



City of Grand Rapids  
"Building a Better City...By Design" Michigan

# WiFi 101

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# What is Wireless Broadband?

Radio waves that broadcast signals between the Internet and

- Laptops
- Personal data assistants (PDAs)
- Handhelds
- 1,000 other devices

Ultimately, all wireless networks connect to wire

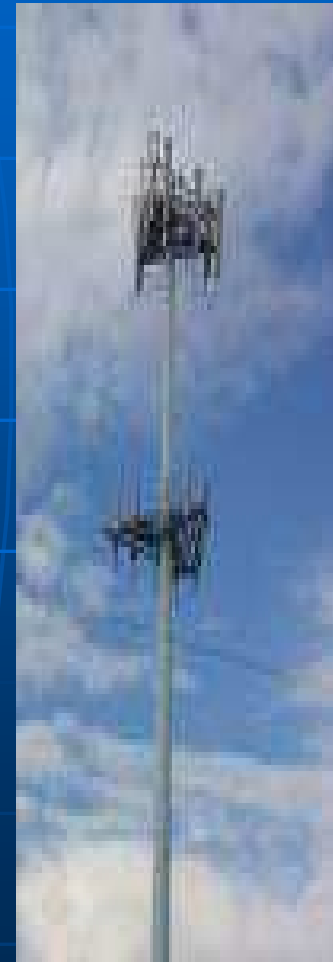


# How does Wireless Broadband Work?



Communication goes through radios placed on:

- Towers
- Utility poles
- Buildings
- City vehicles Could become part of the network
  -



Wireless connections become available as access points/radios are installed



# G.R.'s Hot Spot Cool City Initiative



- Mayor George Heartwell's vision



- City Manager, Kurt Kimball assigned a team to research wireless technology



# City Goals

To deploy a cost effective solution

- Self-funded
- With proven technology
- To serve citizens now and in the future



# Benefits of a Wireless Network

## #1 Goal: Enhance Public Safety

by dramatically increase information available to mobile police and fire units

- Reduce the digital divide with affordable high-speed broadband service
- Improve service delivery to residents
- Reduce the cost of government



# Benefits of a Wireless Network

- Attract & Retain
  - Business
    - Provide an economic development tool
  - Young professionals
    - Create a seamless wireless infrastructure
- Facilitate wireless technology use
  - For citizens and visitors
  - Without a burden on taxpayers



# Summer 2005

## Demonstration Networks

The City partnered with private providers to offer 8 free demonstration networks:

- Install and operate at provider expense
- At least ¼-square-mile in size
- For at least eight weeks
- Used for technology comparison, testing, and evaluation purposes



# HotspotsCoolCity

GRAND RAPIDS WIRELESS BROADBAND

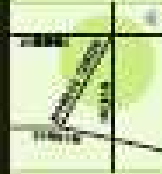
## Free Demonstration Network Sites

- Calder Plaza - Grand Rapids City Hall
- Monroe Center - Police Department
- Van Andel Research Institute
- Kent County - Fuller Campus
- Creston High School
- Seymour Branch Library
- Wealthy Theatre
- Walker City Hall Complex
- Burnwood City Hall

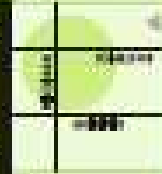
**Calder Plaza/CityHall**  
100 Monroe Avenue NW  
June 1 - August 10, 2005  
Provided by: Grand Rapids



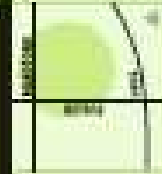
**Grand Rapids Police Dept.**  
One Monroe Center NW  
June 1 - July 10, 2005  
Provided by: Freedom Net Systems



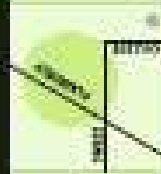
**Van Andel Research Institute**  
133 Roswell Avenue NE  
August 1 - October 1, 2005  
Provided by: Net Sprint



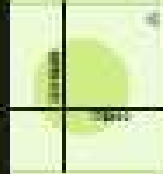
**Kent County - Fuller Campus**  
700 Fuller Avenue NE  
August 28 - October 28, 2005  
Provided by: To Be Determined



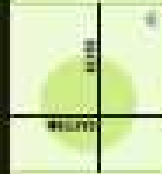
**Creston High School**  
1720 Plainfield Avenue NE  
July 1 - September 1, 2005  
Provided by: Archibald President



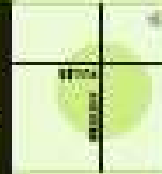
**Leonard/Covell Fire Station**  
1754 Coast Avenue NW  
Available weekdays  
Approximately 2005/06



