entytle

Fact or Industrial Fiction ?

IoT

A must – read guide for OEMs considering **Industrial IoT** initiatives

"I believe that at the end of the century the use of words and general educated opinion will have altered so much that one will be able to speak of machines thinking without expecting to be contradicted."

— Alan Turing

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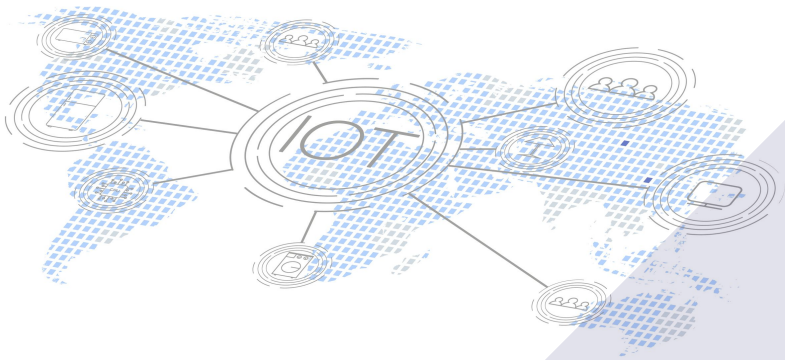
Introduction to IIoT

Internet of Things (IoT) or to be more specific, Industrial Internet of Things (IIoT), is yet another domain that remains mysteriously under-explored by Industrial OEMs.

What's interesting is that, no matter how many times you hear the terms IoT or IIoT, they always seem like a hot topic but truth be told the concept of IoT has been around for more than 70 years now. You must have heard about the 'Imitation Game' - not just the movie but also the 'Turing test' named after its pioneer Alan Turing. In 1950, while working at the University of Manchester, Alan Turing raised the question "Can Machines Think?" in his paper "Computing Machinery and Intelligence".

Though at that time this was a very abstract concept of machines talking and learning from each other, later on, many advancements in the field of computer technology and artificial intelligence led to the development of the Internet of Things.

The Industrial Internet of Things, also known as IIoT, is the extension of the use of IoT in the Industrial sector. A strong focus on machine learning, big data, and machine-to-machine communication enables enterprises and industries to have better reliability and efficiency in their operations. Industrial applications like medical devices, software-based production processes, and robotics are some of the applications that fall under the radius IIoT.



The dreaded “Industry 4.0” and IIoT

Industry 4.0 is almost considered synonymous with IIoT, given that one is dependent on the other. However, while Industry 4.0 provided a broader vision of what the factory of tomorrow should look like, there were quite a few challenges. For one, it did not really factor in industries such as machinery manufacturers, which tend to move deliberately and cautiously given how their products lasted for decades.

When we talk about IIoT in the context of Industry 4.0, there is more emphasis on the systems and processes set to transform with the help of analytics and big data. Various sensors and information sources are supposed to help industrials in their decision-making process by coming up with specific actions and insights. These machines further automate the tasks and make it easier for data collection and analysis, which wasn’t possible normally.

