NORTEL

Business made simple

UMB Network Evolution

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October 3, 2007,

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Business made simple

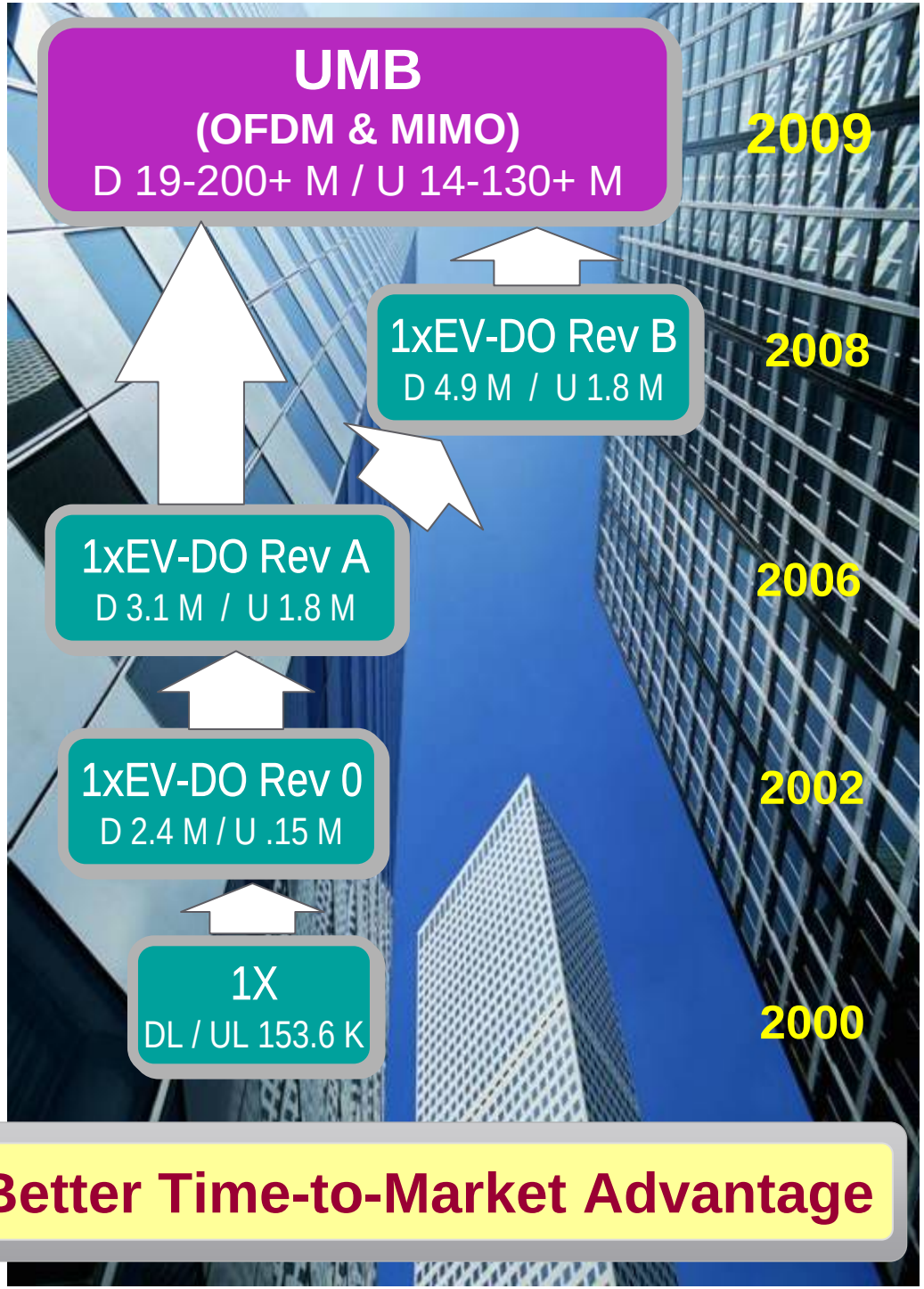
What is UMB?

