Private 5G: Accelerating Towards the Fourth Industrial Revolution

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- *Malaysian manufacturers are integrating advanced technologies such as Internet of Things (IoT) and AI analytics, signifying a move into smart facilities to enhance productivity and improve the total cost of ownership*
- *Private 5G will accelerate this adoption towards the maximum 4th Industry Revolution (4IR) potential*

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We believe the use of private 5G constitutes a catalyst to help industries move further in reaching their potential offered by the 4IR approach to productivity. Analysts are also reporting[1], the rise of private 5G adoption in a variety of verticals around the world.

We envisage a near-utopian ecology built on hyper-connectivity in 4IR, enabling a more intelligent handling of information which will transform the way we work and live. For instance, highly distributed technology-enabled equipment will be constantly exchanging information to precisely guide demand planning and decision-making. Evolving from electric power and electronics, we stand on the edge of a new digital revolution; one which is rapidly blurring the lines between the physical, digital and biological worlds.

In different parts of the world, we are beginning to see glimpses of this super-productive utopia. In Malaysia specifically, manufacturers are gradually integrating advanced technologies such as IoT and AI analytics, moving into smart facilities to enhance productivity and improving the total cost of ownership. Oil and gas companies, for example, which face increased market volatility and a generational workforce shift, are learning to rely on robotics and AR/VR tech to remain relevant in the digital future.

Additionally, geopolitical and economic factors have exposed weak supply chains globally, with shipping and port industries turning to automation and sensing technologies as part of their efforts to address these challenges.

Malaysian businesses are slowly becoming aware of the need to use digital means to survive and thrive. With a lack of awareness about the practical benefits of 4IR among local businesses (only 30% of manufacturers are aware of the concept!), there is a need to reaffirm that the way forward lies in understanding and tapping the potential in digital strategies for growth and productivity.

THE ROAD TO 4IR, WITH PUTTING PRIVATE 5G ON THE FAST LANE

The main hurdle for countries to achieve nationwide transformation lies in addressing gaps in their digital infrastructure. Despite government policies and initiatives, such as Industry4RWD and annual financial incentives,- there must be a greater push to further catalyse digitalisation and automation to generate greater industrial sustainability.

Private 5G may prove to be the ‘secret sauce’ for certain enterprises, especially those operating in or linked to manufacturing and related sectors. In today’s scenario, limited spectrum and poor uplink speed in LTE (4G/Long-Term evolution) are detrimental when implementing next-gen industry applications.

One example is the difficulty existing technologies have in offering high bandwidth and uplink speeds to enable the uploading of high-definition video feeds to cloud or application servers in the event of unmanned inspection and surveillance. The use of robots integrated with AI and machine vision that uses LIDAR (Light Detection and Ranging) for example, to construct 3D images of surrounding environments for real-time movements further amplify the issue. High bandwidths and reliable mobile connectivity are needed to upload these images to a cloud or servers with high computing power.

The importance of private 5G in achieving some part of the 4IR vision should not be underestimated. It offers the foundations on which to lay the essential building blocks of 4IR (Big Data, IoT, Cloud). In addition, private 5G addresses existing interference, performance and bandwidth issues faced by current wireless options such as LTE and WiFi, by creating a closed network with a dedicated spectrum, capacity and infrastructure to meet a company's connectivity requirements.

Industries could realise improved productivity and efficiency gains by using three powerful features of private 5G — eMBB (enhanced mobile broadband), URLLC (ultra-reliable low latency communications) and mMTC (massive machine type communications). Offering better coverage, higher bandwidth, low latency, stronger reliability and tighter security, these features are already powering cutting-edge mobile/wireless enterprise LANs.

IS PRIVATE 5G A UNIVERSAL SOLUTION?

Even though the benefits offered by private 5G are substantial, we must note that this may not suit every sector in Malaysia.

Many enterprises could meet their needs by leveraging 5G products offered over the public network infrastructures, rather than a full private 5G implementation. For example, some applications such as fleet management and logistic will find the proposed nationwide 5G coverage and in-building solutions will be more than adequate to serve their needs.

However, some manufacturing companies will greatly benefit from a private 5G setup. I have observed that many factory floors envisioned moving from wired to wireless processes, such as unlicensed WiFi, but have held back or been hampered by known interference issues which eventually lead to performance degradation. And LTE does not completely solve the problem either!

The private 5G setup with the new assigned spectrums, and its native features are designed to address these needs seamlessly.

Similarly, previous attempts to realize immersive remote monitoring, by , using AR/VR, and remote operation control, has not been truly effective. The missing link between advanced devices such as high-definition cameras mounted at drones or robots, and centralised AR/VR/visuals, has to be fulfilled by 5G as the wireless mobile medium.

This of course will bring cost savings and improve efficiency. In addition, robots will be able to replace humans in potentially dangerous situations, replacing up to 50% to 100% of human capital requirements. This will allow companies to divert their most valuable asset, people, to higher value tasks.

With the private 5G option, the ports industry will also reduce cable wires of rubber-tyred gantry (RTG) cranes and eliminate the need for manual handling of heavy equipment, increasing the safety and efficiency of operations. Crane operators will also be more effective as they will be able to operate multiple RTGs from a central control room.

ACCELERATING DIGITAL MALAYSIA

Technology is just part of pioneering a path to private 5G. Digital transformation is a holistic journey, driven by and with people at the centre of the endeavour.

As hardware becomes commoditised, we will begin to see more manufacturing and related industry-ready equipment capable of working with 5G features. As with all transformation efforts, investment costs need to be justified. With the ROIs of integrating private 5G still at an infancy stage, enterprise leaders need to be on the alert to see potential gains for their own scenarios.

As we are all concerned with security, private networks offer more control over which devices are granted access. This is especially important as the possibility of connecting thousands (or even millions) of additional devices massively amplifies the cybersecurity risks of today's value chains. The secure handling of data should always be front and centre of all business and technological discussions.

TM ONE is poised to work with Malaysian businesses and help realise their digital aspirations when adopting private 5G. Our technical and industry experts have an unparalleled understanding of the local market, and we believe that implementing private 5G needs to be strategised as a journey, not a one-time event.

We have worked hard to bring customised offerings to meet every customer's specific needs, by leveraging our regional presence and extensive platform of partnerships. Coupled with our extensive nationwide fibre infrastructure, we are always ready to offer high service level agreement (SLA) and roll out private 5G solutions anywhere in Malaysia.

We maintain that private 5G poses the potential to be a critical enabler for accelerating 4IR adoption. With our clear focus on human-centred digitalisation, TM will continue to help carve a path to a fruitful high-tech future for all.

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