MPIRICAL
Innovating Telecoms Training

Mpirical Quarterly

Your guide to What's New from your telecoms training platform

Jan 20 - April 20 edition

At a glance:

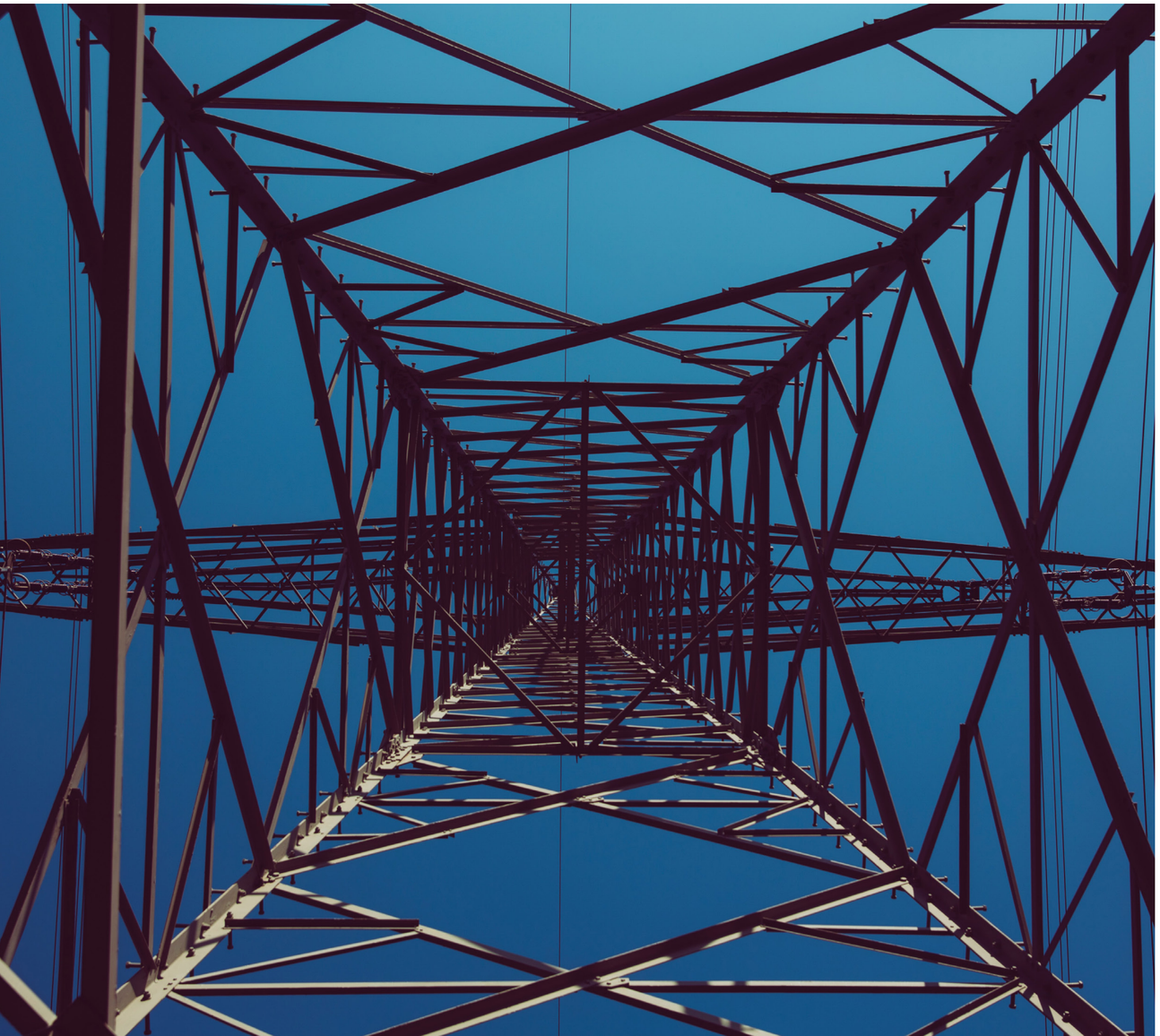
- Explore 6 New Courses
- 5 minute read - 'AI and its significance to 5G'
- Practical Tips - 'How to succeed at remote learning'

Introduction

Welcome to the first edition of Mpirical Quarterly 2020. It's been an interesting start to the year in more ways than one, and as we all adjust to a remote life, we've been working hard to ensure your learning remains uncompromised.

Since January we've added 6 new courses across our technology range, including our popular 5G Security course, just launched, and Introduction to Telecommunications Networks, which is a great place for new learners to start. Both available for LiveOnline delivery.

In this edition, we've selected a number of our expert trainers' recent blog posts to fuel your inspiration, plus some practical tips on how to get the most out of remote learning throughout the current global situation, and beyond...



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Learn Something New

Explore our latest courses across 5G, Complementary and Emerging Technologies...

NEW: 5G Fixed Mobile Convergence

Available LiveOnline and OnlineAnytime, or register your interest in future LiveOnsite dates.

This short course is designed to introduce the main concepts behind 5G fixed and mobile convergence technology. This will be considered on a high-level basis, with focus on the technology and the key components. It will also provide an insight into a number of converged use cases as well as an overview of the basic operation.

Explore Full Course Details

½ day (LiveOnsite, LiveOnline) 3 hours learning (OnlineAnytime)	3 CPD Learning Credits	LiveOnsite, LiveOnline, OnlineAnytime	Level: 2 (Intermediate)

NEW: 5G and Transport Networks

Available LiveOnline and OnlineAnytime, or register your interest in future LiveOnsite dates.

This short course is designed to introduce the main concepts behind transport networks, and how this can be implemented with 5G technology. This will be considered on a high-level basis, with focus on the transport technology and the key components. It will also provide an insight into the latest technology and its application within 5G and the mobile technology sector.

Explore Full Course Details

½ day (LiveOnsite, LiveOnline) 3 hours learning (OnlineAnytime)	3 CPD Learning Credits	LiveOnsite, LiveOnline, OnlineAnytime	Level: 2 (Intermediate)

NEW: Exploring 5G

Available LiveOnline, or register your interest in future LiveOnsite dates.

In order for 5G to become the success it is anticipated to be, monetization of the technology is of paramount importance. This short course seeks to explore the commercial aspects of deploying 5G, from the initial design and roll-out of the network through to monetization as a result of initiatives such as Network Slicing, Multi Access Edge Computing (MEC) and Voice over New Radio (VoNR).

Explore Full Course Details

1 **day** (LiveOnsite, LiveOnline)	**6** **CPD Learning Credits**	LiveOnsite, LiveOnline	**Level: 1 (Beginner)**

NEW: 5G Security

Available LiveOnline, or register your interest in future LiveOnsite dates.

When 5G Standalone networks become operational, service providers will be required to adopt new mechanisms for security in 5G, namely 5G Authentication and Key Agreement and SBI (Service Based Interface) security. Grounded in LTE based techniques, 5G AKA introduces enhancements to protect against fraudulent activity, particularly with respect to key usage and subscriber authentication. For the 5G Service Based Architecture, SBIs are protected using a combination of TLS and OAuth 2.0.

