

Roaming in Africa GSM, nomadism & VoIP

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 - plastic roaming
 - pre-paid local number
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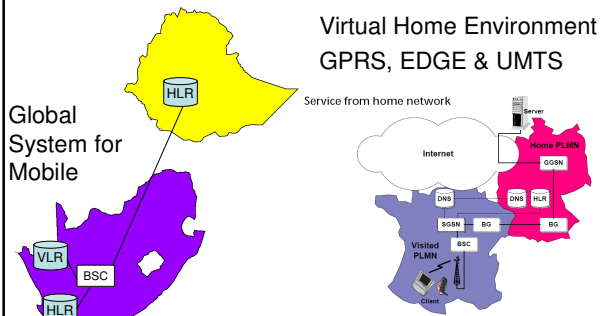
Roaming requirements

- Common network technology
- Compatible handsets
- Use of home number when abroad
- Bi-lateral operator roaming contracts
- Inter-operator billing arrangements (GSM Assn TAP – Transfer Account Protocol)
- Originally NMT, then GSM, later CDMA
- Extended to inter-technology:
 - dual-mode handsets
 - inter-technology gateways

Traditional roaming

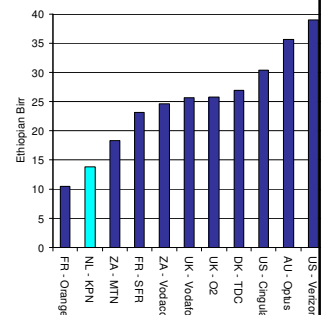
- Prestigious outbound roaming service to:
 - acquire customers
 - retain customers
- Substantial inbound roaming revenues:
 - little effort required
 - highly profitable
- Strong incentives to sign inter-operator agreements
- Up to 15% of Average Revenue Per User (ARPU)
- Only for post-paid subscribers
- High prices became a complex and still unresolved regulatory problem

Roaming



Calling home from Addis Ababa

- United States of America:
 - Cingular US\$ 3.49
 - Verizon not available but US\$ 4.49 from Kenya (with dual-mode phone)
- United Kingdom:
 - Vodafone £ 1.69
 - O₂ £ 1.70 (Telefónica de España)
- France:
 - SFR € 2.20
 - Orange € 1.00
- Netherlands
 - KPN Mobil on Thuraya € 1.32
- Denmark
 - TDC Mobil DKR 19.14
- South Africa:
 - MTN ZAR 13.37
 - Vodacom ZAR 17.95
- Australia
 - SingTel Optus AU\$ 5.74



European Union regulation

- DG Competition:
 - "letters of comfort" allowing STIRA and IOT
 - sector inquiry into roaming
 - approval of many mergers
 - no beneficial outcome for roaming customers
- 2002 regulatory framework:
 - designated as a market to be analysed
 - only Finland and France have completed the analysis
 - no remedies imposed
- Commissioner Reding is proposing a regulation:
 - operators resisted this in the public consultation
 - even if adopted it may not have the intended effect
- Heads of government adopted a supporting conclusion
 - Taoiseach spoke strongly in favour

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Traffic direction technology

Internalisation

- Traffic is kept on affiliate or partner networks
- Competition is driven out of the wholesale market
- The game is to find partners or to be found
- Roaming charges have become a "cash cow"

Competition

- Operators can obtain better deals by negotiation
- But no evidence of this

80-95% of roaming traffic can now be directed to a selected roaming network

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GSM operator footprints

- Econet:
 - Zimbabwe, Botswana, Lesotho, Nigeria, New Zealand
- Orascom:
 - Egypt, Algeria, Mauritius, Congo-Brazaville, Iraq, Italy
- Vodacom:
 - South Africa, Tanzania, DR Congo, Lesotho, Mozambique
 - Vodafone: UK, FR, IE, BE, NL, IT, CZ, DE, IE, ES, AU, NZ, FJ, etc. and partners (BG, HK, MY, etc.)

