

Messaging Anti-Abuse Work Group  
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# IMS Primer for Messaging-Oriented People

Eric Burger  
VP Engineering & Deputy CTO,  
BEA Systems, Inc.

Workgroup Co-Chair, IETF lemonade  
Chairman of the Board,  
SIP Forum



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# Where is Messaging Going?

- Corporate, closed e-mail to Inter-provider to Internet
- ASCII to multimedia
- Dialup to broadband
- Broadband to mobile

**.300M BB Users; 1.2B Wireline Users Total**

**.2.5B Mobile Users; >1B SMS Users**



# Abuse and the IMS

- Good news
  - ▶ Presumption of a paid, premium service
    - QoS, Value-Added Services, Trusted Billing Arrangements
  - ▶ Stricter enforcement of access identity
    - Tolerated (paid for) by end user
  - ▶ Nominally secured networks
- Bad news
  - ▶ Paid/costly services: target for fraud, abuse, denial-of-service
  - ▶ Cash pre-paid services: hard to track
  - ▶ Nominally secured networks
  - ▶ Value of networks ultimately will come from Internet access and Internet applications



# The IP Multimedia Subsystem of the Third-Generation Partnership Project

- 3GPP IMS
- Conversational Services
- Retrieval Services
- Distribution Services
  - ▶ Without user control
  - ▶ With user control
- Messaging Services



# Architecture for Providing Service



# Home Subscriber Server

- Master data base server for a given user
  - ▶ “Home” refers to the user’s service provider
- User identification, numbering and addressing information
- User security information
- User Location information at inter-system level
  - ▶ HSS supports user registration
  - ▶ stores inter-system location information, etc.
- User profile information

