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iBurst Update

ITU Regional Seminar on
Broadband Wireless Access

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Agenda

- Defining iBurst
- Commercial structure
- Deployment status
- Standards

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iBurst at a glance

Mobile broadband wireless system, supporting full range of service offers

Mobile   **Fixed**
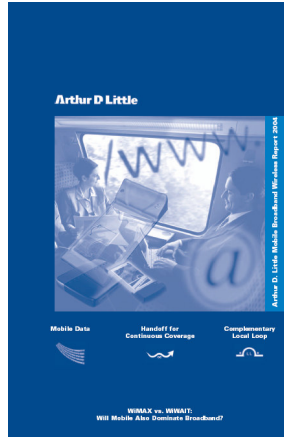
Business

Residential

Data + Voice

- Pure IP transport for last mile
- True broadband user data rates (1 Mbps now, 2-4 Mbps soon)
- Wide-area coverage
- Transparent support of Internet applications, including VoIP
- Full support for mobility
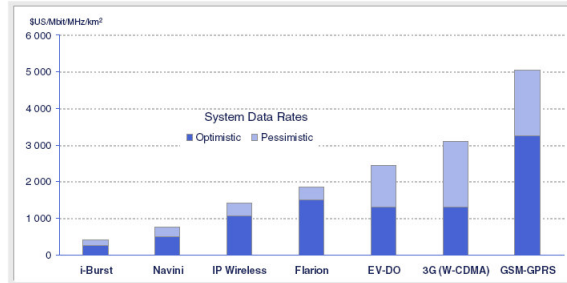- In large-scale commercial operation now

4

iBurst economics are materially different

Arthur D Little

Arthur D. Little Mobile Broadband Wireless Report 2004

Mobile Data Handoff for Continuous Coverage Complementary Local Loop

WiMAX vs. WiWAIT: Will Mobile Also Dominate Broadband?

From the recently-released ADL white paper on mobile broadband wireless:

Figure 9 — Comparative Delivery Costs for Broadband Wireless Data

$US/Mbit/MHz/km²

System Data Rates
■ Optimistic ■ Pessimistic

i-Burst Navini IP Wireless Flarion EV-DO 3G (W-CDMA) GSM-GPRS

Sources: Vendor specifications, Arthur D. Little analysis

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5

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iBurst commercial structure well along

Operators	PBA, WBS, others coming
Manufacturers (radio network)	Kyocera, Dewell exploring others in China and India
Partners	Cisco (core network elements) ArrayComm (smart antenna technology)
Ecosystem Support	iBurst Operators Consortium being formed to provide: • Market development leadership • System-level product management • Protocol/standard development • Operator tools support

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6

3

Commercial products since early 2004

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iBurst Deployments
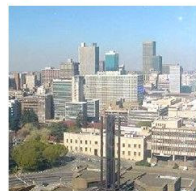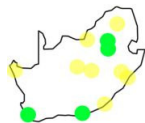
A good iBurst operator candidate...

- Intends to offer primary broadband access

- Wants to seize subscriber acquisition initiative in their market

- Values mobility differentiation

- Understands RF system behavior in real-world environments and the critical success factors in their business model

- Has a good relationship with their spectrum regulator

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9

Two nationwide-scale networks thriving now

South Africa

Personal Broadband

WBS

Australia

iBurst

http://www.iburst.co.za

http://www.iburst.com.au

10

WBS Network in South Africa

- 33 live base stations
    - » Coverage in Johannesburg, Cape Town, Durban, and Pretoria
- Over 9,000 subscribers
    - » 69% desktop
    - » 31% laptop (PCMCIA card)
- Full NOC in Johannesburg & POP in Cape Town
- FULL ISP services (Tier-2 ISP):
    - » Email
    - » Domain registration and
    - » Hosting services
- IP bandwidth management per session/product/protocol
- Pseudo & customized VPN solutions

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11

WBS Network in South Africa, continued

- Currently covering 4 major cities.

