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Roaming Unbundling - Challenges and Opportunities

Session 5: Business Models

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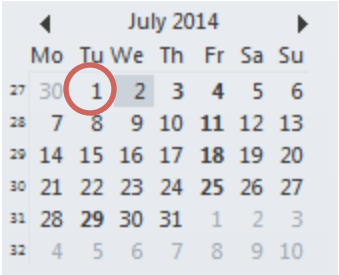
Presentation outline

- Roaming: providing ubiquitous access to (mobile) communication services
- Alternative roaming provider (ARP)
- Local breakout (LBO)
- ARP & LBO: opportunities, threats, challenges
- Conclusions

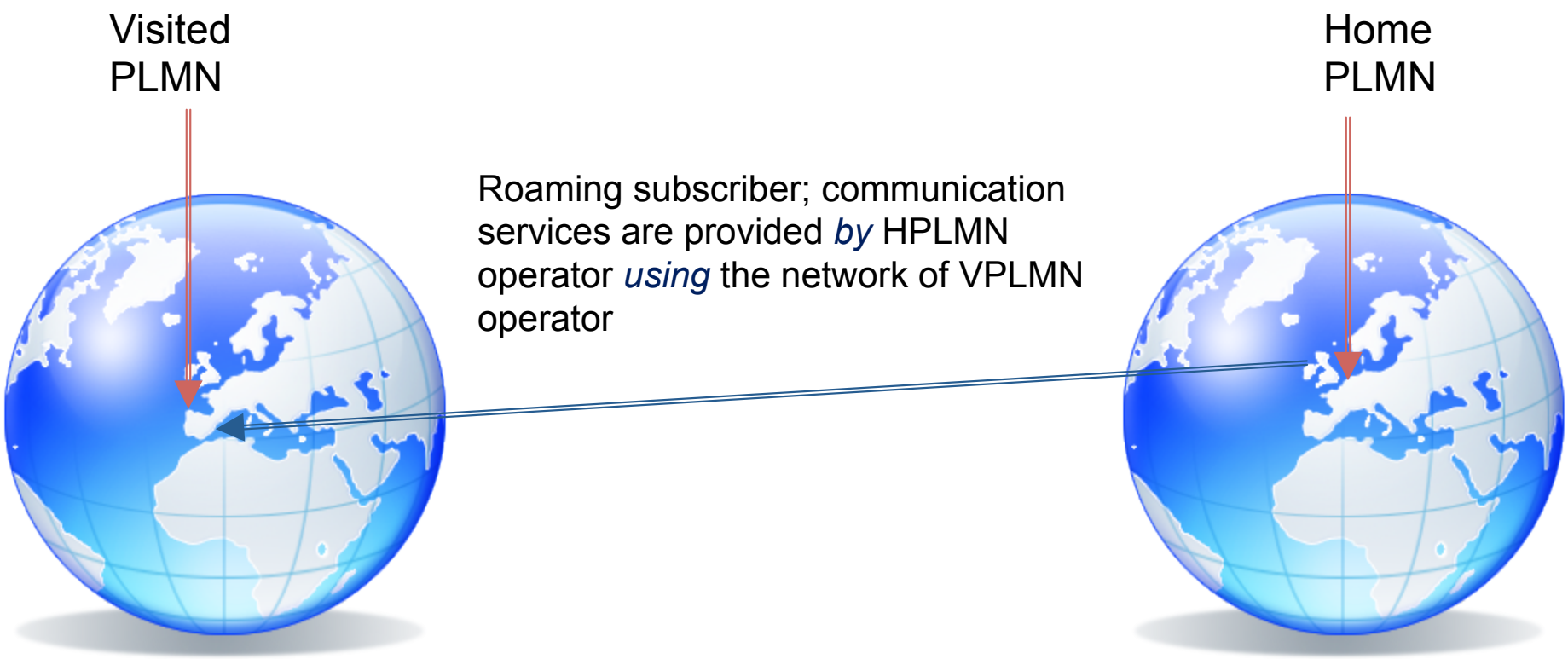
Roaming

Ubiquitous access to (mobile) communication services

- European Commission (EC) new rule:
  - Home communication service versus
  - Roaming communication service
- Subscribers may choose an alternative provider for communication services when abroad
- 'Stimulating competition for roaming communication services'

