EMERGING CELLULAR TECHNOLOGIES AND THE FUTURE

Alex FARES

Operations Director Celtel Kenya ltd

IEng UK:MIIE (UK): BEng (Telecommunications Systems): MEng(Electronic Systems):Dip.Int.M

Author

- *GSM Systems Engineering and Network Management*
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- *GSM: Satellite communication Engineering*

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Introduction

Men and machines exchanging information through voice, image, data or multimedia will basically characterize future telecommunications infrastructure which is driving our society's dramatic transformation to information based economy

The information will be:

- Simple
- Secure
- Reliable and
- cost effective

Introduction

Regulators, Network Service Providers and equipment suppliers all aim at:

- Satisfying the telecom market demands based on the promise of providing the best services to end user

- Stimulating economy to produce many useful goods and services

Introduction

- The idea behind broadband communication system is that, whether over wires or radio waves, all types of information can travel via the same media.

- Development in telecommunications is changing our lives very fast and have implications on traditional industries like:

  - publishing
  - music and
  - films.

M-commerce towards mobile information technology

- Telecommunication is currently one of the most rapidly expanding sectors in industrialized economies.

- The ability to distribute information in all forms have the recent years been revolutionized by:

  - speed
  - ease of transmission
  - limitless range and
  - potential accessibility to the world

M-commerce towards mobile information technology

Effect of Information and Telecommunication technology:

- It is driving our society's dramatic transformation to an information-based economy.
- Has made our businesses More productive and more competitive.
- It has opened up new possibilities for economic break through.

M-commerce towards mobile information technology

- Telecom equipment suppliers, who mostly have been operating in a competitive environment, can agree that the competition is getting:
  - Tougher
  - stronger
  - more brutal
- Their strategy is to provide a complete range of technologies and products required to deliver the ever-demanding customer sophisticated requirements.

M-commerce towards mobile information technology

Using ITU definition, telecommunication services can be categorized as:

- Bearer services
- Teleservices and
- Supplementary Services.

Each of these services can be identified by the networks, which allows them to be treated differently.

GLOBALIZATION

TECHNONOLOGY GLOBALIZATION

- Today's telecommunications market segment is becoming increasingly global and major players are emerging in this market struggling to take a dominant position

- This increasingly global business environment has been driving, and will continue doing so, the globalization of technologies, and in particular, radio access technologies

- The selection of technology is likely to have an impact on the global strategy of each particular cellular operator.

GOBALIZATION

ECONOMIES OF SCALE:

There are aspects associated with the globalization trend that will likely be determining factors for the selection of technology. These aspects are related to the benefits associated with ‘economies of scale’ i.e.

- Network infrastructure and mobile handset costs
- Speed of technology development
- Roaming and service continuity.
- Available service portfolio

Evolution of Telecommunications:

Multimedia services are gaining more importance which include a huge number of applications ranging from

- Phone
- video phone,
- telefax

3G Evolution Paths:

