Colloque IPv6

Caen, 13 Juin 2013

Stratégie de déploiement d'IPv6 dans les réseaux mobiles

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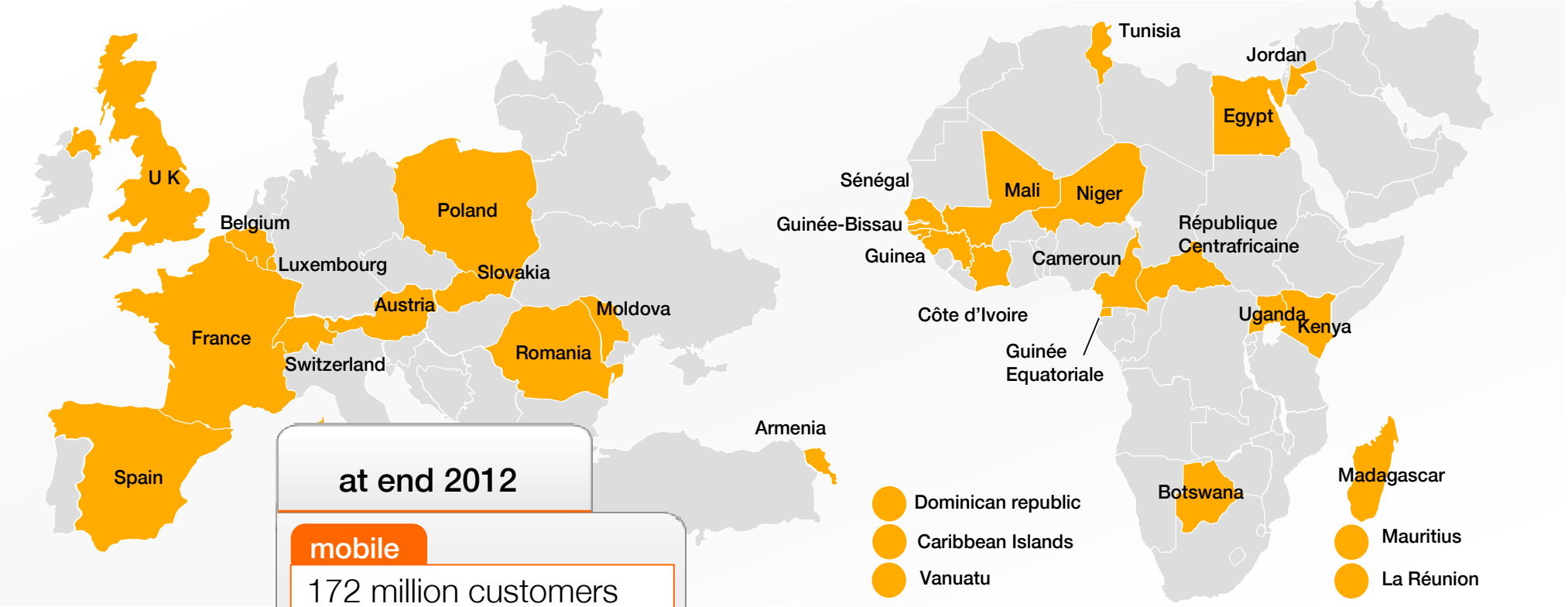
Orange

Agenda

- Mobile services: Orange group in few figures
- IPv6 introduction: the context
- IPv6 introduction strategy
- Hurdles and drivers
- Synthesis and next steps