This course seeks to explore each of these areas by initially evaluating the end to end 5G System, in terms of architecture and overall operation, with emphasis on security roles. 5G AKA will then be explored in detail, including signalling flows and API exchange, before concluding with a breakdown of SBI security.

Explore Full Course Details

1 **day** (LiveOnsite, LiveOnline)	**6** **CPD Learning Credits**	LiveOnsite, LiveOnline	**Level: 2 (Intermediate)**

NEW: Introduction to Artificial Intelligence

Available LiveOnline and OnlineAnytime, or register your interest in future LiveOnsite dates.

Artificial Intelligence is all around us whether we realize it or not, from recommending the next film to watch, asking Alexa to turn on the lights or having a medical scan pre analysed, AI is changing the way we live our lives. In this short course, we will explain what AI actually is and separate the hype from the reality. In so doing we will discuss Machine Learning and Deep Learning, the need for Explainable AI and the role of Big Data and the Algorithms that feed on it. Finally, we will focus on two use cases; 5G and Autonomous Vehicles.

Explore Full Course Details

½ **day** (LiveOnsite, LiveOnline) **3** **hours learning** (OnlineAnytime)	**3** **CPD Learning Credits**	LiveOnsite, LiveOnline, OnlineAnytime	**Level: 2 (Intermediate)**

NEW: Introduction to Telecommunications Networks

Available LiveOnline, or register your interest in future LiveOnsite dates.

Today's telecommunications networks are complex mixtures of legacy technologies, coupled with the latest generation of both fixed and mobile architectures. This course seeks to provide a grounding to those people who are new to the telecoms industry, providing them with a foundation of knowledge which will allow them to explore the telecommunications ecosystem in greater detail. As such, the course is all encompassing, providing technical detail on fundamental concepts, network architectures and finally, today's services environment.

Throughout the course, NetX will be utilized to explore not only the components of a 21st century telecommunications network but also call flows and key network procedures.

Explore Full Course Details

3 **days** (LiveOnsite, LiveOnline)	**18** **CPD Learning Credits**	LiveOnsite, LiveOnline	**Level: 2 (Intermediate)**

Your Learning Zone

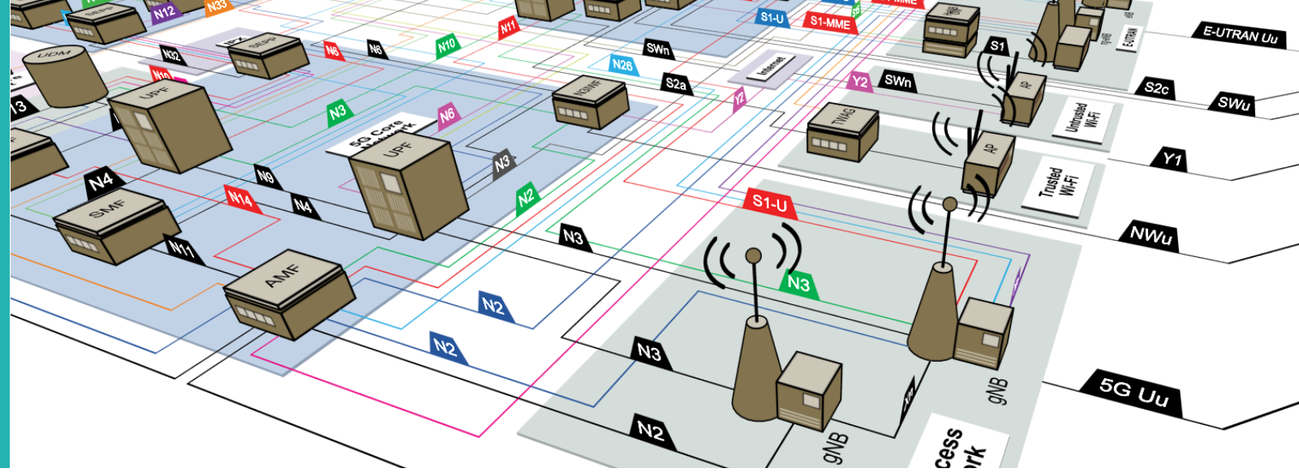
Highlighting the best features at your fingertips to aid your learning...

“

Never stop learning, for when we stop learning, we stop growing.

”

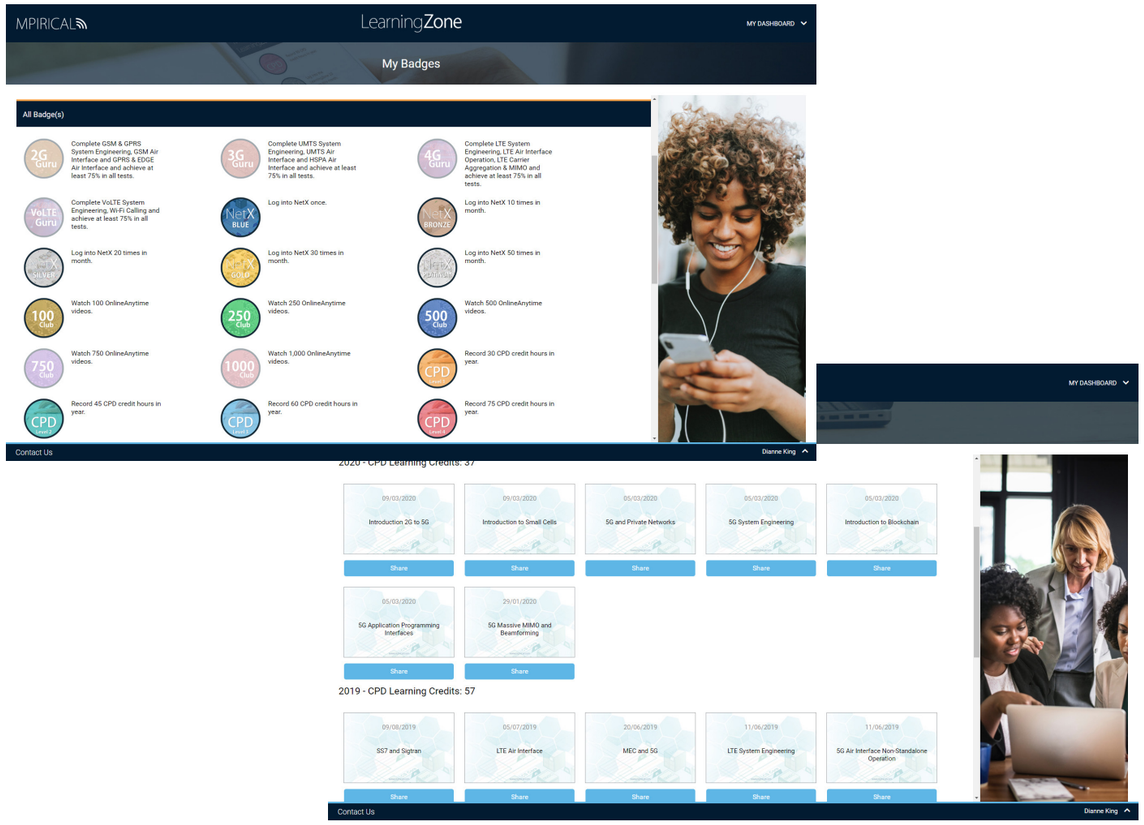
Loyal ‘Jack’ Lewman



Share your Success

In current climes we could all do with a bit of good news, no matter how big or small.
Send positive vibes to your network and share your learning achievements easily from the LearningZone.

