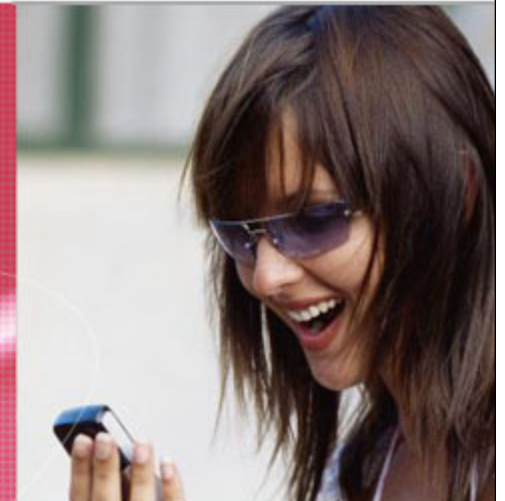


# IMS based application and NGN over Wi-Max (Rural Communication)



Dr. Abdul Razaque Memon  
March 2007

## Outline

1. Why is Broadband Important?
2. Challenges and Opportunities
3. Network Transformation
  - Network Reach ability
3. Service Transformation
  - IMS based services
5. How to move forward?

# 1

## Why is Broadband Important?

## Four Drivers of Mass-Market Broadband Adoption



**1** Public initiatives and policy  
Telecom Policy Makers

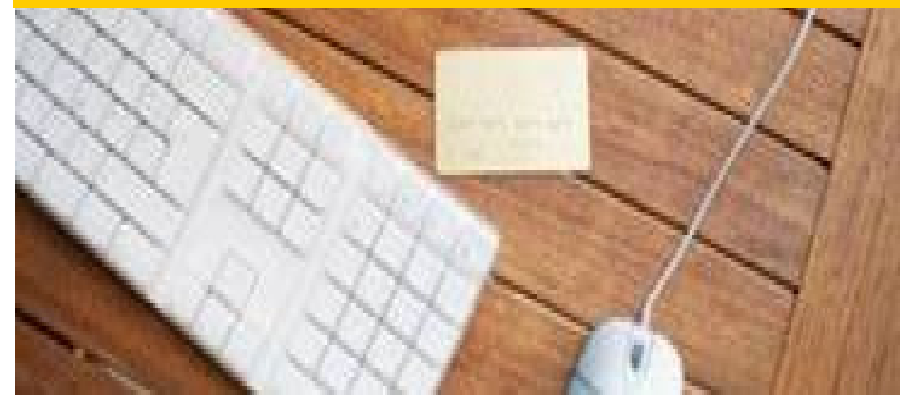


**2** Content and applications  
Content and Application Providers

**3** User awareness and literacy  
Public Education



**4** Services affordability and accessibility  
Network Service Providers



A priority for public stakeholders  
A key role to play for service providers

## Alcatel-Lucent “Broadband for All” Vision

### The Situation:

Six billion people worldwide, but only:

- 2.7 billion mobile subscribers
- 470 million broadband\* (wireline and wireless) subscribers

▪ Source: Alcatel-Lucent, 2006

### The Stake:

Broadband is a necessity for economic and social growth

\* Speeds > 128 kb/s

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

Source: ITU E-applications



Enabling Broadband for All

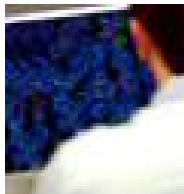
# Economic and Social Benefits of Broadband

## E-Business



- E-commerce for extended network of customers and suppliers
- E-transactions (efficiency) for supply chain and payment

## E-Science



- Access to scientific information for Universities and Research Centers
- Participation in international programs
- Grid computing

## E-Education



- Wider and better access to knowledge
- ICT literacy development
- Distance E-learning

## E-Health



- Tele-diagnosis
- Monitoring of health indicators
- Secure health records
- Training of health professionals

## E-Agriculture



- Information on market prices
- Dissemination of agricultural information
- Easier transactions through direct relationship with buyers

## E-Employment



- Development of ICT work force
- Tele-working to connect remote areas to main office and reduce traffic congestion

## E-Government



- Enhanced public services delivery
- Public administration efficiency
- Transparency

## E-Environment



- Public alert system
- Climate monitoring
- Flood management

**“Broadband is a fundamental civil right and human right.” – New York City Council, Dec 2005**

## E-Health & E-Government Projects

Senegal, Africa E-Health Pilot Project

**E-Health: DIAM Project in Senegal**

Tele-diagnostics for tuberculosis

Technology: DSL and WiMAX

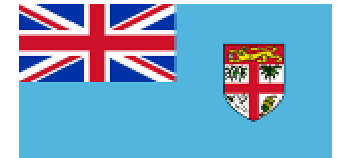
- **Process:**
  - Image capture in remote care centers from a set of medical imaging equipment
  - Visualization and processing of the images on multi-monitor stations in urban care hubs
- Sustainable business case (savings on films) and public health benefits



Fiji E-Government Program

**Response to local needs**

**Applications**



- E-learning & E-Scholar - Scholarship Management
- Prisoner Admin & Crime Database System
- Case Registration System
- Social Welfare & Human Resource System
- Document Management System

Chinese EXIM bank loan

Government investment US\$20M

Alcatel-Lucent prime contractor Project scope:

- Consulting
- Data Centers
- Information and communications infrastructure
- ICT competency development and training

“The project is not only visionary, but also comprehensive and tailored to answer the needs of Fiji today”

- Ratu Jone Kubuabola Fiji Minister for Finance and National Planning

## E-Science: Establishment of National Research and Education Networks

---

### National benefits

- Source of innovation
  - Enables involvement in large international research programs
- 

