Tomorrow's Networks Today

Applications and Integrated Services

for

~~End Users~~
Customers

Didier LEBRAT
Chief Technology Officer
Vodafone Italy

07-08 Oct. 2005, Saint Vincent

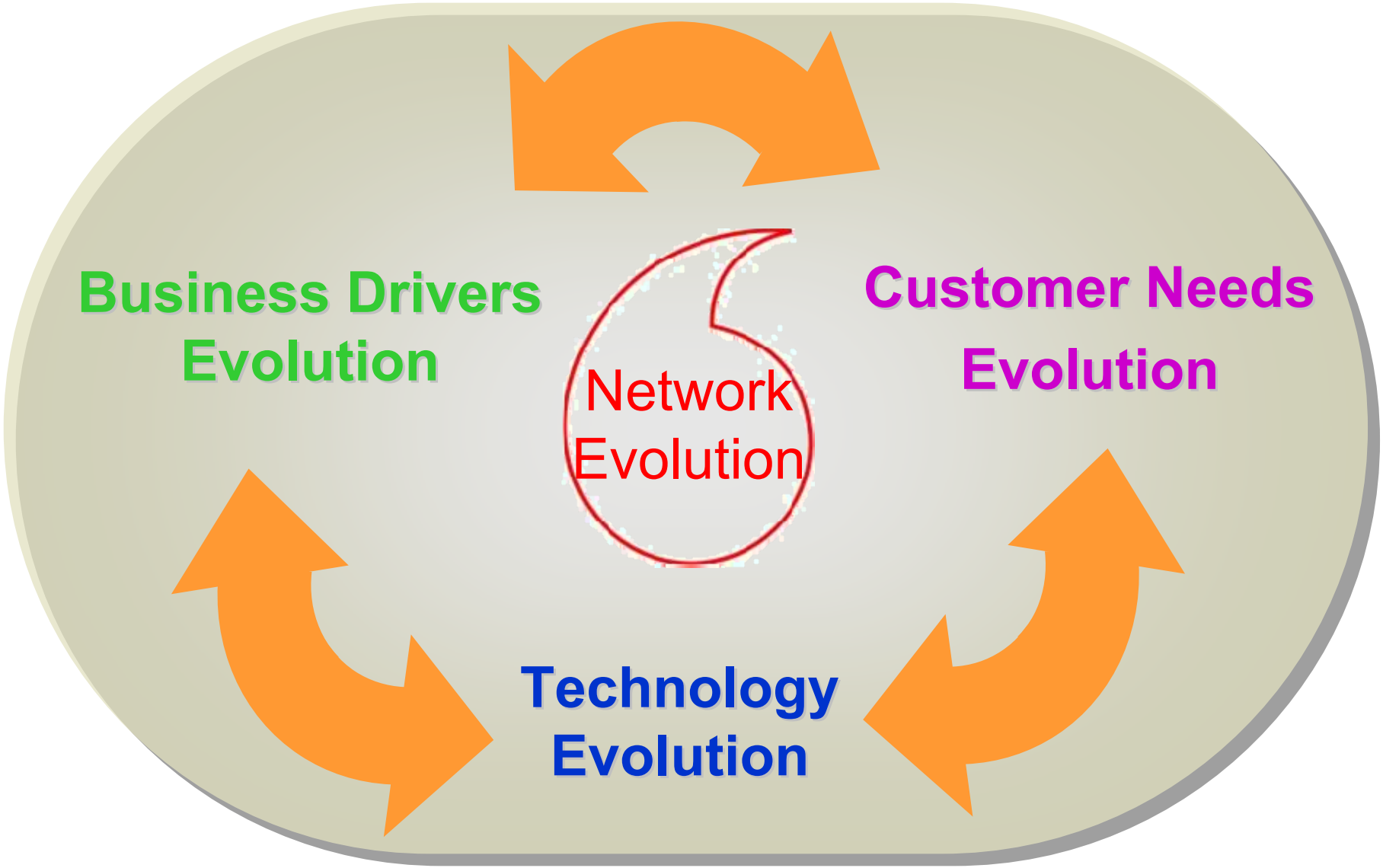
Drivers For Network Evolution

Enabling Technologies

Delivering New Services

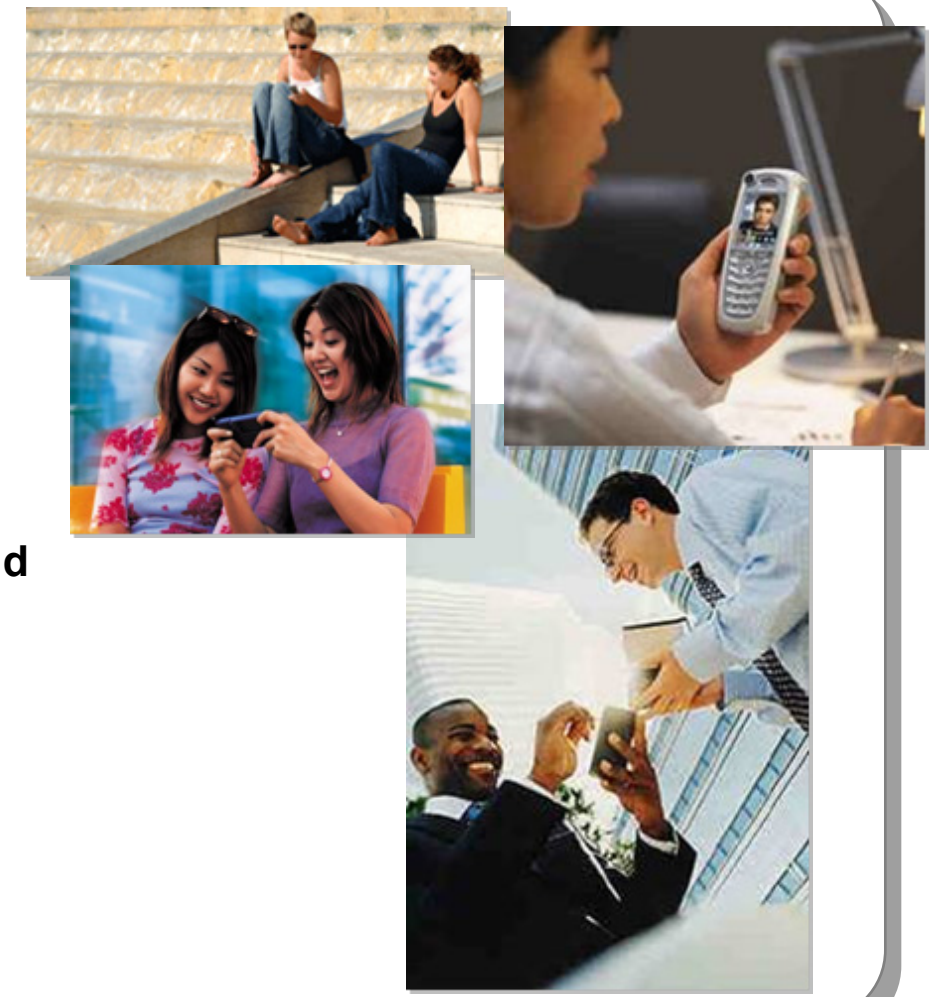
Drivers for Network Evolution

Drivers


Business Drivers Evolution
Network Evolution
Customer Needs Evolution
Technology Evolution

Customer Needs Evolution

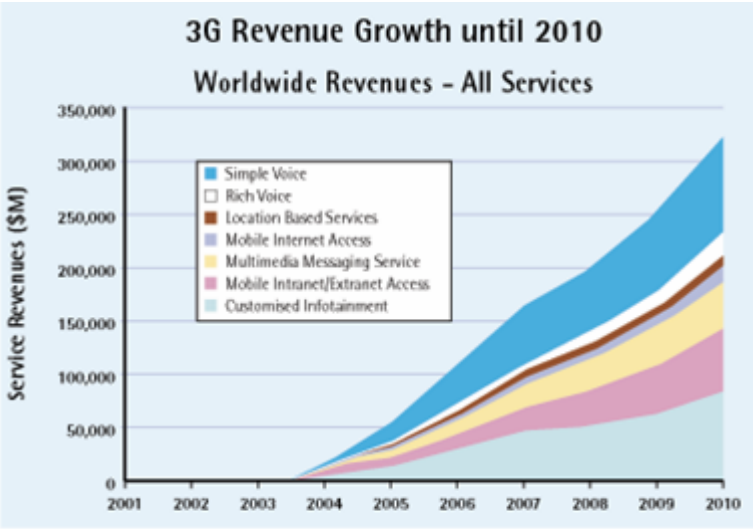
- **Customers want access to their communications and entertainment services from anywhere…**
  - ✓ Home, office, on-the-go
- **…using several different devices and multiple access…**
  - ✓ PC, telephone, mobile phone, PDA
- **… having always the best connection and guaranteed QoS**
- **… with an increased protection of their Privacy and Confidentiality**
- **…with simplicity and reliability**



Business Drivers Evolution

REVENUES

- Incremental revenues will come not only from **voice** but also from **new and diversified data services**
- New Technologies and enablers shall bring **new actors on the market** with new business models
- **Flexible charging schemes** will increase usage through bundles and personalized offers
- **Plug and play paradigm** for the development of new applications

