

## Understanding the convergence jungle: *Putting the buzzwords NGN, IMS, SDP, and SOA into the right context*

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[www.opensoaplayground.org](http://www.opensoaplayground.org)



T. Magedanz (TU Berlin / Fraunhofer FOKUS) - 2007

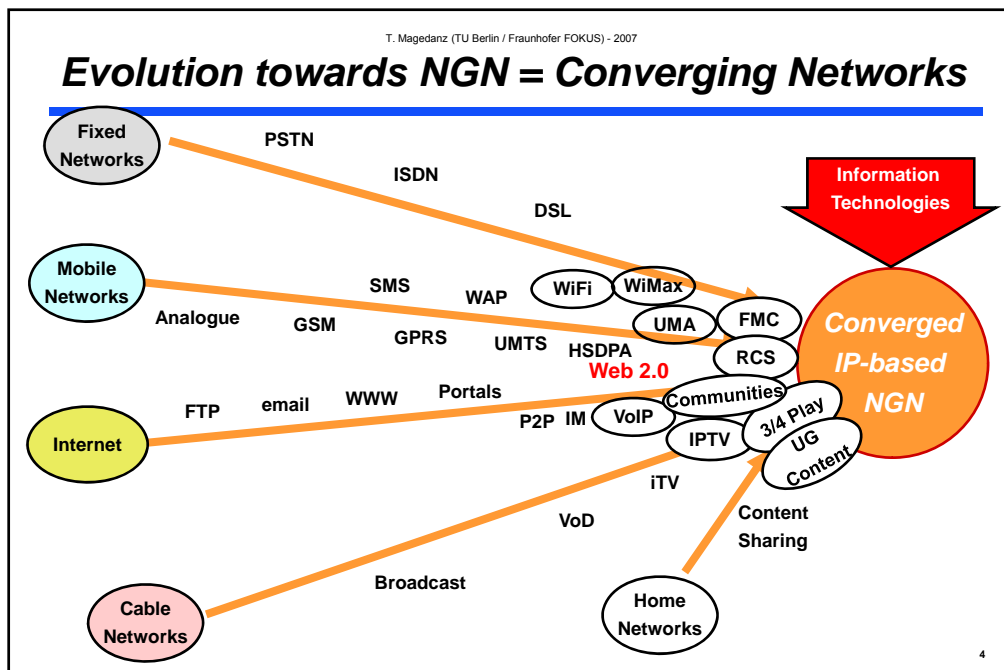
### Abstract

- Next Generation Networks (NGNs) are representing an important milestone in the evolution of fixed and mobile telecommunication networks towards an all-IP based multi media services network environment. Positioned in the centre of the convergence of telecommunications and the internet, a major question arising is what kind of future multimedia killer applications will justify the huge investments to be undertaken for NGN introduction. Based on the success of the internet under the banner of Web 2.0 the hard lesson learned by the telecoms industry is, that there wont be any single killer application in the future but rather a multitude of the niche services have to provided to a broadening spectrum of user groups also called communities. The IP Multimedia Subsystem (IMS) is supposed as international standard to provide as a structured over the top (OTT) service control architecture these kinds of presence-based community communication and information services.
- However, the IMS is not standardising how services have to be developed and provided in an efficient way. The notion of Service Delivery Platforms (SDPs) is addressing this spectrum of needed functionalities on top of various network types, including emerging NGN and IMS infrastructures. This means that SDPs and IMS are considered today as important platforms on top of NGNs for the efficient implementation of an open set of multi media services. Efficiency in this context is enabled by the concept of reusable service components designed independently of underlying network technologies, which brings us to the notion of Service oriented Architectures (SOA) considered today as holy grail for future proof system design.
- This talk introduces the main buzzwords of converging networks and puts them into context by outlining a target SOA Telco architecture, which is forming the base of the FOKUS Open SOA Telco playground, an extensible technology testbed for prototyping innovative multimedia applications on top of converging networks. Application examples, such as an IMS-enabled Facebook application as well as an IMS-based Community IPTV service will be shown.
- For more information look at [www.opensoaplayground.org](http://www.opensoaplayground.org).

## Agenda

- **Next Generation Networks (NGNs) and the role of IMS in NGNs**
- The notion of IMS enablers and their role for future combinational services
- SOA in telecoms: IMS relation to SDPs and enabler exposure
- SOA in Internet: Web 2.0 and Mash Up APIs
- Towards open NGN Testbeds: the FOKUS Open SOA Telco Playground
- Summary

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## Definition of NGN

### Next Generation Network (NGN):

- *a packet-based network able to provide telecommunication services and able to make use of multiple broadband, QoS-enabled transport technologies and in which service-related functions are independent from underlying transport-related technologies.*
- *It enables unfettered access for users to networks and to competing service providers and/or services of their choice. It supports generalized mobility which will allow consistent and ubiquitous provision of services to users.*

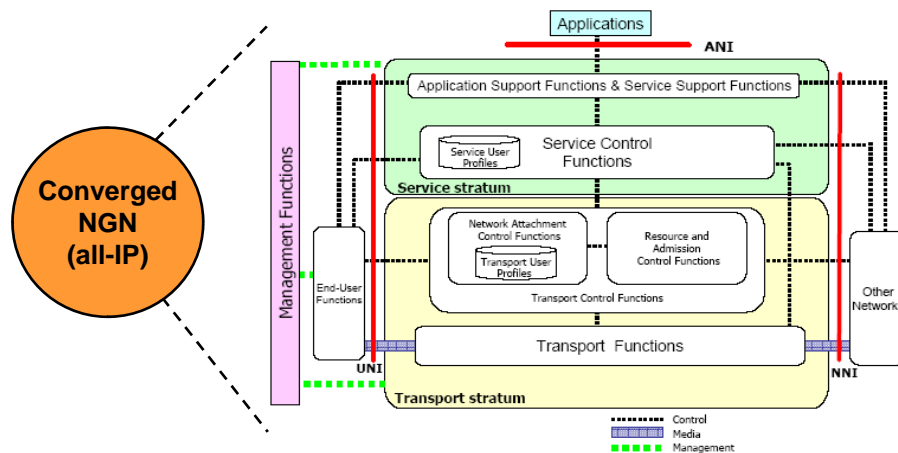
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## Overall NGN Architecture (ITU-T)



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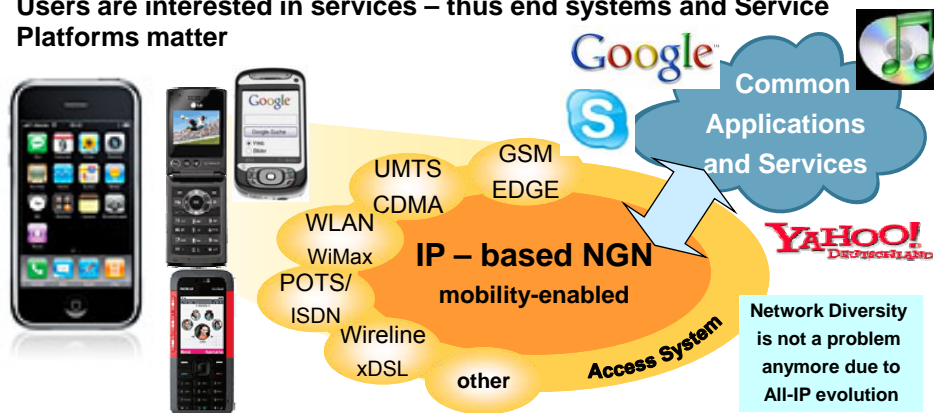
## ***The Internet has changed the Telco World***

- Network technology impacts
  - Circuit switched evolution towards All-IP networks
- Service technology impacts
  - SIP-centered service platforms (IMS), Web 2.0 / SOA
- Business Modeling impacts
  - open services market, Subscription vs. Advertisement payments
- Communication services in the future will be strongly integrated with information services – traditional boundaries will blurr
- Strong shift from person to person communications towards group communications → Communities
- Combinational services centered around presence information and contexts of live → I-centric Communications / human-centric communications
- The result is a Convergence of formerly different domains into one

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## ***Seamless Services – The Net doesn't Matter***

- Network diversity and network innovation pace has lead to network abstraction based on IP as common denominator
- Connectivity Services versus Multimedia Services
- Users are interested in services – thus end systems and Service Platforms matter



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➔ *Is there a life for operators besides bit pipe provisioning?*

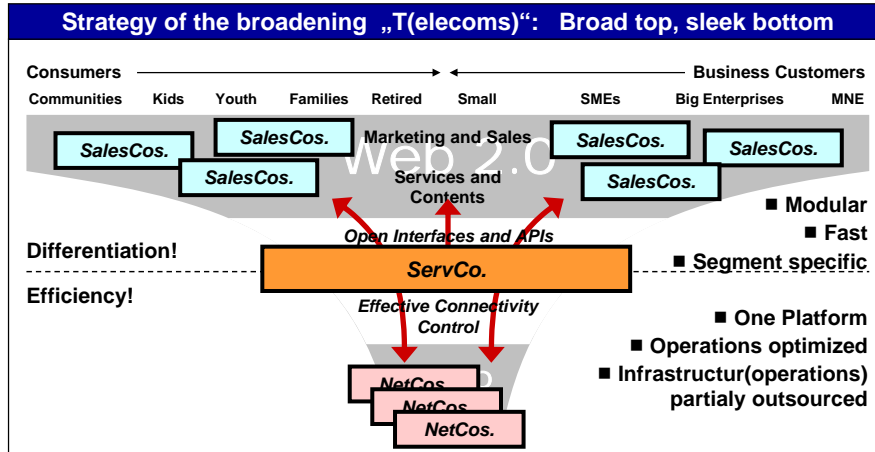
## ***Web 2.0 = Communities and new User Experience***



## Internet impact on Telecoms: Service Diversity

Differentiation and Efficiency is needed to survive

NGN Service platforms / IMS has the potential to link Internet / web 2.0 and telecommunications



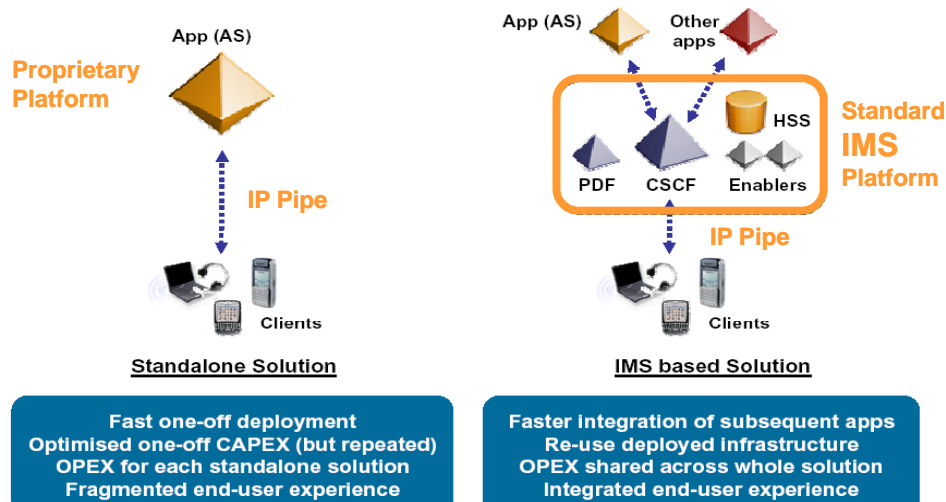
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## ServiceCos: enabling Services over Bitpipes

