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IMT-2000:
Societal & Economic Considerations

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- The contents of this presentation represents **author's analysis** of the material available to public from many technical/business magazines, newspapers and journals.

- **ITU and GSM association** databases have been used for data concerning Africa.

Topics

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- Current economic / business climate
- Considerations for selecting IMT–2000 technology
- Overall conclusion

Current Situation

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- **Bridging digital divide**
  – Not just north / south but also: "technology literate vs. Technology deprived"
- **High costs** of telecom and IT infrastructure
  – Including affordable terminals
- **Convergence/collision** of voice & data communications and IT worlds
- **Rapid** pace of evolution; already talking about 4G
- **Mobility** with data applications or **desktop functionality** on mobile (handset) device?
- **M-commerce** or just **"wireless access"** to internet?

Economic Lessons For New Millennium

(Since 03/2000)

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- **Bankruptcy of WorldCom and others**
  - Major carriers of internet traffic
- **Bust up of "dot.com"** and web-economy
- **Depressed equity valuations**
  - Many down more than 90% since 03/2000 high
- Major operators and vendors retreating to **"core business"**

Economic Lessons For New Millennium

(Since 03/2000)

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- **Lack of all sorts of skills:**
  - IT integration
  - Ipv6 platform
  - Customer services and applications
  - Network planning
  - Operations and maintenance
  - Customer relationship management
    - Not just tariffs, billing and charging
- However, ICT is a must for future development of all countries
- **KNOWLEDGE BASED SOCIETY and not just exploitation of natural resources**

Market Dynamics

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- From state owned **monopolies** to **liberalisation** with many foreign players
- **Sensitivity to local conditions**
  - What works in one region is not necessarily the best for another region
- From technology to **user oriented affordable** services/applications:
  - Users pay for services and not technology!
- **Outsourcing** (of private networks) and birth of virtual network operators

Market Dynamics

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- Infrastructure sharing, collocation, aggregation of functions in a data centre
  - Side effect is concentration of need for electric power, skilled human resources and other cost savings
- Financing based on business model and total cost of ownership during whole duration (~15 - 20 years) not just initial investments!
  - RoI, CAPEX, OPEX, cash-flow and ARPU

What Are We All Looking For?

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Sustainable development:

- Not only economic survival but avoid making short-sighted decisions and sacrificing resources
- No “special” technology for developing countries
- Development of ICT human resources
- Partnerships (AU, NEPAD, WHO, UNESCO, …)
- Leveraging region-wise similarity of conditions for sharing of experiences including regulatory and business models
- Relevant contents for local culture and conditions (rural, urban, language, …)

Conclusion Of Current Situation: Real Issues

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- Real needs of the region
- **Global roaming**
  - Technology incompatibility between GSM and CDMA world
- **Operator experience and sharing knowledge**
  - E.G. GSM association
- **Migration from legacy system**
  - Networks, terminals, “CRM / back office” services and applications
- **Multi-vendor volume production**
- **Useful information for users at reasonable price**
  - Are users willing to pay for data services or do they want “free internet”?
- **Focus on societal services** (and not technology) through web based services with contents of local relevance

ITU-R WP8F CPM For WRC2003: Definition Of “Developing Countries”

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- **Large rural and sparsely populated areas**
- **Difficult geographical terrain**
- **Solutions that enable coverage of rural areas (varied terrain characteristics) with large cells.**

- **This geographic definition applies to** USA, Canada, Scandinavia, Australia, and new Zealand!
  What solutions are they choosing?

- What is “forgotten” is:
  - Low level of income per inhabitant plus foreign debts
  - Literacy rate
  - Basic voice telephony needs

- **Question to ask:**
  why different technology for developing countries?

