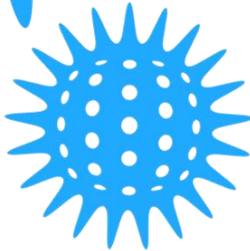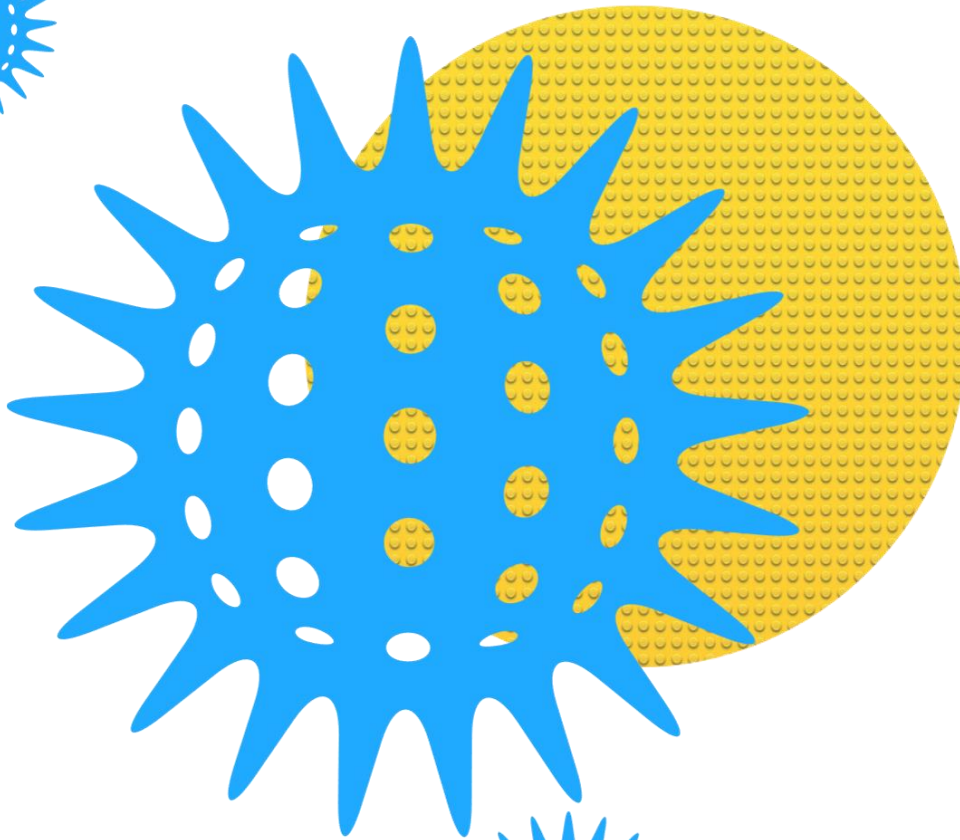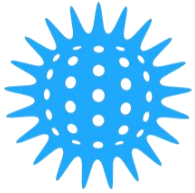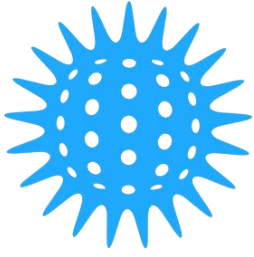# MAPUTIATOTA'S CORONA-STUCK NANO EBOOK 3

PRACTICAL TIPS ON WHAT TO DO WHILST STUCK AT HOME.

Live productively during the Corona Virus lockdown!

Disclaimer
This publication is designed to provide competent and reliable information regarding the subject matters covered. However, it is distributed with the understanding that the author and publisher are not engaged in rendering medical, educational, legal, financial, social, psychological, career or other professional advice. The author and publisher do not assume and hereby disclaim any liability to any party for any loss of any kind, damage, or disruption caused by errors or omissions, whether such errors or omissions result from negligence, accident, or any other cause.

Introduction

Welcome back! This is my **third** book in a **14 part** nano-ebook series. Just in case you've forgotten, I'm Maputiatota*, and I live in this amazing country, Zimbabwe. Very little content is available about how to live **productively** during the Corona Virus lockdown, and I am on a mission to leave you better than you were when the lockdown began.

Excited? Well so am I! I hope you will enjoy this short read!

Telecommunication Basics…and 5G

Ever wondered how your mobile phone manages to connect to the internet? Magic isn't it? In today's article, I explain the absolute basics that help you get a better appreciation of how your much loved gadget works.

Ma Boosta

A long time ago, when they first introduced the public mobile telephone (in the late 1940s), the system used was known as the Improved Mobile telephone service (IMTS). This system used a very tall tower to transmit the signals to the mobile devices in the area.

What does this mean? This meant that all of the people in the city would have to receive signals from that single tower. This, of course, was seen to be a flawed concept as the service was very poor due to call blocking.

So what did the geniuses do? They decided to replace that high power transmitting tower with many low power transmitters. Each low power transmitter would then provide coverage to a small area. That small area is usually hexagonal in shape, and is referred to as a cell. These cells each have a transmitter (Called a Base Transceiver Station, or BTS, or BS) which services the cell.

It is this Base Transceiver Station that is commonly referred to as a "Network Booster."

Here's how the whole thing works:
- Hexagonal Cell present
- Base Transceiver Station services the cell
- The mobile devices (your phones) in the cell connect (wirelessly) to the Base Transceiver Station
- A specified number of Base Transceiver Stations connect (through a physical line) to what is called as Mobile Switching Center (MSC)
- The Mobile Switching Center is then linked to the Public Switched Telephone Network (PSTN)

    * This is the general concept. Of course, technology has come with new developments such as fibre optic cables etc. So I'm not too sure about the PSTN part for modern networks.