- Today: Service Offers are linked to network technologies and thus have a limited reach (compare with over the top providers, i.e. Google)
- Tomorrow Operators have to focus their business activities as either
  - NetCos: Bitpipe Business
    - Efficient provision of Bitpipes
    - Enablement of several ServCos
  - ServiceCos: the „middleman“
    - Operate on top of many different NetCos
    - Provision of service enablers to various SalesCos
  - SalesCos: facing the customer
    - Make use of ServiceCo enabling services for high efficiency
    - Concentrates on Content and Customers

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## Over the Top (OTT) vs. IMS Approach

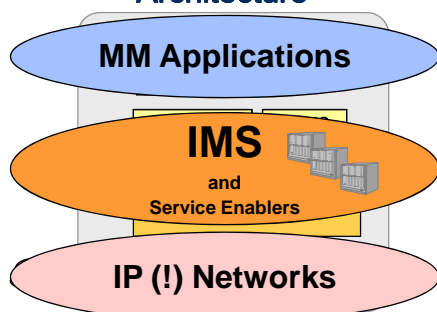


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## IMS = Unified Signaling over IP Networks

- IMS harmonizes the session signalling over IP networks based on SIP
- IMS does NOT standardise specific services, but provides common functionalities for many multimedia services, such as *single sign on*, *security*, *charging*, *QoS*, *customer administration*, etc.

### Architecture

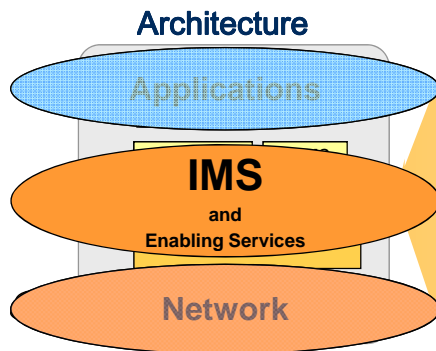


- Overlay Architecture defining a standardized “*docking station*” for applications
- Is built on existing IETF and ITU-T standards
- Is today standardized by 3GPP, 3PPG2, ETSI, TISPAN, CableLabs, ...
- Provides compared to standard internet **better security**, **service based QoS**, **flexible charging** and **single sign on**

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## IMS Core Infrastructure Functionality

- Implementing generic functionality in the infrastructure is most economical !!

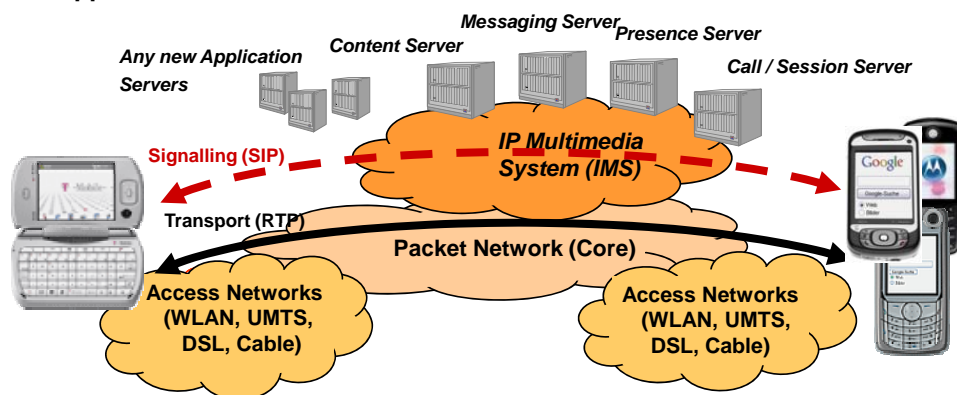


- SIP Session-/Service Control
- Messaging support
- Single-Sign-On User-Authentication
- Subscription Handling
- QoS/Media Authorization
- Signaling Compression
- Charging Support and Correlation
- Routing/Addressing Support
- Regulatory Service Support (e.g. LI)
- Conferencing Support
- PSTN Interworking Support
- Docking Station for Service Enablers
- Docking Station for Applications

## IMS Motivation – Flexible Service Provision

Provision of service enablers and dynamic service portfolio extension

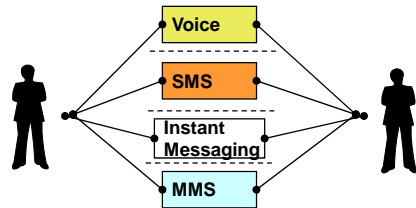
- Presence and Group Server are considered key for the future
- Application Servers can be control servers and/or content servers





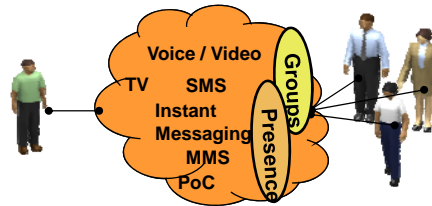
## IMS integrates different Communication Services

Pre-IMS Communication  
("Service Islands")



From the usage of specific individual communication services ...

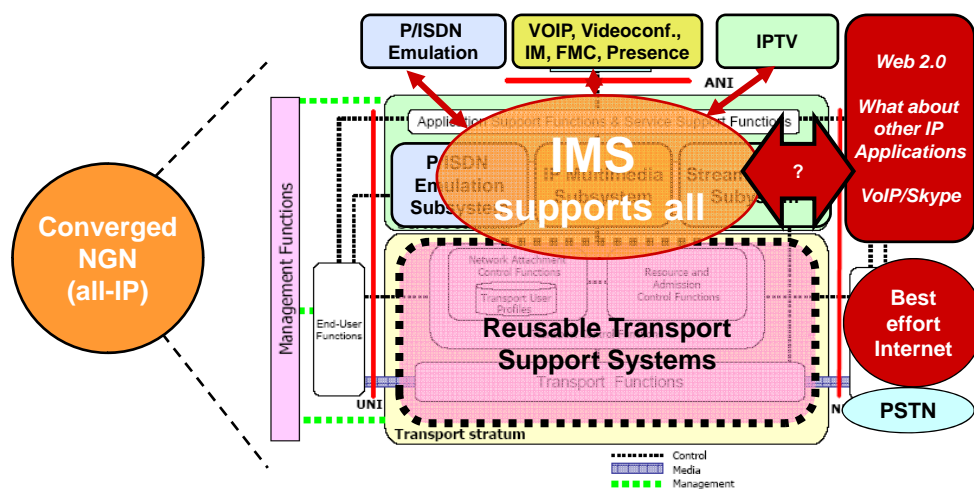
IMS Communication  
("Combinational Services")



... to the **integrated** usage of different communication services centered around **presence** information and within **groups** (→ communities)

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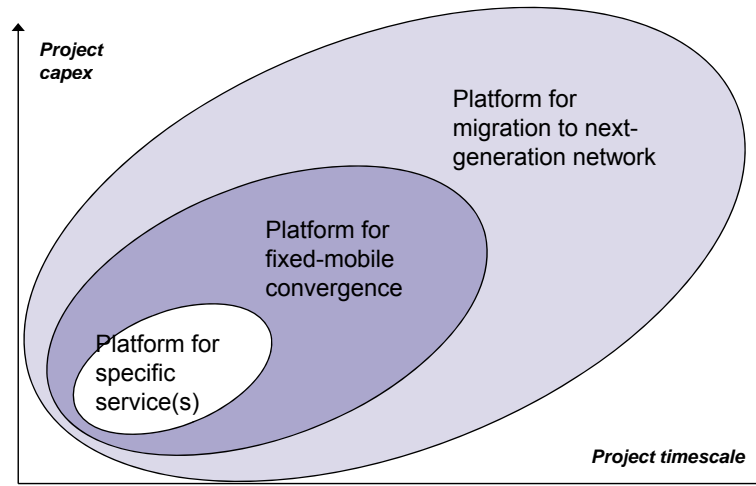
## IMS - Enabler for many Application Domains



IMS = IP Multimedia System  
= International Standard combining Internet and Telecommunications protocols

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## IMS Deployment Contexts



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## Comparing IMS vs. SIP vs. proprietary NGN

- **Proprietary NGN**

- Pros: rapid market entry at lower costs, working solutions
- Cons: vendor lock, limited functionality extensions, interoperability issues
- Comment; This may also be as in the real internet way (see skype), i.e. it is only working for strong players or at high risk

- **IMS based NGN**

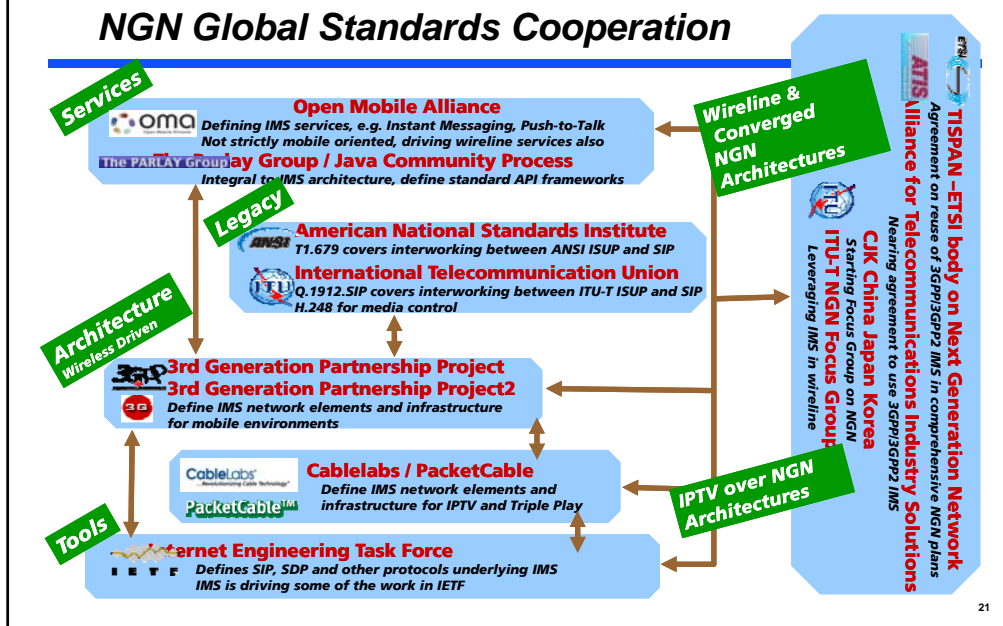
- Pros: lower OPEX, vendor and service independence (plug & play), interoperability, efficient 3Play and more (combinational services)
- Cons: initial CAPEX, high integration and migration efforts

