



**ITU/ITC Regional Seminar on
Network Evolution to NGN & FMC
for CEE, CIS and Baltic States**



**"Mobile 2G/3G networks: a Universal
Communication and Service solution "**


Moscow Russia
27-30/04/2004
Roland THIES



ARCHITECTS OF AN INTERNET WORLD 


Presentation Outline

- > **What is FMC?**
- > Rational
- > From an Unsuccessful Past to A Promising Future
- > The Operator Opportunities
- > Regulation Aspects



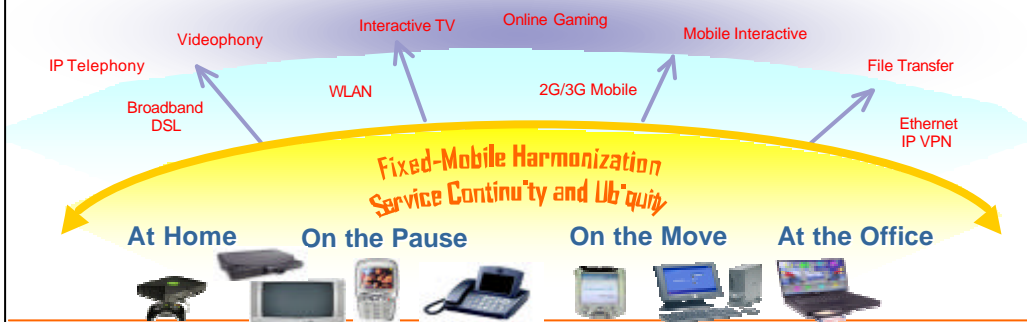
Mobile 2G/3G: a universal service solution — 2

All rights reserved © 2004, Alcatel



What is Fixed Mobile Convergence (FMC)? Principles

- > Same Services available whatever the Access Network
- > Services Subscriptions not linked to Access Networks
- > Request from ETSI to 3GPP for Fixed being harmonised with Mobile under IMS umbrella



Mobile 2G/3G: a universal service solution — 3

All rights reserved © 2004, Alcatel



What is FMC? Back to the Basics: ETSI Definition

"Fixed Mobile Convergence (FMC) is concerned with the provision of network capabilities which are independent of the access technique. This does not imply the physical convergence of networks. It is concerned with the development of a converged network architecture and supporting standards. This set of standards may be used to offer fixed, mobile or hybrid services.

An important feature of fixed mobile convergence is the separation of the subscriptions and services from individual access points and terminals and to allow users to access a consistent set of services from any fixed or mobile terminal via any compatible access point. An important extension of this principle is related to internetwork roaming, users should be able to roam between different networks and to be able to use the same consistent set of services through those visited networks".



Mobile 2G/3G: a universal service solution — 4

All rights reserved © 2004, Alcatel



Presentation Outline

> What is FMC?

> **Rational**

> From an Unsuccessful Past to A Promising Future

> The Operator Opportunities

> Regulation Aspects



Rationale

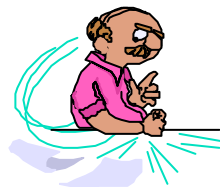
End Users' Expectations - What do they get today?

Services Delivered in a network-centric way

- Multiple Subscriptions, Numbers, Profiles, Billings
- Multiple Customer interfaces
- Services Environment depending on Terminal and Access Network



... End Users' Frustrations



Rationale End Users' Expectations - What do they want?

Services Delivered in a end user-centric way

- Single Subscription, Profile, Billing,
- Single Customer interface
- Same Services Environment whatever the Terminal and Access Network
- Seamless, Secured and Easy Service Access
- Broadband, Quick Access & Rich Content Services
- Optimised Charging



Rationale Operators' Needs

	Fixed Operators	Mobile Operators	Fixed & Mobile Operators
•Reduce Churn	☐	☐	☐
•Avoid fixed to mobile line substitution	☐		☐
•Respond to FMC threat* from Fixed operators		☐	
•Increase Revenue	☐	☐	☐
•Increase Subscriber Base			
•Enlarge Service Offer			
•Limit Price Erosion			
•Reduce OPEX/CAPEX	☐	☐	☐
•Leverage and Unify Fixed, Mobile, Internet Services*			
•Limit platform diversity			

*:for some operators, this is achieved through bundle & partners hip



Rationale Drivers & Obstacles

Drivers

- End Users' Expectations
- Operators' Needs
- Standardisation (seamless inter-working between fixed/mobile/WLAN through IMS)



Obstacles



- Regulation (maintain fair competition)
- Revolution in Current Network Centric Operators' Organisation & Networks
- Mobile operator FMC means bundles and results in price reduction & service commoditisation (Flat rate Internet on Mobile...)



