Requirements for an all IP network

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Why an IP Mobile Network ?

Growth of IP technology
and IP services

Increasing number
of mobile terminals
(voice, SMS,…)

Challenge = fixed-mobile-internet convergence

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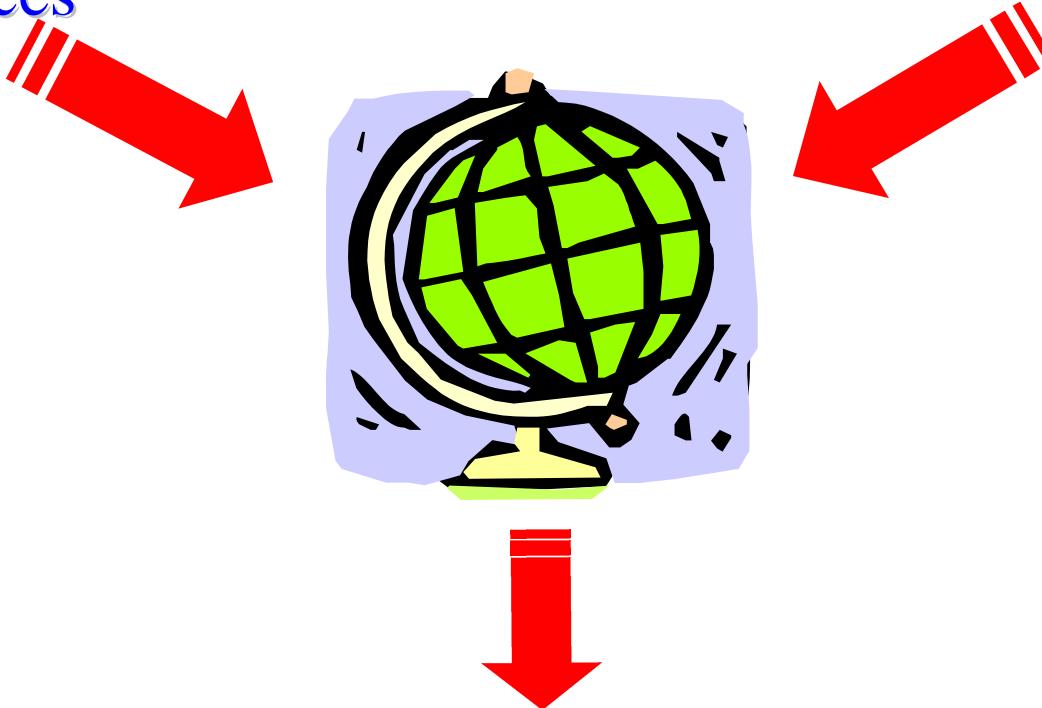
IP opportunity

- **Price**
  - decrease of transport price
  - lower service development price
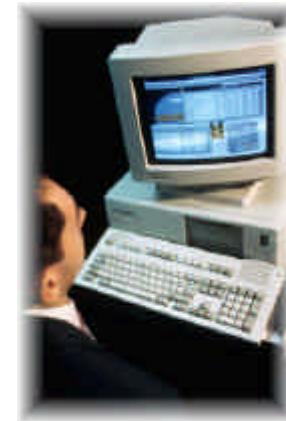
- **Services**
  - new IP multimedia services
  - fixed-mobile service convergence
  - commonality between public and private networks
  - quicker service creation

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Requirements (1/2)

- **Migration from existing mobile networks**
    - re-use of R99 equipements, particularly UTRAN

- **Co-existence of 2G networks, R99 and all IP network**
    - Interoperability between all these networks :
        - ➢ Roaming
        - ➢ Handover
    - Support of R99 terminals in all IP network

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Requirements (2/2)

- **Continuity of existing services (SS, …)**

- **New multimedia services**

- **Same or better QoS than the one experimented in existing networks**

- **Same or better security than in Release 99**

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Architecture principles (1/2)

- **Evolution of the circuit domain with separation of transport and control**

- **Addition of multimedia fonctionnality over R99 paquet domain**

- **IP transport of data and signalling**

- **MAP as the mobility protocol inside mobile network**

- **Mobile IP for inter-networks mobility but not inside mobile networks**

- **Evolution of R99 data bases (e.g. R99 HLR)**

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Architecture principles (2/2)