The next evolution to the
Ultra Mobile Broadband
beyond 1xEV-DO

Increasing Spectral Efficiency

Higher Peak Rates & Sector Throughput

Enhancing User experience for Low Latency Real-Time Applications



UMB: Superior Features & Better Time-to-Market Advantage

UMB Value Proposition

Faster, better performance with lower cost

Higher rate & Faster Response

- Peak of more than 260 Mbps DL, and 70 Mbps UL*
- Average of 16.8 msec end-to-end network latency.**

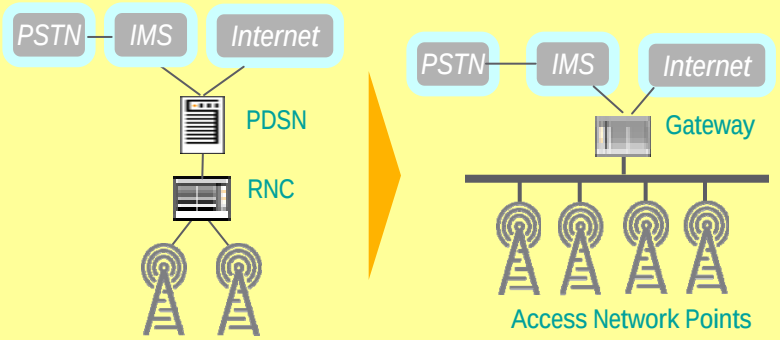
* Based on 2x20MHz BW, FDD, MIMO 4x4 DL, 1x2 UL
** 32 byte packet size, round-trip delay

Highly Scaleable

- 1.25, 5, 10, 15 or 20 MHz
- Support of MIMO and SDMA* for greater capacity and coverage