Presentation Outline

- > What is FMC?
- > Rational
- > **From an Unsuccessful Past to A Promising Future**
- > The Operator Opportunities
- > Regulation Aspects



From an Unsuccessful Past to a Promising Future FMC in the Past

> **Fixed/Mobile Nodes** (eg Fixed Mobile Switch in Mobistar)

- No interest for End User
- + CAPEX/OPEX Reduction for Operator



> **Multi-Mode terminals** (eg DECT/GSM handset of BT's One Phone, Sonera Sonofon...)

- Inconvenient Manual Switch from one mode to the other
- Two Separate Subscription and Bills and
- Bulky & Expensive Terminals
- + One Phone with "Manual" Optimized Charging



From an Unsuccessful Past to a Promising Future FMC in the Past

> **Automatic Call Re-Routing** (1 phone number with call routing to switched on fixed or mobile phone, eg Duet from TDC)

- Two Phones
- Regulation Ban (Duet)
- + One Phone Number with Optimized Billing



> **Fixed/Mobile VPN** (virtual mobile and fixed users network eg "Réseau Unifié" of France Telecom)

- Separate Billing (regulation)
- + Private Numbering Plan with (limited overall) Discount



From an Unsuccessful Past to a Promising Future FMC in the Past

FMC unsuccessful up to now because of ...

- > **Low or Limited Financial Interest for both End Users and Operators**
- > **Services Convergence Limited to Voice with bundles resulting in price reduction for operators**
- > **Inconvenient Solutions** (Separate Billing/Subscription/Customer's interfaces/Organisation)
- > **Unattractive & Expensive Terminals**



From an Unsuccessful Past to a Promising Future FMC - Opportunity Estimates

Reduce churn

- > Reduce mobile and fixed churn by bundling
- > Churn rate could be lowered by 5%* (from 20% to 35% in Mobile)

Grow revenues

- > Grow subscriber base
- > Cross-sell fixed & mobile services, Create new services
- > Create new end-user services

Reduce OPEX

- > Potential of 10%-20%* OPEX savings
- > Integrating fixed-mobile-internet activities

As well as:

- Limit price erosion
- Respond to commoditization
- Expand market
- Cross sell bundling

*source ECG



From an Unsuccessful Past to a Promising Future FMC on track

Recent Evidences of an FMC Move ...

- > **Instant Messaging / SMS Inter-working** (Yahoo! + Cingular - May 2003)
- > **Fixed SMS / Mobile SMS Inter-working** (PCCW HK - July 2003; FT/Orange - May 2003)
- > **Fixed/Mobile Minute Bundle** (Bell South + SBC / Cingular - Oct. 2003)
- > **Fixed/Mobile Video Telephony** (H3G)



Unified Services on Different Accesses to:

- Remove Boundaries between Access Networks
- Increase Revenues
- Keep Existing Customers
- Attract New Customers with Convenient Services



Mobile 2G/3G: a universal service solution — 15

All rights reserved © 2004, Alcatel



From an Unsuccessful Past to a Promising Future FMC on track

More Evidences to come ...