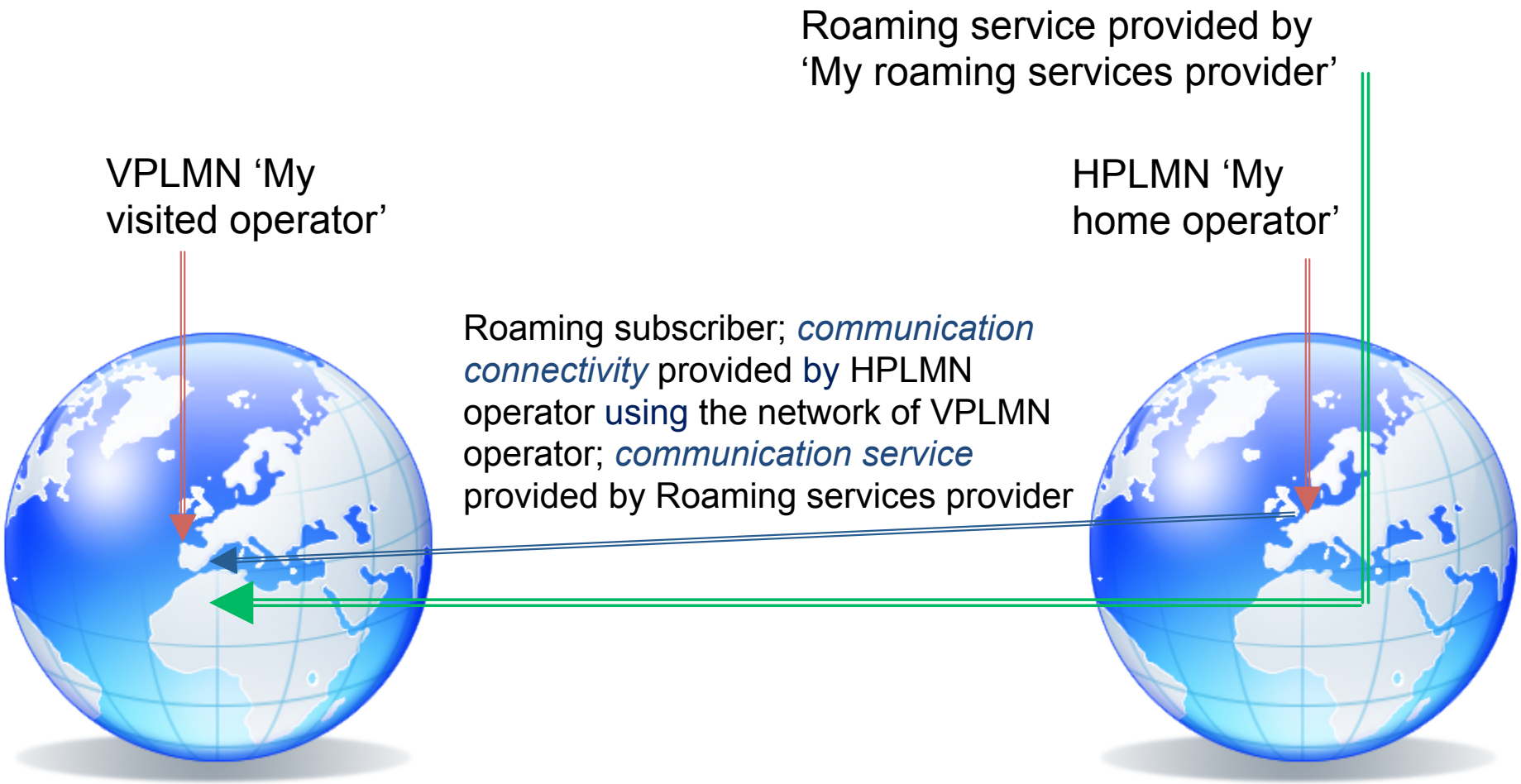


Current roaming principle



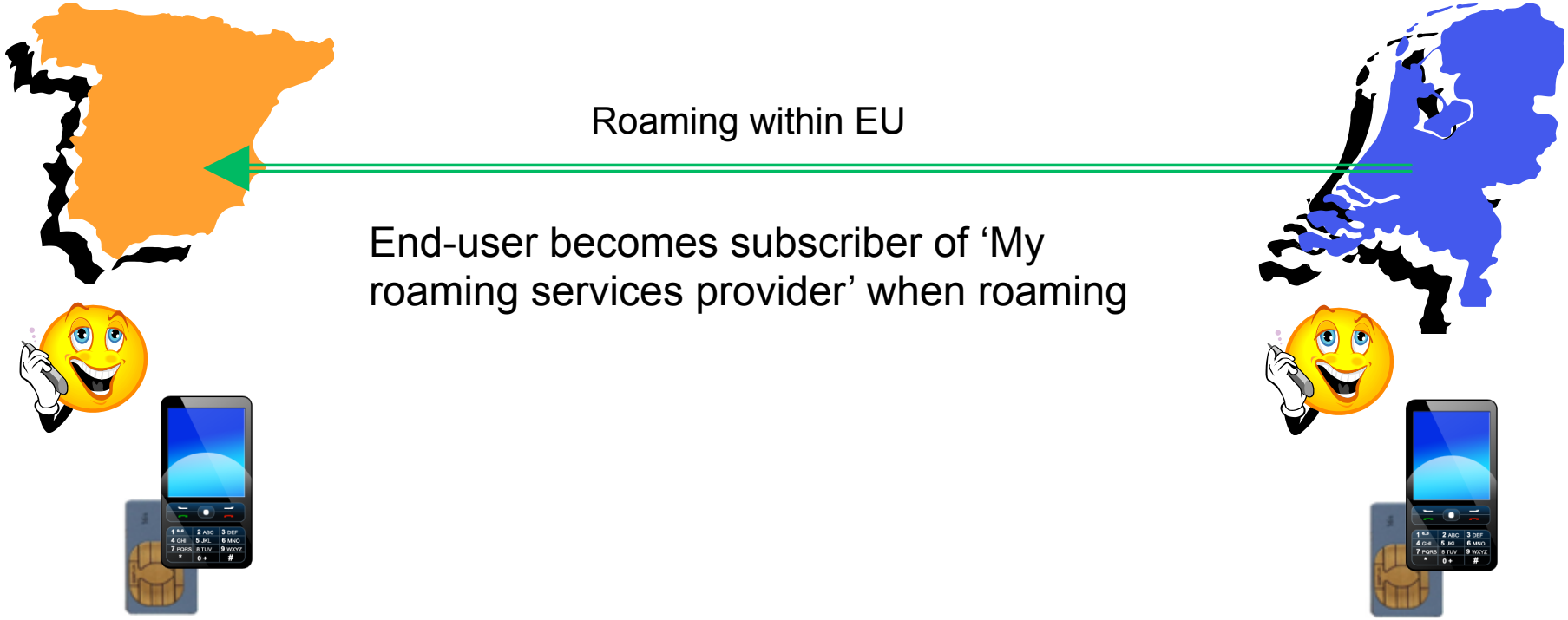
- Roaming subscriber pays (pre-paid / post-paid) to HPLMN operator
- Accounting applied between HPLMN operator and VPLMN operator