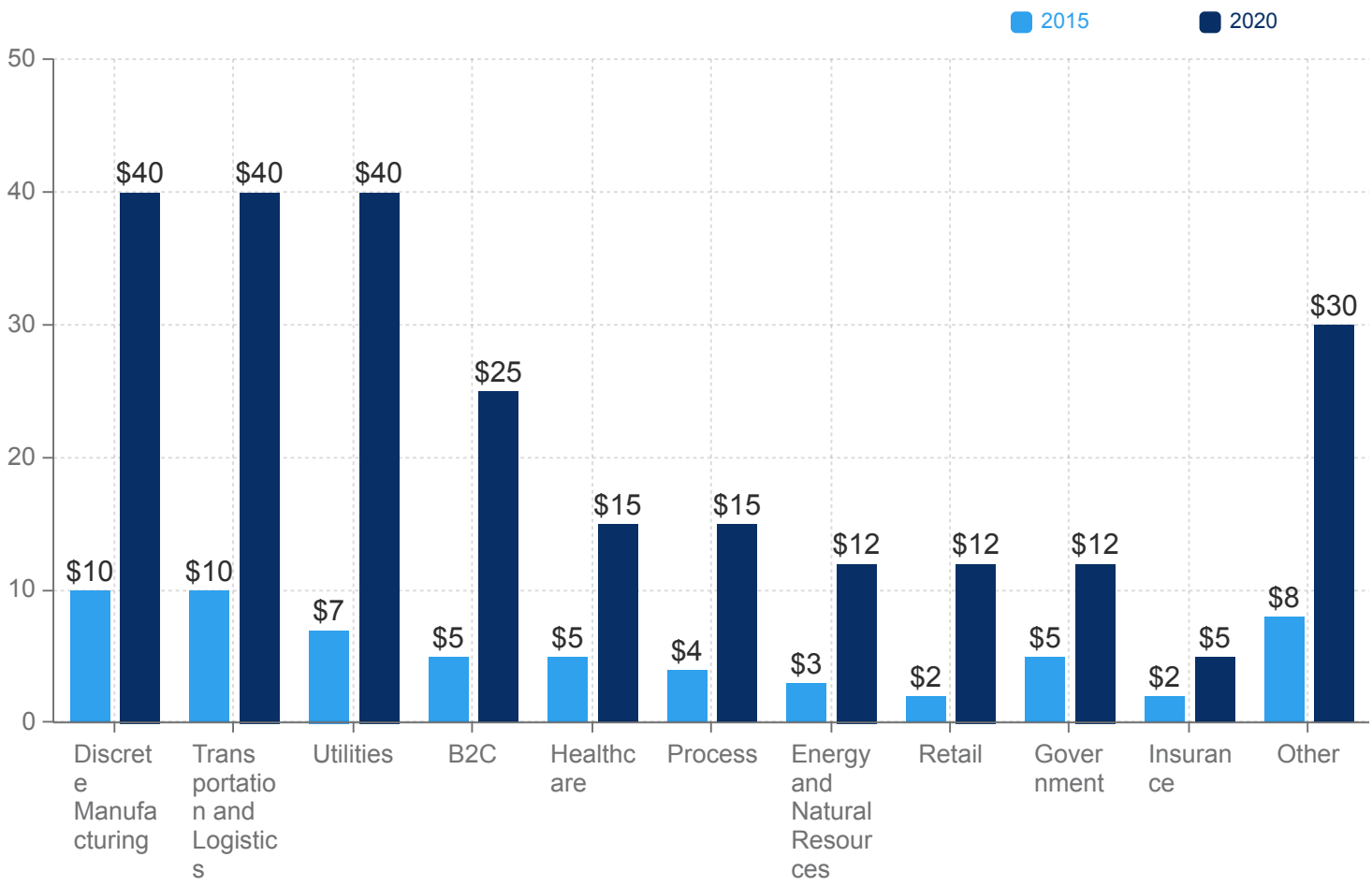
Continuous data collection and transmission amongst smart machines and devices provided machinery manufacturers with ample growth opportunities. The adoption of this technology was hoped to enable all Industrial OEMs to analyze a tremendous amount of data at a very high speed. The idea was to not only enhance performance and scalability but also help the decision-makers in making informed business decisions.

IIoT and Industrial OEMs

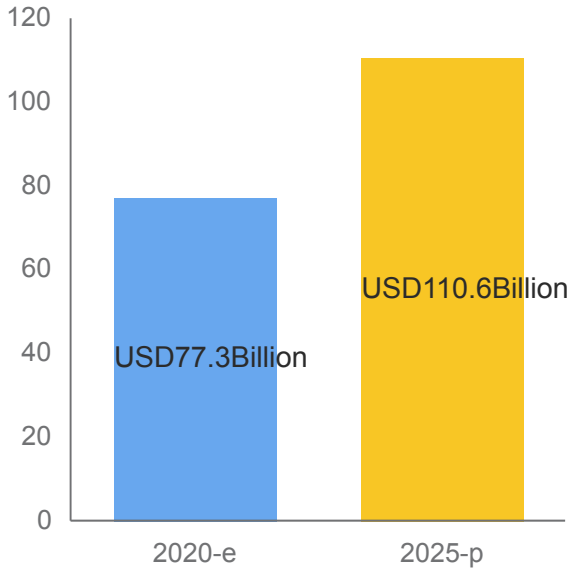
The applications of IIoT can be found in the machinery manufacturing or the Industrial OEM sector. A considerable chunk of the annual budget is being devoted or is being considered for such initiatives. Yet, we notice that IIoT still faces many more challenges than predicted when it comes to actual implementation.

Before we talk about IIoT in the context of Industrial OEMs, here is a distribution of the exposure of IoT across various verticals of the industry[1].

Spending on Internet of Things Worldwide by Vertical in 2015 and 2020
(in Billions of U.S. dollars)



