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VoIP - Voice over IP

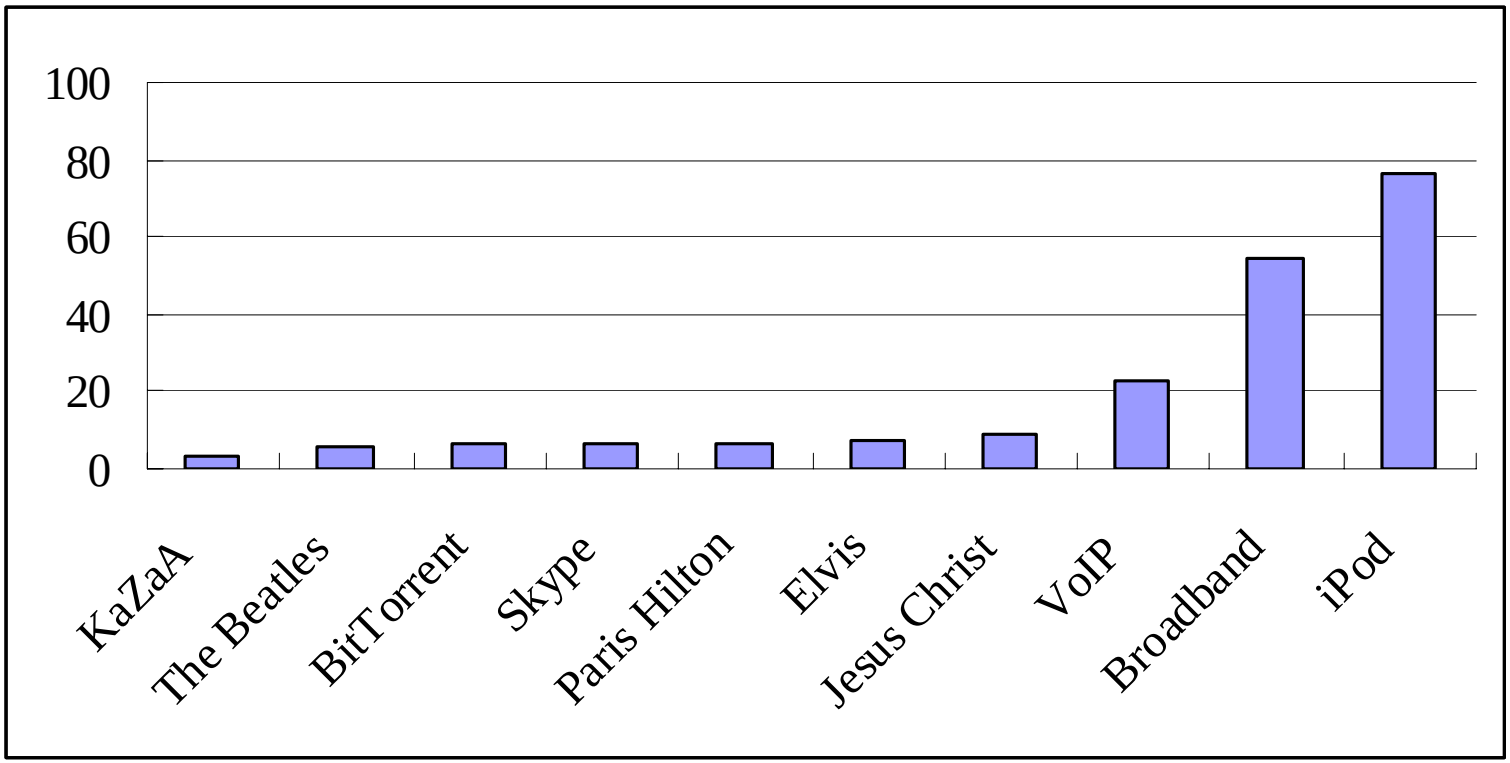
- **Relevância da tecnologia Voz Sobre IP (VoIP) para os Engenheiros Informáticos**

You Know It's Real When ….

… a cartoon talks about your industry

VoIP is in the air

Google search results for query terms (m)



Source: Google

Out of the closet and into the living room in Europe

850k

+

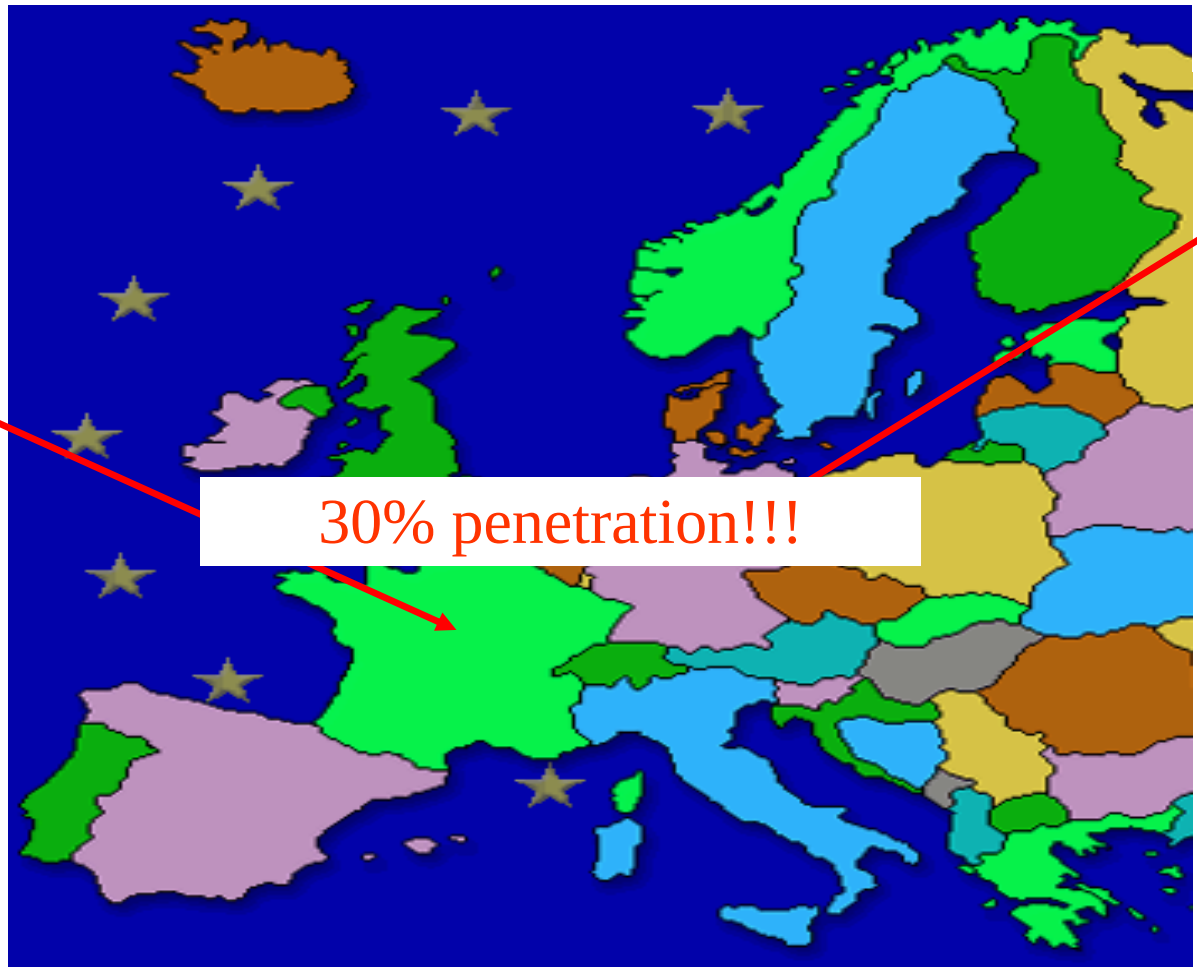
250k

+

c.1.2m

=

2.3m



100k

+

freenet.de

GMX

400k?