- > **BT Blue Phone with seamless GSM/Fixed handover** (WLAN roaming considered)
- > **WLAN/GPRS "Handover" claimed by Nokia for Mid 2004**
- > **WLAN/GSM VoIP terminal announced by Motorola for 2004/2005**



Multi-Mode Terminals to:

- Increase the Convenience & Customer Satisfaction
- Increase End Users' loyalty
- Attract End Users & Increase Revenues



Mobile 2G/3G: a universal service solution — 16

All rights reserved © 2004, Alcatel



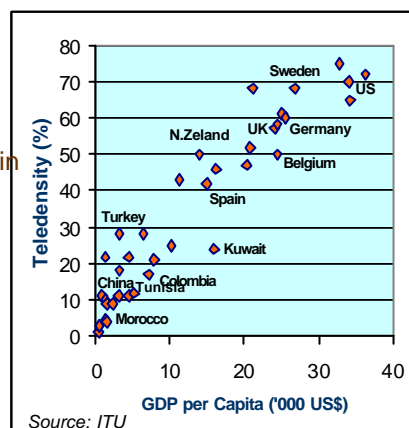
Presentation Outline

- > What is FMC?
- > Rational
- > From an Unsuccessful Past to A Promising Future
- > **The Operator Opportunities**
- > Regulation Aspects



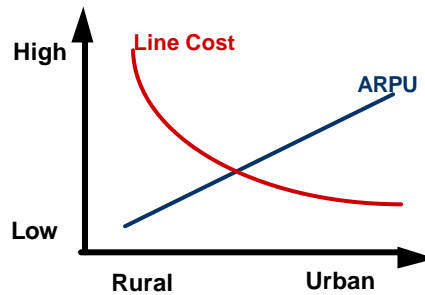
Developing Country Challenge: Access to Information

- > **How Teledensity and economic growth are linked together?**
 - A key issue for economic and social development?
 - ... to be urgently addressed, especially in rural (isolated) areas?
- > **What kind of services?**
 - Telephone, Internet, ...
 - Individual or community access
 - Prerequisites



Universal Access to Telecom services

The famous dilemma!



How to take up the challenge?

- "Dream solution" for Rural Telephony
- dedicated subsidies
- obligation of services (incumbent operator)



Rural Telecom is not as unprofitable as ... it is said !

- > **Incoming call revenues** are not taking into consideration in the business model
- > **Profitability issue must be reconsidered**, taking advantage of potential service Internet revenues
- > **Population solvency** is much better than foreseen
 - Community Access, Prepaid will improve population solvency
 - Real population income is much higher than GDP (--> PPP)

Still operator approach is

- **too much individual access oriented**
- **forgetting Internet opportunities**



Internet can leapfrog development, if ...

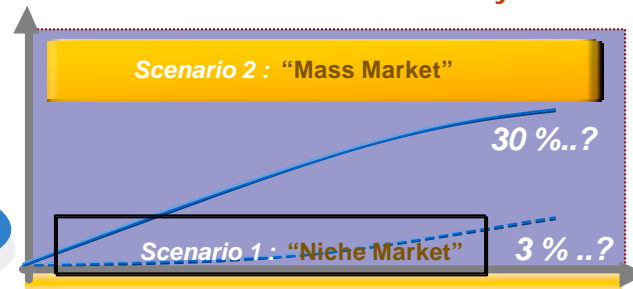
**INTERNET,
as Public Utility**



Internet
Penetration

**... to Reinvent
Internet Usage !**

Internet is seen
as a prime **Communication Tool**
offering **useful end-user services**
based on **local content**
via **Community Access**



Mobile 2G/3G: a universal service solution — 21

All rights reserved © 2004, Alcatel

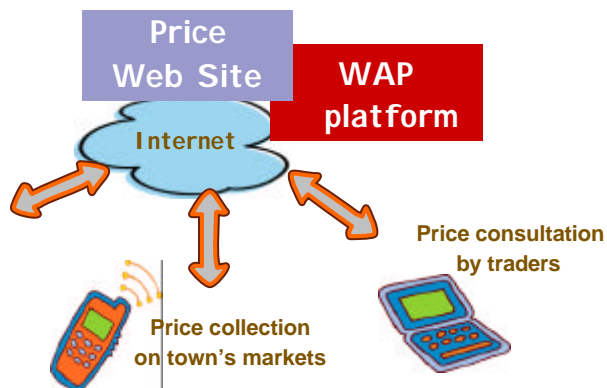
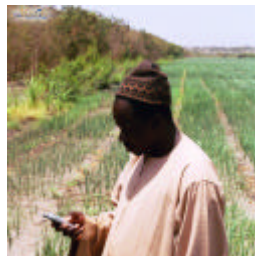


A "virtual" market place



Professional Tool to manage Food price on real time

Price consultation
by small producers



The cost of the service is quickly paid back
by the increase of producers' margins