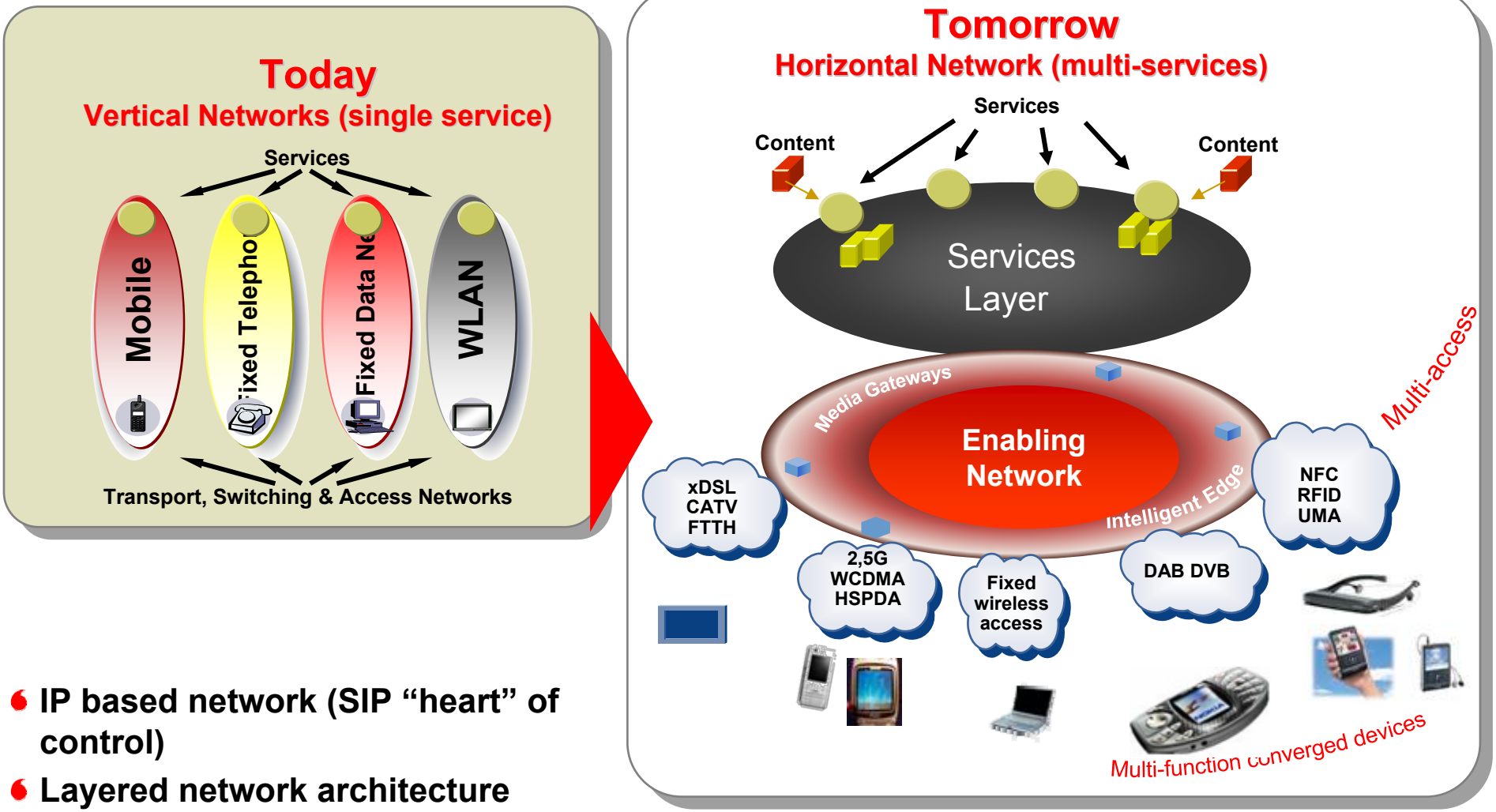


A range of consumer and business market segments will earn 3G operators revenues of more than €1 trillion a decade after the first launches
Source: Telecompetition Inc, February 2001

COST REDUCTION

- **Open interfaces** allow selection of best of breed among suppliers
- **Single core network to operate**, less expensive hardware, common infrastructure for multiple services
- **Interaction with third parties** easier and cheaper

Technology Evolution



- IP based network (SIP "heart" of control)
- Layered network architecture
- Multiple access technologies drive the need for an access agnostic core network
- Broadcast technologies as access enabler for media content distribution
- More powerful terminals, well suited for multimedia content

Enabling Technologies

IMS as Enabling Architecture in the Core Network

- **An architecture for services on the packet domain while maintaining interworking with existing infrastructure**
  - the network (i.e. operator) is aware of the service and as a result manages the service

- **An access agnostic technology**
  - It is not just for UMTS or GPRS, but will also support WLAN, fixed line, etc.