### China: CERNET

- 1 backbone managed by Tsinghua University
- 10 regional networks managed by universities
- 38 provincial nodes
- 900 education and research institutions linked



### Brazil: RNP

- 27 PoPs managed by universities
- 300 institutions linked





# Affordable Broadband Services for Internet Users to Government E-services

## Community Centers are a First Step



School



Cooperative



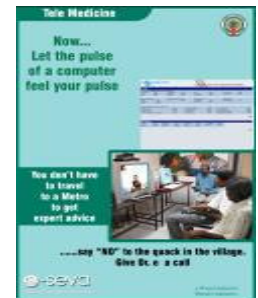
Internet Shop



Town Hall



Hospital



## India Andra Pradesh E-Seva Public-Private Partnership Model: Towards adapted Local Public Services

### End-User Benefits

- Simplicity : Provides a single interface for all public services (national, local)
- Convenience : No need to travel to urban areas
- Efficiency : Faster service and delivery

### Government Benefits

- Cost savings
- Real-time monitoring of services
- Exponential growth of transactions

### Public-private partnerships:

- Provide social and economic benefits of ICT (e-health, e-education, e-government) to all

### Efficient economic model:

- Share cost of devices (PCs and CPE) to provide affordable:0
  - Broadband Internet services
  - Voice services (from GSM to multiuser VoIP services)

### A first step before broadband@home:

- Major contribution to Internet literacy

**“As far as broadband penetration in the country goes, my vision is that every village in the country should be connected”** Mr. Vikram Tiwathia, Confederation of Indian Industries, August 2006

## A National Priority on Broadband

---

### National benefits

- Key driver of GDP growth
- Attracts foreign investments
- Develops new broadband economy
  - Content providers, gaming companies
  - CPE vendors
  - Web design agencies, Web hosting companies, Web server vendors

---

### South Korea



- ICT drove 27% of South Korea GDP growth from 1999-2002
- 17% of that ICT growth was related to broadband

---

### Egypt



- National Broadband initiative launched in May 2004
- Drove the share of ICT above 3.5% of GDP vs 1.5 % in 1998 (100% increase in 6 years)
- “Smart Village“ Business Park now hosts 25 000-30 000 jobs
- Key component of Egyptian Regional ICT Leadership Plan

# 2

## Challenges and Opportunities


Different user segments, distinct value propositions

The opportunity to leapfrog to the latest technologies and business models

# The Challenge:

Need to Address Three Different User Segments with Three Distinct Value Propositions

**Entry Users**



**Increase Mobile Penetration**

**Internet Users**



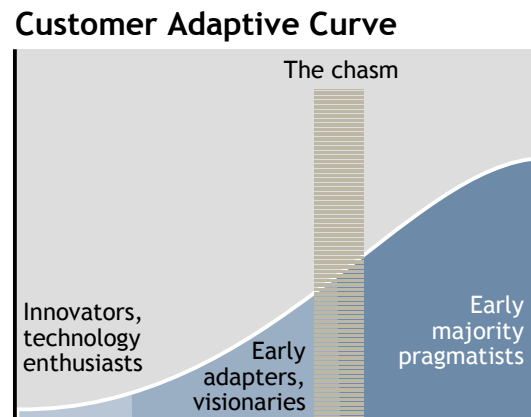
**Enable Mass-Market Broadband**

**Advanced Users**



**Deliver a User-Centric Communication Experience**

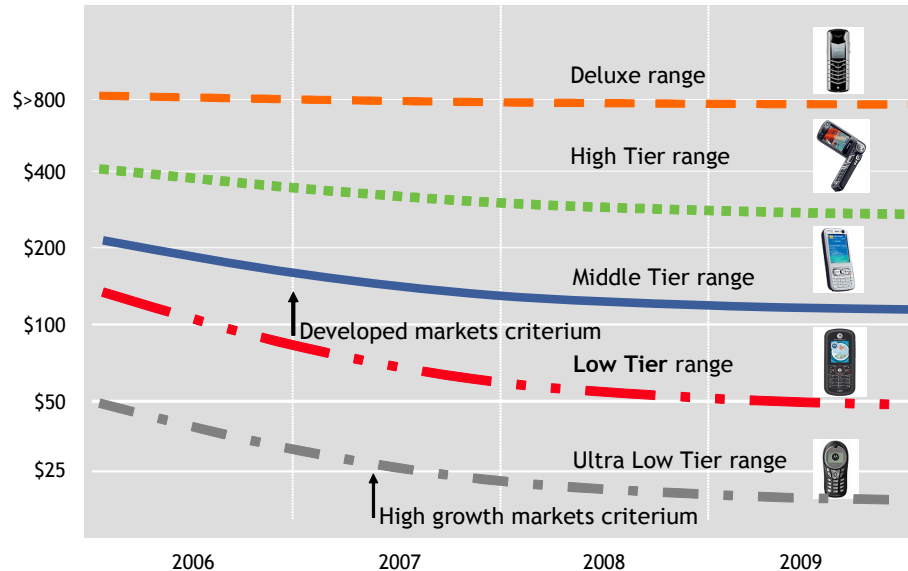
An architecture to deliver a compelling value proposition to each user segment



Source: Geoffrey Moore, 1991

# Affordable Mobile Communication Services: Overcoming the Entry Barrier of Mobile Handsets

## Market leads to low-cost handsets



Source: Alcatel-Lucent, 2006

## The right features, now below \$30\*



- Voice and SMS
- Dual-band
- High sensitivity to improve call quality and network efficiency
- Robustness to minimize after-sales service
- Use of cheap and rechargeable batteries