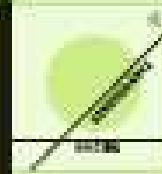
**Seymour Branch Library**  
2330 Eastern Avenue SE  
August 28 - October 28, 2005  
Provided by: Comcast



**Wealthy Theatre**  
1700 Wealthy Street SE  
July 28 - September 18, 2005  
Provided by: ATC



**Walker City Hall Complex**  
4243 Remembrance Road NW  
August 1 - October 1, 2005  
Provided by: Fusion Corporation



**Kentwood City Hall**  
1400 Astor Avenue SE  
August 1 - October 1, 2005  
Provided by: Iteco



## Demonstration Network Facts

- Wireless hot spot networks will be deployed and operated at the vendor's expense.
- There are nine construction network sites and nine participating vendors.
- Networks will be deployed in a phased approach over the summer months.
- Wireless network use will be free to all for the duration of the demonstration at least 8 weeks each.
- Construction networks will be a minimum of 5 x 5 square mile in size.
- The network is intended to augment, not compete with existing fixed net wireless networks.
- A formal request for proposals for a citywide network will be issued following completion of the construction networks.

## Goals of Our Wireless Broadband Project

The City does not plan to compete with private business to sell wireless broadband. The purpose of developing a community wireless broadband network is to leverage the government's infrastructure and to partner with private providers, community institutions, businesses, and community organizations to:

- Enhance Public Safety by dramatically increasing the information available to Police, Police Officers, and Fire Fighters;
- Reduce the digital divide with affordable high-speed broadband service;
- Improve service delivery to residents and reduce the cost of government;
- Promote an economic development tool to attract and retain business;
- Facilitate wireless technology use for citizens and visitors;
- Create a scalable wireless infrastructure to attract and retain young professionals;
- Establish a wireless broadband network without a burden on taxpayers.

## How Wireless Works

Wireless networks use radio waves to set up communication links between devices and the Internet. These devices include laptops, personal data assistants (PDAs), handheld personal computers, and nearly 1,000 other devices currently on the market. Access points connect devices to the network and Internet through radio signals. Some of the access points are connected to the Internet by wires. Most will only require access to an existing power source. Wireless connections will be available as access points are installed. Similar to a cellular phone network, access points can be combined to provide mobile connectivity anywhere in the coverage area.

# HotSpotsCoolCity

"There are compelling reasons to build a wireless network over our city. Broadband is becoming essential for 21st century jobs."

Grand Rapids Mayor George E. Eckert

## Thank You to Our Wireless Partners

- Community Media Center
- City of East Grand Rapids
- Grand Rapids Public Schools
- County of Kent
- City of Kentland
- State of Michigan
- County of Ottawa
- City of Rockford
- SBC Michigan
- Spectrum Health
- Van Andel Institute
- City of Walker
- County of Washtenaw
- City of Wyoming



## Questions?

Go to [wirelessgr.com](http://wirelessgr.com)  
or Call 616.456.3069

Free Demonstration Network Sites  
March 20/19/09

# HotSpotsCoolCity

GRAND RAPIDS WIRELESS BROADBAND





# Splash Page

Welcome to the Grand Rapids Wireless Broadband Demonstration Project

## HotSpotsCoolCity

powered by **NORTEL** hosted by **mLive.com** THE GRAND RAPIDS PRESS

Enhancing human experience • Igniting global commerce • Securing information

### GRAND RAPIDS HAPPENINGS

**Copperfield at DeVos**  
Coke and atris are sure to be heard as the world famous magician presents an "Intimate Evening of Grand Illusion."

- Event details
- More events at DeVos
- Plan a pre-show meal

**TOP LOCAL EVENTS**

- Calder Plaza: Grand Macker Jam, 3-on-3 basketball tournament
- Veterans Park: Memorial Day Parade and Ceremony

**SEARCH LOCAL LISTINGS**  
Arts & Events | Concerts | Dining & Bars | Parks & Festivals | Museums | Movies

**WEATHER • TRAFFIC**  
Grand Rapids, MI  
78° F  
26° C

Other Cities: Floyer, More...  
Forecast: 5-Day Forecast  
Get Live Traffic Reports

**CALENDARS**  
Popular Searches  
- Calder Plaza  
- DeVos Hall  
- Grand Rapids Art Museum  
- Major Gardens  
- Van Andel Arena

**Events By Topic**  
- Art exhibits  
- Concerts  
- Fairs & festivals  
- Family-friendly options  
- Theater productions  
- Search by topic, date & more