- **SIP based NGN (compromise between IMS and Proprietary NGN)**

- Pros: lower CAPEX compared to IMS, some plug and play, classic VoIP evolution, the closer to real internet solution
- Cons: higher CAPEX compared to Proprietary NGN, interoperability issues, limited functionality in regard to 3Play

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## NGN Global Standards Cooperation



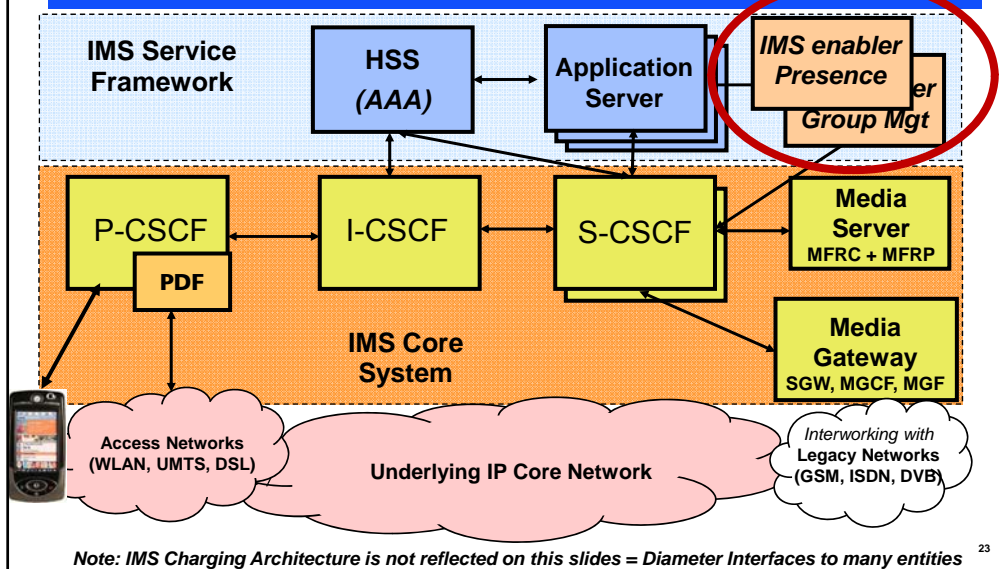
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## 3GPP IMS Architecture: IMS Core and Applications



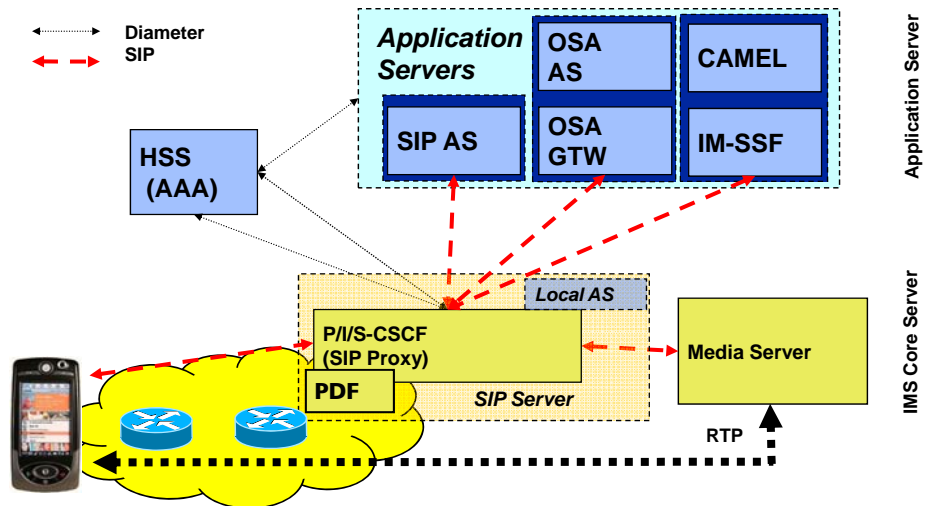
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## IMS Major Components

- The IMS is an Overlay Session/Service Control architecture on top of the packet domain (GPRS, UMTS, WLAN, DSL) based on IP technologies and IETF protocols (e.g. SIP, Diameter):
  - **IMS Core**
    - **S-CSCF** (Serving Call Session Control Function) the IS anchor point in the home network
    - **I-CSCF** (Interrogating Call Session Control Function) providing topology hiding
    - **P-CSCF** (Proxy Call Session Control Function) Entrypoint into IMS world
    - **MS** (Media Server) – Media Server hosting special resources
    - **MGF** (Media Gateway) for Interworking with legacy networks
    - **PDF** (Policy Decision Function) for QoS Control using Policies (COPS)
  - **IMS Application Layer**
    - **HSS** (Home Subscriber System) for maintaining subscriber and AS profiles
    - **AS** (Application Server Function) for hosting applications
    - **IMS enablers** (e.g. Presence, Group Mgt.) are specific ASs with generic functions
  - And the **IMS end system (IMS Client)** plays an important role real multimedia / IMS services

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## IMS Application Server Options



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## Different AS Alternatives

- **CAMEL Services via Camel Support Environment (CSE):**
  - intended for the support of existing IN Services (provides service continuation).
- **OSA Services via Open Service Access Service Capability Server:**
  - intended for the support of 3rd Party Application Providers. OSA SCS provides access and resource control.
- **IMS services on SIP-Application Server:**
  - intended for new services. A multitude of widely known APIs (CGI, CPL, SIP Servlets) is available.
- **IMS services directly on the CSCF (similar to SIP AS):**
  - SIP-AS co-located on the CSCF
  - seems to be useful for simple services. May be beneficial for the Service Availability and the Service Performance.

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## ***IMS Enablers = Reusable IMS Application Servers***

- IMS did not address the standardisation of specific application by purpose
- Only major AS interfaces are defined = IMS is a „docking station“ for ASs!
- Open Mobile Alliance (OMA) is supposed to do service specific standardisation on top of IMS
- Examples include Presence, Group Management, Instant Messaging (IM), Push to Talk over Cellular (PoC), etc.
- Over time it became clear that there is a set of common servers, i.e. enabling servers → ***IMS Enablers***, which can be used in the implementation of more complex IMS services
- ***Major enablers today to be used in IM, PoC and Group Video Calls, etc.:***
  - XML Document Management System (XDMS) enabler for group configuration
  - Presence Server (PS) enabler for maintaining presence information
  - Device Management (DM) enabler is used for client system configuration, as ASs and enablers may need specific software on the client system!

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## ***OMA Service Enablers and IMS***

- IMS provides the common SIP based session control infrastructure
  - Interface to the access network
  - Signalling, routing and reachability
  - Authentication and Security
  - Charging, accounting
  - Docking Station for application Servers and enablers
- OMA SIP-based service enablers are specified on top of IMS as common platform, e.g.
  - Presence, XML Document Management, Push to Talk over Cellular, Instant Messaging, etc.
  - For details see [www.openmobilealliance.org/release\\_program/index.html](http://www.openmobilealliance.org/release_program/index.html)
  - The IMS in OMA Enabler Release version 1.0 contains general requirements and guidelines and does not specify detailed requirements that should be tested or that by themselves can be implemented in products.

### Standards



**OMA  
for  
Application  
Enablers**



**3GPP  
for  
Network  
Architecture**

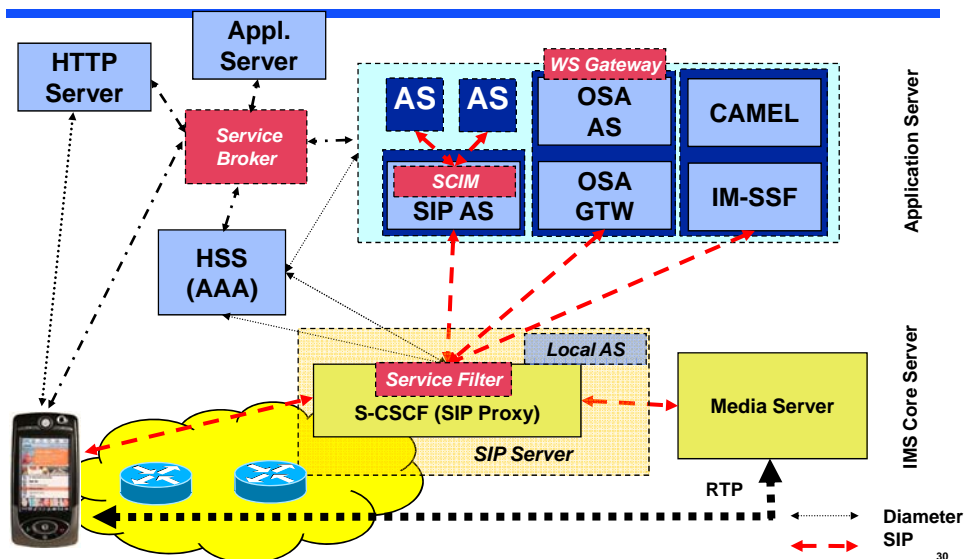
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## Service Orchestration Options in IMS/NGN

- **Service Call State Control Function (S-CSCF) & Service Filter Criteria**
  - Allowing to dispatch service signaling requests to different application servers from the core layer to application layer
- **Service Capability Interaction Manager (SCIM)**
  - Allowing to dispatch and coordinate service signaling to different application servers within application layer (typically inside specific AS technologies e.g. servlets)
- **(Web Service) Exposure API through Service Gateway to 3rd Parties**
  - Allowing to pass control to external application servers / SDPs at application layer
- **Service Broker as part of a SOA/SDP architecture**
  - Allowing to coordinate service signaling (SIP/HTTP) to different application servers within application layer independent of AS technologies and signaling protocols

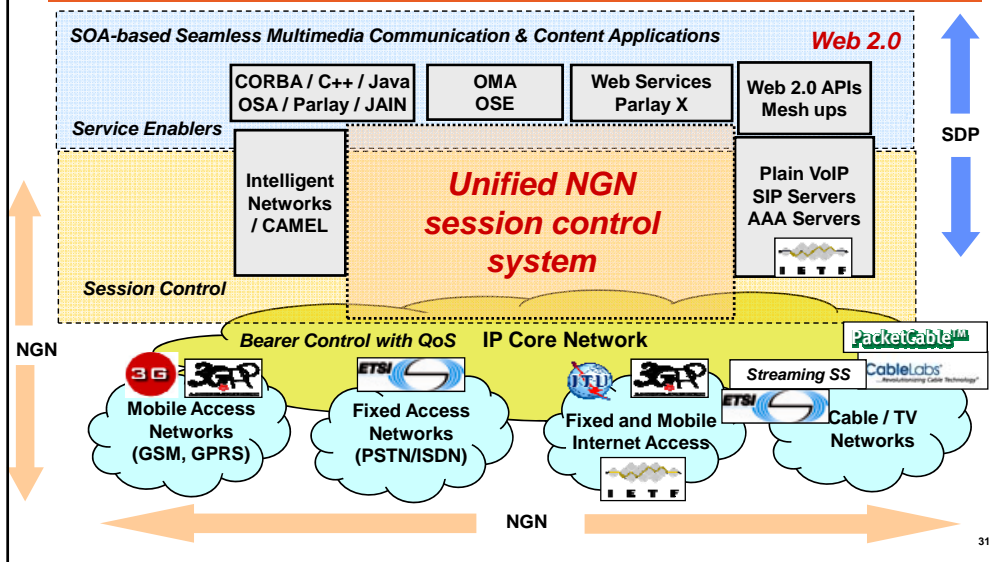
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## IMS Application Orchestration Options