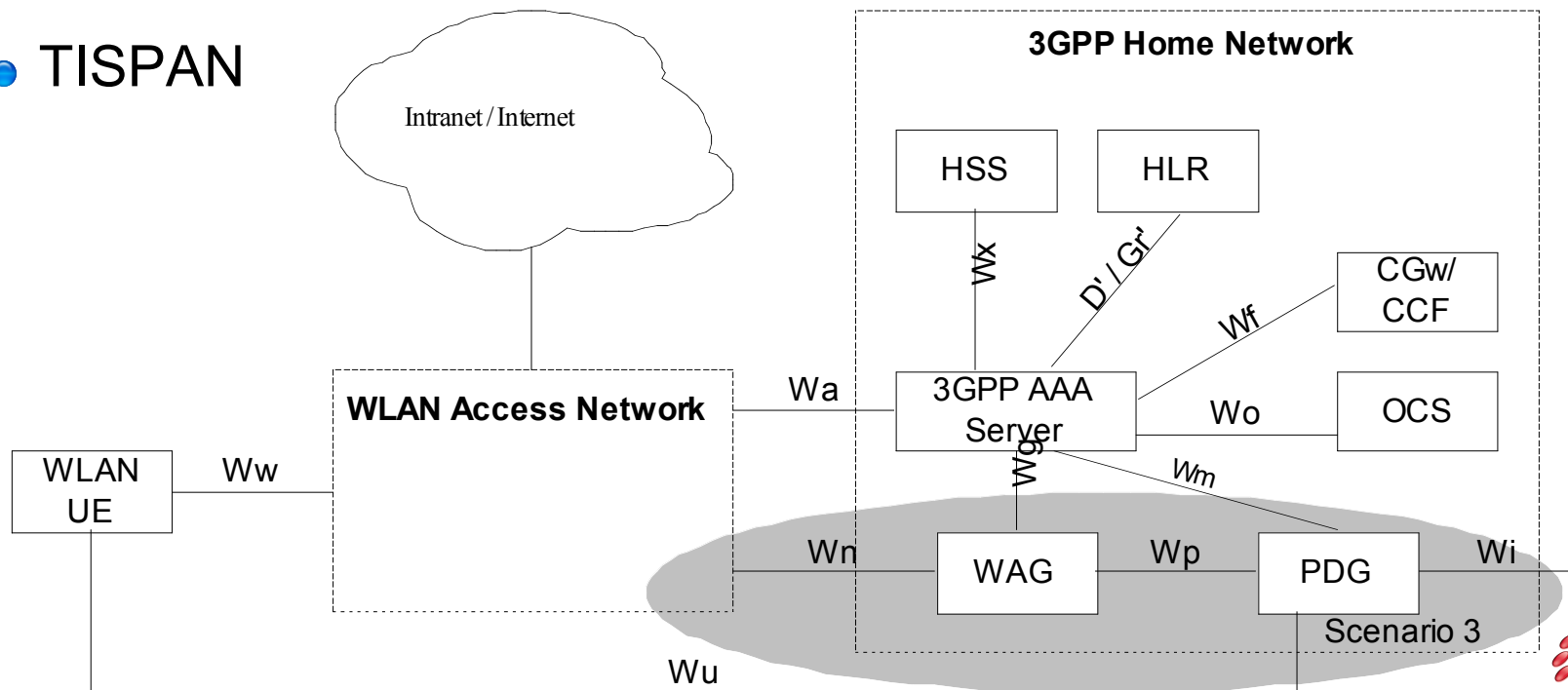


# Mobile Network Assumptions

- Secure identification of User Equipment
  - ▶ Joe Average: Can only use equipment provided by or approved by network operator
  - ▶ Joe Hacker: User Equipment identification derived from smart card
- Universal Subscriber Identity Module (USIM)
  - ▶ Cryptographic protection of hardware device ID
  - ▶ GSM, 3G: removable smart card
- Network Operator

# Device Registration in a Bigger World

- Key and identity exchange, validation, and authorization at 3GPP AAA server
- In network / WLAN procedures
- PacketCable
- TISPAN







# Who Does the IMS?

- Mobile wireless roots, not exclusive focus
- ETSI 3GPP
  - ▶ Specifying IMS for all access networks
  - ▶ Specifying 3GPP (GSM follow-on) access technology
- 3GPP2
  - ▶ Specifying CDMA follow-on access technology
- TISPAN (ETSI)
  - ▶ Specifying wireline access technology
- PacketCable (CableLabs)
  - ▶ Specifying broadband access technology

# The Killer Application

- Is, “Can we create applications faster?” the right question?
- What is a “killer application”?
- Years of “The environment enables us to easily create applications”
  - ▶ Value proposition: Can continuously try out new applications
  - ▶ Expand solution space to converge on killer application
  - ▶ IMS value proposition: reduce cost of being wrong and right
  - ▶ Inexpensive to create applications to address the “long tail”





# The Users of the Network Create Applications

- IT as a customer of the network
- Many may look like (become) companies in the end
- Many will be companies
- Many will be enterprises: SOX, HIPPA, BASEL II

