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Decoupling of Roaming

- Impacts and Expectations -

Roaming World Congress 2013,

Brussels

14 May 2013

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Agenda

- What is stated in the EU regulation articles about Roaming Decoupling?
- What are the technical scenarios to offer decoupling solutions, which ones are chosen?
- What is the impact for implementation?
- Economic/Commercial feasibility?
- Risks for existing roaming providers
- Point of discussion
- Is roaming decoupling feasible also outside the EU?



What is stated in the EU regulation about Roaming Decoupling*?

Article 4 : Separate sale of regulated retail roaming services

Article 5 : Implementation of separate sale of regulated retail roaming services

(Both Articles in current EU Roaming Regulation apply as of 1 July 2014)

* Terminology 'Decoupling' not used in the EU regulation



What is stated in the EU regulation articles about Roaming decoupling?

Article 4 Separate sale of regulated retail roaming services

1. Domestic providers shall enable their customers to access regulated voice, SMS and data roaming services, provided as a bundle by any alternative roaming provider.....
2. Roaming customers shall have the right to switch roaming provider at any time.....but under no circumstances exceeding three working days from the conclusion of the agreement with the new roaming provider.....



What is stated in the EU regulation articles about Roaming decoupling?

Article 4 Separate sale of regulated retail roaming services

3.The switch to an alternative roaming provider or between roaming providers shall be free of charge for customers and shall be possible under any tariff plan.....

4. Domestic providers shall inform all their roaming customers in a clear, understandable and easily accessible form about the possibility to opt for servicesCustomers concluding a contract with a domestic provider for regulated roaming services shall explicitly confirm that they have been informed of such possibility.....



What is stated in the EU regulation articles about Roaming decoupling?

Article 4 Separate sale of regulated retail roaming services

5. The technical characteristics of regulated roaming services shall not be altered Where the switch does not concern all regulated roaming services, those services which have not been switched shall continue to be provided at the same price and, to the fullest extent possible.....



What is stated in the EU regulation articles about Roaming decoupling?

Article 5 Implementation of separate sale of regulated retail roaming services

1. Domestic providers shall implement the separate sale of regulated retail roaming servicesso that customers can use domestic mobile communication services and separate regulated roaming services. Domestic providers shall meet all reasonable requests for access..... access shall be free of charge and shall not entail any direct charges to customers.
2. In order to ensure consistent and simultaneous implementation ... the Commission shall...adopt....detailed rules on the information obligations and on a technical solution

What is stated in the EU regulation articles about Roaming decoupling?

Article 5 Implementation of separate sale of regulated retail roaming services

3. The technical solution to implement the separate sale of regulated retail roaming services shall meet the following criteria:
consumer friendliness, keeping their existing mobile phone number and while using the same mobile device, ability to serve all categories of consumer demand,)..... , cost-effectiveness,a maximum degree of interoperability, ensuring that roaming by Union customers in third countries or by third country customers in the Union is not impeded, ensuring that the rules on protection of privacy, personal data, security and
4. If necessary, the Commission shall give a mandate to a European standardisation body for the adaptation of the relevant standards.....



What are the technical scenarios to offer decoupling solutions, which ones are chosen?

In a BEREC consultation BoR (12) 68, June 2012 ROAMING REGULATION, CHOICE OF DECOUPLING METHOD four options studied:

- Single IMSI
- Single IMSI+
- Dual IMSI
- Local Break OUT (Data only)

Conclusion (BEREC opinion on article 5 implementing act, 27 september 2012) for July 2014

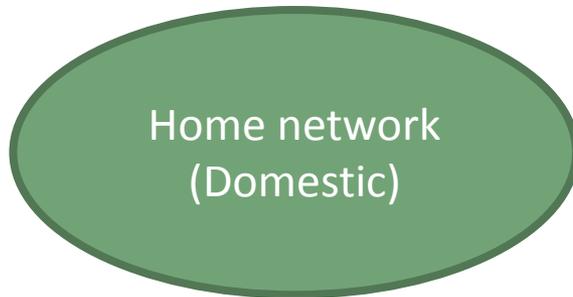
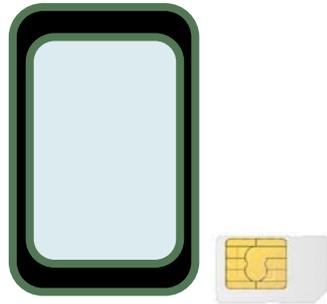
- 1) Single IMSI+ and Dual IMSI were considered to complex (for 7/2014)
- 2) Single IMSI and LBO candidates for implementation



'Normal' Scenario

Subscription to Domestic Network in Home Country

(Data) Roaming Service determined/controlled by the Home Provider (Price, Product, Qos etc.)