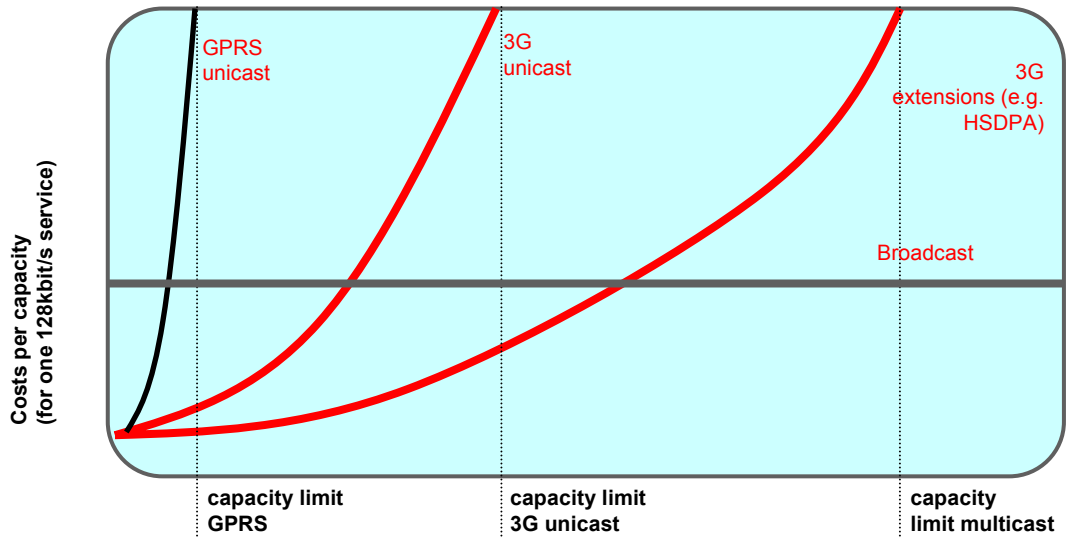
IMS

- **Dedicated Service Layer**
  - Best of breed Application
  - Reduced Time to Market
- **Integrated Service Control**
  - Session control to the packet network
- **Integrated Charging**
  - More flexibility in marketing offer

- **IMS = All-IP? NO!**
  - All-IP refers to the complete set of technologies (IP core and transport networks, IP RAN and radio interface, IMS)
  - IMS is a stand-alone solution which can be optimised by other All-IP components. It is a step towards an ALL-IP architecture

Broadcasting to Enhance Mobile TV Offer

- New media and music solutions such as **Mobile TV and video downloads are now available to the mass market**.
- **UMTS strength lies in its ability to offer busty, highly personalized services**
- **Dedicated mobile broadcast technology is required** to enhance current mobile operators' Mobile TV offer with the support of a higher number of simultaneous channels