+

c.1.4m

=

2.0m

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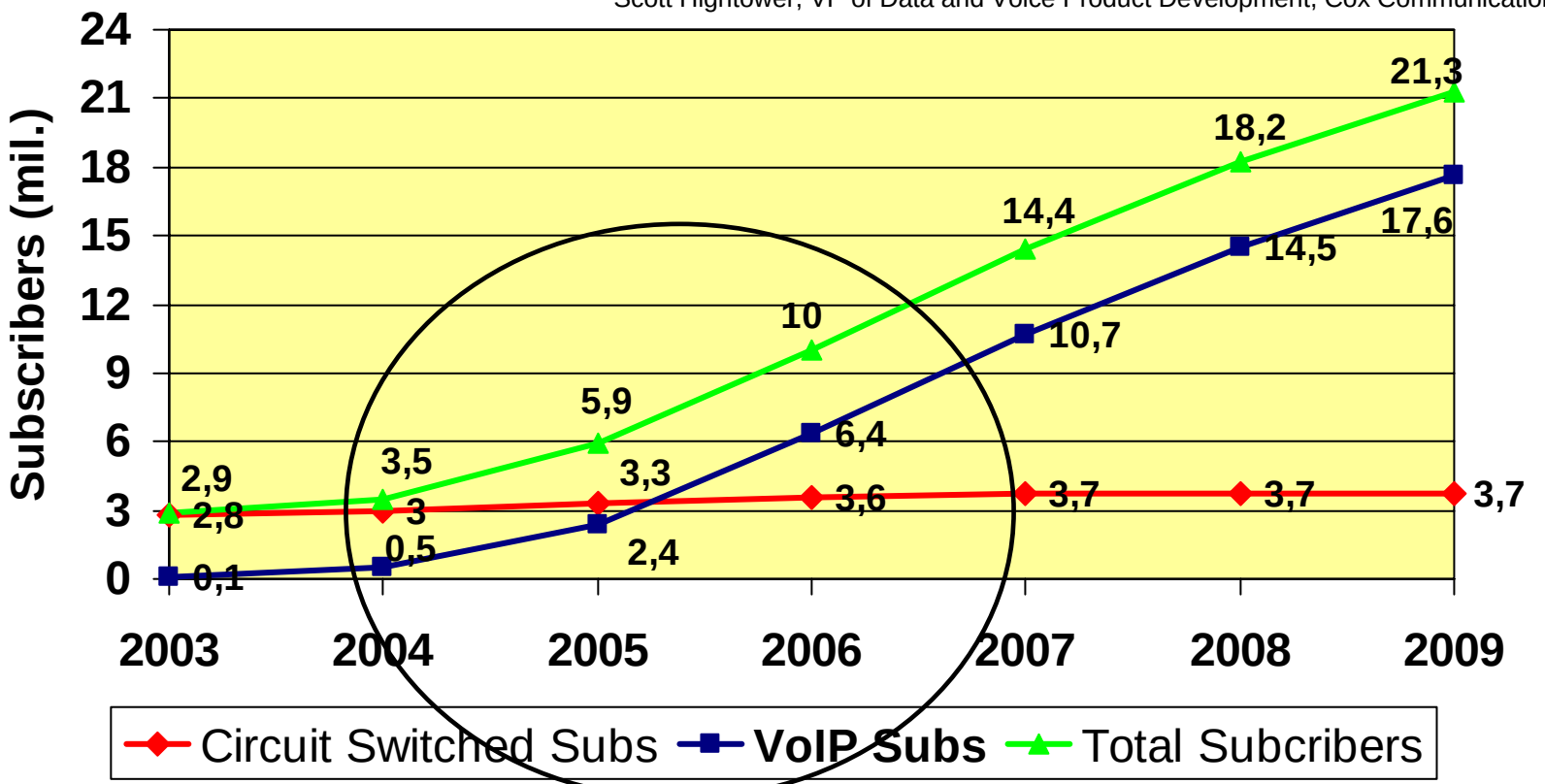
Voice and the Triple Play: VoIP

"Three-product **bundle churn** (video, HSD, VoIP): 50% lower than single-product churn"

Scott Hightower, VP of Data and Voice Product Development, Cox Communications



From to Information …
to Experience Exchange

- **What are we talking about?**

What Skype Has Taught Us

- **Make something easy to use,**
- **Do it better than everyone else,**
- **Provide it at the right price,**

  …and people will use it!

- **Skype has vastly improved the broadband internet communication experience.**

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VoIP @ SIEMENS

- **SIEMENS VoIP Solutions**

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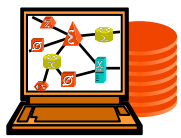
SURPASS product family - Product definition

SURPASS hiQ 8000 - Softswitch (Feature Server), Media Gateway Controller, Signaling Gateway

SURPASS hiG 1100 - VoIP Media Gateway for Trunks - Small to medium applications

SURPASS hiG 1200 - VoIP Media Gateway for Trunks - Medium to large applications



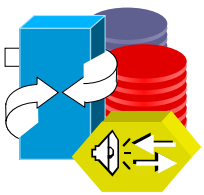
The NetManager i-Suite provides element and service management functionality for the hiQ 8000, hiG 1100, and hiG 1200 Network Elements

NetManager iSMC - Service Management Center

NetManager iSSC - Subscriber Self Care

NetManager iNMC - Element Management System for the hiQ 8000 & hiG 1100/1200

NetManager iPMC - Performance Management Center for hiQ 8000 & hiG 1100/1200



The SURPASS solution portfolio includes 3rd party extension products that are integrated with the solutions

IP Unity Harmony 6000 Media Server

Broadsoft BroadWorks (Up to Business Connection Solution Release BC_3)

The SURPASS solutions are interoperable with many 3rd party products (e.g. SIP/IP phones, IADs, MTAs)

