




# Scaleable Broadband Wireless Networks

## Innovative deployments of broadband solutions

Brussels - November 8, 2005

Lionel Chmielewsky  
 Vice-President, International Sales  
 Proxim Wireless  
 lchmielewsky@proxim.com



## Agenda

- Corporate Facts
- Type of Wireless Offering
- Innovative applications through wireless
  - Mobile Enterprise
  - Last Mile Access
  - Metropolitan Networks
  - Security and Surveillance
  - Public Hot Spot
  - Voice and data Backhaul
  - Transportation
- Which return On Investment?

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## PROXIM Wireless: Corporate Facts

### Solid Resources

- 290 employees (1/3 in R&D)
- HQ in San Jose, CA with Worldwide presence and support.
- NASDAQ listed

### Deep Experience

- In business since 1979
- Blue-chip customer base
- \$2 billion in cumulative investment

### Powerful Solutions


- Widest range of wireless products in the industry
  - Voice, Data, Video
- Patented, *de facto* standard technology
- ISO 9001-Certified

### Growing Markets

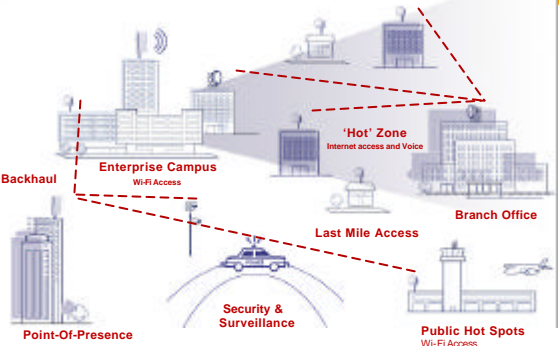
- Wireless Backhaul/Telco
- Municipal Networks/Local Government
- Last Mile Access/WISP
- Connected Enterprise/Education
- Federal Government/Military





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## Proxim Broadband Wireless & Wi-Fi



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## Broadband Wireless Applications

- Well-Recognized Markets:
  - Last mile access: DSL and Cable alternatives for Broadband Internet Access
  - Hot spots and hot zones for Metropolitan networks
- Emerging Markets:
  - Security and surveillance
    - CCTV in trains, busses, airports, bridges, highways
  - Temporary infrastructure
    - New homes or business park developers
    - Large RV parks
  - Mobile environments
    - Marina hot spot
    - Long distance trains and ferry systems

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## Innovative Applications Through Wireless

<b>The Mobile Enterprise</b> 	<b>Security &amp; Surveillance</b> 
<b>Last Mile Access</b> 	<b>Public Hot Spots</b> 
<b>Metropolitan Area Networks</b> 	<b>Voice &amp; Data Backhaul</b> 

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# Mobile Enterprise

Leipzig Rechenzentrum der Bayerischen Universitäten

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## Education

**Challenge**

- > Simplified access for employees and students to Mainframe and Internet. Next step is to separate internal use and student access with different security levels.


**Solution**

- > 150 ORINOCO Access Points. VLANs with separate security levels are used to give easy access to services while internal usage and administration is separated
- > High performance Access Points with enterprise functionality and support of all Standards including VLANs.



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# Last Mile Access

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## TeleNet Poland

**Challenge**

- > Wireless Network for backbone and access supporting over 3000 subscribers

**Solution**

- > 51 Links of Proxim MP.11a for backbone and 55 x ORINOCO AP4000 for public access and as Wireless Distribution System (WDS) in the 5GHz band
- > Bandwidth management, radio frequency band and capacity, WDRP protocol elevating wireless to very high Quality, throughput, future-proof products



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Skinnskatteberg, Sweden

Community broadband wireless network


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**Challenge**

- > Deliver broadband to less densely populated, remote community
- > Leased lines and fiber too expensive


**Solution**

- > License-exempt Tsunami point-to-multipoint system delivers fast, inexpensive broadband access to the community
- > Over 2000 customers
- > Key to community economic and social development
- > Supported by EU funding for broadband



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# Metropolitan Area Networks

## City of Grand Haven

### Metropolitan Area Network

#### Problem

- > To provide citywide wireless network coverage around the city of Grand Haven, Michigan
- > Services include broadband wireless access, VoIP and mobile video over Wi-Fi
- > Target customers include first emergency responders, businesses, residential and boating enthusiasts



#### Solution

- > Tsunami MP-11 Model 5054 serves as the wireless backhaul for ORINOCO AP-4000s and AP-600s
- > Advanced Wireless Distribution System capability of ORINOCO AP-4000 allows extension of Wi-Fi network using separate 5 GHz band, eliminating Ethernet connectivity for every AP
- > Successfully covers 70 square miles and up to 15 miles into the lake
- > America's First Wi-Fi Covered City



Downtown Grand Haven situated on the Grand River and Lake Michigan

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## Opencast Coal Mining South Africa

#### Challenge

- > To get telemetry data, productivity information, high precision GPS data and video to and from the walking draglines that mine the open cast pits. Extremely harsh working environment.



#### Solution

- > 23 Walking Draglines. Proxim Tsunami MP11a product provides up to 36Mbps of data per machine, two additional repeater sites interconnected via Tsunami Quick bridges have also been added to the system to provide complete coverage of the mine which spans many kilometers.



