



Expectation to All IP NW and its evolution

7-9 February, 2000

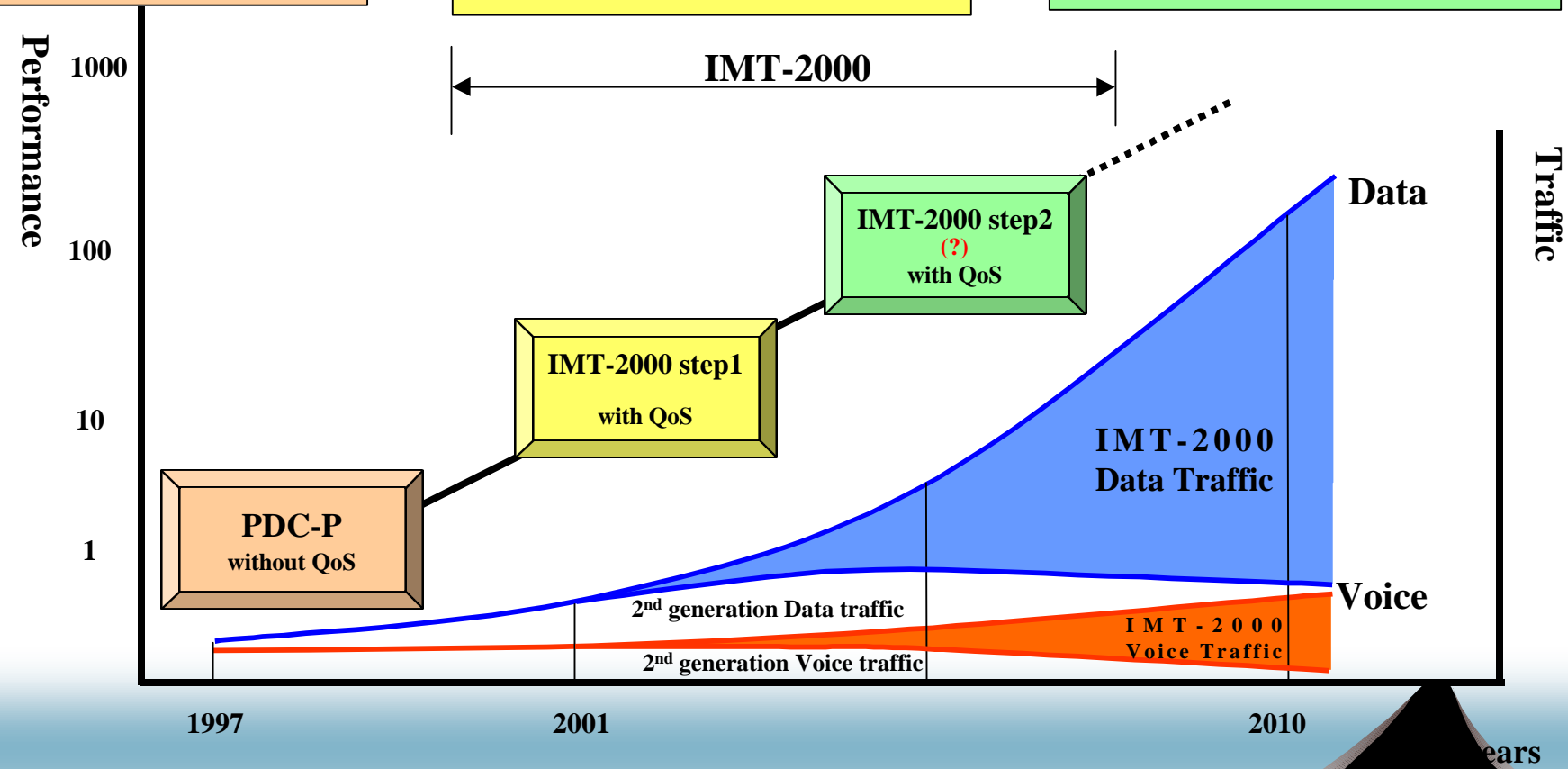
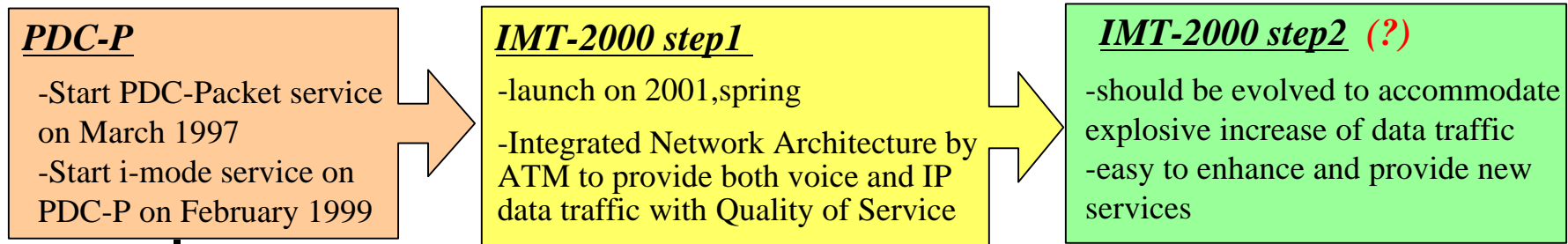
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3GPP all-IP workshop (Nice, 7-9/2/2000)

