Recent developments in municipal wireless networks: industry at a crossroads

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After EarthLink: search for business models

• Muni as anchor tenant (Minneapolis)
• Muni builds network primarily for government applications: wireless automated meter reading, public safety, traffic management (Corpus Christi)
• Fiber + wireless (Wi-Fi, WiMAX, 3G): muni + private company -- government, enterprise and consumer applications
• Ad-supported networks (Portland, Ore.)
2007 State of the Market Report

<table>
<thead>
<tr>
<th>Year</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005 SOMR</td>
<td>$31.5M</td>
<td>$76.5M</td>
<td>$177.7M</td>
<td>$405.6M</td>
<td></td>
<td></td>
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<tr>
<td>2006 SOMR</td>
<td>$47.4M</td>
<td>$116.9M</td>
<td>$235.5M</td>
<td>$459.6M</td>
<td>$941.0M</td>
<td>$1,757.5M</td>
<td></td>
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<tr>
<td>2007 SOMR</td>
<td></td>
<td>$243.2M</td>
<td>$329.4M</td>
<td>$488.8M</td>
<td>$686.6M</td>
<td></td>
<td>$913.1M</td>
</tr>
<tr>
<td>YTY Growth Rate</td>
<td>35%</td>
<td>48%</td>
<td>40%</td>
<td>33%</td>
<td></td>
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</tr>
</tbody>
</table>
Who’s deploying

- Counties
- Mid-tier cities (Tucson, Minneapolis)
- Fast-growing cities
- Small towns on dial-up
- Significant increase in Europe and Asia, e.g. Nantes (France), Bristol (UK), Tianjin, Shanghai, Groningen (Netherlands), S. Joao da Madeira (Portugal)
Tucson study (CTC)

- Residents want city to create more competition in the market
  - 41%: city should make rules that encourage competition
  - 19%: city should encourage private sector to build network
  - 25%: city should take no role in the development of wireless Internet access

- Businesses: city’s main role is to ensure high speed Internet access is affordable and available
  - 41%: city should make rules to create more competition
  - 14%: city should build wireless network
  - 20%: city should encourage private provider
  - 22%: city should have no role

http://www.tucsonaz.gov/it/docs/CMS1_028045.pdf
## Tucson study (CTC)

<table>
<thead>
<tr>
<th>Cost estimate</th>
<th>Tropos</th>
<th>Skypilot</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low density</td>
<td>High density</td>
</tr>
<tr>
<td>Total network cost</td>
<td>$16.9M</td>
<td>$29.4M</td>
</tr>
<tr>
<td>Total CPE cost</td>
<td>$10.5M</td>
<td>$6M</td>
</tr>
<tr>
<td>Total estimate</td>
<td>$27.4M</td>
<td>$35.4M</td>
</tr>
</tbody>
</table>

Low density: 20 nodes per sq mi; high density: 40 nodes per sq mi
What are cities using it for?

- Wireless automated meter reading
- Public safety
- Public transport (in Europe): buses, ferries and high-speed trains
- Traffic management (AT&T’s network for Riverside, CA)
- Parking control
- Emergency response (Tucson ambulances, hospitals)
Public Transport

- Stagecoach, National Express and Reading Transport bus lines in the UK
- TGV Est: Paris to Frankfurt at 320 km/h cutting travel time from 6h 15m to 3h 50m
- Thalys: Paris to Amsterdam in 3h 45 by end of 2008
- Business model: put more butts on seats
- On-board entertainment, Internet access
- Enterprise: railway worker apps, data transfer when crossing borders (EU regulations), public safety
  - Example: Dutch Rail NS Desktop saves 25 minutes per day per employee and cost savings estimated at EUR 8 million per year
  - Wireless security cameras
Stagecoach Bus Lines
London-Oxford
24/7

• Busiest bus service in Europe
• In last nine months: 75,000 sessions by 15,000 unique users
• Users downloaded almost 400 gigabytes and uploaded 70 gigabytes
• In the last seven days, almost 1,000 unique users have used the service 2,200 times
• Average online time is 40 minutes (in a 90-minute journey)
• Average download is around 6MB during the session. The majority of passengers (over 70%) are commuters or students
• Backhaul is Vodafone's HSDPA service getting about 1.2 Mbps download speed to the vehicle
• Backhaul cost is £25/month per vehicle ($50 per month). Vodafone will be upgrading its network to HSUPA in major UK metro areas from November 2007 with 7.2 Mbps service
• Wireless camera streaming live video: killer app for the bus company
Wi-Fi for the last 100 meters

• Wi-Fi is being used as THE connection to the end user’s device (laptop, phone, gaming console)
• Fiber, DSL, 3G and WiMAX for backhaul
• New operators like Iliad/Free in France have Wi-Fi, fiber and WiMAX as key offerings
• Highly competitive market requires bundling of services (fiber or DSL + telephony + IPTV + Internet access) -- 50 Mbps symmetrical for 29.95 EUR per month (Paris)
For more information

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Muniwireless Conference, Santa Clara
Oct 21-23, 2007
http://www.muniwireless.com/article/articleview/5852/1/24/

* 2007 State of the Market Report available next week