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## NGN Application Layer – IMS as docking station



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## Agenda

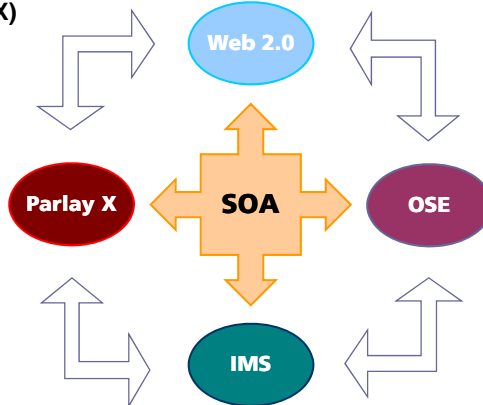
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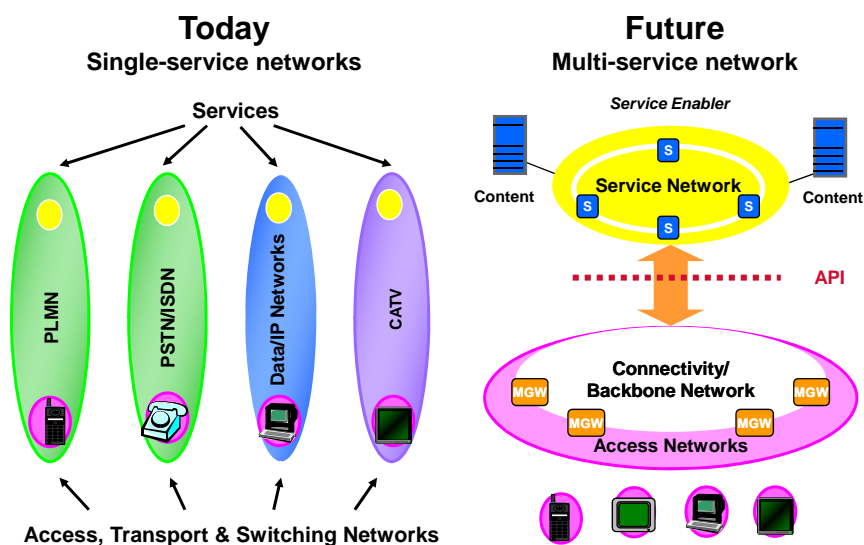
## SOA, Telecommunications and Web 2.0

- Service Oriented Architecture (SOA) approach for the integration of
  - NGN architecture (IMS-based core network)
  - Application Enablers (OMA Service Environment)
  - 3rd party interfaces (Parlay X)
  - Web 2.0 Applications



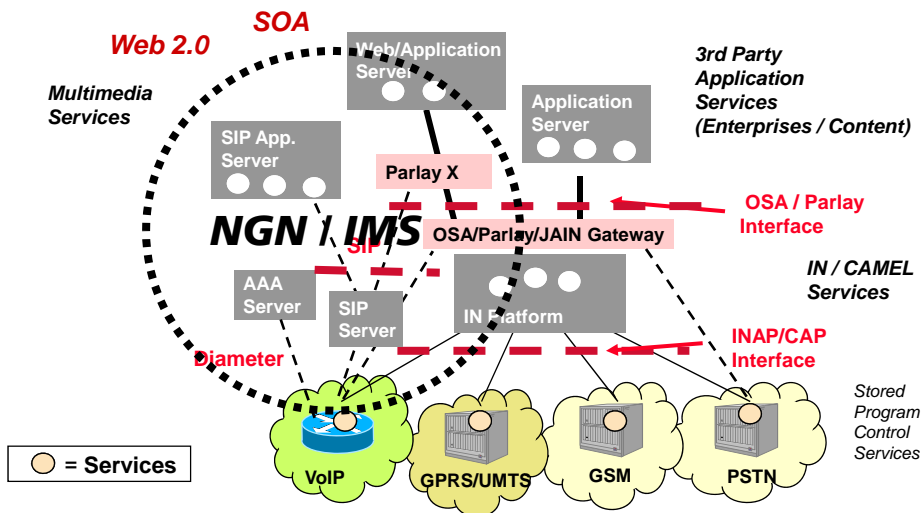
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## From Separate Networks To Converged Networks



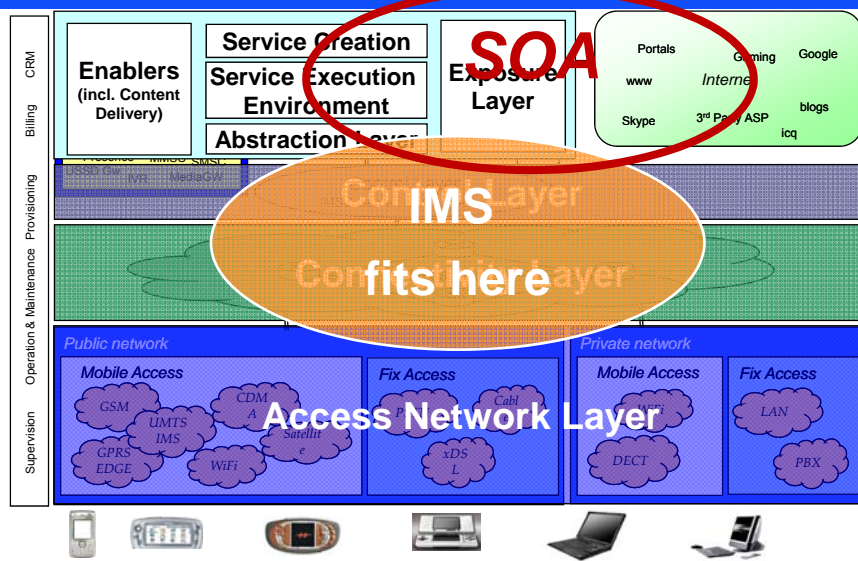
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## Evolution of Service Delivery Platforms



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## A Service Delivery Platform enables Seamless Services



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## ***IMS vs. SDP aspects***

### **IMS**

- provides network overlay
- secure authentication, authorization
- charging mechanisms
- message routing
- media handling
- user database
- legacy interworking
- inter-domain functionality
- ...

### **Service Delivery Platform**

- Service Creation
- Service Execution
- OSS/BSS interfaces
- Service activation interfaces

**You cannot compare apples with oranges, but only a SDP on top of IMS provides the services needed to justify the investments into a NGN.**

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## ***SOA Principles*** (Def. by The Open Group, or OASIS, IBM ...)

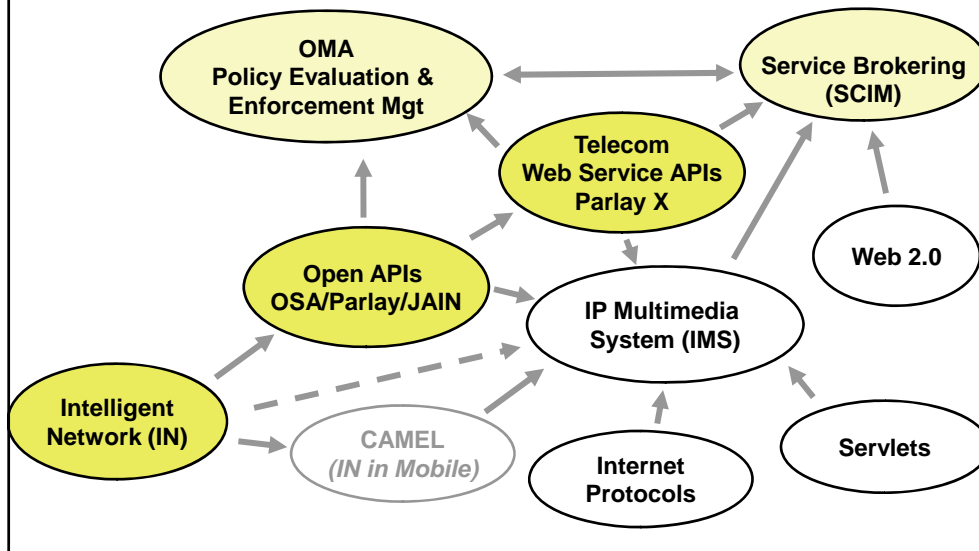
### **Service-Oriented Architecture (SOA)**

**Service-Oriented Architecture (SOA) is an architectural style that supports service orientation.**

- Service orientation is a way of thinking in terms of services and service-based development and the outcomes of services.
- a service:
  - is a logical representation of a repeatable business activity that has a specified outcome (e.g., check customer credit; provide weather data, consolidate drilling reports)
  - Is self-contained
  - *may be* composed of other services
  - Is a “black box” to consumers of the service

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## Evolution of SOA Concepts in Telecoms