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Evolution scenario of NTT DoCoMo

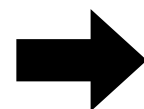


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DoCoMo network features

	PDC/PDC-P	IMT-2000 step1	IMT-2000 step2 (?)
Speed	up to 28.8kbit/s	up to 2Mbit/s	
QoS	none(best effort)	support	
Service	<ul style="list-style-type: none"> • Connect to IP NW • “i-mode”service 		enrich
Standard	proprietary	Based on R99	Based on evolved R99



A point of service view,
it is important to enrich services rising above R99.

Requirements for next evolution

Service

Enrich and enlarge service contents.

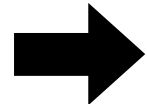
- develop CN service entity easily
- harmonize with IP service provided by ISP

Implementation

All IP is one of alternatives.

(We expect All IP is suitable for above service requirements.)

How to realize?



**We should respect R99 specification.
R00 should be evolution from R99.**

Objective and issues

Service

(a) Service flexibility, extension, Cost reduction

- Easy to develop service applications
- Infrastructure cost reduction by multi-vendor

Issues

- Service control, software structure, Open API
- Separation service from transportation

(b) Harmonization mobile and IP service

- new IP services based on mobile information
(location, billing, authentication etc.)

Issues

- Core Network information transforming server
- Interface between CN and ISP servers

Applying All-IP

(c) IP extension for mobile communication

- handling huge IP data traffic
(avoid traffic concentration and realize optimum routing)
- support QoS