A new view on roaming:
(option) 'roaming services provider'



- End-user becomes subscriber of 'My roaming services provider' when roaming

‘Single IMSI’, i.e. no SIM swap required

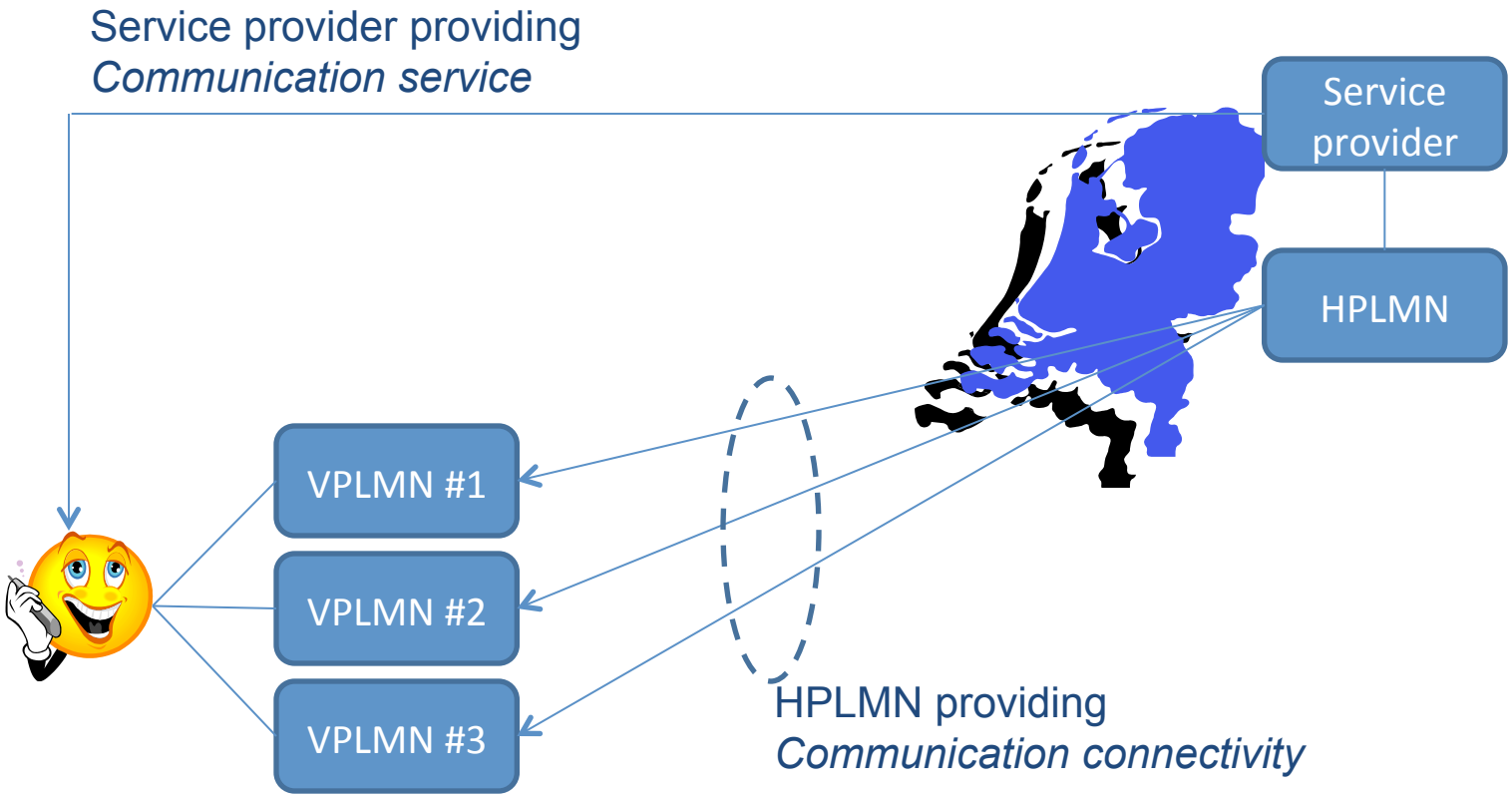


Same SIM card facilitates in receiving communication service from ‘My roaming services provider’, when roaming

