

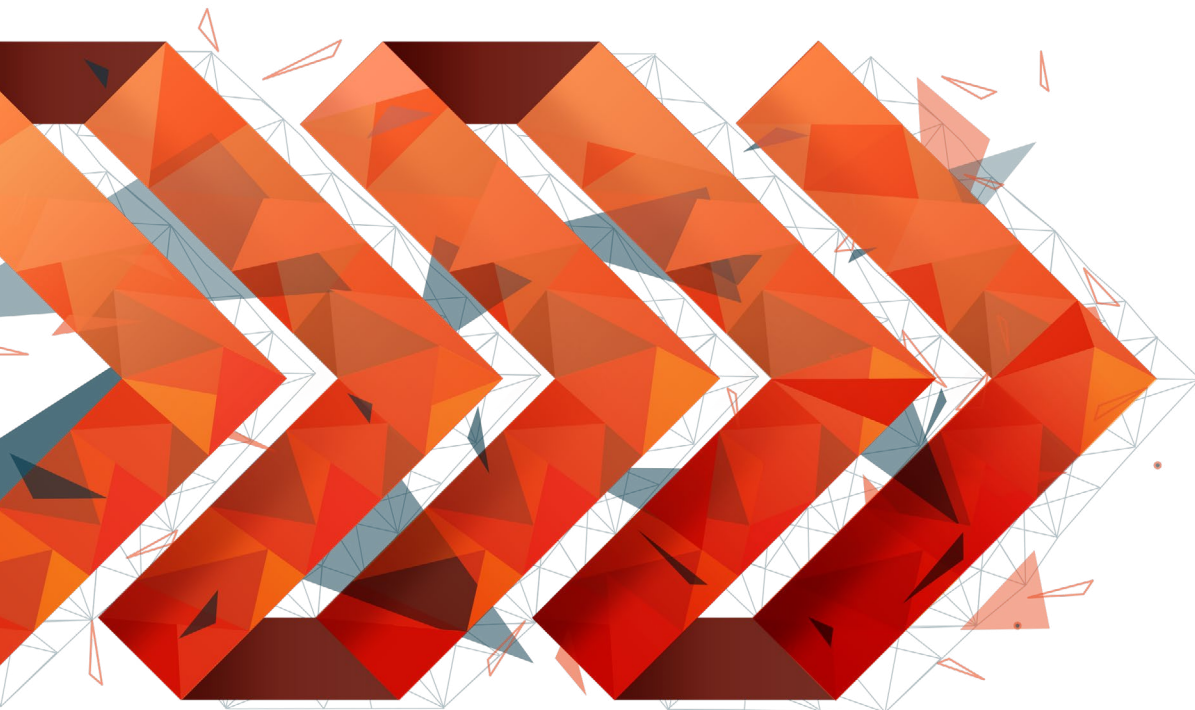


DIGITAL INDUSTRY
GROWTH PARTNERS™

RESEARCH NOTE

Momenta Partners 2020 Predictions

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Introduction

2020 is the kind of round number date to which we arbitrarily attach significance. If you travel back in time five years or so, you will find no shortage of predictions focused on 2020. They typically involved what the size of a market will be: “The Industrial Internet of Things will be a \$1T market by 2020” or as one well known industrial organization predicted: “Our digital business will be \$15B by 2020.” We now know how these predictions turned out.

Momena Partners’ 2020 predictions reflect what we already see happening in the market and what we expect to continue. The industrial and infrastructure worlds are still in the early stages of digital transformation – particularly in comparison to other sectors such as retail and finance – but this is not a reason for complacency. The technology to support our predictions already exists and organizations can, and should, act now. Significant obstacles remain and we have extensively elaborated on these and included concise recommendations for how they can be addressed.

In addition to our specific and actionable predictions described below, we predict another certainty: By the end of the 20s, none of us will recognize the industrial world nor will we have predicted all of its manifestations.