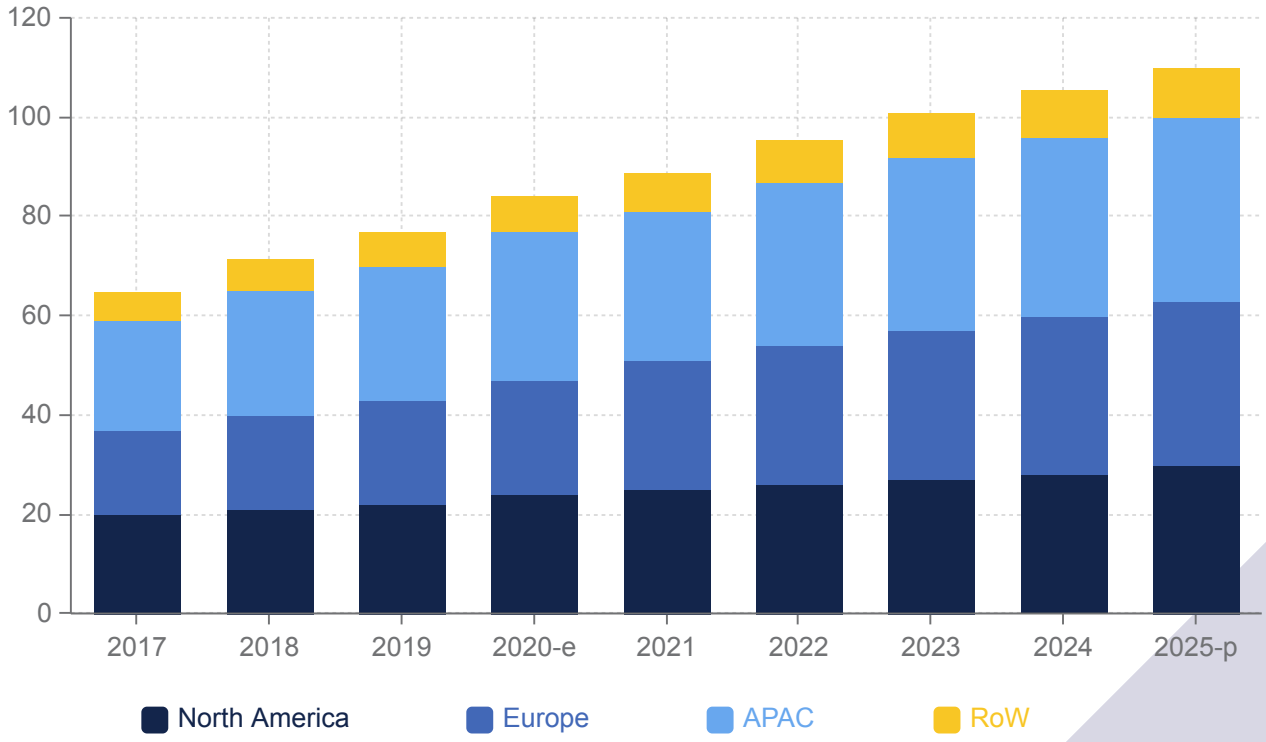
Few organizations have successfully implemented IIoT Initiatives, while a lot of them have tried and abandoned this route. While IDC reports the IoT footprint is expected to grow up to $1.2 trillion in 2022, Statista[2], by way of contrast, is confident its economic impact may be between 3.9 and 11.1 trillion U.S. dollars by 2025.



CAGR 7.4%

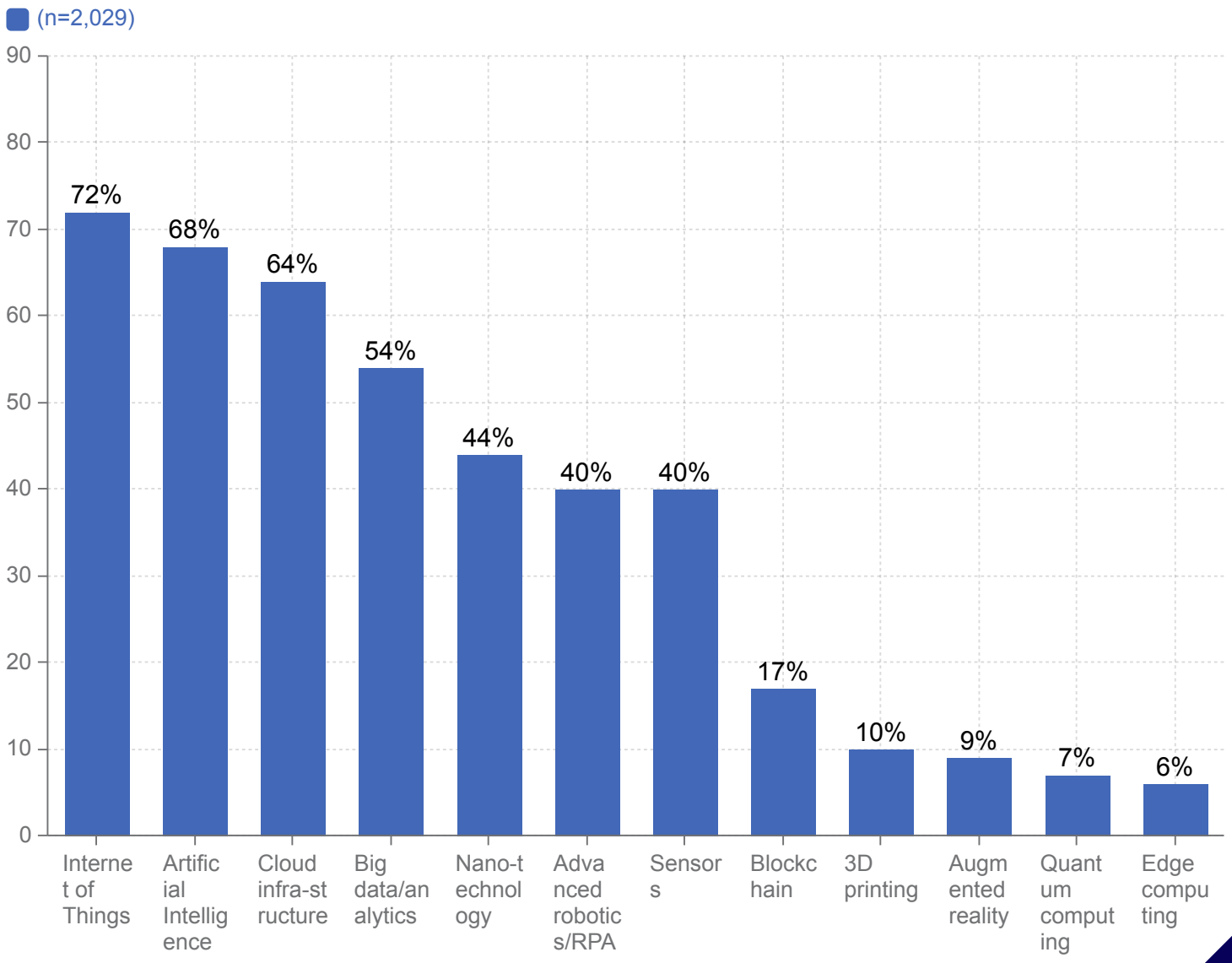
- The IIoT market is expected to be worth USD 110.6 billion by 2025, growing at a CAGR of 7.4 % during the forecast period.
- The manufacturing vertical has been an early adopter of IIoT solutions to improve its production processes and is projected to account for the largest size of the IIoT market during the forecast period.
- Technological advancements in semiconductor and electronics devices; and increased use of cloud computing platform are some of the major factors driving the market growth.