\* depending on local tax and duties

## Industry Initiatives



“To get below US\$30 per handset is a milestone achievement.”  
Craig Ehrlich, Chairman, GSM Association



“The CDMA industry is working on several initiatives to further reduce the cost and accelerate availability of entry-level devices, as well EV-DO mobile broadband.”  
CDG, Costa Mesa, Calif., February 27, 2006

# 3

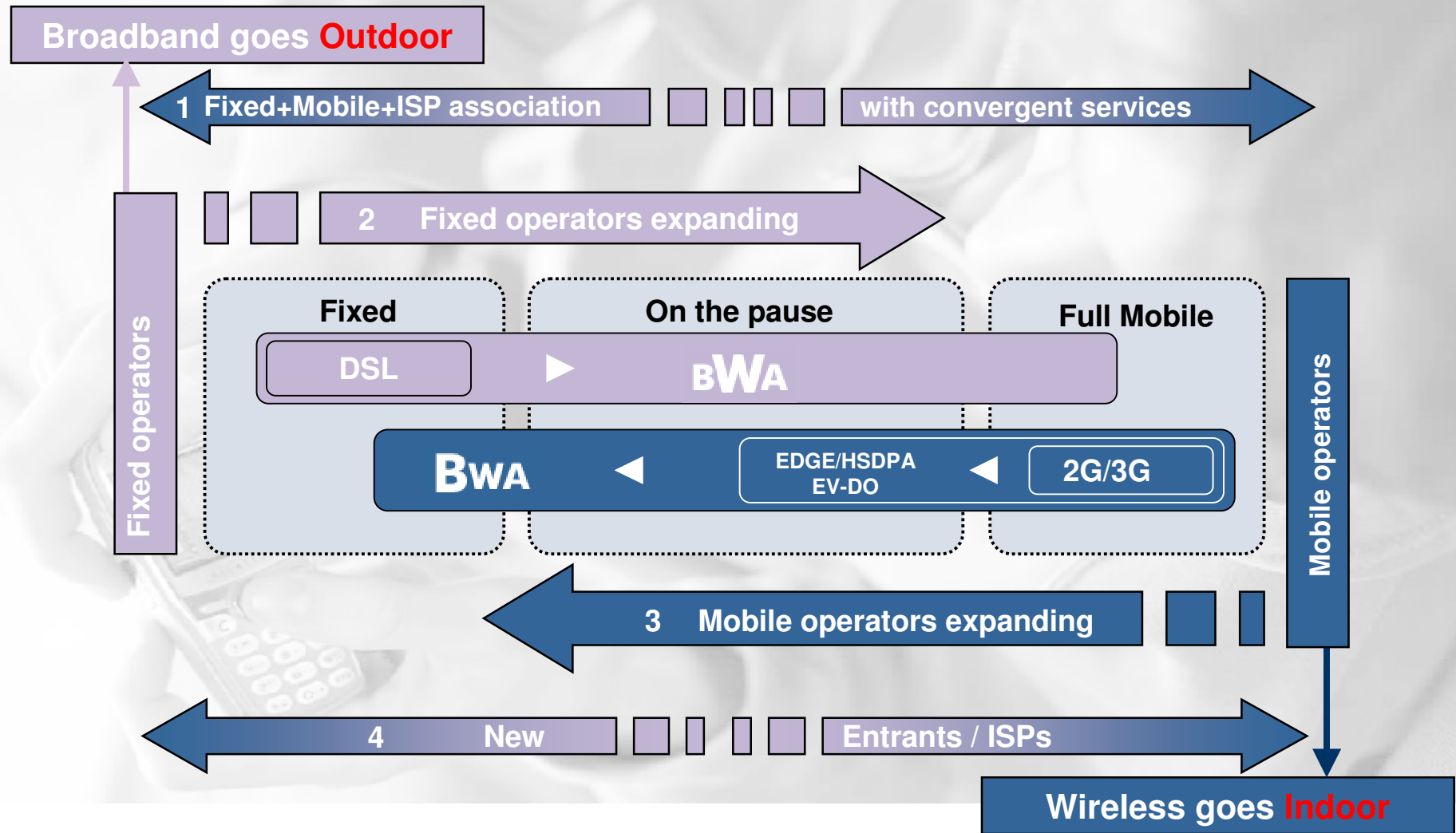
## Network Transformation

Innovate in radio access to increase voice and data penetration

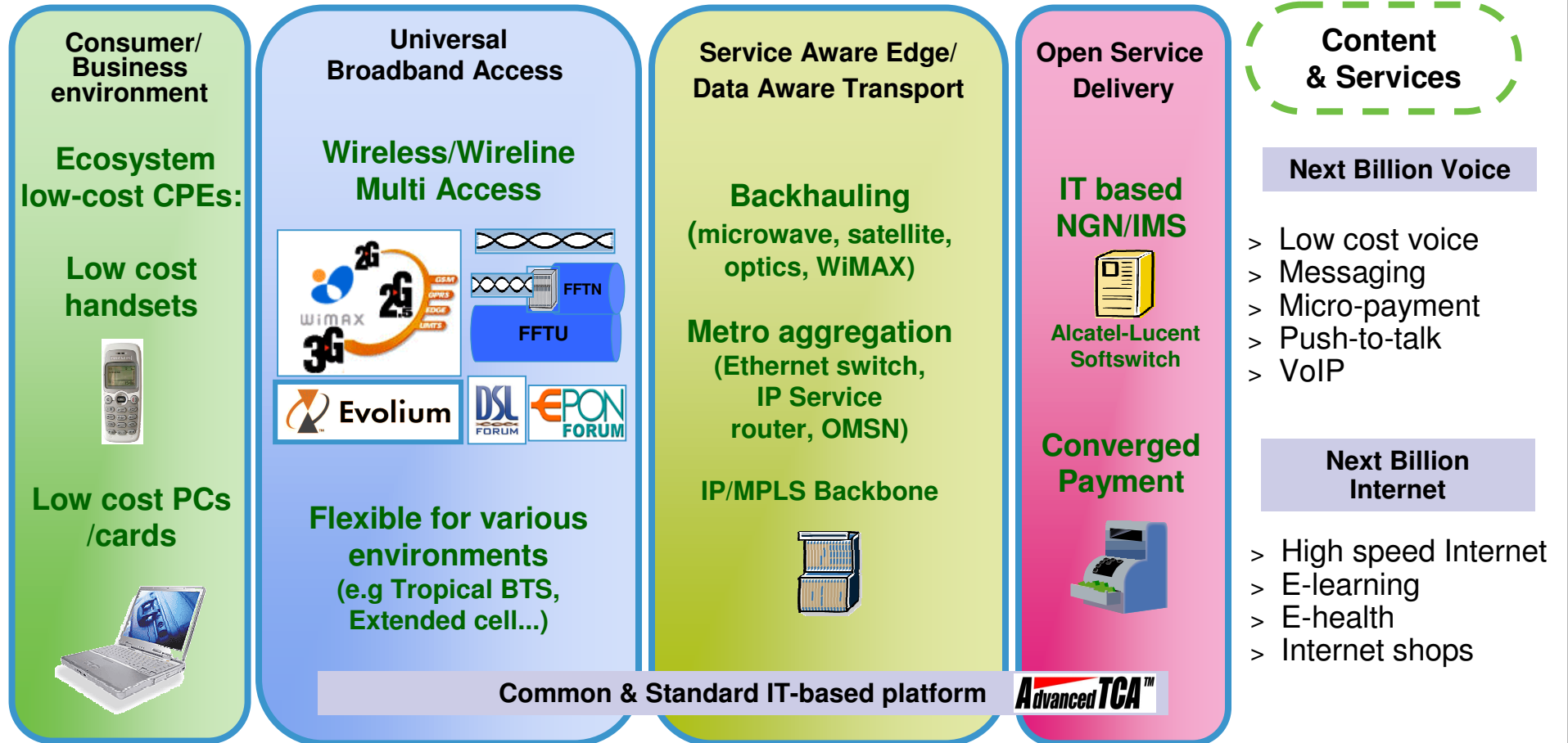
Combine access technologies to expand broadband footprint