SIM card facilitates in receiving communication service from ‘My home operator’, when at home

Fundamental for roaming services:

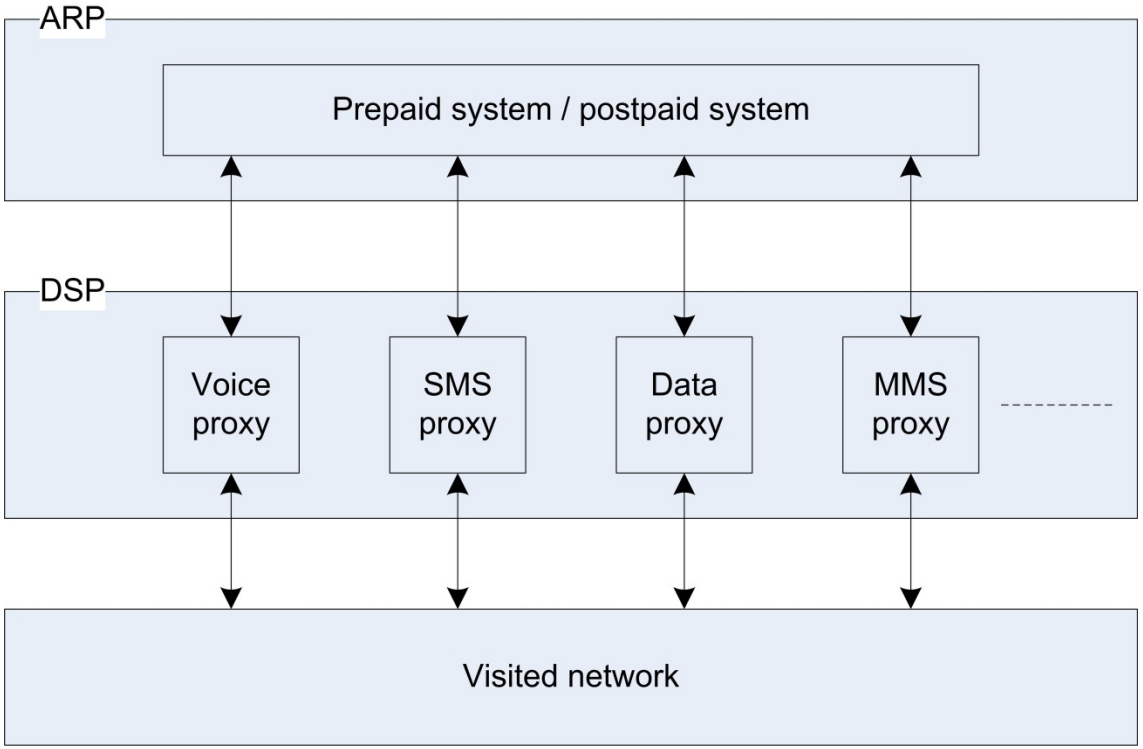
Separation of *Connectivity provider* and *Service provider*



Alternative roaming provider (ARP)

Choosing your provider for roaming services

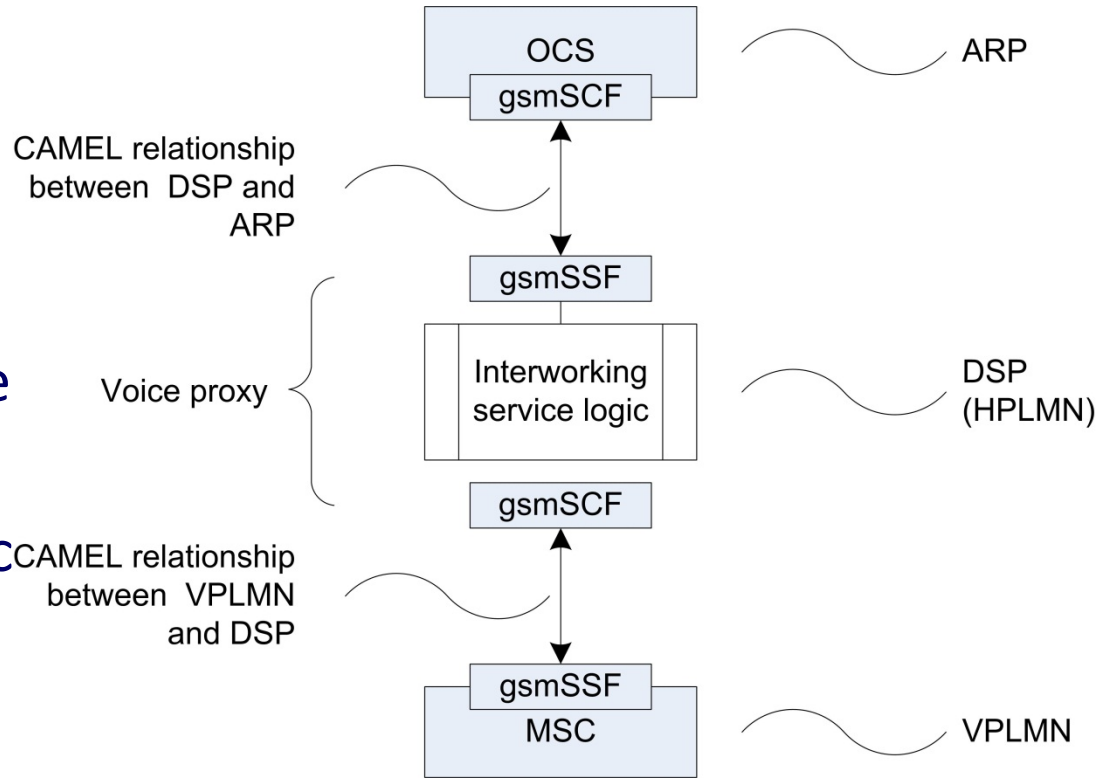
- Domestic service provider (DSP) exposes control of voice / SMS / MMS / Data to ARP
- Control for charging only
- (currently) limited to subscribers roaming in EU