Orange Mobile footprint



at end 2012

mobile
172 million customers

Employees
170 000 employees

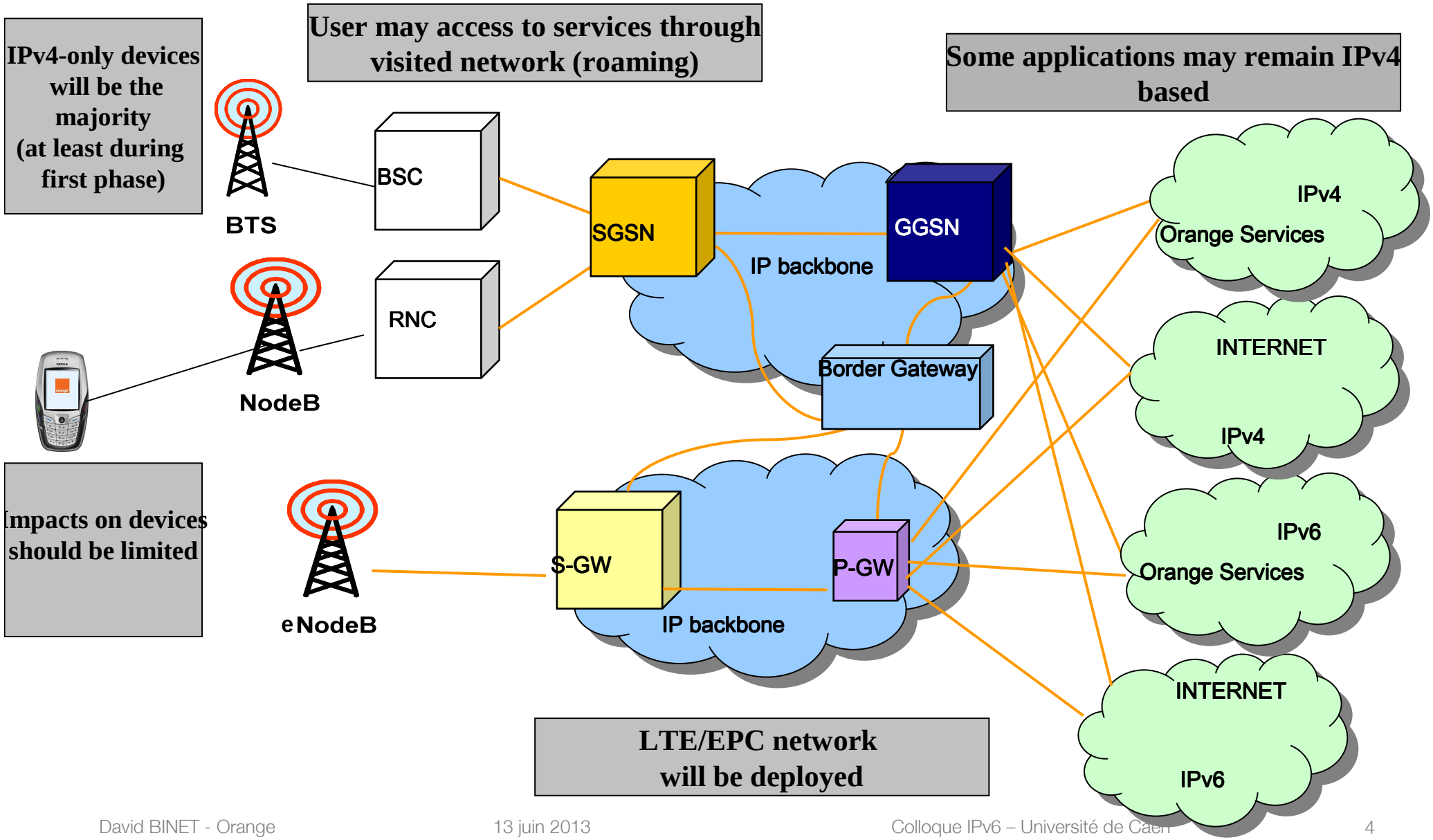
Fixed broadband
15 million customers

consolidated revenues
€ 43.5 billion

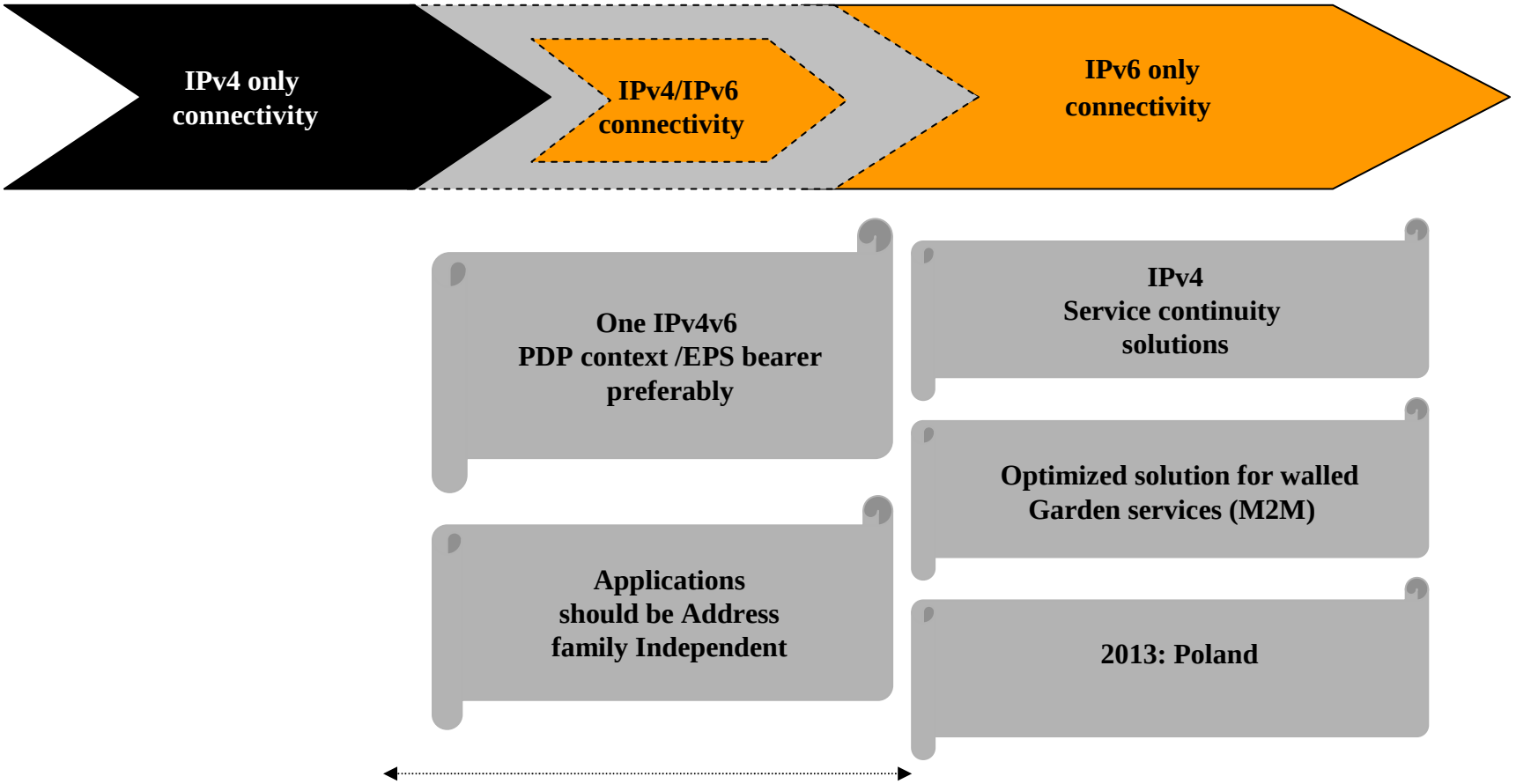
Some diversity inside Orange Group…

- Various situations regarding IPv4 mobile architectures in the group
  - Most of the affiliates assign IPv4 private addresses to UEs (User Equipment)
    - This pool is limited
    - Known issues with NAT44
      - Performance, service availability, incoming communications, ALG, etc…
    - More complex design for accounting & regulatory functions
      - Lawful Interception, UE traffic identification
  - Some affiliates assign public IPv4 addresses
    - But public IPv4 address exhaustion is happening
  - Some affiliates assign both public and private IPv4 addresses