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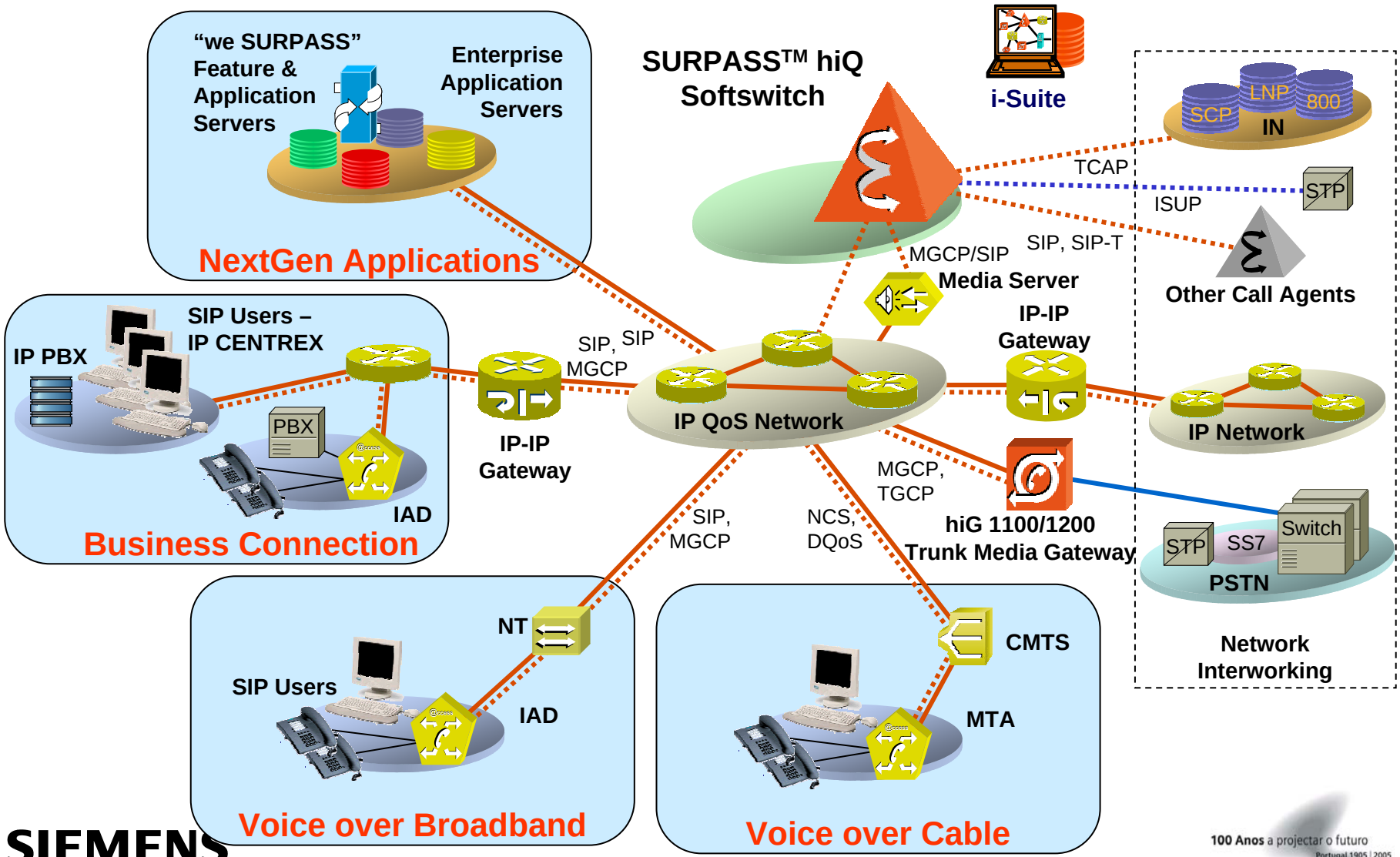
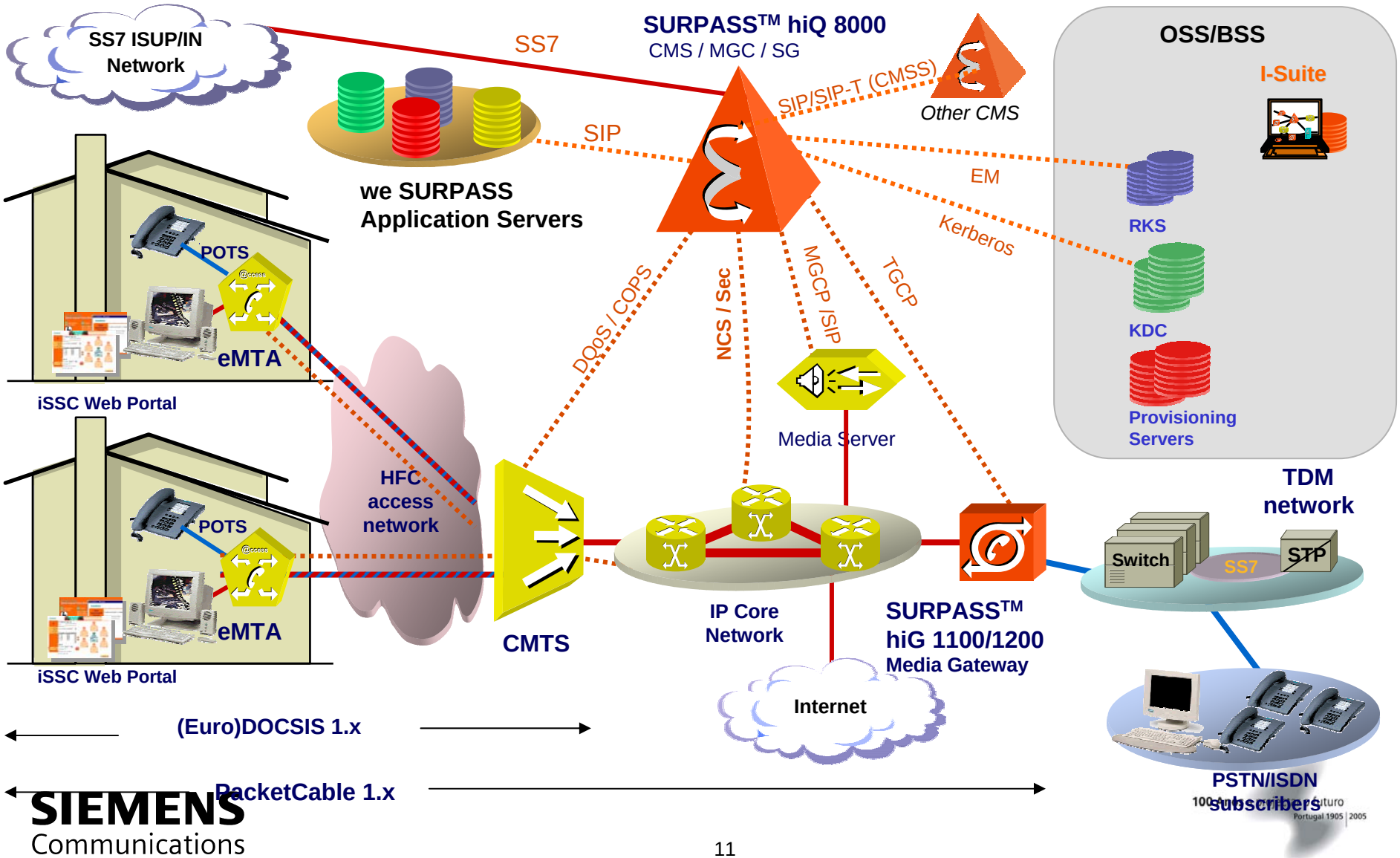
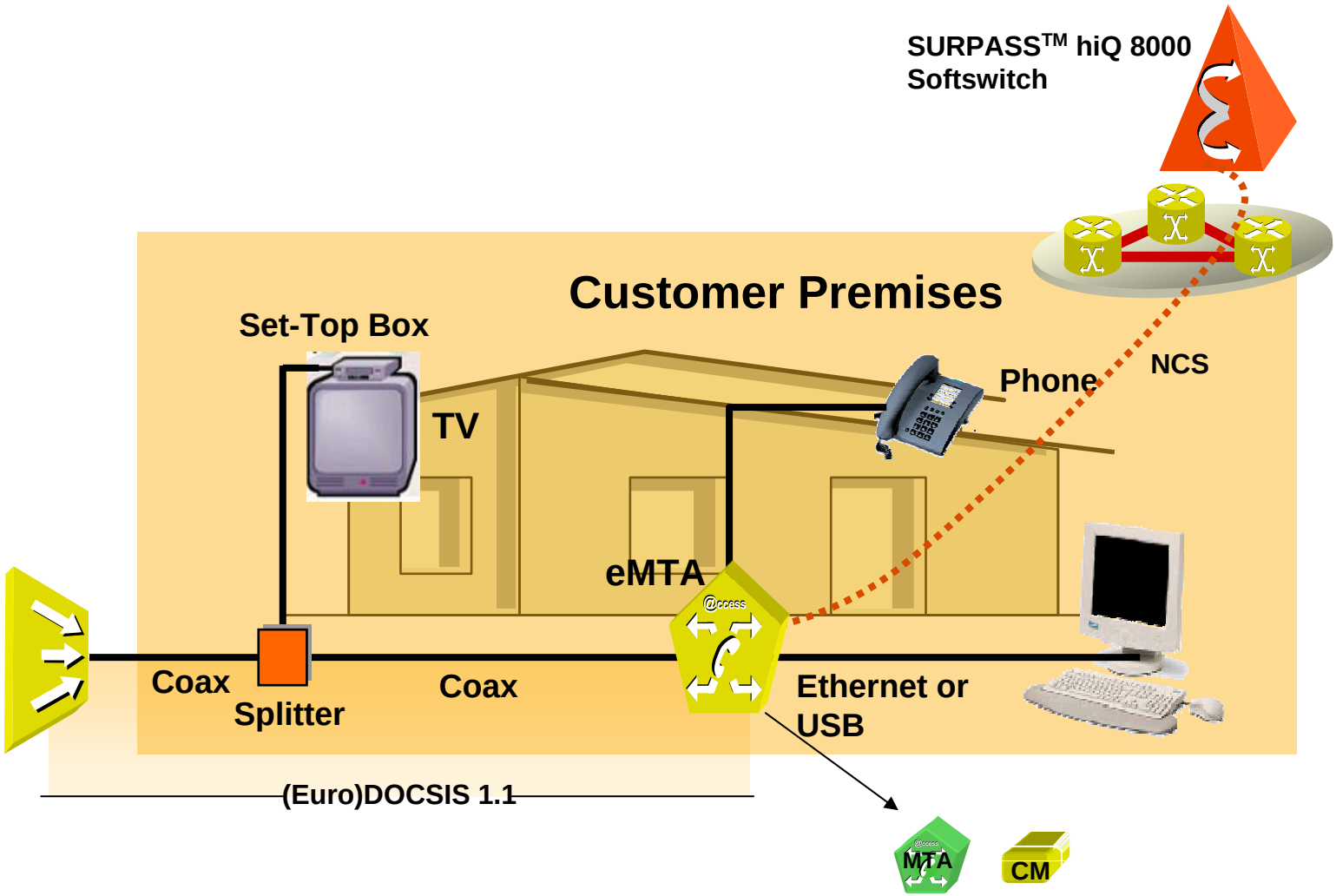
SURPASS™ Solutions Network Topologies



