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International Telecommunication Union
International Multimedia Telecommunications Consortium

ITU-T Standardization of Multimedia Service Mobility: Current Status and Future Directions for Telecommunication Networks

Dr. Leo Lehmann

Rapporteur ITU-T Q.29/16 Mobility Management

Federal Office of Communication (OFCOM)

Switzerland

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Mobility Definitions

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(based on ITU H.510, Q.1703)

Personal mobility:

The ability of a user to access telecommunication services at any terminal on the basis of a personal identifier, and the capability of the network to provide those services delineated in the user's service profile. The personal mobility may be used for a user that is involved in two or more terminal devices.

Terminal mobility

Terminal mobility refers to the ability of a terminal to access telecommunication services from different locations and while in motion, and the capability of the network to identify and locate that terminal.

Service mobility

The ability of a user to use the particular (subscribed) service irrespective of the location of the user (horizontal) and the terminal that is used for that purpose (vertical/ Session Mobility).

Mobility Definitions (cont.)

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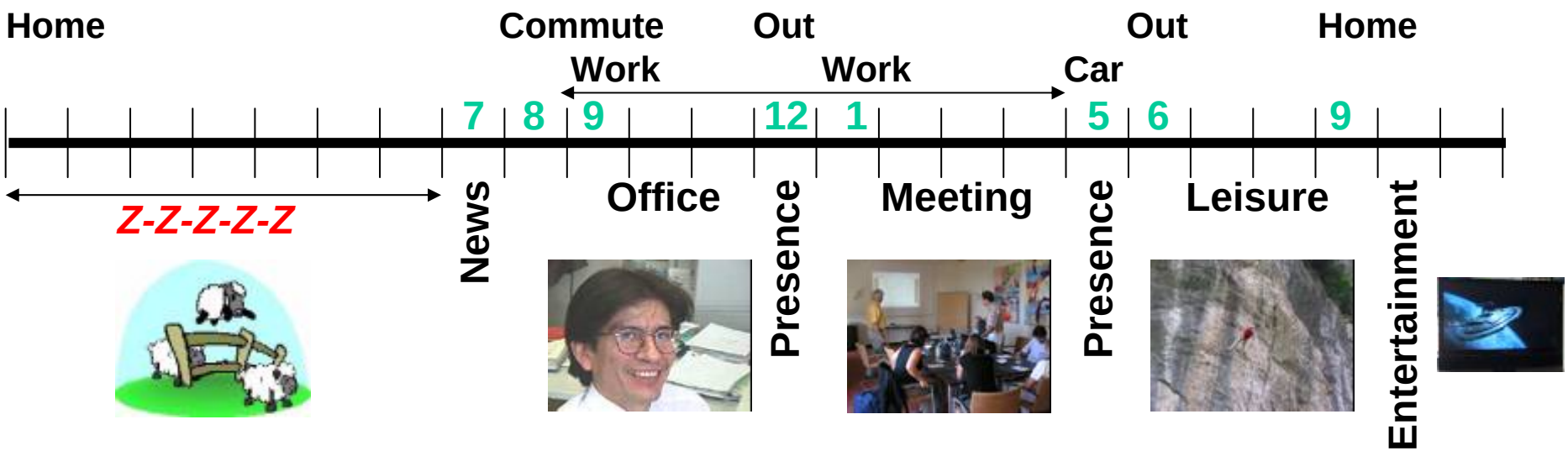
IMTC

Service Mobility

always requires in mobile & converged environment

User Mobility

Terminal Mobility



ITU-T Standards H.5xx

Current ITU-T Standards regarding Mobility for Multimedia Systems and Services:

- H.501- Protocol for mobility management and intra/inter-domain communication in multimedia systems
- H.510- Mobility for H.323 multimedia systems and services
- H.530- Symmetric security procedures for H.323 mobility in H.510

