Broadband for All
Deploying 3G/HSDPA at Lowest Costs

ITU Conference Sept. 20, 2006

ALCATEL

Agenda

High-Growth Economies: a Strategic Focus

Deploying 3G/HSDPA at Lowest Costs (CAPEX & OPEX)

Conclusion

September '06 - 2

ALCATEL

The Market

A worldwide market of **6 billion** people

Currently under-served, with only:
- 2 billion cellular subscriptions
- 1.2 billion fixed telephone lines
- 210 million broadband subscriptions

Source: IDATE, 2006

▶ **Broadband is a necessity for economic and social growth**

E-health
E-education
E-government
E-environment
E-business
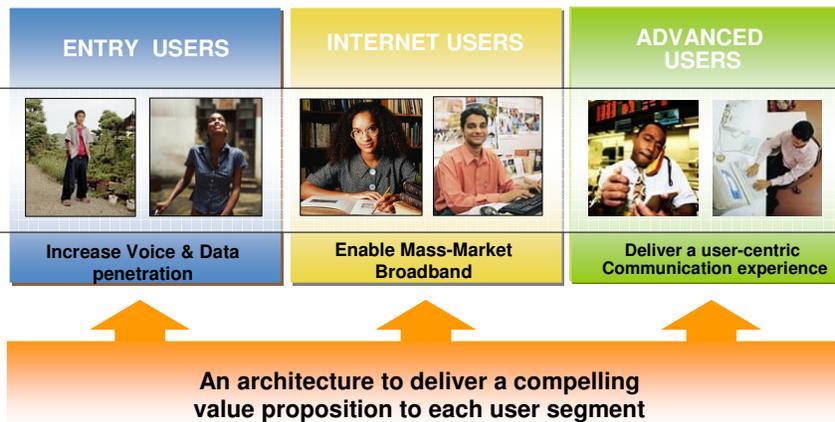E-agriculture
E-employment
E-science

Source: ITU E-applications

130 countries have a DAI (ITU digital access index) < 0,55

ALCATEL

The Challenge: Need to Address 3 Different User Segments, with 3 Distinct Value Propositions

ENTRY USERS	INTERNET USERS	ADVANCED USERS
Increase Voice & Data penetration	**Enable Mass-Market Broadband**	**Deliver a user-centric Communication experience**

An architecture to deliver a compelling value proposition to each user segment

ALCATEL

2

Entry Users:
Service Providers Must Increase Voice & Data Penetration

MOBILE PENETRATION
risk
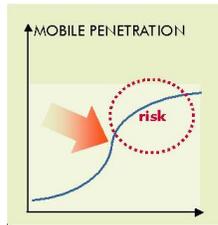
Growth in mobile penetration at risk to decelerate:

- saturation of current target segment
- need new value proposition to address underserved

ENTRY USERS

Two barriers to overcome for Service Providers

- Affordability: meet the needs of lower-income users, without cannibalizing the existing customer base
- Accessibility: increase coverage in a cost-effective way

Need innovation for new momentum

September '06 - 5

ALCATEL

Four Drivers of Mass-Market Broadband Adoption

1 Public initiatives and policy
TELECOM POLICY MAKERS

2 Adequate and relevant content
CONTENT PROVIDERS

3 User awareness & expertise
PUBLIC EDUCATION

4 Services affordability and accessibility
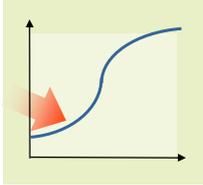NETWORK SERVICE PROVIDERS

A primary focus for Public Stakeholders

September '06 - 6

ALCATEL

3

Internet Users:
Service Providers' Key Role in Enabling Mass-Market Broadband

BROADBAND PENETRATION

INTERNET USERS

Broadband still at early adopter stage:

- Prices in high-growth economies> mature markets
- - Need critical user mass for scale & content

Two barriers to overcome:

- **Affordability:** increase PC penetration and deliver new affordable entry packages
- **Accessibility:** leverage wireless broadband to expand footprint beyond copper

Need to leapfrog to mass-market
Wireless broadband opens the game

ALCATEL

Advanced Broadband Users:
Need to Deliver a User-Centric Communication Experience