Leapfrog to IP for cost efficiencies and services differentiation

# Customers are responding to convergence threats (2/2)



# Building bricks for the WiMAX ecosystem





# WiMAX cleverly addresses both end user and operators expectations


**Latency**



**Gaming**

IP


**QoS**



**Voice**

IP

**Throughput**



**Video / TV**

**Security**




**Mobile Office**

IP

**WiMAX**  
answers  
the technical  
demand  
**NOW**

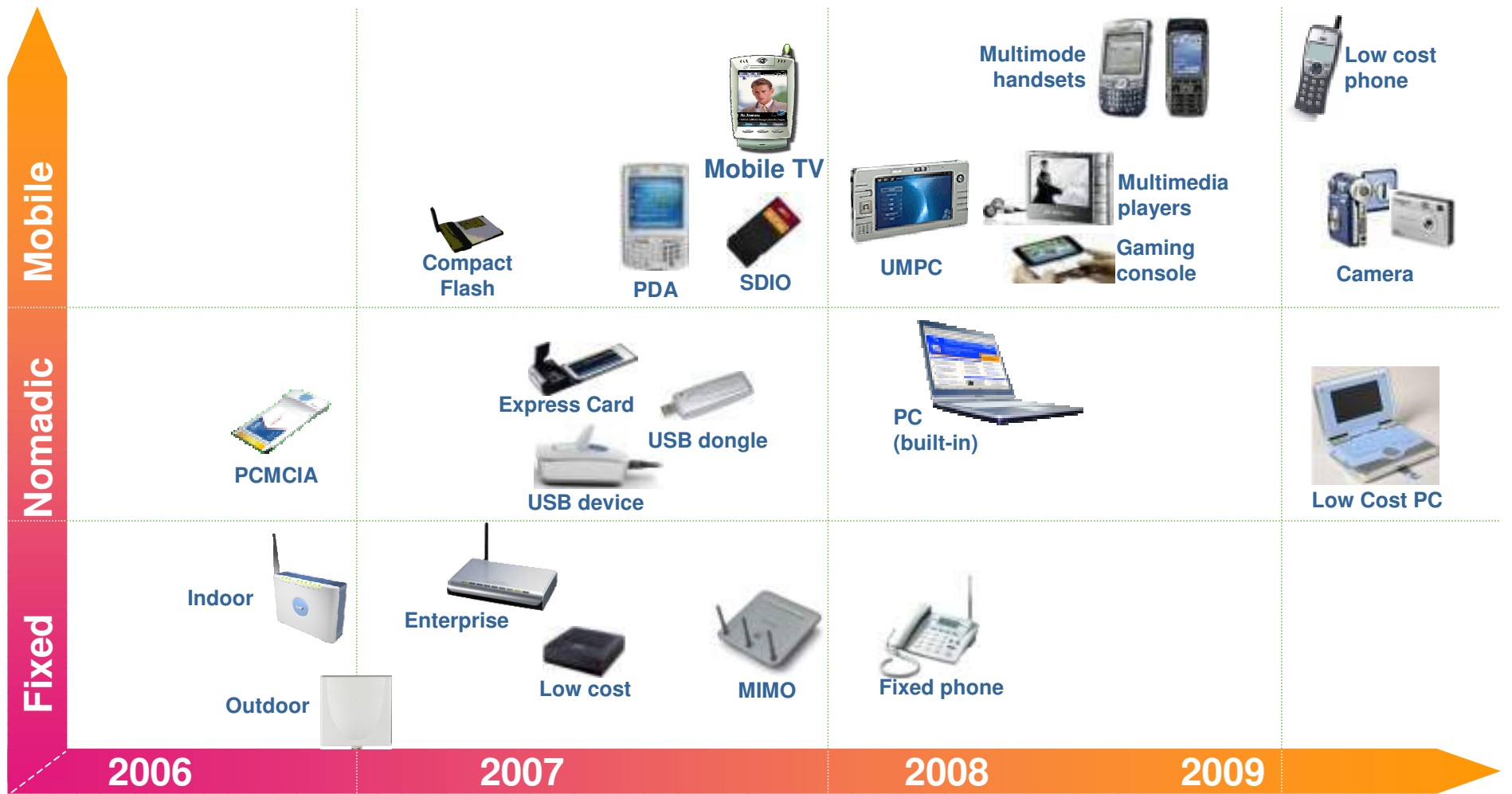
IP

**Mobility**



**Internet**

# WiMAX End-User devices roadmap



# 4

## Services Transformation

Innovative services for each user segment

Leapfrog to IMS and carrier-grade Service Delivery Environment (SDE)

## Evolutions in End-User Drivers: Broadband AND Wireless



End-User have high Expectations



### ... Going Broadband “Going Fast and with quality”

- Always on connection