…and common requirements

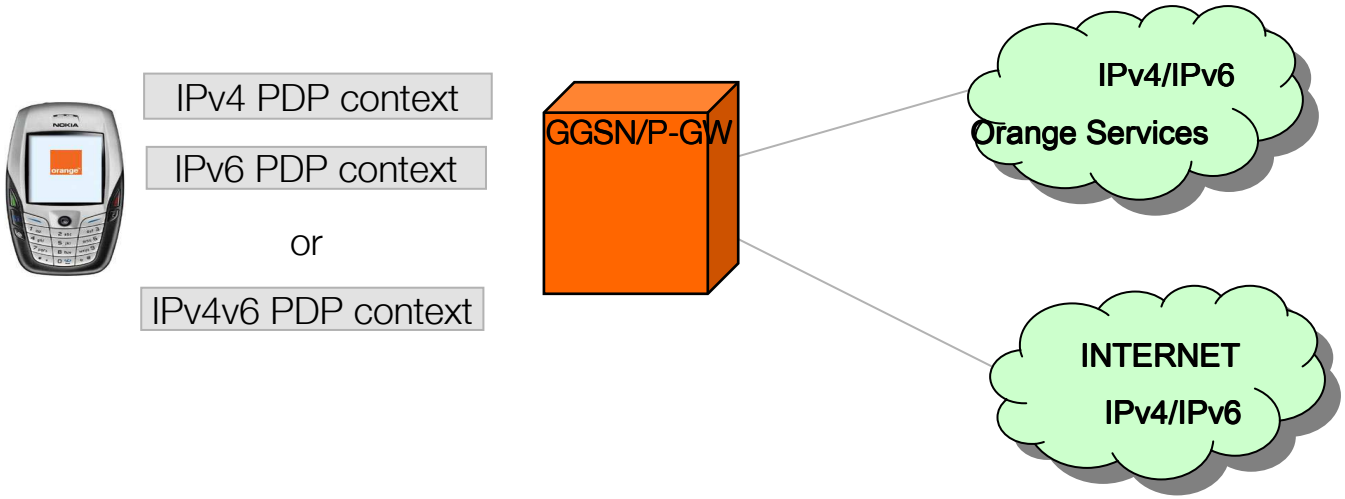


IPv6 introduction strategy



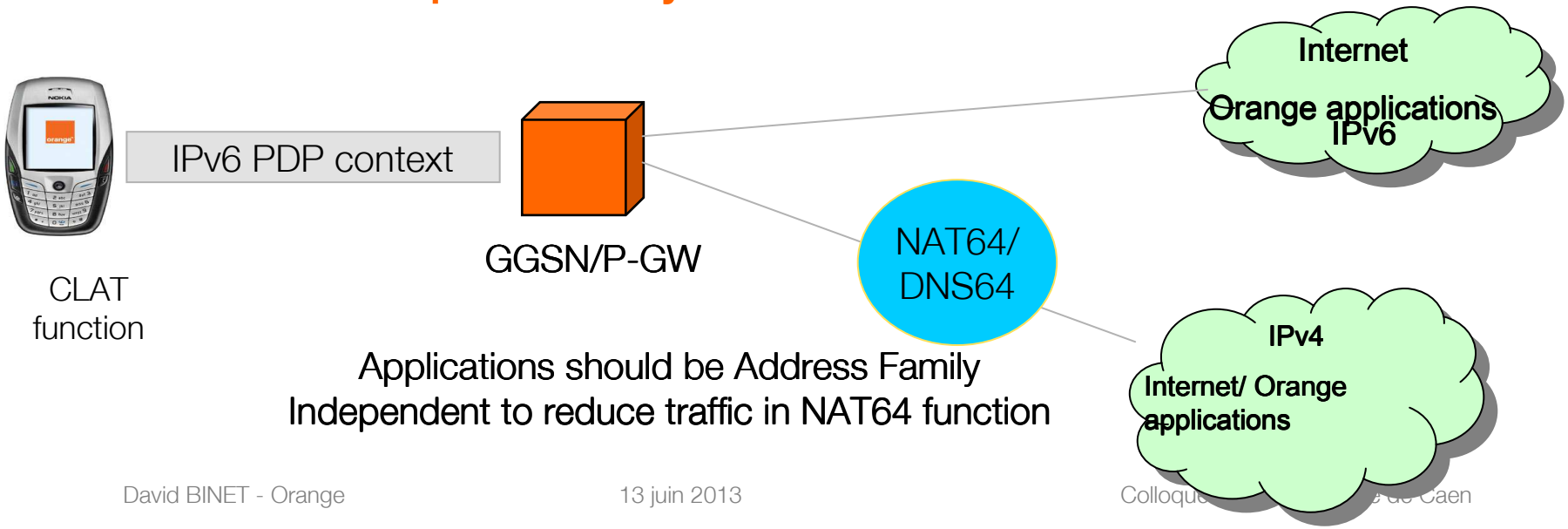
IPv6 introduction strategy (2)

❖ First (optional) step: Dual Stack (2 options)