Exposing charging control (I)

Voice proxy

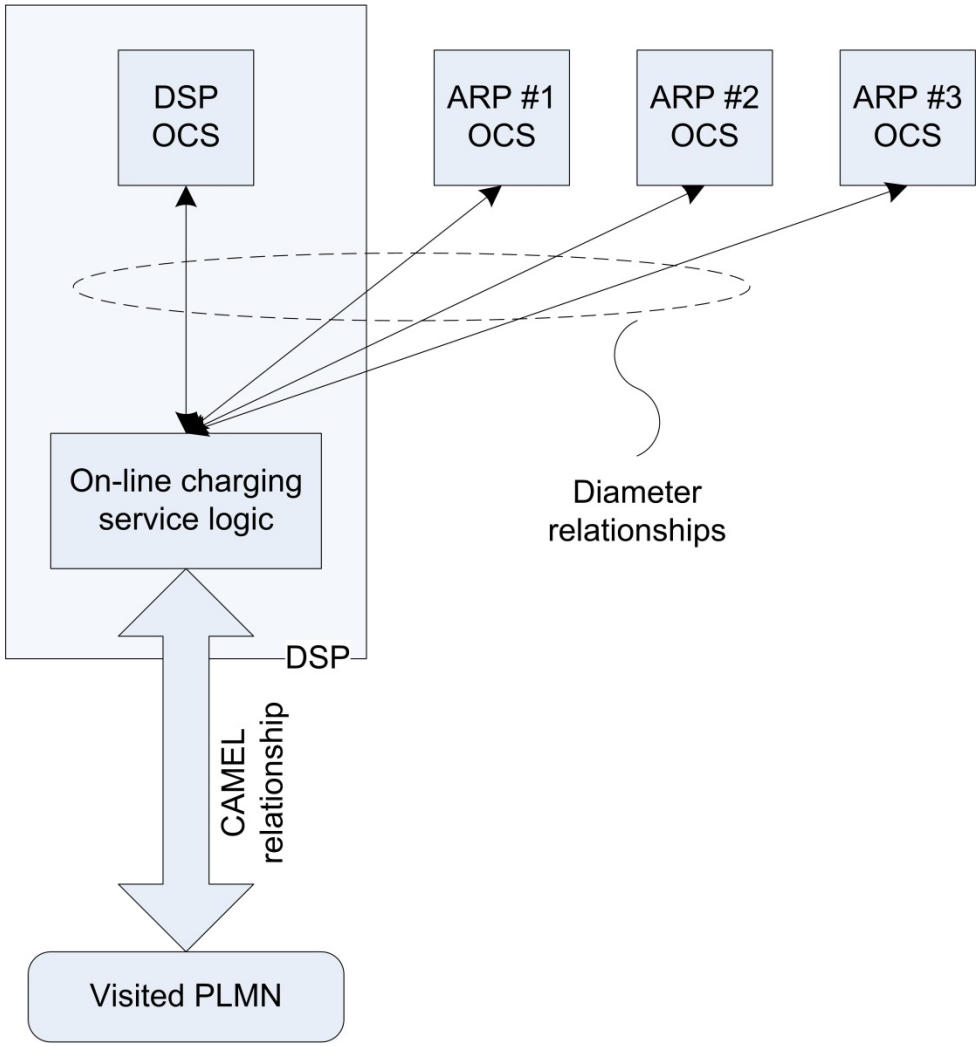
- CAMEL relation is extended, by DSP, towards ARP
- DSP retains strict control over service capability
- Existing CAMEL relationships between DSP and VPLMNs can be used
- ARP CAMEL service logic is applied (under auspices from DSP)



Exposing charging control (II)