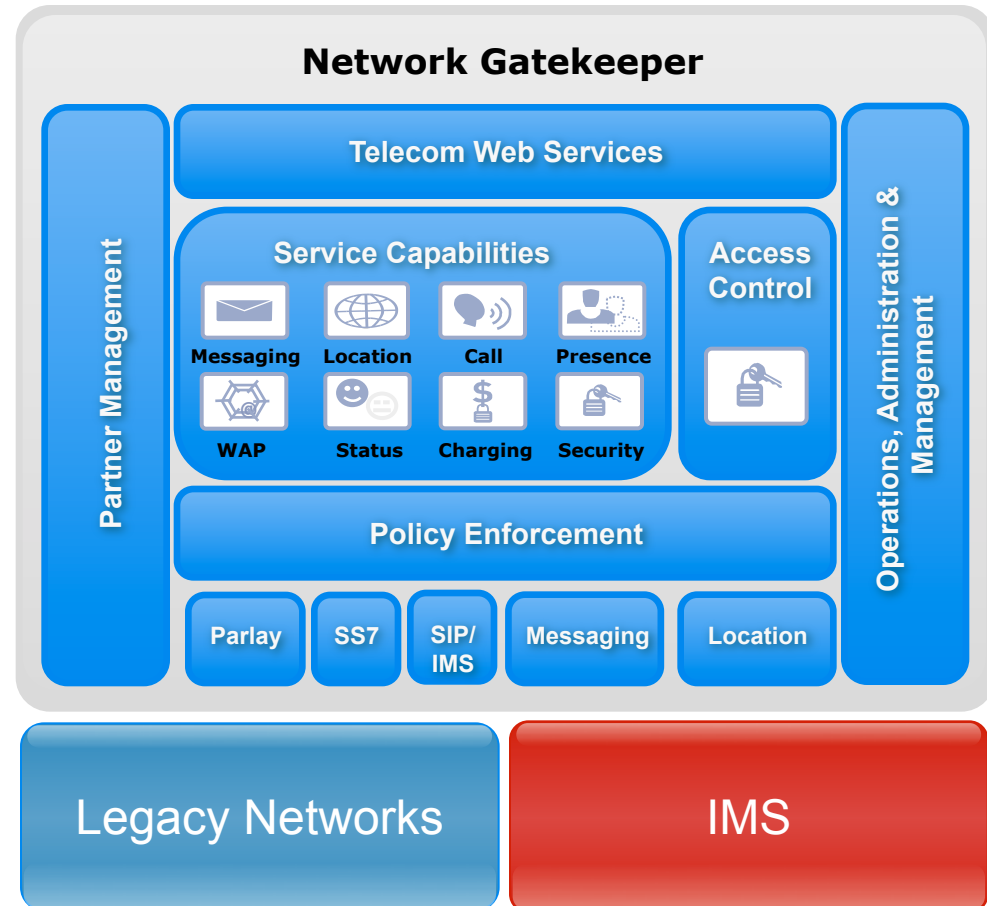
NEW  
Interesting  
Application

Ability of **user** to create their  
**own** application, to **use** or  
**share**

- What if we let ANYONE create applications?
  - ▶ What do we need to enable this?

# Service Exposure: SDP

- ParlayX
  - ▶ Call control
  - ▶ Location services
  - ▶ Inbound/outbound messaging
- Policy enforcement
  - ▶ Identity management
  - ▶ SLA enforcement
  - ▶ Network Protection
- Billing services
- Advanced web services