* SDMA = Space Division Multiple Access

Flat All IP architecture

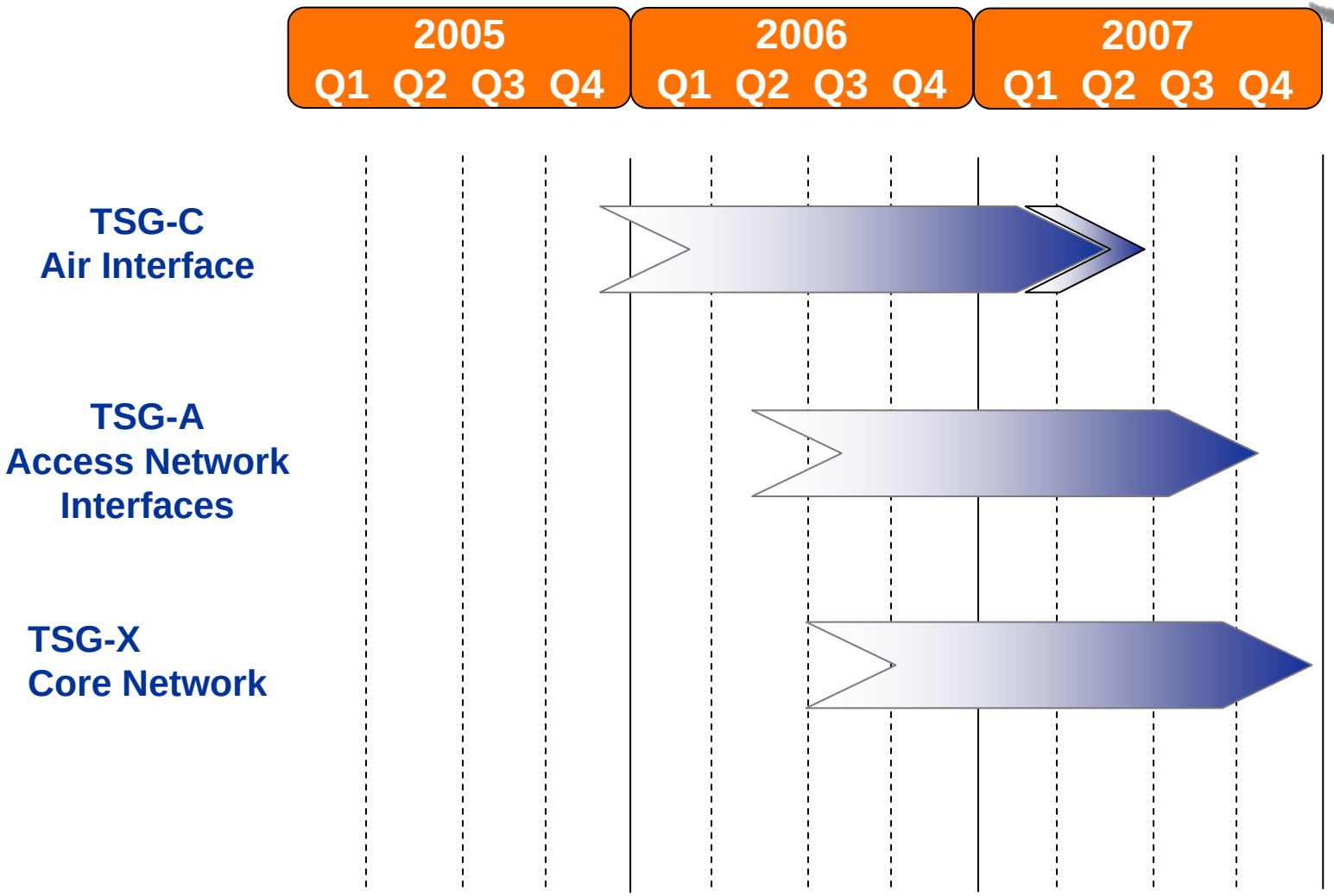


Lower cost

- More spectral efficient compared to all 3G techs.
- Investment protection with mobility support with the legacy 1xEV-DO network.