IIoT Market by Region
(USD Billion)



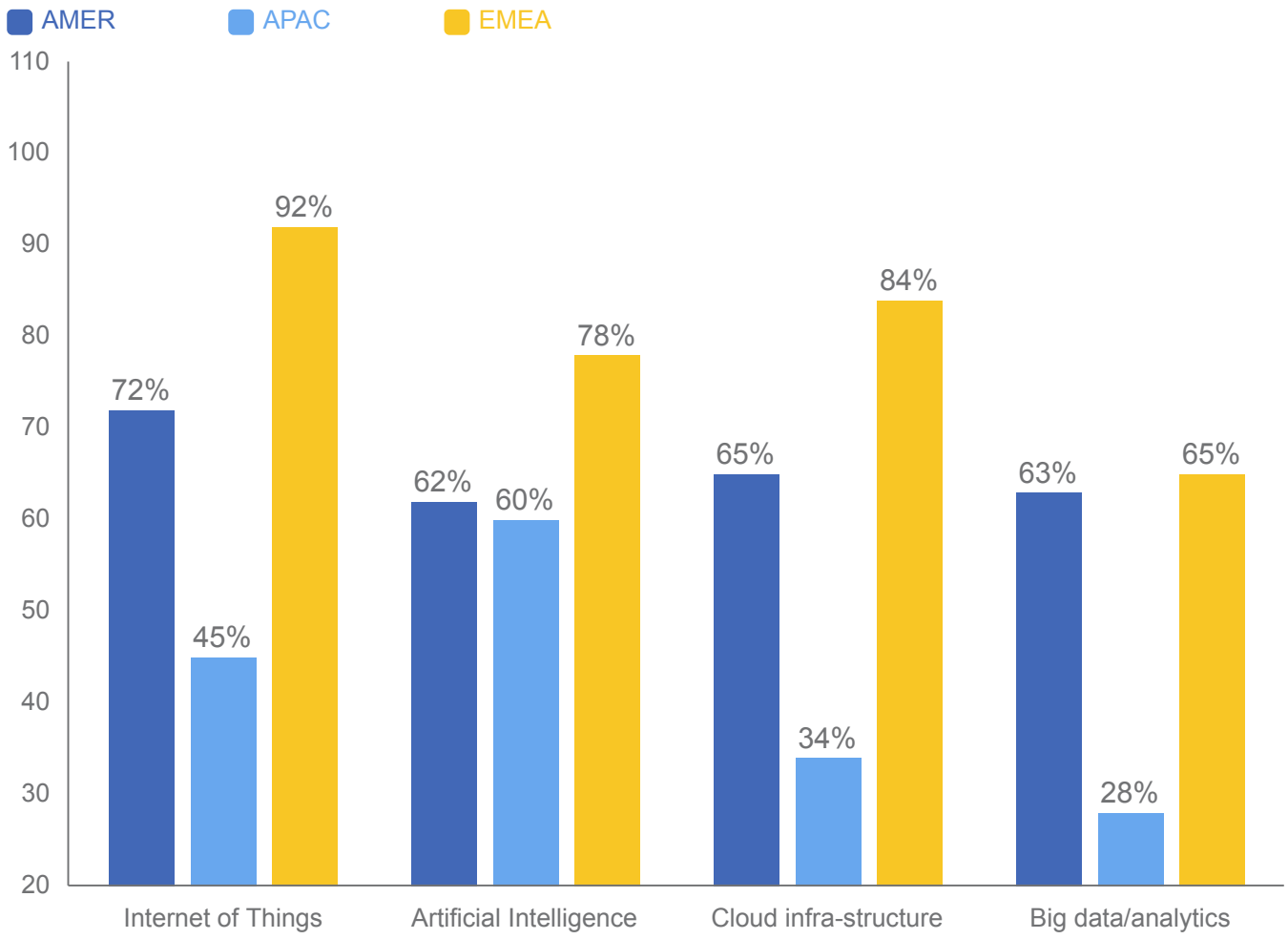
In a recent survey conducted by Deloitte[3], out of 2000+ CXOs, 72% voted for IoT as the "Industry 4.0 technologies" expected to have the most profound impact on their organization, followed by 68% who voted for AI, 64% voted for cloud data, and 54% voted for Big Data/Analytics.