ADVANCED USERS

Growing competition to attract and retain advanced users:
Consumers and Businesses
High disposable income
High awareness @ desire for the hottest services

Delivering a user-centric communication experience enables to differentiate:
Services agility to quickly exploit opportunities
Services must be blended, not bundled
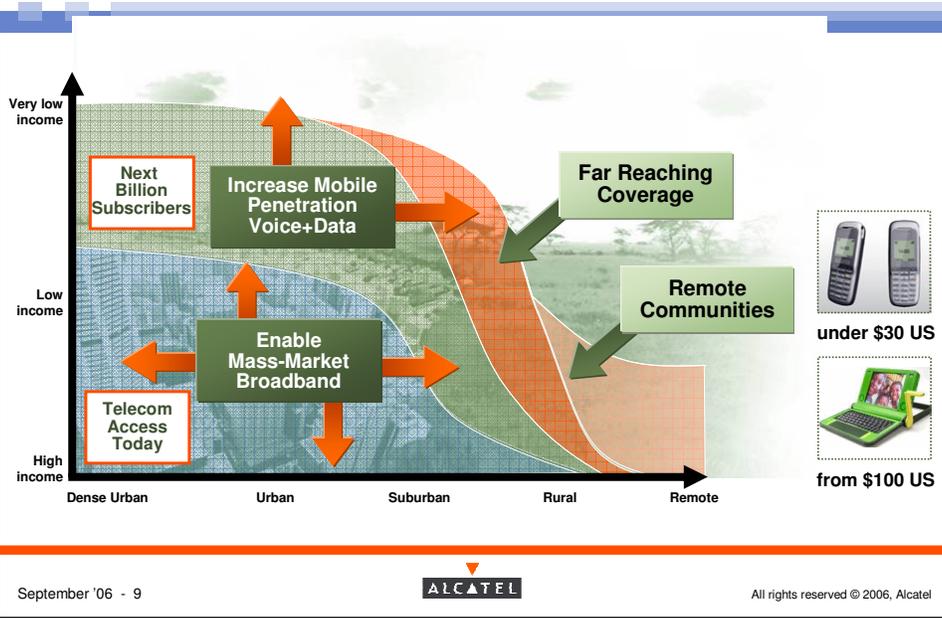Services personalization is key to success

Need to leapfrog to the most advanced
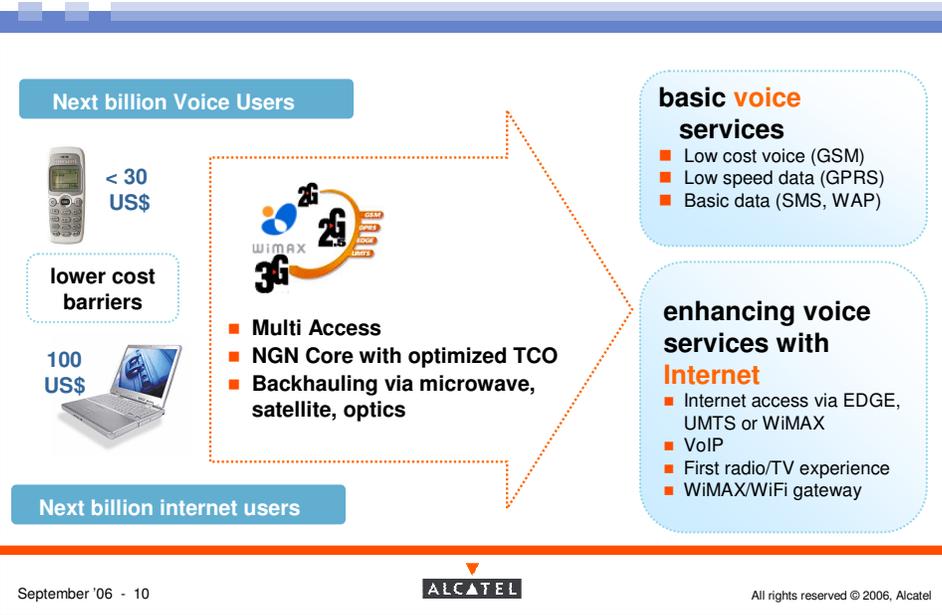### service creation and intelligent delivery

