acceso a red?

¿Uno o varios accesos a la red?
Cellular providers will have to compete with access and service providers

- Avaya is rapidly taking over companies
- Skype and Vonage are taking over individuals
- CFE: Supply electric power to
- Avantel compite con RED UNO de Telmex
- Axtel: Wireless fixed local and long distance voice services
- Alestra: Owns a fiber optic network, provides access to the AT&T worldwide network, and provides voice & data communications service (100 MMUSD)