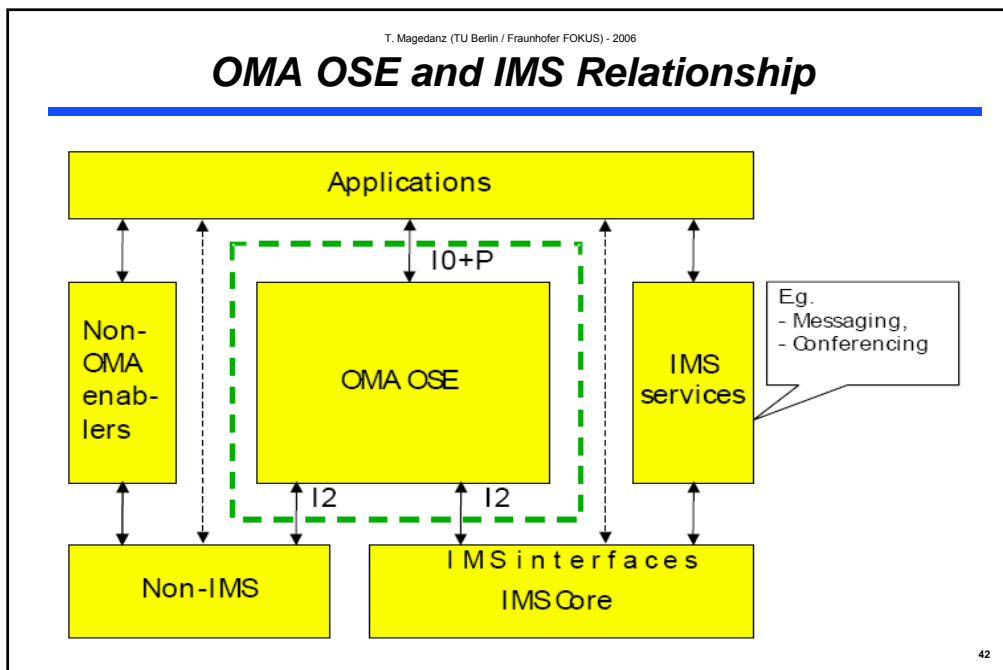
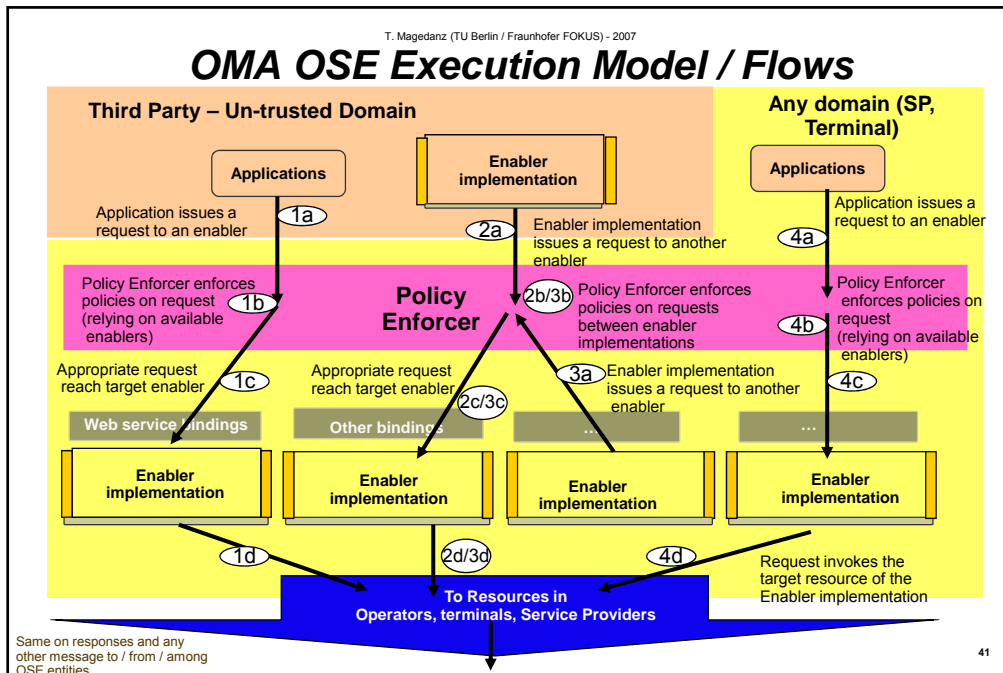


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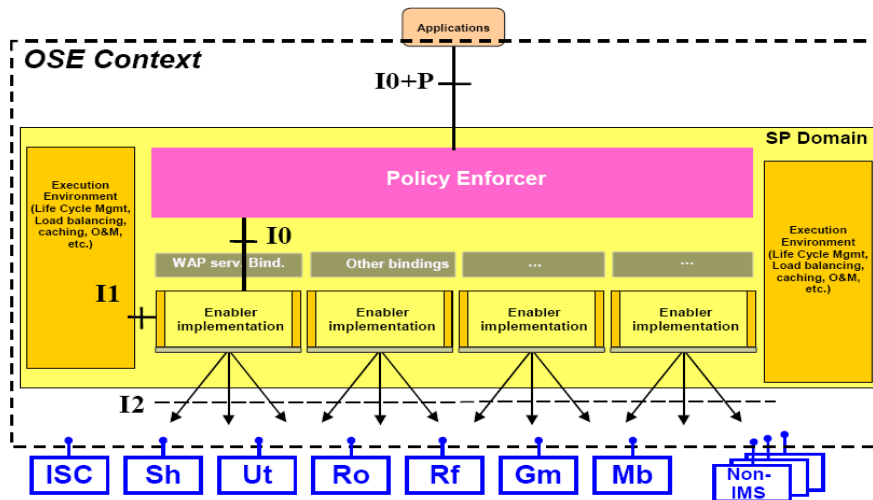
## OMA Service Environment (OSE)

- The Open Mobile Alliance has defined plenty of service enablers
- But how to provide and combine these enablers?
- Based on OSA/Parlay ideas OMA decided in 2005 to start its work on the OSE  
➔ [http://www.openmobilealliance.org/release\\_program/ose\\_ad\\_archive.html](http://www.openmobilealliance.org/release_program/ose_ad_archive.html)
- OSE is based on policy based service interface provision and separates:
  - Applications
    - either resident on an in-house platform or a third party application
  - Policy enforcer
    - applies policies to the interaction between the application and the Enablers and between Enablers wherever applicable and in some cases the Policy may be null.
  - Enabler
    - contains intrinsic functions which can interact with other functions, within the domain of the architecture and underlying network resources.
  - Execution environment
    - deals with aspects such as Life Cycle management, load balancing, OA&M etc.

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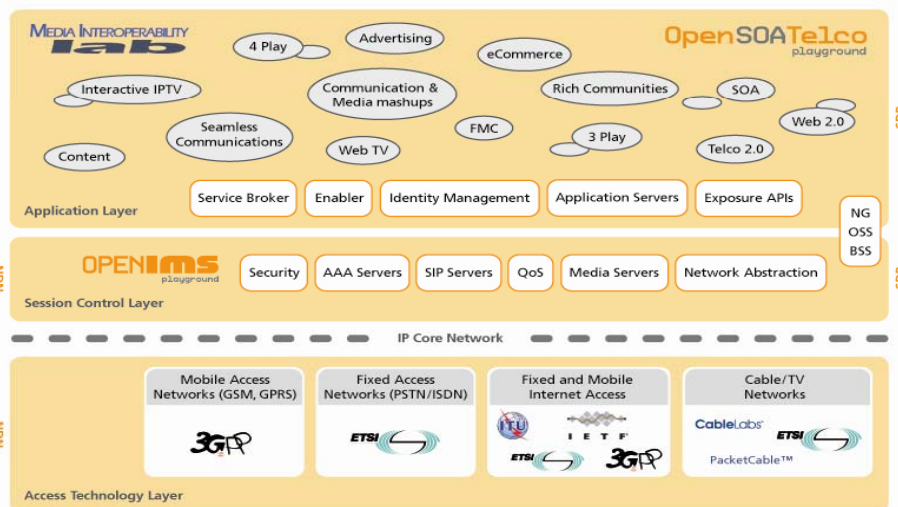


## OMA Service Enablers and IMS (Detailed View)



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## IMS within an SOA-based SDP Context



## A SOA Telco Architecture - Open SOA Playground



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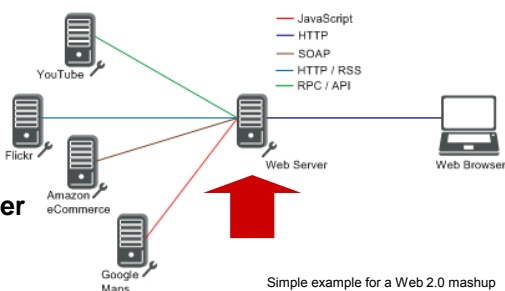
## Web 2.0 Mashup

- Content used in mashups is typically sourced from a third party via a public interface or API, although some in the community believe that only cases where private interfaces are not used count as mashups.
- Many people are experimenting with mashups using Google, eBay, Amazon, Flickr, and Yahoos APIs.
- Nothing new to “serious” software development, but new in regard of script-based Internet/WWW software

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## Usual Web 2.0 Mashup Architecture

- Mashups are created using several enablers.
- Mashups are accessed through the browser using HTTP.
- A new application is composed through connecting several other functionalities or information sources.
- Different APIs are used to connect to these enablers

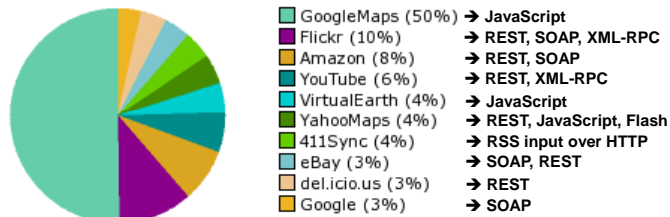


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## Web 2.0 APIs

- Mostly high level APIs based on JavaScript and/or Web Services (e.g. Google Search)
- Other methods of sourcing content for mashups include Web feeds (e.g. RSS or Atom) and screen scraping (clipping).

Top APIs for mashups:

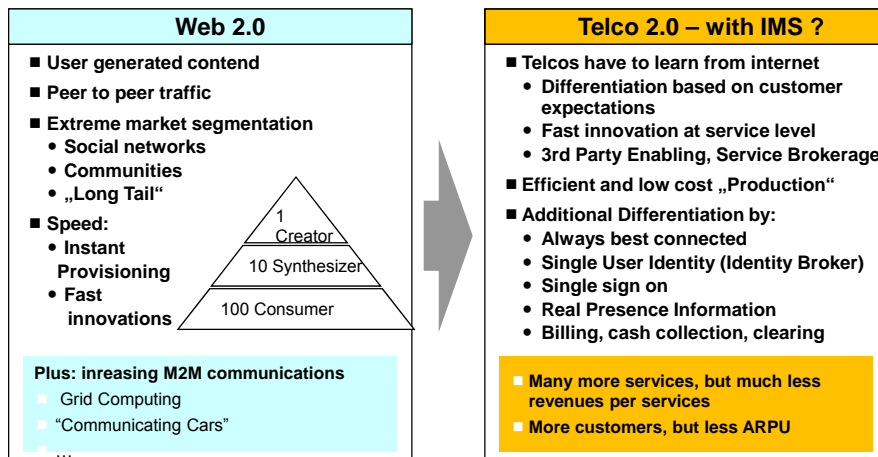


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## Telcoms vs. Internet - IMS and Web 2.0 ?

The Internet / Web 2.0 will receive increasingly acceptance. Telcos have to learn.

