The enterprise is ready for MulteFire

A conversation with Christian Wagner,
VP Business Unit Enterprise, m3connect
By Monica Paolini, Senza Fili

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The enterprise is ready to automate its processes, and it needs high-quality, reliable, low-latency wireless connectivity, as well as support for mobility. I talked to Christian Wagner, VP of the Business Unit Enterprise at m3connect, about how MulteFire addresses the enterprise requirements for IoT applications and process automation, and how it can do so in private networks operating in unlicensed bands.

Monica Paolini: Christian, what does m3connect do to bring wireless connectivity to the enterprise?

Christian Wagner: m3connect is a leading provider of Wi-Fi networks in the healthcare, hospitality, retail, and enterprise markets. In the these markets, we recognize that we need a more reliable technology than Wi-Fi, with better support for mobility, quality of service and latency. MulteFire a technology that meets the enterprise requirements. Therefore, we are working on different MulteFire projects and different use cases. We see a big future in this new technology.

Monica: Often when I talk to someone about MulteFire, the issue of how it compares to Wi-Fi comes up right away. There is a perception that Wi-Fi and MulteFire are competing technologies. If there's Wi-Fi, why do we need MulteFire? What

are the advantages of that? What's your view on this, since you're already working with Wi-Fi?

Christian: We are not talking about Wi-Fi replacing MulteFire. Every technology has its right to stay. Wi-Fi is really for the mass market, and it is nearly everywhere. It's built-in in every tablet, handset and computer. It's something which is already here. We use it for connectivity, surveillance and many other tasks.

But some use cases, such as automation processes and logistical processes, need higher quality. That's where you need the addition of LTE. That's the reason MulteFire and Wi-Fi will coexist in the enterprise.

Monica: Typically, enterprises already have Wi-Fi, but they want to deploy MulteFire as well. For which applications do you envision the enterprise will use Wi-Fi and for which ones MulteFire?

Christian: Wi-Fi is for the standard processes which requires no special connectivity requirements like mobility or latency. For instance, you may use Wi-Fi on your tablet as you move around in the production line, to have some overview about the goods, the processes and sensors. This will be taken place over the very cost attractive standard communication devices

But you need MulteFire or a higher-quality network for use cases such as Autonomous Ground Vehicles, or AGVs, to run the manless forklifts. They need mobility support as they move within the enterprise premises. When a forklift moves from one NodeB to the next one, it needs a constant connection without interruption. LTE protocols in MulteFire can do that because they have a constant bitstream to manage seamless handovers from one cell to another.

Another reason to use MulteFire is latency. For instance, the AGV security protocol needs low latency and a constant connection. You may have some HD cameras connected to the AGV and see exactly what you are doing in near-real time. MulteFire is a perfect technology for that.

Monica: If it's something that is mobile, then wireline is not a viable alternative. For some IoT applications in the enterprise, you don't need wireless. But where you have moving elements, like a forklift, you need a wireless, mobile connection, as you said. What other critical factors are there in the enterprise?

Christian: In addition to mobility, we need reliability. In Wi-Fi, you never know how many handsets are out there, or how much interference you have. Wi-Fi does not have mechanisms to

coordinate interference or to have quality of service.

These are things which are in the MulteFire specification. How do I manage quality of service? How do I deal with coexistence? What spectrum frequency is available to me? MulteFire can help the enterprise address these questions. These components are important and are a reason why we need MulteFire.

Monica: Enterprises can use MulteFire to build private networks so they can have control over the network, without depending on mobile operators. How important do you think this is for the enterprise?

Christian: For enterprises, it's very important to have their own network. Today, mobile operators have LTE technology they can use to deploy their own infrastructure, for instance using DAS.

Enterprises have very sensitive data and do not want communication to a network outside of their premises. When they connect through a mobile operator network, the communication always goes back and forth to the network operator's core. This is something enterprises want to avoid. They want to have their own ecosystem. They want to have their own data and want to manage their data. They need private LTE MulteFire technologies.

Monica: To date, LTE adoption in private networks has been limited by the need for licensed spectrum, which is difficult and expensive for the enterprise to get.

Christian: Normally, LTE frequencies are not available for the industry. They are only available

for the mobile network operators. They bought these and they have permission to use them.

In Germany, for example, there is new frequency spectrum dedicated for the enterprise, in the 3.7 to 3.8 GHz band. We expect it to be available by mid-2019.