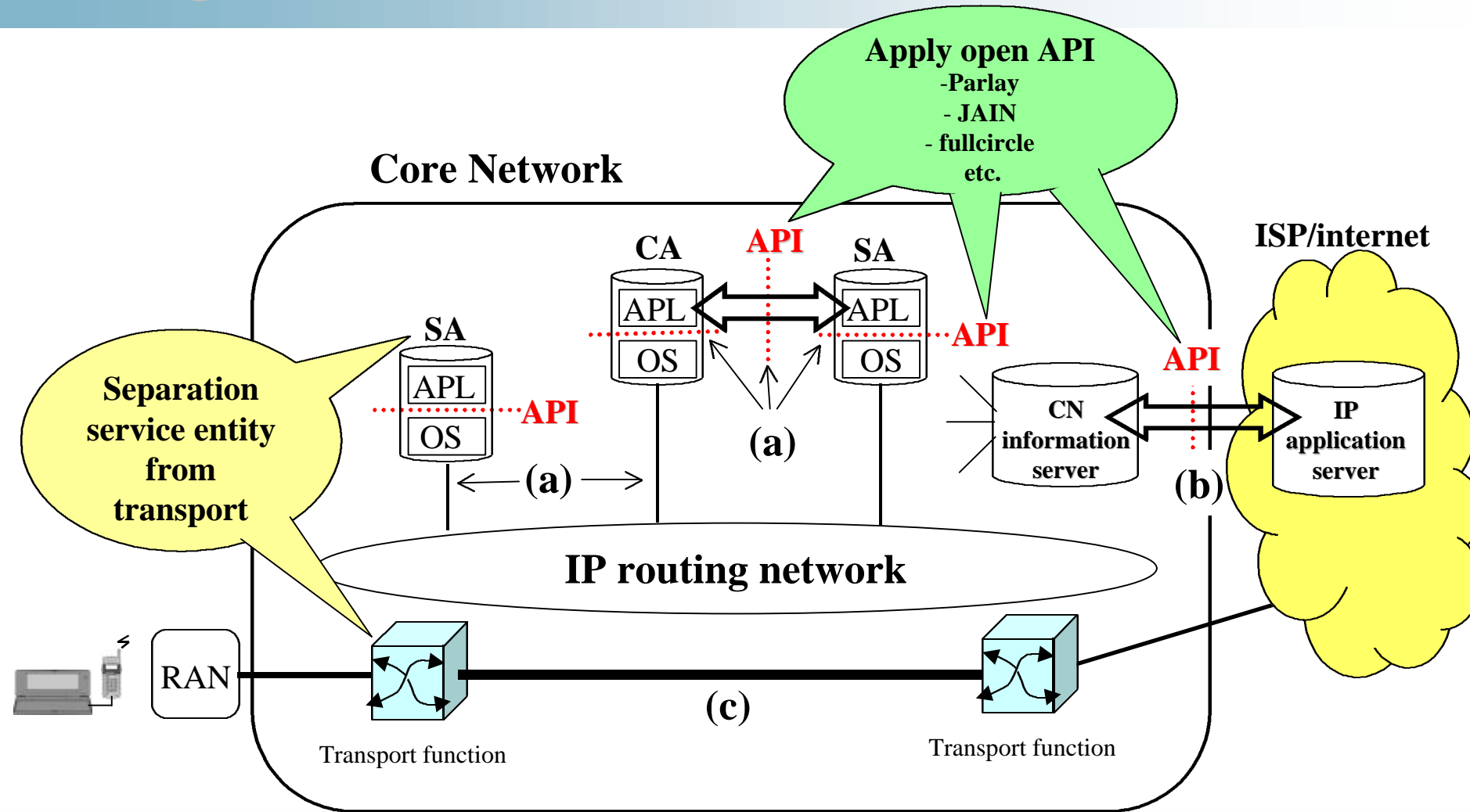
Issues

- Scalable IP network performance(delay, quality etc.)
- IP Mobility, IP QoS

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Next generation network model