● **Independance of services and technology**

 – VHE/OSA : anywhere, anytime, with any terminal

 – API for service creation : flexibility in service introduction

 – The same API for mobile and fixed network

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Architecture overview

UMTS R99

RNC

SGSN

GGSN

IP transport

GPRS

BSC

SGSN

GGSN

UMTS R00

SCP

Services

HLR

CSCF

IP

GSM-NGN

Transit Server

MSC

MG

RNC

SGSN

GGSN

MGCF

PSTN

MSC Server

GMSC Server

MG

MG

MSC

BSC

GSM

MSC

RNC

UMTS R99

IP, ATM or TDM transport

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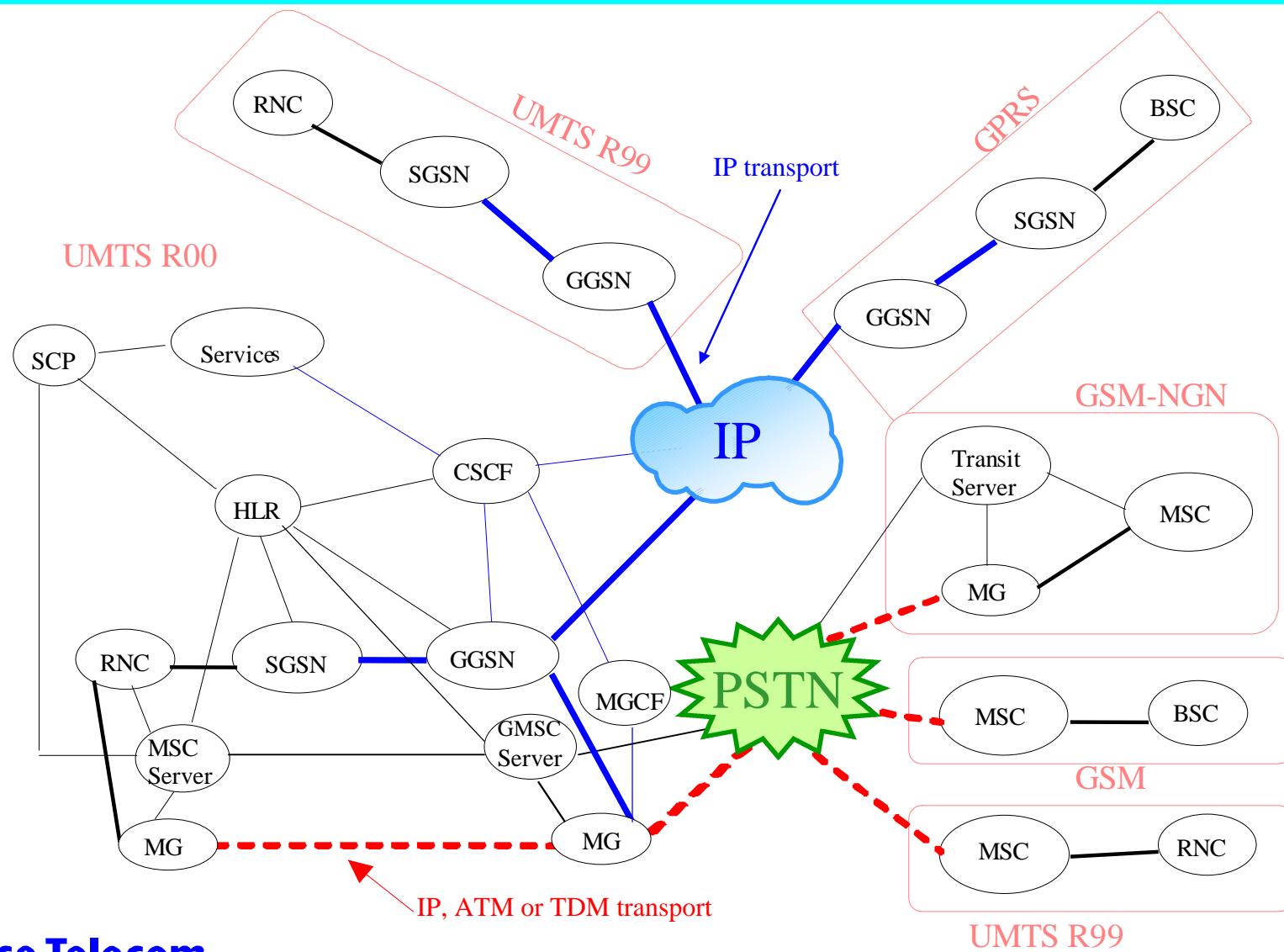
Problems to be solved

- **QoS**

- **Security**

- **Charging and billing**

- **efficient use of radio spectrum**

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Conclusion

- **Soft migration from existing networks**

- **IP services**

- **Possibility of deploying a common IP backbone**
  - for transport of data and signalling
  - for both CS and PS services

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