Municipal Broadband Wireless Solutions
Disclaimer

This presentation contains forward-looking statements within the meaning of the "safe harbor" provisions of the Private Securities Litigation Reform Act of 1995. These statements are based on the current expectations or beliefs of Alvarion's management and are subject to a number of factors and uncertainties that could cause actual results to differ materially from those described in the forward-looking statements. The following factors, among others, could cause actual results to differ materially from those described in the forward-looking statements: potential impact on our business of the current global recession, the failure of the market for WIMAX products to develop as anticipated; Alvarion's inability to capture market share in the expected growth of the WIMAX market as anticipated, due to, among other things, competitive reasons or failure to execute in our sales, marketing or manufacturing objectives; inability to further identify, develop and achieve success for new products, services and technologies; increased competition and its effect on pricing, spending, third-party relationships and revenues; as well as the inability to establish and maintain relationships with commerce, advertising, marketing, and technology providers and other risks detailed from time to time in the Company’s Annual Report Risk Factors section as well as in other filings with the Securities and Exchange Commission.

All the information in this presentation and in particular the roadmap, is provided solely for information purposes, and is not a commitment, promise or legal obligation to deliver any products, features and/or functionalities, and should not be relied upon in making purchasing decisions. The development, release and timing of any products, features and/or functionalities described remains at the sole discretion of Alvarion. If and when any products, features and/or functionalities are offered for sale by Alvarion, they will be sold under agreed upon terms and conditions. This information may not be incorporated into any contractual agreement with Alvarion or its subsidiaries or affiliates. Alvarion makes no representations or warranties with respect to the contents of this presentation, and specifically disclaims any express or implied warranties of merchantability or fitness for any particular purpose.
Agenda

- Municipal Market & Players
- Municipal Applications:
  - Public Safety
  - Traffic Management
  - Education
  - Broadband for Councils
- Deployment considerations
Historically, municipalities have played a key role in enabling new infrastructure (electricity, roads, telegraph and railways).

Local municipalities are committed to their own communities.

Municipalities have power, incentive and means to develop communities.
Municipal Business Values

- Efficiency and better service
- Enhanced quality of life and public satisfaction
- Advanced education system
- Improved public safety
- Positive PR
- Increased income
No single business model is unique to municipalities

As the market evolves, various business models form, bringing different players into a variety of partnerships:

- Government
- Local municipalities
- Local enterprises
- Service providers
- System integrators
- Fixed operators (WISPs)

As the market matures and project volume increases, larger players enter the scene including nationwide and international service providers and system integrators.
A range of business cases according to geographic, geopolitical and business environments:

- Full government funding
- Local municipality: IT ROI-based or service-oriented
- Cooperation between local municipality and enterprises or service providers
- Independent local organizations (cooperatives)

ROI is often second to social/political criteria
# How to Approach Municipality Players

<table>
<thead>
<tr>
<th>The Motivation</th>
<th>Mayor</th>
<th>Security</th>
<th>Education</th>
<th>IT Manager</th>
<th>CFO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Happy citizens, re-election</td>
<td>Secure community</td>
<td>Education for everybody</td>
<td>Control and tranquility</td>
<td>ROI</td>
<td></td>
</tr>
<tr>
<td>Increased public satisfaction</td>
<td>Control and safety</td>
<td>Equal opportunity for everyone</td>
<td>Extended reach for IT department</td>
<td>Efficiency and cost reduction</td>
<td></td>
</tr>
<tr>
<td>Case studies, visits to other cities, public relations</td>
<td>Present ecosystem with partners, case studies</td>
<td>Present ecosystem, principal feedback</td>
<td>Free training, demo kit, white papers</td>
<td>Business case tool</td>
<td></td>
</tr>
<tr>
<td>Security, health, education, Internet access</td>
<td>Video surveillance</td>
<td>Connecting schools, digital classrooms</td>
<td>Remote access to IT application, redundancy</td>
<td>IP-PBX, leased line replacement</td>
<td></td>
</tr>
<tr>
<td>Key decision maker</td>
<td>Decision maker</td>
<td>Decision maker</td>
<td>Influencer</td>
<td>Influencer</td>
<td></td>
</tr>
<tr>
<td>Give blessing, reference</td>
<td>Allocate budget, help with external funds</td>
<td>Help with external funds</td>
<td>Help with writing bid specifications</td>
<td>Share internal ROI results</td>
<td></td>
</tr>
</tbody>
</table>

**Role**

- **Mayor**: Key decision maker
- **Security**: Decision maker
- **Education**: Decision maker
- **IT Manager**: Influencer
- **CFO**: Influencer
Public Safety