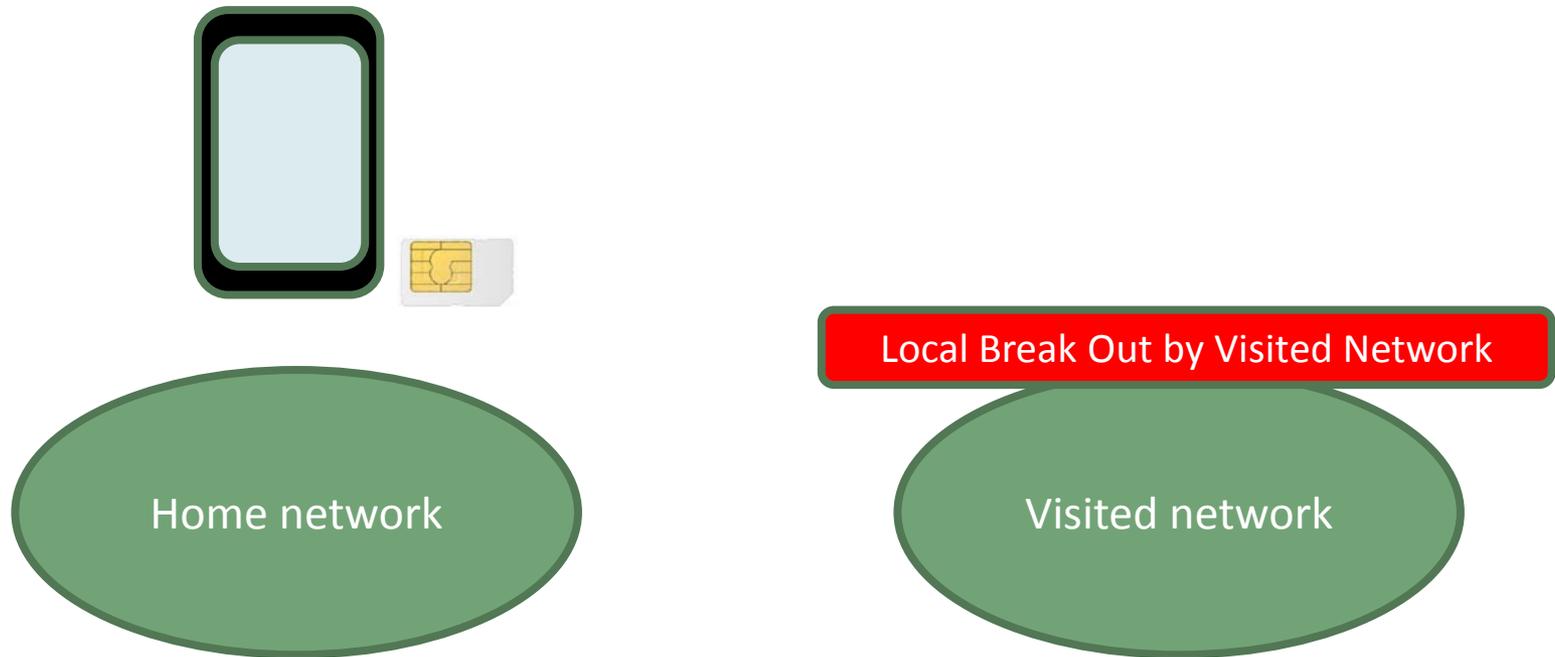
Domestic Provider has the Monopoly on the subscriber roaming services



'Roaming Decoupling' (Local Break Out) LBO scenario

Subscription to Network in Home Country

Data Roaming Service provisioning independent from Home Network Provider.