Exposing Diameter charging control

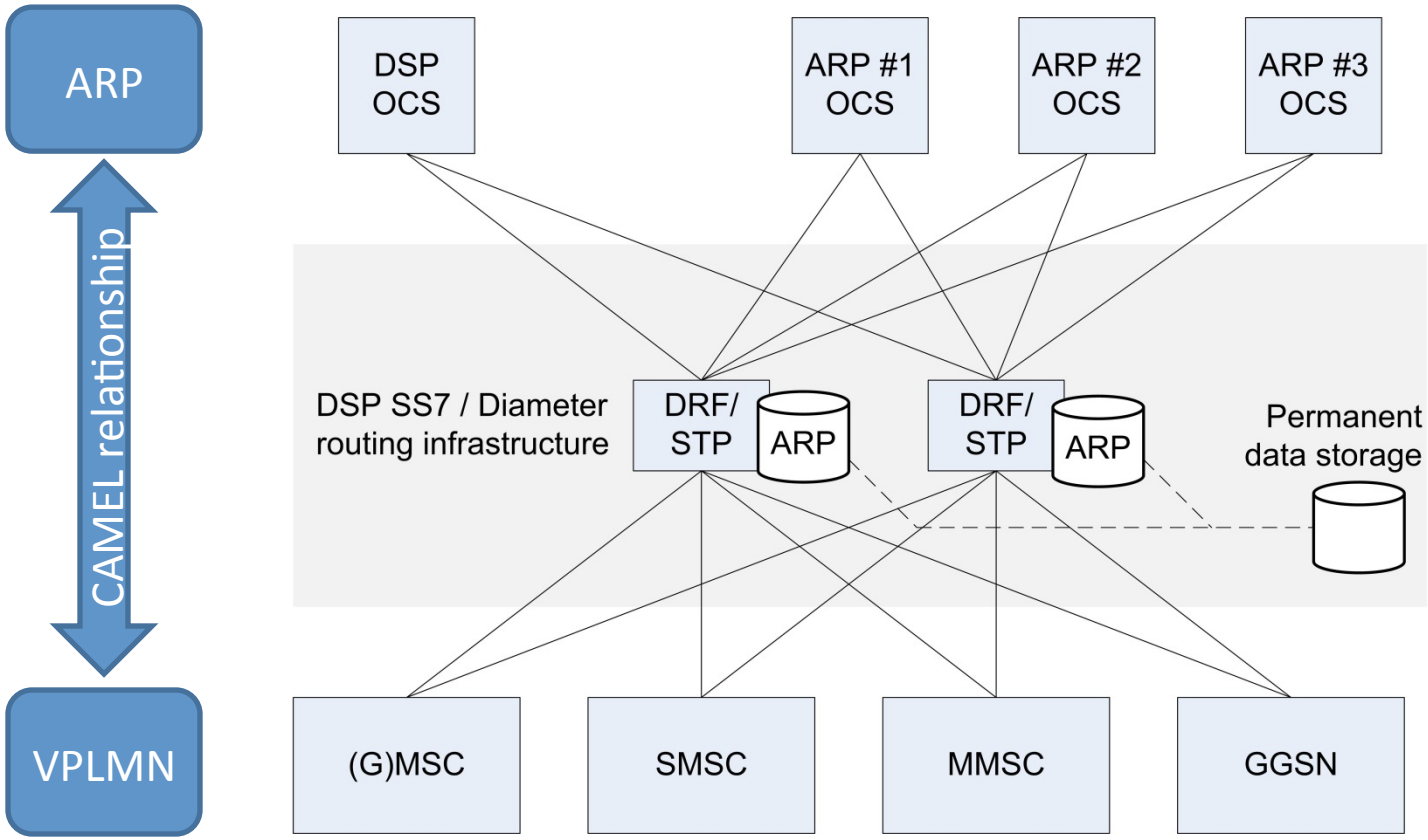
- CAMEL relationship terminates at DSP's charging system
- Rating and User account handled by ARP
- Diameter charging control exposed to ARP(s)
  - Diameter voice control yet to be standardised
- Existing CAMEL service logic, from DSP, is applied



Exposing charging control (III)

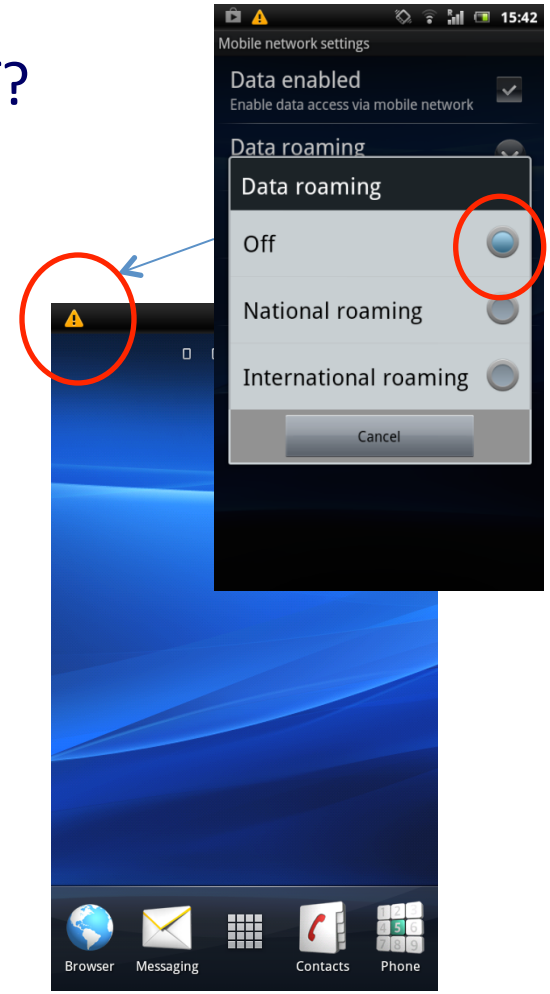
Extending native communication control capability to ARP