H.510 Mobility Related Functional Elements

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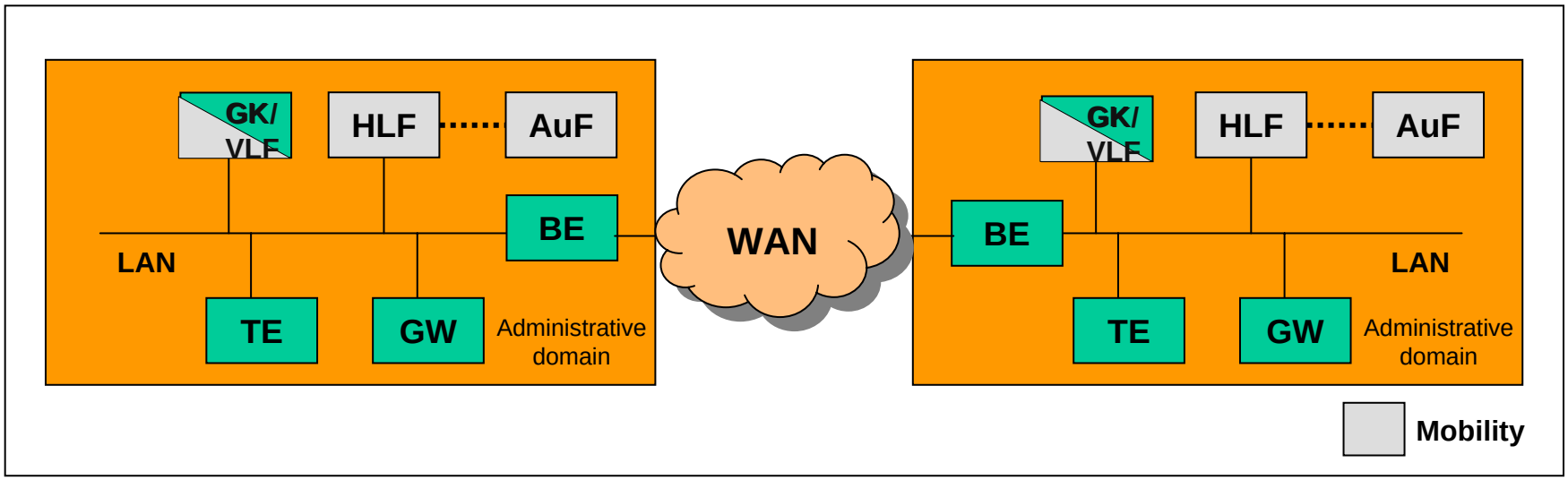

Home Domain: Domain, where a user has a subscription for H.323 services
Visited Domain: Domain, which is serving a user outside the home domain

Mobility related Functional Entities:

Home Location Function (HLF): Database, which stores subscription data and current location (VLF) of a mobile user/ terminal
Authentication Function (AuF): Authentication of a mobile user/ terminal towards the serving domain (home or visited)
Visitor Location Function (VLF): Database for temporary storage of data relating to a visited user/ terminal (e.g. pointer to GK, where the user/ terminal is currently registered, pointer to HLF,..)

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Combined Mobility H.5xx / IMT2000

- H-Series Technical Papers; http://www.itu.int/publications
- Extension H.510/ H.530
- IMT-2000: ITU framework for 3rd-generation (3G) wireless phone standards to deliver high-speed Multimedia Data and voice. IMT-2000 supports various technologies that increase data rates such as EDGE(Enhanced Data Rate for GSM Evolution) and UMTS (Universal Mobile Telephone System).

Combined Mobility H.5xx / IMT2000 (cont.)