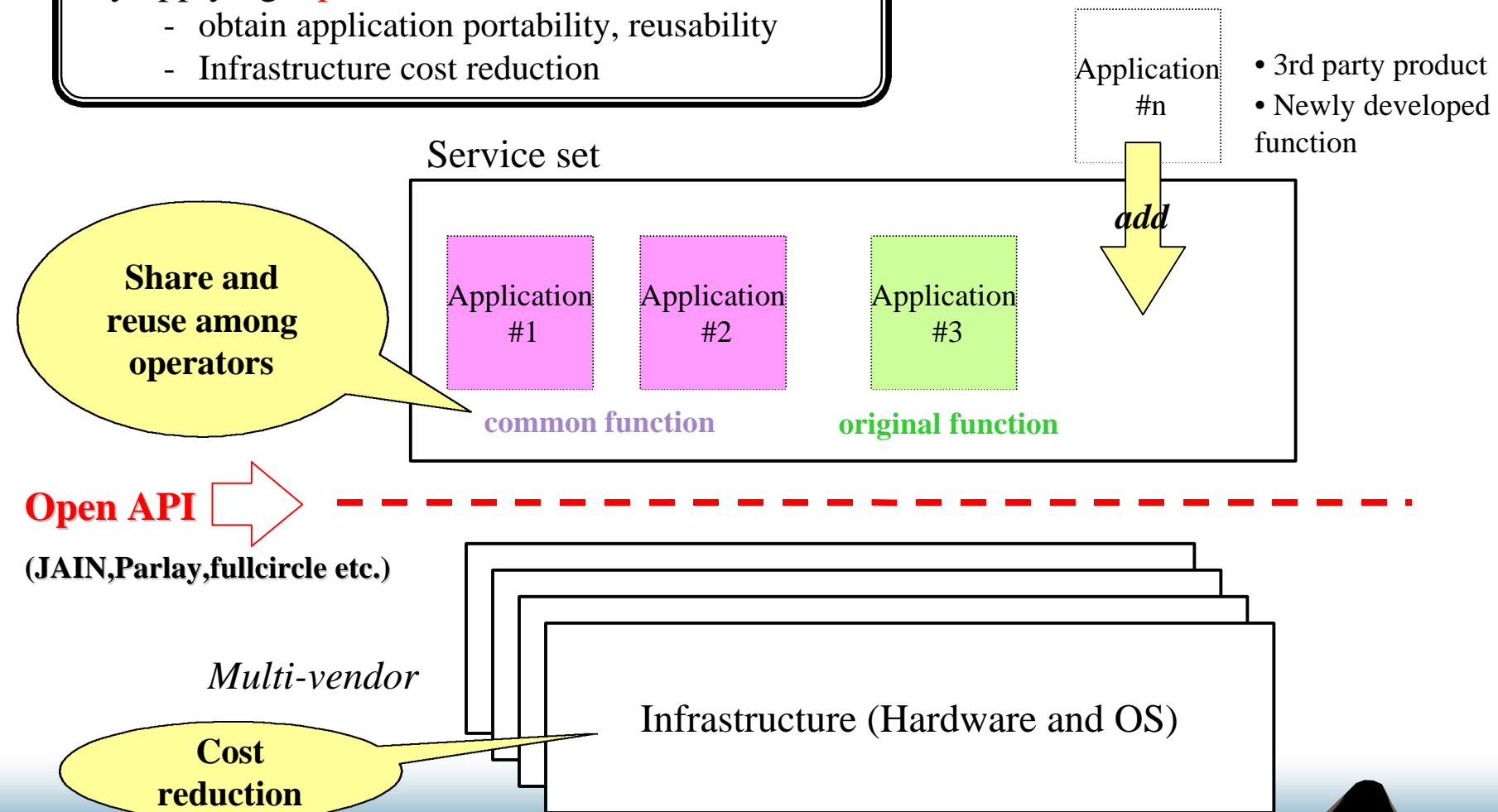


CA: Call Agent
SA: Service Agent

(a) Service flexibility, extension, cost reduction

By applying **Open API**

- obtain application portability, reusability
- Infrastructure cost reduction

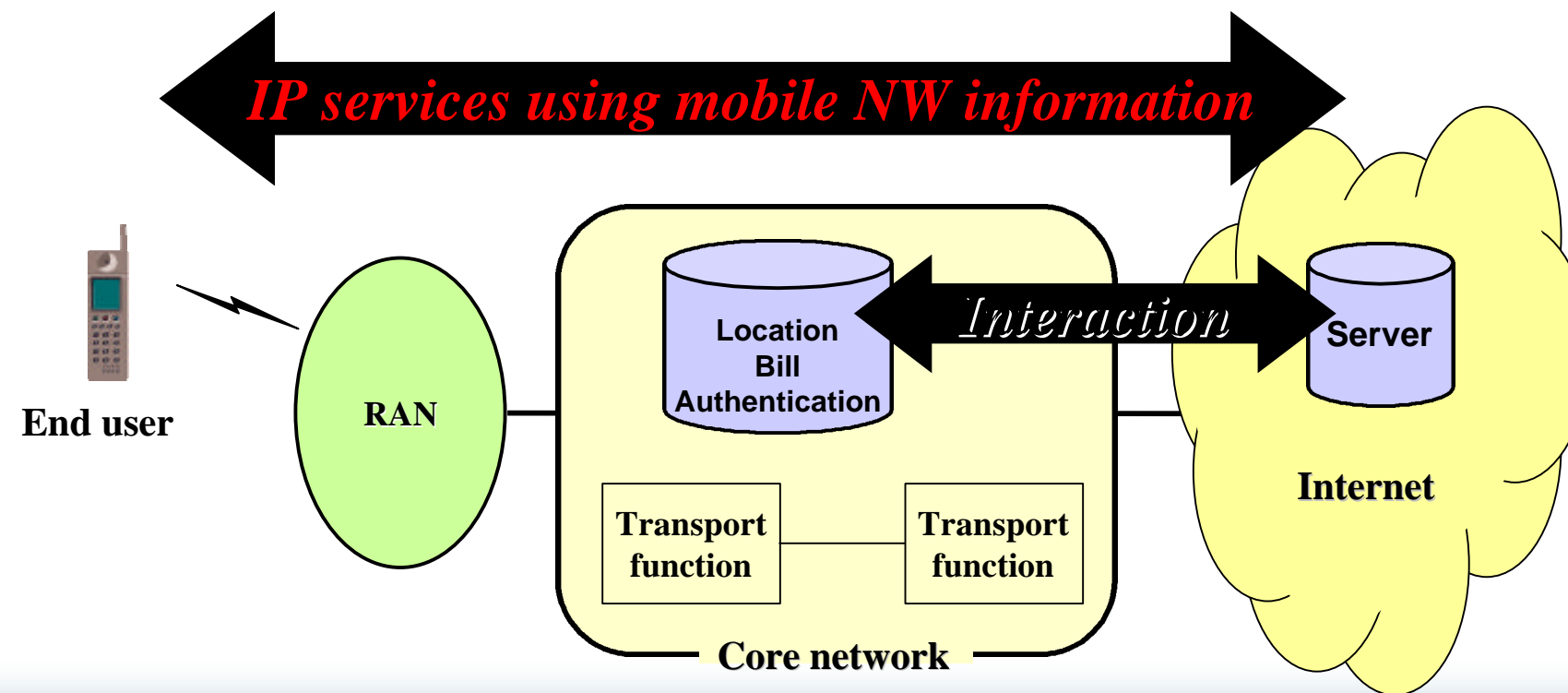


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(b) Harmonization mobile and IP service

