Plumbing, Electrical, HVAC . . . and 5G

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KEY THEME – EDGE PRODUCT MARKET FIT REQUIRES TECHNOLOGY <u>AND</u> CHANNEL MATURITY

We build and use technology as a matter of course these days – it's unusual to see work today being done that does NOT involve tech in some form (blacksmithing?).

Although we tend to take tech for granted in many of our daily interactions, it's useful to look at when and how technology innovations have crossed over into a more standard GTM, or go-to-market, motion. What's the criteria to make the leap and how do we predict that GTM path and leverage that for maximum business advantage?

There are many examples of where the GTM path has changed to make technology more mainstream. If you bought a Ring doorbell in 2014 it was likely on-line through a technology reseller. One model, kind of pricey, for geeks only. As the tech matured it's now in Home Depot, in a nice box, where everyone buys doorbells. There's a level of maturity of the tech itself – the semiconductors (cheaper, lower power, higher perf), materials and manufacturing, cloud services and software, networks – but also a level of sophistication in the *commercialization* of that technology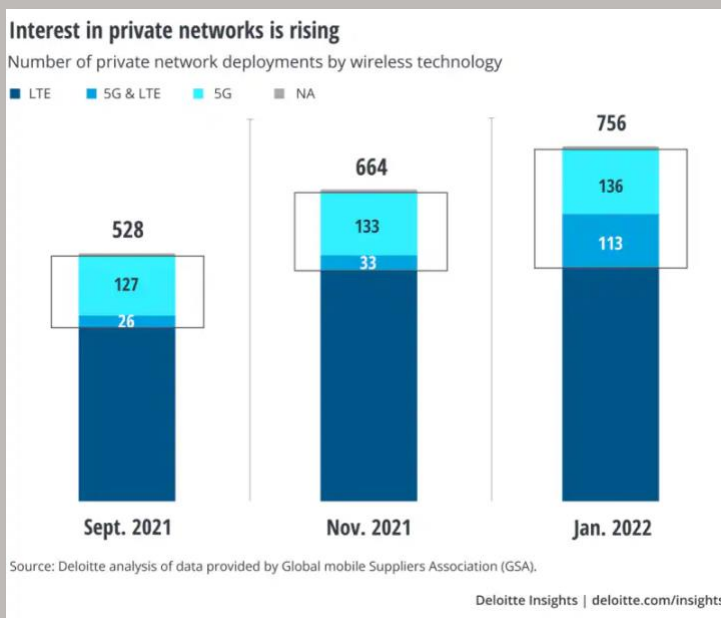 – that unlocks a new GTM and enables that tech to land in its "natural home." Those of us in the tech-making business are always (hopefully) listening to customers to build the right "it"- and the R&D behind this technology – from the development of novel AI models, leapfrogs in semiconductor fabs, innovative battery technology – are foundational and amazing. But ultimately how does the solution, that includes these fundamental innovations, need to land to really have business impact? Let's look at a canonical example that I believe is about to make a transition to a new GTM model – Private 5G.
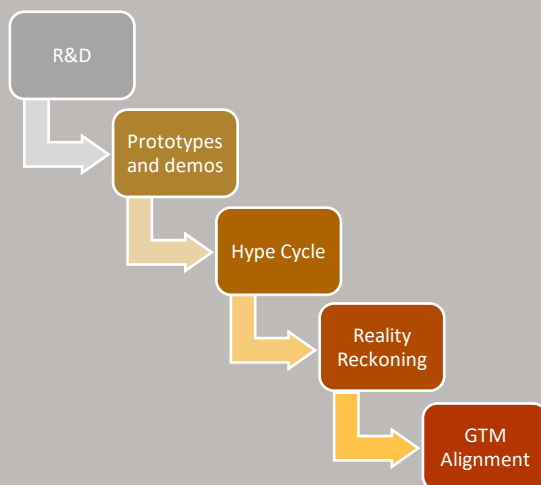
5G is the poster child for deep technology innovation and massive over-hype. It's built on incredible science – literally vibrating air – and pushing a ton of packets over great distances at near zero latency, to devices moving at high speeds. Between the millimeter wave frequencies, network slicing, beamforming – the list of innovations is mind-bending. And therefore, perhaps, as 5G was starting move from the lab to the trade show demo, the hype cycle went into overdrive.

The tech industry is addicted to hype cycles. We love hype cycles. Back in 2019, Gartner published "5 Trends Appear on the Gartner Hype Cycle"[1] – which included 29 separate technologies (!). And 5G was a whopper. There is no debate here. But, out of that tech came some real opportunities for business to accelerate their digital transformation journey – including Private 5G.

Private cellular networks are not that new. Companies like Cradlepoint (now part of Ericsson) have been providing mid-band CBRS (LTE equivalent) based wireless solutions for years, with equipment suppliers like Ericsson and Nokia leveraging their telecom bona fides, with semiconductor providers like Qualcomm, Intel and others providing the foundational semiconductor tech.

Interest in private networks is rising
Number of private network deployments by wireless technology

Source: Deloitte analysis of data provided by Global mobile Suppliers Association (GSA).