Evolution Path to All IP

ALL- IP

IMS

Non Real Time Services **Real-time Services**

Separate CS and PS domains

CS voice

Data to 384kbps

CS Core over IP Split MSC

Scalability, efficiency

Push-to…
Rich Voice Video Sharing
Presence

RT services on the radio
Voice-to-video upgrade
Gaming

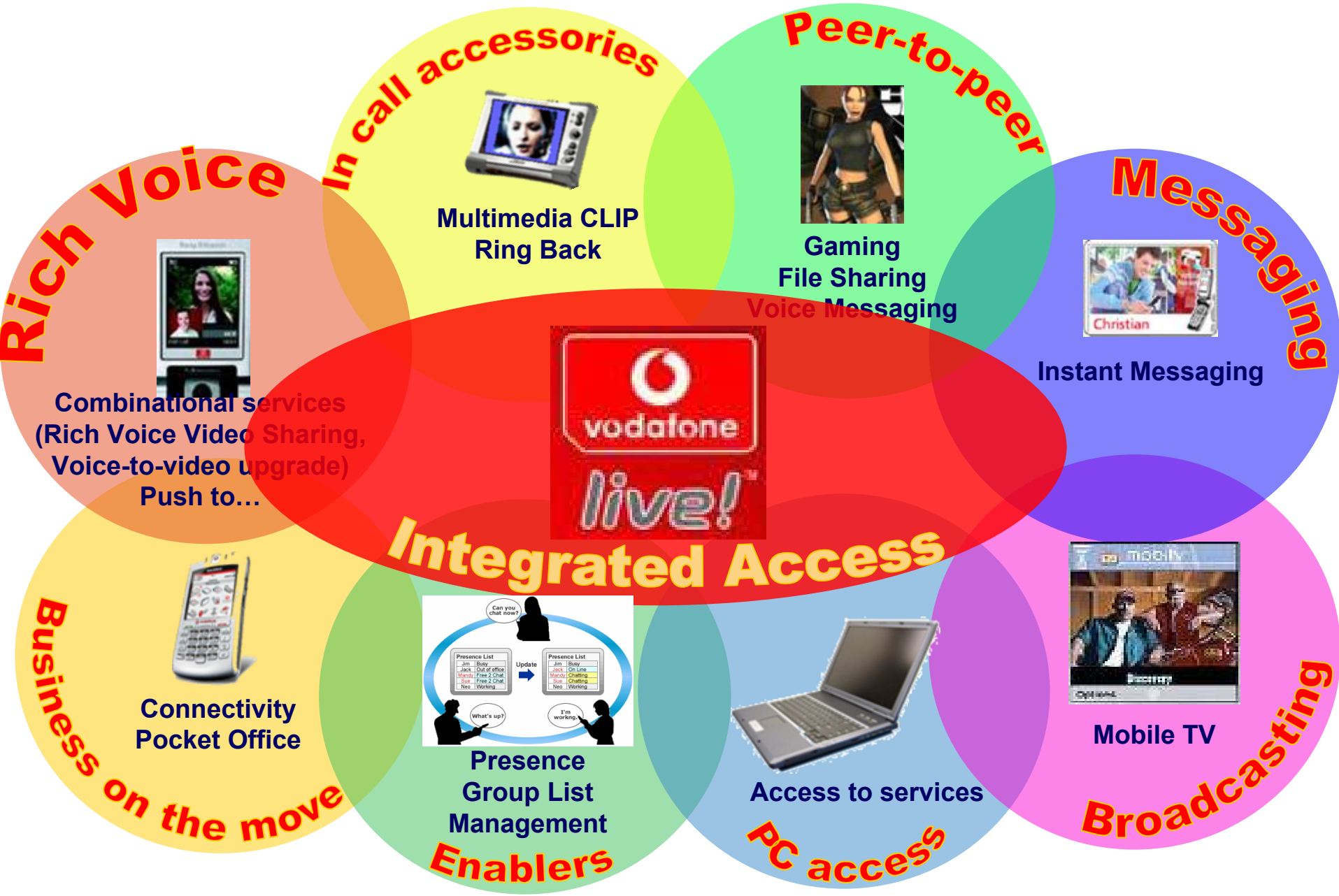
R99 **R4** **R5** **R6/R7**

TIMELINE

Delivering new services…

through upcoming enabling Technologies

A View On Services' Families



Rich Voice: Combinational services

Rich Voice Video Sharing

to push a "one-way" video stream to B-Party's terminal during a "normal" voice call for a certain time (⇨ "one way video").

John starts recording a video of his new bike while talking with Anna

Video stream appears instantly on Anna's display while they continue talking

Voice-to-Video Upgrade

to upgrade a "normal" voice call to a full duplex video communication (as applied for Video Telephony) and vice versa (⇨ "two way video")

Sue & Alice Request voice and video session

Voice

Video

Mom accepts voice and decides to add video later

IMS enables the recognition of the invoked service and hence the proper management of its requirements, for instance granting the required QoS

Rich Voice: Push To ….

- Push to Talk over Cellular (PoC) is **one of the first available IMS based applications**.
- **PoC (Push to talk over Cellular) similar to walkie talkie communication but offered through a network:** one party can speak at a time while the other party (or groups) must listen.
- Possible **evolution towards images, videos etc**. with the half duplex approach
- Push to Talk is an example of **interactive peer to peer multimedia**

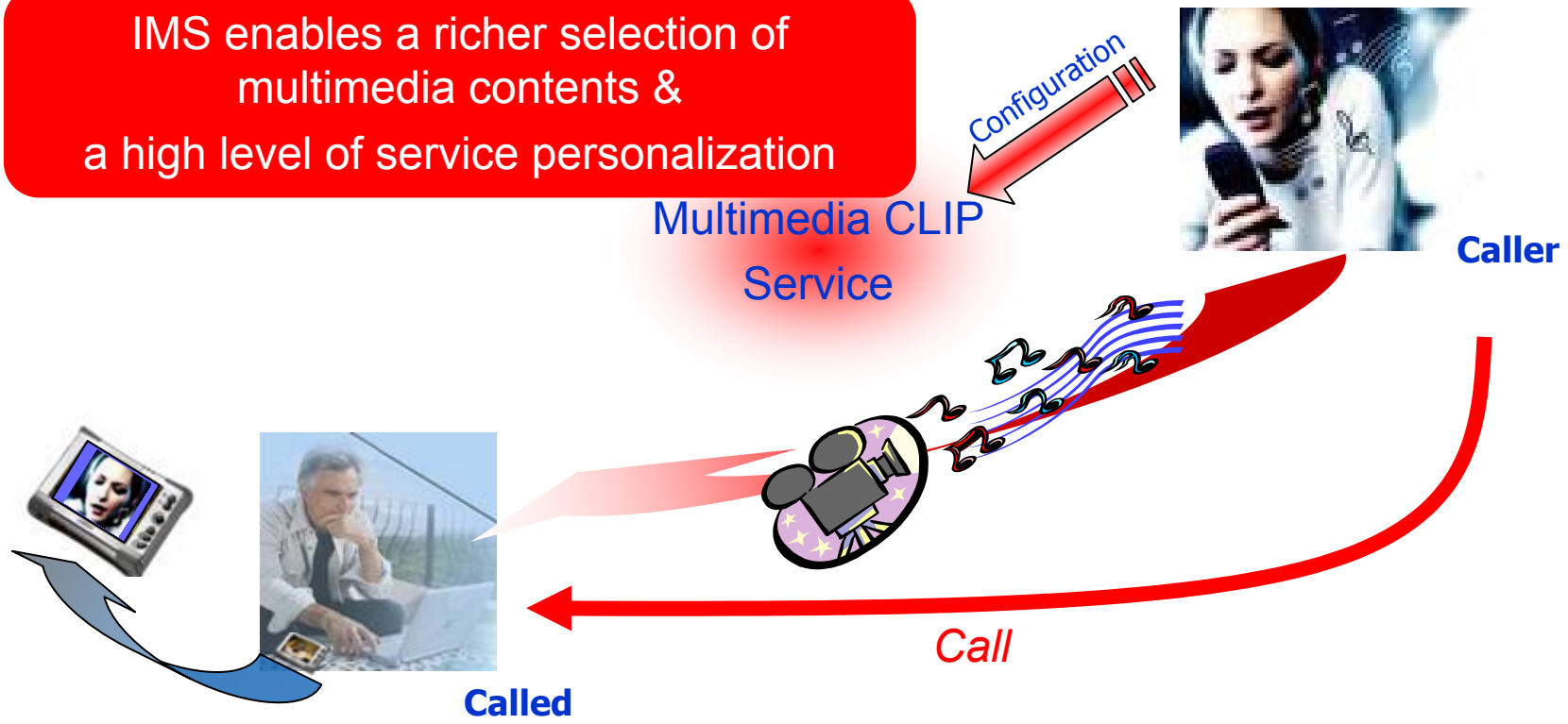
IMS network is an efficient enabler to manage QoS and access rights for this family of services, in particular when video and high throughput services are requested