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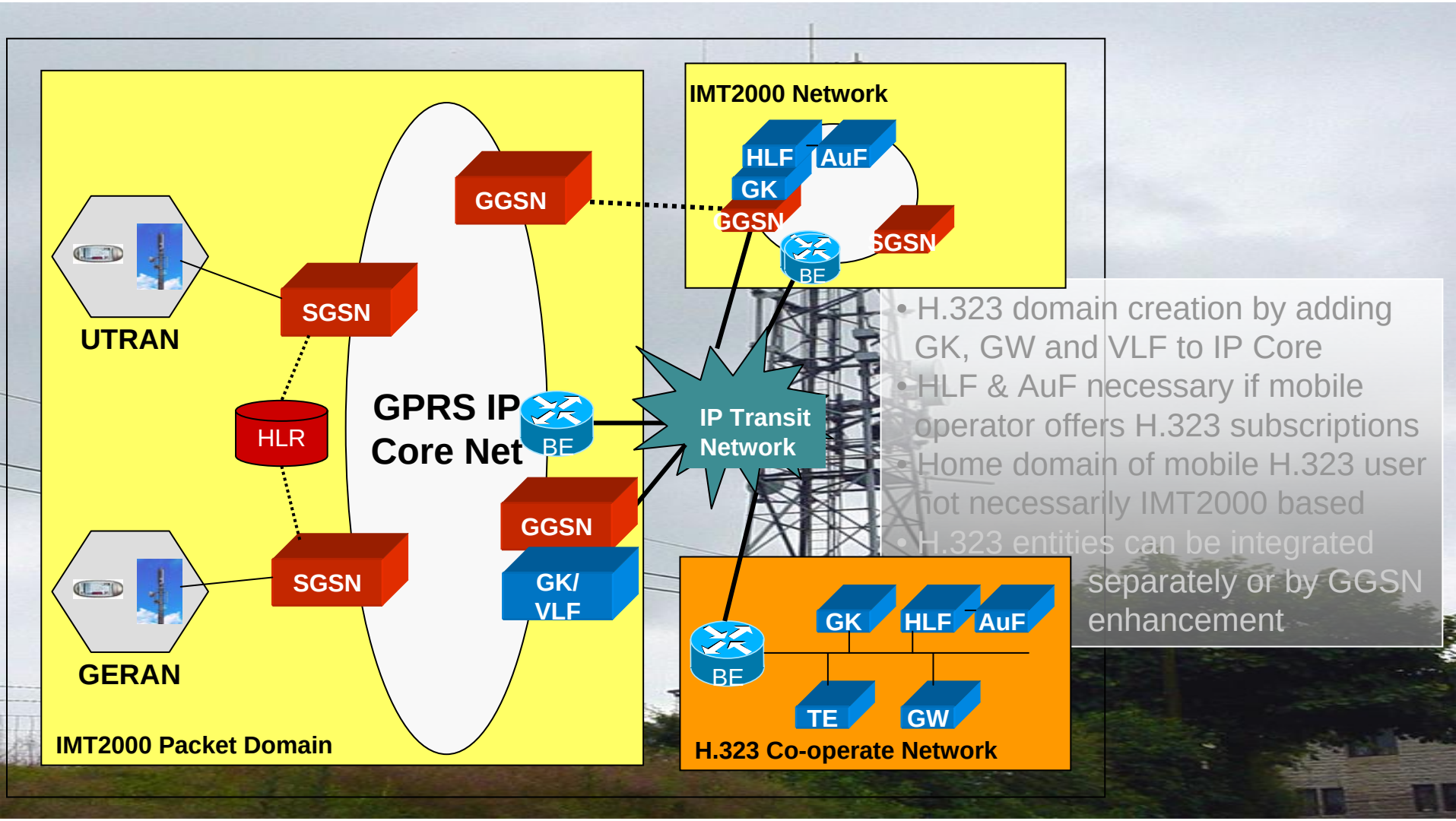

- H.323 domain creation by adding GK, GW and VLF to IP Core
- HLF & AuF necessary if mobile operator offers H.323 subscriptions
- Home domain of mobile H.323 user not necessarily IMT2000 based
- H.323 entities can be integrated separately or by GGSN enhancement

Combined Mobility H.5xx/IMT2000 (cont.)

GGSN: Gateway GPRS Support Node; interconnection with packet data netw.; IP address allocation

SGSN: Serving GPRS Support Node; access control for mobile terminals; routing; security functions; location management GPRS; protocol conversion between GERAN/ UTRAN and IP core; charging support

HLR: Home Location Register: Database, which stores subscription data and current location of a mobile user /terminal (IMT2000 environment)

UTRAN: UMTS Terrestrial Radio Access Network; covers an appropriate area with UMTS radio base stations

GERAN: GSM Edge Radio Access Network; covers an appropriate area with GSM/EDGE radio base stations

Combined Mobility H.5xx/IMT2000 (cont.)