- Increase to 6-8 cities by end of 2005

- Current coverage design is >5 km radius

    - » Moving to 3 km and better in CBDs and urban areas

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12

6

The PBA Network Today

- 73 sites

- Coverage: 5m pops, 3500 sq km

- Sydney Melbourne Brisbane Canberra & Gold Coast – all backhauled to Sydney

- Broadband widely available

- 50:50 sales of PCMCIA & desktop modem

  » Laptop PC sales growing rapidly, desktop flat

  » Increasing interest in VoIP

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13

iBurst deployments en route

- Spectrum holder in 3 countries in northern Europe in planning stages

- Significant activity in Asia, Africa, and Russia

- Opportunities in China and Latin America to be explored

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14

7

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iBurst and Standards

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iBurst Standards Update

- HC-SDMA standard developed in ATIS based on iBurst protocol (version 1.3.1) near final approval as an ANSI Standard

- ISO/TC204 initiating work leading toward ISO standard for use of iBurst by Intelligent Transport Systems (ITS)

- iBurst recognized in Project MESA as applicable for Public Safety

- IEEE 802.20 progressing so slowly it is likely to be considered a 4G standard

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16

8

High Capacity - Spatial Division Multiple Access

- ATIS 0700004-200x, High Capacity-Spatial Division Multiple Access (HC-SDMA) (new standard)

    » Developed based on the iBurst Protocol (version 1.3.1)

    » Balloted and approved by ATIS – June 12, 2005

    » ANSI Public Review to close on September 5, 2005

- Expect final ANSI adoption by mid-September 2005

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17

Scope of HC-SDMA Standard

- ATIS 0700004-200x, High Capacity-Spatial Division Multiple Access (HC-SDMA)

    SCOPE: This document defines the radio (RF), Physical Layer (PHY), Medium Access Control (MAC), and Layer 3 (L3) specifications for the HC-SDMA (High Capacity-Spatial Division Multiple Access) protocol. This specification does not address functionality at the service and application layers. Typical deployments are expected to use a standardized data networking access paradigm, such as L2TP and PPP.

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18

Contents of HC-SDMA Standard

- The HC-SMDA Standard specifies:

  » Base station (BS) radio frequency characteristics

  » User terminal (UT) radio frequency characteristics

  » Associated frame structures for the various burst types

  » Modulation, forward error correction, interleaving and scrambling for various burst types

  » Logical channels (e.g. broadcast, paging, etc.) and their roles in establishing communication over the radio link

  » Procedures for error recovery and retry

  » Layer 3 (L3) mechanisms for creating and controlling logical connections (sessions) between UT and BS

  » L3 mechanisms for user terminal authentication and secure transmission of on the uplink and downlink data links

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19

New iBurst Project in ISO/TC204

- ISO/NP25113: "Intelligent Transport Systems - CALM - Standardise Specific Mobile Broadband Wireless Access Communications Systems" adopted in April 2005 at Paris meeting of ISO/TC204

- Scope:

  » A standardised approach, including protocols and parameters, for Medium and Long Range communications, for currently deployed MBWA MANs and specifications for both Master/Slave and Peer-to-Peer Communications that support vehicles traveling at highway speeds.

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20

New iBurst Project in ISO/TC204

- Scope cont'd:

  » Support communications over existing MBWA MANs, including, among others, HC-SDMA that is being standardized by ATIS WTSC-WWINA, and which is embodied in the iBurst system.

  » Allow an interface to the CALM architecture currently being defined by another part of TC204/WG16.

  » Help developers and operators of road traffic communication systems achieve communication functions that support a wide range of Intelligent Transport Systems (ITS) applications.

IEEE 802.20 Summary

- MBWA: Mobile Broadband Wireless Access

  » "clean-sheet" design for mobile broadband

  » Standard to be truly broadband, optimized of IP-data and vehicular speed mobility

- 802.20 should make a call for proposals after November 2005

  » Requirements completed

  » Evaluation criteria and technology selection process definition almost done

  » Criteria and requirements suitable for an iBurst-based technology proposal

Thank You!

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