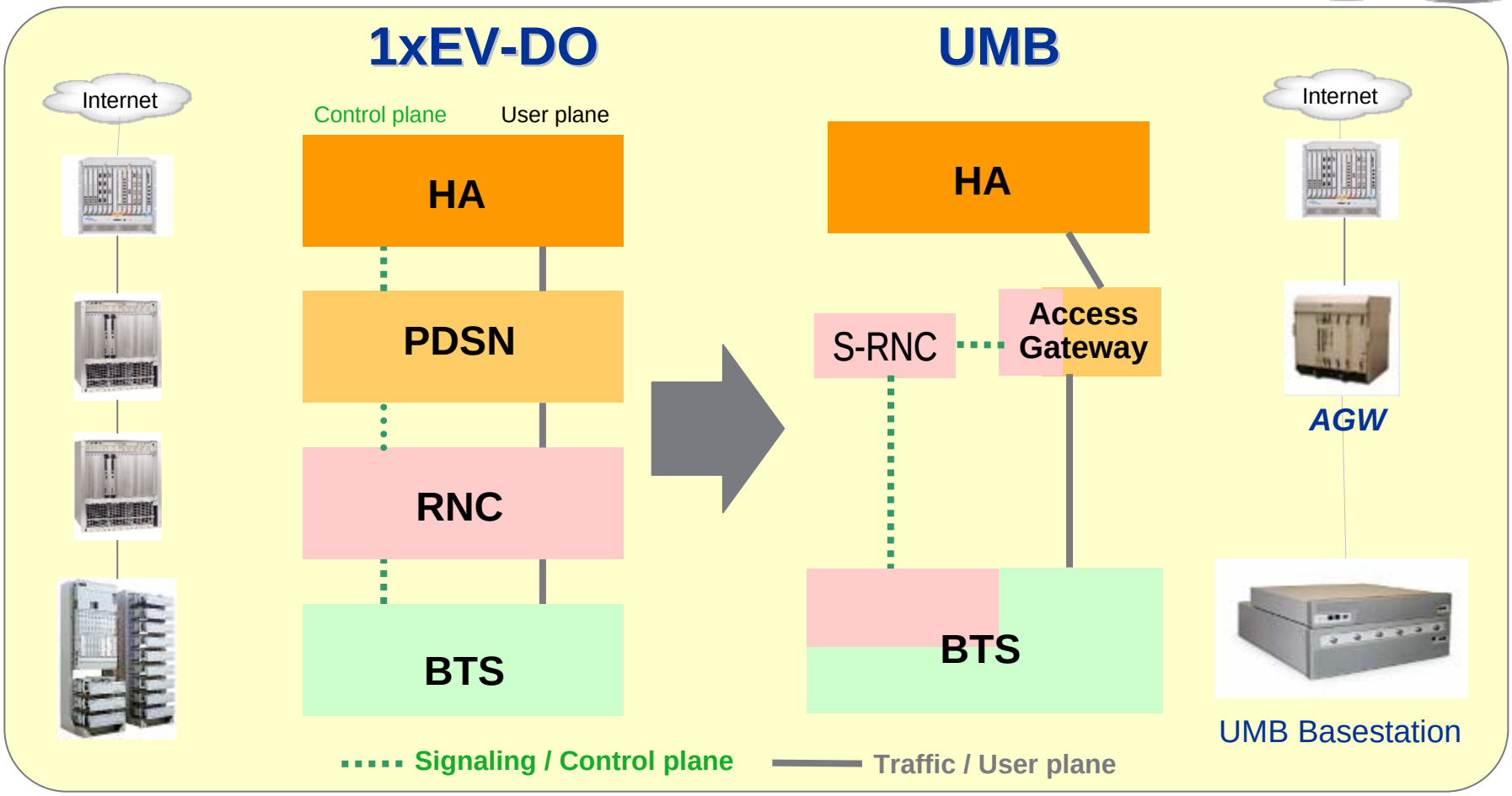
UMB Standard timelines

Both access and core evolutions



All IP Network Evolution to UMB

Functional Mapping onto the Simpler & Flatter Network



Flatter Network Architecture with Evolved Functional Distribution

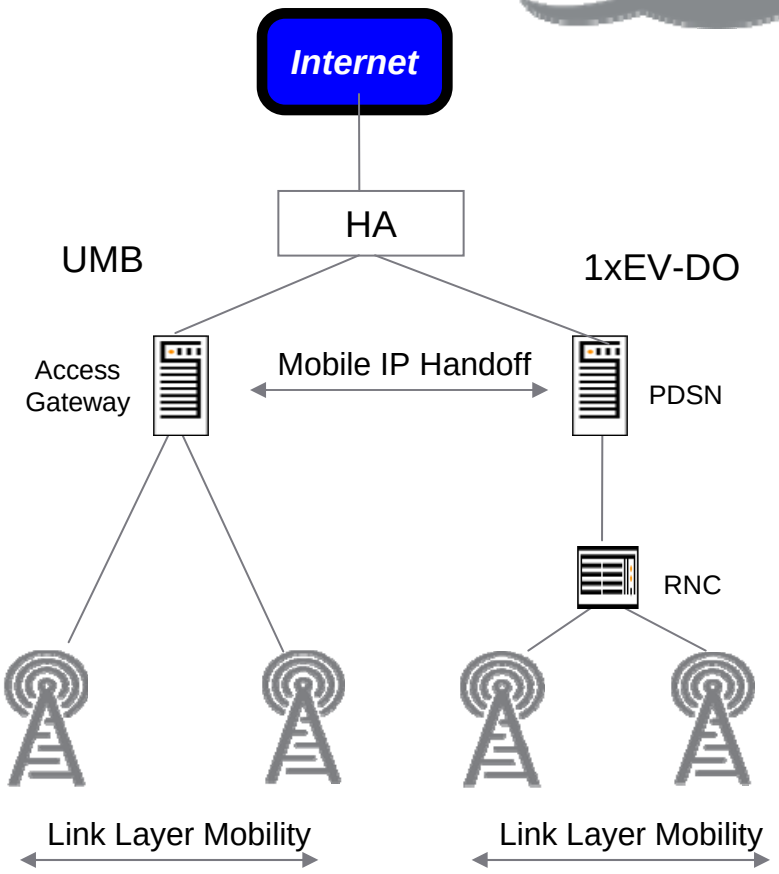
UMB: Seamless Mobility Management

Between UMB and 1xEV-DO

> Mobility at link layer as well as IP Layer
  - Multi-route solution for link layer mobility
  - Support of Mobile IP

> Elegant link layer multi-route design
  - Multi-route to avoid ping-pong problem
  - Resource pre-allocation to minimize delay
  - Data traffic forwarding to prevent data loss

> Mobile IP handoff to 1xEV-DO network



UMB supports seamless mobility

Benefits of UMB Evolved Network

Contribution to both top line and bottom line

Flatter network= Faster network response
= More Applications to Offer
• More *mass scale* offering of more real-time applications
Add up to the Top Line ARPU

Flatter IP network = Less hierarchy
= Higher overall reliability
Lower OpEx

Seamless mobility support w/ Legacy networks = Flexible network rollout
Lower initial CapEx

