Alvarion WiMAX Solution and Portfolio

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Pre-Sales Manager

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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 spread of the U.S. credit crisis and subsequent predictions of, and potential for, 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.
Agenda

- Alvarion at a Glance
- The Environment
- Product Portfolio
- Alvarion WiMAX Solution
- Success Stories
Alvarion at a Glance
**Alvarion**

**Highlights**
- WiMAX pure player
- OPEN WiMAX end-to-end offering
- Innovation in broadband wireless IP technologies
- World’s preferred WiMAX choice

**Facts and Figures**
- Founded: 1992
- Employees: 1200, including 500+ R&D engineers
- International presence: over 25 offices worldwide
- Publicly-traded (NASDAQ: ALV)
- 225+ commercial WiMAX deployments
- 50+ mobile WiMAX deployments; 30+ customer trials (Q2/08)
- 7+ years of WiMAX experience
- 15+ years of broadband wireless IP experience

Source: Sky Light Research, Sept 2008
Mission and Strategy

Mission

Be a dominant global player in the broadband wireless industry

Strategy

Maintain broadband wireless access market leadership and growth

Leverage on assets to lead the WiMAX Personal Broadband market
Company Values

- Do the right thing right
- Respect the individual
- Excellence
- Customer-centric focus
- Strength of purpose
The Environment
The Business of WiMAX (1)

Personal Broadband

Where...

Developed markets
High broadband penetration

What...

Broadband anywhere, any time, and on my devices
The Business of WiMAX (2)

Primary Broadband and Voice Services

Where…
- Emerging markets
- Rural and urban regions in developed markets

What…
- High speed Internet and voice services
Primary & Personal Broadband

Source: Alvarion based on various research reports
OPEN WiMAX Best-of-Breed Ecosystem
Alvarion Product Portfolio
Alvarion’s Business Segments

- Municipal / Government / Public Safety / Video Surveillance / Applications
- Personal Broadband Services
- Enterprise & Broadband Services (Data & Voice)
- Residential Broadband Triple-play Services
Strategic Segments and Offerings

Personal Broadband Services

Municipal / Public Safety / Surveillance / Private Networks

Wireless DSL

Residential Multi-Service (RMS)
Strategic Segments and Solutions

- **Personal Broadband**
- **Primary WDSL**
- **Residential Multi-Service**
- **Rural Broadband**
- **Government & Vertical Applications**
- **Backhauling**
- **Business-Multi-Service**

**Products**

- 4Motion™
- BreezeMAX™
- BreezeACCESS® VL
- BreezeNET® B
- WALKair 1000 & 3000
- eMGW™

**Frequencies**

- 2.3, 2.5, 3.5 GHz
- 2.4, 4.9, 5.2, 5.4, 5.7 GHz
- 3.3, 10.3, 26, 28 GHz
- 0.9, 1.9, 2.4, 3.5, 5.7 GHz
Comprehensive Suite of Services

Support
- Training
- Operations
- Maintenance
- Optimization
- Security
- Network management

Integration
- Planning
- Design
- Installation
- Commissioning
- Turnkey services
- Program management

Solutions
- Vendor comparison and selection
- Integration
- Delivery
- Deployment

Business
- Business case and model
- Option selection
- CAPEX and OPEX optimization
- Rollout plan
End-to-End Solution Offering

- A complete range of solutions, products, and services for WiMAX networks
- OPEN WiMAX network strategy approach
- Alvarion provides end-to-end solutions

Alvarion takes responsibility for the end-to-end solution
OPEN WiMAX - In open architectures service providers choose the combination of vendors and partners that best fit their specific requirements

- Enables operators to choose best of breed solutions
  - Best-in-class products
  - Best-fit products and solutions
  - Limitless mix & match combinations

- OPEN WiMAX solution delivered by pure-play vendor alliances
  - Leverage expertise of each pure-play vendor
  - Winning teaming and cooperation agreements
WiMAX Leadership in Transformation: OPEN™ WiMAX Best of Breed
Three generic profiles in WIMAX NWG

Profile A (removed by the WiMAX Forum)
- Decomposition of BS and ASN GW (with R6)
- Centralized ASN GW only
- Handover Control (RRM) in ASN GW

Profile B
- BS and ASN GW are not decomposed (R6 is not exposed)
- Probably may work for Centralized and Distributed

Profile C – Supported by Alvarion
- Decomposition of BS and ASN GW (with R6)
- Centralized and Distributed ASN GW
- Handover Control (RRM) in BS; ASN GW is agnostic to the radio intelligence
Comparing WiMAX Profiles