Removes the Monopoly that the Home Network has on the subscriber roaming (EU roaming Regulation, July 2014)



How does LBO work

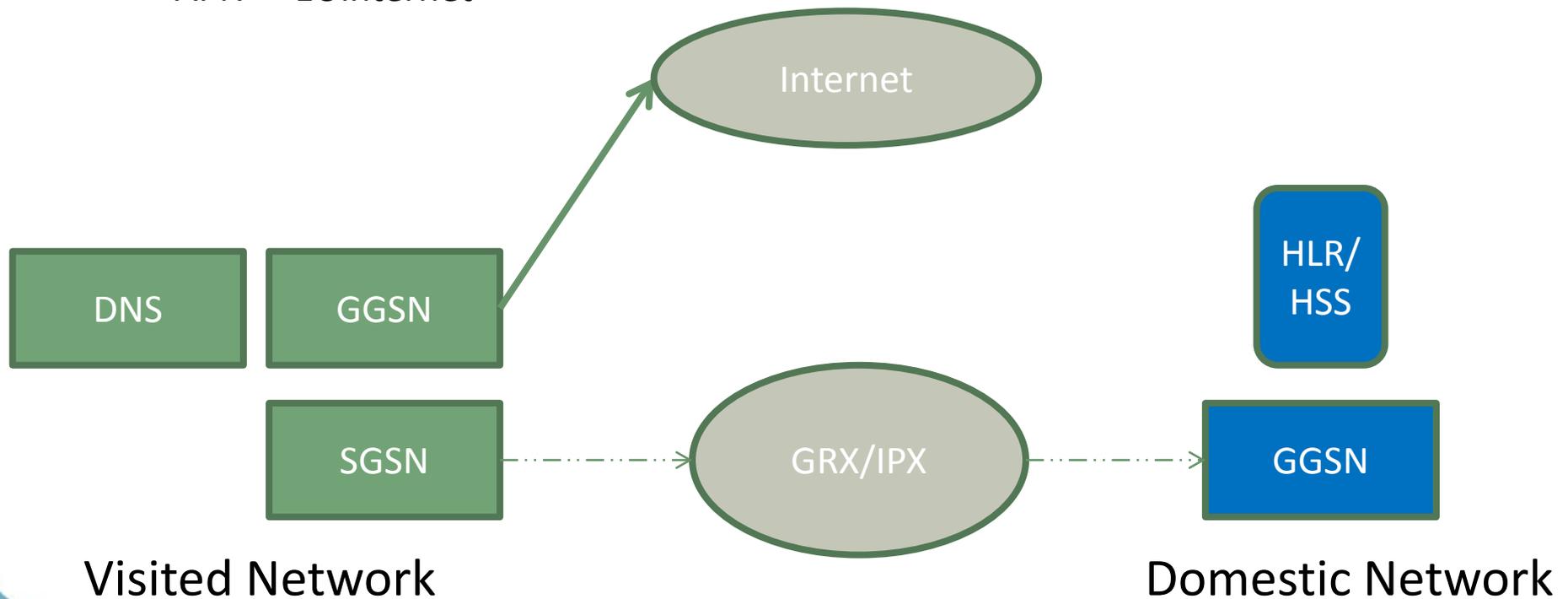
- Customer signs up with LBO provider (up front before roaming, or while roaming)
- Payment depending on the LBO offer (could be 'WiFi-like')
- Home network provides 'LBO APN' in the roaming profile ('EUinternet')
- SMS and Voice, Voicemail unaffected in the Visited Network
- Security based on the Home network
- SoR and Manual Selection issues
- Restoration of APN required when no longer the LBO is used
- No (home network) support for data services (e.g. Blackberry, content, VPNs etc.)
- No Data TAP/CDR to Home network
- New Notification/Interface needed between Visited Network/LBO and Home network (to start/stop the service)
- Customer Can have several LBO's at the same time (in different countries or from different providers) and irrespective of the Single IMSI Alternative Roaming Provider.