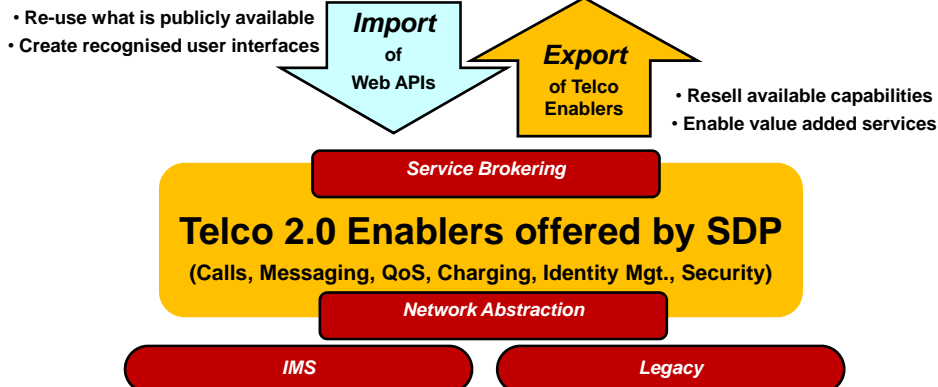


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## Import and Export of „Services Enablers“

### Web 2.0 World Players and Services

(Google Maps, YouTube, RSS Feeds, etc.)



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## Web-based Telco Enabler Exposure Examples

- British Telecom's 21c Web SDK based on extended Parlay X Web Services based interfaces (<http://web21c.bt.com/>)
  - New possibility of defining user-specific call flows in XML for enabler orchestration
  - Authentication, conference call, inbound SMS, messaging, voice call
- Orange Partner API based on Web Services (French market only) and XML-RPC (<http://www.orangepartner.com>)
  - Authentication, Personal Calendar, Personal Contacts, Personal Messages, Personal Photos, Personal Profile
  - SMS, Email,
  - Web-based widgets (bubbletop dev platform)

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## ***Web-based Telco Enabler Exposure Examples***

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- T-Online Open Developer Forum based on Web Services and XML-RPC (<http://developer.telekom.de>) – official start in Q3/4 2008
  - Voice Call, send SMS
- Sipgate API based on XML-RPC ([http://www.sipgate.de/user/download\\_api.php](http://www.sipgate.de/user/download_api.php)) – German VoIP ISP
  - Voice call, send SMS, send Fax
  - Billing data, call lists

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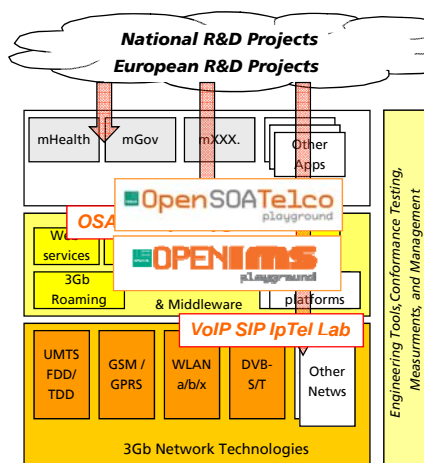
## Fraunhofer FOKUS - Overview

- FOKUS has been founded 1988 in Berlin, Germany
- 220 employees: scientists, students, technicians originating from 30 nations
- FOKUS is THE Telecoms R&D institute within the Fraunhofer Society
  - Fraunhofer Society is the biggest German R&D organisation, total # of 12.000 employees)
  - 60 institutes in total, 15 institutes in ICT
- FOKUS works since 18 years on convergence of IT, telecoms, internet and home entertainment and performs applied research and development projects
  - Performs strategic studies, solution concepts, system integration and prototyp developments
  - Strong cooperation with universities & Establishment of spin offs (e.g. iptelorg.com)
- FOKUS funding: 20% state, 80% industry R&D projects
  - Key to success: Strategic Partnerships with big players (DTAG, NTT, etc)
- Main R&D Vision: „I-centric communications“ and „autonomic communications“



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## Open NGN Testbeds @ Fraunhofer FOKUS



### Open NGN Test & Development Center

- Testbeds are considered key for sustainable research
- Testbed focus is on IP and service platform layers
- Foundation for industrial and academic projects
  - Applications development support
  - Applications validation
  - Service Platform prototyping
  - Infrastructure component testing
  - Network technologies integration



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## IMS Testbeds as R&D Base @ FOKUS



- In November 2004 – after 2 years of development sponsored by BMBF and FOKUS – the FOKUS Open IMS Playground has been officially opened
  - [www.open-ims.org](http://www.open-ims.org)
  - Technical foundation was the expertise and available software in the fields of Open Source SIP Express Router (SER) und FOKUS OSA/Parlay Gateway (OCS)
  - The Open IMS Playground is the globally pioneering open IMS Testbed und contains FOKUS own developed and industry partner IMS products

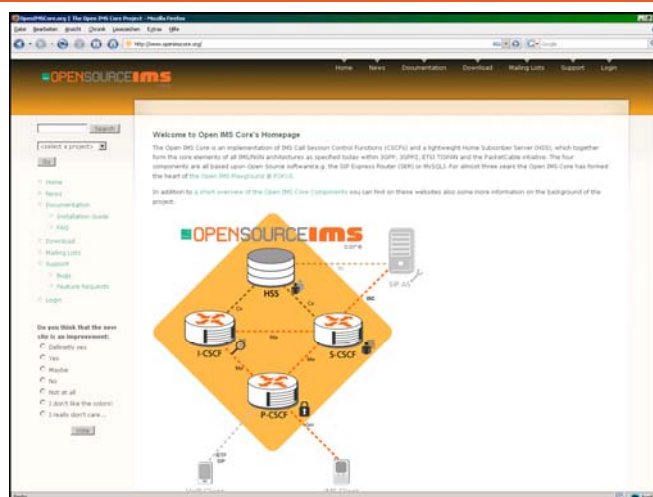


- In November 2006 the FOKUS Open Source IMS (OSIMS) Core System - the core of the IMS playground - has been officially released to the general public via the BerliOS Download site
  - [www.openimscore.org](http://www.openimscore.org)
  - OSIMS allows industry and academic institutions to setup own testbeds (with or without FOKUS support and components)
  - Since then OSIMS has been downloaded many thousand times from all over the world

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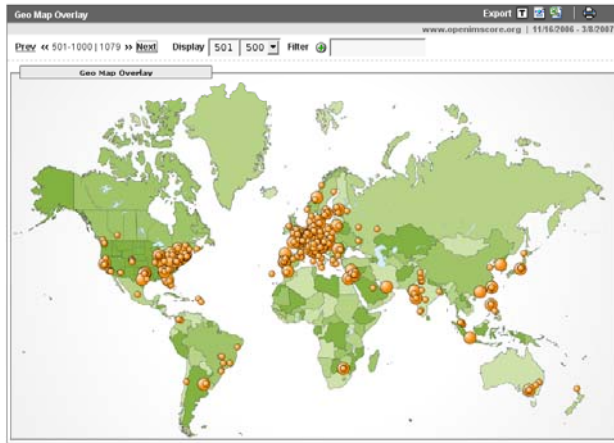
## Check it out (literally) – [www.openimscore.org](http://www.openimscore.org)

- Lists all details on
  - SVN checkout
  - Installation
  - Configuration
- Provides
  - FAQ section
  - Mailinglists
  - Feature tracking
  - Polls
  - ...

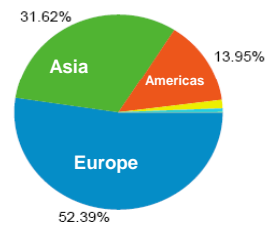


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## Some feedback so far ... from Google Analytics

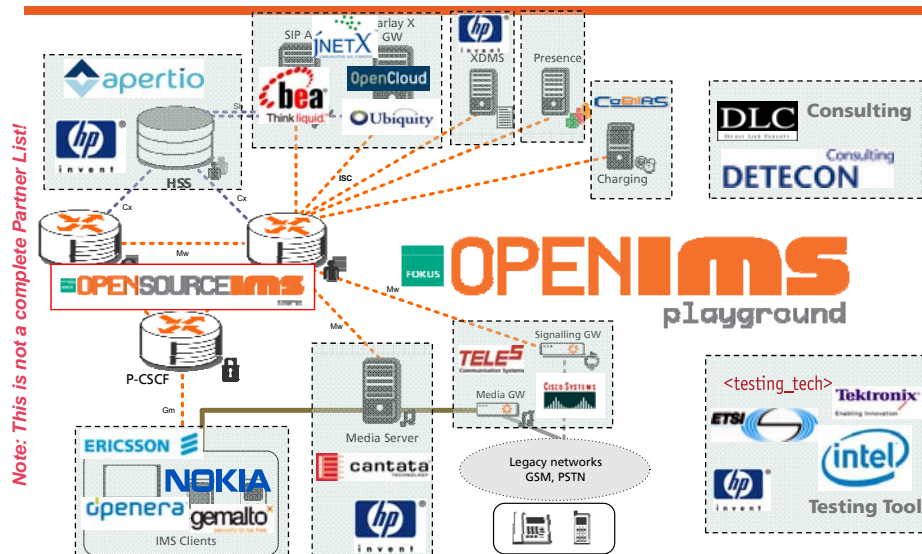


- > 40.000 visits
- > 13.000 unique visitors
- Approx. 150 visitors/day
- Region breakdown



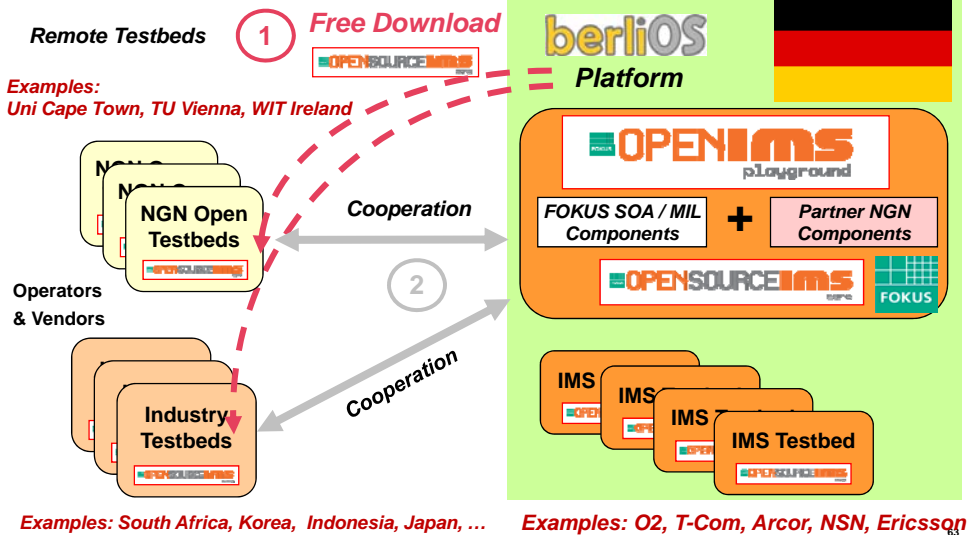
61

## FOKUS Open IMS Playground and Core

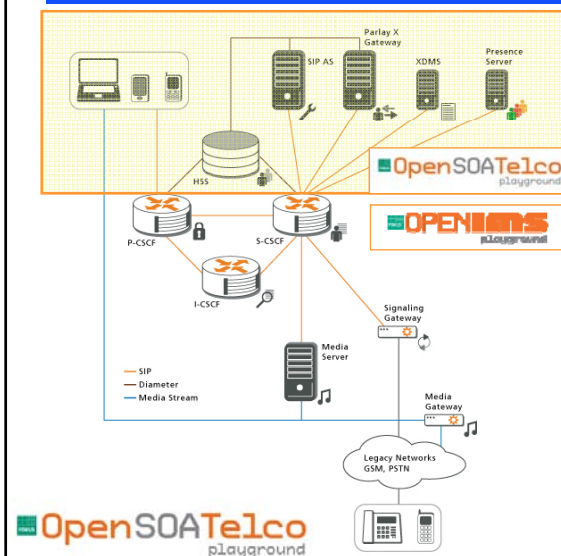


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## Export of Testbed Technologies for R&D Projects