Provide harmonized new IP services
between mobile NW and IP application server



(c) IP extension for mobile communication

Handle huge IP/data traffic and support QoS

- **Caused by tunneling, traffic concentration to gate node and detour routing**

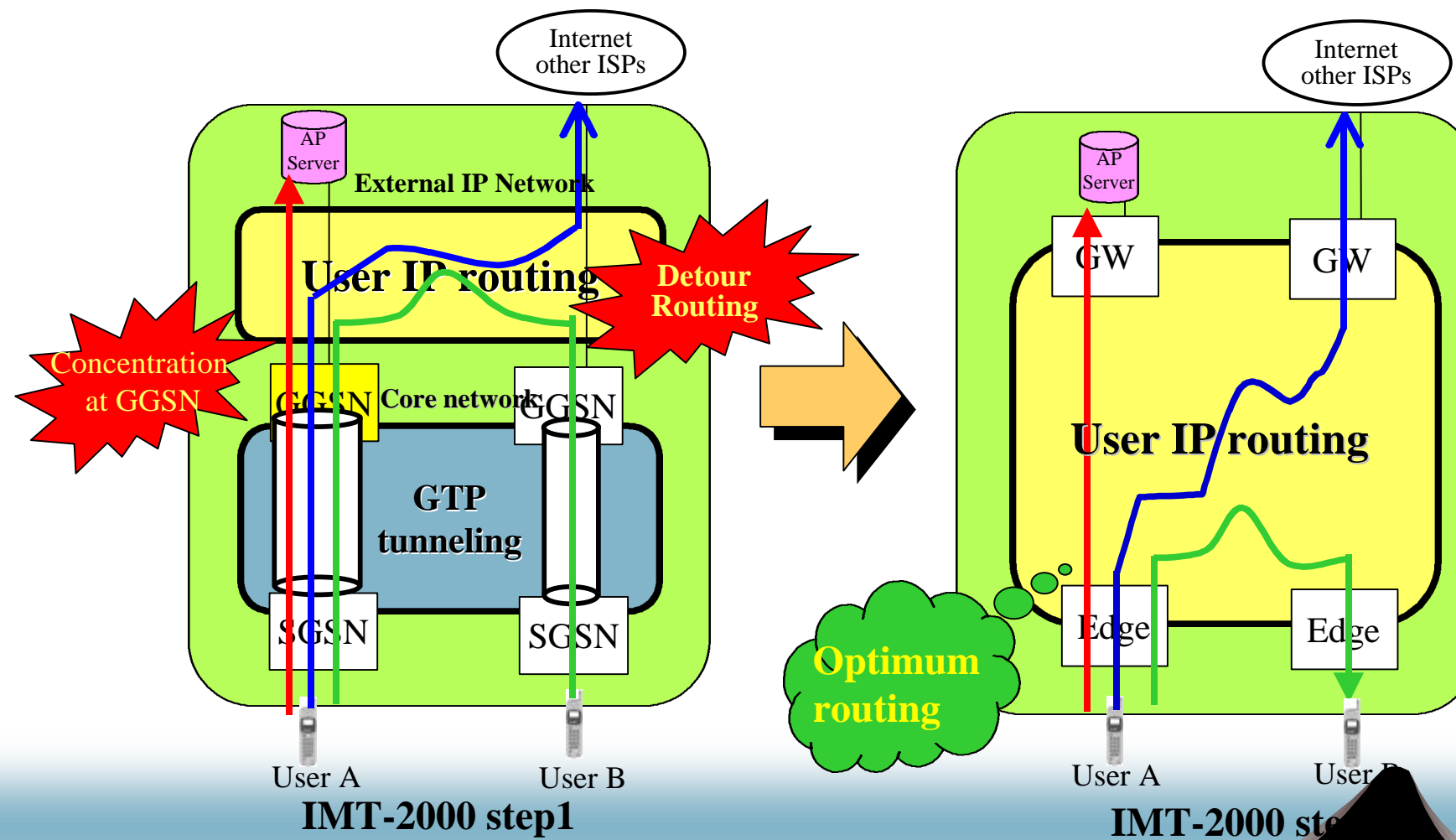
IP mobility

- **Supporting quality of services is required**

IP QoS

Evolution Point

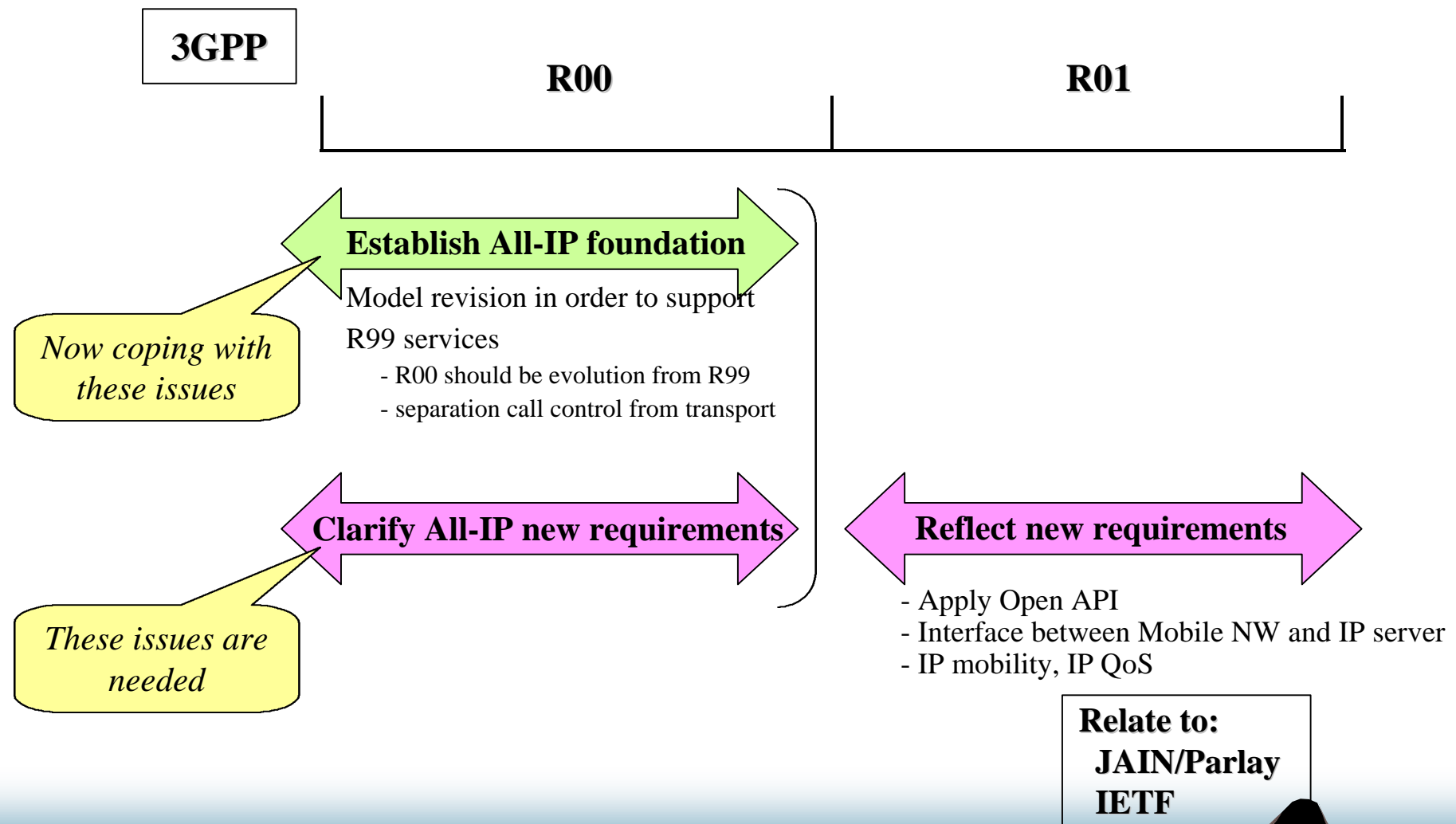
- Core network should introduce IP Mobility instead of tunneling