In Call Accessories: Multimedia CLIP

- It will be possible to create and/or choose a variety of personalized ‘calling cards’ which will be (dis)-played on other customers’ mobile devices
- Text, Animated-Image, Audio, Video contents can be combined
- Filters criteria can be defined to determine which calling card should be displayed (based on called, time, day of the week, etc.)

IMS enables a richer selection of multimedia contents &

a high level of service personalization



Peer-to-Peer: Gaming

During the game session, John chooses to start also a chat session

IMS

Signalling

SIP

Chat data

John

Luke

Game data

IP Connection

Media components

> Luke: I am going to win!

>John: Yeah right, in your dreams!

> Luke: I am going to win!

>John: Yeah right, in your dreams!

Invite

Chat

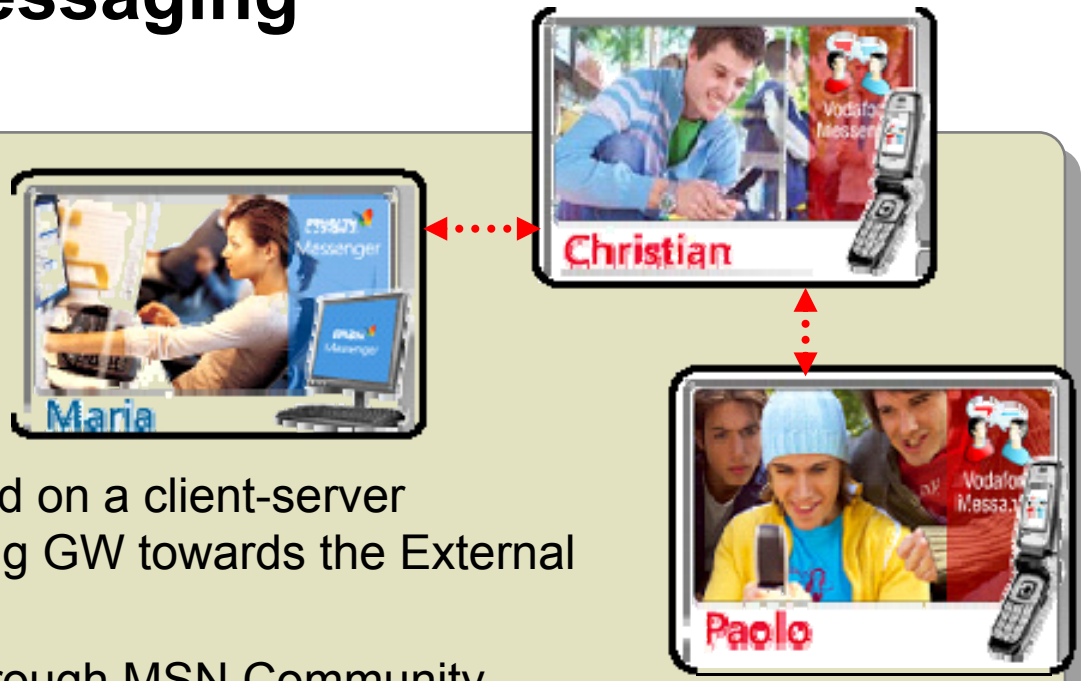
Introduction of IMS with SIP-based peer-to-peer services is an important step, replacing the current client-server paradigm.

The IMS architecture enables the easy integration between games and other services (presence, IM, etc.).

Most importantly, IMS allows the operator to properly manage the service in terms of required QoS.

Messaging: Instant Messaging

- Currently offered IM service allows to exchange messages keeping always in touch from Mobile and PC.