Which Industry 4.0 technologies are expected to have the most profound impact on your organization?



The degree to which CXOs believe technology will profoundly impact their organizations also varies by region. EMEA is by far the most bullish of all the regions, while APAC is the most skeptical of the "big four" technologies impact.

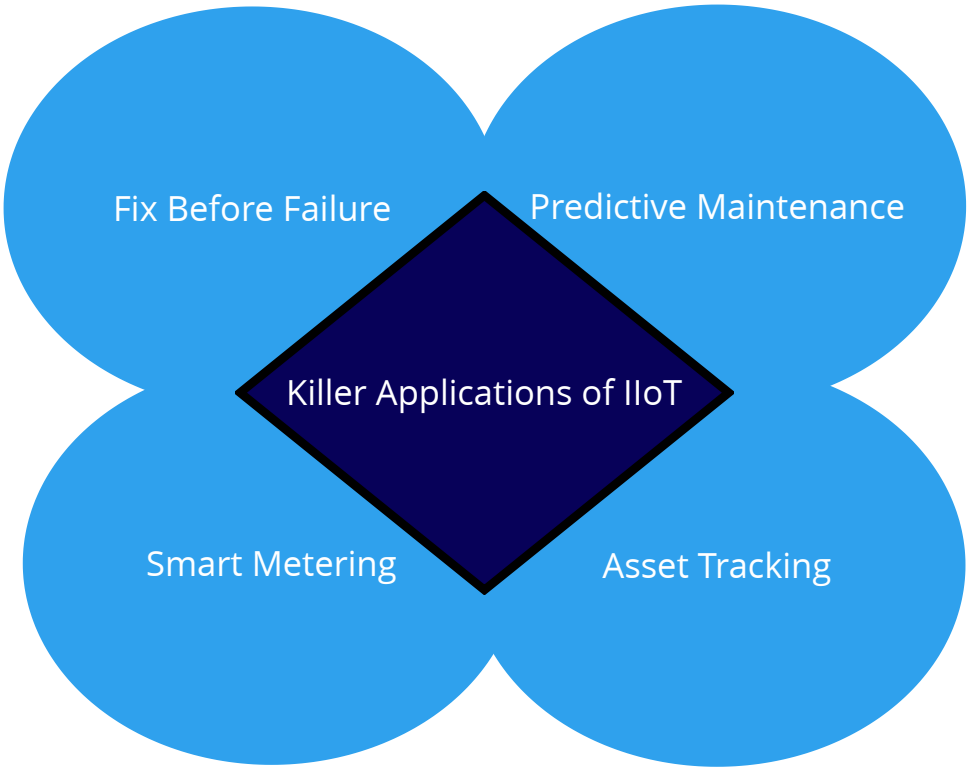
Industry 4.0 technologies' expected impact, by region



Digital transformation, specifically IIoT implementations, has been the top priority for organizations for many years now. Another Deloitte[4] Industry 4.0 Investment Survey from 2018 concludes that 94% of executives and directors said that Digital Transformation is a top strategic priority at their organization.

So here's a trillion-dollar question for Industrial OEMs, if we have been working on these initiatives for years, why isn't IIoT ubiquitous and commonplace?

It’s been the year of IoT for a few years now...



Unfortunately for most manufacturers, IoT (Internet of Things) and particularly IIoT (Industrial IoT) remains a continuously advancing horizon. Fix-before-failure, predictive maintenance, smart metering, asset tracking have all been touted as the killer apps of IIoT for a long time.

To be fair, IoT is trending in the right direction but is not fully there yet. It turns out that the reason is pretty simple. It's been reported that roughly 2% of Cisco's IoT devices "call home." For industrial manufacturers, it's the same story but exacerbated by the fact that they must rely on their unconnected installed base for any aftermarket growth.

Equipment that was installed years and even decades ago are certainly not connected. So, how do you deploy fix-before-failure on unconnected assets?

The trillion-dollar answer to what ails IIoT is that old industrial equipment can't easily be upgraded, customers don't care for something that seems to be more of an 'Industrial OEM' problem than a customer problem, and that Industrials design 10-20 years down the line making it difficult to keep up with a nascent, ever-evolving concept of IoT.

