

Citywide Wi-Fi: current status and future trends

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After EarthLink: the search for business models

- Earthlink is selling its muni Wi-Fi business
- Many cities' networks on hold
- But some are successful: Minneapolis, Corpus Christi, St. Cloud

WHY?

Business models that work

- Muni builds network primarily for government applications: wireless automated meter reading, public safety, traffic management (Corpus Christi), energy grid management (Burbank public utility)
- Private company builds network where the city government is an anchor tenant (municipal applications) and the network is also used for public access (free and paid) --> Minneapolis
- Ad-supported networks (Portland, Oregon): but these need a lot of users to make money, very much in the infancy stage, not proven

2007 State of the Market Report

	2004	2005	2006	2007	2008	2009	2010
2005 SOMR	\$31.5M	\$76.5M	\$177.7M	\$405.6M			
2006 SOMR	\$47.4M	\$116.9M	\$235.5M	\$459.6M	\$941.0M	\$1,757.5M	
2007 SOMR			\$243.2M	\$329.4M	\$488.8M	\$686.6M	\$913.1M
YTY Growth Rate				35%	48%	40%	33%

Who's deploying

- Counties
- Mid-tier cities (Corpus Christi, Minneapolis, St. Cloud, Florida)
- 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)

Cost estimate	Tropos		Skypilot	
	Low density	High density	Low density	High density
Total network cost	\$16.9M	\$29.4M	\$15.2M	\$26.4M
Total CPE cost	\$10.5M	\$6M	\$10.5M	\$6M
Total estimate	\$27.4M	\$35.4M	\$25.7M	\$32.4M

Low density: 20 nodes per sq mi; high density: 40 nodes per sq mi

What are cities using it for?

- Public safety: No. 1 application
- Wireless automated meter reading
- 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)

The iPhone changes everything

- Demand for Wi-Fi everywhere, thanks to more iPhone and iPod Touch users
- Rise of portable Wi-Fi devices (Sony PSP3 and Nintendo DS) creates demand for easy login
- Applications on iPhone and iPod Touch will make a difference

Grassroots driven citywide Wi-Fi: is this the answer?

- Meraki Networks setting up a citywide network in San Francisco
 - Solar powered mesh nodes on roofs, repeaters in homes
 - Volunteer based, some employees of Meraki setting up the roof-top nodes

Go to www.meraki.net

For more information

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