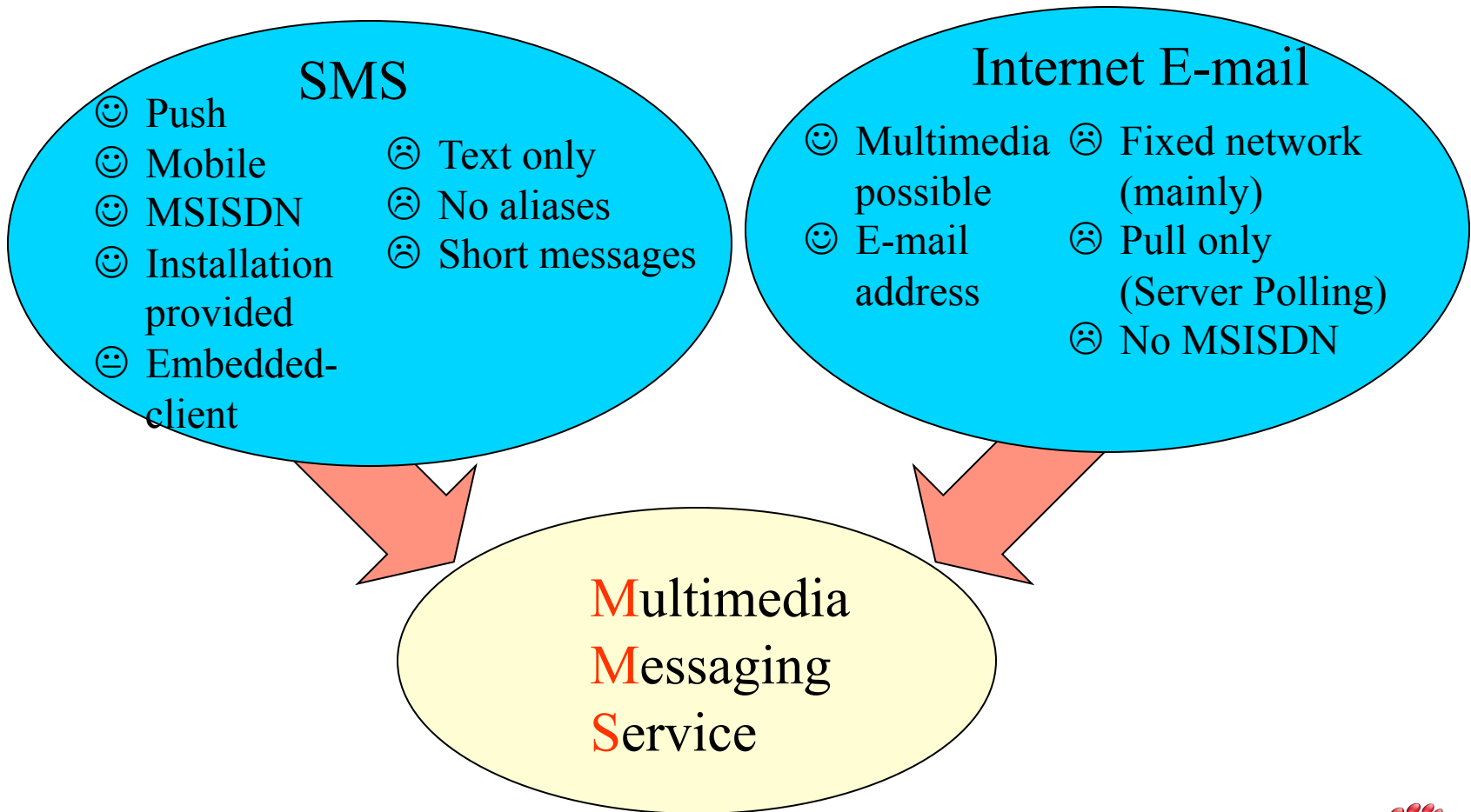


# What About Messaging?

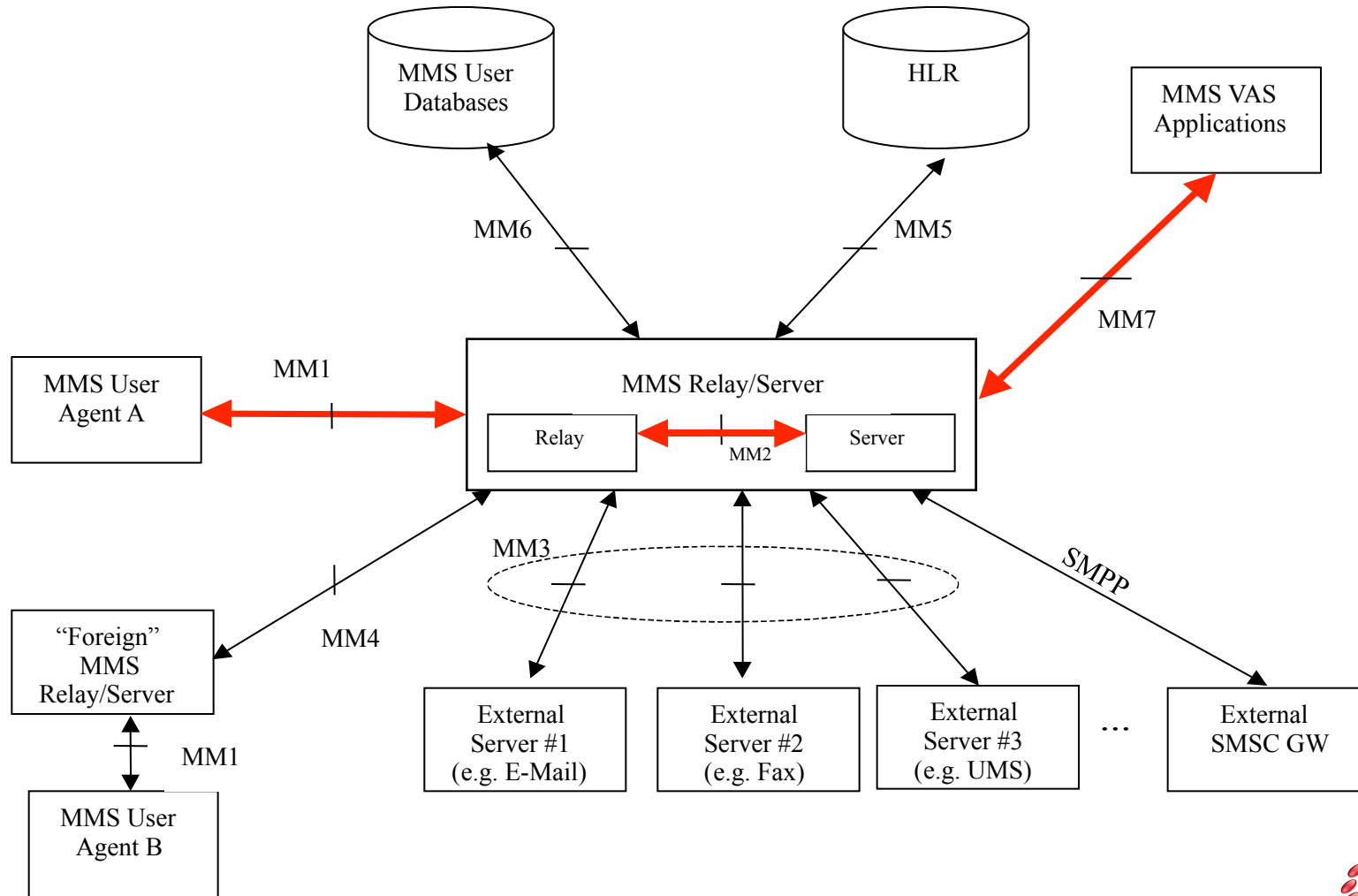
- Immediate messaging
  - ▶ Sender may have presence information on recipient
  - ▶ Best-effort: message may be discarded or deferred if recipient not available
  - ▶ Recipient or recipient's IMS may filter message
  - ▶ 3GPP: SIMPLE (SIP MESSAGE method)
- Session-based messaging
  - ▶ Expectation of near-real-time delivery
  - ▶ Point-to-point
  - ▶ Chat room
  - ▶ 3GPP: SIMPLE (SIP INVITE + MSRP)
- Addressing
  - ▶ Users
  - ▶ Lists
  - ▶ Rooms

# Multimedia Messaging Service

Merging the Advantages of Two Successful Messaging Services



# MMS Reference Architecture





# Prognostication on Messaging\*

- Legacy SMS and MMS (as multimedia SMS) lasts for years
- Lemonade (Internet e-mail with mobile optimizations) replaces Enhanced Message Service
- Converged Messaging challenges e-mail for asynchronous communication

\* Not an official position of IETF, lemonade work group, ETSI, 3GPP, BEA, etc.



# Services



- Purpose of IMS
  - ▶ Cost reduction: shared services infrastructure
  - ▶ Revenue generation: service velocity
- Service Creation: Old versus New
- Stimulus / Markup Design Model
- Developer Pool
  
- “Low Cost to Fail, Low Cost to Succeed”



# Attack Vectors

- Classic messaging vectors
  - ▶ E-mail gateways to mobile e-mail
  - ▶ SDP gateways to SMS/MMS
  - ▶ E-mail gateways to SMS/MMS
  - ▶ Mobile, mobile code
- Novel vectors



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Thank You

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