Suitable for both Greenfield and Overlay Networks

Backup Slides

UMB to 1xRTT Active Mode Mobility

Packet-switch to circuit-switch handoff

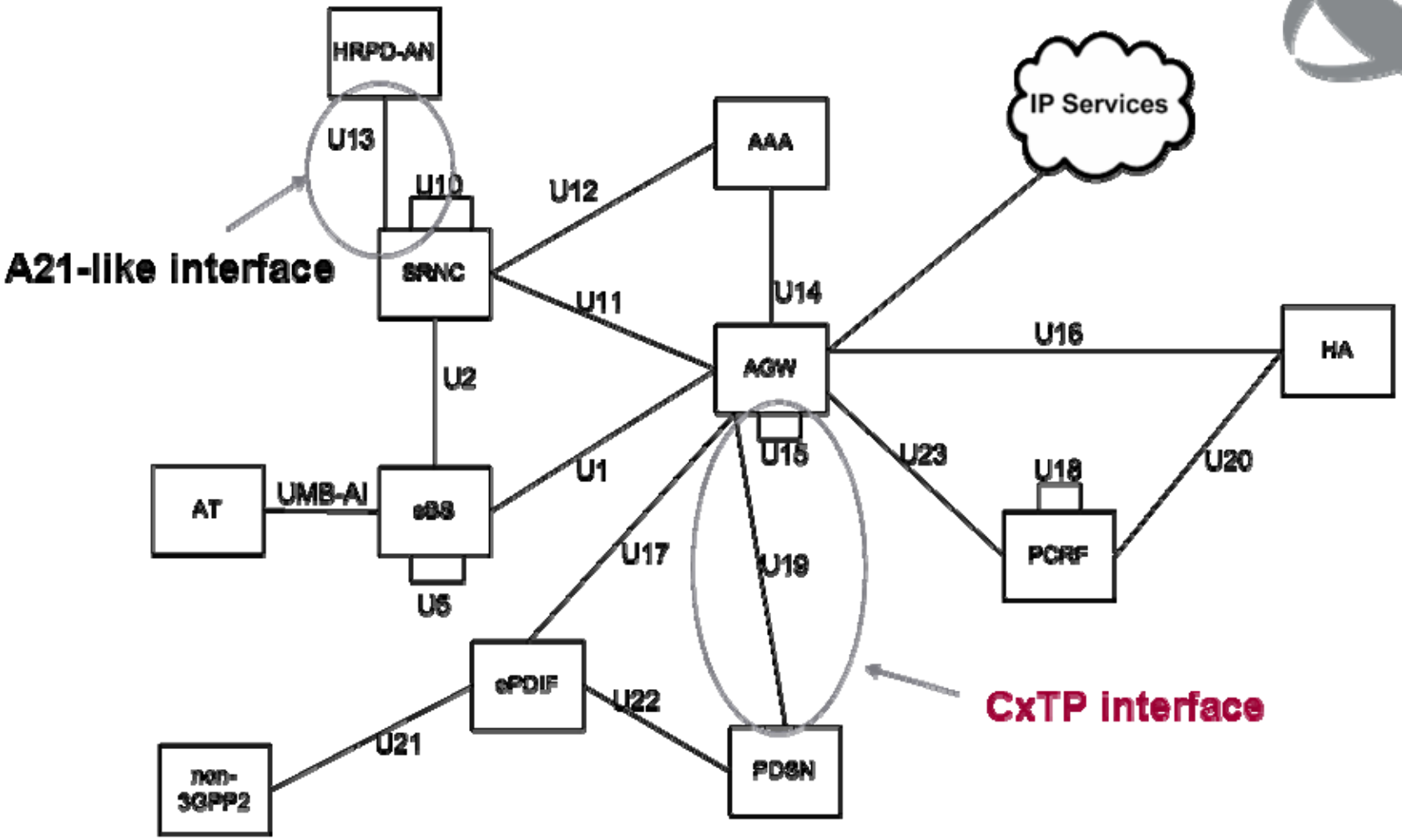
> A21-like tunneled solution
- MME-BSC A21-like interface to support inter-system HO preparation messaging
- Incoming 1xRTT HO is treated identical to 1xEV-DO to 1X HO
- Requires UMB air link to allow for tunneling of CSNA protocol

> Inter-"MSC" solution
- New SAE function 'S-RNC/AGW-CS' emulates "anchor-MSC" and exhibits an IS-41 interface towards 1xRTT MSC (no impact on 1xRTT network)
- Interface between UMB and 1xRTT MSC transports HO preparation signaling

> AT has indicated to the network (VCC AS) which domain it is in.
- When moving to 1X sends SMS message to VCC AS
- When moving to UMB sends SIP Registration

Solution for Voice call continuity from UMB to 1X

3GPP2 Evolved Reference Architecture



TEF architecture has been adopted by 3GPP2