Walking Draglines—  
These giants are 120m high and comprise  
PLC monitoring  
Winkel PC  
Voice over IP Telephone  
Video Camera

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## Security & Surveillance

## Africa's Highest Diamond Mine - Lesotho

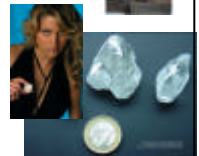
#### Challenge

To provide communication links, LAN, VoIP, Security Surveillance to remote diamond mine at 3600m altitude. Rugged terrain and harsh environment means wireless becomes the preferred option.



#### Solution

- > 3 x Tsunami MP11a cells to connect various mine buildings around the site. Webcams have been installed into plant vehicles.
- > Most cost effective solution.



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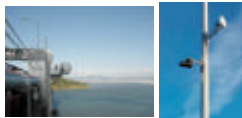
## California Department of Transportation Asset Surveillance

#### Problem

- > Protect Bay Area's transportation infrastructure consisting of 7 bridges and 2 tunnels

#### Solution

- > Tsunami Multipoint Subscriber Units connect IP cameras to Multipoint Base Stations
- > Redundant Tsunami Point-to-Point from bridges to Caltrans office
- > Constant, reliable surveillance that can survive harsh outdoor environments
- > Cost and time savings vs. fiber, designed for outdoors



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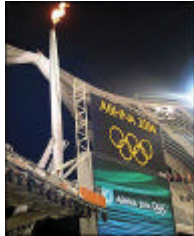
## Public Hot Spots

## Greece – First “Hot Country” 1/2

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### Challenge

- > Population of over 10 million people
- > Very low broadband penetration of 0.1% of the population as of January 2004
- > Host of the summer 2004 Olympic games
- > Needed to accelerate broadband deployment in Athens and across the country for businesses, hotels and residents.



### Requirements

- > Deliver Internet access, IPsec tunneling, Virtual LAN, roaming and corporate services
- > Ensure that the network could support future services including Video on Demand, Voice over Wi-Fi, Wi-Fi to GSM roaming and mobile enterprise applications

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## Greece – First “Hot Country” 2/2

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### Solution

- > Phase I: Deploy 120 wireless hot spots with wireless backhaul at Athens hotels and outdoor areas for the summer Olympic games as well as to surrounding cities
- > Phase II: Deliver last mile access to core business customers including hotels, vacation villages, airports, exhibitions and conference centers across Greece
- > Phase III: Includes an additional 350 hot spots, wireless backhaul and last mile access to businesses and residences.
- > Wireless technology is perfect for quick and easy deployment of network infrastructure
- > Wireless solutions meets future technical requirements

*“With the surge in tourism from the summer games, we were able to quickly deliver wireless high speed Internet access at hotspots so that reporters like Mr. Toshiharu Tsuji with the Japanese press could quickly relay stories to Japan and tourists could stay in touch with friends back home,”*

Mr. Zografidis Nikolaos, CEO, ACISgroup.



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## Oslo Airport, Norway Hotspot

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### Challenge

- > Need to providing secure and mobile Internet, corporate networking and email access throughout the entire airport, including all public areas both inside and outside the terminal, baggage-handling areas, a conference centre and the airplane cockpit, as well as the Radisson SAS Conference Centre East.



### Solution

- > A wireless Internet zone, called IPzone, using 250+ ORINOCO AP-2000 located in tech rooms designed for this purpose and throughout the airport, that are not noticeable to the general public
- > No interference with airport communications, particularly air traffic control, intelligent radio channel planning, and secure VPN.

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## Voice & Data Backhaul

## United Nations World Food Program

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### Challenge

- > To provide voice and data communications in disaster relief situations. To reduce these costs by replacing multiple VSAT links into each camp.



### Solution

- > Tsunami Quickbridge 11 point to point links to connect camps up to 20km apart. A single high bandwidth satellite link is now able to serve multiple sites. Currently the UN have replaced over 60 VSAT links enabling budget to be utilized in more critical areas.
- > Cost effective solution with very rapid ROI. Ease of installation.



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## Transportation

## KyeongSan Transit Railway

Mobile Transit Security

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### • Problem

- > The absence of a train conductor makes an in-car security and surveillance system necessary
- > High-resolution cameras require high-bandwidth wireless platform
- > Access-point based solutions could not support the performance and roaming requirements with trains moving at speeds up to 80km/ h (50 mph)



### • Solution

- > One Tsunami MP.11 Model 5054 BSU every 1 – 2 km (~ 1 mile) along the track and one Model 5054 SU in every train car
- > All IP surveillance solution with IP cameras and IP application servers
- > Tsunami MP.11 Model 5054 ability to deliver high bandwidth coupled with guaranteed minimum data rate at high speed are key to project success
- > Good performance and the most cost-effective solution



Conductorless Train System

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Which Return On Investment ?

## Case Study Michigan ISP ROI Calculation on CapEx

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WWAN costs	\$ 83,100
WLAN costs	\$148,750
<b>Total</b>	<b>\$231,850</b>
Estimated Revenue/Yr	\$284,430
Estimated Revenue/Mo	\$ 23,703

**Payback/ROI 9.78 months**

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