**OPEN WiMAX™ (Profile C)**

- Clearly defined separation between Base-Station (RRM) and ASN-GW (networking) entities (functionality)

**Profile B**

- “black box”
  Unknown separation between Base-Station and ASN-GW entities

**Profile A** was canceled by WiMAX Forum
Disruptive Approach of OPEN WiMAX

- OPEN WiMAX delivers **Operator Centric Approach**
- End of vendor-centric era in telecommunications
- Open architecture guarantees interoperability among vendors
Alvarion 4Motion Solution
WiMAX Network Models & Time Frames

2004

Access 2004/5
- Fixed Outdoor
- WiFi Hotspot
- Backhaul

Nomadic 2006/7/8
- Metrozone
- Fixed Indoor
- Enterprise Campus Piconet

Portable/Mobile 2009+
- Mobile

Going Forward....

Fixed Access
- Stationary BB Access wherever you are

Nomadicty
- Pedestrian mobility
- BE HO – Latency tolerant TCP/IP applications

Portability
- Up to 60 KMH
- Guaranteed HO for non RT services
- Sleep/Idle mode

Simple Mobility
- Up to 120 KMH
- Guaranteed HO for all services

Full Mobility

alvarion
Your Open WiMAX Choice
4Motion Solution

Core Network Equipment

Service Enabling Platforms

End-User Devices

Radio Access Network Equipment
4Motion is a complete OPEN™ WiMAX end-to-end solution

- WiMAX IEEE 802.16e-2005 Certified Wave II
- Employs an open, standard all-IP architecture enabling a Best-of-Breed multi-vendor solution
- Delivery of mobile and fixed video, voice, and data services
- Supports the full range of business, residential, and Personal Broadband services
Alvarion 4Motion Solution

Core network equipment

Accounting Authentication And Authorization Server

Home Agent Server

AlvariSTAR™ Network Management System
Alvarion 4Motion Solution

Radio Access Network Equipment

- BreezeMAX 2300
- BreezeMAX 2500
- BreezeMAX 3300
- BreezeMAX 3500
- BreezeMAX 3600

BWG-LS

Macro

BWG-IS

Micro
Alvarion 4Motion Solution

End-user equipment

Ultra Mobile PC*
Consumer Electronics*
Smart Phone*
BreezeMAX NA
BreezeMAX PRO

* Provided by Alvarion partners and CE manufacturers
Alvarion 4Motion Solution

Service enabling platforms

- Voice (VoIP)
- Mobile TV
- Instant Messaging
- Email
- Video Conferencing
- File Transfer
- VPN
- Location Based Services
Phase I. Fixed and Nomadic
The solutions in year 2007 address fixed and nomadic services

Solutions comprised of the following elements:

- **RAN (BreezeMAX):**
  - Macro and Micro BST

- **End User Equipment**
  - Variety of outdoor and indoor CPEs

- **Network main components:**
  - External AAA Server
  - AlvariSTAR
BMAX Advantages

4Motion 802.16e pre-certified solution, based on our BreezeMAX mature BST platform

Operating in all standard WiMAX frequencies - 2.3, 2.5, 3.3, 3.5GHz, 3.6GHz

Support nomadic services using WiMAX core network

Multi application / service platform
Multiple QoS levels

Superior Coverage and capacity
Modular BST – Dense Populated Area

- Suited for dense Urban/Suburban deployments
- Modular, supporting up to:
  - 3 sectors with two carriers or 6 sectors with one carrier
- 4 channel AU-IDU
- Support 2\textsuperscript{nd} and 4\textsuperscript{th} order diversity
- NPU for GPS support
- Scalable, Carrier class platform
  - Hot swappable functionality
  - Centralized management
- Standard based Radius interface for operation with AAA server
- Local and remote management
- Suits for low dense rural deployments
- Based on similar hardware components and provides similar functionality as the Modular BST
- A compact 1U 19” shelf
- Single carrier for low density rural area
  - Single sector using directional antenna or OMNI antenna
- Support 2\textsuperscript{nd} and 4\textsuperscript{th} order diversity
- Can operate with all types of HP-ODUs
- Standard based Radius interface for operation with AAA server
- Local and remote management
Phase II. Portable and Mobile Services
4Motion™ WiMAX Solution