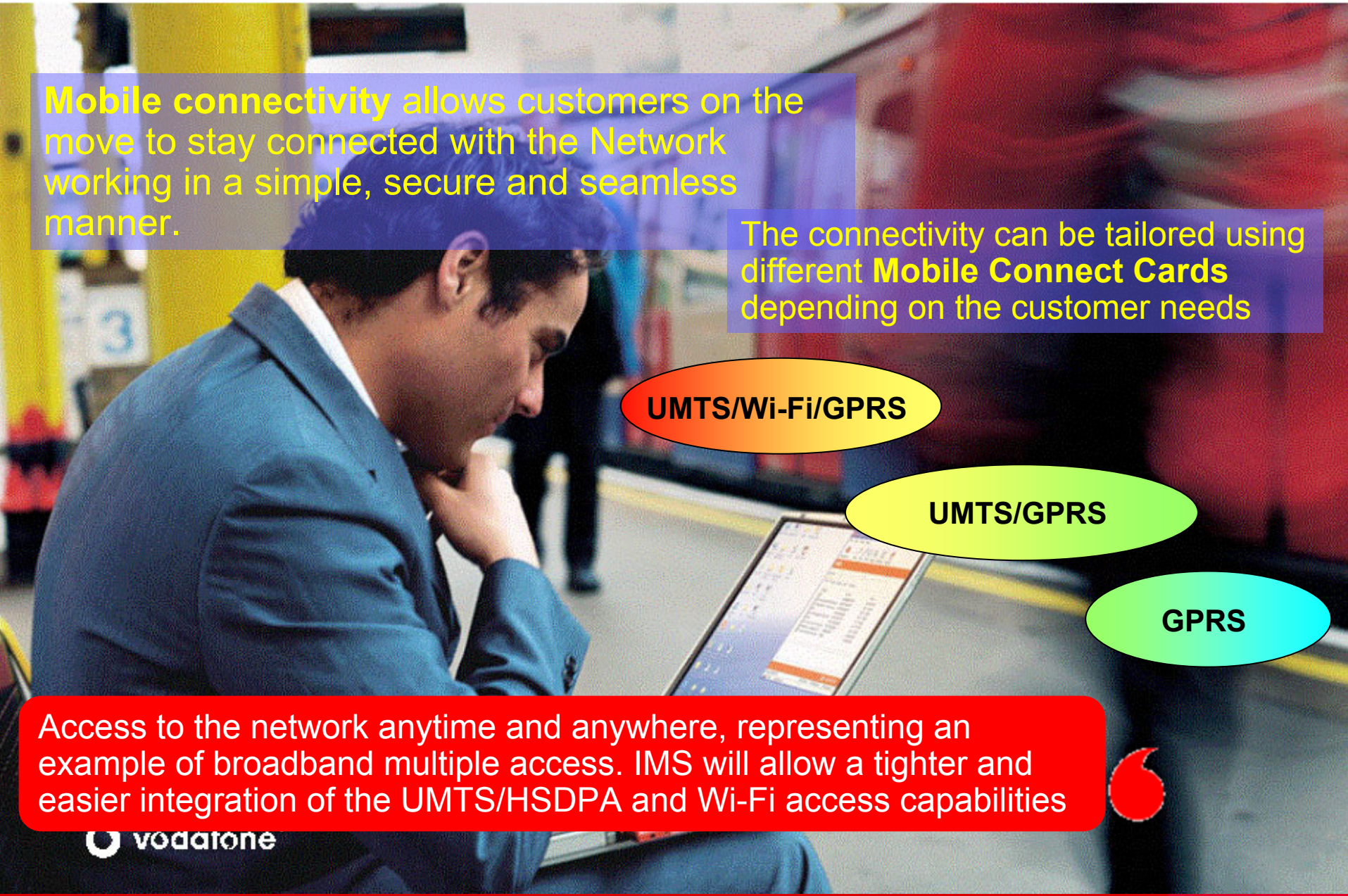


- Current IM implementation is based on a client-server paradigm and using an Interworking GW towards the External Messengers
- Messaging capability increased through MSN Community connection

IMS would allow

- a simpler network integration (e.g. the GW disappears),
- sharing of presence status information among operators and services,
- a proper service management by the operator (e.g. QoS),
- a more flexible charging model

Business on the Move: Mobile Connectivity



“Mobile TV” is not just TV to Your Phone

MobileTV streaming (today)

- **Programming**
  - Few popular channels and clips, repackaged content
  - Short, live-streamed clips and channels
  - Non-interactive
- **Terminal & Quality**
  - Low resolution/bitrate (90kbit/s, 10 fps)
  - Small screen size
  - Mono sound
- **Radio technology & Coverage**
  - 3G
  - Regional, National coverage

evolution

One to One

On-demand, premium, one:one MobileTV

- **Programming**
  - Mobile-specific premium video offerings
  - Short on-demand clips, downloaded/time-shifted content
  - Short dip-in (4-5 min/day)
  - Dedicated mobile content rights
- **Terminal & Quality**
  - Moderate resolution/bitrate (128kbit/s, 10-15 fps)
  - Moderate sound quality
  - Small screen size
- **Radio technology & Coverage**
  - 3G, HSDPA
  - Ubiquitous, international coverage (“3G follow-me”)

Loss of broadcast coverage

One to Many

Live, mass-media, one:many MobileTV

- **Programming**
  - Large selection of broad popular real-time channels
  - High interactivity
  - Longer viewing (10-20 min/day)
  - Common TV content rights
- **Terminal & Quality**
  - High resolution & bitrate (250kbit/s, 25fps)
  - Stereo sound
- **Radio technology & Coverage**
  - Broadcast (DVB-H, DMB, MBMS)
  - Regulation-dependent coverage, limited roaming