**SPECIAL OFFERS**  
Planning a Trip?  
Browse Travel Resources  
All Categories

**Travel Directory**  
Search for vacation rental properties

**Grand Rapids Press**  
Special Sections:  
- Travel Business  
- Discover Ohio

**Featured Advertisers:**  
- Action Travel  
- Americas Travel  
- Cruise Lines  
- Travel 2 Go  
- Cruisers On Sail

**INSIDE Visitor Essentials**  
- Arts and Events  
- Concerts  
- Dining and Bars  
- Travel  
- Maps

**Site Tools**  
- E-mail This  
- Search Site  
- Newsletters

**Speak Up!**  
- Share your opinion and advice  
- Log On to ChatRoom

**DISCOVER**  
CLICK HERE for Everything you need to plan your trip!

**BUY TICKETS**  
Concerts & Events

**Food Centers**  
Shopping List

- Dairy
- Paper
- Supplies
- HSA
- Flowers
- Soups


**Grand Rapids**  
2008 Grand Rapids, Kent County

**2008 VISITOR ESSENTIALS**  
Plan a new trip today!  
Reserve your space  
Let us help you plan

**From THE GRAND RAPIDS PRESS**  
- As always, the question with Copperfield: How'd he do that?  
- Much Malls helps Nicholson's career  
- Green Day's way is unique  
- Today's Grand Rapids Press news

- Consistent Header & SSID
- Acceptable Use Agreement
- Content
  - MLive
  - TV13
- Survey
- Contact Us

**FREE**

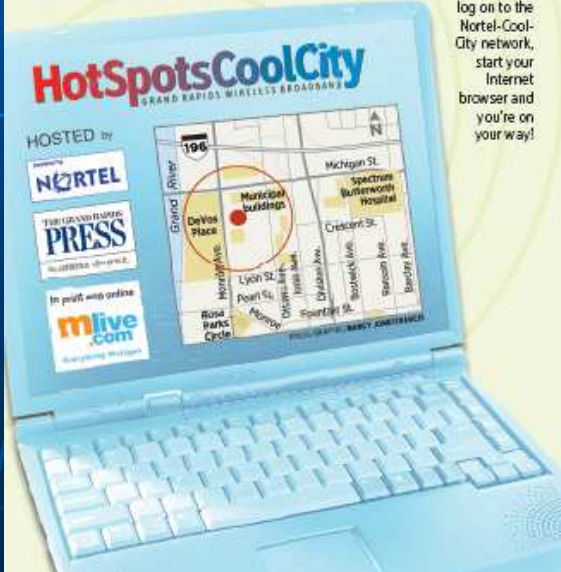


**in G.R.**

Take your Wi-Fi ready laptop or Palm Pilot down to Calder Plaza and enjoy FREE Internet access.

[ E-mail friends — surf the Web ]

It's easy — turn on your wireless device within a quarter mile of Calder Plaza; log on to the Nortel-Cool-City network, start your Internet browser and you're on your way!