Beyond IIoT - Data Science to the Rescue

Where IoT can't come to the rescue, data science can. IIoT may be for the early adopters, so what should the vast majority do? The challenges that Industrial OEMs are considering would get solved with IIoT are still pertinent. The question that many manufacturers are asking every day is: how can we leverage customer data (things like orders, service records, call center logs, sales opportunities) across a variety of systems (like CRM, warranties, service contracts, etc.) to extract patterns of customer behavior and usage to predict customer needs? But there's more. How can these companies get better at predicting the health of equipment and predict customer churn? How do they increase the 'linkage rate' of customers, so more assets are under contract? How do they ultimately improve the connect rate for their customers, so they can drive top-line revenue by recovering lost wallet share? How do manufacturers know what works in their messaging and what doesn't? Which customers would likely be the best candidates for new product development? Data science can and does provide all of these answers.

AI-driven platforms like Entytle Insyghts are helping B2B manufacturers harness the power of their historical and new customer data to increase installed base visibility, identify patterns, and predict customer service and sales needs. Ultimately, it's up to a company's service, marketing, and sales team to do something with these insights: which means that a certain degree of change management needs to happen too. But the good news is that companies don't need to rely on a technology framework that is nascent, or they haven't exactly gotten their head wrapped around. Instead, manufacturers can embrace data science to produce the same results and transform their aftermarket approach from reactive to proactive. They are improving their connectivity with customers to drive better outcomes for their customers. As Jensen Huang, CEO of Nvidia, said, "Software may be eating the world, but AI is going to eat software."

The promise of IIoT to B2B manufacturers

The promise of IIoT is massive: harnessing machine data, sensors, fault logs, operational information, etc., to drive very specific and targeted insights, with the main goal of pre-empting failure events and ensuring high asset uptime. These ideas are not new; about 25 years ago, GE, Rolls Royce, and other engine makers would routinely get performance data off an engine to understand failure, duty cycle, etc. What was hard then is much easier now. But there are still a couple of problems with the GE and Rolls Royce engine models. First, not everything in the field is a Rolls Royce engine. In fact, most installed equipment isn't, and these assets also don't have sensors on them.

The result: a vast majority of the installed base of manufacturers is mostly unconnected, and the timeline to connect them is distant. It gets worse: for the small minority of connected devices, getting actionable insights from data remains a long-term objective. Finally, those manufacturers that are connected with sensors and have the ability to extract data remotely are complacent, just collecting gobs and gobs of it and promptly relegating that same data to a system where it's rarely touched.

The IoT of 'unconnected things'

Corporations are sitting atop vast amounts of information collected from daily interactions with customers. This ranges from order entry events, invoices, field service calls, tech support, CRM records, and so on. These datasets have great standalone value, but they can provide great insights on customer and asset behavior when analyzed collectively. Data can now be used to predict failures, service events, sales opportunities, etc. More importantly, it helps drive timely, targeted, and proactive engagement with customers, which ultimately drives loyalty and lifetime revenue growth for the manufacturer. Each customer is unique. Each product a company sells fulfills a particular customer need. Matching the two factors at the right time requires a more comprehensive analysis of customer data than many businesses can't afford or develop on their own. That is why a new generation of software uses sophisticated and continuous analysis to arrive at a more targeted sales approach – identifying which customer needs what item and when. The key to generating more revenue from a manufacturer's installed base seems to lie in the continuous learning software processes applied to their existing, dispersed, siloed data to generate better-qualified sales opportunities.

Connecting the unconnected is something that companies can deploy in weeks rather than months or even years, as in the case of IIoT. In the example below, data science modeling and predictive analytics are applied to existing sets of customer data; what was once dispersed, siloed, incomplete information can be connected to identify patterns and behaviors to help B2B manufacturers:

- Increase visibility into their installed base
- Enhance connectivity with existing customers
- Retrieve hyper-targeted, data-driven services, and sales opportunities

The one thing that can sink your IIoT Initiative

Installed Base Data Quality: The Achilles Heel of IoT, eCommerce, and Servitization initiatives. As the Covid crisis engulfed the world last March, companies large and small grappled with the existential threats to their businesses. Different sectors were impacted to varying degrees, and it was clear to everyone that the crisis was going to cause habits to change, some irreversibly.

In the Industrial OEM world, we started seeing companies make investments cautiously in areas that could help them with “remote and distance” service. The belief was, the changes triggered by Covid would stick, and they were willing to invest in small experiments to determine the feasibility, ROI, etc., of these new investments.

Specifically, OEMs launched initiatives in IoT, eCommerce, and AR/VR as a way to deliver a high level of service to their customers without compromising the health and safety of their employees.

As the year progressed, a few things became abundantly clear:

1. Customer expectations were permanently changed – in a way that challenged OEMs
2. IT departments were stretched thin – too many initiatives, too few people
3. Initiatives that delivered operating efficiencies were higher in priority and got funded
4. Pilots got delayed and slowed down due to a combination of 2 & 3
5. A growing realization that data quality and completeness was blocking or slowing these initiatives

Quality comes last

The issue of data quality has hamstrung most companies from making progress, especially as eCommerce, IoT, and Servitization require a single source of customer truth as a necessary requirement to operationalize these initiatives.

