Every cloud has a silver lining: It's time to embrace cloud solutions for advanced manufacturing

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people-smart automation

Background

New technologies are changing the face of modern manufacturing – everything a manufacturer does, from design to manufacturing to daily operations, and how all those processes integrate with the wider supply chain – all of this is being transformed by the cloud. Cloud-based IIoT solutions bring huge benefits to advanced manufacturing operations. These include making it possible to achieve full collaboration between teams in a factory, between different factories, and between factories and their suppliers; as well as a lower total cost of ownership (TCO); ease of set-up and use;

reliability of data access due to data centre redundancy; regular and seamless software updates; and the highest possible level of data security.

Additionally, modern cloud solutions deliver unparalleled ability to manage the downsides of - and embrace the possibilities offered by - the 'new normal' that has been created by the Covid-19 pandemic.

> **Off-site cloud computing capabilities now mean that even the smallest manufacturing operation can purchase affordable and secure access to the highest level of computing capabilities**.

This puts the benefits of IIoT – such as advanced AI algorithms, intelligent digital assistants, and big data capabilities – within the affordable reach of all. Potentially, it could lead to an era where the smallest manufacturers are more competitive and have greater agility than ever before, as they can now access computing capabilities which previously would have required a major capex for installing on-site servers and the employment of IT specialist teams.

A lower TCO, and a lack of upfront CapEx costs, are a particular benefit. Many of these cost benefits are delivered by the Software as a Service (SaaS) business model that is enabled by the cloud. Upfront CapEx expenditure is replaced by monthly payments – putting advanced computing capabilities within reach of many more companies than was previously the case. Meanwhile, easy scalability means that even the smallest manufacturing firms can choose a package that is tailor made to the size of their company, their needs and the number of system users required.

Going forward, the demand and complexity of the IIoT-enabled Smart Factory will become too advanced for on-premises servers to meet the needs of a factory, meaning that ultimately, cloud-computing will be a necessity for all manufacturers.

Cloud computing opens new paths for growth

In the coming years, advanced manufacturers will find that their customers, their employees and their supply chain partners demand greater efficiency and flexibility than ever before. This requires ever greater agility on the part of manufacturing firms to be able to deliver products that enable faster time-to-market, while still offering the highest quality.

As a result, in the foreseeable future, the computing demands will be immense. In fact, in the near future, purchasing individual on-premises servers with the requisite computing power will be prohibitively expensive for most manufacturing firms and will require significant real estate. The only way to be able to access computing systems with the capacity to store the almost unlimited reams of data generated by the IIoT, and with the computing power necessary to run advanced AI algorithms to process the collected data, will be to do so on the cloud. The use of AI is a key part of this story, as cloud computing is about far more than simply data storage and file management.

Cloud-enabled collaboration

With a holistic, cloud-based industrial software solution, collaboration is possible like never before. Even on the same site, a large modern factory usually has different teams in different offices who should ideally be working together closely and yet in practice rarely communicate. Cloud solutions can break down the barriers between such 'siloed' teams. The same goes for collaboration between entire factories – whether it be a large multinational with multiple manufacturing sites, or whether it

be smaller manufacturing firms working closely with external manufacturing partners. Finally, the cloud can connect factories with their suppliers.

Whether being used to connect different teams, different factories, or different companies up and down the supply chain, a cloud software solution enables a fully integrated digital working environment with complete data sharing. All users benefit from a single software platform to manage all elements of the workflow. Essentially, using an integrated cloud solution delivers the same effect as would be delivered if all your employees were able to use the same computer simultaneously – with full access granted for multiple users to shared working files, documents, and programs. This is in stark contrast to the cumbersome solutions that many manufacturing firms currently have, where different teams or different factories are using bespoke software that either cannot integrate with other systems for data sharing at all or, if they can share data, can only do so via a time-consuming special data conversion process.

The SaaS opportunity:

The challenge of bringing industrial cloud solutions to market has inspired vendors to embrace new business models. Chief among these has been SaaS (Software as a Service). While no two SaaS solutions are identical, effectively the model offers manufacturing software on a pay-as-you-go basis. The benefits of SaaS for manufacturing and industrial companies are significant and so the model is being widely adopted.

- Easy set-up

The most obvious immediate benefit for industrial companies adopting a cloud-based SaaS solution is the ease of set-up. For the industrial end-user, the set-up process is often as simple as logging in. While there is a hardware requirement also, this is usually limited to smart sensors and edge devices, which are simple and quick to deploy.

Plataine designed an advanced application, PlataineEdge, providing an intelligent gateway to the cloud by analyzing data collected from industrial sensors & machines and transmitting only what matters.

- Lower TCO

With a cloud-based software solution, the TCO (Total Cost of Ownership) is usually significantly lower than with an on-premise software solution. There are a number of reasons for this. First and foremost, there are no upfront infrastructural CapEx costs for items such as servers. Instead, users do not own their computing assets, but pay a monthly cost for access to computing services – a far preferable situation for many companies. Second, there is no need to 'over engineer' the IT system. Industrial companies using cloud solutions don't need to worry about whether their computing needs will increase or decrease in the coming years. Cloud computing is both flexible and scalable. If more space is needed, more can be rented, and if less is needed, then the computing capacity being paid for can immediately be scaled back – and companies need only pay for the apps they actually use. This is of particular benefit for small and medium sized businesses that cannot afford to buy an advanced industrial computing solution up front. Instead, such companies need only pay according to the number of users they actually have. Third, there are no maintenance costs as maintenance is managed by either the IIoT or cloud provider; and finally, there is no need to find and hire skilled IT personnel.