Gain course badges for your activity in the LearningZone and take pride with the certificates that endorse your learning efforts.



Apply your Learning

Apply your learning and get under the skin of your network with NetX. Featuring a fully interactive 3GPP based network map, narrated call flows and detailed network procedures, NetX brings your learning to life. Accessible direct from the LearningZone.

Stay up to date

Find out about new courses as soon as they become available. Keep an eye on the What’s New banner in your LearningZone for details of the latest course releases, Mpirical news and technology blogs.

“

An investment in knowledge pays the best interest.

”

Benjamin Franklin

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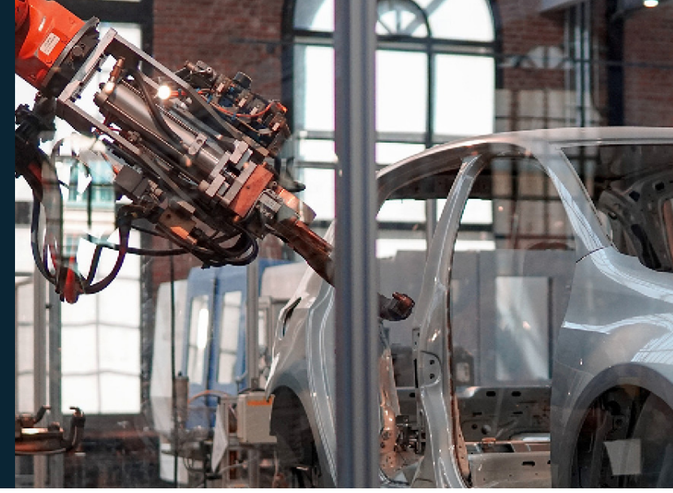
Private 5G Networks



Private 5G networks are a topical area at the moment, no doubt fuelled by the successes of LTE in private network deployments.

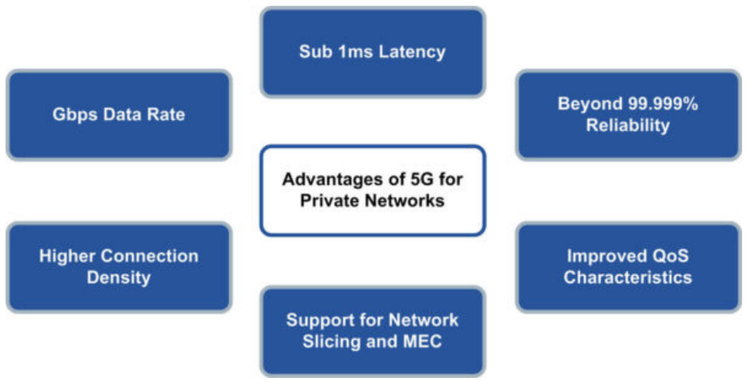
This is particularly relevant to the U.S.A., where Private LTE has been deployed within the 3.5GHz CBRS (Citizen's Broadband Radio Service) shared band. It's clear though that Private 5G is shaping up to see significant deployments on a global scale, pending spectrum regulation.

Advantages

5G as a private networking technology is a particularly interesting proposition; with data rates in the order of Gbps, latency of sub 1ms and reliability exceeding 99.999%, the latest 3GPP technology outperforms LTE and Wi-Fi but also provides advantages beyond simple performance.

For example, connection density of devices has improved tenfold over LTE, making 5G attractive for Massive IoT deployments and therefore ideal for private deployments in a variety of scenarios with high numbers of end devices – enterprise, industry, healthcare, etc. Moreover, 5G has inherent support for Network Slicing, making network management and control easier for the private network operator. Support for MEC (Multi Access Edge Computing) is also beneficial, particularly in an industrial setting where AR and VR use cases are gaining traction.

Finally, the QoS mechanisms that 5G supports, albeit similar to LTE, now extend to delay critical services which require guaranteed bitrates (a prime requirement for industrial applications requiring deterministic message transfer).



Be Inspired

Take a break with one of our selected 5 minute reads from our Technology Blog...

Challenges

Beyond the media hype surrounding 5G however, deploying the technology in a private network setting is not without its challenges. The technology is new, which obviously has implications on cost. Where early Private 5G trials are enabled with the financial support of equipment vendors, mobile service providers and academia, the price point for 5G will need to come down if Private 5G is to become a commercial success. That said, as 5G technology as a whole sees more widespread deployment (approx. 51 5G networks currently deployed at the time of writing), the cost should reduce.

Perhaps one of the most significant challenges is spectrum or more specifically, in which band should Private 5G be deployed. At present, there's three options available: Licensed, Unlicensed and Shared.

Licensed – although operating the Private 5G network within a licensed spectrum band will mitigate the risk of interference, the cost associated with this option is potentially too great. This however is scenario dependent; for an enterprise deployment of Private 5G, it's unrealistic to think that that enterprise would be in a position to purchase exclusive access to radio spectrum. However, for a national infrastructure company it may be an option.

Interestingly, spectrum regulators tend to understand these issues and consequently, some common-sense approaches to licensed spectrum usage are beginning to emerge. For example, the UK regulator OFCOM is permitting access to licensed spectrum owned by mobile service providers which may be either a) unused or b) not deployed in a specific geographical area. For a small fee and under strict regulation (transmission range, geography, etc), a Private 5G network could potentially access this spectrum.

Note that the mining industry in particular could benefit from this approach since mines deep underground or geographically isolated are not going to interfere with public mobile networks.

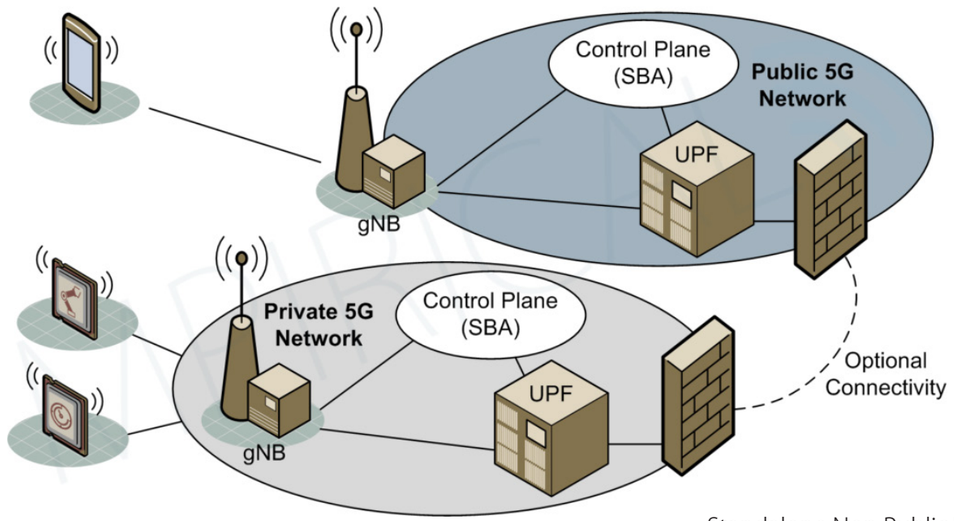
Unlicensed – with this approach, the Private 5G network will operate in the traditional unlicensed band which is shared by other technologies such as Wi-Fi and LTE-U. Interference is obviously an issue, but the cost of the spectrum is free. In addition, in the USA, Europe and other parts of the world, freeing up a further 1.2GHz of spectrum around 6GHz is being explored.