The range of data quality issues can be as simple as duplicates (or many more!) of customer names, addresses, contacts, etc.; misspellings, incompletes, and other data issues. But as the complexity and completeness of the customer engagement increases, data requirements (and therefore quality issues) increase dramatically.

At Entytle, we've seen our share of data issues. A memorable example is finding 62 different entries in various systems (ERP, CRM, Service, Support, etc.) for one single customer! Another is large-scale incompletes (e.g., Acme Inc, United States as the complete address from an ERP system). Or worse, unclassified and uncategorized (no taxonomy?) for equipment, parts, assemblies, kits, consumables, services, etc.

The lack of data quality leads to issues with the integrity of the analytics performed with IoT sensor data, eCommerce recommendations, and, more importantly, customer histories. Imagine, for example, with 62 different IDs for the same customer at the same location; clearly, transactions were being logged against each customer ID. So which one should a sales or service rep believe? How does she know what the customer has truly done?

Therefore, can the analytics and recommendations have any integrity? When moving to an eCommerce environment, which of those 62 customer profiles/histories should be used to present options to the customer? Without solving this foundational challenge, manufacturers risk-taking the investments they are making to create value for their customers (i.e., IoT, eCommerce, Servitization, etc.) and turning that investment into a net negative experience for their customers.

These are just a few examples of what could go wrong with poor data quality. In the next section, we will outline how you can improve data quality without investing years and significant expense in full-scale Master Data Management (MDM) solutions.

The one thing that can save your IIoT Initiative

IIoT is here to stay.

If anything, 2020 & all the changes it brought accelerated IoT adoption across the industrial world. But, unfortunately, what seemed like Industrials thought was a B2C wave definitely seems to be resonating harder with machinery manufacturers.

Industrial IoT is full of paradoxes for Industrials at the moment - on the one hand, it is expected to grow into a $950 Billion industry (2019 pre-pandemic estimates) and, on the other, suffer from a high failure rate. While Microsoft[5] says that 30% of IoT projects, in general, fail at the proof-of-concept stage, Cisco[6] pushes this number much higher at 60%. Cisco goes on to say that just 1 in every 4 organizations considers their IoT initiatives successful.

IIoT, despite all the promises it offers, is still in the 'early adopter stages. Is every piece of equipment or even a large percentage of equipment sold by OEMs connected through IoT today? No.

However, there are strong tailwinds propelling IoT in 2021. Machinery manufacturers are intrinsically slow, steady & exceedingly cautious - IIoT breaks that mold, forcing Industrials to adopt new technology at break-neck speed, using trial-and-error, making huge investments into tech that they don't clearly understand.

IIoT is gaining momentum - but only a small fraction of the world's installed base is connected and monitored remotely.

A point I made earlier about the slow nature of the Industrial OEM needs a little more elaboration treatment. Every machinery manufacturer is simultaneously supporting equipment that was sold 15-20 years ago while designing the next generation of equipment that will become common-place 10 years into the future.

IoT isn't designed for past compatibility. IoT is the shiny new technology that is meant for what is being manufactured today. For example, an air purifier and an air conditioner sold this year can easily be fitted with the most accurate sensor relaying information back to the manufacturer. However, the same cannot be achieved easily for an HVAC system that was sold 15 years ago and still needs to be supported. And that's another paradox that Industrials have to grapple with when discussing IoT in the machinery space.

IoT's primary objective is to pre-empt & predict machine performance. While Industrial IoT will do exactly this pre-emption and prediction for the next generation of equipment, what should an Industrial do for the last generation of equipment that will continue to serve, break down, need repairs & services, and the whole aftermarket?

IoT data and analytics will play an increasingly important role in the "health management" of these connected machines, but there is nothing comparable for the world's fleet of unconnected machines.

So, what's the single biggest thing that can help Industrial IoT?

I believe I have safely established that IIoT is a long-term bet for Industrials. A friend of mine from the Industrial world jokingly said that he would be retired before seeing any value coming out of the IIoT project in his company. I found it amusing and yet the brutally honest description of most enterprise projects in our world. ERPs take forever to implement, so why should a large-scale project such as IoT be any different?

So what should Industrials do in the short run? Here's a tip - Every OEM has huge volumes of data that give a pretty good understanding of what happened to the machine, what inferences can be drawn from this data, and therefore what actions can be taken. That data comprises all aspects of their Installed Base.

It resides in multiple tools & silos, but it's very much alive, waiting to be aggregated, cleaned, and then analyzed to predict, pre-empt and prescribe a course of action. Use that data. It's with you right now and will pay off remarkably well (up to 10X of your investment) in a concise span of time (think a few months, not quarters or years !!).

"Perfect is the enemy of good" - So instead of waiting for IoT data availability, OEMs can start the journey with the data they already have in the house.

The major problem in executing Installed Base vision is an Industrial's inability to scale and make repeatable workflows that create prioritized and refined customer lists that sales, service, and marketing could use to drive action.