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Schedule



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Conclusion

Proposal

- **In All IP NW we should have some key issues about services rise above R99 service.**
- **In R00, we should establish All IP foundation first, and clarify All IP evolving function.**
- **In R01, we would standardize All IP evolving issues.**
 - **applying Open API**
 - **how to interact between Mobile NW and IP server**
 - **IP mobility, IP QoS**

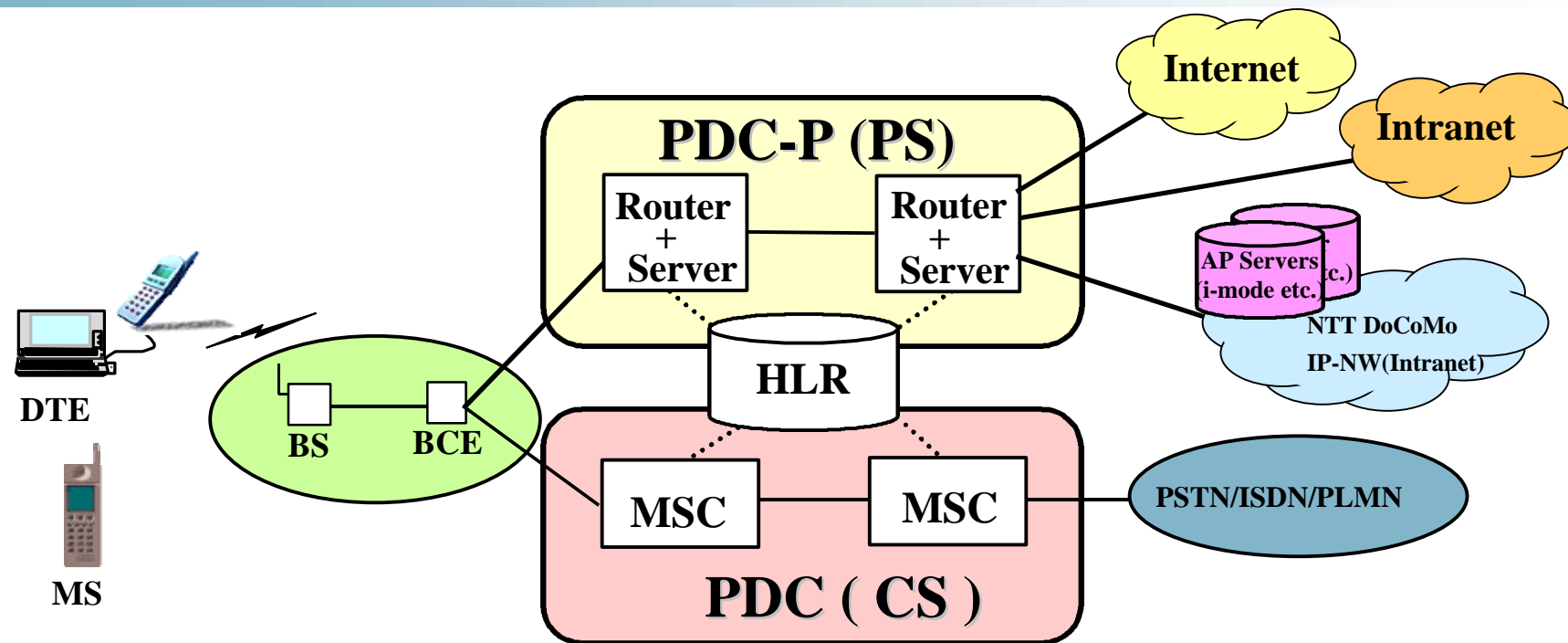
DoCoMo's requirements for next NW evolution
would be realized in R01