Shared – around the globe today, spectrum regulators are assigning spectrum bands allocated to shared spectrum operation and reserved for a particular technology such as LTE or 5G. For a typically low fee, a Private 5G network can be deployed within this shared spectrum band, benefitting from a reduced risk of interference and potentially large channel sizes (OFCOM's Shared Access License reserves 4 separate bands with the 24.25-26.5GHz band having 2.25GHz of spectrum available). Interference is still however an issue and as such, coordination between private networks may be required.

Deployment Models

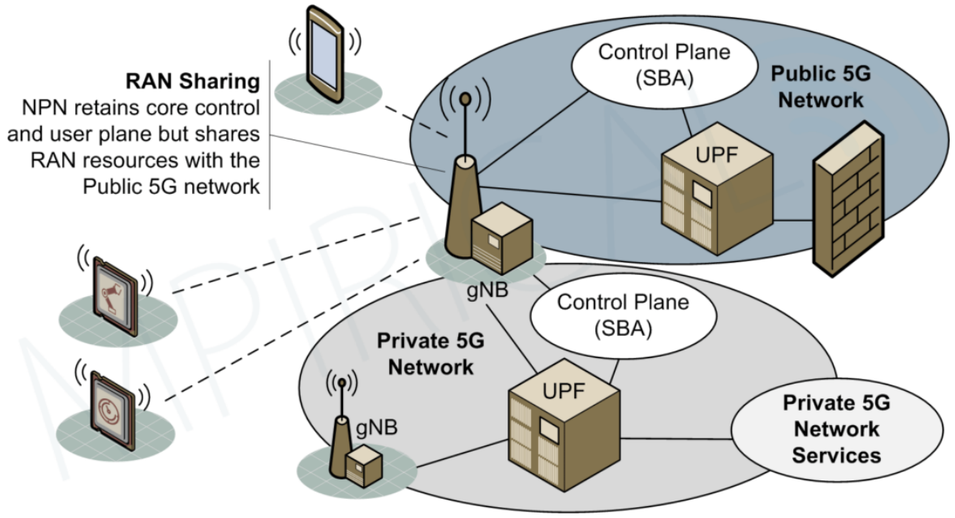
From the perspective of the 3GPP (the standards body responsible for 5G New Radio), Private 5G networks are termed "Non Public Networks". Two high level deployment models exist:

SNPN (Standalone NPN) – this is a Private 5G network which is self-contained; the network owner is responsible for the RAN and Core elements, with no interaction with a Mobile Service Provider.



Standalone Non Public Network

Public Network Integrated NPN – with this approach, a Mobile Service Provider will assist in the deployment of the Private 5G network. This could include RAN sharing, RAN and Core Sharing or full outsourcing, possibly instantiated as a network slice within the Public 5G network.



Public Network Integrated Non Public Network (RAN Sharing Example)

Conclusion

On a global basis, even Private LTE networks are a relatively new phenomenon, with deployment lessons still being learned. Although real-life deployments of Private 5G are out there, challenges related to cost and spectrum usage, coupled with a lack of knowledge within the private network industry are potentially going to be limiting factors. However, specific use cases such as Industry 4.0 could unlock a huge market for Private 5G, particularly since 5G can provide communication services which outperform the private networking technologies that are currently available today. Providing a combined approach between standardization bodies, spectrum regulators and equipment manufacturers can be achieved, Private 5G could mean the reach of 5G is extended way beyond the traditional mobile space.

Want to know more about Private 5G? Take a look at our Private 5G Network course here.

Perhaps not too surprisingly, news coming out of Las Vegas last week (CES 2020) tended to focus on the mass rollout and uptake in 5G, and the evolution of ML (Machine Learning) and AI (Artificial Intelligence) as it begins to encompass all aspects of our life. As such, I thought I would take this opportunity to take a brief look at how these two technologies may combine.

Fuelled by Hollywood, the common perception today is that AI enables computers to be programmed to actually be a human mind; to be intelligent in every sense of the word, to have perception, beliefs and the general cognitive states attributed to humans. This is "Strong AI" and to date, remains solely in the minds of the film producers and directors.

Instead, the AI which is in widespread use today is termed "Weak AI", examples of which include: the automated personal assistants of Alexa and Siri which conduct natural language processing; autonomous vehicles and their ability to interpret their environment; computer vision, which is able to conduct facial recognition or analyse medical scans. It is this type of AI which is being incorporated into 5G.

What is Artificial Intelligence?

There is no universal definition of Artificial Intelligence however it can be expressed as the ability for a machine to perform cognitive functions which we associate with the human mind, such as perceiving, reasoning, learning and problem solving.

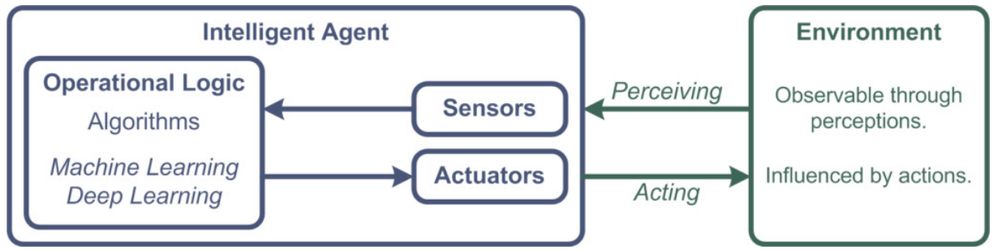
A conceptual view of AI[1] can be described as an "intelligent agent" which in turn consists of three main elements; sensors, operational logic and actuators. The sensors collect raw data from the environment whilst the actuators act to change the state of the said environment.

Clearly, the power of the intelligent agent is the operational logic as it must, for a set of defined objectives, take the input data from the sensors and provide output to the actuators. These could

Author:
Gavin Mitchell

Published: 3rd January 2020

take the form of recommendations, predictions and decisions that in turn can influence the state of the environment.



The operational logic element is comprised of various algorithms which are used to build a model of the environment and then to interpret this model to make predictions, recommendations and decisions etc. These algorithms form the basis of what we now describe as Machine Learning and Deep Learning.