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Plastic roaming

- Change the SIM card
- Many handsets are SIM-locked to ensure recovery of handset "discount"
- Loss of use of home number for inbound calls (calls can be forwarded)
- Different number shown on Calling Line Identification (CLI) for outbound calls
- People are weak:
 - they forget
 - they get confused
 - they damage or lose the SIM cards

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Pre-paid Local Number (PLN)

- Relatively new service from Roamware
- For visiting pre-paid customers
- An additional number:
 - existing SIM card
 - second IMSI
 - new credit
 - use of stored numbers
- Less disruptive than plastic roaming
- Less costly than traditional roaming
- Lack of transparency on pricing

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UAE – Etisalat 'Ahlam' package

- Emirates Telecommunications Corporation
- AED 90 (~ US\$ 25) and can easily be topped up
- 90 days duration but cannot be renewed
- pre-loaded with:
 - 90 minutes of national calls
 - 9 SMS messages
 - missed call notification
 - call waiting
 - a free three-minute call to any foreign destination

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Pre-paid roaming

- Requires an Intelligent Network (IN):
 - Customized Applications for Mobile Network Enhanced Logic (CAMEL)
 - complex and expensive
 - disappointing adoption
- Prices are generally very high
- Mobile Internet access prices are outrageous
- Availability is:
 - limited
 - uncertain

Examples of pre-paid roaming

- Orange (UK) in France
 - making/receiving calls £1.20 / £ 0.60
 - SMS £ 0.40
- Meteor (IE) in France
 - making/receiving calls € 1.29
 - SMS € 0.39
- Base (BE) in France
 - making/receiving € 1.50 / € 0.8676
 - SMS € 0.50
- Swisscom in France
 - making/receiving CHF 1.10
 - SMS CHF 0.40
- T-Mobile Xtra in France
 - making/receiving € 1.29
 - SMS €
 - also callback service

€ 1 = ETB 9.06
CHF 1 = ETB 5.749
£ 1 = ETB13.13

Satellite

- Inmarsat
- Iridium
- Thuraya:
 - satellite
 - GSM
- Available, but far from being affordable
- Niche services

Stored credit

- Disproportionate complexity and cost to access small value of stored credit in the home country
- Could store the credit on the:
 - handset
 - SIM card
 - in an attached card
 - Internet payment system (e.g., PayPal)
- Stored credit already exists with smart cards
- Would need conversion to local currency:
 - at a reasonable rate

Smart cards

Hong Kong SAR – Octopus

- Buses and MTR
- Ferries, the Peak Tram and some taxis
- Convenience stores
- Fast food restaurants

London – Oyster

- Buses and the Tube
- Touch card against the reader at beginning and end of journey
- Secure
- Fast

<http://www.smartcardalliance.org/>

Japan – Felica

- Sony and NTT DoCoMo
- *Osaifu ketai* (wallet phone)
- To take a “substantial” share of the ¥27 trillion market for micro-payments (< ¥3,000 each)
- Major investment in readers in:
 - shops
 - bars and coffee shops
 - Japan Rail stations
- Also JAL ticket-less check-in
- Extended to several South-East Asian countries
- Being extended from stored credit to credit card

<http://www.sony.net/Products/felica/>

International call charges

- Liberalisation of markets
- Heightened competition
- Spot markets
- Newer and cheaper technologies
- Collapse in the total value of the market
- Increasingly diverse offers
- Much lower prices (including flat rate)
- Now very much more affordable

Voice over Internet Protocol

- VoIP is not tied to a fixed location
- In addition to voice, services have:
 - Presence Management (PM)
 - Instant Messaging (IM)
 - social networking (e.g., myspace.com)
- Devices and software can be moved:
 - nationally
 - internationally
- With broadband access, there is easy nomadic use of software (SIP client, Skype, etc)
- Some very low prices

Wireless VoIP

- Multiple possible devices:
 - lap-top computer
 - Personal Digital Assistant (PDA)
 - Skype phone
- Wi-Fi chips are cheap and easily added to consumer electronic devices (n.b., games consoles)
- New multimode handsets
- Nokia E-Series handsets:
 - Wi-Fi when in corporate offices worldwide and at home
 - SIP client
 - otherwise GSM
- Dedicated Wi-Fi phones