SURPASS™ VoCable Solution
Typical PacketCable Network Architecture

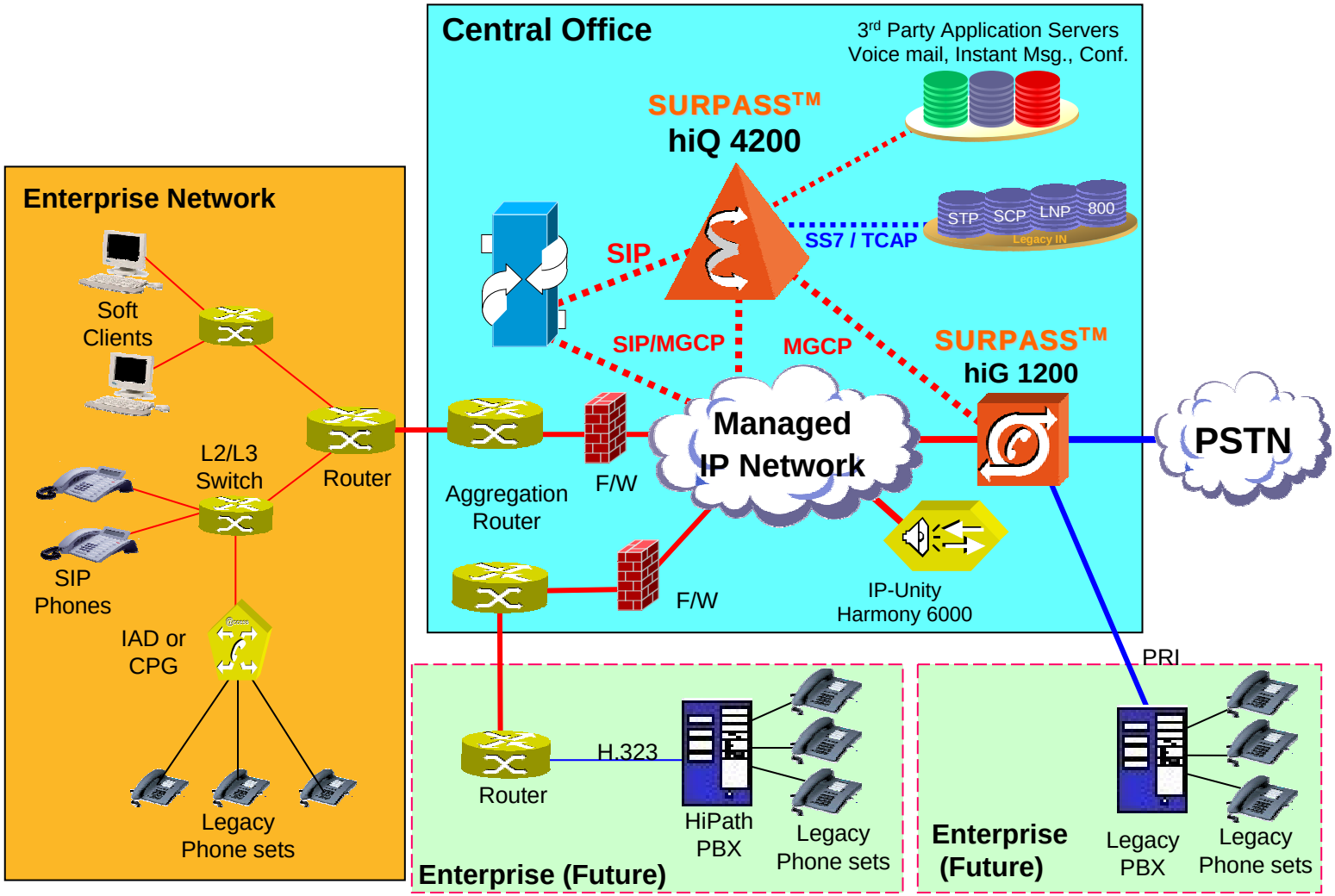


Voice over Cable
A Detailed Look at the Customer Premises



eMTA = CM and MTA

SURPASS™ Business Connection Solution – hiQ4200 (1)



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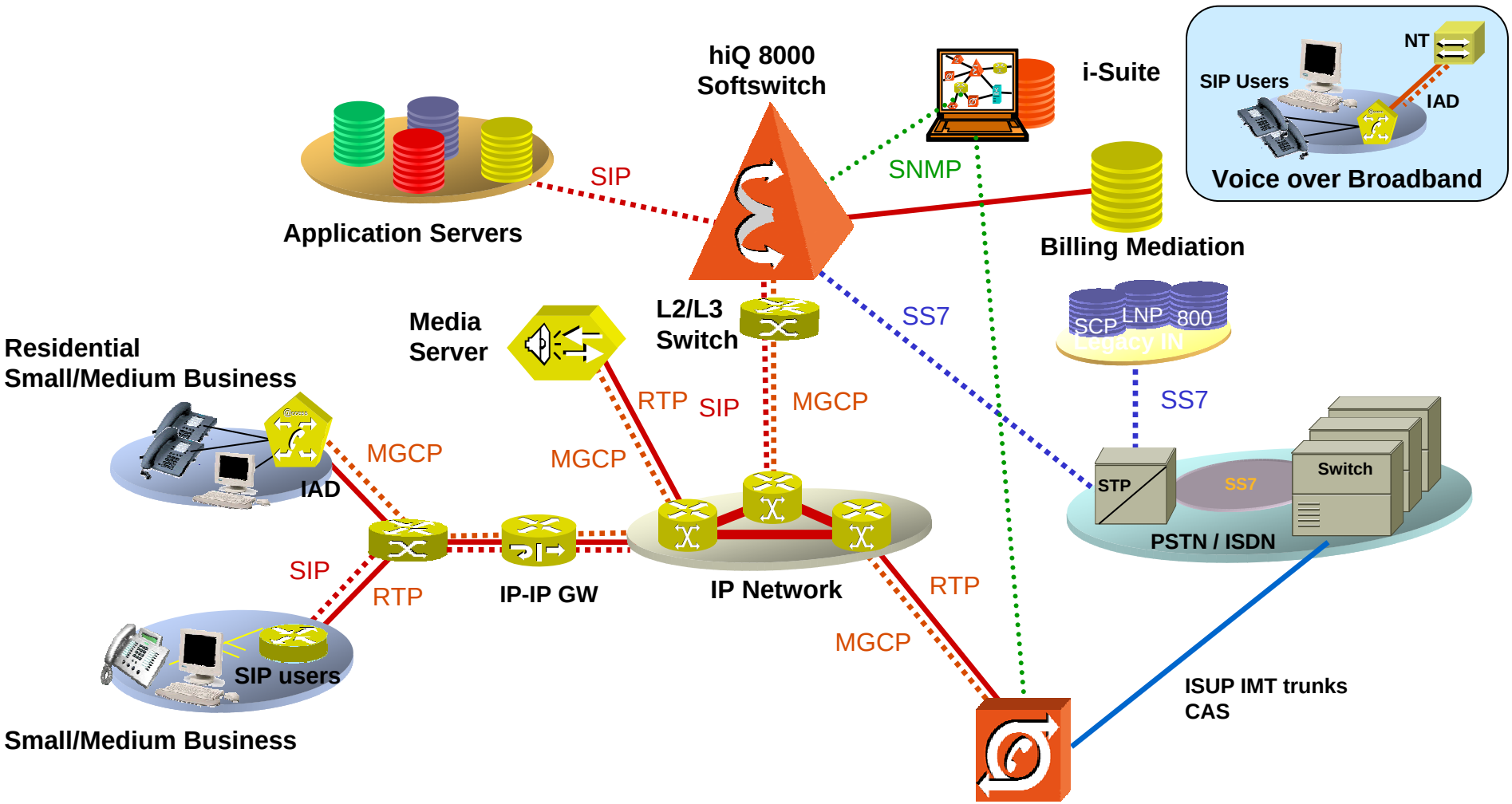
SURPASS™ VoBB Solution



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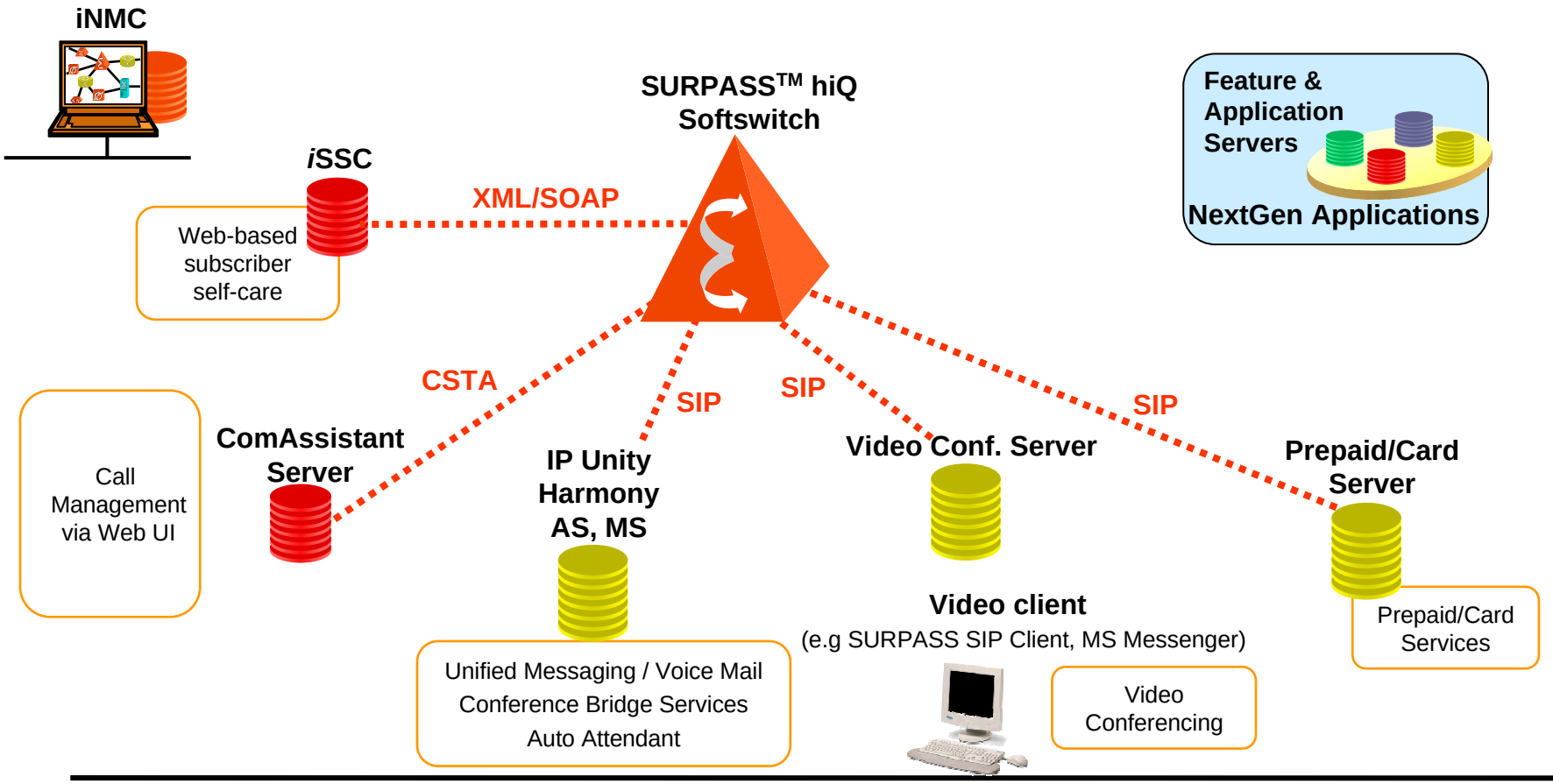
SURPASS™ NextGen Applications (NGA) Solutions