Machine and Deep Learning

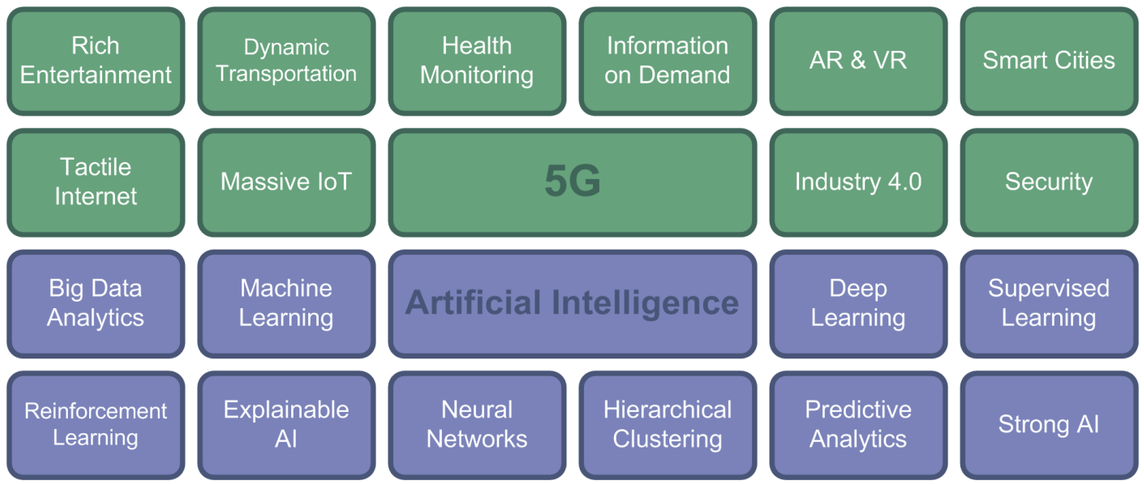
Most recent advances in AI have been achieved by applying Machine Learning to very large data sets. Machine Learning algorithms detect patterns and learn to make appropriate predictions and recommendations by processing data and experiences, rather than receiving explicit programming instructions. Moreover, the algorithms also adapt in response to new data and experiences to improve their efficiency over time. In other words, Machine Learning provides both predictions and prescriptions.

Therefore, Machine Learning relies on algorithms to analyse enormous data sets to be both predictive and prescriptive however it cannot think, feel or display any form of self-awareness or exercise free will, regardless of what Hollywood would have us believe. That level of AI is still some years away! What Machine Learning can do however is to perform predictive analytics much faster than we humans and without getting bored and thus should be viewed as a tool to help us rather than replace us. Thus, Machine Learning can perform the analysis, but we humans must still consider the implications of said analysis and therefore make the required moral and ethical decision.

Deep Learning on the other hand can be defined as a type of machine learning that is able to process a wider range of data resources, requires less data pre-processing by humans and can often produce more accurate results than the more traditional machine learning techniques. In Deep Learning, interconnected layers of software based calculations known as "neurons" form a neural network which can ingest vast amounts of input data and process it through multiple layers that learn increasingly complex features of the data. That is, the network will make a decision about the data, learn if its decision is correct and then use what it has learned to make better decisions in the future with regards to new input data.

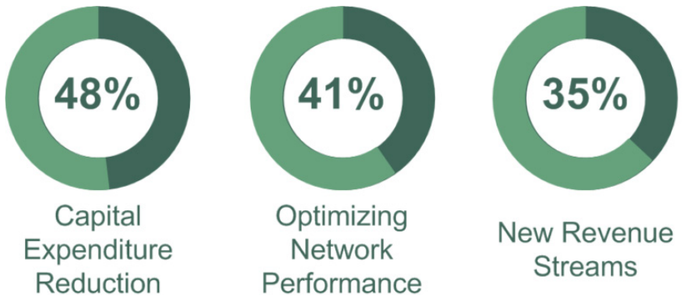
5G and AI

The 2020s is very much the decade of 5G and even though 2019 saw the launch of numerous 5G networks around the globe, the majority of these were based on "Non Standalone Architecture" and as such, utilized the 4G core network. In other words, they simply provided data capacity boosts through a new 5G radio network whereas control remained firmly in the world of 4G. However, true 5G is a lot more than this and during the early 2020s, we will begin to see more "Standalone" deployments capable of supporting the key differentiators of 5G; Massive Machine Type Communications (MMTC) and Ultra Reliable Low Latency Communications (URLLC). Once these are truly available, along with the services that really require them, need for AI to process the data will be critical if we are going to support the 5G services that we as an industry, have been enthusing about for the past few years.



As we enter this new decade, we need to move from the "Internet of Things" to the "Intelligence of Things"; or in other words to support connected intelligence. Service providers cannot simply be focused on moving the data from "A" to "B" but instead, they must focus on the value and significance of said data. They must deploy AI to not only manage and optimize these complicated 5G networks but to also generate new revenue streams. History has taught us that if we simply build a data pipe, someone else will quickly develop the service to run over the top and thus capture the revenue. AI and 5G is no different.

Interestingly, the coexistence of 5G and AI appears to be happening already as indicated in a report from Ericsson[2]. This states that 53% of service providers expect to have adopted AI within their networks by the end of 2020 with a further 19% looking to do so within the next three to five years. Furthermore, the report indicates that the reasons service providers are doing so is to not only build new revenue streams (35%) but also to reduce capital expenditure (48%) and optimize network performance (41%) moving forward.



5G and AI working together...

5G and AI will form a "symbiotic" relationship in that each will enhance the capabilities of the other. For example, the integration of Multi Access Edge Computing (MEC) into the 5G Service Based Architecture (SBA) alongside the significant reduction in latency brought about by the new 5G air interface will enable Augmented Reality (AR) and Virtual Reality (VR) to become mainstream across both enterprise and consumer markets. Thus, video data from the devices will be rapidly transferred across the network enabling machine learning algorithms operating on the edge to interpret the information and return "intelligent" responses in near real-time.

Conversely, the complexities of the 5G radio will necessitate the need for Machine Learning and AI in order to dynamically optimize the millions of 5G small cells, not to mention the issues of introducing Massive MIMO and beam forming / beam steering. Network Slicing, a key enabler introduced in 5G, can also benefit from AI as the algorithms will enhance automation and adaptability by processing real-time information on network performance, quality of service provision etc, thereby supporting a more efficient, dynamic provisioning of a network slice.

Therefore, as we head into the 2020s and the widespread adoption of 5G, it is fair to say that AI will play an ever increasing role in supporting not only network operation but also the way we interface and utilize the new services that will run across it.

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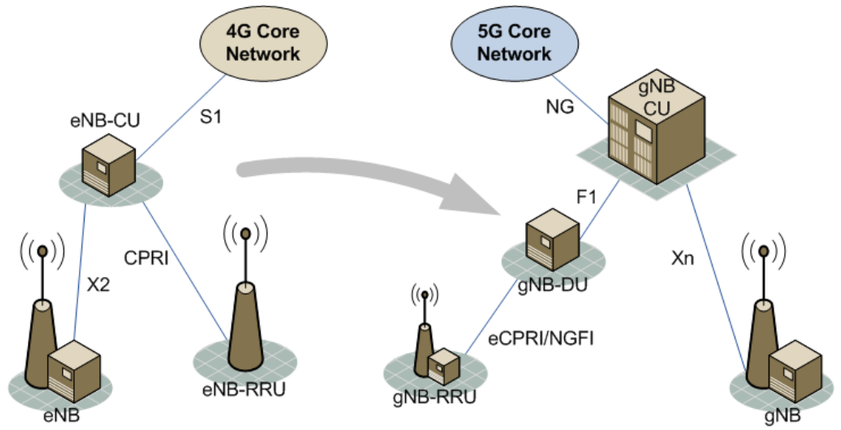
The Challenges for 5G and Transport Networks

A number of challenges face service providers with regards to being able to meet the 5G requirements. These challenges include a network bandwidth that doubles every 18 months and connected device numbers that double every 24 months.

In order to meet these challenges as well as widely varying requirements for performance, capacity and latency, the transport network must evolve and scale efficiently. This evolution needs to take place from the access network through to the core network.