Appendix

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PDC and PDC-P network architecture

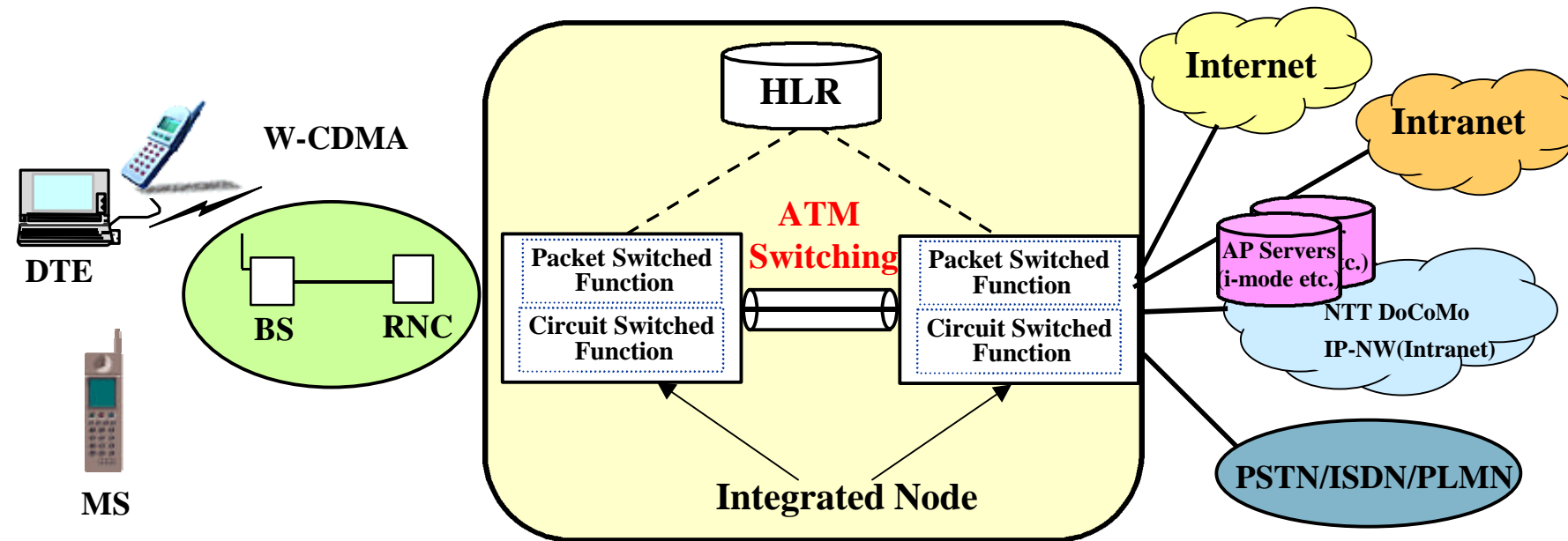


BCE:Base control equipment
 BS :Base station
 DTE:Data terminal equipment
 MS :Mobile station
 MSC:Mobile switching center
 HLR:Home location registration
 PDL:Personal digital Cellular
 PDC-P:Personal digital Cellular-packet
 PSTN:Public switched telephone network
 ISDN:Integrated services digital network
 PLMN:Public land mobile network

<Technical Points>

- The Packet-switching network is added on the circuit-switching network
- only best effort service
- The fault tolerant computer is used as server

IMT-2000 system step1 network architecture



RNC:Radio network control
 BS :Base station
 DTE:Data terminal equipment
 MS :Mobile station
 HLR:Home location registration
 PSTN:Public switched telephone network
 ISDN:Integrated services digital network
 PLMN:Public land mobile network

<Technical Points>

- Packet switching network and Circuit Switching network are integrated into one ATM switching network.
- Support QoS with ATM-SVC
- Integrated network enable to reduce the deployment cost and load of operation and maintenance