Personal Broadband for you, anytime, anywhere

- Complete end-to-end IEEE 802.16 solutions
  - Fixed/Nomadic/Portable/Mobile WiMAX services (Quadruple Play)
  - Fully distributed all-IP architecture
  - Open architecture and interfaces
  - Advanced access technologies
  - Flexible and low cost
- BreezeMAX 4Motion: High Power, Smart BTS & CPE, WiMAX Compatible - Proven infrastructure sequel of Breezemax
- Featuring support
  - Software defined radios (SDR), scalable OFDMA,
  - smart antennas, MIMO & dynamic bandwidth allocation
- Delivered by Alvarion and its Technology partners
The solution in H1/09 addresses Mobile solutions
- Greenfield mobile broadband operators
- Early adopters of Mobile WiMAX technology

Comprised of the following elements:
- RAN (BreezeMAX-4M):
  - Macro BST
  - New Antenna Arrays [Tx+Rx] – 2+4, 4+4
- CPE
  - Fix ODU CPE and SI
  - Mobile Station (MS) – PCMCIA, Handset
- Network main components:
  - ASN GW (Network Gateway)
    - Small Scale Integrated in BMAX-4M
    - Large Scale third partners
  - AAA Server
    - Integrated or external
    - Home Agent (Roaming Agent)
    - Alvaristar™
Support Mobile WiMAX service
- Intra and Inter BST Handoff

4Motion 802.16e Certified Solution
- Can upgrade 4Motion TDD BST

OPEN™ WiMAX architecture
- Standard WiMAX Interfaces offers Best of Breed Network Core devices

World Wide WiMAX frequencies coverage (masks)
- 2.3, 2.5, and 3.5GHz frequencies
- At 5, 7, 10Mhz

Investment protection
- Migration path using variety of CPEs, upgradeable to 802.16e
- Future proof migration to AAS technologies (MIMO, Beam Forming)
## Network Building Blocks

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASN GW</td>
<td>Network Gateway</td>
</tr>
<tr>
<td></td>
<td>Enables Mobility</td>
</tr>
<tr>
<td>BWG-IS</td>
<td>Small Scale</td>
</tr>
<tr>
<td></td>
<td>Integrated into BreezMAX BST</td>
</tr>
<tr>
<td>BWG-LS</td>
<td>Large Scale ASN-GW</td>
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<tr>
<td></td>
<td>From IoT partners (i.e. Starent, Cisco, Hitachi)</td>
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<tr>
<td>Home Agent (HA)</td>
<td>Enables Roaming between WiMAX networks</td>
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<tr>
<td></td>
<td>From third party</td>
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<tr>
<td>AAA server</td>
<td>Enables Network Entry</td>
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<tr>
<td></td>
<td>Authentication, Authorization, Accounting</td>
</tr>
<tr>
<td></td>
<td>Complementary to BWG-IS</td>
</tr>
</tbody>
</table>

**BMAX-4M with BWG-IS Integrated ASN-GW**

**BWG-LS Cisco 7600 Multiple ASN GW with Integrated HA and Integrated AAA**

**Third Party AAA From Bridgewater For BWG-IS**
Scalable BMAX-4M Modular BST

- Suits for Mobile WiMAX deployments
  - Dense-Urban / Urban / Suburban / Rural
- Modular, supporting up to carriers:
  - 3 sectors w/ 2 carriers
- Always Support 2\textsuperscript{nd} and 4\textsuperscript{th} order diversity
- Carrier Grade Resiliency
  - Hot swappable functionality
  - Centralized management
  - Design for full redundancy
- Local and remote management
Outdoor unit - ODU

- Designed to support world wide frequencies
- Attached or detached antenna
- **1RX / 1TX, 34-36dbm, up to 10Mhz, models:**
  - 2.3GHz ROW / WCS for US
  - 2.5Ghz, 2 models, each is 100MHz
  - 3.5Ghz, 4 models, each is 50Mhz
- **2 Rx /1TX 37-39dbm, up to 10Mhz, models:**
  - 3.5Ghz – 1 model, supporting 200MHz
- **4 Rx /2TX 37-39dbm, up to 20Mhz variety of models:**
  - 2.3GHz ROW / WCS (future)
  - 2.5Ghz, BW
  - 3.5Ghz, BW
- Fully outdoor
- Optional an add-on H bracket for easy deployment
CPEs and End-user devices
Product Portfolio

- Beceem and GCT based – from BreezeMax release V2.0 (Q2’08)

- Intel based –
  - 802.16e pre-certified - from BreezeMax release V1.0 (Q1’07)
  - 802.16e certified - from BreezeMax release V2.5 (Q3’08)
Products Overview