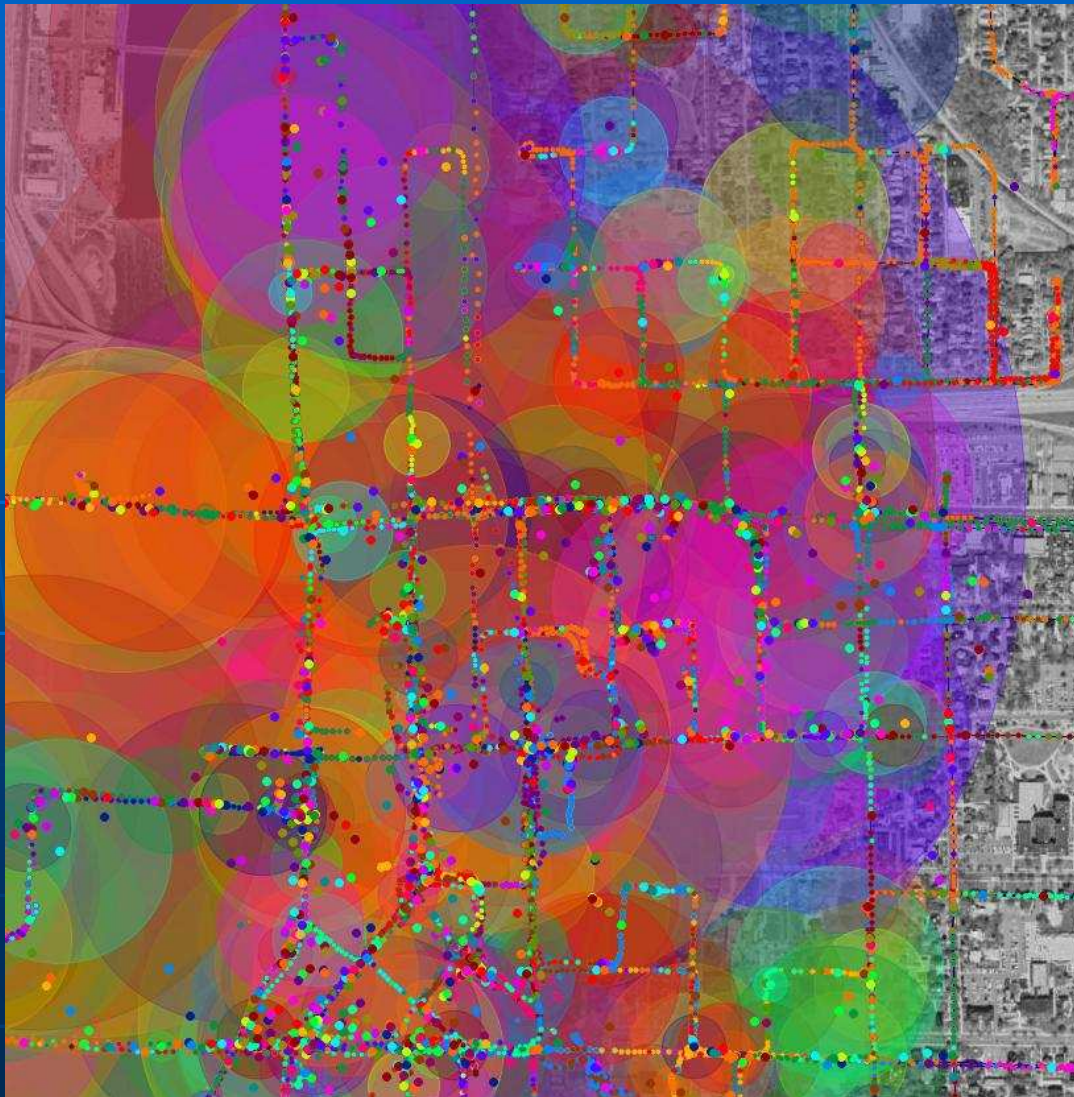


# Wireless Network Testing

- Testing by Excelsio Communications
  - Coverage radius
  - Throughput
  - Latency
  - Other parameters
  
- Presentation - September 27, 2005  
Bill Stark, Excelsio President
  - Test findings to Staff, our partners, GR City Commission.



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Wireless  
Noise

Downtown  
GR



## Wireless Network Testing

- Reports available for download
  - *Executive Summary* - Report to Grand Rapids City Commission 9/27/05
  - *Full Report* - Grand Rapids Wireless Demonstration Evaluation Report 9/30/05



## Our Partners

- State of Michigan
- Counties:
  - Kent
  - Washtenaw
- Cities:
  - Kentwood
  - Walker
  - Rockford
  - Wyoming
  - East Grand Rapids
- SBC Michigan
- Spectrum Health
- Grand Rapids Public Schools
- Van Andel Research Institute
- Community Media Center



# Overview of WiFi in Other US Cities

About 200 cities  
in US

- Philadelphia
- San Francisco
- St. Cloud
- Mountain View

In Michigan

- Muskegon
- Ottawa
- Oakland
- Washtenaw
- Kalamazoo
- Lansing





# Grand Rapids Wireless Broadband RFP Network Requirements

- Outdoors - 45 sq. mi.
- Indoors - nearly every building
- At least 1 Mbps symmetrical data transmission
- Low-cost
- Portable and mobile data service



# Grand Rapids Wireless Broadband RFP Network Requirements

- The successful proposer must provide:
  - Wholesale access to other service providers
  - Retail access to the end user
  - Future expansion to include surrounding cities (separate RFP)
  
- The City provides:
  - Use of City assets
  - Public Awareness



## Response to RFP

Nine proposals were submitted by the April 25th deadline:

- ACD.net
- AT&T /IBM
- BroadBreeze Communications
- Clearwire
- Earthlink Municipal Networks
- NeoReach Inc.
- NetApex
- RITE Brain Consulting
- Pronto Networks



# How does it affect me?

## Can I get it in my home?

- Residence in City Limits
- Subscription through provider

## Will it be free?

- Some FREE hotspots
- Anticipated lower cost than cable or DSL

## Will it work anywhere?



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# Why Wireless Broadband Applications!!



