Cross-fertilization of IMS and IPTV services over NGN

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Agenda

- Motivation
- IMS and IPTV
- IMS-based Converged Multimedia Services Framework
- FOKUS Media Interoperability Lab
- Evaluation
- Summary & Outlook
Motivation

- **Personalization**
  - Personalized content delivery based on
    - User preferences
    - User context (current location, access network, UE capabilities etc.)
    - User feedback and recommendations
    - Personalized targeted Advertisement (user or group based advertisements)
  - Personalized look and feel e.g. GUI

- **Interactive multimedia services**
  - Interactive content
    - Content based interaction schemes
    - Community support + services mash-up
  - Direct user transaction
    - Voting in Quiz-Show integration enabling direct user feedback via RC
  - Shopping
    - Charging through monthly bill or credit card credentials

- **Converged Telco and TV services**
  - Integration of telecommunication services
    - Audio and video telephony, presence, chat and messaging
  - TV services
    - Live TV and VoD
  - Accessible through different end devices
Limitations of today's IPTV solutions

Black box systems
- Closed for 3rd party service providers
- No cross-vendor interoperability
- User is bound to certain service contracts
- No NGN integration / Weak community & Web 2.0 integration / no Telco integration
- Weak dynamic service provisioning

Web TV
- Best effort (no chance for HD) → no QoS
- To many service offers in the web – no harmonized look and feel → different clients needed
- P2P is best effort too (scalability issues)
- No common user model (several accounts needed)

→ Need for
- Standardized service platform for IPTV (Open interfaces, generic hardware platforms)
- Seamless integration of different services available on various end devices and access networks
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IMS and IPTV

Why use IMS for IPTV?

- We need a framework for IPTV service control, User Profiles, charging, DRM, QoS, etc.
- Enabling **interactivity** and **personalization**
- Until now there are no standards for IPTV
- IMS (e.g. TISPAN Release 2) is still under development
- Agonistic access to TV services through different bearers (e.g. xDSL, CATV, UMTS, WLAN or DVB-X)
- Convergence of IMS services and TV services / Telco integration
IMS and IPTV (cont.)

IMS enables

- Overlay control of fixed, mobile and broadcast networks
  - 3G, 802.X, DSL, DVB, etc.
  - Seamless session mobility across several bearers or IP-based access technologies
  - Quality of service support
- Profiles and states management of IMS subscribers
  - Personalization and personal mobility support
- Managing user interactivity and feedback
- Session management and service provisioning
- User authentication, authorization and accounting (AAA)
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IMS-based Converged Multimedia Services Framework

**End User**
- IMS stack
- Media stack

**Access and Transport**
- 3G
- DSL
- DVB-X
- WLAN
- WiMax

**IMS Core**
- P-CSCF
- I-/S-CSCF
- CDCF

**Enabler Services**
- UPSF/HSS
- Common Multicast channel
- NASS
- RACS

**Applications**
- Recommendation
- Interactive app.
- 3rd party app.

**Content Delivery and Storage Function**

**Content Provider**
- Content manager

**Media stack**
- IPTV logic
- Ut/SOAP/http
- Common Multicast channel
- Gm/SIP
- Xc/RTSP
- Xp/RTP/FLUTE/FTP

**API/WS/SOAP**
- Sh
- Ch
- ISC

**3G**
- Gm/SIP
- Ut/SOAP/http

**API/WS/SOAP**
- Gm/SIP
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FOKUS Media Interoperability Lab

IMS-based IPTV
- Linear TV
- EPG
- Video on Demand (VoD)
- VoD Rating
- VoD Recommender
- User created content (YouTube)
- Bookmarking & Search
- Targeted interactive advertisement

IPTV-NGN interaction
- Rich Presence
- NGN Telephony (VoIP)
- Instant Messaging
- See what I see
- Video Follow Me
- Targeted notifications
- Remote parental control
- Voting & Shopping

Messaging

Interactive advertisement

Calling

EPG

Rich Presence

Voting
NGN Live TV

- Live TV
- provide short EPG (electronic program guide) information
- multicast technologies for video playout
NGN Video on Demand

