



EU Regulation for Intercommunication And Roaming

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Outline Of the Presentation

- ⌘ Introduction to roaming
- ⌘ Regulation in the European Union and Finland
- ⌘ Markets and roaming charges
- ⌘ Conclusions



Introduction To Roaming

- ⌘ " Roaming in mobile networks describes a situation, where a subscriber of one operator uses the services of another operator, while in the foreign network coverage area "
- ⌘ Can be applied to both voice calls and data services



Roaming Types

- ☞ **International roaming**
 - Using services of another operator in a foreign country
- ☞ **Inter-regional roaming**
 - Using services of another operator in the same country with non-overlapping service areas
- ☞ **National roaming**
 - Using services of a competing operator in the same country with overlapping service areas
- ☞ **Inter-technology roaming**
 - Roaming between different technologies (2G, 3G, WLAN)



Roaming Agreements

- ⌘ The GSM Association has adopted a common framework consisting of:
 - Standard Terms of Roaming Agreements (STIRA)
 - Inter-Operator Tariff (IOT)
 - Traffic fees (for data services)
- ⌘ Roaming brokers can be used for gaining access to multiple foreign operators at once



GSM Roaming

- ☞ Users can be identified by several attributes:
 - IMEI code of the handset
 - IMSI code of the SIM card
 - MSISDN – the phone number, including the country code (CC) and national destination code (NDC), f. ex. +358-40-1234567
 - MSRN – the Mobile Station Roaming Number
 - TMSI - a Temporary Mobile Subscriber Identity assigned to the mobile station for purposes of internal routing



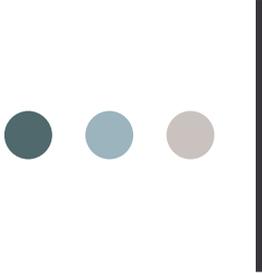
GSM Roaming (2)

- ⌘ Calls can be Mobile Originated or Mobile Terminated
- ⌘ In a MT call the call must be routed through the destination subscriber's home PLMN in order to find out the user's location
- ⌘ MO calls are routed like all others



GPRS And 3G Roaming

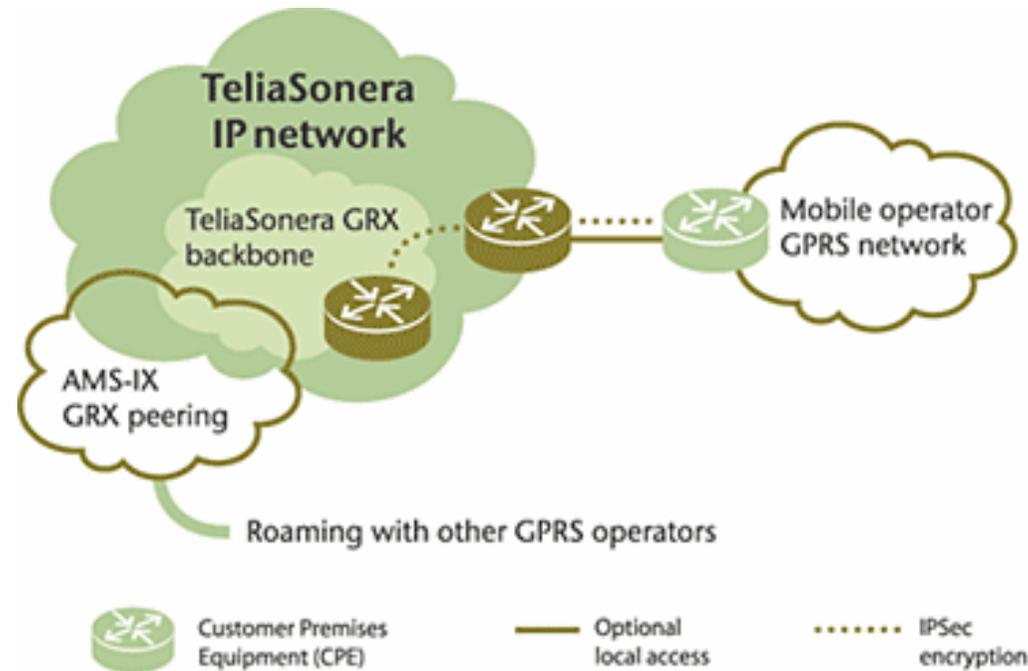
- ⌘ The GSM Association has identified two approaches:
 - ISP Roaming - the visited network provides the GPRS service including interconnection to the Internet
 - Home Public Land Mobile Network (HPLMN) – the home network provides the GPRS service and the visited network only provides air interface connectivity and routes the traffic back to the home GPRS gateway node
- ⌘ HPLMN provides better security and connection quality