- **Capacity –** higher traffic demands in 5G will be presented through overall throughput increases and throughput per site increases. Peak user connection speeds in 5G will rise up to 20Gbps. In addition to this, a global average five-fold increase in traffic volume is predicted by 2025, 76% of which will be video traffic.
- **Connectivity –** 5G will see the densification of cell sites which will drive the number of transport network access points that will be needed. It is forecast that this densification will mean a 3 to 4-fold increase in cell sites in new locations. In addition to this, new approaches to RAN deployments and virtualization of the 5G core will require more connection points, scalability and flexibility in the transport network.
- **Capability –** transport networks will need new capabilities that can increase flexibility and agility, with an ability to provide the foundation for a distributed mobile network. In addition, techniques and technology used in 5G will facilitate increased coordination and MIMO (Multiple In Multiple Out) beamforming. This will see a requirement for low latency and improved synchronization, especially across the fronthaul network.
- **Complexity –** the transport network needs to handle not only a huge increase in traffic but also a wide variety of network characteristics for each specific case. Some use cases will demand ultra-low latency connections, while others will have more relaxed requirements. Deployment of virtualized RAN, network slicing and distributed cloud networks will lead to more dynamic traffic patterns and more complex connectivity demands.
- **Cost –** the advances enabled by 5G cannot be managed cost effectively simply by adding more capacity to existing transport network infrastructure. The transport network needs to become more integrated end to end, from radio access, through the fronthaul and backhaul to the core network using solutions that will optimize TCO (Total Cost of Ownership).

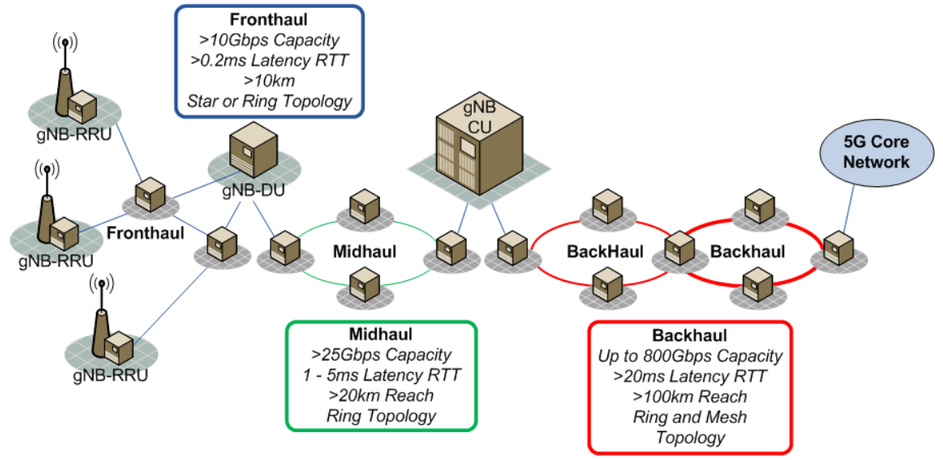
One main change that is noticeable when considering the evolution of technology from 4G to 5G is the split within the access network to incorporate centralization. This provides for greater flexibility and facilitates the virtualization of the RAN, but it does add to network complexity.



The C-RAN (Centralized RAN) approach introduces several advantages for the service provider:

- **Cost reduction –** centralizing processing capability means that the cost of a DU (Distributed Unit) reduces.
- **Energy efficiency and power cost reduction –** by reducing the hardware requirements of the cell site, general power consumption and also air conditioning costs can be reduced. This cost saving could be significant, especially with networks containing hundreds of thousands of cell sites.
- **Flexible hardware implementation –** this in turn will result in highly scalable and more cost-effective RAN solutions.
- **Improved coordination –** including performance optimization as a result of improved inter-cell interference coordination, as well as improved load management.
- **Improved offload and content delivery –** aggregation of processing capability at the CU (Centralized Unit) provides an optimal place in the network for data offload or hosting of content.
- **Deployment flexibility –** particularly with respect to where the functional split of the protocol stack lies, which in turn has an effect on the transport network.

Taking into account the implementation of C-RAN, the transport network can be broken down into three specific areas – fronthaul, midhaul and backhaul. Fronthaul transport is provided between the RRUs (Remote Radio Units) and the DUs, midhaul transport is provided between the DUs and the CUs, and backhaul between the CUs and the CN (Core Network). The different transport network characteristics between these are summarized below.



When analyzing the capacity requirements in the 5G RAN fronthaul there are a number of considerations to take into account as they all contribute to the overall calculation. These include the number of antenna ports being used, the radio bandwidth and also the subcarrier spacing being used. The NG-RAN (Next Generation – Radio Access Network) shall be able to support up to 1GHz system bandwidth, and up to 256 antennas. Calculations in relation to a possible transport deployment show that a theoretical maximum bitrate over the transport network of approximately 614Mbps per 10MHz per antenna port is needed.

Backhaul will provide the connectivity between small cells, macro cells, core networks and possibly numerous gateway nodes in between. The end points will be interconnected by a network of physical links, each with differing characteristics in terms of capacity, latency, availability, coverage, security, delay, synchronization, QoS, and physical design. Backhaul bandwidth capacity can be expected to be greater than 25Gbps and potentially up to 800Gbps. This will be dependent upon the amount of aggregation taking place and the deployment scenario (urban, rural, dense urban or indoor hotspot).

The increased demand for 5G eMBB is predicted to require the number of microcell sites to grow from 11 million to 14 million. As well as the challenges that 5G small cell sizes will bring this number increase will result in extra traffic. As such, during the planning phase of a deployment it is key that this is provisioned correctly. Failing to have adequate backhaul capacity can have detrimental effects.

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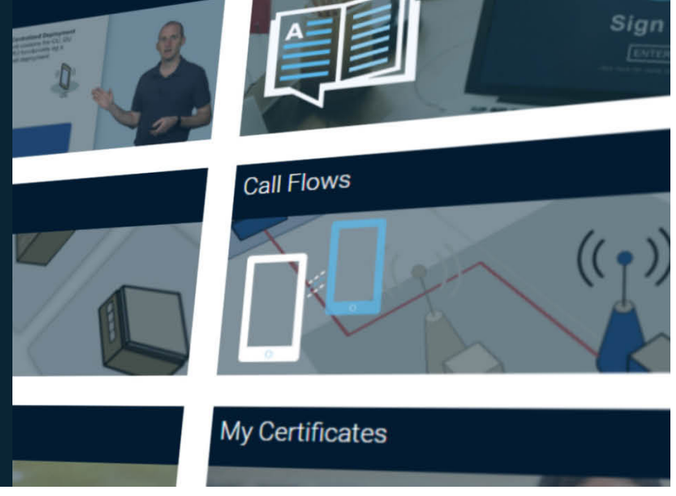
5 ways a good LMS can benefit learning



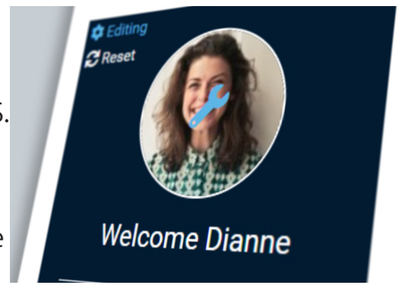
Continued learning is a must for professionals and with online training being one of the preferred ways to learn, something that is key to aid this is a good Learning Management System (LMS).

