IMS
New challenges for the regulations

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The new challenges

A few years ago, most service providers were offering a very limited number of services, each over a distinct technology. Regulation in this context was very much linked to the technologies

With NGN/IMS, we find for the first time a single technology that can handle any service from voice to multimedia covering consumer and enterprises…

Regulation has to adapt to this new situation and move from a technology to a service focus.

In this context, it is also important to clearly define the services in a regulation context. In the new world, will the regulator:

regulate the service from a phone covering all options?

or will they regulate the "voice calling service" from any device?

or will they just regulate services from the first phone?
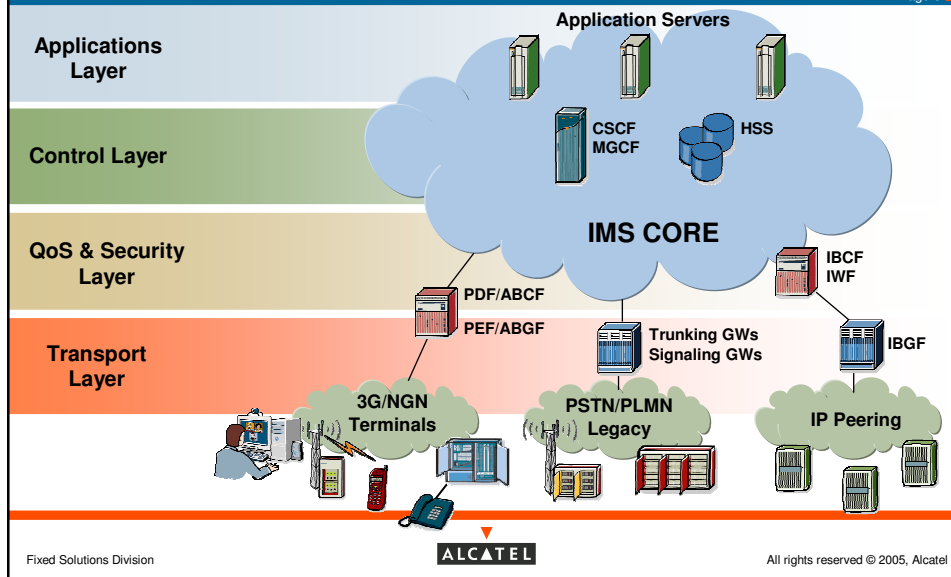
or will they impose regulation on all services?

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The IMS/TISPAN vision
A Layered Architecture

Applications Layer

Control Layer

QoS & Security Layer

Transport Layer

Application Servers

CSCF MGCF

HSS

IMS CORE

IBCF IWF

PDF/ABCF

PEF/ABGF

Trunking GWs Signaling GWs

IBGF

3G/NGN Terminals

PSTN/PLMN Legacy

IP Peering

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VoIP, To regulate or not To… ???
Different scenarios, different rules…

PES (PSTN Emulation Service)

▼ **Normal Twisted-Pair based POTS, with VoIP infrastructure only on Carrier premises.**

▼ **No mobility possible. Geographically dependant fixed numbers.**

▼ **Same price policy as fixed legacy lines.**

▼ **Replaces Legacy POTS service, and as such it shall fulfill actual regulation compliancy.**

Broadband based VoIp

▼ **POTS and/or Multimedia service that requires BB access, and connects with PSTN.**

▼ **Nomadicity: numbers are not related to Geographical position of the user (USA, Australia, Europe). Some countries will use Location Independent Ranges ("dummy" area codes).**

▼ **"Long Distance Calls" are meaningless. New tariff rates should apply.**

▼ **It does not require to fulfill all regulations as previous services (USA), unless it's used as "First Line" service (Europe). In Australia, a POT alternative service shall be available.**

▼ **The tendency is to slightly regulate this service.**

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VoIP, To regulate or not To… ???
Different scenarios, different rules…

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Internet based "Free VoIp"

▼ **Peer-to-Peer sessions that does not connect with PSTN**

▼ **Legal in most countries (USA, Australia, Europe). Tendency is not to regulate them.**

▼ **Cannot be blocked by provider (USA), unless indicated on the contract (Australia). Trends on Europe shows blocking will be illegal. Most of the operators are not blocking it.**

▼ **QoS can not be assured.**

▼ **The tendency is to fight against them with better quality services, with local PSTN connection and advanced services.**

The previous scenarios shall be regulated in different ways, because are different services, with different characteristics and purposes.

