VCC Service:
Standardization of Integration between CS domain and IMS

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Agenda

- Introduction

- The VCC Service

- Integration between CS and IMS

- Conclusions
- Questions

Introduction

"If you can dream it, you can do it."

Walt Disney

- Result of Master Degree research

- Sponsored by PT Inovação Brasil

- About New 3GPP Release

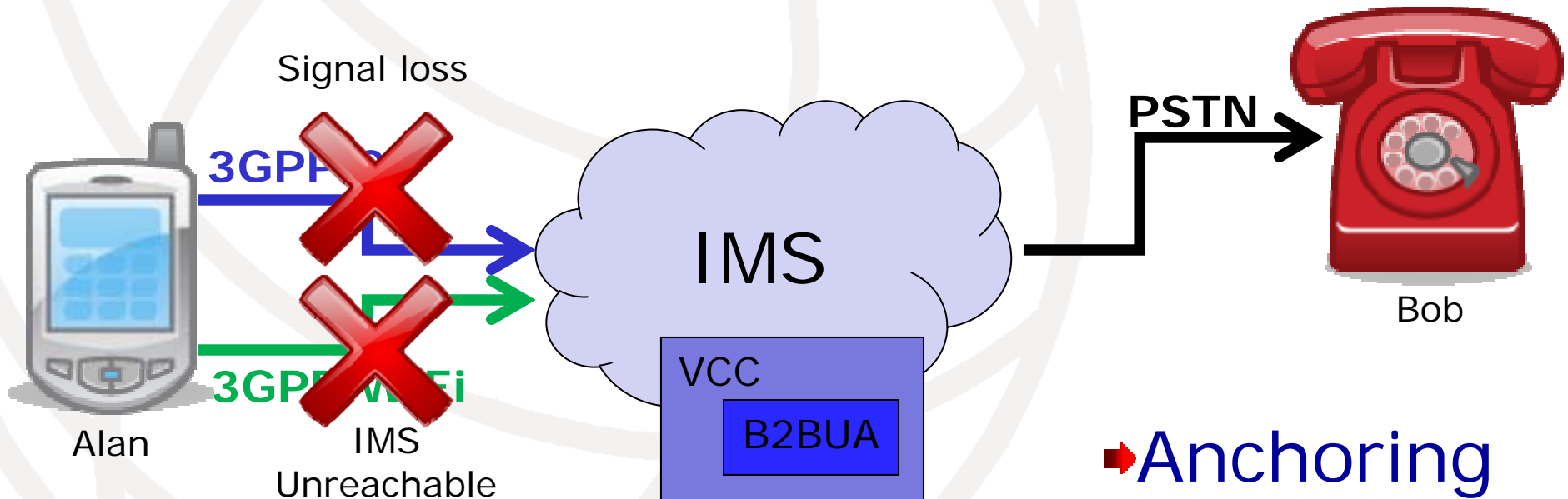 - Published in July/2007

Introduction – Contextualization

- People are looking for…
  - Multimedia and Interactivity
  - Convergence and Mobility
- NGN was created to reach these points
- IP Multimedia Core Network (IMS)
  - Implements NGN, inside 3GPP
  - Many networks as access networks
  - Has a lot of services specified

The VCC Service

- Voice Call Continuity...