Mobile 2G/3G: a universal service solution — 22

All rights reserved © 2004, Alcatel



Access Network Technologies

Use standard widespread technologies
in innovative arrangements



- ▶ Fixed or Mobile
- ▶ Wireline or Wireless
- ▶ Narrowband or Broadband
- ▶ Voice or Data

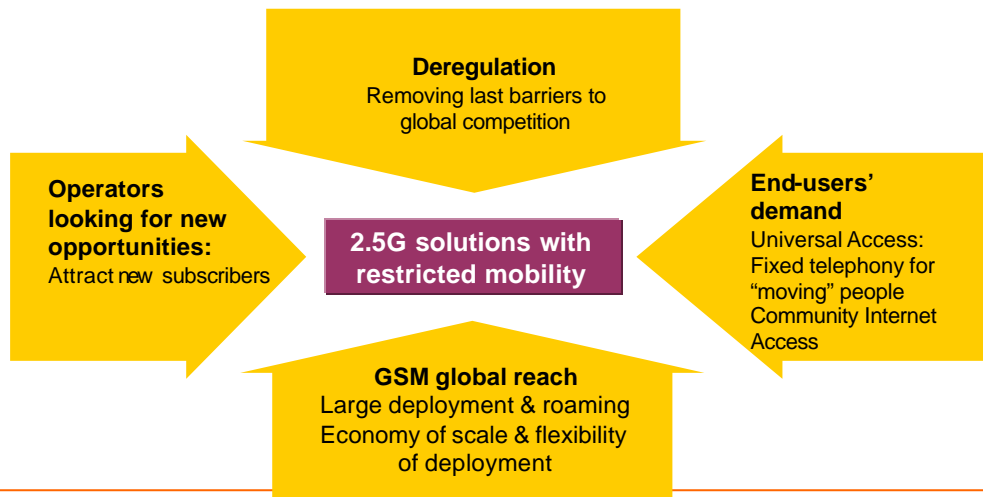


Mobile 2G/3G: a universal service solution — 23

All rights reserved © 2004, Alcatel



2.5G Solutions with Restricted Mobility A Key Opportunity for Carriers

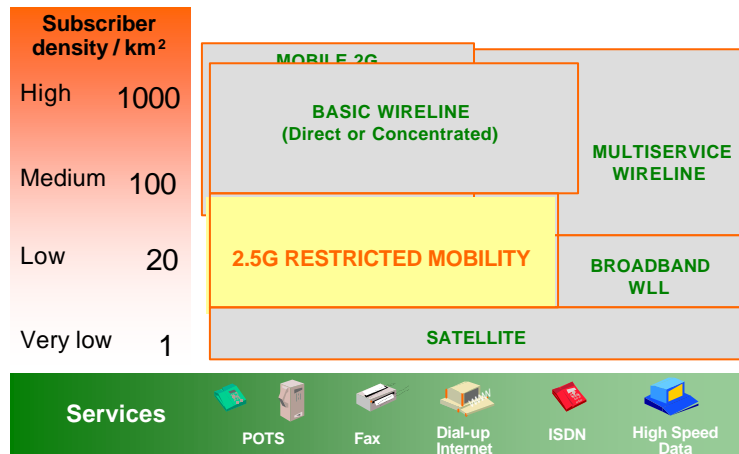


Mobile 2G/3G: a universal service solution — 24

All rights reserved © 2004, Alcatel



The Solution for medium and low density Access



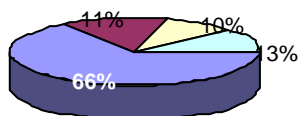
Mobile 2G/3G: a universal service solution — 25

All rights reserved © 2004, Alcatel

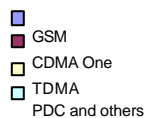


Why 2.5G technology in the Local Loop?