MulteFire will hopefully be quicker to be deployed, because it allows the enterprise to use the unlicensed spectrum that Wi-Fi uses and that is already available. Unlicensed spectrum will help the enterprise because it is flexible and does not require the coordination and order process that you need to get the licensed frequencies from the authority.

Monica: What about using LAA instead? You would still be able to use the same unlicensed band – although it would be difficult for the enterprise to build a private LAA network, because you need a licensed band as the anchor, and hence the enterprise would need to work with an operator, which has access to the licensed spectrum.

Christian: Exactly. LAA works for mobile networks run by operators. The control plane is going over the mobile network. The user plane is half-and-half. It's not purely on the unlicensed band that is shared with Wi-Fi. That's not a solution that works for the enterprise to get a completely controlled and secured data network.

Monica: We talked about mobility, latency, spectrum and how these will enable enterprises to become automated. But how important is wireless for enterprise automation?

Christian: Competition drives the adoption of

automation. Enterprises compete against each other. If they can automate more processes and streamline their logistical systems, they can do things faster and without adding more resources. To achieve these goals and support all their use cases, it's business-critical for the enterprise to have a reliable wireless network.

AGV-driven unmanned forklifts are something which already exist. The hindrance is how to make the communication secure and reliable for the daily logistic and production processes.

Monica: Besides manufacturing, hospitality is another area where there is a lot of interest in technologies like MulteFire and private networks. What do you see in this area?

Christian: We are very big in the hospitality industry. We serve the Wi-Fi infrastructure in hotels, as well as healthcare facilities and hospitals. These verticals have good Wi-Fi, and they want to continue to invest in Wi-Fi. That's good for them, because Wi-Fi is business critical.

But cellular coverage is also business critical. If they do not have cellular coverage in their premises, if phones do not connect to the public cellular network, they will get a bad reputation and they will lose customers. But big mobile network operators are not willing to serve every single hotel and pay for the in-building infrastructure to have cellular coverage in there.

In a hotel, we expect multi-operator coverage. It does not work if a hotel has only T-Mobile or only Verizon or only Vodafone. To satisfy their guests, hotels need access to every network which is available in the country.

MulteFire is a good tool with which to approach this issue. There are some prerequisites, however. The main one is the need for a very quick implementation of MulteFire in the handsets. All the main smartphone vendors need to have MulteFire implemented in their devices. If 60% to 80% of the handsets have MulteFire, enterprises can build up its own private LTE MulteFire networks with unlicensed spectrum, because it's free spectrum for 5G.

Every hotel can invest in a MulteFire network and serve guests on its own network. But it would also need a roaming interface to the network operators. If MulteFire enables this, it will help the hospitality and healthcare verticals to serve cellular coverage on their premises.

Monica: In the manufacturing vertical, a private network that is separate from an operator's network is an advantage. For the hospitality industry, it's the other way around: a hotel needs to create its own network and invest in it because it's necessary to give connectivity to its guests. But hotels want to work with operators and establish roaming relationships with them. How can this work? Not every single hotel can go and talk to all the operators. What type of infrastructure can facilitate roaming agreements between hotels and other hospitality venues, and mobile operators?

Christian: We need a common roaming interface similar to the one operators use with each other. You need the permission of every mobile network operator to establish a roaming interface, but we need system in place that does not require every single hotel to negotiate a roaming agreement with every operator.

This can be done in a centralized way by a roaming hub. There can also be a political or regulatory order for mobile operators to open their roaming interfaces for neutral host and venue networks.

Monica: What is the appeal of MulteFire for neutral hosts, wholesalers, intermediaries, and service integrators?

Christian: There are different use cases. One use case for sure is the substitution of the normal cellular coverage. Another use case is to connect to measurement instruments, such as sensors. And with the connected sensors and the big data you get from them, combined with the data from the network, you can create numerous additional use cases.

Monica: Construction may be another vertical where MulteFire can be a good fit. You need connectivity at construction sites, and the companies operating there may need to have their own network because there is no cellular connectivity. Do you think this is another place where MulteFire is going to be used?

Christian: Yes. There is a place for MulteFire, and there is a place for private LTE networks. Large construction sites remain up and running for one or two years. At these sites, you need constant communication. Most of the time, there is no existing cellular coverage at construction sites. You need something before you get licensed, operator-based cellular coverage. A temporary LTE MulteFire network could be very useful to help construction companies control construction sites, to communicate with external sites, and to get lorries and the construction machines connected.