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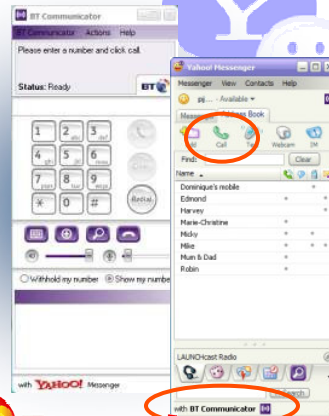# Beat Skype at their own game….
…And provide better services to end users

▼ IP to IP, IP to PSTN, PSTN to IP Calls

▼ Call waiting

▼ Call Forwarding based services

▼ Three party conference

▼ Video Calls – Video Conference

▼ Voice Mail

▼ Buddy List, Chat & Presence

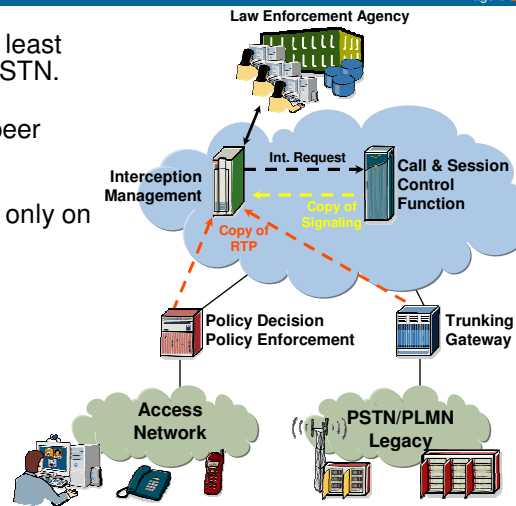▼ Data Sharing

Skype like service at Skype like prices

BT **YAHOO!** **Broadband**

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Examples of Regulatory Services

Mandatory Features: Lawful Intercept

Easy to do in Legacy, but….

▼ Mandatory in most countries, at least when service interconnects with PSTN.

▼ Hard to do for Internet peer-to-peer calls.

▼ IMS proposes Voice Encryption only on the access network.

▼ New services shall be included:
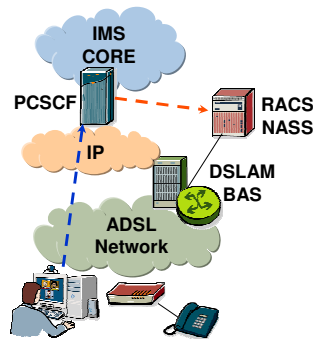- Which service this will apply to?
- What about Video Calling?

Law Enforcement Agency

Int. Request

Interception Management

Call & Session Control Function

Copy of Signaling

Copy of RTP

Policy Decision Policy Enforcement

Trunking Gateway

Access Network

PSTN/PLMN Legacy

Mandatory Features: Location

Easy to do in Legacy, but….

Nomadicity requires ability to dynamically determine customer location at time of Service registration

IMS CORE

PCSCF

RACS NASS

IP

DSLAM BAS

ADSL Network

▼ User location is determined at time of registration.

▼ When receiving the Registration message, the P-CSCF will query the RAC/NASS function, collecting user location information.

▼ Info is returned to the P-CSCF which inserts it into the Register message, and forwards up the info.

▼ At the end, the info is stored on the Users Database (HSS)

A critical Feature for Emergency Services

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Mandatory Features: QoS assurance
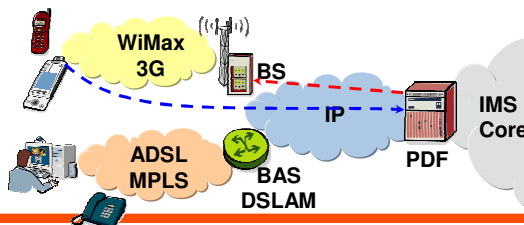
Easy to do in Legacy, but….

▼ IMS provides means for controlling, assuring and reporting QoS.

▼ ¿Does user expects PSTN voice quality, at least for paid services?

▼ Shall this be regulated? Or will remain unregulated and considered an asset leading to additional revenues?

- **Shall minimum QoS level be imposed?**
- **Shall a call be rejected if QoS level can not be assured?**
- **Shall a user have access to QoS Reports?**

Applicable to all voice or to PES?

WiMax 3G

BS

IP

IMS Core

PDF

ADSL MPLS

BAS DSLAM

When a new call is requested, the PDF checks resource availability & policy vs resources requested.