Advantages over other wireless technologies



2.5G: 80% of the world mobile market



- > the most wide-spread technology
- > the solution to reduce operational costs
- > the Data inside capability
- > the SIM concept
- > the larger coverage
- > the failure of previous WLL technologies

Allows the restricted mobility solution

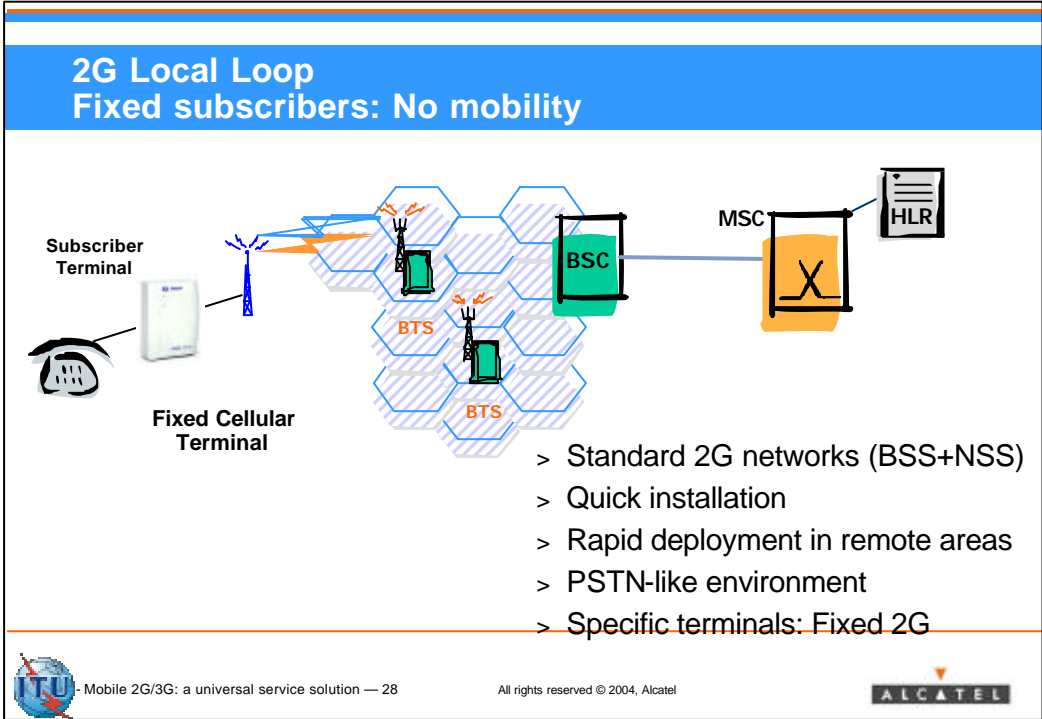
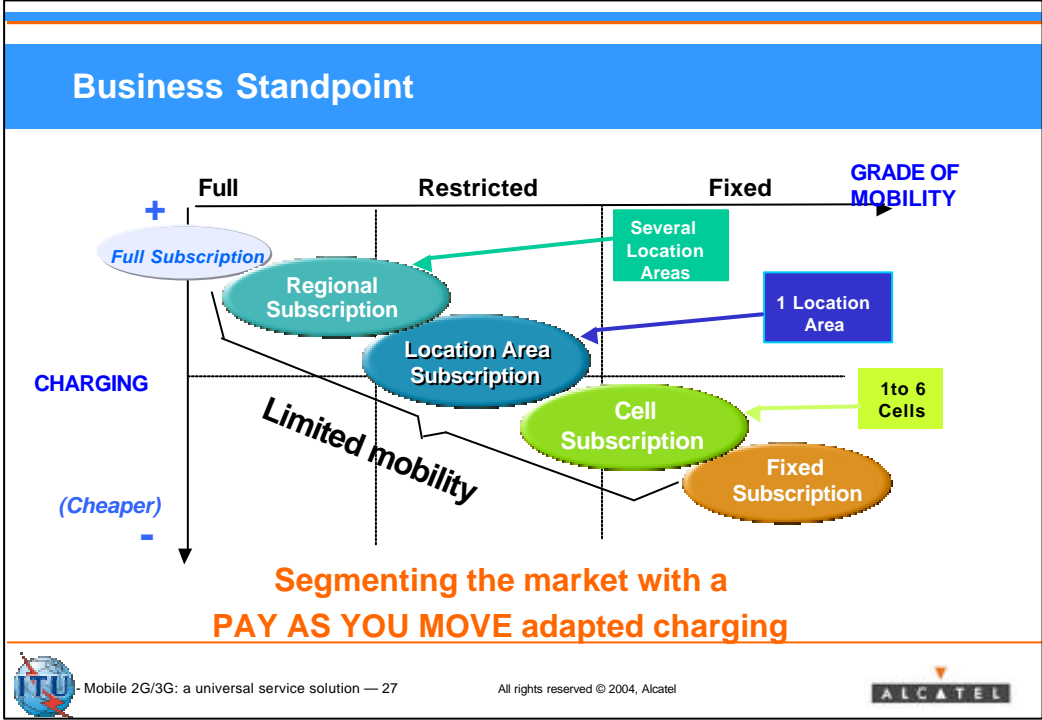