VoIP over 3G

- Theoretically possible, but questions of:
 - pricing
 - download limits
 - operators filtering out VoIP
- Some deals for Skype over 3G:
 - Hutchison Whampoa (a.k.a. Three)
 - E-Plus (KPN)
- Enormous reluctance of 3GSM operators:
 - but for how long?
- For the present, roaming charges make VoIP very expensive to use over 3G

Wi-Fi and WiMAX

- Slow adoption in Africa
- Few lap-top computers
- Lack of affordable ADSL for residential hot spots
- Dominant operators control leased lines
- Lack of IXPs for competitors
- Absence of economies of scale

West Africa

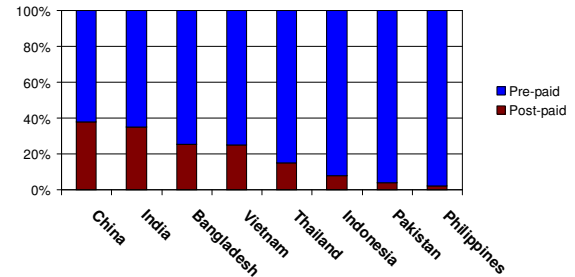
- ECOWAS project for ICT common market
- Concern to ensure:
 - access to international roaming
 - affordable prices
 - transparent tariffs
- Absence of obvious solutions

West African Common Market Project
 Harmonization of Policies Governing the ICT Market in the UEMOA-ECOWAS Space
 Section 2.4
http://www.itu.int/ITU-D/treg/Events/Seminars/ITU-EC-Project/Ghana/modules/Compil-Guidelines_final.pdf

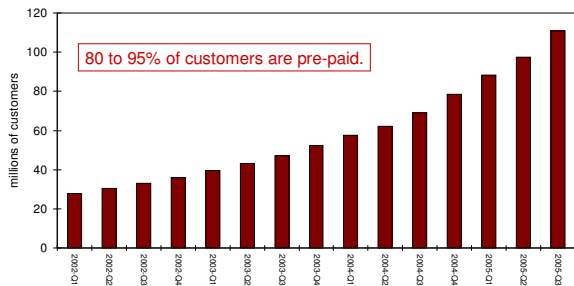
Demand

- Pre-paid customers worldwide:
 - very large numbers
 - most of the growth
 - but ARPU is declining
- Concern and interest in pre-paid roaming in:
 - Caribbean
 - West Africa
 - South-East Asia
- Much depends on travel patterns
- Low cost airlines are a driver in Asia and Europe

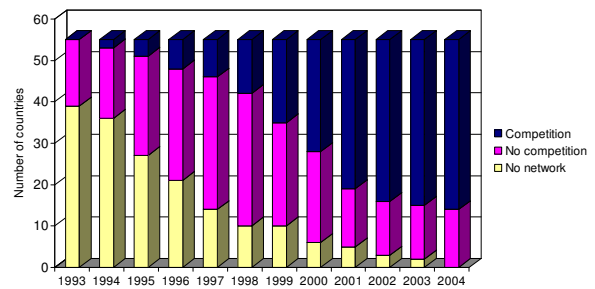
Out of Africa



Growth of GSM in Africa



Competition in mobile



National security

- Increasing pressure on nomadic use:
 - recording names of Internet café users
 - ID card details required for pre-paid GSM
- However, measures are often:
 - weak and poorly enforced
 - unsystematic and poorly thought out
- Plastic roaming and PLN may be seen as a security issue
- Wireless VoIP will be very hard to detect

Conclusions

- Strong demand for affordable roaming
- Effects of traffic direction are uncertain
- Regulatory issues with the established model are far too complex to resolve
- Need a simple pro-competitive solution
- Could just store the credit on the "handset"
- Could push ahead for wVoIP

Issues

- What are the possible business models for cheap outbound calls from remote locations?
- What are the means of “forwarding” calls to “remote” locations?
- How to extend these to broadband and value-added services?

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