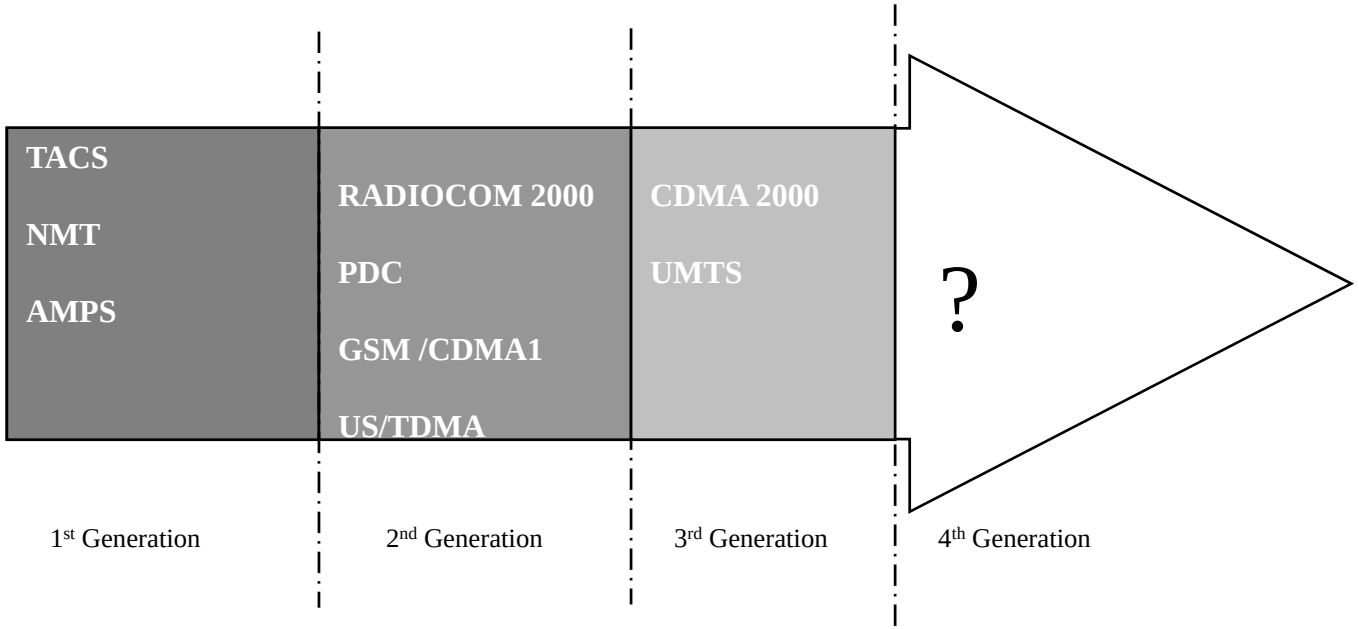


Fig 1: Evolution paths associated with the existing 2G technologies :

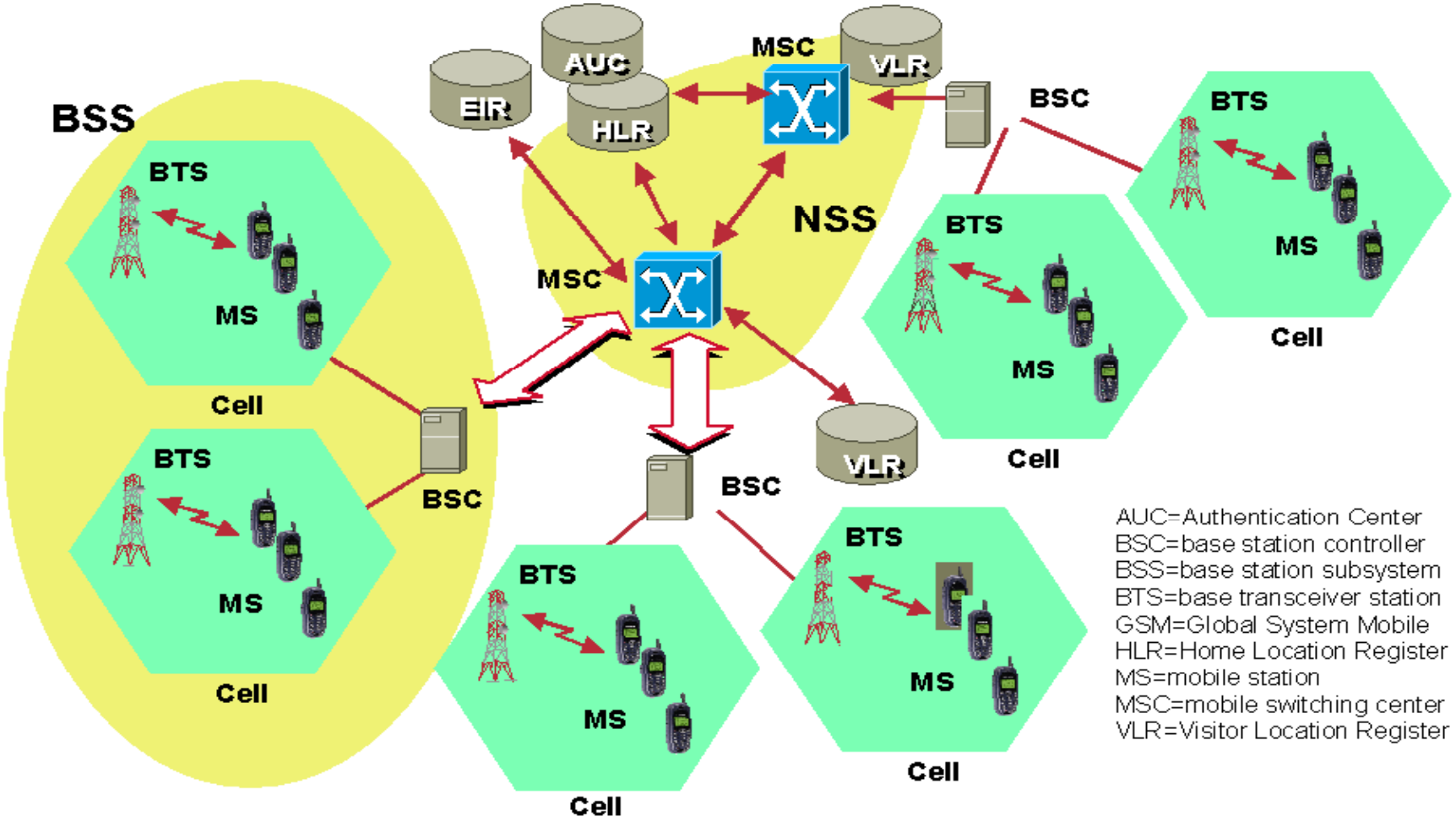
1. GSM Cellular network:

- Analog cellular systems are commonly referred to as first generation system.

- The digital systems in use, such as GSM, PDC, CDMA one and US-TDMA, are second-generation systems.

- These systems have enabled voice communication to go wireless in many leading markets and customers are increasingly finding value in other services such as text messaging (SMS) and access to data networks (FAX) which are starting to grow.

GSM Cellular network…



Roadmap to M-Commerce

- *Telecommunications industry is, therefore, faced with challenges of providing the necessary capacity for both backbone transmission infrastructure and the access network.*

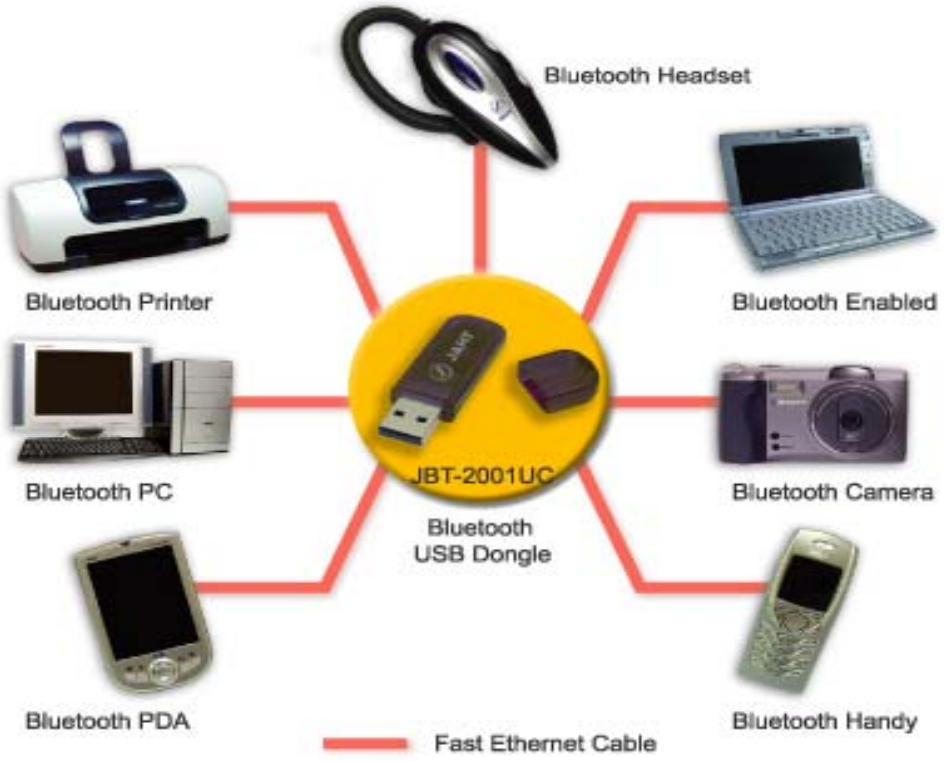
- *At the same time, the provision of new innovative multimedia and broadband services will enable telecommunication operators to gain a foothold in the market and experience a rapid growth.*

