Technology Brief...

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Research, Analysis, Strategy, Insight

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Are SigFox and LoRa the WiMax of IoT?

The number of IoT connected "things" is expected to grow dramatically over the next few years, with estimates ranging as high as 50B connected devices by 2020. Indeed, this has caused somewhat of a stampede to try to offer broadband connectivity options to attach all of these devices to the cloud. Current networks supporting 4G/LTE offer connectivity but at a price that most IoT things can't afford. Its not only a connection cost issue, but also one of power requirements (standard LTE modems are relatively power hungry), and size (many LTE modem chips are quite large given the size of many of the IoT devices). And most IoT devices need relatively low speed and low amounts of data transmission requirements, which are not the design center for modern LTE networks. So alternatives to standard wireless broadband networks are needed.

Two players in this gold rush to connect all the devices coming on line are Sigfox and LoRA. Both are targeting the low power, low bandwidth requirements that most "things" need. And both are now deploying networks based on their own standards (Sigfox is a proprietary network owned by the company and LoRA is an alternative open network proposed by a consortium). But does either have a chance of success long term? The answer, in my opinion, is no. This is WiMax all over again.

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The standards body controlling the specs on broadband wireless connectivity (3GPP) was slow to react to the needs of low power and low bandwidth connections. This is not uncommon given the nature of various constituencies represented in the standards committee. Most standards bodies take time to do their work. But recently, 3GPP approved the Narrowband LTE spec (NB-LTE), also known as NB-IoT, technically designated as Cat M1 (1 mbps data rate) and Cat NB1 (40 kbps data rate) in Release 13 of the 3GPP LTE standard.

The fundamental success factors of any network longer term are investment to create scale, support by the major players, and supporting standards versus being proprietary. On all fronts, NB-LTE wins out. First, current LTE networks around the world can be upgraded with minimal investment to support NB-LTE. Indeed many carriers have already announced their intention to do so (e.g., Verizon, AT&T). This will make it nearly ubiquitous within the next 1-2 years. Proprietary networks like Sigfox and LoRA need to be built out and therefore require major investments. LTE already has a huge footprint that can be leveraged, whereas the alternatives start from a green field deployment which can take years to fully deploy.

Second, the largest vendors of modem chips (e.g., number 1 supplier Qualcomm, as well as major suppliers like Intel and others) have announced their endorsement

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of NB-LTE standards and have stated they will make SoC and standalone modem chips available to this standard within the next several months. And major carrier infrastructure vendors (e.g., Ericsson, Nokia, Huawei) have also announced support. The other networks can't claim this level of support, and will have relatively few chip and infrastructure suppliers as they will go where the standards (and volumes) lead them.

Finally, NB-LTE is a worldwide standard and will therefore be implemented the same way current smartphone based networks are, with cross-carrier roaming and universal access. This scale is a major advantage to service providers, commercial users of IoT/EoT, and mobile "things". Scale is important in any connectivity scenario as users won't deploy IoT with spotty or intermittent coverage.

There is one other point that's critical. NB-LTE has a direct pathway to the roll out of 5G networks. While 5G is still 3-4 years away, it will be critical to future uses. As a result it's likely that NB-LTE will be around for a long time. Neither Sigfox or LoRA can claim such integration into the future networks.

So the bottom line in my opinion is fairly simple. NB-LTE low power ultimately wins, as internationally deployed standards win out over proprietary green field networks. The chip companies and carrier infrastructure vendors ultimately will move to standards in supplying products. The major carriers will modify their existing LTE networks which will overwhelm the proprietary ones in sheer scope and capability. Current investments being made in Sigfox and LoRA (e.g., Vodafone) are only stop gaps to fill the void but it will be hard for them to grab enough scale to be successful longer term. Within 3-4 years, I expect all will be mothballed, or at least well on the way towards obsolescence. If there's one thing we've learned from WiMax, it's that is very hard to go against the grain when so many vested interests are at stake, even if you do have a potentially better, or at least more rapidly deployed solution.

LiveWorx – Industrial IoT becomes more

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The recent LiveWorx event in Boston sponsored by PTC, a company that provides tools to create, operate and service products primarily in industrial settings, was promoted as an IoT conference. A number of interesting synergies were presented beyond the traditional industrial management and CAD tools highlighted in the past. While focused on PTC's core products and markets aimed at leveraging its installed base, it nevertheless showed the increasingly practical role that IoT is playing in day to day operations of major corporations and why mainstream vendors of industrial products must quickly embrace IoT.

PTC has a footprint in both the digital and physical worlds. It provides tools to create 3D designs in CAD, Bills of Materials (BOMs), manufacturing info programmed into PLM systems, and a suite of tools for repair and service operations. But PTC is moving beyond its traditional core capabilities to enhanced IoT offerings. It has recently released Coldlight for business analytics, Vuforia for Augmented Reality (AR) from CAD info, and VuforiaStudio for AR development.