Deloitte Insights | deloitte.com/insights

Private 5G holds out a promise of ultra-low latency, secured and private, ubiquitous connectivity – across the campus, the factory floor, and across acres of commercial property - completely in the control of the IT department. Like any respectable tech, it had its own "mini" hype cycle. Every tradeshow had multiple a private 5G demos competing on speed, capabilities, coverage – you name it.

So, what happened? It's complicated. Literally, it's complicated. To drop in a packet core on-prem, with a RAN, a DAS, with the right interconnects, layout, software configuration, deployment and provisioning, security layers, and integration with a commercial businesses existing IT/OT flow…it's complicated. In addition, on-prem private 5G also provides an opportunity to utilize the heavier edge equipment (think Intel Xeon-class boxes) – that's running the packet core – to also run other commercial workloads, like AI models for anomaly detection, time series insights and more, although some of that could be offloaded to a hyper-scalar depending on latency requirements. There are also challenges in insuring you have the right radios in the UE (user equipment) to use the right 5G spectrum being used in that specific private

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[1] Gartner Research - Hype Cycle for Emerging Technologies, 2019

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deployment – this is NOT your typical iPhone[2]. Companies started to look at the ROI envelope, and long deployment times between trade show and factory floor, and they started to ponder their investments in a macro-economic environment where the cost of money was going up, as was time-to-market.

The good news is that the market is still there and heating up. According to the recent SNS Telecom report, "global spending on private LTE and 5G network infrastructure for vertical industries - which includes RAN (Radio Access Network), mobile core and transport network equipment - will account for more than $6.4 billion by the end of 2026."

The private 5G underlying tech is killer, but the GTM is super challenging. And, just like Ring doorbells, the GTM is getting figured out by some bright companies on the horizon. First, most telcos are standing up business units to provide private 5G that uses their spectrum and interoperates nicely with their "public" network cloud. Also, some of the big Sis, like Cap Gemini, are stepping into sell/configure these systems. Finally, companies like Celona are creating more turnkey private 5G equipment – based on all the great foundational tech that I mentioned. There are also companies springing up that are taking a holistic approach to installing/supporting private 5G, like Freshwave, which is where it starts to get interesting.

"Private wireless effectively eliminates many of the long-standing mobility and reliability issues that enterprises have historically faced with conventional best effort wireless technology or public carrier services," said Sanjeet Pandit, Vice President of Global Relations with Operators and Ecosystems in Celona. "The real goal is obfuscating the perceived complexity of the technology while eliminating the friction of deploying the private wireless with what is already in place.

Recent technical advanced with so-called 5G LAN systems do precisely this through tight integration of the RAN with a full-stack IP converged 4G/5G core coupled with an intuitive cloud-based orchestration platform – all purposely engineered for IT staff."

Freshwave was founded on the premise that the networking technology needs to be integrated into the industry specific buildings and trades to really land within the right ROI envelope. They would say that they are in the "buildings trade" and happen to also be network experts. This is where private 5G is heading for construction and indoor spaces – to be a powerful tool in the toolbox of any builder to deliver connectivity a part of any construction project – that feels like the right "natural home" for this type of commercial connectivity – the Home Depot equivalent for private 5G.

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[2] Apple device support for private 5G and LTE networks - Apple Support

Case in point, take a look at how they are connecting London's tallest skyscraper. Today via a 4G pay-as-you-occupy DAS (providing connectivity even in some of the lifts), with a current proof of concept discussion about a 5G private network layer being added in at [22 Bishopsgate (freshwavegroup.com)](https://freshwavegroup.com)

I expect we'll be seeing more of these fit-for-purpose solution providers of private 5G[3]– companies that build/retrofit stadiums, office parks, factories, refineries, even shipping ports and airports. As the hype cycle dies down, private 5G is finding it's GTM – as a part of an overall construction/building solution. That's where companies will look to buy from, as well as on going service and support.

The role of "commercialization" here can't be overstated. Commercialization is what happens after software is GA, or generally available. It's that last 10% of the work that unfortunately can take 90% of the effort – the performance and stability bugs, configuration issues, interops between systems, and the telemetry to understand how the whole system is working. This is why it's crucial to find a trusted partner for your private 5G projects – one that has pre-integrated and commercialized several patterns that can fit your business. It's great to kick the tires with the tech providers, hear the pitches and see the demos. Ask the hard questions on roadmap, timing, and long-term support. But at the end of the day, who is on point to install, deploy, and maintain a commercialized solution?

This is just one way how private 5G is maturing – with a new class of construction and building experts that are augmenting their capabilities with commercialized private 5G solutions – a "natural home" as the tech matures and proliferates. If you're an equipment, spectrum, semiconductor, or software provider you should be expediting your partnerships and alliances with this emerging set of new businesses, and ensuring your raw tech has a clear commercialized path to successful deployments.

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[3] Who's selling [private 5G](https://) and what do you get? By Maria Korolov, Network World, 2022

https://edgecelsior.com