2. Blue tooth:

Two transmission ranges have been defined for personal area networking

- The range is between 10m and 100m without a line of sight
- Cell coverage area in Blue tooth technology is low
- This makes it a very costly proposition for operators
- Adds Value, NOT Cutting Costs!

Bluetooth applications:



3. WAP

- Is a secure specification that allows users to access information instantly via handheld wireless devices such as mobile phones, pagers, two-way radios, smartphones and communicators.
- Is a protocol and a standardized way that a mobile phone talks to a server installed in the mobile phone network.
- The wireless application protocol takes a client server approach.
- WAP is suitable for thin clients since it incorporates a relatively simple micro browser into the mobile set.

WAP…

Corporate applications that are being enhanced and enabled with a WAP interface include:

- Remote Monitoring Such As Meter Reading
- Vehicle Positioning
- Corporate Email
- Paging
- Two way radio comm.

4.i-mode:

- Is a wireless internet service which enables mobile phone users to access mobile internet sites.

- It is a **full-color, always-on, packet-switched**, Internet service for cellular phones offered by **NTTDoCoMo** (Nippon Telephone and Telegraph DoCoMo)

- *doco mo* means "anyplace you go" in Japanese and the acronym stands for: "Do Communication Over the Mobile Network."

- i-mode users include young people, middle aged and old people. There are slightly more male i-mode users than female users.

5. GPRS & EDGE:

GPRS

- GPRS - General Packet Radio Service is a packet-based bearer that is being introduced on many GSM networks

- The use of packet Switching means sharing of the same resources used by various mobile users, who are charged on the basis of the amount of data transmitted, not on the connection time as WAP

- GPRS is a development of GSM and can be implemented by mobile operators on top of their regular GSM network.

GPRS…

GPRS advantage:

- Allows customers to answer voice calls while in the middle of sending e-mails or viewing a WAP site.
- The data call is halted then picked up after the voice call with no extra charge being incurred.

2. EDGE (enhanced data rates for GSM evolution)

- Another so-called 2.5G initiative yet to be realized
- Sits between 2.5G and 3G although it offers the potential for packet- based services up to 384 Kbps

ADVANTAGES

- Ease of deployment
- High-speed packet-data

ACCESS SCHEMES:

CDMA;

In CDMA every communicator is allocated the entire spectrum all of the time to scatter a radio signal across a wide range of frequencies