PTC has done more to accelerate the deployment of IoT on an industrial scale than many vendors. Coming from its technical and industrial base of users, over the past few years it has morphed from a company of primarily engineering/CAD tools into a broader company encompassing IoT management, analytics and AR/VR creation tools as an extension of its CAD capabilities. This is directly in line with what its customers want/need as they envision AR/VR as an extension of product

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design, service, and sales promotion. PTC has also added an analytics function which is necessary for any IoT installation to add value to an organization. And it has completed a number of partnerships to expand on its own base (e.g., SAP HANA, Dell).

PTC is strong in the industrial space where they have their biggest installed base. It makes sense for them to leverage this base to connect to existing product sets focused on 3D design and test, as well as manufacturing and industrial controls. But they are not a general purpose IoT platform that can provide a diverse set of capabilities across other industries, e.g., retail, financial, etc. This includes their design and analytics tools, which may be somewhat general purpose, but are tied to the PTC toolset as a first step. Opening up to other data repositories may eventually happen, but if it does it will take some time. PTC is no immediate threat to other more general purpose IoT players like SAP, IBM, Cisco, GE Digital, etc., who concentrate on the back end analytics and learning needs, while PTC is more focused starting at the front end and working backwards towards analytics and machine learning.

The market for IoT is growing, but much of the deployable technology will be centered on subject matter expertise – and confined to set purpose deployments with specific extensions to existing installations. As such PTC is well positioned to take advantage of its targeted installed base – extending their current products with enhancements while keeping the installed base of products in play.

Bottom Line: PTC has a winning strategy longer term as many, particularly mid-market companies, wish to add IoT on top of existing solutions, rather than rip and replace current infrastructure. We believe that PTC offers a good strategy for itself and its customers to move to enhanced IoT services for the least amount of pain and cost. As such, it should prove successful in expanding its business over the next several years.

Yahoo Gets a New Parent

Recently, Verizon announced it is buying troubled Internet pioneer yahoo for $4.8B, a very significant sum for such a troubled property. Despite much negative reaction, Verizon buying Yahoo makes sense for several reasons.

"…Overall Verizon buying Yahoo makes sense. It gives them a way to compete better with AT&T (and Google). It provides a large base of users to sell added services to (and deliver ads). It gives them content creation capabilities to better compete for added revenues...."

Verizon would get a significant number of Yahoo users (yes there still are many) that go to the site daily. Why this matters is not for the free emails that Yahoo offers. It's about faces that can look at ads, and the possibility of Verizon selling them paid services as an add-on to free services (premium vs. freemium).

Over the past couple of years, Yahoo has been focused on becoming a producer of content. While some would argue whether or not it's good content, it nevertheless creates a number of online programs that Verizon could leverage and deliver to existing customers (both wireless and FiOS). And this compliments Verizon's other Internet property, AOL.

Verizon is looking at ways to stay competitive primarily against AT&T. With DirectTV AT&T has a platform for providing content, and often original content. Yahoo gives Verizon the potential to expand into the online content arena. And it gives VZW an installed base of users to deploy/upsell to for bundling purposes (much like AT&T does). Indeed, the world of carriers/providers is expanding to combined packages – wireless, TV, online content, WiFi, etc. This multi-method delivery is how the carriers will need to expand revenues in a maturing market where the number of potential new subscribers has fallen (the market in the US is

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essentially saturated). Raising ARPU means adding services. That is what Verizon wants to do with Yahoo – find ways to increase ARPU through added services, as well as revenues with ads.

What will be interesting is what T-Mo and Sprint do to react to this. They are trying their utmost to compete, but I don't think long term you can compete on price alone. Their "free" data for streaming was a way for them to compete with Verizon and AT&T, and it has helped them grow installed base of subscribers. But as ATT and now Verizon pull ahead in content creation, they may fall behind with customers who want additional services and especially content.

Verizon is also looking over its shoulder at Google, who is trying to work its way into being a carrier/provider, especially in the wired home. Google offers a number of free services that they then leverage for revenues, and Verizon is trying to make sure Google doesn't undercut them with customers (this is also an issue for AT&T).

Finally, as we move to the Internet of Things, especially in the connected home, it will be critical for service providers to have a variety of services to offer customers. The more ways you can get customers into your network, the "stickier" it will be and allow you to sell even more services (e.g., entertainment, safety, burglar/fire alarms, monitoring services, health related services, etc.). This is also part of the equation of Yahoo being purchased by Verizon.

But there is a downside too. If Verizon can't stem the flow of people unhappy with Yahoo and continuing to move to other places (especially Google), then the number of "eyes" Verizon is buying will shrink, and potentially substantially. First order of business for Verizon will be to make Yahoo relevant again and make current Yahoo users happy and willing to stay. Then they can work on getting more subscribers. But stemming the exodus is key.

Overall Verizon buying Yahoo makes sense. It gives them a way to compete better with AT&T (and Google). It provides a large base of users to sell added services to (and deliver ads). It gives them content creation capabilities to better compete for added revenues. If leveraged correctly it provides "stickiness". And it gives them a larger overall footprint, in an era where scale is important to carriers. One could argue whether the price they are paying for Yahoo is the right price, but overall the price is not a big issue for them as they will have no problem financing it.

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