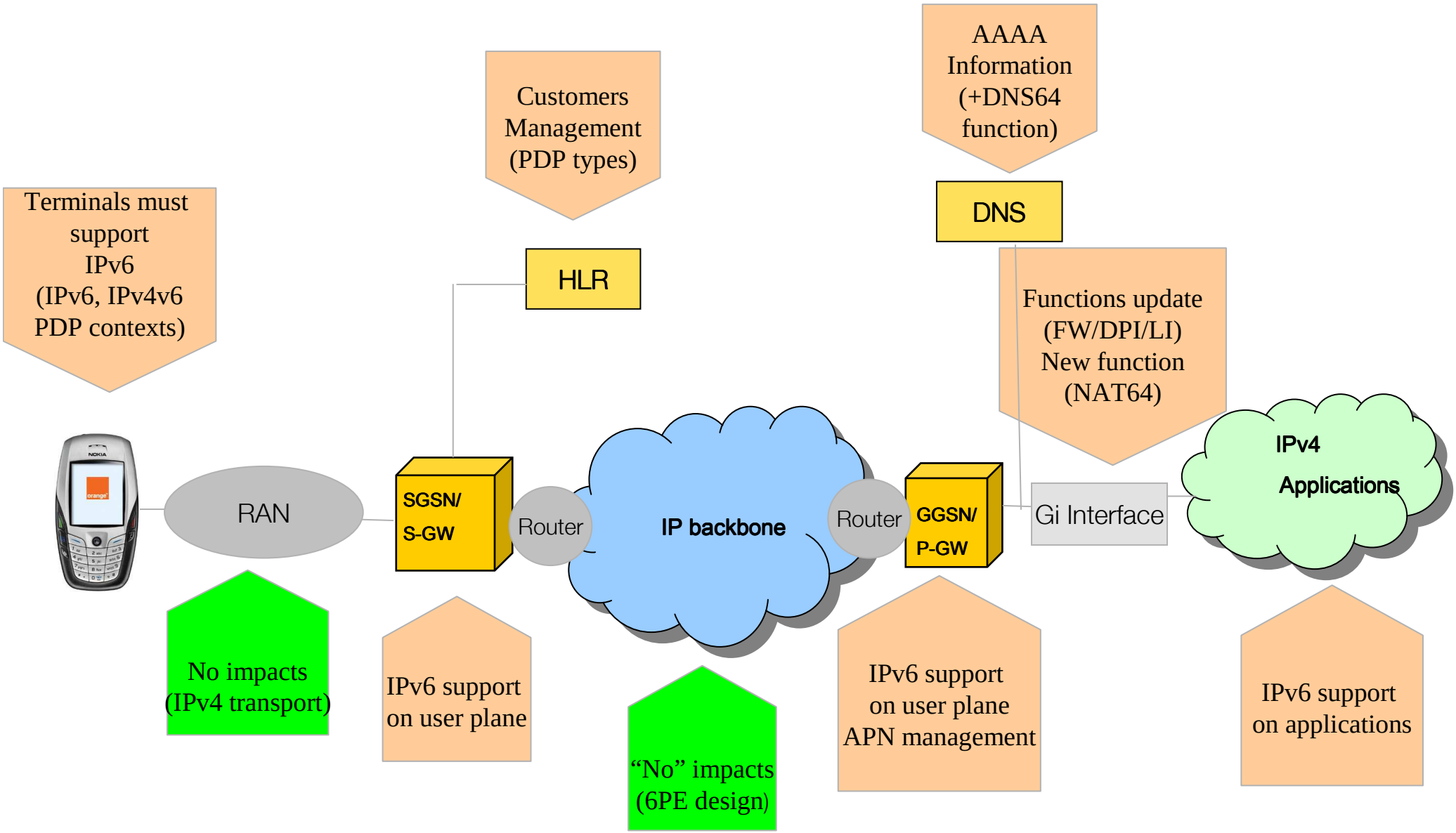
One PDP context for IPv4 and IPv6
Is the preferred option But only Available from Release 8 (LTE) and Release 9 (GPRS)

❖ Second step: IPv6-only



Applications should be Address Family Independent to reduce traffic in NAT64 function