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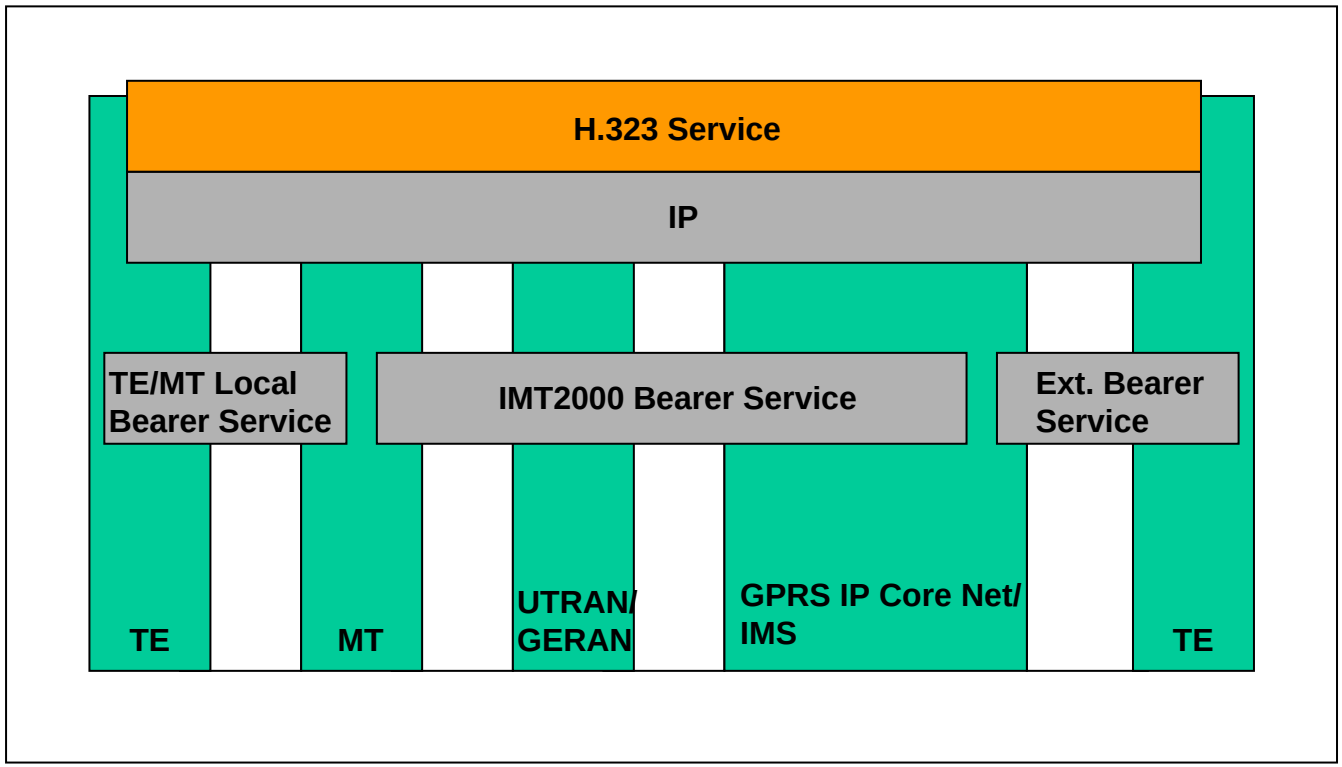

- IMT2000 based PLMN offers IP connectivity, H.323 functionality is introduced on as an overlay on top
- Support of two types of mobility:
  - Mobility on PLMN level (e.g. handover between two radio cells within GERAN/ UTRAN) while the administrative domain remains the same in context of H.323
  - Mobility on H.323 level (roaming/ handover between different administrative domains)

Combined Mobility H.5xx/IMT2000 (cont.)