  - Uses 3GPP Core Network and at least 2 3GPP Access Networks

  - Is very important to IMS and NGN

    - Like handover between cells in a GSM network

    - It guarantees mobility in a convergent network

  - Provides the ability to keep a call even if the access network used is changed

    - User should not perceive audio interruption
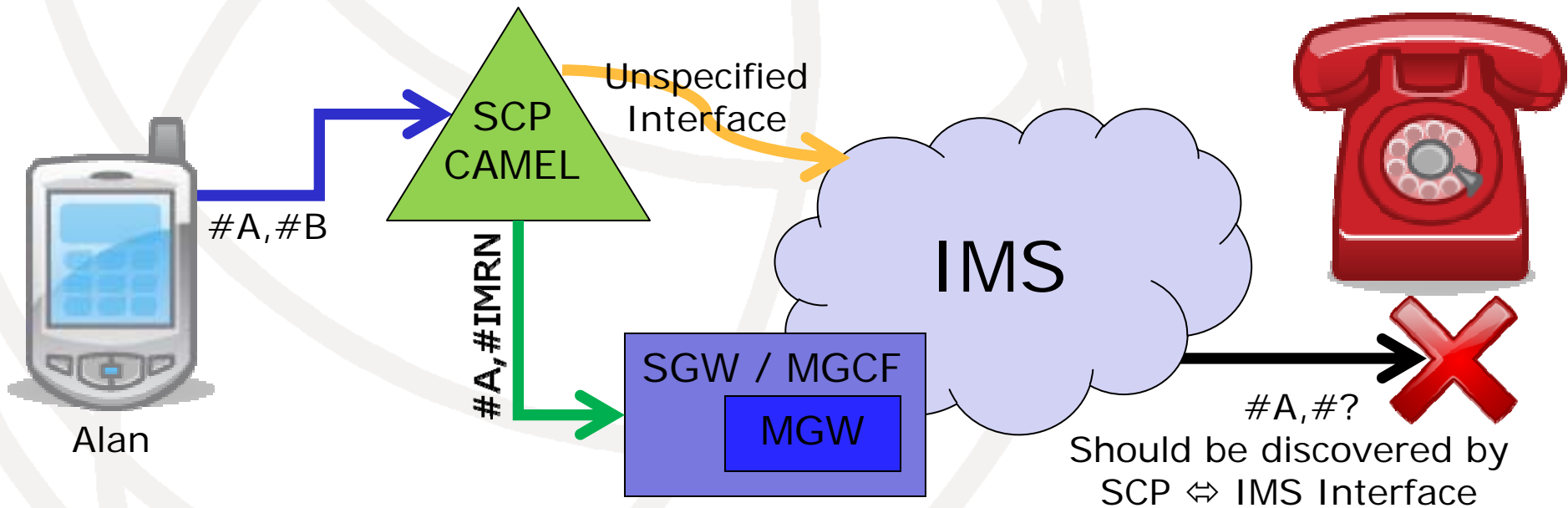
The VCC Service – How it works?

- **Uses a B2BUA SIP Application**
  - When a domain transfer is needed
  - Updates the audio source on the destiny
  - Accordingly to the new network used