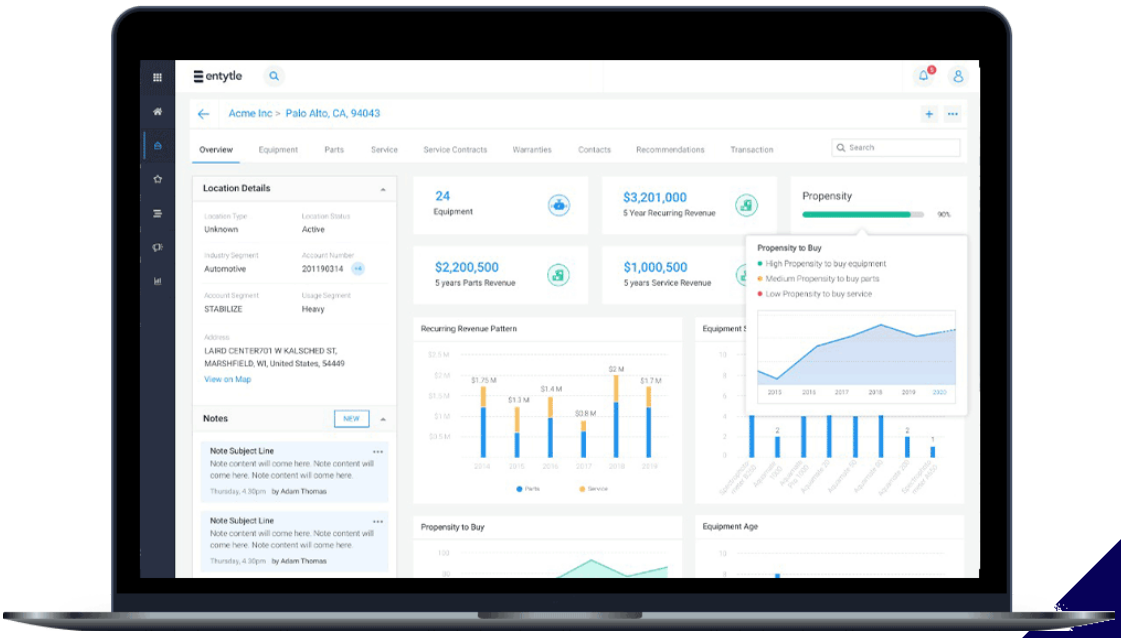
Entytle Insyghts

Insyghts was developed by a team of business and data science professionals with decades of operational experience at large B2B manufacturing and software companies. They struggled with the same aftermarket revenue challenges outlined in this paper. Finally, after years of analysis and real-world customer trials, they found a solution.

Insyghts, a SaaS platform, incorporates purpose-built AI/ML analytics to identify sales and service opportunities to increase wallet share from the OEM's installed base. Entytle Insyghts turns repeat sales efforts into more cost-effective, predictable, and proactive results using pattern recognition and other algorithms applied to a company's enterprise data.

The key components of this analysis are:

- Pattern recognition of customer behavior and product life-cycles
- Continuous analysis and machine learning of sales data and customer actions
- Actionable intelligence for contacting the right companies with the right offers at the right time



Quick to Deploy, Low IT Intervention, High ROI and Security

Because Entytle Insyghts is non-intrusive and easy to deploy, companies can be up and producing actionable sales opportunities in less than two weeks. Entytle Customer Success team works hand-in-hand with a company's IT team throughout the setup process.

In addition, once Entytle Insyghts is installed, there is little or no need for a customer's IT team to maintain it. Entytle reports are regularly distributed to selected sales associates automatically. All customer data sent to the Entytle cloud for analysis is encrypted. Once reports are ready for circulation, they are also encrypted and sent back to the appropriate company sales team.

In real-world deployments at Entytle customer sites, the average increase in opportunities is nearly 50%. One customer, an industrial pump and mixer manufacturer, reported a 40% conversion rate of those opportunities. A health sciences equipment manufacturer uses Entytle to win back 15% of customers who have stopped buying from them.

B2B sales organizations have too much data and too little time to isolate truly profitable repeat-business and aftermarket opportunities. Manual or semi-manual strategies are at best ineffectual, and at their worst, expensive and time-consuming, with little or no ROI. Entytle software has the following benefits:

- Dramatically improves visibility into the installed base
- Automates the entire qualification process
- Delivers right-customer, right-time opportunities
- Requires low maintenance
- Provides quick, continuously refined results

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About US

Entytle, Inc. is a provider of Entytle Insyghts, the world's first Installed Base Data Platform (IBDP) for Industrial OEMs to unify, organize & analyze their customer information while significantly improving available data quality. Insyghts, a SaaS platform, incorporates purpose-built AI/ML analytics to identify sales and service opportunities to increase wallet share from the OEM's installed base. Entytle is trusted by Industry leaders including Johnson Controls, Baker Hughes, Peerless Pump, Dematic, ColeParmer, and many more who use Entytle to drive organic growth at scale. Learn more at www.entytle.com.

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