Source: EMC, August 2001

Mobile 2G/3G: a universal service solution — 26

All rights reserved © 2004, Alcatel





2G Local Loop Fixed subscribers : Fixed 2G Terminals

> Strengths of fixed 2G terminals

- Different types of fixed 2G terminals:
 - 2G adapter + standard fixed telephone
Sockets for other devices: PC, fax..
 - Fixed 2G telephone handset
 - 2G payphones (e.g. Ascom, Schlumberger,...)
- Compliant with fixed licenses terms



Fixed GSM handset

> Weaknesses of fixed 2G terminals:

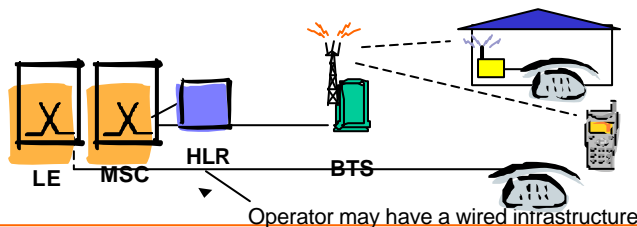
- Less economical terminals compared to standard 2G terminals
- Permanent local AC power supply is required
- Installation of an outdoor antenna may be required



Scenario n°1: Fixed Operator

Incumbent Fixed operator deploying a 2G Local Loop network

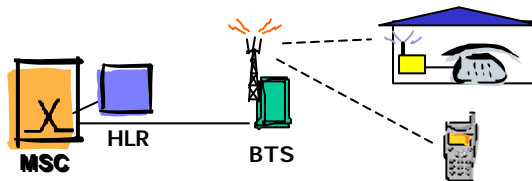
- > **For rural and suburban areas**, wireless solutions are less costly than wired when subscribers are spread
- > **Quick deployment** and easy installation
- > **Capacity to evolve to a full mobile solution Pre-paid** (public phones & mobile pre-paid) for all users through the same IN platform



Scenario n°2: Mobile Operator

Mobile operator starting to provide 2G restricted mobility services

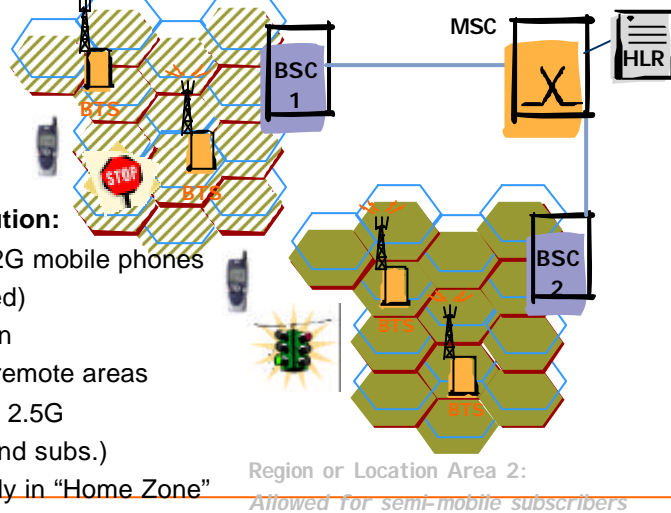
- > The **mixed 2G fixed/mobile solution** has synergies like:
 - Very limited investments: **infrastructure is shared**
 - Increase revenues: by doing **attractive packaged fixed/mobile rates**
 - **Pre-paid (public phones & mobile pre-paid)** for all users through the same IN platform