- Higher Speed connections
- Unlimited usage
- Overall better Quality of Experience

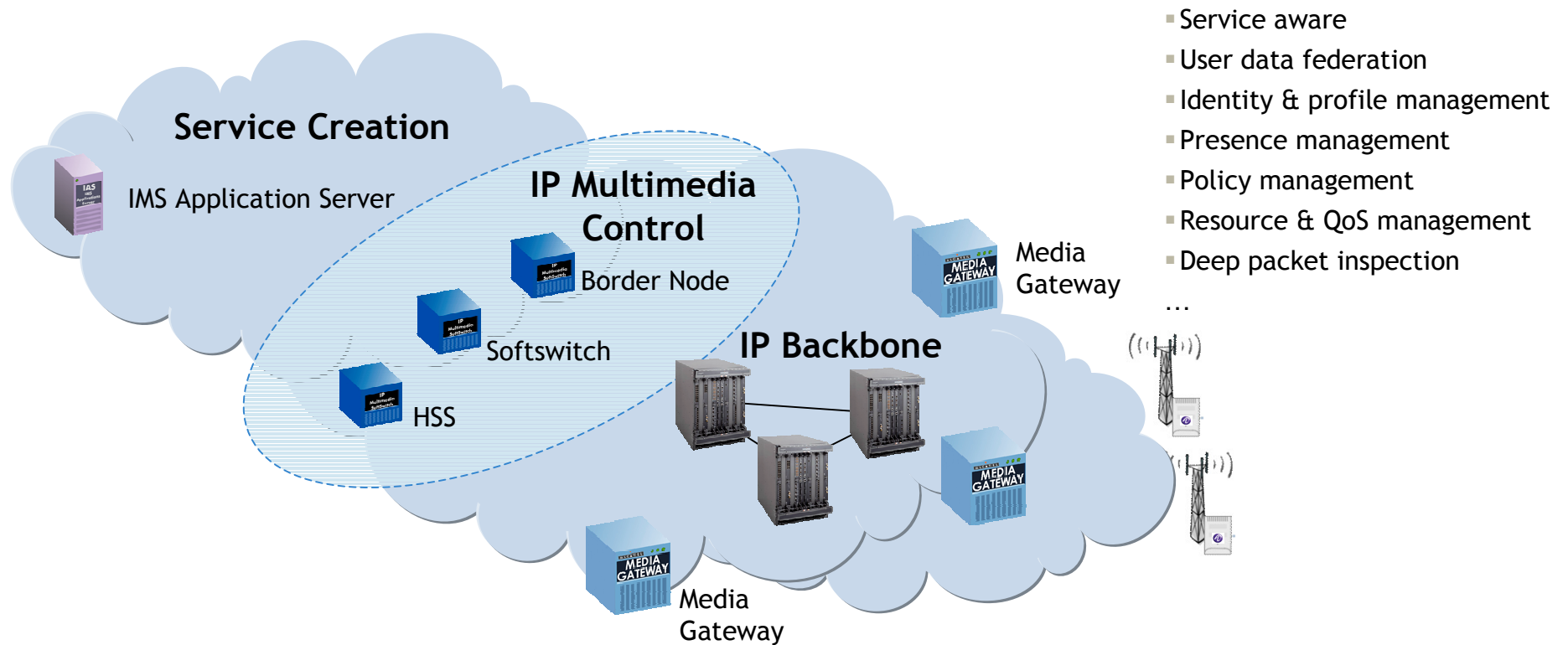
### Going Wireless ... “My services everywhere”

- Access to services anywhere
- Access to services through any terminal
- Same Quality of Experience than broadband wireline
- Enjoy new communicating devices



Broadband Wireless

# Distributing software value across the network



- Service aware
- User data federation
- Identity & profile management
- Presence management
- Policy management
- Resource & QoS management
- Deep packet inspection

## Service Innovation

Multi-access  
Multi-device  
Multimedia

## Smart Network

User-aware  
Service-aware  
Secure

## Service Delivery Simplification

Common platforms  
Software upgrade  
Scalability

# Evolutions in End-User Drivers

## A wide variety of rich services

Voice ...