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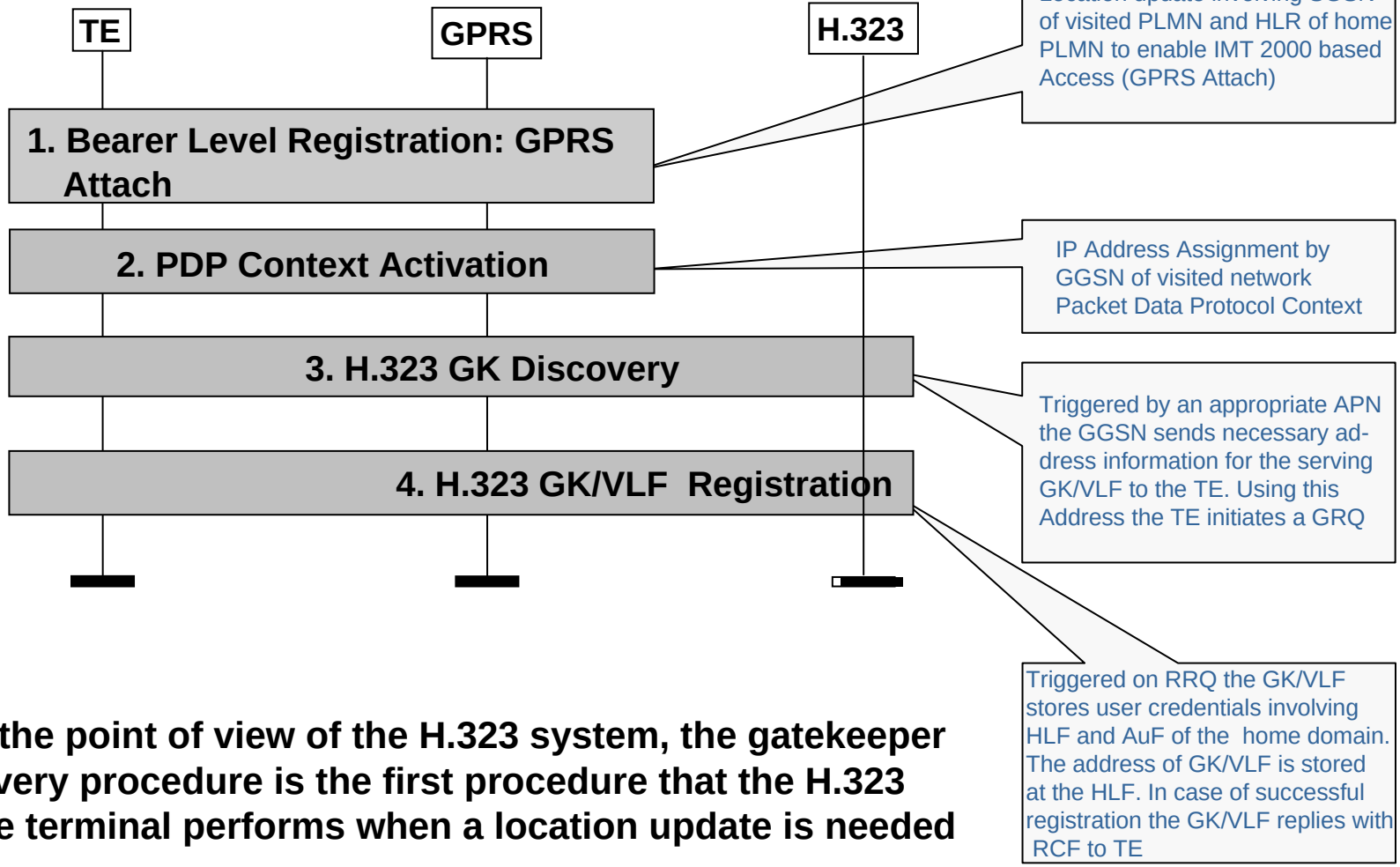

From the point of view of the H.323 system, the gatekeeper discovery procedure is the first procedure that the H.323 mobile terminal performs when a location update is needed