Predictions

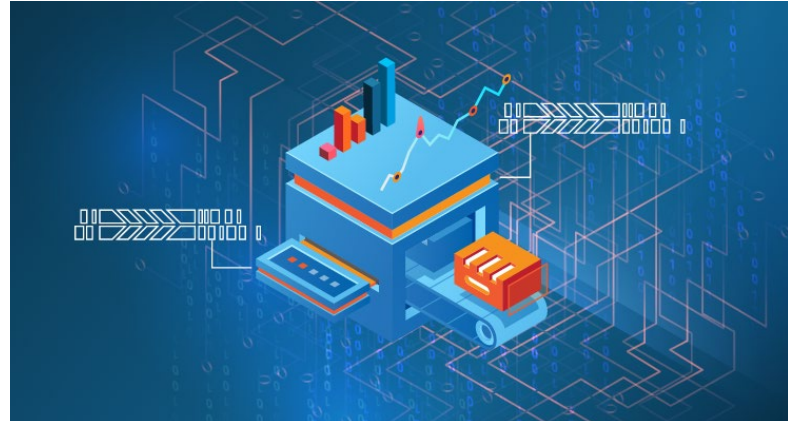
1. Industrial value chains will be dramatically reconfigured in the next decade as new outcome-based business models proliferate such as product as a service, insights as a service, and “power by the hour.”
2. Edge computing investments in the industrial and infrastructure sectors will grow by 50% as adoption barriers dissipate.
3. Starting in 2020 several well-funded industrially-focused AI/ML vendors will fail as the focus shifts from generic approaches to outcome-based approaches.
4. In the next five years, at least one third of industrial companies will shift 20% of IT budgets to OT in order to fund digital transformation initiatives.

Recommendations

1. Prepare for industrial value chain reconfiguration by prioritizing investments in the digital technologies necessary to support data visibility, analysis, and collaboration.
2. Make edge technology investments a priority in 2020 to take advantage of new capabilities and optimize data processing efficiencies.
3. Focus AI/ML efforts on purpose-built platforms and tools that will deliver measurable returns on investment while avoiding open-ended projects with uncertain outcomes.
4. Explore opportunities to cut traditional IT costs – such as moving infrastructure and applications to the cloud – in order to free up resources to invest in OT-centric digital transformation projects.

Discussion

Industrial value chains will be dramatically reconfigured in the next decade as new outcome-based business models proliferate such as product as a service, insights as a service, and “power by the hour”



The Fourth Industrial Revolution is going to gain steam over the next decade as data is liberated from siloed systems, analyzed with increasingly sophisticated AI/ML capabilities, and shared across value chains. This will change how decisions are made, who makes them, and how they are made which, in turn, changes how value chains are configured. This will manifest itself in a number of ways including:

- The increased prevalence of industrial product as a service models and the growth of new digital technology-enabled business models
- Legacy machine builders will transform into digital services companies
- Disruptive new entrants will redefine existing sectors and sub-sectors
- Digital-first full-stack companies that combine physical and digital technologies will continue to mature and ultimately position themselves as industry leaders

As industrial value chains evolve and new models emerge, data ownership issues will need to be resolved and new approaches to data sharing embraced. This will create some inevitable conflicts and change management issues – both within organizations and across the extended value chain. The speed of change in any given value chain will largely depend on organizational readiness and willingness to embrace the coming changes. It will also depend on how attractive it is for outside sources of capital to invest in new business models. The latter would accelerate the pace of the change and force incumbents to move faster themselves.