### Unlimited Voice

- VoIP as a strong telecom industry trend

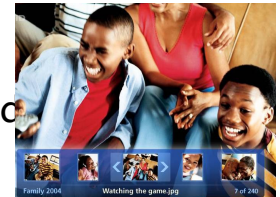


Data...



### High-Speed Internet

- Peak rate: 8 Mbps DL, 256 Kbps UL, unlimited volume



Advanced Services...



### Mobile TV, Mobile gaming & Blogging

- Few broadcast channels and 100+ unicast channels for unlimited usage
- Full interactivity, low latency for both server-based or peer-to-peer gamers



### Mobile office

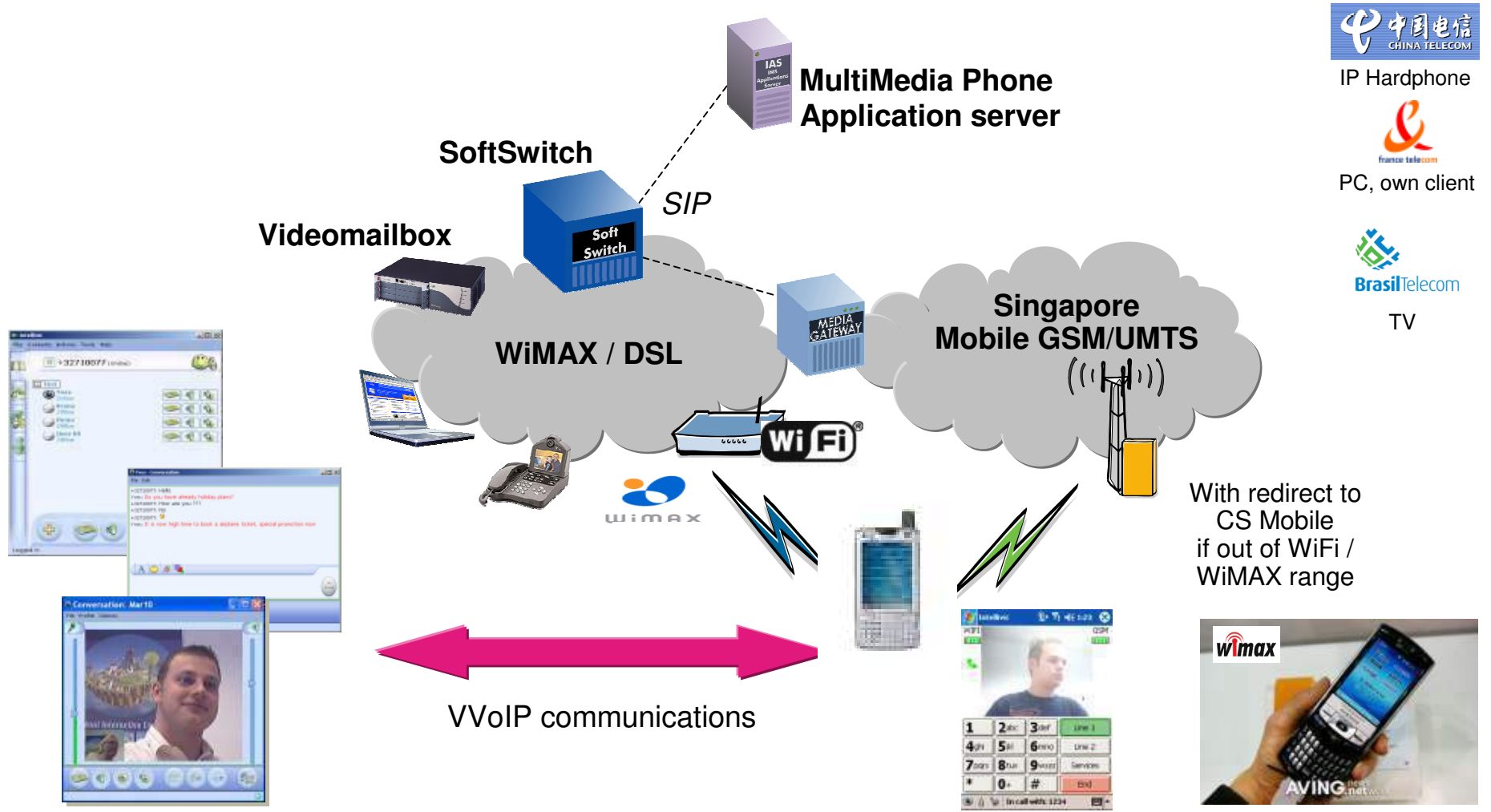
Affordable voice and Internet services for low income users

ghp  
obil

Differentiated and advanced features for high end users

# Voice & Video communication over IP

## *Taking mobility into new dimensions*



# Exploring a wide range of services delivered over IP

## SERVICES

DATA

Seamless BB Connectivity



Corporate VPN services



COMMUNICATION

The Broadband phone



Voice & Video over IP



Virtual PBX & Enterprise Mobility

Multi-Media Conferencing



MEDIA

Video (Streaming, 3Play)



Music Services (Streaming, iTunes)