ALCATEL

Two Opportunities for Mobile Service Providers

Very low income

Low income

High income

- Next Billion Subscribers
- Increase Mobile Penetration Voice+Data
- Far Reaching Coverage
- Remote Communities
- Enable Mass-Market Broadband
- Telecom Access Today

under $30 US

from $100 US

Dense Urban   Urban   Suburban   Rural   Remote

ALCATEL

Product Strategy
From basic voice to enhanced data services

Next billion Voice Users

< 30 US$

lower cost barriers

100 US$

- Multi Access
- NGN Core with optimized TCO
- Backhauling via microwave, satellite, optics

Next billion internet users

basic voice services
- Low cost voice (GSM)
- Low speed data (GPRS)
- Basic data (SMS, WAP)

enhancing voice services with Internet
- Internet access via EDGE, UMTS or WiMAX
- VoIP
- First radio/TV experience
- WiMAX/WiFi gateway

ALCATEL

Boost mobile penetration
How to address these emerging markets ?

Next billion challenges

Complex environment

Challenging profitability issues

Incomplete infrastructure access

Specific operational constraints

Infra vendors' assets

Local presence

Adapted portfolio

Profitable business model

Customised Applications

ALCATEL

Agenda

High-Growth Economies: a Strategic Focus

Deploying 3G/HSDPA at Lowest Costs (CAPEX & OPEX)

Conclusion

ALCATEL

Deploying 3G/HSDPA at Lowest Costs (CAPEX & OPEX)
Key Customer Issues to address low-ARPU segment

▶ **Reduce the cost of the radio infrastructure to fit the targeted ~5$ ARPU**

✓ Optimized CAPEX & OPEX to boost profitability

✓ Adapt the infrastructure to environmental conditions

➤ compatible with harsh environment
➤ very simple to deploy and operate

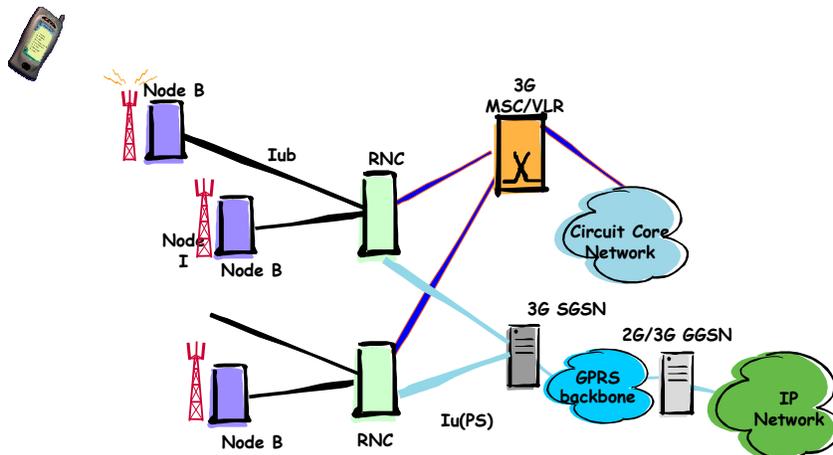✓Deploy the infrastructure matching exactly the needs of the targeted population

Low-ARPU regions deserves a low-ARPU range of radio access equipment

ALCATEL

Deploying 3G/HSDPA at Lowest Costs (CAPEX & OPEX)
Network Overview

ALCATEL

7

Assessing operator's challenges
Operators requirements versus geography

Type of area		Operators Requirements for RAN
Dense urban area	▶	**Minimum site cost** Node B/RNC of very large capacity & granularity Satisfy/differentiate various subscriber classes via QoS
Low urban area	▶	**Trade-off site cost/number of sites** Medium/large capacity Node B
Low density and rural areas	▶	**Minimum number of sites** Small capacity Node B , CAPEX & transmission optimized globally
Community	▶	**Minimum site cost and sites number** Small capacity Node B, Very High Power & transmission optimized globally