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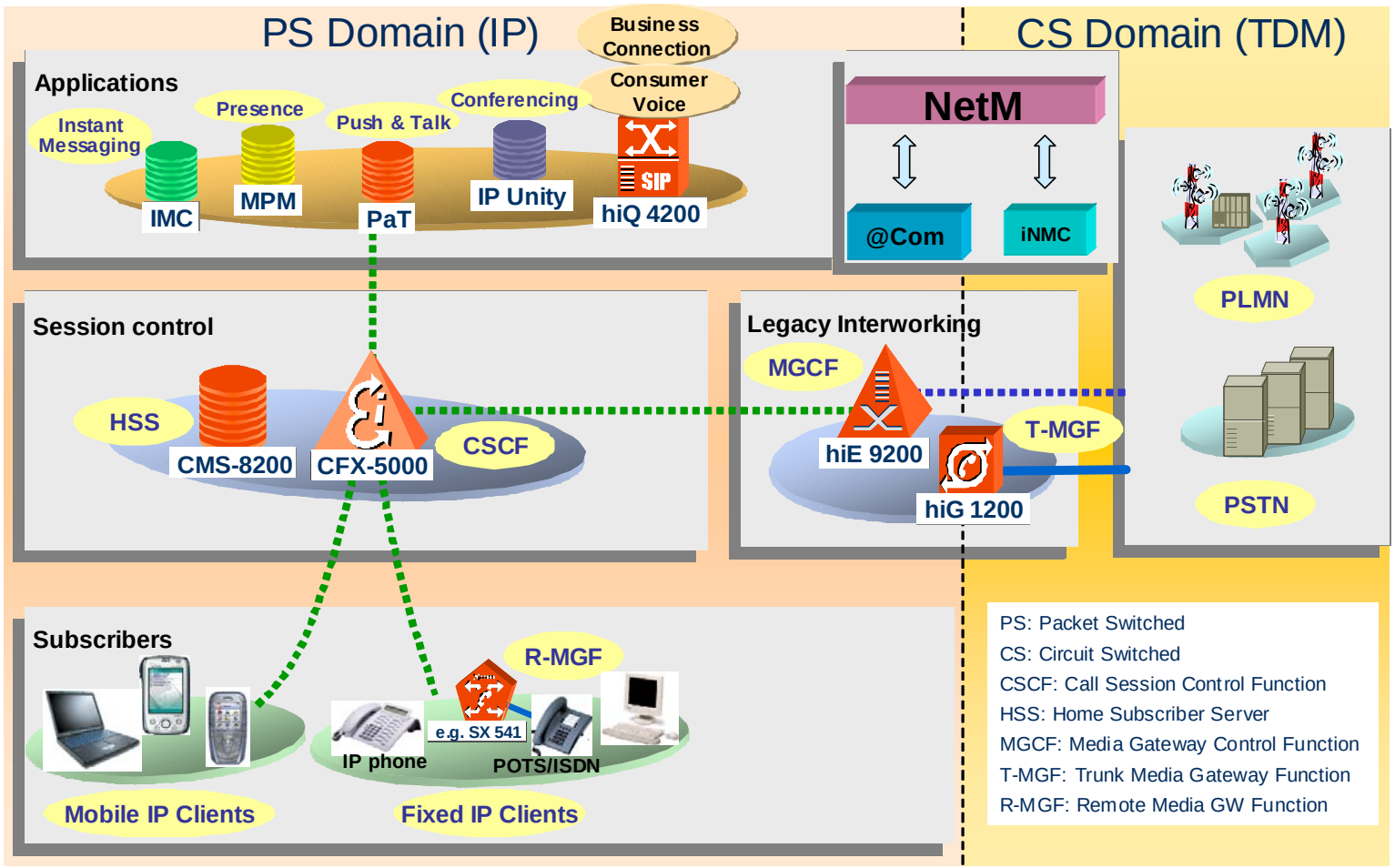
Fixed-Mobile Convergence Solution



VoIP impacts

- **... on Software Engineering**

Impacto da Voz Sobre IP (VoIP)

- **Orgânicos - a introdução da Voz Sobre IP (VoIP) ao nível, por exemplo, de uma empresa implica**
  - **infrastructure** *merging IT, data/text and web*
- **Aplicacional - a VoIP proporciona novos desafios nas seguintes áreas:**
  - **Tecnologias de Comunicação (CT- Communications Technologies)**
  - **Tecnologias de Informação (IT - Information Technologies) puras.**

Exemplo: no domínio da Convergência da telefonia Móvel versus Fixo, fala-se já da possibilidade de aplicaçao dos conceitos de "GRID computing" às infraestruturas de VoIP.

Organizational Impacts: Many Networks Become One

- Previously we had vertical solutions that offered one network per service:
  - PSTN, X.25, Frame Relay, IP, Telex...
- The Internet is becoming the common carrier for all services
- Growth comes as various wireless access technologies connected to the Internet
  - Wi-Fi, 3G (data), WiMax, UWB…

Aplicational Impacts: Phones are Becoming Computers (1)

- Powerful CPUs
- Connected to the Internet via various radio networks (multi-band)
- Open OS (Linux, Symbian, Windows Mobile, etc)
- Easy to install applications
- Affordable

Aplicational Impacts: Telephony is Becoming an App (2)

- An application that you run on a computer
- Computers have different form factors
  - Desktops
  - Laptops
  - PDAs
  - Mobile phones
  - Embedded
  - Increasingly ubiquitous and everywhere

CT - Communications Technologies

1. **Presence and availibility management**
   - **presence server, user agent, [illegible], buddy lists;**
2. **Single sign-on**
   - **generic [illegible]tion**
3. **Plug & play**
   - **Network**
   - **Peer Dis[illegible]**
   - **Application/Service Av[illegible]**
   - **Service disco[illegible]**
4. **Peer-to-Peer[illegible]; Home & Enterprise Networking**

[illegible]tion and Automatic language translation

[illegible]Mobile Convergence)

The Road Ahead:

Multi-Modal IP Communications!

IT - Information Technologies

1. TELCO Resilient/highly reliable platforms
   - Reliability, redundancy, fault tolerance
2. Component Technologies
   - SOA - Service Oriented Architectures
   - Distributed application processing, Application Software and TMN, e.g. Web Services
   - EJB, .NET, Corba 3.0; J2EE, DCOM, SOAP, OSS/J
3. Middleware
   - Hide platform SW (OS) and HW from applications
4. Distributed databases / storage
   - A must for geographical redundancy and disaster recovery
5. Service Development & Deployment Kits
   - For in-house and 3rd party developers
6. Test automation / management
   - A must

IT - Information Technologies Challenges

1. **Software Development Processes**
   - **Agile vs eXtreme**
2. **GRID computing**
   - **Scalability, load sharing, distributed storage**
3. **Multi-core processors**
   - **Programming, reliability, redundancy**
4. **Component Technologies**
   - **Which Middleware**
5. **Virtual Machine Monitors**
   - **Serviceability**