IMT-2000 Frequency Bands (M.1036 – 1)

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- **WARC-92 identified the bands:**
  - **1 885-2 025 MHz**
  - **2 110-2 200 MHz**
- **WRC-2000 identified the following bands:**
  - **806-960 MHz (not on a global basis)**
  - **1 710-1 885 MHz**
  - **2 500-2 690 MHz**
- **Globally harmonised frequency bands will:**
  - **facilitate world wide compatibility;**
  - **facilitate international roaming;**
  - **reduce the overall cost of IMT-2000 networks and terminals by providing economies of scale**

Social And Economic Issues

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- **ICT investments "compete" with:**
  - Health and basic education (illiteracy eradication)
  - Rail, road and electricity infrastructure
  - Rural development
  - ICT skills development
- **Universal (voice) services into villages**
- **GNP**: affordability of services – are they for free?
  - With less than US$ 2 per day, how much for telecom?
- **Roll-out of IMT-2000** in "developed" world:
  - Urban or "hot spot" areas with handover to 2G or 2.5g
  - Is "developing countries" situation different?

“Technology” For IMT-2000 – Complexity!

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- Not just radio technology and spectrum; IMT-2000 is the **most complex endeavour ever:**
- **Terminals**: PC, PDA, 3G interface to (vending) machines, TTCN,
- **Terminals**: battery life, processing power, memory, OS platform, EMC,
- **Access**: Bluetooth, Wi-Fi 802.1x, xDSL, HIPERLAN, …
- **Optical backbone transport** for “legacy circuit switched” and IP packet switched traffic
- **Switching**: ATM, MPLA, RSVP, RTP, H.323, ipv6, soft-switch, media-gateways
- **Middleware**: HTML, XML, SOAP, WSDL, JAVA, COBRA

“Technology For IMT-2000 – Complexity!

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- **Web based services**
- **Voice**: codec, speech recognition, voice/text translation, MP3,
- **Graphics and video**: MPEG, JPEG,
- **Security**: encryption, user/transaction verification (UIM, payment)
- **Location**: GPS, location derivation via base stations, …
- **Infrastructure**: legacy to IP based
  » But watch out for QoS!

Web Based Services

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- **Sharing of customer data and revenues**
- **Smart card technology**
  – SIM, USIM card
- **User identification and verification**
- **Major service is still e-mail (80% traffic)**
- **VoIP, “net meeting” still small (less than 3%)**
- **E-commerce is a small portion**
  – Less than 1%
  – With credit card fraud of 40%
  – Unfortunately, only “profitable” services:
    - adult pornography
    - paedophilia
  – Disappearance of all “dot.com” companies

Web Services:
Potential Region-wide Initiatives

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- **Major question**: who pays for the services?

- **Telemedicine**
- **Distance learning**
- **Teleworking**
- **E-government**

All the above services allow to leverage the shortage of skills (which reside in urban areas) for the rural areas' development:
(medicine, schools, government advice, …)

“Standards World” Landscape

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- **Many bodies with different levels of representation**
- **Need**: coherent open (non-proprietary) standards and harmonised regulations
- Open standards create environment for competition and innovation: **IPR costs?**
- Harmonised regulation and spectrum management
  – Create large market and business confidence
- **Focus** is new applications and business opportunities
- ITU, IETF, 3GPP, 3GPP2, ETSI, regional standards bodies
- GCF, GSMA, CDG, UMTS forum (“clubs”)
- OMA, and other fora
- (Regional /global) research initiatives by governments
  – EU, Japan, Korea, …

Need for “region wide” Regulatory Harmonisation

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- Europe, APT, Latin America
- Regulatory policy
- Spectrum Harmonisation
- Equipment conformity requirements (SDoC)
- “Single market” to create volume
- Licensing conditions
- “Open network” and “universal services” provisioning

Something similar needs to be done for African regions

Overall Conclusions

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Choosing a Technology is not enough,

We must engage with our hearts and minds for sustainable development !

- **“Not necessarily the perfect, but the most diffused” to share experience, lower costs**
- **Gradual successive transition with seamless integration and interoperability with existing infrastructure**
- **Different culture brings different business model**
- **Solution must be economically viable for long term**
- **DO NOT COPY BUT LEARN from the experiences of others**
- **Leverage AU,NEPAD and existing regional partnerships**

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Thank You !

GSM Coverage In Africa

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Only Guinea-Bissau and Eritrea are without GSM **(source: GSM Association)**