## Towards SOA over IMS



- A lot of work in the Open IMS playground has been performed in the context of IMS applications prototyping and IMS – SDP integration
- Today the new buzzword SOA (Service Oriented Architecture) is used to describe a service delivery platform, which features reusability of service components and service orchestration
- Therefore, we have established the Open SOA Telco Playground on top of the Open IMS Playground in summer 2007 to reflect our activities in this domain
- See [www.opensoaplayground.org](http://www.opensoaplayground.org)



## ***FOKUS work in the context of SOA Telco***

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- Based on the long term practical experiences in international projects performed for various vendors and network operators, FOKUS is currently concentrating on the following areas of work within a SOA-based Telecommunications Environment:
  - Integration of telecommunications and Web 2.0 services under exploitation of SOA principles, focusing on both end system based as well as server based service orchestration. This leads to a very flexible service implementation infrastructure for
  - Development of advanced service brokers for IMS (= SIP-based) services and non IMS (= HTTP-based) services.
  - Development and extension of SOA-based IMS application servers.
  - Prototyping of community based SOA services on top of IMS and legacy networks based on Parlay X and OMA PEEM
  - Design and Development of an extensible Management solution for SOA-based NGN/IMS environments, including service provisioning systems for SOA-based IMS environments and monitoring and fault management systems
  - Development of SOA-based Autonomic Communications Infrastructures (as part of the Composite Services Management Workgroup of the Autonomic Communications Forum (ACF))

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## ***SOA Telco Playground Work Items***

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### **Goals:**

- Exploration of technologies, ideas, and concepts for Service Delivery Platforms on top of Next Generation Networks
- Open for Partners (partner concept as known from IMS Playground)

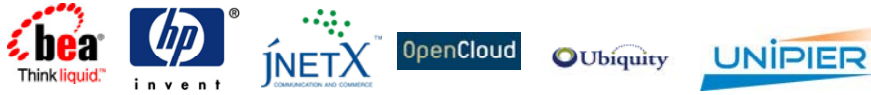
### **Work Items:**

- Technology prototyping
- Application prototyping
- Technology integration
- Feasibility studies
- Conformance and Compliance tests
- Benchmarking

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## Current Partners

### SDPs:



### Integrators:



### Publishers:



### Academia:



### Operators:

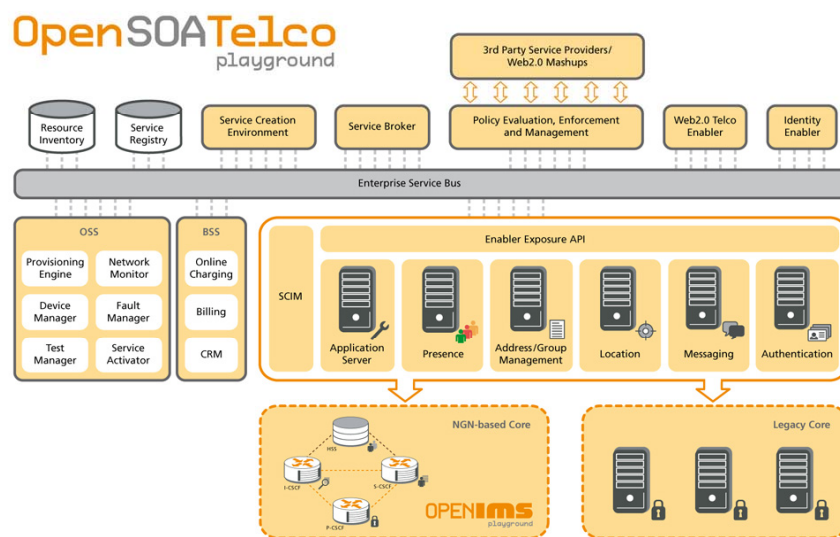


Plan for the future is to strengthen the academic partner branch  
Possible upcoming partners:



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## A Sample SOA-based NGN Architecture



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## ***FOKUS SOA Telco Components***

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- **Service Broker**
  - Governance of service requests
  - References to applicable access and usage policies at PEEM
  - Triggers OSS/BSS for new service deployment
  - Service Chaining / Service Interaction
- **Policy Evaluation, Enforcement and Management (PEEM)**
  - Policies for service access authorization and definition of enabler capabilities
  - SCIM functionality for service orchestration on SIP level (ISC interface)
  - Interacts with Service Broker as policy repository
- **Web 2.0 Enabler**
  - Two-way perspective:
    - Inclusion of Web2.0 enablers into Telco services for mobile/IPTV customers
    - Exposure of Telco network capabilities to be included into Web2.0 mashups

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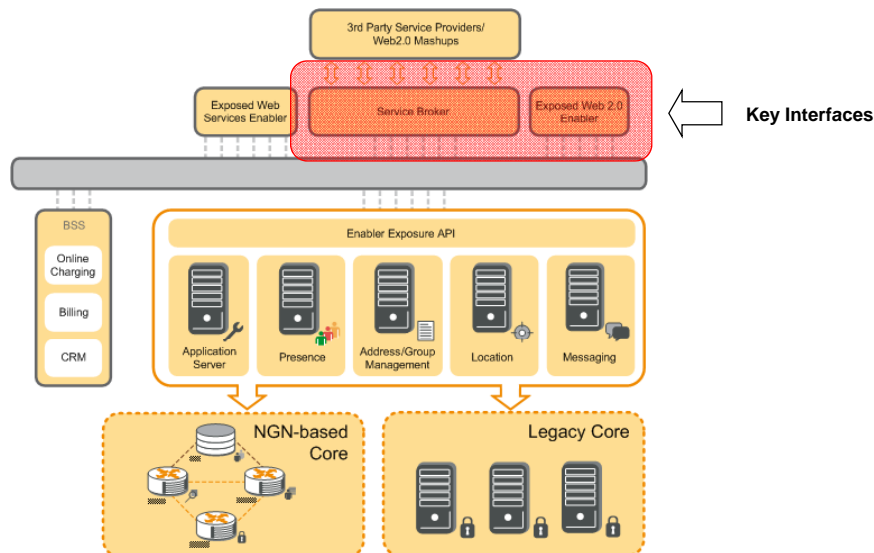
## ***FOKUS SOA Telco Components***

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- **Service Registry**
  - Extended UDDI
- **Resource Inventory**
  - Network element and functionality inventory for OSS / BSS orchestration
- **Service Creation**
  - Anchor point for MDE-based service creation tools

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## Opening up Telco Infrastructures in a SOA Way



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T. Magedanz (TU Berlin / Fraunhofer FOKUS) - 2007

## Integrating Web 2.0 Apps with IMS

Basically different approaches are possible:

- **Walled Garden:**
  - Integration of IMS Enabler and information into Web 2.0 applications
    - IMS Enabler as part of a Web 2.0 mashup
  - Offering Web 2.0 functionality towards IMS clients through specific IMS enablers
    - Translation of Web 2.0 APIs into SIP/IMS mechanisms
- **Open Garden:**
  - Integration of IMS Clients into Web 2.0 applications
    - Web 2.0 specific functionalities as part of a rich IMS client
    - Bypassing of operator infrastructure

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## Web 2.0 Telco Integration – IMS-based Facebook

- Integration of Telco real-time communication features into the Facebook community (~ 60 million users)
- Integration of Web 2.0 community features into telco-branded IMS client
- Telco / Web 2.0 application mashup

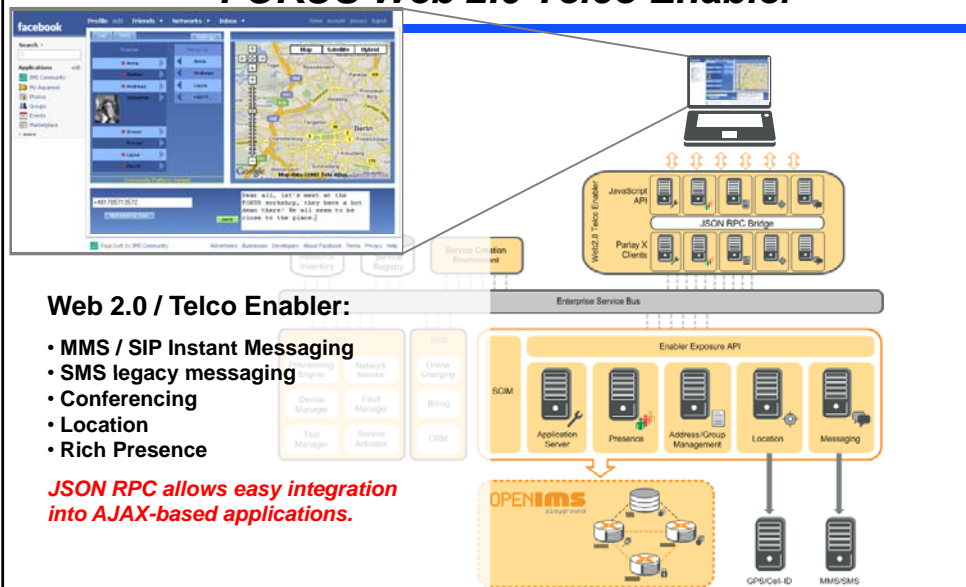
- Google Mail
- Google Calendar
- Google Maps
- Microsoft Virtual Earth
- User specific RSS feeds
- Blogging
- RSS cross-referencing

- IMS Facebook plugin
- Web 2.0 enabled IMS client
- IMS rich presence
- IMS location
- IMS conferencing
- IMS Instant Messaging
- IMS / SMS, MMS integration
- IMS / Web 2.0 Syndication Integration



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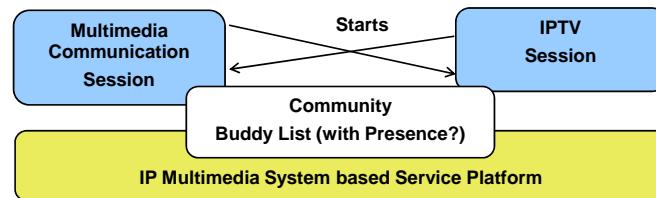
## FOKUS Web 2.0 Telco Enabler