Conclusions

IMS will enable mobile operators to generate incremental revenues from new data services

The best technology to satisfy customer needs

Operators shall be able to provide enriched services leveraging on **easiness of use, ubiquity and quality of services**

New opportunities for the operator

Innovative applications benefit the whole communications ecosystem. Operators will be able to open up their networks to 3rd parties **managing access, quality of service and key customer ownership** criteria like charging

IMS enables convergence while *preserving our investments*

IMS to bridge different islands

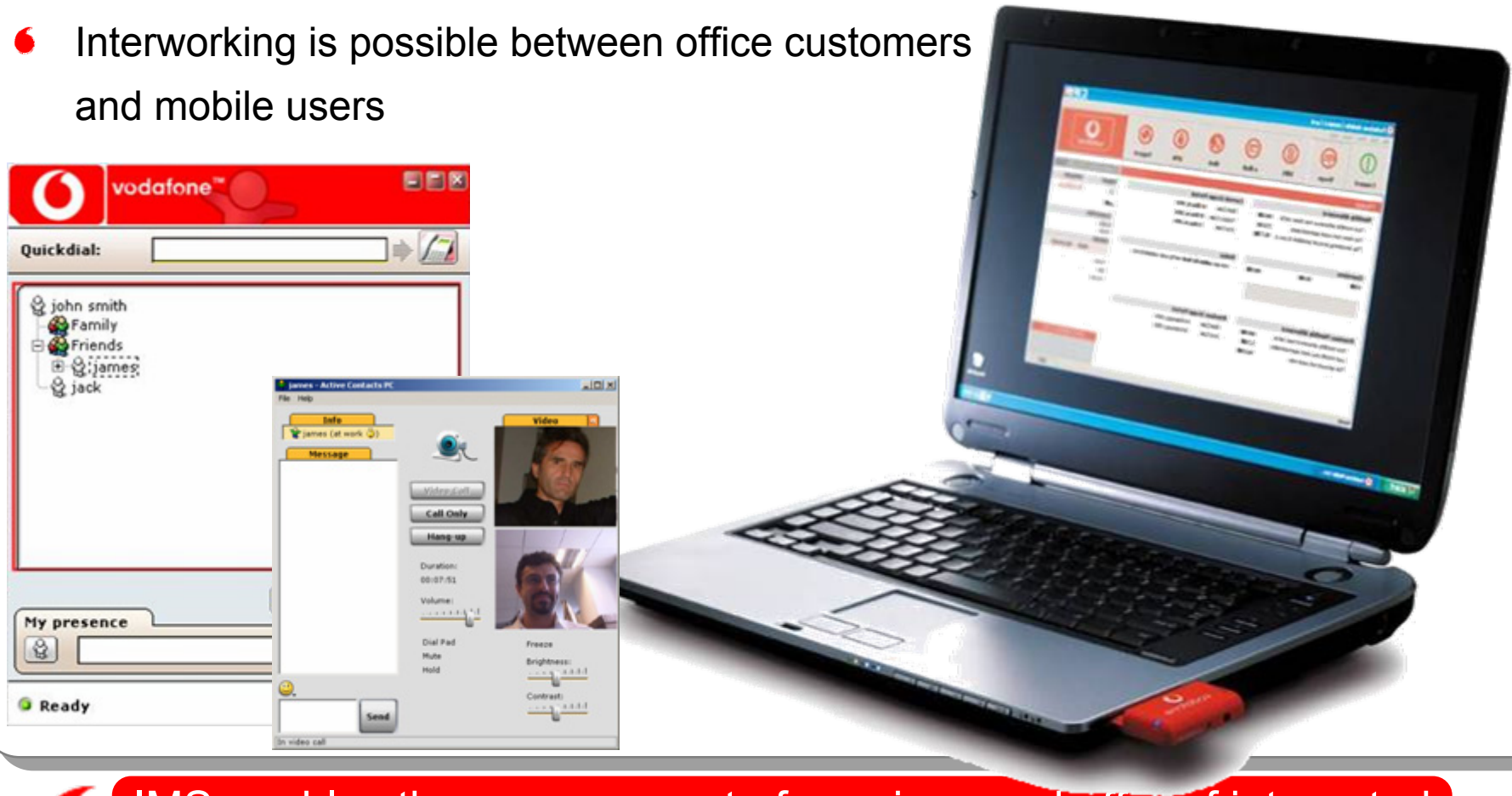
To give customers personalized, unified services and enriched coverage and quality, using the **most appropriate Access Technology**.

IMS resolves the interworking dilemma

IMS allows **existing infrastructure to be reused** to a large extent interworking with current services. Upgrades can be achieved **incrementally**

PC Access

- Capability to access the mentioned services when customers are in LAN office
- Appropriate PC client offers the same experience as mobile customers
- Interworking is possible between office customers and mobile users



IMS enables the management of sessions and offer of integrated services transparently to both clients (PC and mobile)