Copyright © 2002  
BusExplorer.com



# Municipal Applications

- Send an amber alert to all mobile city workers
- Fire fighter or engineers retrieve building schematics from the field
- Police officer or headquarters can view video from a light post camera miles away
- Work orders and service routes and times are up to date and accessible to office and field personnel 24/7





## Municipal Applications

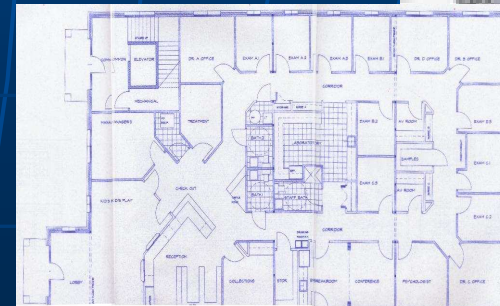
- Improve service delivery with more knowledgeable staff and improved efficiencies as employees access needed information using the wireless network
- Issue building permits or zoning violations from the field





# Municipal Applications

- Asset tracking
- Automated water meter reading
- Traffic signal control
- Remote monitoring and control of critical infrastructure systems such as HVAC systems, water and sewer pipelines.
- Automated notification of expired parking meters
- Wireless credit card payment of parking fees
- Remote access to building prints for inspectors
- Real-time permitting
- Wireless recording of assessment updates including downloading photographs







# Education Applications

- Student access to current school information, homework assignments, help via a school web site and remote teaching
- Improved communication between school administration, teachers, parents, and students with use of email
- College and University – access to campus network for off campus students and distance learning
- Bus and transportation location
- Video surveillance cameras for student security





# Economic Development



- Visitors and conventioners access hotel, restaurant, visitor and convention Web sites free, from anywhere in the City



- Real estate agents and other property sales professionals provide virtual tours of real estate from anywhere in the city, even while in transit



- Neighborhood businesses can target specific geographic areas or neighborhoods by advertising on the wireless network.



# Health Care Applications

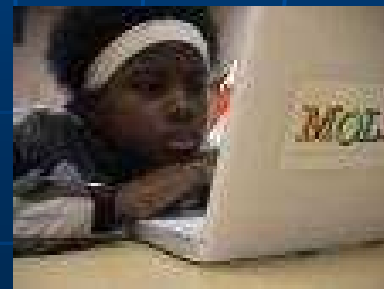
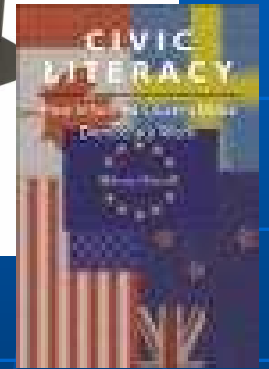
- First responder access to vital patient information and medical assistance
- Remote monitoring of patients with chronic illnesses, increasing patient comfort and also reducing health care costs
- emergency workers have immediate access to data, including EKGs, enabling them to make important decisions and call in necessary teams while the patient is enroute to the hospital





# Digital Inclusion

- Provide low-cost, high-speed Internet access for low-income residents
- Provide an hour a day free service for all
- Offer free access to government/non-profit Web sites
- Create wireless kiosks for citizens to access government sites
- Work with non-profits to solicit PC distribution and free training





# Applications

- What applications can you think of:
  - City Use- your department
  - Other business use
  - Personal use



# Project Timeline

| <b>Milestone/Activity</b>   | <b>Deadline</b> |
|---|-----------------|
| Due Diligence Research  | 11/4 - 2/05     |
| Invitation to provide a demonstration network issued  | 3/4/05          |
| Demonstration Network providers selected  | 4/15/05         |
| RFP issued for consulting and engineering services  | 4/20/05         |
| First demonstration network "live"  | 5/23/05         |
| Consultant contract award   | 6/10/05         |
| Demonstration Network testing by consultant   | 8/2006          |
| Consultant Report Issued  | 10/1/05         |
| RFP for City-wide wireless network issued   | 1/27/2006       |
| Letter of Intent to Bid (Required)  | 4/5/06          |
| RFP Response Due  | 4/25/06         |
| Comprehensive review and evaluation by City staff and our community partners of all proposals submitted | May/June        |
| Interviews  | June/July       |
| Agreement Award   | Summer 2006     |
| Project Kickoff   | Fall 2006       |



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"Building a Better City...By Design" Michigan

# Questions:

For more information visit our Web site:

[www.wirelessgr.com](http://www.wirelessgr.com)

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Start thinking: How can we leverage wireless in our department