Key facts

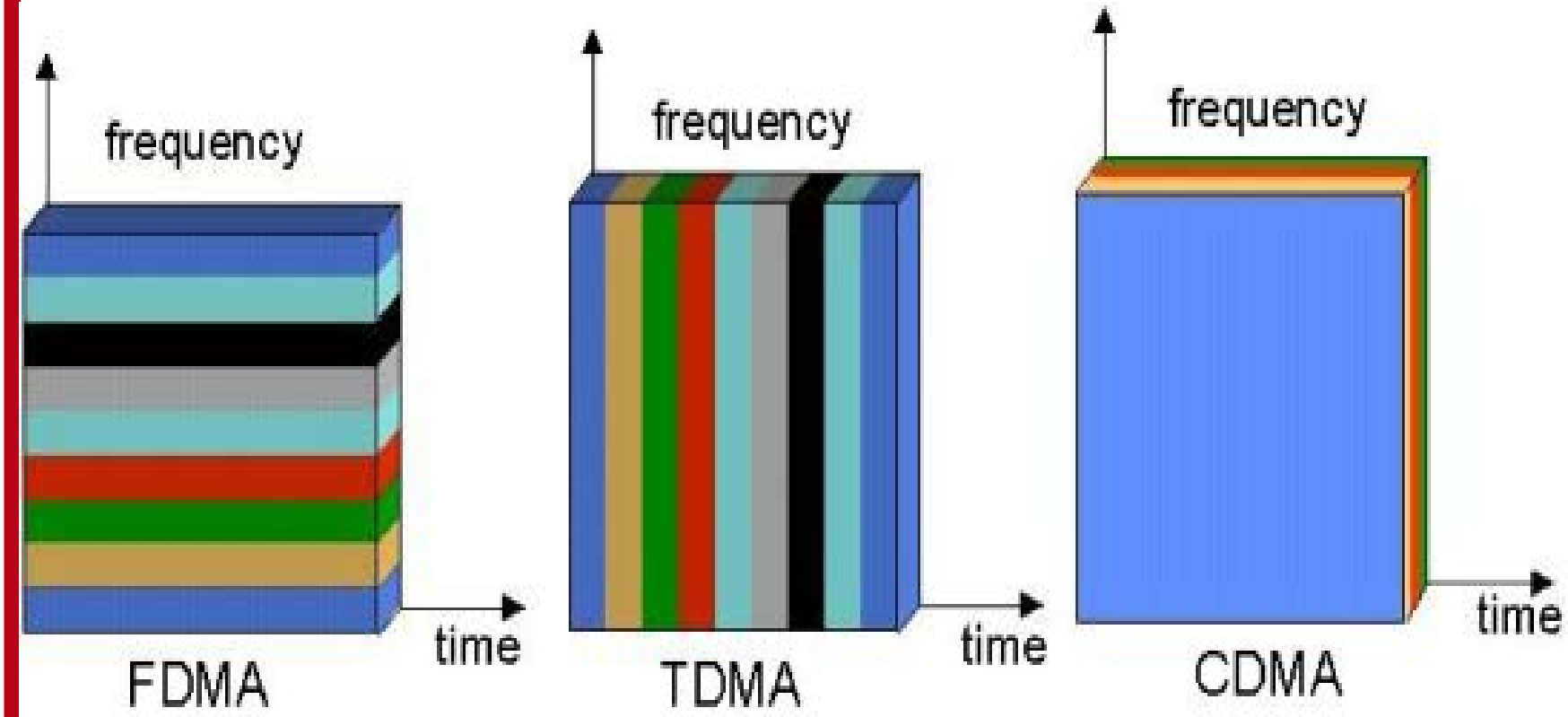
- Uses spread spectrum techniques
- every channel uses the full available spectrum
- Individual conversations are encoded

Roadmap to M-Commerce

CDMA Advantages:

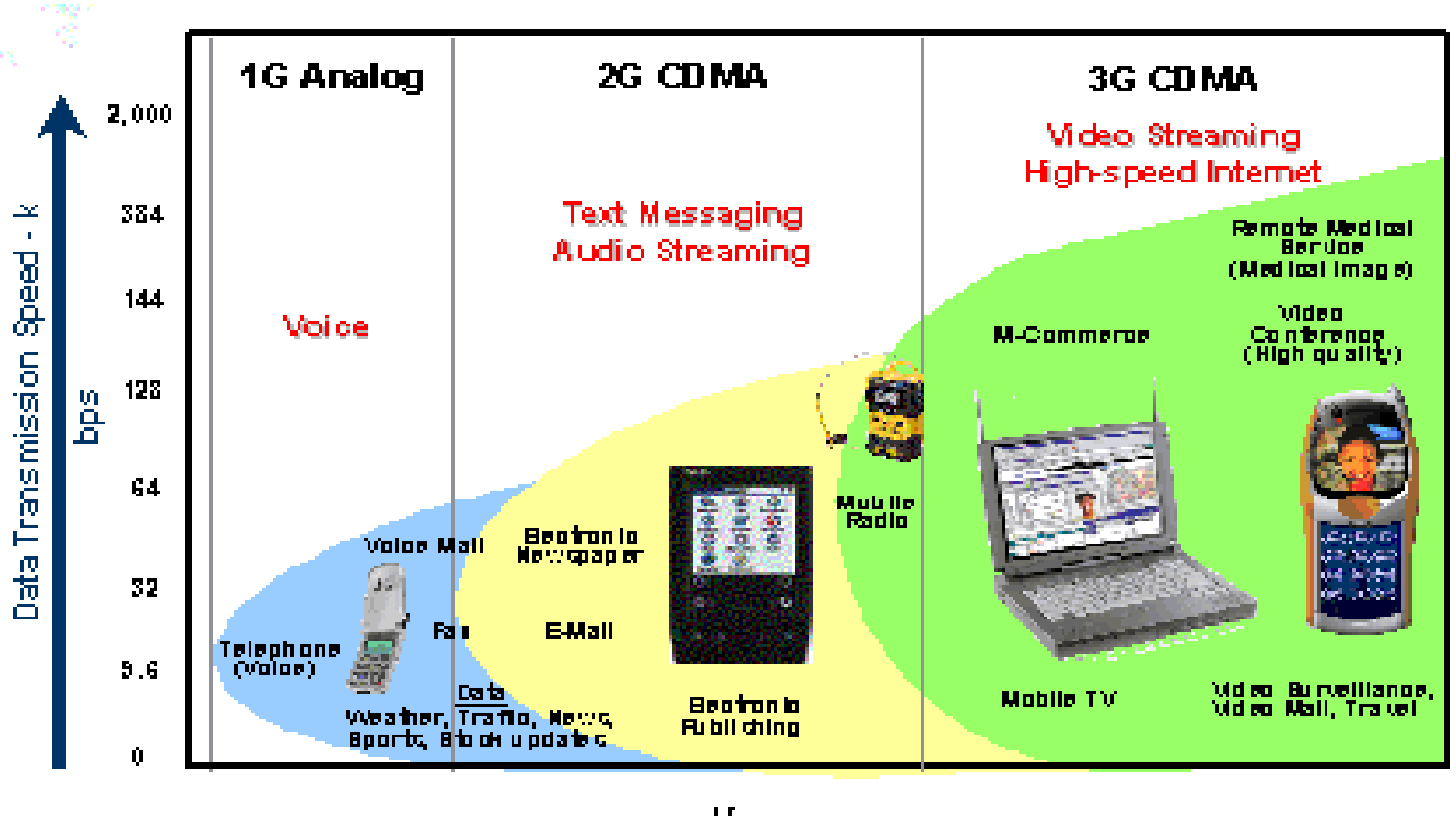
- provides better capacity for voice and data communications
- allows more subscribers to connect at any given time
- is the common platform on which 3G technologies are built
- Small cell radius

ACCESS SCHEMES:



Roadmap to M-Commerce

Future Proof Technology:



Cellular network-demand 01

- Operators have yet to grab the imagination of the market

- Fortunately, mobile penetration is higher than Internet penetration in every market, with the exception of the US, this fact might aid m-commerce, and this should help drive demand for m-commerce services.

Cellular network-demand 02

- As the world knows, we are moving from 2G to 3G via (in some sense) 2.5G. One important issue to be visualized is the extent to which end-users are prepared to pay for the ability to transact business using their mobile device. Payment plans have to be devised which are free of possibility of fraud.

Cellular network-demand 03

- 3G infrastructure rollouts will take time, for Africa it may start off in the year 2014 however, we need to prepare customers adequately for impending changes in business world.

The world's most expensive mobile phone

Crypto Smartphone

Launched on 16th July 2006 in Russia by a Moscow based JSC Ancort Company has the following Features:

- Uses a symmetric 256 bit cryptographic algorithm and Windows CE (Enhanced Real-Time) operating system
- Has a *platinum* body
- The Ancort logo and the navigation key are made of *18 carat rose gold*
- Its navigation key carries 28 round cut *diamonds*
- The leather carrying case with *platinum* trimmings and lock
- When the case is opened, it plays music and the music can be changed to the client's choice.
- Uses powerful encryption technology to provide added security.
- The level of encryption will provide secure protection of information against kidnapping, technological blackmail, financial racketeers and corrupted state officials

The world's most expensive mobile phone

Crypto Smartphone

Cost? 1.3m USD ≡Kshs 93 Million

Thank you