As an incumbent, you have some decisions to make regarding where you invest and what role you play in the transformation of your own value chain. For those that look to be proactive and look to control their future, Momena has defined three business models:

- **Digital Enablers** – those that use digital technologies to enhance existing offerings
- **Digital Expanders** – those that add additional offerings to their portfolios
- **Digital Transformers** – those with new products and processes that redefine the industry

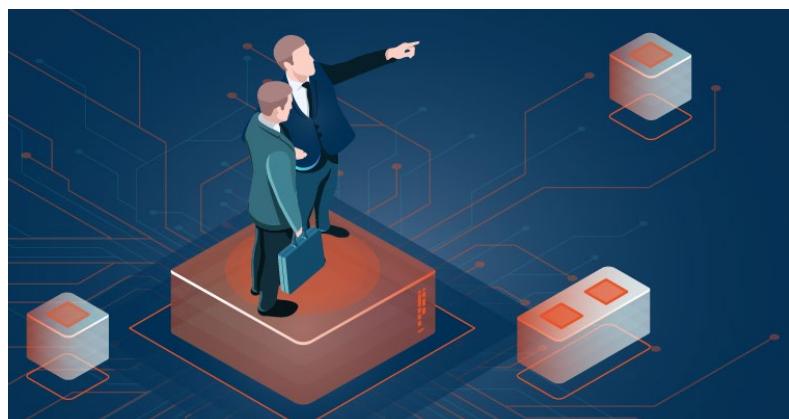
This is not meant to be a comprehensive list of possible business models but, for machine builders and OEMs in particular, they represent a path to the future which is supported by the current state of digital technology.

The only certainty for the next decade is that the pace of change in the industrial and infrastructure sectors will intensify and agility will need to be baked into any business strategy you pursue. The speed of digital technology innovation – already faster than we have ever experienced – will continue to be

rapid. As cost and other barriers to adoption drop, we can also expect more outside investments in new and disruptive business models. Indeed, starting with the right digital platform and then acquiring physical assets will become one of the approaches deployed in a wide range of subsectors.

Every Digital Industry strategy shares some common elements – the need to invest in collecting and aggregating more data, the need to invest in analytics to derive more value out of that data, and the need to invest in ways to more effectively collaborate around that data internally, with business partners, and with customers. This is the foundation and now is the time to put it in place if you haven't already done so (and very few industrial organizations can claim to be there yet). This has to be treated as a strategic investment with a longer-term horizon, not unlike the way organizations treated major IT investments in the past (more on this in our discussion on IT versus OT below).

Edge computing investments in the industrial and infrastructure sectors will grow by 50% as adoption barriers dissipate

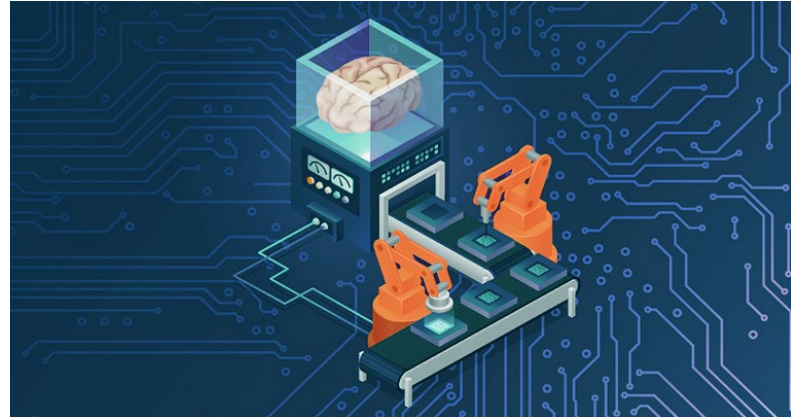


2020 is the year when the great Edge vs Cloud debate gets put to rest and investments in edge computing start to ramp up in a significant way. There is now a general understanding that certain types of data capture and analysis belong at the edge – such as capturing highly granular time-series data which doesn't change much or benefits from interpretation and aggregation – and the cloud is for more general data storage, higher level analysis, and collaboration.

For industrials, edge adoption is largely driven by demand for real-time machine learning for asset health and vision at the edge as well as other compelling use cases. There is also growing demand for seamless computing fabric to enable distributed analytic models to be deployed and managed from the cloud to the edge. Companies like Siemens and Nutanix are bringing convergence technologies to market, enabling truly integrated edge computing. Standards have also made significant progress with the adoption of Linux as an OS for the edge being critical, while protocols like MQTT are helping with backhaul enablement.