- For voice: CAMEL relationship between VPLMN and ARP



Local breakout (LBO)

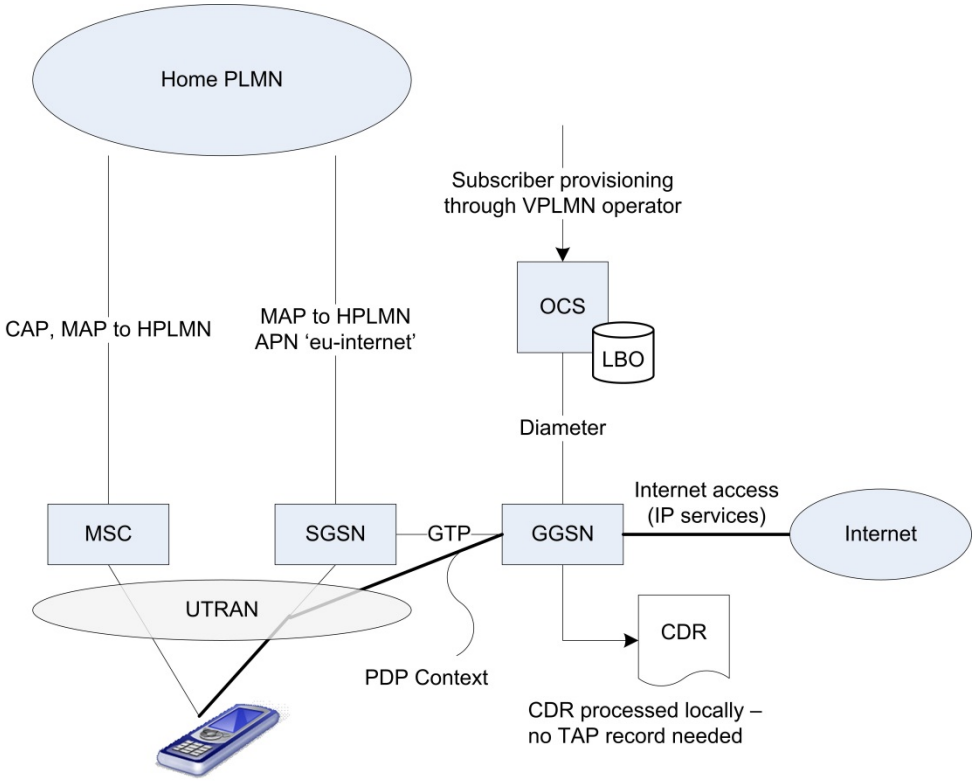
- Every traveler's worry: is my data roaming off? If not: $$$!
- People reverting to toll-free / low-cost WLAN
  - Or local SIM card…
  - But no roaming data revenue for operators
- LBO facilitates mobile data connection through *local GGSN*
  - *3GPP style LBO: local GGSN, but still charged, for data usage, by HPLMN operator*
  - *EU style LBO: local GGSN, charged by visited network operator, through locally obtained (pre-paid) data subscription*



Local internet access

EU style

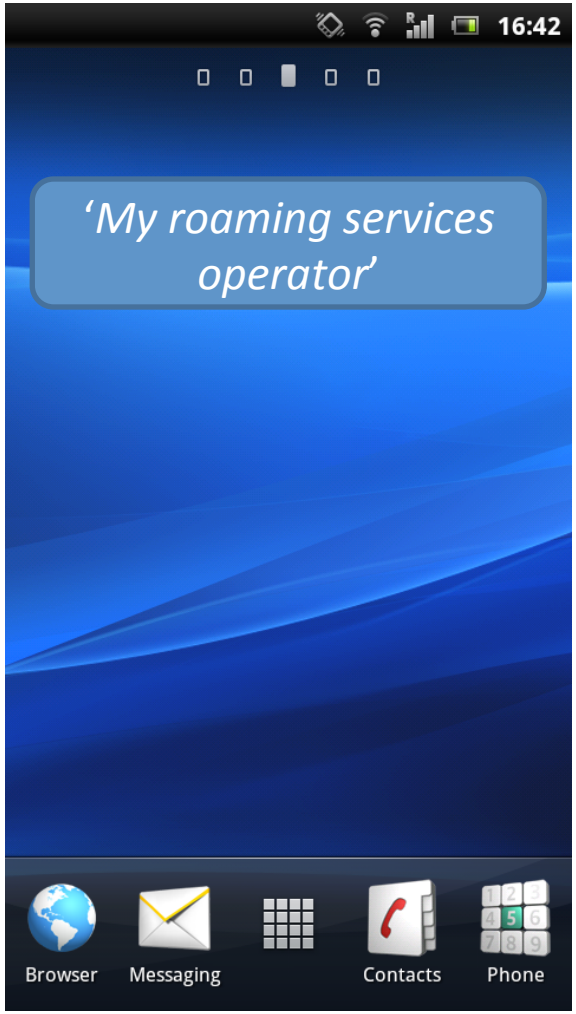
- APN 'eu-internet' to be provisioned (in HPLMN) for subscriber
- PDP Context towards that APN results in selection of local GGSN for internet access
- Charging is done from local GGSN
- Home network operator not involved in / aware of local data connection