2G Local Loop “Semi-mobile” subscribers

Region or Location Area 1:
Barred for semi-mobile subscribers

- > **Advantages of the solution:**
 - Lower cost standard 2G mobile phones
 - Mobility (though limited)
 - No terminal installation
 - Rapid deployment in remote areas
 - Data functionality with 2.5G (2.5G term. for high-end subs.)
 - Subs. Taxed differently in “Home Zone”



Region or Location Area 2:
Allowed for semi-mobile subscribers



The Telephone and Internet in isolated areas

... at affordable costs

- ▶ **2G**, offers phoning with mobility limited to zones with long distance activity.
- ▶ **2.5G**, for access to information individually, or collectively



by extension of the mobile infrastructure (at a marginal cost) with optimised connection solutions :
Cable, broadband radio, microwaves, satellite,

....

The solution for universal access



Mobile 2G/3G: a universal service solution — 33

All rights reserved © 2004, Alcatel



Main advantages for End Users

- > **Mobility** : “nomadism”
- > **Prepaid** : solvency
- > **Virtual leased line to access Internet** : cybercafés
- > **Mobile platform services** : added revenue



Mobile 2G/3G: a universal service solution — 34

All rights reserved © 2004, Alcatel



Main advantages for Operators

- > **CAPEX**
 - Extension of existing 2.5G Network **at marginal cost**

- > **OPEX**
 - Neither specific operation, nor maintenance, nor training
 - No “at home” installation
 - No billing, bad debt

- > **Revenue**
 - significant growth [thanks to increased user base]
 - added value services [over a unique infrastructure]



Presentation Outline

- > What is FMC?
- > Rational
- > From an Unsuccessful Past to A Promising Future
- > The Operator Opportunities

> **Regulation Aspects**



Regulatory issues

- > Two main areas of concern for regulators regarding 2.5G-LL
 - 2.5G spectrum availability, particularly in the 900 MHz band for GSM and 850 MHz band for CDMA (in many countries was already allocated to mobile operators)
 - Additional competition to existing mobile operators, i.e. an unfair change of the mobile market structure



2.5G Spectrum Availability ?

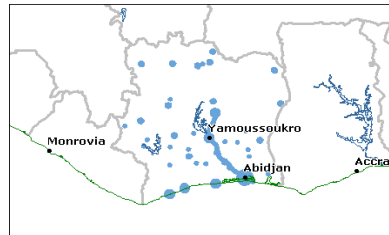
- > **No real shortage of spectrum in rural zones**
 - Mobile networks are first of all deployed in urban areas and along main roads (highest business potential)
 - Rural coverage is the last investment priority for commercial 2.5G operators (lowest business potential)
 - Many rural areas will remain without radio coverage for many years
⇒ **a lot of unused spectrum !**
- > **Little spectrum is needed to meet rural demand**
 - Subscriber density is low (usually below 10 users per sq.km)
 - 2 x 5 MHz should be sufficient in most cases
 - 2 TRX, 8.20 Erlang per sector (GoS 2%)
 - 492 subscribers per 3-sector base station at 50mErl/subscriber



Competition with mobile operators ?

- > **Big differences with a commercial mobile service**
 - Communication services are to be provided at regulated, PSTN-like tariffs (universal access context)
 - End-user mobility
 - either no mobility at all (fixed 2.5G terminals)
 - or a cordless phone-like mobility (with a standard 2.5G handset)

- > In most emerging economies, **mobile operators have a very small subscriber base among rural population** which is not covered by the network



GSM network coverage of Ghana and Ivory Coast



2.5G in the Local Loop should be authorised

Use of 2.5G technology in rural WLL projects will not create any regulatory problems, provided that

- 2.5G spectrum is **allocated on a limited geographical** basis, i.e. only to a clearly identified rural area
- Services are provided at **regulated, PSTN-like tariffs**
- The operator complies with the **restriction of mobility**
 - This can be easily controlled by allowing only fixed 2.5G terminals
 - But mobile handsets give a more economical solution for the operator

A relevant technology is available.....

Universal Access development is frozen by regulation !



www.Alcatel.com

Thank you for your attention....

ARCHITECTS OF AN INTERNET WORLD: 