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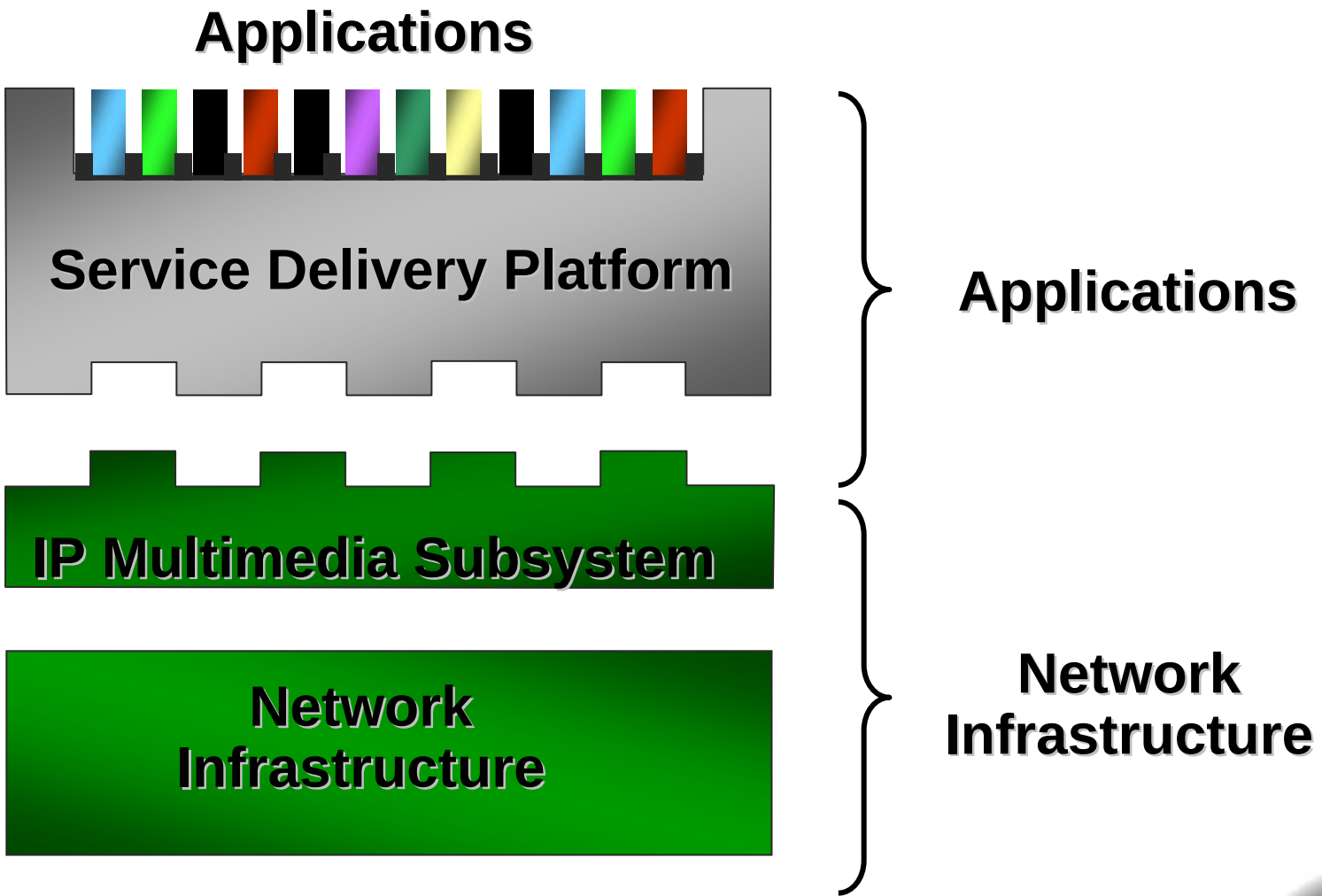
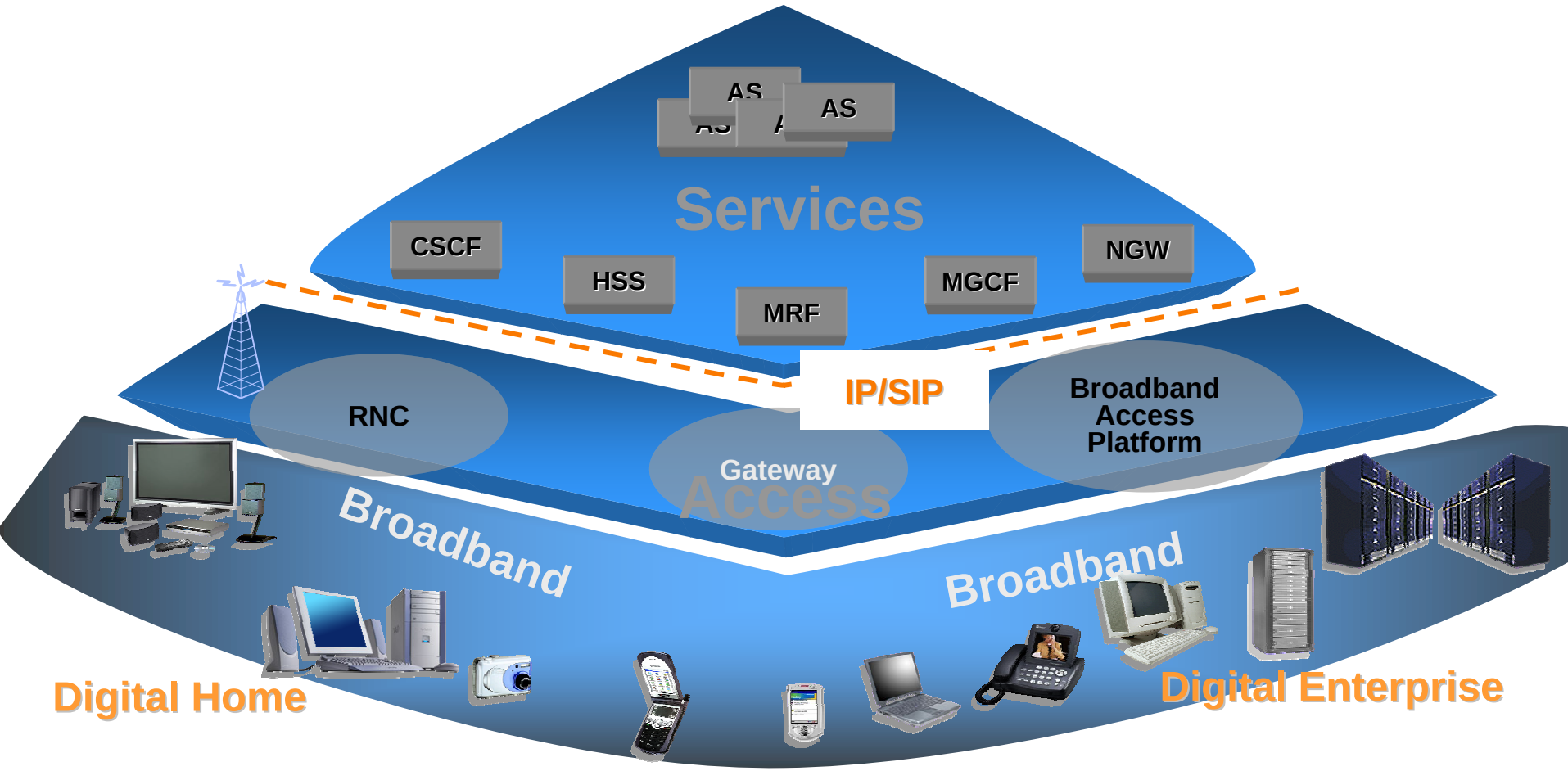
IP Multimedia Subsystem

- **Case Study on what lies ahead!**

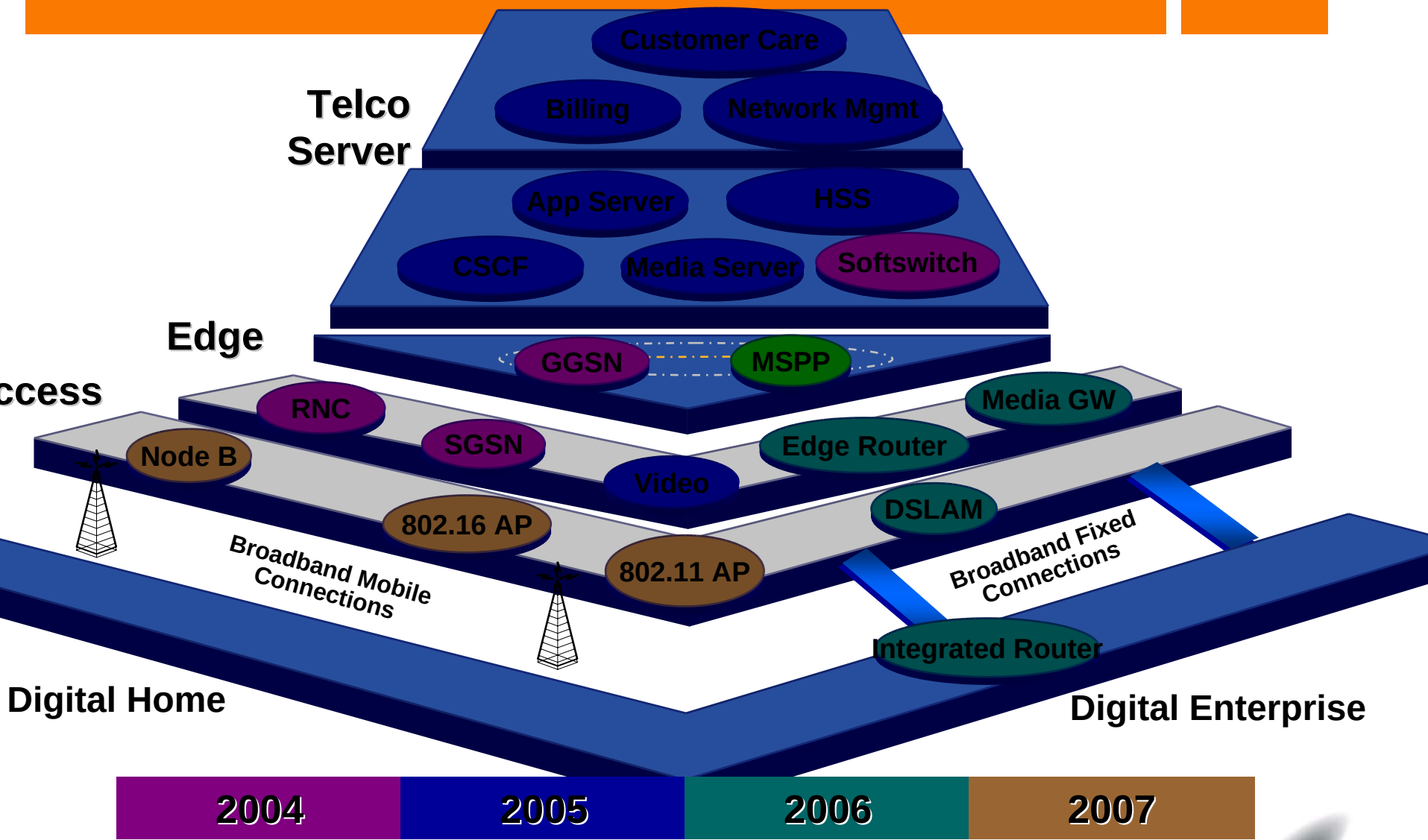
Agile Service Deployment through Modular Network Infrastructure