Improved Public Safety

- Monitor public locations and critical facilities
- Identify illegal activities
- Track criminals recorded while committing a crime
- Connect first responders to municipal applications
- Provide real time video to and from vehicles
- Improve emergency situation management
- Enhance feeling of public safety
Public Safety (1)

Monitoring and Awareness
Wireless networks enable reach to almost anywhere in the city

Command and Control Center
Wireless networks provide capacity to aggregate data to control center

Rapid Response Teams
Wireless networks are the only solution for mobile coverage
Public Safety (2)
Wireless Video Surveillance Benefits

- No need for wired links
- Reduced deployment costs (CAPEX)
- Little to no operational costs (OPEX)
- Rapid deployment time
- No need for cable route approval
- Flexibility and scalability
- Secured connectivity
- Mobile and portable support
Roissy, France

- Community of 14 towns and villages spread around the Charles de Gaulle airport
- Created Municipal police force
- Built a Mesh network of all villages using PTP links (200 square km)
- Deployed CCTV cameras in each village that are connected to village center using several PtMP sectors
- Equipped local police cars with an Alvarion CPE, enabling video feed transmission directly to police cars on-the-move

<table>
<thead>
<tr>
<th>Customer Type</th>
<th>Municipality/Law Enforcement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Country / Region</td>
<td>Roissy, France</td>
</tr>
<tr>
<td>Application</td>
<td>Broadband data for law enforcement officers in the field</td>
</tr>
</tbody>
</table>
Roissy, France: Images
Traffic Management

Enhanced Traffic Management

- Balance traffic loads
- Reduce pollution
- Reduce accident rates
- Provide driver alerts on road conditions and hazards
- Expedite emergency event handling
- Monitor speed-limits
Full synchronization of traffic lights and sensors in a large area results in:

- Reduced delays
- Lower fuel consumption
- Decrease in harmful emissions
Lenexa, USA

- City in greater Kansas City area
- Deployment is state-driven by ITS (Intelligent Transportation System) program with participation from 19 cities in 2 states
- Extension of fiber backbone
- Fixed connectivity to traffic lights, cameras and buildings
- Mobile coverage
Lenexa, USA

- Full synchronization of traffic lights over a large area
- Delays reduced up to 21%
- Fuel consumption reduced up to 18%
- Harmful emissions reduced up to 15%
e-Education

- Provide remote education via shared or dedicated networks
- Offer interactive learning
- Connect remote schools and universities to remote libraries and research facilities
- Utilize remote research computers and databases
e-Education (1)

Connecting schools with broadband (>2 Mbps)
Enabling digital classrooms with Internet access

Private educational network with full control of access and content

Schools become small WISPs with their own content servers and remote learning activities
e-Education (2)

**Single access for students anywhere:**
- In campuses and labs with PTP links
- Outdoors with WiFi and USB dongles
- At home with a WiMAX WAN network
Krosno, Poland (1)

The Challenge

- Improve educational resources with broadband Internet access
- Improve community security and of quality life
- Limitations of wired solutions
  - Low throughput
  - Poor Quality-of-Service
  - Costly and lengthy laying of fiber cable

Deploying multiple applications for municipal and public use

The Solution

- Deployed Alvarion’s BreezeMAX in 3.5 GHz
- 6 sectors cover the entire city
- Connecting 13 schools and libraries
- Network is used by police for CCTV cameras
- Free public Internet access using Alvarion’s BreezeMAX Wi² solution
Krosno, Poland (2)

Deploying multiple applications for municipal and public use
Cost Reduction

- Replace leased lines with wireless PTP/PtMP links saving on monthly/annual fees and get better SLAs
- Reuse equipment for a new link, after existing link is no longer required
- Utilize Voice over IP (VoIP) in specially deployed networks
Our network costs are down by 50% thanks to the Alvarion wireless solution. It was a simple case of ‘pay less and get more’.
Ged Bell, Head of IT, Dundee City Council
Cost Reduction - VoIP

VoIP can be used in same wireless network as data and video as long as there is a QoS guarantee mechanism.

Alvarion products support QoS both in the air and then on land.

"Alvarion’s solution not only provides us with excellent voice and data services, it has enabled the citizens of the community to benefit from enhanced safety and security.