## DEVICES

Laptop with SoftClient



WiMAX/Cellular Phones



PC with SoftClient



POTS & IP-Phones connected to IADs



Mobile

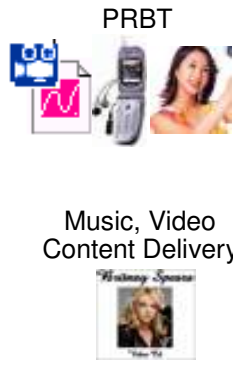
Fixed



# Service Examples & Capabilities

## Consumer Applications

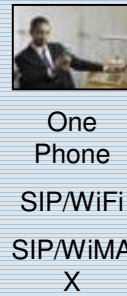
### MUSIC



### VIDEO

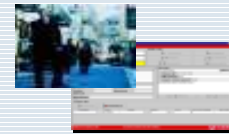


### Multi-access mobility



## Corporate Applications

### Mobile Office Voice CMM & WPABX



### Mobile Office Data email, PIM, Intranet



### Voice and Video Conferencing



### Multimedia Conferencing

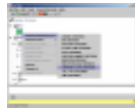
9

## Payment & Common Capabilities

### Real-time Payment

### Advanced Flexible Rating

### Mobile Kiosk



### Content Value Charging



### Location

### Presence



### Announcement Machine



### User Profile

## Affordable Communications: Micro-Vouchers Enable Voice Communication for All

### Over-the-Air Prepaid Micro-Vouchers Service

#### End-user benefits from innovation

- Affordable: Lower entry price vs scratch card
- Available: Reseller on the street corner

#### Case study

- More than two million load transactions per day



#### Service provider benefits

- Increase consumer reach with larger distribution network
- Increase consumer spend by enabling several refills by entry users
- Decrease OPEX (50% less than scratch card)

### E-Trade Service for Micro-Business

#### End-user benefits from innovation

- Example: Real-time market information for small farmers and fishermen enable savings on transportation and better prices for goods
- Simple to use

#### Case study

- Operational in Senegal (2003) and pilot in South Africa (2005)

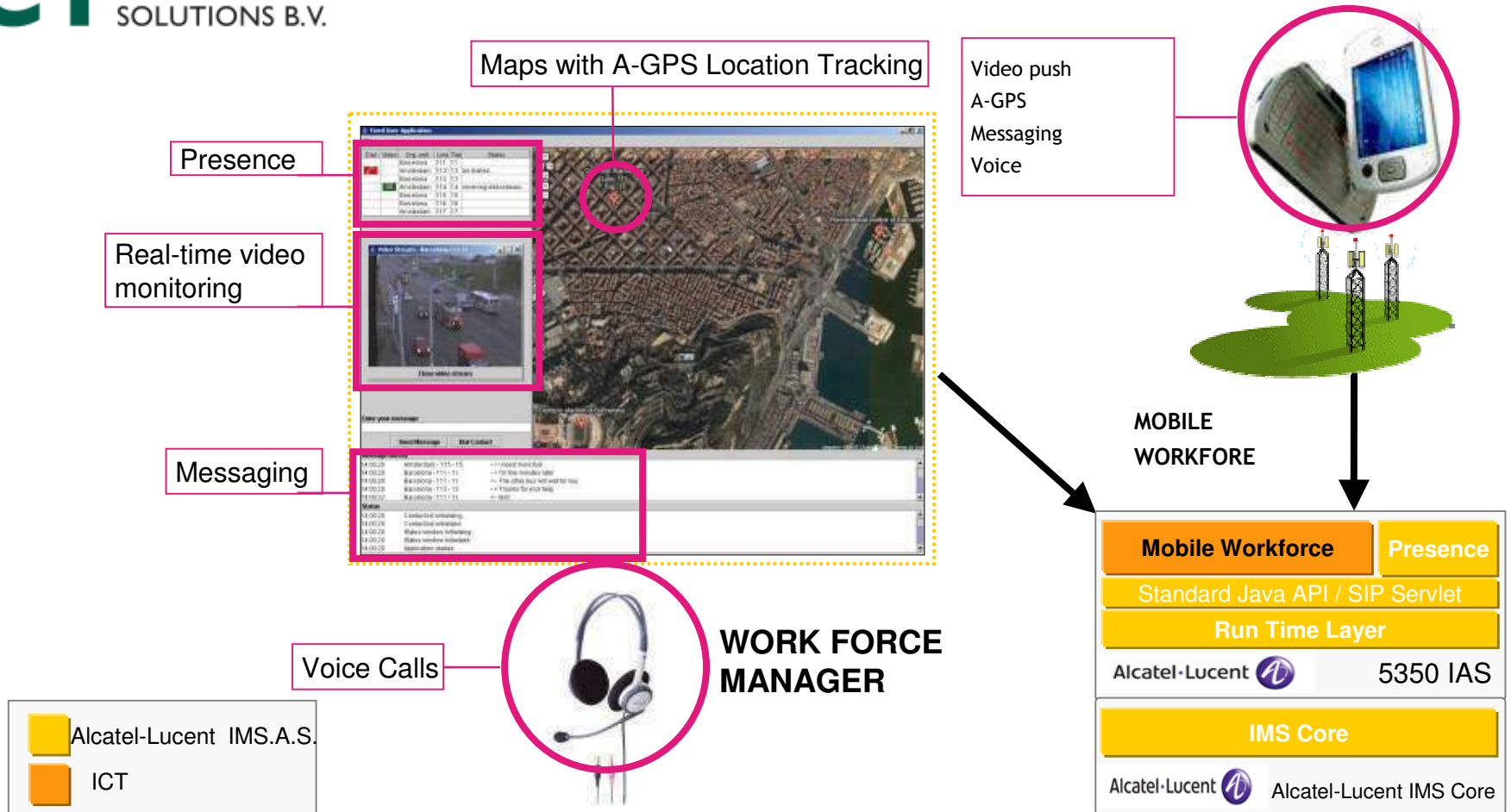


#### Service provider benefits

- Development of SMS traffic
- Increased penetration and ARPU in rural areas and small businesses
- Increased customer loyalty
- Ability to leverage professional organizations for distribution and promotion