Also, large construction and building companies tell us that they want something else than Wi-Fi because Wi-Fi is too limited for them, with too little power and too many access points.

Monica: Construction sites are environments where you do have a lot of mobility, because you don't even have a building.

Let's talk about timing. How long will it take before we get to MulteFire commercial deployments?

Christian: The timing depends a lot on the big manufacturers, big OEMs. When will OEMs support MulteFire? When will they have the user equipment available? The use cases for the enterprise are already there. The enterprise is waiting for MulteFire, and it is ready to start deploying the technology.

We still cannot do MulteFire trials, because of the lack of remote units, such as CPEs. But we are doing private LTE trials in the 3.7 GHz band. Enterprises are waiting for that. It's time-critical for them because they want to automate their processes, but they need the handsets, radio units, and modems to implement in their robots and machines.

Monica: Right now, MulteFire is based on LTE. However, in the future, can MulteFire transition to 5G?

Christian: MulteFire has to transition to 5G, because 5G can support more use cases, especially those that need low latency. Network slicing will add benefits for enterprise-dedicated use cases.

In the enterprise you have different use cases and different networks. Phone calls may be routed

through the public network. But time-critical communications, such those supporting AGVs, benefit from a private network.

It is important to have LTE technology on unlicensed, shared spectrum – and to have a roadmap from LTE to 5G. MulteFire already has one, and the route is clear.

Glossary

AGV	Autonomous Ground Vehicles
CPE	Customer premises equipment
DAS	Distributed antenna system
HD	High definition
IoT	Internet of things
LAA	Licensed Assisted Access
OEM	Original equipment manufacturer

About MulteFire Alliance

The MulteFire Alliance is an independent, diverse, and international member-driven consortium defining and promoting MulteFire – a cellular-based technology for operating in unlicensed and shared spectrum. The MulteFire Alliance purpose is to support the common interests of members, developers and users in the application of LTE and next generation mobile cellular technology—such as 5G New Radio—in configurations that use only unlicensed or shared radio spectrum. As an open organization, the MulteFire Alliance will collaborate with stakeholders that have an interest in shared unlicensed spectrum. Its goal is to develop technology that will be widely adopted in global standards.

About m3connect

Since 2001, we have become one of the biggest wireless internet service providers in Europe, and as a technology leader we operate offices across Europe, Middle East and US. We provide wireless internet access with flexible network design. Beyond this, we also offer integration of a range of services, including private LTE and 5G networks, digital signage, guest infotainment systems, VoIP, VoD and location-based services – for clients in the enterprise, in the hospitality market, fairs and conventions, finance, retail, healthcare and transport.

About Christian Wagner

Christian Wagner has a very long experience in communications. Through several positions at Vodafone and Telefonica in the operations and planning area, he was responsible for the network quality of their industry customers. Het then moved to Kathrein, where he was responsible to introduce the digital distributed antenna system for indoor and outdoor coverage. Today he works for m3connect, one of the largest Wi-Fi service providers in Germany. His role is to build up a new business segment with a combination of Wi-Fi, private LTE, MulteFire and 5G especially for the enterprise segment. With his team he introduces wirelss networks which meet the industry requirements in combination with new business models and use cases.

About Senza Fili

Senza Fili provides advisory support on wireless technologies and services. At Senza Fili we have in-depth expertise in financial modeling, market forecasts and research, strategy, business plan support, and due diligence. Our client base is international and spans the entire value chain: clients include wireline, fixed wireless, and mobile operators, enterprises and other vertical players, vendors, system integrators, investors, regulators, and industry associations. We provide a bridge between technologies and services, helping our clients assess established and emerging technologies, use these technologies to support new or existing services, and build solid, profitable business models. Independent advice, a strong quantitative orientation, and an international perspective are the hallmarks of our work. For additional information, visit www.senzafili.com.

About Monica Paolini

Monica Paolini, PhD, founded Senza Fili in 2003. She is an expert in wireless technologies and has helped clients worldwide to understand technology and customer requirements, evaluate business plan opportunities, market their services and products, and estimate the market size and revenue opportunity of new and established wireless technologies. She frequently gives presentations at conferences, and she has written many reports and articles on wireless technologies and services. She has a PhD in cognitive science from the University of California, San Diego (US), an MBA from the University of Oxford (UK), and a BA/MA in philosophy from the University of Bologna (Italy).