CCRPF"
Utilizing a Single Link for Both Voice and Data

**Data Capacity per Sector (Mbps FTP)**

- SELECT PRODUCT:
  - BreezeACCESS VL...
  - BreezeACCESS 49...
  - BreezeACCESS VL...
  - BreezeNET B100

**Max. Voice Calls per Sector**

- 0
- 36
- 324

**Percentage of Capacity Allocated to Voice**

Note: Capacity numbers provided are only applicable for BreezeACCESS VL.
BreezeNET B hardware Revision C or higher (for both AU / SU & SU / RE).
Data and voice capacity figures provided above assume ideal conditions.

*alvarion* Your Open WiMAX Choice
Broadband for Councils

- Provide public Internet access (Hot Zones)
- Offer residents a city portal and information access
- Build information and emergency kiosks
City portal for municipal services and activities

WiFi hotspots as a free public service - access in different areas of the city
Broadband for Councils (2)

Information kiosks, linking to Internet or city portal

Emergency kiosk with voice and video access to local police
Outer Hebrides, Scotland

- Remote rural community
- Harsh weather conditions
- No broadband access
- Required full data access solution
- Needed additional access to municipal services, local businesses and residents
Diverse Range of Applications

- **CCTV**: High uplink capacity in specific points
- **Traffic Sensors**: Low capacity in wide areas
- **Campus Connectivity**: PTP in various capacities
- **VoIP for City Workers**: High QoS in wide areas
- **Hot Zones**: Best effort QoS in designated areas
- **e-Education Networks**: PtMP with medium downlink capacity
- **AMR**: Low capacity in wide areas
- **VoIP for City Workers**: High QoS in wide areas
Considerations of the Chief Information Officer (CIO)

- Different applications have different needs and characteristics
- Various technologies
- Budget is usually targeted for specific applications
- Limited budget and resources
- Projects are long term and ongoing
- Same staff for network installation and maintenance (city employee or subcontractor)
Alvarion’s Modular Solution

Answers application needs according to budget, time and other resources available

- Budget from Board of Education to connect schools at 2 Mbps each
- IT budget for building backhauling
- Public safety/police budget for CCTV
- Park maintenance budget
- Software upgrade and adding Wi²
- Police cameras require more capacity
- Some schools switch to VoIP: require more bandwidth
- Education budget: provide underprivileged children with home connectivity
- Local water company deploys AMR on top of municipal buildings
- Software Upgrade

Software Upgrade
Alvarion’s solution is complete, modular, robust and scalable enabling municipalities to achieve maximal performance in their environment.
Thank You
### Caravaggio, Italy (1)

<table>
<thead>
<tr>
<th>Customer Type</th>
<th>Municipality/Law Enforcement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Country / Region</td>
<td>Caravaggio, Italy</td>
</tr>
<tr>
<td>Application</td>
<td>Broadband data for law enforcement officers in the field</td>
</tr>
<tr>
<td>URL</td>
<td><a href="http://www.poliziacolli.it">http://www.poliziacolli.it</a></td>
</tr>
</tbody>
</table>

- Inter-municipal Police Force Association, a province of the Bergamo-Lombardy region
- Video surveillance in an area that could not be covered by optical fiber
- Guarantees an emergency service to citizens via wireless LAN networks and IP cameras and in future, a mobile office vehicle with a video-control system
  - 35 square km
  - 7 municipalities
  - 80 cameras
  - 20 km coverage
Caravaggio, Italy

Street level NLOS camera

Remote camera with PTP link
Provide a cost-effective and reliable connectivity solution to support an Urban Traffic Management Control (UTMC)

Utilize the 3.3 GHz frequency

Support bandwidth-intensive digital CCTV systems

Enable traffic lights and road sensors to utilize same CCTV infrastructure

Assure link reliability

WiMAX Solution for intelligent transport management

Deployed BreezeMAX®, Alvarion’s WiMAX™ solution

All traffic information captured by cameras, SCOOT system and traffic signals (26 systems including; 40 cameras, 130 traffic light sensors and car park sensors) is consolidated in a central control center

Alvarion’s flexible network can be used for additional applications such as CCTV and WiFi on busses
The Challenge

- Increase personal access to ICT (Information and Communications Technology) at home for disadvantaged secondary-age pupils
- Provide a cost-effective, safe and reliable connectivity solution
- Create a proprietary, secure school network
- Develop flexible infrastructure ready to use for additional applications

The Solution

- Deployed Alvarion’s BreezeACCESS® EZ in 5.8 GHz
- Network was built in under six weeks delivering basic, safe connectivity for residential access
  - 21 sectors
  - 600 CPEs
- This solution in 5.8 GHz was 8 times cheaper than standard 2.4 GHz Mesh
- Council is planning to use network for backhauling in 2.4 GHz WiFi for new marine