# Vertical markets - The Workforce Manager

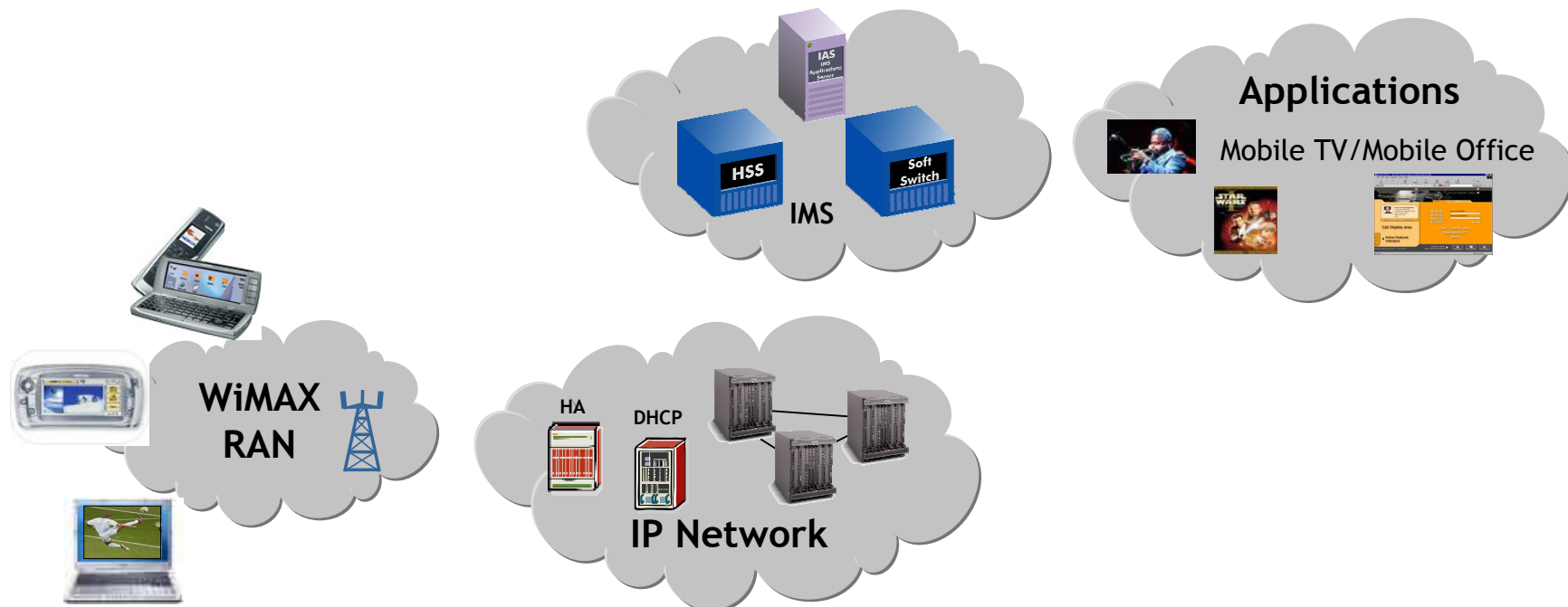
## 3rd Party Application Developed on Alcatel-Lucent IMS



## End to End offering & integration skills



- IMS (BT, KPN)
- Applications - Mobile TV
- IP network transformation expertise
- End-to-end integration of complex networks



...supported by major customer references

### IMS Services

20+ live deployments

### IPTV & MultiPlay

#1 Triple Play  
115+ F&M customers

### Payment

#1 Real Time Payment  
Driving transformation with Tier1  
220+ fixed and mobile customers

### IP/NGN

Unmatched Field Experience  
245+ fixed & mobile customers  
Leverage #1 in Classic switching

### Subs Data Management

1/5 of the world mobile subscribers  
160+ Customers

Enabling competitive transformation

# Alcatel-Lucent WiMAX Deployments

**+40**  
Trials & Deployments in 1H07

**>20**  
Trials & Deployments in 2006

**KT**  
Korea Telecom, Korea  
Wimax Reality Center

**India**  
Ramping up C-Dot-Alcatel Research Center  
Field trials launched with major operators

**Russia & CIS**  
Wimax projects accelerating  
Field trials launched with new alternative players

**LATAM**  
Wireless DSL expansion & mobile evolution projects  
Field trials launched with Tier 1 operators

**Bellsouth, USA**  
at&t

**Other major operators in:**



**ACCA NETWORKS**  
Broadband Partner  
Acca, Japan

**Canada**  
Friendly users Trial  
High-end services (Nomadic, Mobility)

**maxis.**  
Maxis, Malaysia

**GDS**  
GlobalCom Data Services  
Globalcom, Lebanon

**SFR** n9uf cegetel  
SHD, France

**WiMAX** telecom  
WiMAX Telecom, Austria, Slovakia & Croatia

**China**  
Lab Trial performed with Major Mobile Operator  
Alcatel-Lucent uniquely positioned for Wimax

[www.Alcatel-Lucent.com](http://www.Alcatel-Lucent.com)