Signal loss

3GPP

3GPP WiFi

Alan

IMS
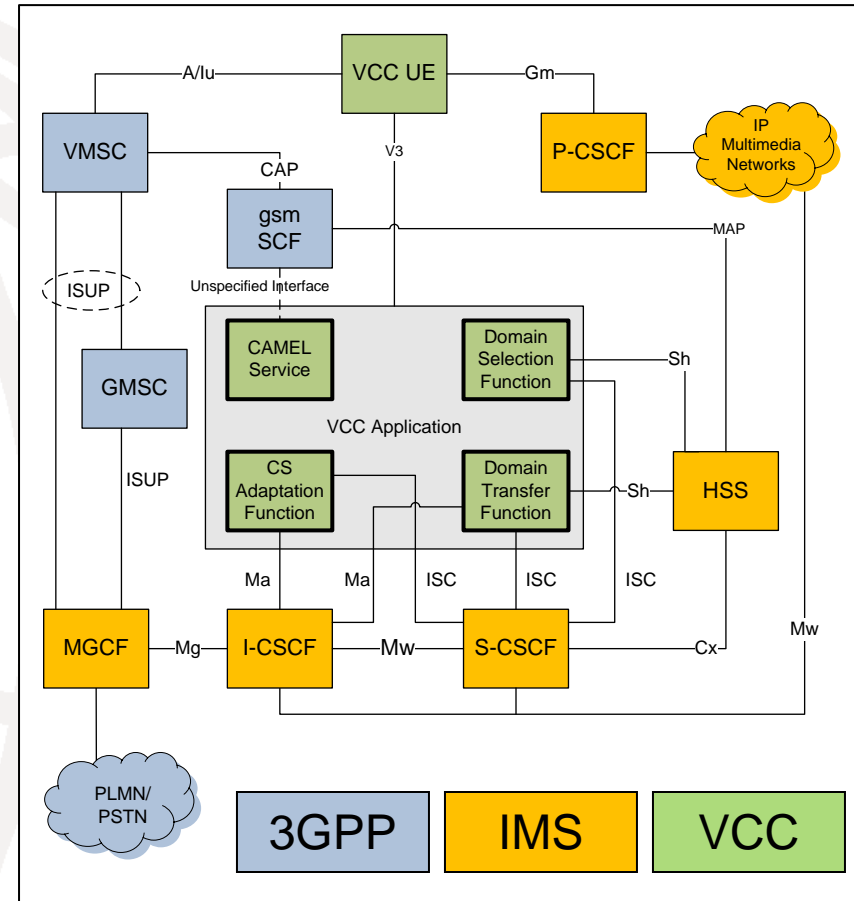Unreachable

IMS

VCC

B2BUA

PSTN

Bob

- Anchoring in IMS

The VCC Service – CS to IMS

- Forward CS initiated calls to IMS
  - Static Routing at MSCs
  - CAMEL Service ⬅

- Could lose some information!

Bob

Unspecified
Interface

SCP
CAMEL

IMS

#A,#B

#A,#IMRN

SGW / MGCF

MGW

#A,#?
Should be discovered by
SCP ⬌ IMS Interface

Alan

The VCC Service – Architecture

- **3GPP TS 23.206**

- **Functional Entities**

- **Reference Points**
  - **IETF**
    - SIP: Gm, ISC, Ma, Mg, Mw
    - DIAMETER: Sh, Cx
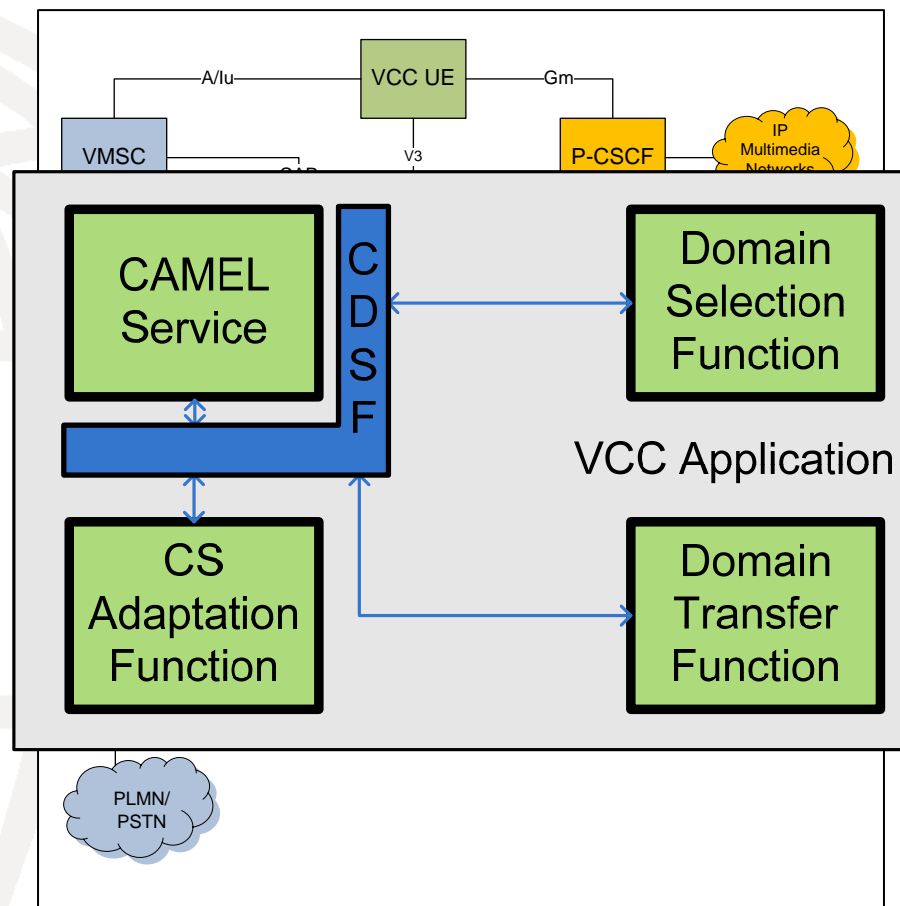 - **3GPP**
    - A/Iu, ISUP, CAP, MAP