Continuous Coverage

September '06 - 15

ALCATEL

Overview of 3G operators' challenges

Sustain Data Traffic Growth
- Boost network traffic
- Be ready for new technologies

Intensify Customer Capture
- A maximum Quality of Service
- Efficiently address traffic hotspots
- Indoor coverage

Extend Your Coverage
- Low cost solutions for low traffic & remote areas
- Ensure continuity of service

Guarantee Urban Coverage
- A stable network despite huge growth
- A minimum initial CAPEX & monitor OPEX
- A fast deployment

Time
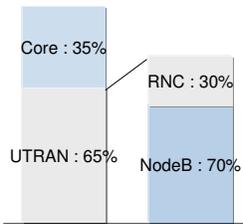
September '06 - 16

ALCATEL

8

Innovation in Radio Access:
A Key Business Driver to Profitably Increase Coverage

Need to reduce the number of sites
- Particularly for rural network extension

Need to reduce the cost of sites
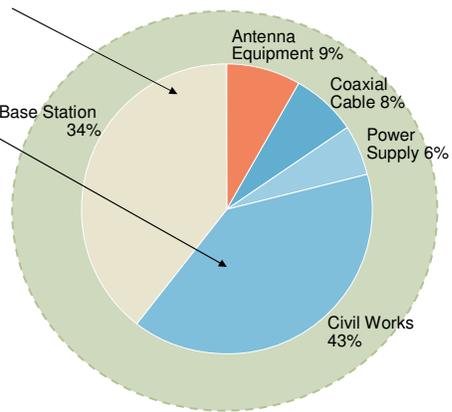- Particularly for dense urban environment

Cell Site Cost Distribution

Core : 35%

RNC : 30%

UTRAN : 65%

NodeB : 70%

Network access costs

Base stations represent between
10% and 34% of total cell site cost

Site engineering savings are crucial

Antenna Equipment 9%

Coaxial Cable 8%

Base Station 34%

Power Supply 6%
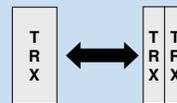
Civil Works 43%

ALCATEL

The solutions for low-ARPU networks
The Twin TRX module

The TWIN TRX module

An ultra-compact TRX available in all BTS

1 TWIN module = 2 TRX functions in single housing

- TRX size decreased by a factor 2
- Power consumption decreased by a factor # 2

T R X   ↔   T R X | T R X

Double capacity

✓ Up to 24 TRX in MBO2 & MBI5 (12 TWIN)

Very high Power coverage

✓ Reaching > 100W Output Power

ALCATEL

Multi-standard Radio Access Point

New in Q3 '07!

WiMAX

GSM Modules	+	UMTS Modules	+	WiMAX Modules

Node B   **BTS**   **WiMAX**   **Multi-standard Base Station**

UMTS   or   GSM GPRS EDGE   or   802.16e

GSM GPRS EDGE / UMTS   or   GSM GPRS EDGE / WiMAX   or   UMTS / WiMAX
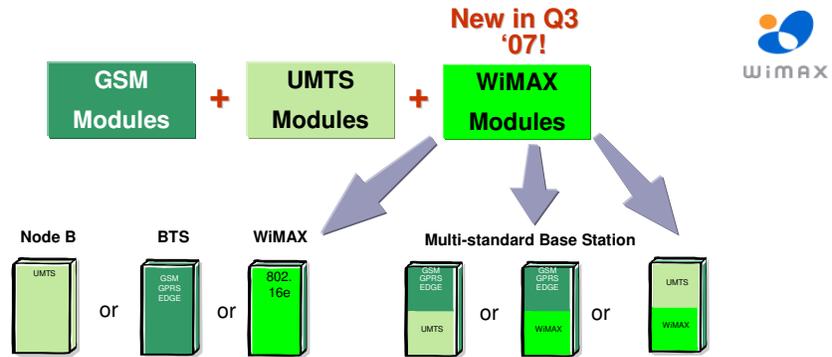
WiMAX 802.16e Alcatel Products will be integrated in MBS cabinets with WiMAX W3 release
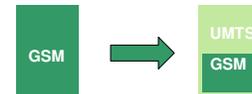
September '06 - 19

