

Perspective

Embedded and IoT letter for decision makers, by Witekio

The executive team's message



“IoT and embedded are fast moving markets, especially on the software side which is greatly emulating thanks to its large community. It’s not always easy for you, innovators, to step back, analyze, and get a holistic understanding to drive good decisions. We all have too much information and work to do. Plus; management duties can take you away from the end-customers that are the one to influence for real the market.

For all that, Witekio management team have decided to create this private, exclusive and unique format to give you in 3 minutes the capabilities to get from the field insights, connect dots, and to decode what is behind the hype. You’ll find in that letter, extracted from the unique Witekio team experience, emerging technologies, specific market drops and/or growth, weak signals, learnings from our latest projects, learnings from data analysis. We hope you’ll enjoy.”

Samir, Sebastien, and Yannick

What is happening in the software world?

- **Nvidia to acquire ARM**, game changer for the embedded software industry. The company, more known for its graphical power unit in the PC industry, is making an aggressive move in the embedded field. Nvidia AI capabilities and technologies could accelerate AI at the edge adoption, especially if they acquire the #1 provider of ARM based technology.
- A lots of **IoT device Certificates will expire in the next few years**. If manufacturers continue to churn out IoT devices and products without thinking about the implications of an about-to-expire CA root certificate, the internet of things might quickly turn to an internet of trouble.
- Data centers consume **about 2% of global electricity today; by 2030, they could consume as much as 8%**. Design software taking into account carbon emissions will become key in the coming years.
- Arduino, and Edge Impulse are teaming up to **simplify the deployment of deep learning networks on microcontrollers**, with a solution named TinyML.
- **Gaia-X** (EU’s landmark cloud infrastructure project), which involves 22 firms from both France and Germany, **officially registered as a non-profit organization on September 22nd** at its headquarters in Brussels.

R&D Talks

We share our customers insights from the field, for you to connect the dots between the macro trends and the reality.

“On long lasting machines as ours (heavy duty vehicles), digital ‘disruption’ is a risk to loose customers trust. Thus we prefer to create new services/businesses on existing machines than new products”

Xavier, Director, Heavy duty vehicle OEM

“Interoperability is a major stake in smart building. Indeed real estate company face hundred of editors / OEM proposing technologies that are not compatible with each other. Therefore, relying on open platforms is a must”

Thomas, General Manager at Smart energy company

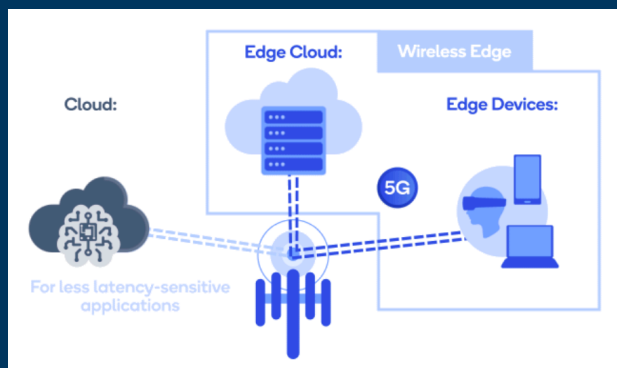
“Embedded and IoT software and hardware development is becoming more complex while time to market and cost expectations are tougher. OEMs are constantly balancing between “Make or Buy” decision, with delayed decisions and long development processes.”

SB, C-level at an embedded design house



Our CTO analysis : 5G and Edge computing

Edge Computing brings the computation closer to the location where it is needed to solve one of the challenges of cloud computing - the response time. But is 5G not supposed to be super-fast and therefore, reduce the response time as well? Yes, it is, and there is an overlap, but the size of this overlap depends on how you define the Edge:



In the diagram above, the Edge is split in two parts: the Edge Cloud and Edge Devices. Edge Devices are mostly ARM powered products running on Linux. Edge Cloud is a new paradigm where the computing power is moved from central servers out to the 5G base stations. The Edge cloud is how some big tech companies such as Nokia, Ericson, and Cisco see the future of cloud computing. Or in other words, they want to become the next AWS... Their idea is that with the 5G they can guarantee a latency below 30ms to a server located in the base station. For most use cases this latency is more than enough and any advance computing (like deep learning) in the device doesn't make sense anymore. So, what's next, is it the end of Edge Devices?