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## Community TV – IPTV plus Communications

- What is community TV?
- A group of people communicates with each other and wants to add video sharing service to the multimedia session and thus may watch the same video (live or on demand or even timeshifted).
- A group of people may watch the same video (live or on demand or even timeshifted) and start to communicate about the movie while watching.
- Technologywise there is no difference if provided by a common platform, which supports both multimedia communications, communities and IPTV



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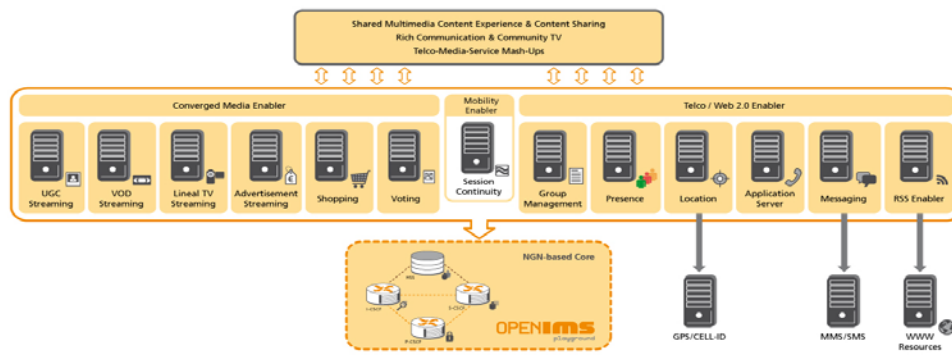
## Towards Interactive Community TV / Media



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## SOA Telco Playground – IPTV/Media Extensions

- Community TV with Rich Communication features and Web 2.0/Media service mash-ups
- Interactive Multimedia Community Services
- Interactive multimedia community services
- IPTV and Multimedia Streaming Enabler



## SOA Telco Playground – IPTV/Media Extensions

- On-demand content
- Community TV
  - User generated content sharing of videos (push/pull)
  - Invitations to join pay-per-view content (e.g. football match), where one users pays for a set of others (in his community)
- Mobile advertisement
  - location or group based
- eTourism
  - get streams about sights during a tourist stay
- Media-Telco mash-ups
  - E.g. give me all online users of my friends/buddylist and send them a video of my last holiday
  - Send a mobile advertisement about a concert to all users close located to the concert area and usally interested in this concert

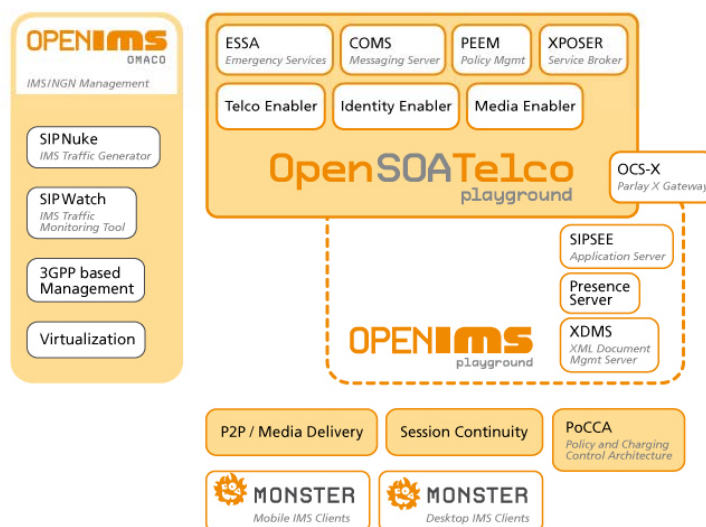
## SOA Telco Playground – IPTV/Media Extensions

- Enablers expose webservice interface towards the service broker
- UGC Sharing Enabler
  - Content sharing of user owned audio and video content
  - Synchronize distribution and play-back among the community
- VOD/Live TV Enabler
  - Establishing a VOD/Live TV session by network initiation
- Advertisement Enabler
  - Sending of personalized advertisement streams to a user or user group
- Shopping Enabler
  - Sending of personalized shopping information tagged to the advertisement
- Voting Enabler
  - Network initiated voting requests (e.g. quiz-show)

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T. Magedanz (TU Berlin / Fraunhofer FOKUS) - 2007

## OSIMS Add On Components – until 09-2008

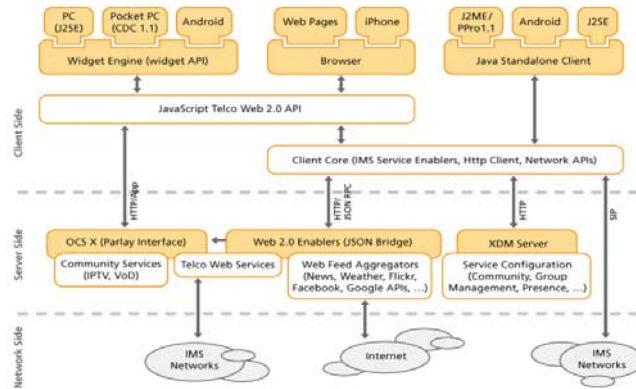


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## MONSTER – New IMS & Web 2.0 Client Framework

- Generic Client Core framework for access to Telecoms and Web 2.0 services
- Develop-once-deploy-to-many
- Client Core Adaptors support:
  - Browsers
  - Widget platforms
  - Android
  - Mobile devices
  - Desktop devices



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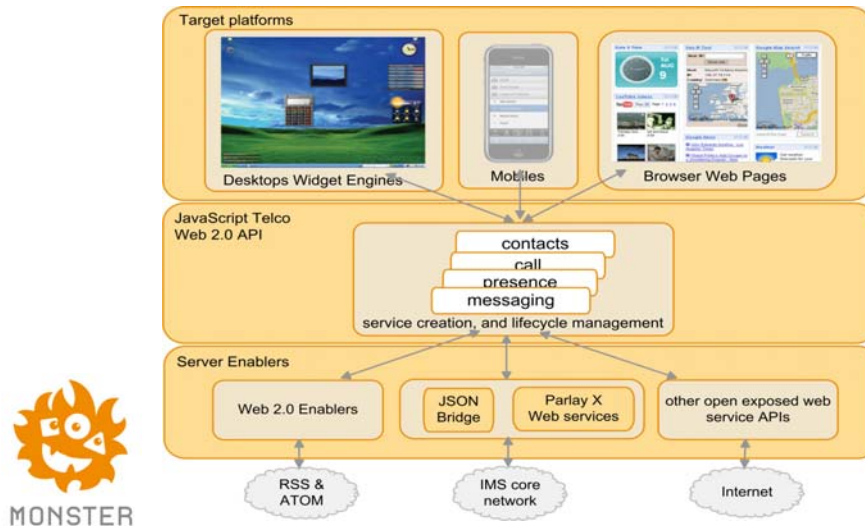
## MONSTER – New IMS & Web 2.0 Client Framework

- Layered architecture enabling IMS core functionalities:
  - Media Handling
  - IMS Signaling
  - Service & Device profile configuration
- Extendible Client Framework providing plug and play service enablers:
  - Telephony
  - Presence & Messaging
  - Peer-2-Peer
  - Community & Location
- Easy Customization and Branding
- Easily portable across devices
- Standard conformant with IETF, 3GPP, TISPAN
- Support for emerging Web 2.0 applications such as GeoTracking, video integration (You Tube) and more



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## JavaScript Telco Web 2.0 Architectural Overview



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## Agenda

- Next Generation Networks (NGNS) and the role of IMS in NGNs
- The notion of IMS enablers and their role for future combinational services
- SOA in telecoms: IMS relation to SDPs and enabler exposure
- SOA in Internet: Web 2.0 and Mash Up APIs
- Towards open NGN Testbeds: the FOKUS Open SOA Telco Playground
- Summary

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## Summary

- NGN, IMS, SDP, SOA and Web 2.0 are hot buzzwords these days
- Value chain moves north from networks towards services and contents
- NGNs today are related to fixed/mobile all IP networks, but do not address services at all
- IMS is just a common signaling platform over all-IP networks, but does not include services delivery
- Telco SDPs are related to services and move towards SOA, but often they are closed
- The web 2.0 leads the way towards a real SOA world, but with debatable business cases (free communications! But advertisement revenues!!!)
- An Open SOA telco architecture is needed over both legacy networks and IMS and NGNs with open interfaces for 3rd party use
- The FOKUS Open SOA Telco playground addresses the challenges of IMS /SDP service creation, provision and management in face of converging internet and telecommunications

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## Our Workshop - Mark your Calendar!

The poster features the Fraunhofer FOKUS logo and the URL [www.fokus.fraunhofer.de/go/ims-event](http://www.fokus.fraunhofer.de/go/ims-event). The main title is 'Challenges and Opportunities in a Converged Services World – an Update on IMS, IPTV, SDPs, SOA and Web X.0'. Below this, it says '4th International FOKUS IMS Workshop' and 'Berlin, November 6–7, 2008'. To the right of the text is a photograph of a person using a laptop. A diagonal banner across the bottom right of the poster reads 'More than 290 people from 29 nations attended last years event' and includes the URL [www.fokus.fraunhofer.de/go/ims-event/](http://www.fokus.fraunhofer.de/go/ims-event/).

Featuring:

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

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# Any Questions?

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## About the Speaker



### **Prof. Dr. Ing. habil Thomas Magedanz**

*Thomas Magedanz (PhD) is professor in the electrical engineering and computer sciences faculty at the Technical University of Berlin, Germany, leading the chair for next generation networks (Architektur der Vermittlungsknoten – AV) supervising Master and PhD Students*

*In addition, he is director of the "NGNI" division at the Fraunhofer Institute FOKUS, which also provides the national NGN/IMS test and development centre in Germany. Prof. Magedanz is one of the founding members of FOKUS (1988) and member of the management team.*

*Furthermore he is principal consultant of Direct Link Consult e. V., a FOKUS Consulting spin off focussing on professional services, strategic studies and technology coaching.*

*Prof. Magedanz is a globally recognised technology expert, based on his 18 years of practical experiences gained by managing various research and development projects in the various fields of today's convergence landscape (namely IT, telecoms, internet and entertainment).*

*He acts often as invited tutorial speaker at major telecom conferences and workshops around the world.*

*Prof. Magedanz is senior member of the IEEE, editorial board member of several journals, and the author of more than 200 technical papers/articles. He is the author of two books on IN standards and IN evolution.*

*Since 2006 he is also extraordinary professor at the University of Pretoria and University of Cape Town in South Africa.*

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## Contact



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## Useful References – Open SOA Telco Playground

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- Blum, N. et.al. : "Definition of a Web 2.0 Gateway for 3rd Party Service Access to Next Generation Networks", 2008, in IFIP, Volume 284; Wireless and Mobile Networking; Zoubir Mammeri; (Boston: Springer), pp. 247–258, ISBN 978-0-387-84838-9

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