GPRS And 3G Roaming (2)

- ⌘ IP connections between operators are needed in HPLMN
- ⌘ GPRS Roaming eXchanges (GRX) solve the problem
- ⌘ GRXs provide dedicated IP connections between GRPS networks
- ⌘ Two peering points exist for GRXs, Amsterdam and Singapore
- ⌘ 3G support is available in most GRXs, since it is IP based traffic

GPRS And 3G Roaming (3)



TeliaSonera's GRX model



Regulation In the EU

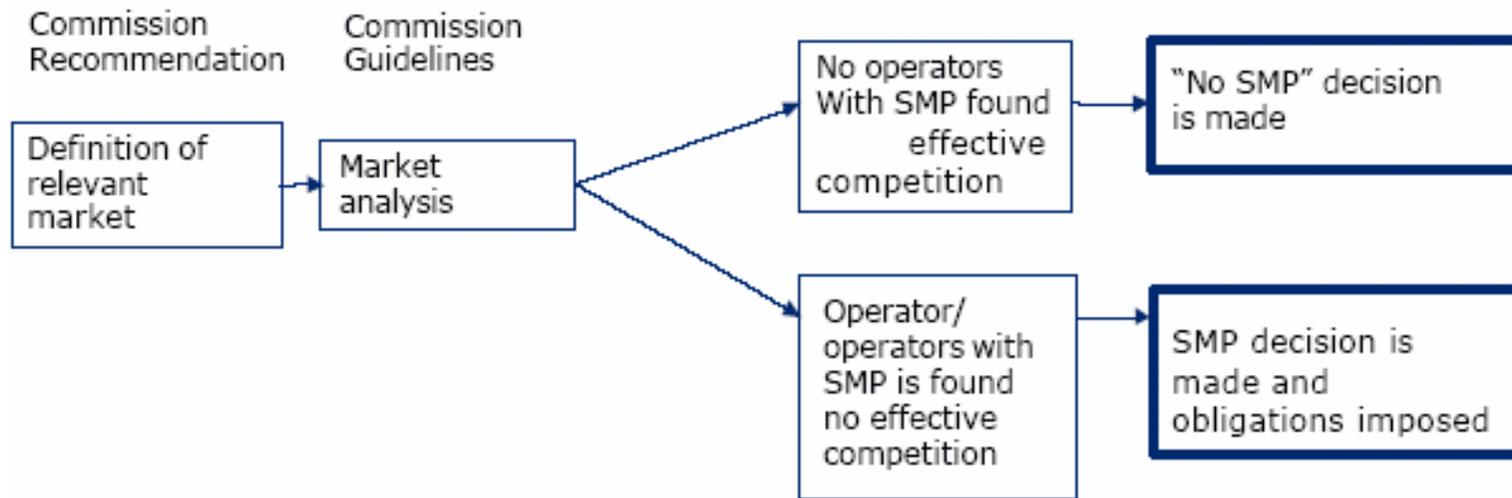
- ç 10th November 1999 the Commission reviewed the existing regulatory framework for telecommunication and policy proposals were made towards a new framework
- ç In 2002 the new regulatory framework was finally realized under 5 directives
 - Framework Directive (DIRECTIVE 2002/21/EC)
 - Authorisation Directive (DIRECTIVE 2002/20/EC)
 - Access Directive (DIRECTIVE 2002/19/EC)
 - Universal Service Directive (DIRECTIVE 2002/22/EC)
 - Processing of personal data and the protection of privacy in the telecommunications sector (DIRECTIVE 97/66/EC)