Integration Between CS and IMS

- **Interfaces have not been specified**
  - ➤ Vendor dependent
  - ➤ Problems to interoperate
- **Proposal**
  - ➤ Call Data Storage Function (CDSF)

Integration Between CS and IMS

- CDSF is responsible for
  - Storing data which could be lost
    - Reference (PK), Calling, Called, Date
  - Keeping a list of known references
    - IMRN – used to route to IMS
    - CSRN – used to route to CS
  - Controlling their usage statuses
    - Free or been used
    - Shared between CAMEL Service/CSAF/DSF
    - To avoid collision in the same voice channel

Integration Between CS and IMS
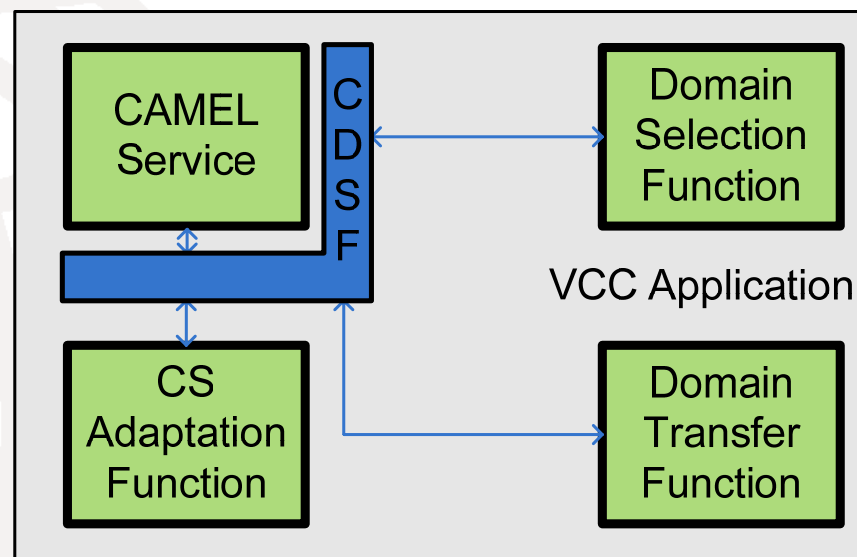
■ **CDSF characteristics**