IPv6 introduction impacts on mobile architecture



Main hurdles - Devices

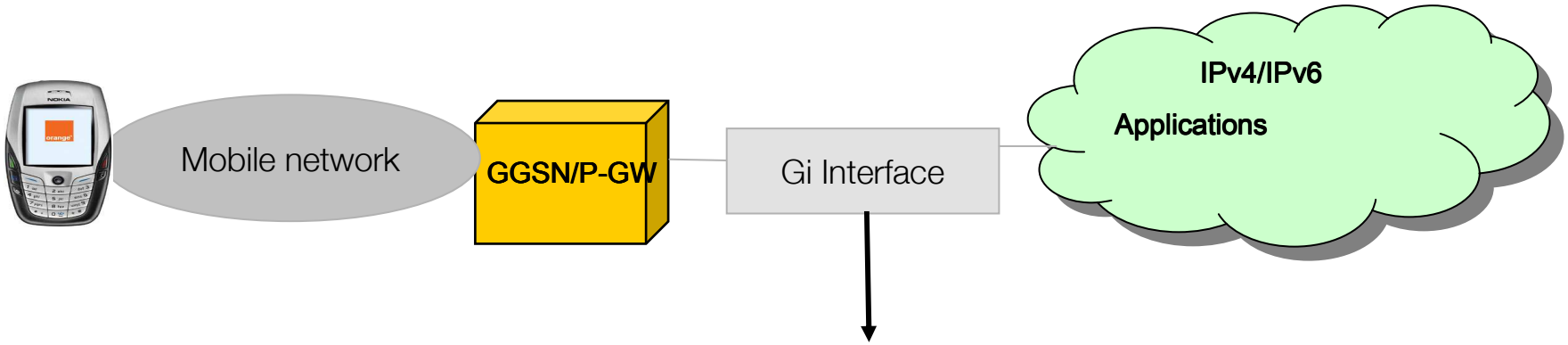
- Some diversity in terminals portfolio

- With new chipsets integration more and more devices are IPv6 compliant considering basic features
- More functions are required
  - CLAT function for IPv4 service continuity
  - Prefix delegation capabilities
  - /64 prefix sharing solution
  - PCP function
  - …

Main hurdles - Devices
draft-ietf-v6ops-mobile-device-profile-03

- This document is for:
  - Providers to help in preparing documents detailing their device requirements
  - Vendors to be aware of a minimal set of requirements to allow for IPv6 connectivity and IPv4 service continuity (using an IPv6-only connectivity)
- Cross SDO (standards Developing Organization) document
- Multi operators initiative
- Document structure
  - basic Connectivity requirements
    - 3GPP interface
    - WLAN interface (IEEE 802.11)
  - Advanced requirements
  - Mobile Devices with LAN Capabilities
  - APIs & Applications

Hurdles: (s)Gi interface impacts



- **Not exactly an interface but a network**

- **Currently like some pearl necklace in our architectures**

- **Various functions are provided: IP translation, Firewalling, DPI, billing, caching, routing….**

- **These functions must be « IPv6 compliant » (at least to provide the same level of service than for IPv4 service)**

- **New functions (new devices) to be added for IPv4 service continuity (NAT64 when IPv6-only connectivity is provided)**

Hurdles: Roaming

- Roaming agreements to be updated for IPv4v6/IPv6 PDP contexts support
- IPv4 fallback must be ensured if IPv6 connectivity cannot be provided (visited network does not support IPv6)
  - More crucial in IPv6-only scenario
- HLR/HSS must be updated to provide IPv4 / IPv6 / IPv4vv6 PDP contexts
  - Identification of visited networks in connection request may be required to enable IPv6-only connectivity
- White paper for IPv6 transition edited by GSMA
- Roaming tests not easy to lead (hundreds of roaming situations !)
- Behavior of some « old » SGSN may not be compliant with new specifications (none connectivity for IPv6 PDP context)

In a nutshell…IPv6 is here

- Core network devices are mature regarding IPv6 features
- Devices are more and more IPv6 friendly
  - More time is required for advanced features
- Main applications (Google, Yahoo, Youtube…) are IPv6 compliant
- Some Orange affiliates have deployed it and some other operators also
- Whatever the strategy retained for IPv6 introduction (dual stack or IPv6-only), IPv4 and IPv6 protocols will have to be managed for some time
  - Legacy IPv4 devices and applications will be here for some time

Still some efforts to lead..

- To avoid any roaming issues
- To get all required features in devices
- To be sure middleboxes provide the same level of service than for IPv4
- To consider IPv6 and IPv4 for new architectures
  - FMC (Fixed Mobile Convergence), Wi-Fi offload..
- But it is also the case for IPv4 !

QUESTIONS ?

.....THANK YOU