Regulation In the EU (2)

- ⌘ Reasons for the new regulatory framework:
 - To create a consistent framework for the converging technologies in communication networks
 - To increase competition in markets, where significant market powers (SMP) exist
- ⌘ National regulatory authorities (NRA) were to realize the directives by 25th July 2003
- ⌘ Actions included defining and analyzing electronic communications markets and recognizing players and possible SMPs

● ● ● | Regulation In the EU (3)



Consulting the operators, the Commission and other EEA countries

Actions of the NRA by FICORA



Regulation In the EU (4)

- ⌘ In the proposal for relevant markets, only wholesale voice service markets were defined for mobile networks
 - Access and call origination on public mobile telephone networks
 - Voice call termination on individual mobile networks
 - National market for international roaming services on public mobile telephone networks
- ⌘ No markets were defined for SMS or other data services (GPRS etc.)



Regulation In the EU (5)

- ⌘ How are GPRS and 3G roaming regulated then?
- ⌘ By competition law and relevant consumer protection regulation?
- ⌘ In additional relevant markets defined by NRAs?
- ⌘ As shown in pricing, it is still a work in progress



Regulation In Finland

- ☞ Finland's NRA is FICORA
- ☞ Finland was one of the few countries to enact the directives on time
- ☞ With the new framework, FICORA is able to make decisions on SMP
- ☞ FICORA works together with the Finnish Competition Authority (FCA)
- ☞ Both organizations are responsible for creating and maintaining competition in Finland



Markets

- ⌘ Retail markets: operators offer services to end users
- ⌘ Wholesale markets: operators offer services to other operators
- ⌘ Relevant markets need to be defined to have a consistent way of evaluating competition
- ⌘ Relevant markets can be product markets or geographical markets
- ⌘ In the EU proposal for relevant markets, 4 retail and 14 wholesale markets were defined



International Roaming Charges

- ⌘ The relevant market for IMR is national on the geographic level
- ⌘ Charges mostly cost based with an added profit margin
- ⌘ A popular approach is to divide the world in to cost zones (6 zones used by O2, Vodafone and Sonera)



International Roaming Charges (2)

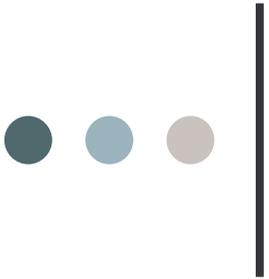
MO call to a number in Greece (€ / min)		MO call to home country (€ / min)		MT call (€ / min)		SMS		GPRS (€ / MB)	
Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
0,36	1,13	0,65	1,39	0,24	1,13	0,13	0,75	5,00	25,00

INTUG survey at Athens Olympics 2004 about international mobile roaming prices



International Roaming Charges (3)

- ⌘ What about pre-paid subscriptions?
- ⌘ According to INTUG, the charges seem to be even higher and the choice of networks smaller



Markets In Finland, National Roaming?

- ç As the 3 large network owners (Finnet, Elisa, TeliaSonera) have nation wide networks, there is little need for inter-regional roaming between these operators or MVNOs using the same networks
- ç Ålands Mobiltelefon Ab does have its own network in Ahvenanmaa, and also has inter-regional roaming agreements with Elisa and Finnet
- ç National roaming doesn't seem to exist?



Conclusions

- ⌘ Despite investigations by the European Commission, the mobile network operators have been able to boost their profits in roaming
- ⌘ Often difficult for the end user to know how much they are being charged
- ⌘ Despite the complexity of roaming charges, it is still the end user's responsibility to make sure they are not getting ripped off



Discussion

‡ Questions, comments