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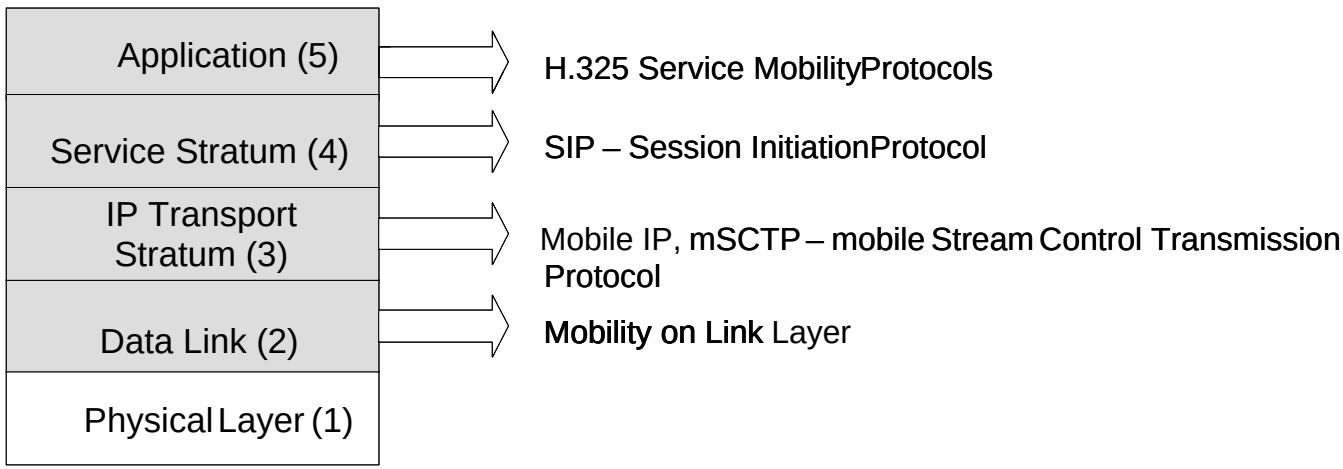
Multimedia Service Mobility on the NGN environment

- Exploit capabilities and protocols of the NGN, focus on application specific issues
- Different variants of service control
- Draft Revision ITU-T technical paper



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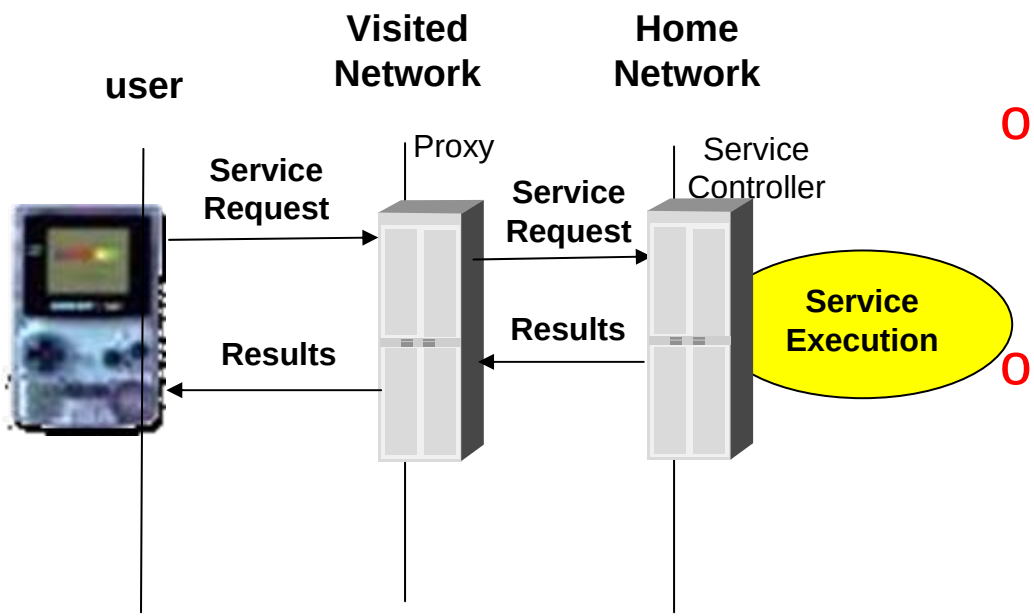
Home Centric Service Control for Roamers: services are only accessible via the user's home network