There a whole host of LMS out there but if it isn't a user friendly one it will soon become more frustrating than helpful. When logging in you need to instantly be able to navigate to the resources you need, be that a video course, white paper or even a blog. If you can't, you'll likely log off and think twice about logging back in.

We have our own LMS here at Mpirical, the LearningZone, which provides a wealth of training to the telecoms industry and we constantly look for ways to improve the user experience. Since applying several new features in recent years, from personalisation to gamification (in the form of badge earning) we have seen an increase in usage and engagement.

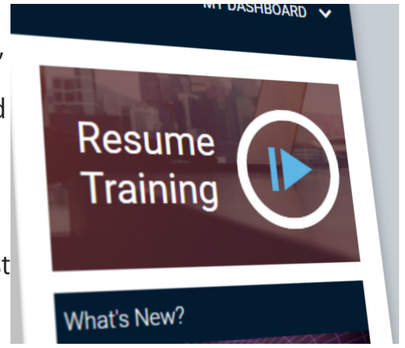
Here are just 5 things we think help make a great LMS:

- **Personalisation & Customisation –** If a user feels like the platform is theirs, they will be much more willing to utilise it for their learning. Being able to add a profile image and choose how your name appears helps to personalise an LMS. Another aspect of this is customisation. Allowing a user to edit pages like the dashboard, by allowing the closing of tabs they aren't interested in or moving them into an order they want, makes the user experience much better. We have utilised this feature on our dashboard and in 'My Courses'.

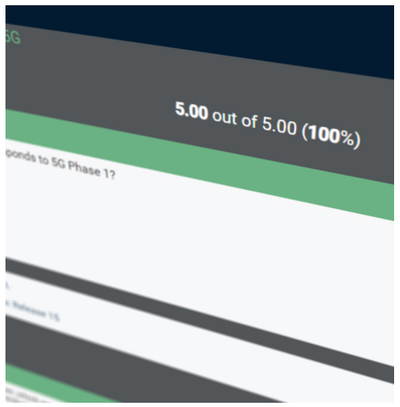


- **Gamification –** Gamification is a great way to engage users in their learning. In our LearningZone we have added gamification in the form of 'Badges'. These provide an incentive to keep learning and give users the feel-good factor when they earn one. Also, if they are part of a team undertaking the same training, the badges can create a bit of friendly competition!

- **Resume function –** Let's be realistic, it is unlikely that a user will be able to fully complete a training course in one sitting, so providing an easy way to jump back in where a they left off is essential. Through the LearningZone we have provided a couple of ways to easily do this. We have a big 'Resume Training' button in the top right of the dashboard, click this and the user is taken right back to where they left a course. Alternatively, users can find their latest course activity in their profile box on the dashboard. Here they can see the last three courses they have undertaken, what percentage they are through them and can click the course to jump back in.



- **Clear End Goals with Instant Feedback –** Having clear end goals for a learner is always a must. It's great that they can watch hours of video content, but it's meaningless if there isn't an end goal. A quiz or a test of understanding following a course can not only solidify learning but also provides the end goal of earning a certificate of achievement. Instant feedback is important to go alongside this. Through our LearningZone, once a test of understanding has been completed, the learner will get an instant grade and be shown what they got right and what they got wrong. Completing a course will result in the awarding of a certificate, which can be shared on social media and also downloaded as a PDF.



- **Extra Resources –** It's not enough to provide a learner with just video courses (excellent as they are); there needs to be more to help aid their learning. Extra resources are a perfect way to give a user a better experience while learning, as well as a reason to keep coming back. In our LearningZone we offer a glossary of telecoms terminology (perfect to help users with the many acronyms of the telecoms world), a technology blog for further reading and best off all, access to our unique tool for network visualization, NetX.

There you have it, 5 things we think help to make a great LMS that can really benefit learning. Of course, there is plenty more that we offer that can contribute to this but maybe we will discuss those at a later date.

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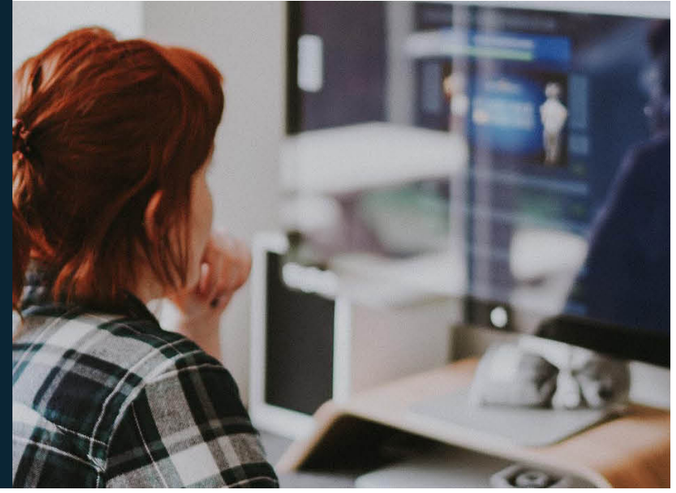
MPIRICAL
Innovating Telecoms Training

How to succeed at remote learning



As remote living becomes the new norm, the world is navigating what that means for many aspects of our daily lives, including work, social interactions and education. But the latter is no novelty to many.

The Rise of Remote Learning

Online learning has seen a significant surge in recent years, particularly corporate training and professional development, with a global revenue for e-learning expected to reach $325 billion by 2025. At Mpirical, we ourselves have seen the digital shift. In the last 4 years since introducing our OnlineAnytime package, we have seen this grow in popularity, surpassing our once dominant face to face classroom sessions of our LiveOnsite courses, and the trend continues to accelerate. Even before enforced global isolations, the past 12 months has seen a rapid move toward the consumption of our online materials, with views of our videos on Vimeo alone up 5 fold in the last year.

Since Mpirical launched, we have respected the intricacies, pros and cons of distance learning, and worked these into our unique learning management system for delivering a large proportion of our telecoms training. So as online training veterans, we wanted to share our advice on how to get the most out of online learning, and how you can be successful in your remote studies, during this period of lockdown, and beyond.