Some handy concepts
Hand off
This is when the mobile device moves from one cell to another. The mobile phone checks the signal (power) that is being transmitted from the Base Stations around it, and through this process, the Base Station with the best signal is selected.

At the edge of a cell, there can be a scenario in which the signal from the BTS servicing that cell is weak, but the adjacent BTS'es signal is weaker than the one you are currently in. This results in poor network coverage in this scenario.

Make before break
In this concept, a new channel is selected during the handoff process before the old channel is released.

Break before make
In this concept, things happen the other way round. This results can call dropping, and this must explain why the phone suddenly goes silent when you're on a call and travelling.

Great. Now that you understand all the really basic wizardry your network and phones do, lets learn more.

What is 2G, 3G, 3G, 4G and 5G?
Well the G stands for the generation of the cell phone technology. I'll give the absolute basics about the key features of each generation.

2G (used by simple phones – mbudzi)
This marked the introduction of the following:
- Short Message Service (SMS),
- Multimedia Message Service (MMS)
- Packet data

3G (used by smartphones and some advanced simple phones)
Key characteristics:
- Faster internet speeds
- It made it possible to stay on the internet whilst on a voice call

4G (mainly used by smartphones)
Key characteristics:
- High speed internet
- VoLTE which allows one to have superior voice calls over the 4G LTE network.
- Not possible to make a conventional non-VoLTE call using 4g – the device downgrades to 3g

…And WHAT IS 5G?
5G is simply the 5th Generation of cellular networks.
 Here is an excerpt from techrepublic
> *Principally, 5G refers to "5G NR (New Radio)," which is the standard adopted by 3GPP, an international cooperative responsible for the development of the 3G UMTS and 4G LTE standards.*

- *Other 5G technologies do exist. Verizon's 5G TF (Technical Forum) network operates on 28 and 39 GHz frequencies, and is used only for fixed wireless internet service, not in smartphones.*
- *5G standards divide frequencies into two groups: FR1 (450 MHz - 6 GHz) and FR2 (24 GHz - 52 GHz). Most early deployments will be in the FR1 space.*
- *Research is ongoing into using FR2 frequencies, which are also known as extremely high frequency (EHF) or millimeter wave (mmWave) frequencies.*

5G technology is driven by 8 specification requirements
- *Up to 10Gbps data rate > 10 to 100x improvement over 4G and 4.5G networks.*
- *1-millisecond latency.*
- *1000x bandwidth per unit area.*
- *Up to 100x number of connected devices per unit area (compared with 4G LTE).*
- *99.999% availability.*
- *100% coverage.*
- *90% reduction in network energy usage.*
- *Up to 10-year battery life for low power IoT devices.*

Who does 5G benefit?
- *One of the major focuses of 5G is the ability to use wireless networks to work hand in hand traditional wireline connections by increasing data bandwidth available to devices and minimizing latency.*
- *For remote workers, this greatly increases flexibility in work locations, allowing for cost-effective communication with your office, without being tied to a desk in a home office with a wireline connection.*
- *One priority for the design of 5G networks is to lower barriers to network connectivity for Internet of Things (IOT) devices.*
- *Proposals for 5G networks are focusing on reducing power requirements, making the use of IoT devices more feasible.*
- *City centers, office buildings, arenas, and stadiums:*
  - *The same properties that make 5G technologies a good fit for IoT devices can also be used to improve the quality of service for situations in which large numbers of devices make extensive use of the mobile network in densely populated areas.*
  - *These benefits can be realized easily in situations with variable traffic—for instance, arenas and stadiums are generally only populated during sporting events, music concerts, and other conventions.*
- *5G for consumers means not just faster mobile internet, but mainly internet connectivity in many more objects than what is currently present.*

- *The car and the house are two examples of the big IoT revolution coming ahead, supported by 5G networks.*

Here are Key points to be learnt from that short passage

5g is a new technology that allows for:

- Faster communication due to faster data rates
- Lower latency (latency is simply how much time it takes for a small chunk of information to travel from the source to the destination). A lower latency makes it very good for being used as a backbone in real time systems.
- It promises better battery consumption for the devices that use this new standard.

Well, there are very theories out there. Here is my opinion on a few of them

Is 5g used to control your mind?

Here is a question - If it were possible to do so then why would countries waste ~~billions~~ trillions on nuclear weapons, bombs, or even armies when they could just inject microchips and instantly have the people under their control? What do you think?

Is 5g safe?

Well there isn't enough information to give a conclusive answer at the moment. On one hand, there are sites claiming that 5g is pretty safe (and I know that there are Standards Associations out there. They certainly wouldn't allow for a dangerous technology to be introduced), and on the other, there are claims that the 5g hasn't gone through enough testing to see its effects on our health.

Well the technology is still new. If there are any adverse effects, then I hope they will be addressed.

Does 5g Create Viruses?

Here's an excerpt from https://science.howstuffworks.com/life/cellular-microscopic/virus-danger.htm

Viruses can only exert influence by invading a cell, because they're not cellular structures. Viruses can infect every living thing -- from plants and animals down to the smallest bacterium. For this reason, they always have the potential to be dangerous to human life. Still, they don't become truly treacherous until they infect a cell within the body. This infection can happen several ways: by air (thanks to coughing and sneezing), via carrier insects like mosquitoes, or by transmission of body fluids such as saliva, blood or semen.

Conclusion

That's all for today folks!

Tomorrow we will talk about Self Development, and I'll give actionable steps for you to become the best version of yourself!

I hope you enjoyed it. For more material, feel free to head over to my blog https://maputiatotablog.wordpress.com

I'm available on Instagram @ maputiatota, and on Twitter @ maputiatota Don't be shy to say hi!