LBO solution

PDP profile

- VPLMN Access Allowed = ON (allows local roaming, where Home roaming is/was commonly applied in Mobile networks)
- APN = 'EUinternet'

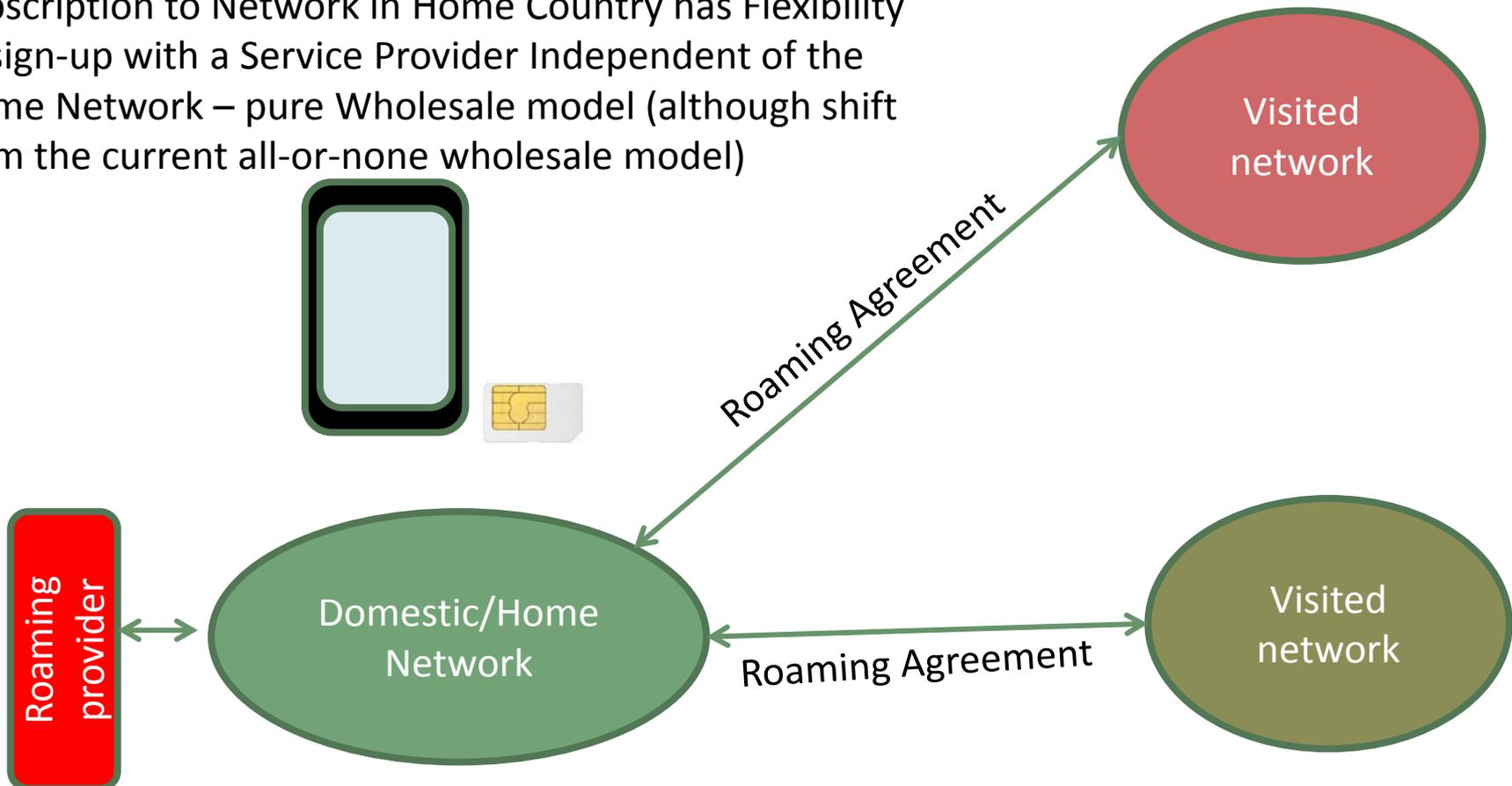




Mobile Communication

'Roaming Decoupling' (Single IMSI)

Subscription to Network in Home Country has Flexibility to sign-up with a Service Provider Independent of the Home Network – pure Wholesale model (although shift from the current all-or-none wholesale model)



Removes the Monopoly that the Home Network has on the subscriber roaming (EU roaming Regulation, July 2014)



Who does it work

- Pure wholesale solution, but split between the domestic provider and an alternative roaming provider
- Roaming Service and implementation as such unaffected
- Only one Alternative Roaming Provider at the time
- Domestic Network must be Home network (otherwise there is no access)
- Camel/Diameter interfaces for Charging, BSP Cost Control
- CDR exchange, Provisioning interfaces in a MVNO-like manner



Overview

- + Single IMSI : Pure wholesale for sms, voice, data roaming
- Single IMSI+ : Single IMSI model but including SoR to a visited network of choice
- Dual IMSI : two or more (U)SIM applications on one UICC (individually managed)
- + Local Break Out : Data only to an ARP

Economic/Commercial feasibility?

