Migration from 2G to 3G in South Africa
S.A. progress: Roadmap from GSM to UMTS

- Standard services: max. 9.6 Kb/s
- New services: about 100 Kb/s
- Enhanced multimedia services with full roaming through different networks
- Flexible narrowband and wideband services on demand from 8kb/s to 2Mb/s

GSM
- GSM Phase 1
- GSM Phase 2
- GSM Phase 2, 5

advanced GSM
- GSM Phase 2, 5
- GSM Phase 1

UMTS Introduction
- basic UMTS
- GSM Phase 2, 5
- GSM Phase 1

UMTS Mass Market
- advanced UMTS
- GSM Phase 2, 5
- GSM Phase 1

Service Capability
- 1994
- 2002

Year

Evolution Path towards UMTS due to Market Demand
WRC-2000 IMT-2000 Frequencies
GPRS: a new data service in GSM

BSS - Base Station System
HLR - Home Location Register
VLR - Visitor Location Register
GSM - GPRS Support Node
PCU - Packet Control Unit
Disadvantages of current situation

- **Disadvantages for user**
  - Restricted user data rate (9.6kBit/s)
  - Calls routed over the PSTN / ISDN to the data networks:
    - higher price (PSTN access as transit network)
  - Subscriber will be charged for connection time, not for usage
  - Long call setup time ca. 20s (modems)
  - Restricted length of SMS

- **Disadvantages for operator**
  - No efficient resource management possible
  - Restricted number of user
  - SMS is not an ideal match for many applications

No possibilities to push data services as a mass market!
GSM Phase 2.5 addresses the disadvantages of current solution

**Higher user data rates:**
- Use of data compression (HSCSD, GPRS)
- Combining of traffic channels (HSCSD, GPRS)
- New channel coding (different for HSCSD and GPRS)

**Increased radio resource efficiency - higher number of users:**
- Shared access to the same channel (GPRS)
GPRS offers a path towards UMTS

- an evolution path to 3rd generation: UMTS
- a means to evolve from a predominantly voice to a mixed voice and data world: voice is also a kind of data!
- a means to exploit and enhance existing networks
- a solution where existing hardware need not be replaced. (Extremely cost effective)
GPRS: Key architecture

- BTS (Base Transceiver Station)
- BSC (Base Station Controller)
- PCU (Packet Control Unit)
- GSN (GPRS Support Node)
- MSC/VLR (Mobile Switching Center/Visitor Location Register)
- Gateway MSC
- HLR (Home Location Register)
- GR (GPRS Register)

- BTS extension by SW
- PCU Integration into BSC
- GR integration into HLR
- SGSN & GGSN based on a new platform

- GSN - GPRS Support Node
- PCU - Packet Control Unit
- GR - GPRS Register

Networks:
- PSTN
- ISDN
- Internet
- Intranet
- PSPDN
Questions
Thank you