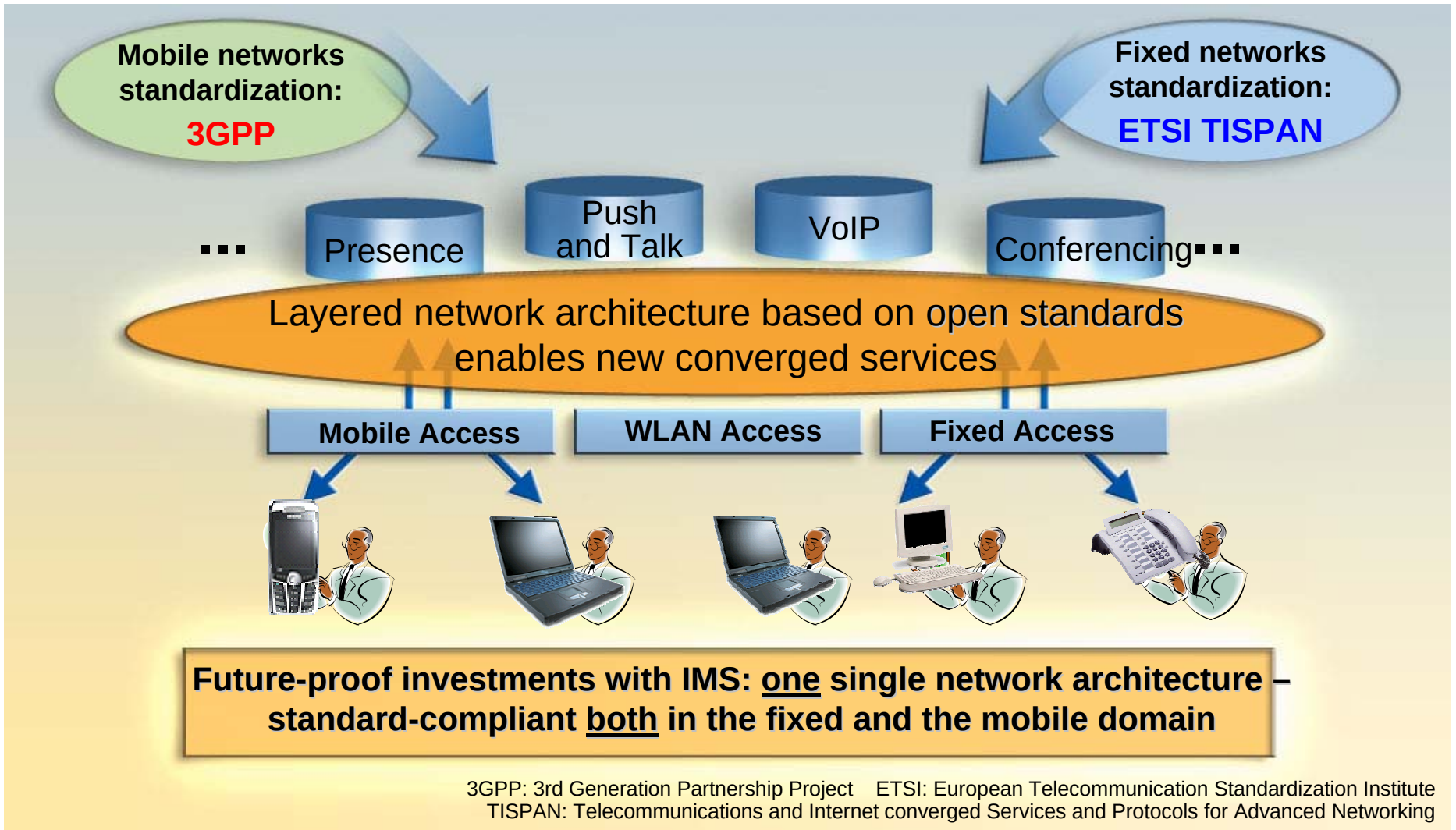
Deploying More Agile Networks – Standards-Based, Multivendor



Vision of a Modular Network

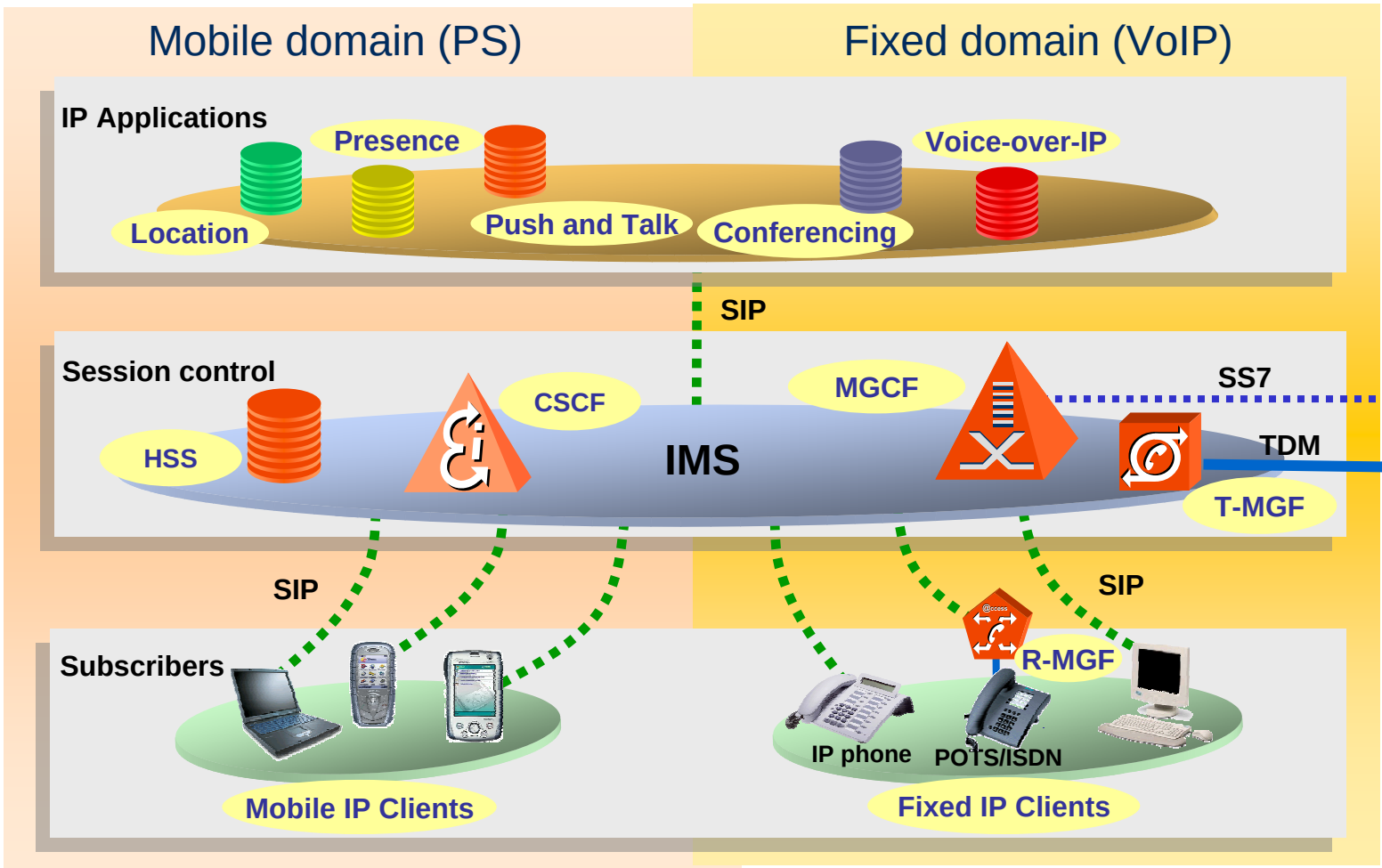


Standardized architectures for converged Next Generation Networks



3GPP: 3rd Generation Partnership Project ETSI: European Telecommunication Standardization Institute
TISPAN: Telecommunications and Internet converged Services and Protocols for Advanced Networking