If needed, access elements are requested to increase user BW.

IP Packets are marked with DiffServ to have priority on the IP Transport.
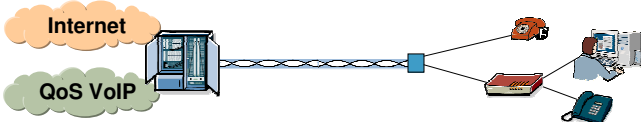
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Mandatory Features: Lifeline Support

Easy to do in Legacy, but….

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▼ This is not an issue for PES systems
- **The VoIP is implemented on the Carrier's side of the network. User keeps its classic POT service over the a/b wire with remote feeding etc.**

▼ Requires some extra effort for a wireline Broadband VoIp operator:
- **There're IADs available with automatic switching to POT line in case of failures.**
- **This will mean classical POT service shall remain, either with Legacy or NGN-PES infrastructure.**

Internet

QoS VoIP

▼ Not possible to implement on a wireless Broadband VoIP operator.

▼ Several countries do not consider this as mandatory
  ▼ Service shall be available only if user request it, and under the figure of a Legacy or NGN-PES POT service.

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The Australian's situation
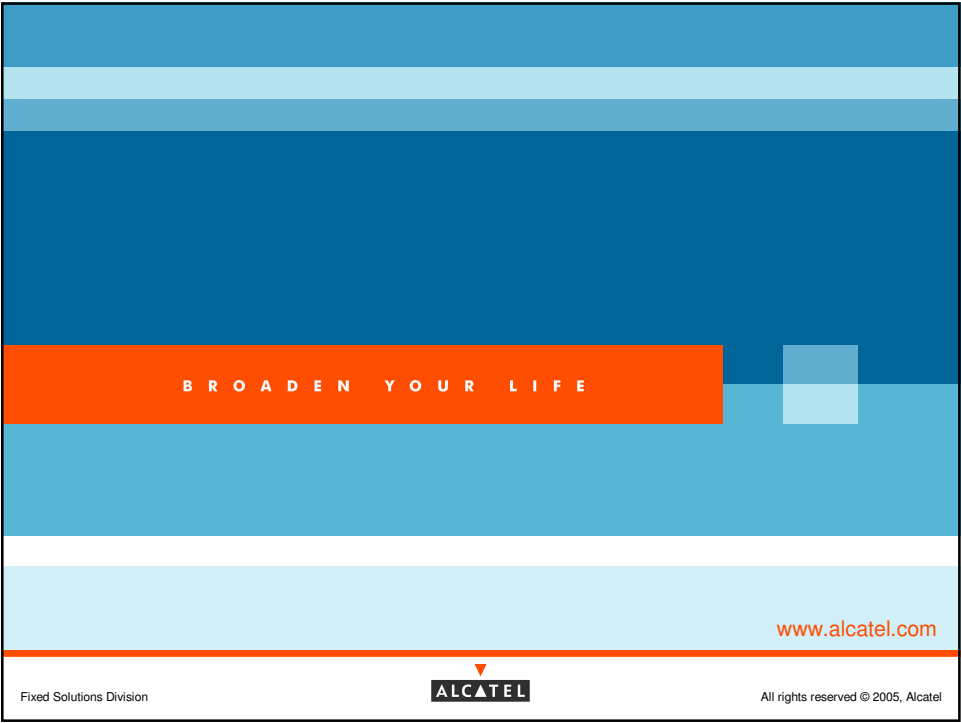
Beautiful things that do not combine together

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▼ All access providers need to set the SAME PRICE for the SAME SERVICE in all parts of Australia:
- **In order to break even when offering services to remote parts of the country, the access provider needs to charge more for services in the cities, and use the extra revenue to offset the losses outside the city.**

▼ The regulator can force Telstra to unbundle DSL services.Telstra can only ask cost plus for unbundled loops:
- **As loops in the city are much less expensive to maintain than loops in the country, the regulator forces Telstra to charge less for unbundled city loops.**

▼ Competitors are not forced to offer services everywhere. So, they can offer services only where wholesale costs are low, and meet the obligation to offer national pricing, offering at the same time cheaper prices than Telstra.

▼ So, if Telstra wants to do national-wide investments for leveraging the service, they'll see that their investment in the most profitable areas will be used by competitors in order to provide cheaper services and increment their market-share. Users will choose on that areas to go with competition due to lower prices than Telstra.

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