Mobile

Residential & SOHO

Corporate

Broadband Consumer Electronics

Modem & RGW

Voice GW

Integrated Access Device

Data Modem

Primary Voice

Network GW

USB

PC Card

Your Open WiMAX Choice
BreezeMAX Mobile Terminals

- Designed for WiMAX 802.16e mobile users
- Wave 1 certified, Wave 2 ready
- Self installable and self configurable
- Data Throughput:
  - 7Mbps downlink and 2Mbps uplink for 64k packets
- Based on Beceem BCS200 dual band chipset
- Frequency support
  - 2.3, 2.5 and 3.5Ghz
- Key features
  - Max transmit power 23dbm
  - OS support – WinXP & Vista
  - Cardbus interface
  - EAP-AKA, EAP-TLS and EAP-TTLS authentication support
  - Connection Manager Application
Terminals – BreezeMAX USB Modem

- Designed for WiMAX certified 802.16e fixed and nomadic users
- Basic and Low cost CPE
- Based on GCT chipset
- Designed for residential users with single Desktop PC
- Small form factor – can carry it in your bag…
- Bridge capabilities
  - Same features set as PC card
- Frequency support
  - 2.3, 2.5 and 3.5Ghz
WiMAX Devices Strategy

1. Alvarion
2. WiMAX Chipset
   - Intel
   - BECEEM
   - SEQUANS
   - GCT
3. IOT, ODM
   - 4MOTION
   - AW3
4. 802.16e Offering
   - Offering
   - IOT
Comparing WiMAX Profiles

OPEN WiMAX™ (Profile C)

Clearly defined separation between Base-Station (RRM) and ASN-GW (networking) entities (functionality)

Profile B

“black box”
Unknown separation between Base-Station and ASN-GW entities
4Motion solution
4Motion Solution

- Core Network Equipment
- Service Enabling Platforms
- End-User Devices
- Radio Access Network Equipment
Customers
Top Tier Customers

Western Europe
- Orange
- Deutsche Telekom
- France Telecom
- BT
- Eircom
- Vodafone
- Cogent
- Telefonica

APAC
- NTT
- Reliance Infocomm
- Bharti
- AIRCEL
- Chunghwa Telecom
- China Mobile
- China Telecom
- CNC
- China Unicom

Eastern Europe
- Мегафон
- Svyaz
- Invest
- biete
- Казактелеком
- Telekom Srbija
- Telecom
- Golden Telecom

LATAM
- Telmex
- Telefonica
- Axtel
- Emtel
- Telemovel
- COTAS
- Telekom
- Millenium
- Tigo

Africa
- MTN
- GT
- Telecom Namibia
- Telecom
- MWEB

North America
- Verizon
- TDS Telecom
- AT&T
- airband
- Alltel
- Digicel
- alvarion
Top Emerging Operators

Western Europe
- wimax
- euskaltel
- Altitude Telecom
- NeoSky
- mobilecity
- MalarEnerg
- BUTLER networks

APAC
- TelstraClear
- CallPlus
- TULIP®
- FINTEL
- Dialog Telecom
- SunTel
- Allegro Networks

Africa
- KTN
- TCC
- MicroCom
- STARTECH Connections
- Global Broadband Solutions
- GULF SAT
- ETI
- suburban

Eastern Europe
- PETERSTAR
- alternet
- Norby
- Astral
- clearwire
- CENTER TELECOM

LATAM
- Alestra
- Americatel
- GVT
- telecel
- Ertach
- RACSA

North America
- speakeasy
- A2
- Wheatland Broadband
- DIGITALBRIDGE
- alvarion
Success Stories
WiMAX Customers LATAM

- Telmex Argentina
- Entel in Chile
- Telecel in Paraguay
- Americatel in Peru
- Telmex Perú
- Genesis Venezuela
- Telmex Chile
- Telmex Ecuador
WiMAX Customers LATAM

- **RACSA Costa Rica**
  - Alvarion 802.16e compliant Technology in 3.5 GHz band
  - Fixed and Portable applications now
  - Path to Mobility applications in the future

- **Telmex Mexico**
  - 802.16e compliant Technology in 3.5 GHz band
  - Commercial Deployment in Tabasco
  - First Telmex WiMAX network in Mexico
  - Tres Marías Project

- **Telgua Guatemala**
  - 2.5 GHz band

- **Telecom El Salvador**
  - 3.5 GHz band

- **Millicom Guatemala**
  - 802.16 compliant Technology in 2.3 GHz band

- **Millicom El Salvador**
  - 802.16 compliant Technology in 2.3 GHz band

- **Tigo Bolivia**
Thank You