Siemens IMS Next Generation Networks



PS: Packet Switched

CS: Circuit Switched

IMS: IP Multimedia Subsystem

CSCF: Call Session Control Function

HSS: Home Subscriber Server

MGCF: Media Gateway Control Function

T-MGF: Trunk Media Gateway Function

R-MGF: Remote Media Gateway Function

Convergence on application and control layer creates common user experience for both mobile and fixed subscribers

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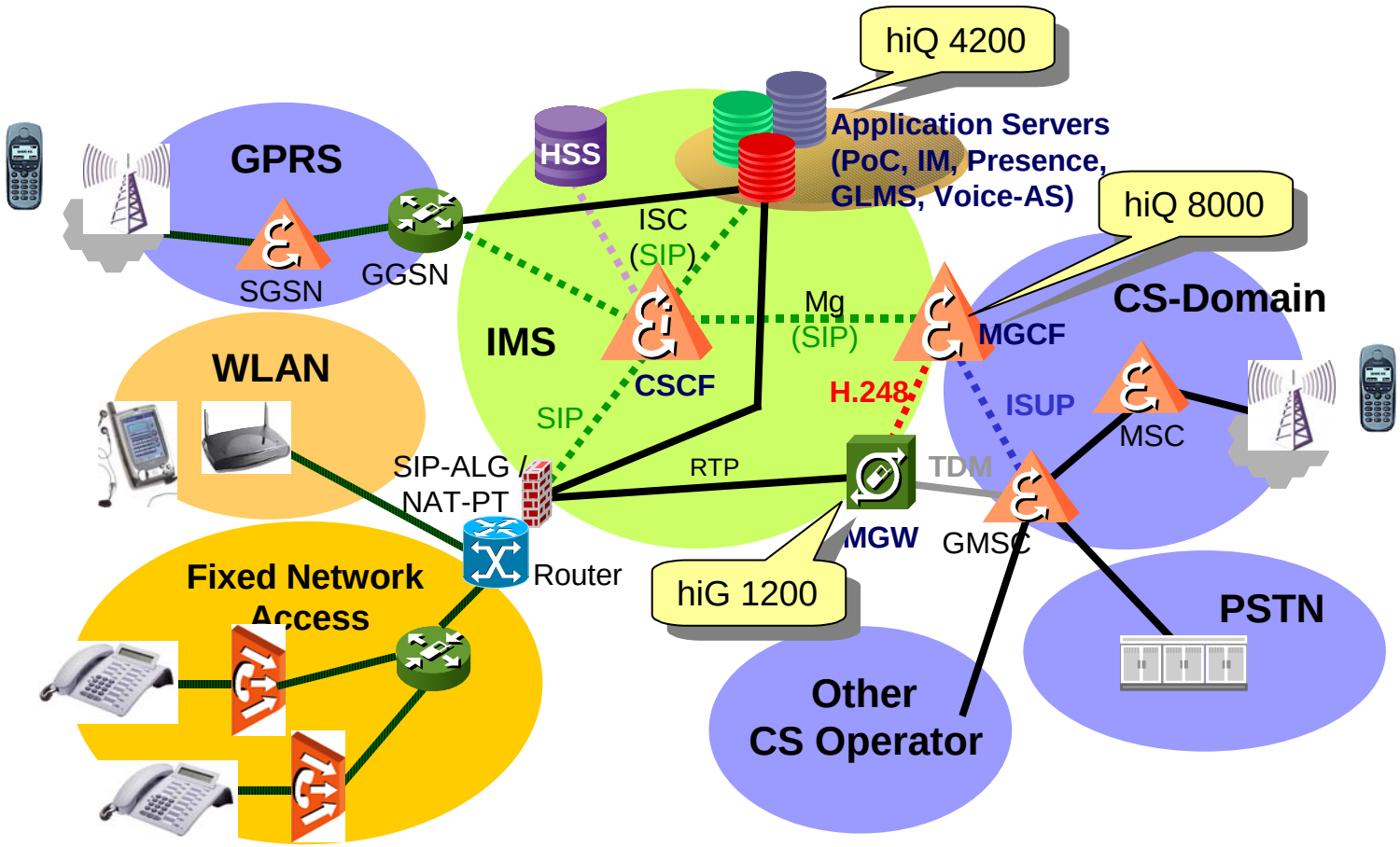
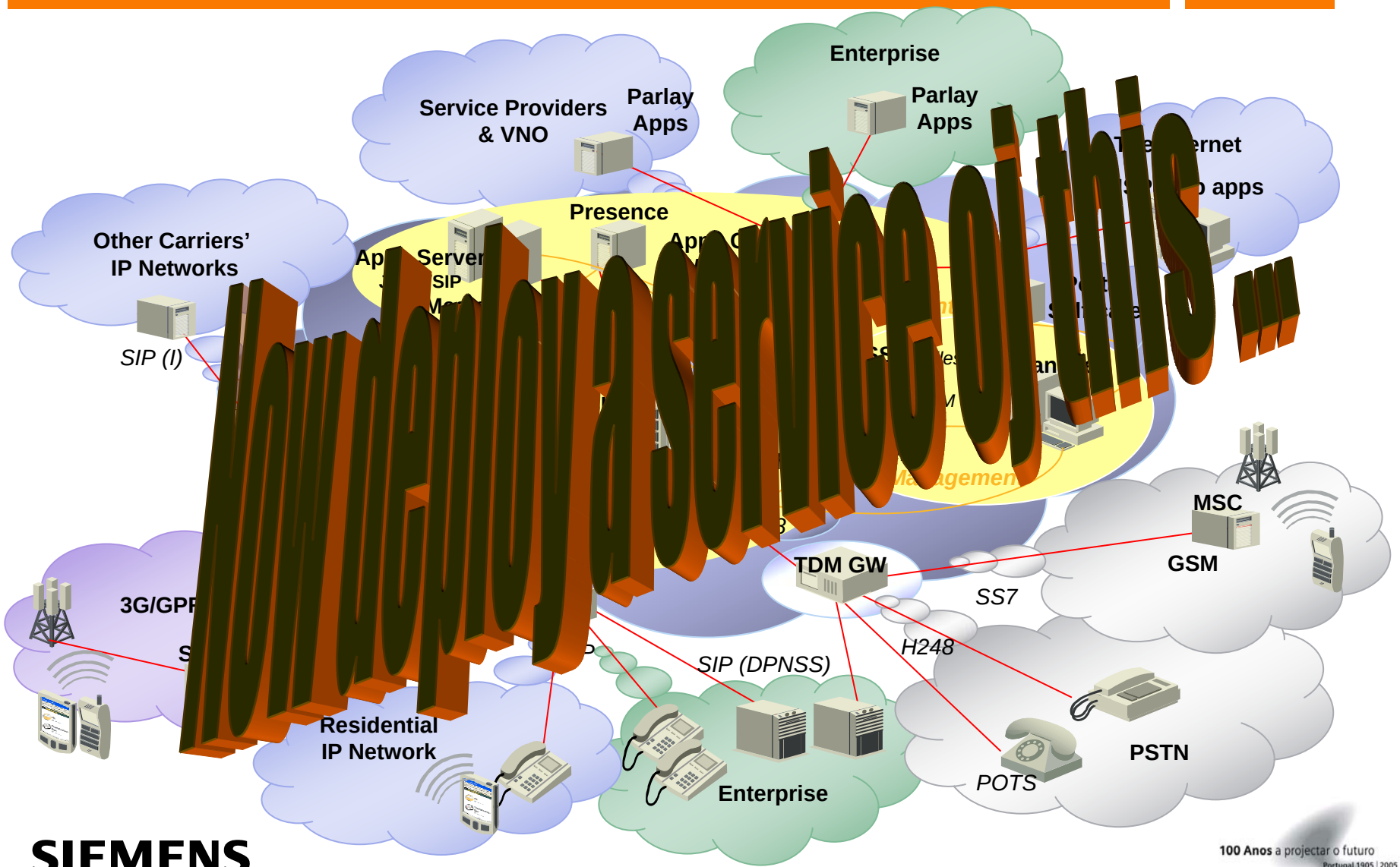
Siemens IP Multimedia Subsystem Solution



Management Layer - Integration is key



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In Conclusion

- IMS builds Intelligence environment for agile services, though it is a ‘disruption’ - of the 3rd kind
- It requires close encounter between IT and Telecom worlds
- Application innovation is yet to peak, inspired by the smart endpoint, but splitting and splicing features must be addressed carefully
- IMS enables sharing resources but vendors will find it hard to move from Silos to Layered approach
- The wide variety of applications will necessitate integration, streamlining management and user interfaces

Our obstacle is complexity: Dealing with it is the single most important challenge facing the I/T and TELCO industries!

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