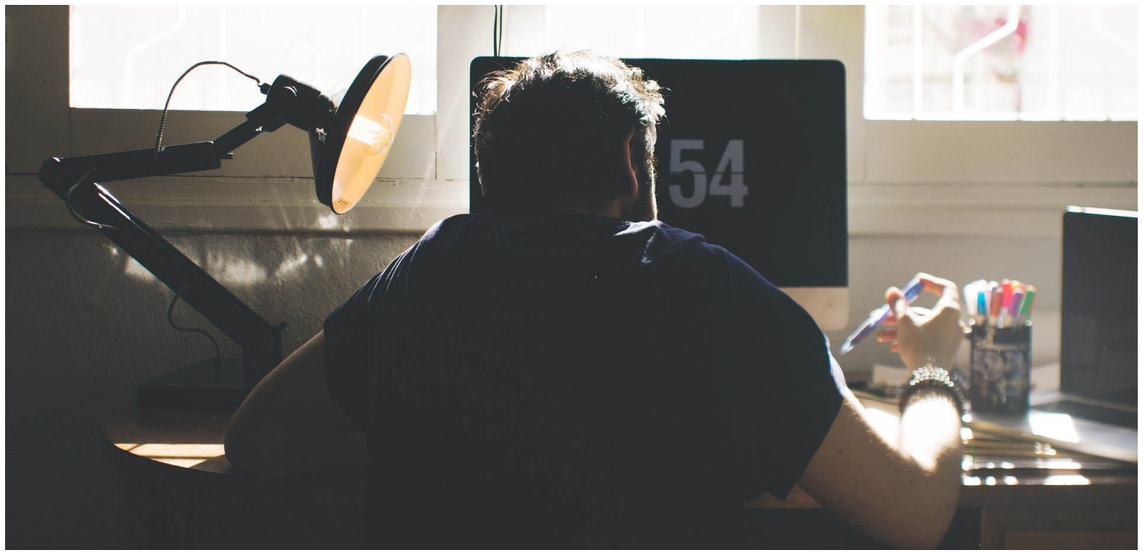
Is online learning for everyone?

Despite the rise in popularity, online learning may not be best suited to everyone. There are a number of factors that come into play when it comes to being a successful remote learner:

Learning Styles

Depending on which model you look at, there are an array of styles that characterise your individual learning. Taking a popular model VARK as an example, this breaks down learning styles into Visual, Auditory, Reading/Writing and Kinesthetic.

On the outset, it may seem that online learning is well suited to both visual and auditory learners in particular – given the combination of graphics and audio explanation that videos and other online materials can offer. There is the possibility in contrast that kinesthetic learners – who typically learn by being more hands on and interactive – may not reap the same benefits in an e-learning environment.



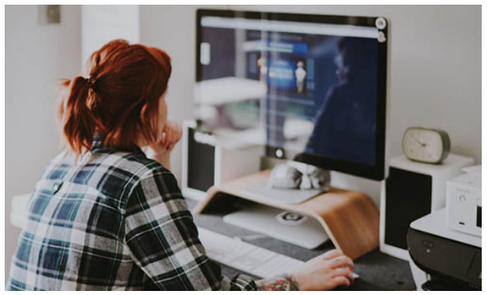
However, depending on the Learning Management System you are using and the course materials available to you, any good training provider would ensure these learners are catered for as well through interactive tools that allow for applied learning. Our network visualization tool NetX for example, allows learners to interact and get under the skin of their network.

So assuming you are using a quality training provider, an online platform shouldn't hinder your learning, no matter what style of learner you are. It may however be the case that kinesthetic learners for example become more creative in the ways they learn, and engage with those various tools provided.

Which brings us on to our next factor: mindset...

Mindset

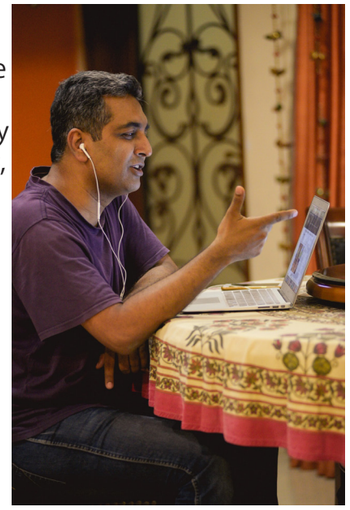
With any form of remote living, whether that be remote working or online learning, there is an element of self-motivation that comes into play. When the initiative to learn comes from the individual, and not a calendar invitation from your boss or a herd of your peers heading into an office training room, there needs to be motivation from the learner to dedicate time and head space to their studies.



And you'll know if that's for you or not. Online learning takes discipline, and a desire to develop. If you intrinsically have this motivation, then great! If you're someone who knows you may need that extra push to get into the learning 'zone', all is not lost yet when it comes to e-learning. There are some things you can do to help boost your motivation. Aside from geeing

yourself up with motivational TED talks about, well, motivation, a simple act like weaving training into your daily schedule, even just for a set hour each day, could help keep you on track. Send yourself that calendar invitation if it helps.

Community Engagement



As many of us are finding in our new imposed remote world, despite emerging technologies, there can be drawbacks to not having that face to face interaction. And online learning is no different. Not only can there be a distance between the course leader and the students, but between the student group itself.

Online learning can be isolating.

This can suit some people. Some people prefer the one-to-one feel of online training programmes, with the anonymity it provides and the flexibility for working at your own pace. But for others, the inability to confer with your peer group, or stop for a brief moment of reflection and clarity with either the instructor or fellow learners, can be a dampener to the learning experience.

If you fall into this latter group of students who learn better in a herd, then online learning is probably not your first choice. But if this is your only option right now, get creative. Engage with your cohort through other means. Enlist a learning 'buddy' and work through the content together. Taking that initiative again to seek out ways that will aid your learning.

Remember too that online learning doesn't have to mean solo study. Live virtual classrooms may suit you better than on demand courses...

Self-awareness

So is online learning for everyone? As we've highlighted above, there can be a number of challenges to online learning, but many of which can be overcome by the tenacity of the learner. And in all of the cases mentioned above, this relies on an element of self-awareness.

As a learner, spend some time thinking about your leaning style, how do you best soak in information? Take a quick online quiz if you're not sure. Do you lack motivation to drive your own development? If you've read this far the answer is probably no, but be mindful of things you can do to keep the momentum going. Do you know you need to be part of a learning community, or are you content working alone?

Once we are self-aware about our preferred learning practices, we can take the necessary steps to ensuring we are getting the best out of our online learning experience.

So how do we succeed at online learning?

Through our own experience at Mpirical, and those of our past and present cohorts, we've outlined some tips to help you get the most out of your remote courses:

Establish a learning-conducive environment

As you'll see from the many articles regarding remote working conditions at the moment, the same is true of learning. Ensure you have a dedicated space. Be comfortable. Make yourself free from distractions. Give yourself the dedicated time you need. Be realistic about the amount of time you're going to spend on your studies.

Choose the right device for you

Any good learning platform will be responsive, allowing you to learn in the way that best suits you, whether that's at your desktop, on a tablet or scrolling through your mobile phone. Our own cohorts tend to opt for desktop studying, with 77% of our students accessing our courses in this way. But that's not to say that a mobile device isn't as effective if that's your preferred tool.

Engage with your learning community

In whatever way you can. As mentioned above, consider a learning buddy. Get a group chat going with some of your colleagues. Schedule your learning around the same time if possible, so you can all give each other that motivational boost. Share your learning milestones, and celebrate those of your peers.

Be active in your learning

"Learning is more effective when it is an active rather than a passive process." Kurt Lewin. Take it from this guy. To be successful in any form of studies, involve yourself. Be active in your learning. Engage with the materials provided. Be curious about your further development.

Enjoy the experience

You're dedicating time to your studies. Try to enjoy it. Follow the tips above, engage in the materials, be active in any gamification that your learning platform provides, be social with your learning and you will not only emerge better skilled, but having enjoyed the process as well.

Mpirical run a range of telecoms courses through LiveOnsite (temporarily suspended with new dates to come), LiveOnline or an on demand OnlineAnytime package. We provide an enviable learning management system, the LearningZone specifically designed to aid learning. Discover our LearningZone or browse our range of courses.

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