ARP & LBO

Opportunities, threats, challenges – for end-user (I)

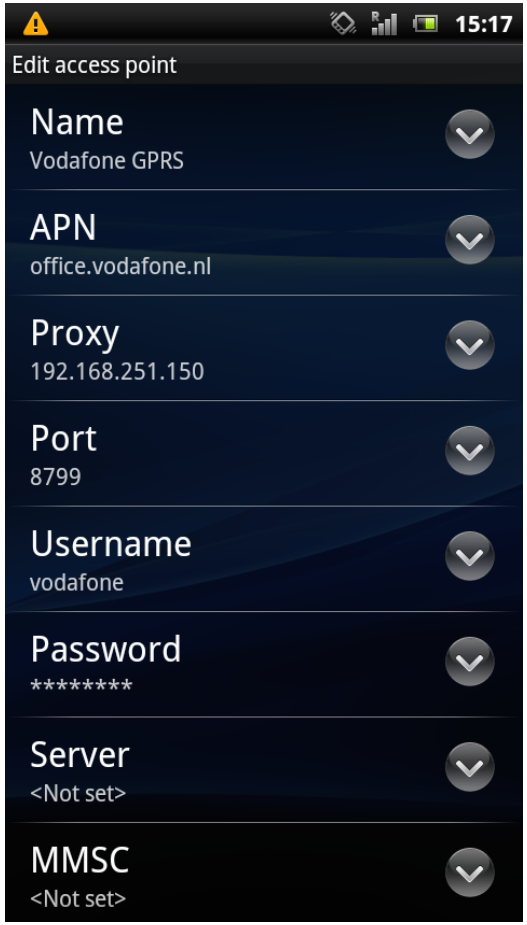
- Confirmation of ARP service (e.g. 'My roaming services operator'), when roaming abroad
  - as opposed to, or in addition to, getting indication of VPLMN operator
- Consistency in end-user service
  - ARP (pre-paid) charging service logic may differ from DSP charging service logic
  - Local IP address
- End-user service consistency between different countries
- Transparency in end-user service is key!



ARP & LBO

Opportunities, threats, challenges – for end-user (II)

- Setting the APN by end-user
  - e|.g. 'office.vodafone.nl' --> 'eu-internet'
  - And back when moving out of EU coverage…
- Activating data roaming
  - And de-activating when roaming to other network (out of EU coverage)
- Receiving definitive indication (i.e. confirmation) about using local access for mobile data
- Dependency on operator-specific GGSN services



ARP & LBO

Opportunities, threats, challenges – for operator

- Adaptation / enhancement needed to Home network for supporting ARP and (to lesser extent) LBO
- Safeguarding the network as well as safeguarding customer relation
  - Large investment made in roaming relationships, network reliability and superior end-user service
  - Advising end-user on usage of ARP and LBO
- How will the market for roaming services develop
  - Price regulation?

Data roaming with LBO: opportunity?

- Roaming data by many travelers not used (due to high cost; 'bill shock')
  - Lost revenue opportunity for operator
  - Inconvenience for end-user (hunting for WLAN…)
- LBO may entice the market at large (operators, vendors) to engage into providing continuous mobile data, for regular tariff (data bundle) + marginal roaming service mark-up
- 3GPP style LBO potentially preferential compared to EU style LBO?
  - No local (pre-paid) data subscription required for end-user
  - Potential for seamless data connectivity transfer between LTE, UTRAN, WLAN

Broadening the scope

Advanced data use cases

- Multiple data bearers (PDP Context / 4G data bearer) per phone
  - Different applications using different data bearers
  - Transparency needed for end-user regarding cost of data usage
- WLAN being integrated by 3GPP as access network for 3GPP based communications network
  - Simultaneous cellular mobile data connection and WLAN connection
- Multi-RAT (Radio access technology) application
  - E.g. one application using 4G for conversational voice/video and WLAN for call enrichment
- Access transfer between 3G, 4G, WLAN (for data services)
  - Data bearer to remain anchored with Packet gateway where the bearer was established

Conclusions

- Alternative roaming provider (ARP) and Local breakout (LBO) aim to instigate competition for roaming communication services (price being just one goal)
- There are some challenges to overcome for providing consistent and transparent end-user service. Transparency and ease of use for end-user is key!
- Uptake of ARP & LBO will depend on how ARP & LBO are put in the market
- ARP and LBO not yet defined for LTE and VoLTE
- Advanced data use cases require intricate control over data bearer establishment. 3GPP LBO thus preferred?

Thanks for your attention

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