- Video on Demand content (movies)
- trick functions (play, pause, stop)
- user rating (1 to 5 stars)
VOD Session Continuity

1. IP Connectivity and IMS Registration

2. Service and content provisioning

3. SIP Invite: VoD movie X

4a. SIP Invite: Content X

4b. 200 Ok: SDP RTSP

5. 200 ok: MP SDP RTSP to X

6. RTSP: Setup

7. RTSP: Play

8. RTP

9. RTSP: teardown

10. SIP Info time stamp

11a. SIP Bye

11b. SIP Bye

11c. 200 Ok

11d. 200 Ok

12a. SIP Invite: VoD movie X

12b. SIP Bye

12c. 200 Ok

12d. 200 Ok

13. IP Connectivity and IMS Registration

14. Service provisioning, VoD: X, time stamp

15. SIP Invite: VoD movie X

16a. SIP Invite: Content X

16b. 200 Ok: SDP RTSP

16c. 200 Ok

16d. 200 Ok

17. 200 ok: MP SDP RTSP to X

18. RTSP: Setup

19. RTSP: Play, t=time stamp

20. RTP

21. RTSP: teardown

22. SIP Info time stamp: t

23a. SIP Bye

23b. SIP Bye

23c. 200 Ok

23d. 200 Ok

Alice mobile TV

Alice fixed TV

P-I-S-CSCF

SIPSEE(SME)

MDF
interactive Advertisement & Shopping

- Personalized, targeted and interactive advertisement
- Build in shopping service
Interactive Voting

- Channel and user specific Voting service enabled by the Service Interactivity Functions using the IMS
- Integrated billing and accounting
Home Media - UPNP & DLNA support

- Scans Media Devices within the home domain
- Provides access to pictures, video, music, metadata
- Home content sharing
Converged IPTV service - VoIP

- VoIP enabled IPTV client offers telephone service
- Interaction between TV and communication services
  - on incoming call displaying caller id
  - if call is connected:
    - VoD: pause video
    - LiveTV: mute audio during the call
Converged IPTV service – Instant Messaging

- Messaging service using the Session Initiation Protocol (SIP)
- Real-time, content related conservation (community aspect)
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Total end-to-end signalling delay

- Implementation of SIP AS on SipSEE 2.0 and BEA WebLogic Sip Server 3.1
- SipServlet
- Two different access networks (WiFi, LAN)
Service-to-dummy concurrency test

- Ability to switch between different services

<table>
<thead>
<tr>
<th>Condition</th>
<th>BEA</th>
<th>SipSEE</th>
</tr>
</thead>
<tbody>
<tr>
<td>User only (WIFI)</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>User + dummy (WIFI)</td>
<td>120</td>
<td>120</td>
</tr>
<tr>
<td>User only (LAN)</td>
<td>40</td>
<td>40</td>
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<tr>
<td>User + dummy (LAN)</td>
<td>80</td>
<td>80</td>
</tr>
</tbody>
</table>
Parallel user request

- BEA SipServer
- SipSEE 2.0
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Summary & Outlook

- IMS as middleware for cross fertilized IPTV scenarios
- Easy integration of NGN features into IPTV world
- IMS as service docking station for personalization and interactivity features
- FOKUS Media Interoperability Lab as reference implementation
If you want more ...

Mark your Calendars!

4th International FOKUS IMS Workshop 2008
“Challenges and Opportunities in a Converged Services World - an Update on IMS, IPTV, SDPs, SOA and Web X.0”
Berlin, Germany, November 6-7, 2008
www.fokus.fraunhofer.de/go/ims-event/

Featuring:

• IMS Starters Tutorial, Open Source Starters Tutorial
• Many Operator Talks
• Several interactive Workshops
• Vendor Exposition
• IMS Playground Visits and IMS Service Demonstrations
• FOKUS SOA Telco and Media Interoperability Lab Tours

More than 290 people from 29 nations attended last years event