Over the last year, there has been a reduction in several key edge adoption barriers including cost, complexity, and security risks and, as a result, investment activity is ramping up. Industrial firms have been slow to move to the cloud, but the addition of edge computing can help enable digital technology adoption. With the reduced barriers, emergence of standards, better recognition of the role of edge and cloud, and the proliferation of wireless sensors, 2020 will be a pivotal year for edge computing.

Starting in 2020 several well-funded industrially-focused AI/ML vendors will fail as the focus shifts from generic approaches to outcome-based approaches



Momena Partners estimates that global venture investments – whether by industrial companies themselves or by venture capitalists – in industrially-focused AI/ML product and/or service companies has exceeded \$5B to date. Prominent examples of AI/ML firms focused on industrial applications including C3.ai (\$355M raised – source PitchBook) and Uptake (\$293M raised – source PitchBook). Almost all of these investments have yet to see a significant financial return as deployments have primarily consisted of pilot projects. They have, however, been very successful in helping to raise the level of hype to a peak.

The most successful deployments of AI/ML in the industrial context have been purpose-built applications targeting a specific problem in a specific subsector. The solutions are usually delivered by vendors with deep domain expertise and the costs of these deployments are typically less than \$500K. In many cases, these deployments look different than AI/ML as it is used by consumer-facing technology companies such as Amazon, Facebook, and Google. Industrial organizations are beginning to realize that while they might benefit from the innovation created in the consumer world, the types of approaches they choose should be fit-for-purpose to their applications.

There is, and will continue to be, a significant opportunity for the use of AI/ML in industrial contexts. Most industrial organizations would benefit from having better visibility into the performance of their assets and equipment as well as becoming more predictive. But, as we noted in [Walk Before You Run](#), the majority of industrial organizations would be wise to start with simple data aggregation, contextualization, and visualization. A phased approach, which considers limitations and implementation challenges, will be the key to ultimate success.

In the next five years, at least one third of industrial companies will shift 20% of IT budgets to OT in order to fund digital transformation initiatives



[Note: Operational Technology, or OT, is the digital technology deployed by industrial and infrastructure organizations to monitor, operate and maintain their physical assets. It is often managed separately from enterprise IT and funding for it comes from separate budgets.]

As noted above and in [The Industrial Ecosystem Imperative](#), digital transformation in the industrial world is driven by capturing more operational data, better contextualizing that data, and greater collaboration around that data. This will require significant investments in sensors, wireless communication, visualization, and analytics (the IIoT). Most industrial organizations operate in competitive environments which require them to tightly manage costs. This begs the question: How do they fund these investments?

IT typically represents around 2% of an industrial organization's budget. For a mid-sized industrial organization of \$5B this adds up to \$100M. 20% at that budget is \$20M which would fund some significant digital transformation investments. This is not a hypothetical exercise. Momena Partners is aware of several industrial companies who have already started down this path, including one large industrial conglomerate with over \$100B in revenue, and we expect the trend to continue.

Most organizations recognize that the bulk of their IT costs are tied up in supporting existing infrastructure and applications. In the last ten years, we have seen a proliferation of enterprise applications being offered as cloud services (led, most notably, by Salesforce). There are a number of ways to trim IT costs but the one capable of having the biggest impact is moving infrastructure and applications to be managed by a cloud service. Industrial organizations should look hard at this option in order to free up funds for digital transformation related OT projects.



As a convergence of digital forces redefines industry, we believe it is critical to have a broad and practitioner-grounded perspective and services for this ecosystem as a whole.

Momenta was founded by deep practitioners in Digital Industry to be Growth Partners, not simply academics or consultants. We designed our practices to seamlessly drive long-term value from concept to culmination, startup to exit, and along full solution stack. From this deep practitioner perspective, we drive our industry-leading research, advisory, executive search, and ventures practices, all hyper-focused on Digital Industry, in every region of the world.

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