Luckily, there is a catch ☺. 5G is based on small cells with a range below 300 meters (1,000 feet) as opposed to the 16 kilometers (10 miles) of 4G. Moreover 5G is based on millimeter wave (25 Ghz) which means that every tree, building, and so on will absorb the signal.

Therefore, as much as 5G might be a revolution in places where Telco providers think that the deployment is worth it (probably mostly cities), many places will never be covered by this type of network. Hence, the future of Edge devices and centralized data centers is probably not over soon.

Learning from our data

Using our 200 projects a year to extract unique data to understand our market.

[In a recent market trend study](#), Gartner emphasizes the importance of positioning « Total Solutions » for Semiconductors suppliers to successfully address IoT endpoint market demand. This study clearly sets that OEMs developing « IoT enabled » cloud connected devices or equipments recognize the complexity of such project that go beyond the typical design of an embedded device, but requires a « holistic » system approach of how the device will integrate and interact with its environment.

It is also the reflexion of the « market promise » of IoT as it applies to the edge and endpoints: As embedded devices move into IoT scenario, the value proposition is less and less on the device features or capabilities per say, but more and more on the usages and impacts they are contributing in the context of the global IoT scenario they are part of.

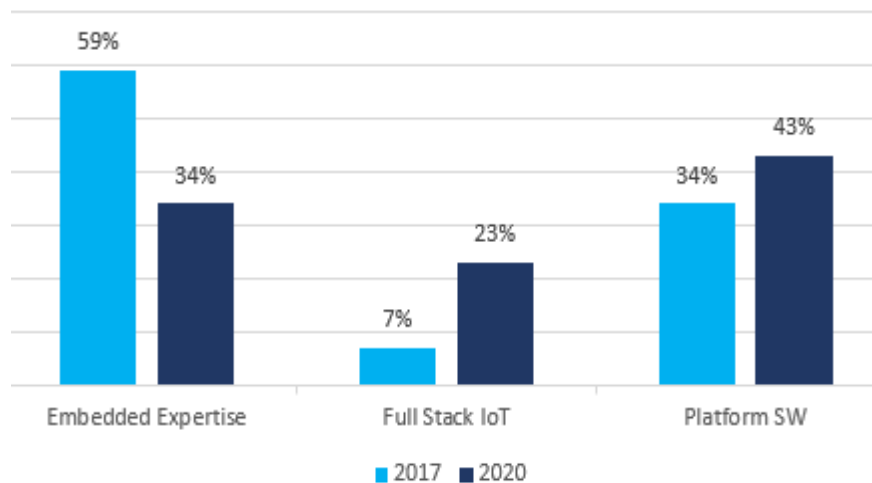
This implies that the whole supply chain of technology providers, contributing to the development of new « IoT edge devices » are no longer expected to focus on the features and capabilities of their technology, but on the use cases and the solution they deliver for the vertical markets they serve.

This analysis matches very well with the market transition we've seen at Witekio. Next is an overview of our customers' projects, comparing revenue between 2017 and 2020.

« Embedded Expertise » reflects typical « Technology driven » software development for embedded devices.

« Platform Software » (eg vertical use case driven development) and « Full Stack » (eg complete edge to cloud implementations) reflect « Total solution » approach driven by use cases need and impacts.

Witekio Revenue by Type of Service



Dive Deeper

The Coming Certificapocalypse: <https://witekio.com/iot-security-certificapocalypse/>

Gaia X project home page : <https://www.data-infrastructure.eu/GAIX/Navigation/EN/Home/home.html>

How green is your software? <https://hbr.org/2020/09/how-green-is-your-software>

Arduino, and Edge Impulse are teaming up to simplify the deployment of deep learning networks on microcontrollers: <https://blog.arduino.cc/2020/05/26/edge-impulse-makes-tinyml-available-to-millions-of-arduino-developers/>