- Visited network acts as Proxy
- basic capabilities required by visited network (bandwidth)
- supported by SIP and to be integrated into the NGN (S-CSCF of home network)

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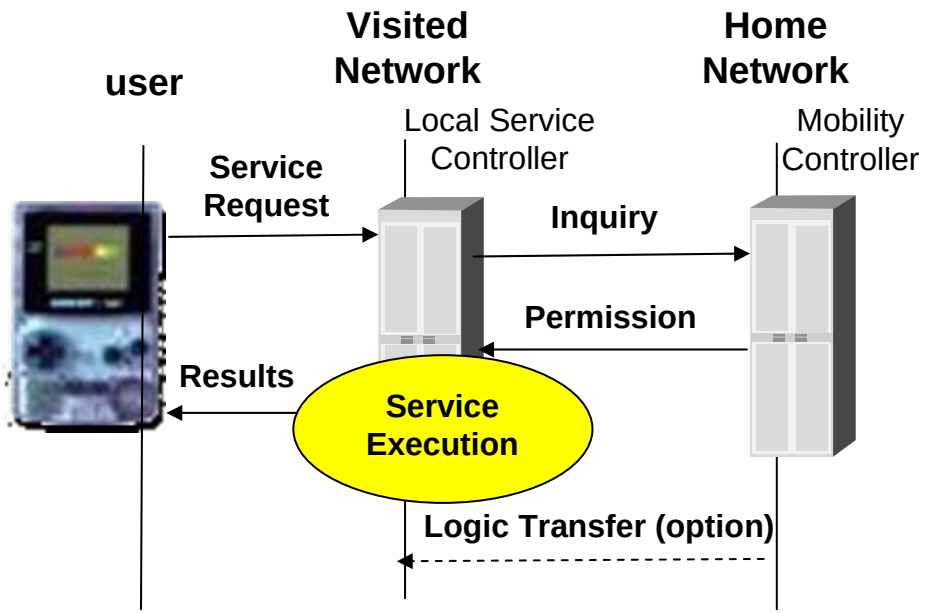
Visited Centric Service Control for Roamers: Service control is handled by the visited network



- optionally transfer of service logic
- lower dependency from home service provider
- logic transfer requires hardware compatibility
- appropriate roaming agreements and SLA's
- Currently not supported by NGN (some support by SIP)

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Comparison Home/ Visited Centric Control

	Home Centric	Visited Centric
NGN Support	+	- (availability)
Complexity	o	-
Delays	-	+
RFID Suitability	o	+
Accounting & billing	+	o (prepaid)
Profile Handling	o	o

General Requirements

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- Consistent service behavior (RTP, TCP based) in home/visited network regardless of service access (considering also acces-sibility for disabled & older persons)
- Service profiles shall include personalization of individual media components of a MM call

General Requirements (cont.)

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- The time required to select and to register to a visited network based on the offered services needs to be minimized
- With regard to real-time conversational services mobility protocols shall not increase the total latency (end-to-end delay) according ITU G.114

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- 4 closely related co-operating Questions:
  - Q.2/19 Mobility management
  - Q.5/19 Convergence of evolving IMT-2000 networks with evolving fixed networks
  - Q.6/13 NGN mobility and fixed-mobile convergence
  - Q.29/16 Mobility for Multimedia Systems and Services

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Summary

- Multimedia Service Mobility is an important feature for NGN and/or fix/mobile converged environments
- H.5xx series can extend Multimedia Services to Cellular Networks
- H.mmsm shall complete NGN mobility as far as necessary on the application layer (e.g. specific profiles & capabilities)
- Interest are welcome to contribute to Q.29/16 in the context of NGN GSI

Finally

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Thank you !