

5G (Fifth Generation)

Amanda Cicilato

Northern Melbourne Institute of TAFE Waterdale Rd, Heidelberg, Australia¹
amanda.cicilato@gmail.com

Abstract –

A new generation for new youth with high speed internet, online games, online video chat and many more features which are not possible 10 year back but now it is possible with 5G.

5G mobile communication systems based on beam-division multiple access and relays with group cooperation mobile communication systems based on beam-division multiple access.

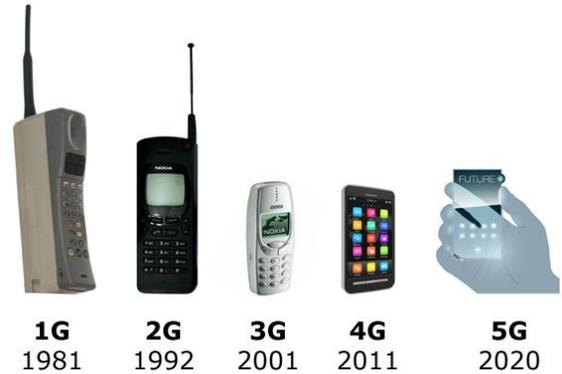
I. Generations:

First generation, 1G: These phones were analogue and were the first mobile or cellular phones to be used. Although revolutionary in their time they offered very low levels of spectrum efficiency and security.

Second generation, 2G: These were based around digital technology and offered much better spectrum efficiency, security and new features such as text messages and low data rate communications.

Third generation, 3G: The aim of this technology was to provide high speed data. The original technology was enhanced to allow data up to 14 Mbps and more.

Fourth generation, 4G: This was an all-IP based technology capable of providing data rates up to 1 Gbps.



Any new 5th generation, 5G cellular technology needs to provide significant gains over previous systems to provide an adequate business case for mobile operators to invest in any new system. Facilities that might be seen with 5G technology include far better levels of connectivity and coverage. The term World Wide Wireless Web, or WWW is being coined for this.

For 5G technology to be able to achieve this, new methods of connecting will be required as one of the main drawbacks with previous generations is lack of coverage, dropped calls and low performance at cell edges. 5G technology will need to address this.

II.5G Computers:

Ever since computers first came into production, they have been evolving. The Commodore 64 and Apple computers have dominated the very first computer market. Today, there are many companies in the computer industry fighting for technology supremacy. And since the beginning, every new generation of computers has dominated over the old ones. When they first came out, each jump in technology took awhile, but nowadays, the technology changes daily. Fifth

generation computers are overall much better than the previous generation.

The computer has progressed in many ways, but the most important improvement is the speed and operating capabilities. It was only around 6 years ago when a 386 DX2 processor was the fastest and most powerful CPU in the market. This processor could do a plethora of small tasks and still not be working to hard. Around 2-3 years ago, the Pentium came out, paving the way for new and faster computers. Intel was the most proficient in this area and came out with a range of processors from 66 MHz-166 Mhz. These processors are also now starting to become obsolete. Today's computers come equipped with 400-600 Mhz processors that can multi-task at an alarming rate.

Fifth generation computers surpass the previous generation in all ways. Computer technology has a life span just as living things. Gerald Holzhammer compares today's computers to a tree, and says that people must prune 20 years of legacy 5 so it can grow and prosper. Someday, the fifth generation of computers will be out of date and a new generation will be coming in to take its place. It is a continuous cycle, where the new always dominates over the old and it will not stop for anything.

III. Concepts of 5G

Group cooperative relay: This is a technique that is being considered to make the high data rates available over a wider area of the cell. Currently data rates fall towards the cell edge where interference levels are higher and signal levels lower.

Cognitive radio technology: If cognitive radio technology was used for 5th generation, 5G cellular systems, then it would enable the user equipment / handset to look at the radio landscape in which it is located and choose the optimum radio access network, modulation

scheme and other parameters to configure itself to gain the best connection and optimum performance.

Vandermonde-subspace frequency division multiplexing for modulation: It will be necessary to provide much more flexible and efficient forms of modulation for 5G cellular systems. This is one format being considered.

Smart antennas:

Another major element of any 5G cellular system will be that of smart antennas. Using these it will be possible to alter the beam direction to enable more direct communications and limit interference and increase overall cell capacity.

IV. Features of 5G technology.

- **Advanced billing interfaces.**
- **Global Connectivity**
- **High Speed / 25Mbps of Connectivity Speed**
- **Best for Business**
- **Private Networking**
- **Fast and Accurate**
- **Large broadcasting of data in Gigabit**
- **Resistive in terms of errors**
- **Ultrasound Technology**
- **Video Conferencing**
- **Display, Camera and Time Machine**
- **Storage and Body Colours**
- **Solar Panel in 5g**

REFERENCES

1. <http://www.123helpme.com/preview.asp?id=65665>
2. en.wikipedia.org/wiki/5G.
3. <http://www.radio-electronics.com/info/cellulartelecomms/5g-mobile-cellular/technology-basics.php>
- 4) <http://xplereout.blogspot.in/2012/07/5g-technology.html>
- 5) <http://www.futuretimeline.net/21stcentury/images/mobile-phones-2020.jpg>.

IJLTEMAS