- LBO probably complicated for customers (settings, APNs, manual network selection, various LBO's in parallel), not a mass service?
- Single IMSI is the easier concept (like a carrier select), addition to the MVNO portfolio
- Cost recovery of the implementation for the existing network operators (GSMA concern)?
- Maybe just temporary feasible as long as there is margin between regulated retail and wholesale rates



Risks for existing (roaming) providers

- Further decline of roaming volumes, roaming revenues
- Further pressure on roaming retail prices
- Increased (roaming) competition
- Access has to be granted to (all reasonable requests from) ARPs and LBOs
- Implementation Cost (and recovery)



Opportunities for whom (LBO)?

- Type Customers get more and more 'savvy' to avoid traditional roaming, and to choose and select Wifi vs Mobile, and choosing price-efficient applications whenever needed (Skype, OTT-VoIP). Customers cannot without Data!
- Visited networks can decide to turn Data Roaming revenues into LBO revenues. If customers choose for LBO then voice and SMS outbound roaming will remain, or use to attract new customers that would normally be unreachable
- Operator groups in advantage as they can offer an LBO package for a group of countries?
- Would the Visited Network be enabled to offer LBO wholesale, so that a 3rd party provides the retail service?
- For the LBO provider the cost price for LBO is low, allowing for rate plans at the level of the local pricing (instead of roaming pricing) but at the risk of jeopardizing the (inbound) roaming revenue



Opportunities for whom (Single IMSI)?

- Existing MVNO/service Providers to extend their business, or may be a new MVNO niche.
- MVNO group in several countries to mirror offers in various countries
- Sufficient margin between retail roaming pricing and wholesale roaming pricing required



EU reaches preliminary deal on future-proof roaming solution for mobile phone users (march 2012)

Current and new retail price caps (excluding VAT)

| | Current | 1 July 2012 | 1 July 2013 | 1 July 2014 |
|-----------------------------------|----------|-------------|-------------|-------------|
| Data (per MB) | None | 70 cents | 45 cents | 20 cents |
| Voice-calls made (per minute) | 35 cents | 29 cents | 24 cents | 19 cents |
| Voice-calls received (per minute) | 11 cents | 8 cents | 7 cents | 5 cents |
| SMS (per SMS) | 11 cents | 9 cents | 8 cents | 6 cents |

Current and new wholesale price caps (on prices operators charge each other):

| | Current | 1 July 2012 | 1 July 2013 | 1 July 2014 |
|--------------------|----------|-------------|-------------|-------------|
| Data (per MB) | 50 cents | 25 cents | 15 cents | 5 cents |
| Voice (per minute) | 18 cents | 14 cents | 10 cents | 5 cents |
| SMS (per SMS) | 4 cents | 3 cents | 2 cents | 2 cents |



Discussion

- Roaming Decoupling may be of value to further enhance change and innovation
- Traditional Telecom parties not 'over-enthusiastic' (Y/N)
- Probably not a service for the mass, but to be targeted at specific groups, and/or by specific resellers/providers.
- Cost Concerns (has there been concrete cost analysis?)

Is roaming decoupling feasible also outside the EU (unregulated roaming areas)?

- Technically similar solutions may apply
- Harmonized APN as in the EU (regional or worldwide)
- GSMA support needed...
- Wholesale/MVNO support in markets



Traditional Roaming in decline

- SMS, roaming and voice revenues are decreasing
- Wifi becoming more and more important, and is putting pressure traditional (GSM) roaming
- Voice less important if Data is widely available
- In Europe : Future Single Market will kill roaming revenues
- Also outside Europe roaming regulation/solutions are developing
- LTE will make the roaming portfolio more complicated



Innovation in the Market...

- New Dual IMSI, Multi IMSI providers
- Growth of Wholesale and also Wholesale Roaming
- WIFI Roaming
- Local Roaming Number
- Applications and supporting solutions (in particular in smartphones)

‘Decoupling’ becomes available in July 2014 as one of next innovation opportunities



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