ALCATEL

Evolution from GSM to UMTS
No addition of new sites for 3G

3G Radio Site Cost Breakdown
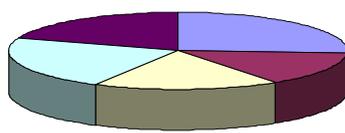
- Node B Indoor MBI 3 (3 TEU)
- Air Conditioning, Power Supplies Support
- Civil Works & others
- Site Acquisition & Project Management
- Antenna+feeder+µwave (trans)

■ Node B CAPEX only represents 25% of a 3G site

GSM → UMTS / GSM

Total Site costs have to be considered !

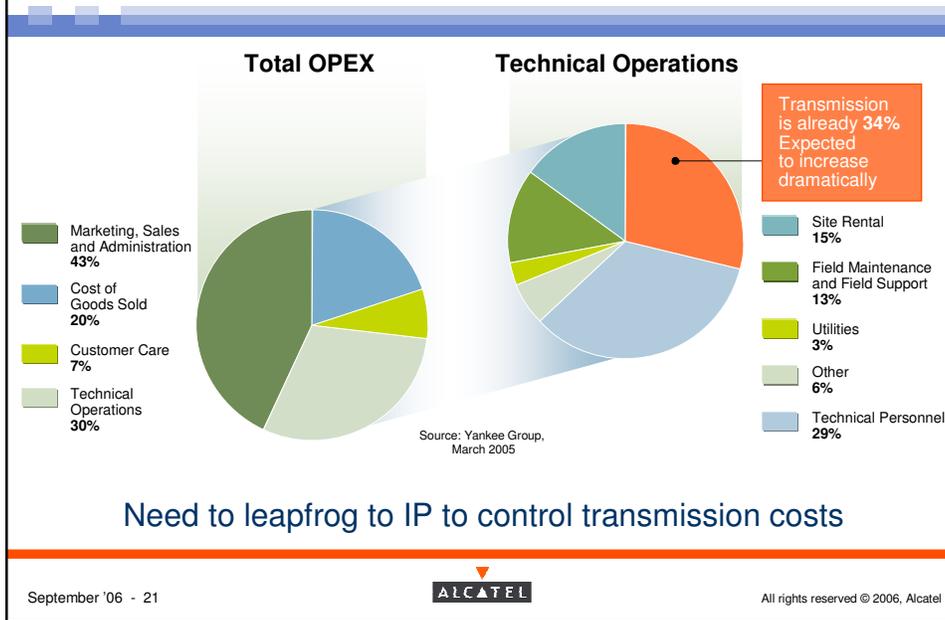■ Cost of upgrade for a BTS from GSM to GSM+UMTS only represents 24% of the cost of a 3G site

■ = 76% TCO saved for the first year !

September '06 - 20

ALCATEL

Slide 1

Transmission Costs are Key Driver of OPEX:
Dramatic Increase Expected from Broadband Internet

Total OPEX **Technical Operations**

Transmission is already **34%** Expected to increase dramatically

Marketing, Sales and Administration **43%**

Cost of Goods Sold **20%**

Customer Care **7%**

Technical Operations **30%**

Site Rental **15%**

Field Maintenance and Field Support **13%**

Utilities **3%**

Other **6%**

Technical Personnel **29%**

Source: Yankee Group, March 2005

Need to leapfrog to IP to control transmission costs

ALCATEL

Slide 2

Agenda

High-Growth Economies: a Strategic Focus

Deploying 3G/HSDPA at Lowest Costs (CAPEX & OPEX)

Conclusion

ALCATEL

Conclusion

Broadband for All	**Key Drivers**	**Infrastructure deployments**
A strategic focus A real market opportunity for both MSPs & infrastructure vendors	Public initiatives End users awareness & education Relevant Services contents Affordability of services, hansets & PCs	Dedicated solutions Preserving max of existing assets Reducing investments & Operation costs

=

Profitable business cases for "Broadband for All"

ALCATEL

Questions ?

ALCATEL

Thank you for your attention

Alcatel, leading the way towards a user-centric broadband world.

◀BROADEN YOUR LIFE▶