➤ **Protocols**
  ■ Sockets/TCP/IP
  ■ URL-encoded/HTTP ⬅

➤ **Data Storage**
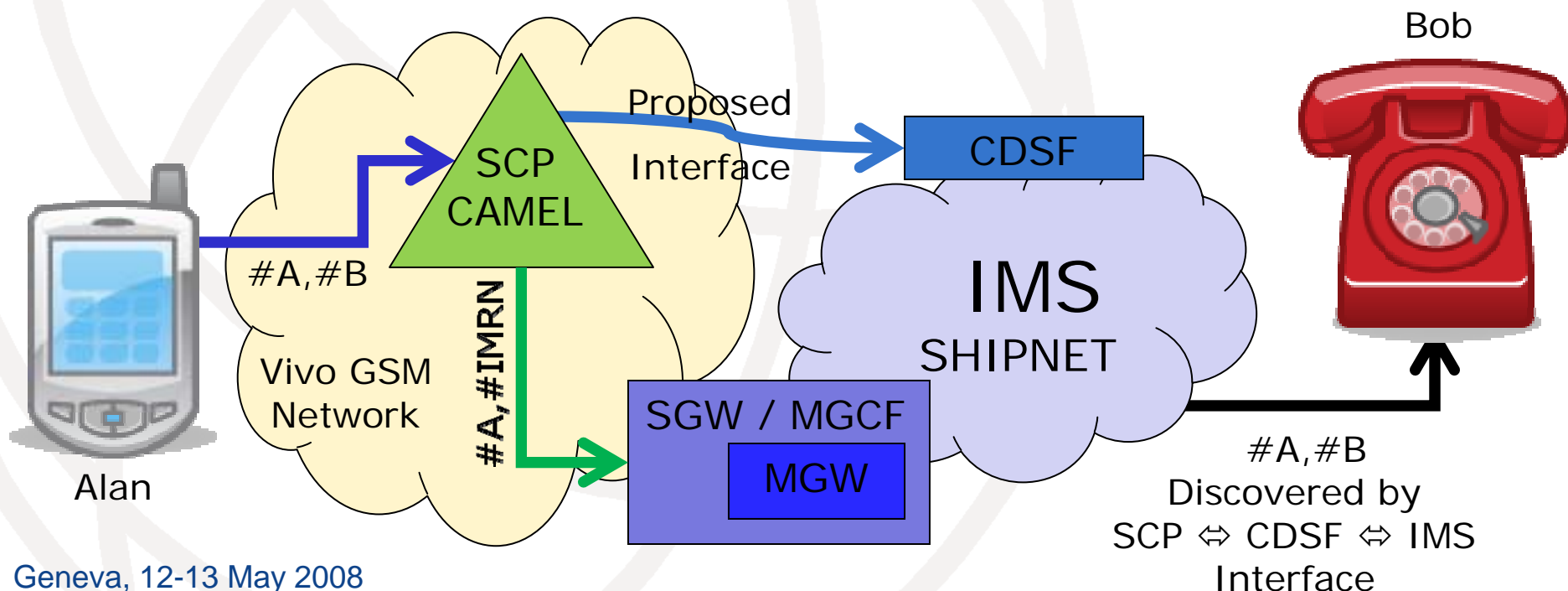 ■ Files (plain, XML...)
  ■ Database (MySQL, Sybase, Oracle ⬅)

➤ **Methods**
  ■ GetReferenceType()
  ■ SaveDataCSCall()
  ■ LoadDataCSCall()
  ■ SetReferenceStatus()
  ■ SaveDataIMSCall()
  ■ LoadDataIMSCall()

CAMEL Service

C D S F

Domain Selection Function

VCC Application

CS Adaptation Function

Domain Transfer Function

Integration Between CS and IMS

- **CDSF is working**
  - Many scenarios successfully tested
  - Implementation was demonstrated at FUTURECOM 2007

Bob

Proposed
Interface

SCP
CAMEL

CDSF

#A,#B

#A,#IMRN

Vivo GSM
Network

IMS
SHIPNET

Alan

SGW / MGCF

MGW

#A,#B
Discovered by
SCP ⇔ CDSF ⇔ IMS
Interface

Conclusions

- **Contribution to VCC Standards**
  - It is possible to integrate CS and IMS
  - Could be used an open interface
  - Interoperability guaranteed
- **Separation of Control and User Plane**
  - Fundamental to implement the VCC
- **Migration to IMS**
  - VCC is an advantage

ITU-T Kaleidoscope Conference Innovations in NGN

VCC Service: Standardization of Integration between CS domain and IMS

Thank You Very Much!

Questions?