- Access to a skilled computing workforce

This issue of personnel is a big one and it's not just an issue of cost. The digital Smart Factory is reliant on factory stuff with advanced computing skills. But finding such individuals can be difficult and, if they can be found, they are often very expensive.

- Reliability and data security

A cloud-based SaaS solution offers total reliability because cloud solutions are based on multiple data centres located around the world. The system offers redundancy because all data is cloned on multiple data centres, and everything is backed up. This means round-the-clock server uptime is guaranteed and all data and computing power will always be accessible.

Additionally, with a SaaS solution, the user has the peace of mind of knowing that their software is always up-to-date. Since operators subscribe to a service, software updates, upgrades, and fixes for any bugs, are done constantly. The customer does not even need to be involved with the upgrade process but will simply notice that their software improves over time.

IIoT providers that are specialists in their fields are usually backed up by one or other of the leading cloud-providers such as Amazon Web Services, Microsoft Azure or Rackspace. This partnership – between the SaaS software provider and their cloud provider – delivers the best possible cybersecurity solution. In almost all cases, IIoT cloud-based solutions are more secure than solutions hosted by on-premise servers. The reason for this is that on-premise servers are almost always connected to the internet, just like cloud servers, and so there is no practical difference in terms of vulnerability. Also, manufacturing firms employing on-premise servers rarely have the funds necessary to employ an experienced in-house cybersecurity team, unlike IIoT and cloud providers who will have skilled workers capable of the most sophisticated data encryption.

For manufacturers with a cloud-based IIoT solution, responsibility for all these issues – server uptime, software updates, data security, and the provision of a skilled data security workforce – rests not with them but with their IIoT and cloud providers.

To manage your data security better, you are welcome to explore this guide.

Manufacturing in the 'new normal'

Manufacturers were embracing cloud-based technology since well before the hit of Covid-19, however there is no doubt that the trend has accelerated massively as a result of the pandemic. The virus, with its requirement for social distancing for an indeterminate period, has caused many manufacturers to accelerate their automation and IIoT plans. Many commentators have suggested that Covid-19 has brought forward the world of industrial automation by 5 or even 10 years.

This may sound like hyperbole, but in fact it is quite logical. Many, even most, advanced manufacturers did already have automation plans in the pipeline. The pandemic has both deprived them of their workforces and also reduced demand, meaning that for many it has been the perfect time to speed up plans to automate production lines. Additionally, as more and more manufacturers implement IIoT technology, their long-term efficiency and profitability will radically improve, meaning the laggards will feel the competitive pressure in the years to come and thus be forced into following suit simply to stay in business.

- Remote deployment

National lockdowns caused by the pandemic have also been no block to the deployment of IIoT since, in most cases, remote deployment of cloud-based solutions is perfectly feasible. One recent example has been at Alestis Aerospace, who selected Plataine's IIoT solution to optimize their Brazilian manufacturing operation – Alestis do Brasil. Plataine's solution was a single integrated platform which automated the production workflow and optimized cut-planning processes to deliver significant time savings and improved material yield at Alestis. It was carried out swiftly and completely remotely and resulted in zero downtime at the factory during roll-out.

- Remote working and visibility

As remote working – again, spurred on massively by the pandemic – also becomes the norm, better tools to allow improved collaboration between team members have become vital. The hardware agnostic nature of many IIoT solutions, and the fact that they are accessible from anywhere in the world, is becoming a key benefit. The best IIoT offerings are designed with dashboards that can be accessed on any device – smartphones, tablets, laptops, desktops, and even wearable devices. For employees to access the system, all that is required is internet connectivity. It makes no difference at all where people are located.

As well as giving flexibility to senior managers, this also means that multinational companies can easily deploy the skills of their technical experts across all sites, so teams can work collaboratively without having to fly around the world. Additionally, companies can choose to build up technical teams in different locations from their factories if that suits their strategic goals.

Managing a production plan on the cloud can offer one solution that works for both planners and factory floor operators alike. This allows planners to monitor production status and make adjustments remotely, without having to walk the factory floor. To learn more about how and why this is possible, check out this short video case study about production Scheduler.

Cloud computing – it's a question of business strategy

The decision about whether to move to a cloud-based IIoT solution is not just an operational- or technology-level decision, and it should not be simply left to manufacturing or IT management alone. It is a business strategy-level decision, and it should be considered at the highest levels of a company as it works out how to implement the truly smart factory.
Although the light at the end of the COVID-19 tunnel is closer than ever, there is still time left while production volumes are relatively low, and now is the perfect time to start your digital transformation journey.

Time to take the next step:

At Plataine, we provide IIoT solutions to some of the world's largest OEMs, Tier 1 & 2 discrete manufacturers, including Airbus, General Electric, Siemens, and Renault F1 team.

To learn more about how we can drive your factory's efficiency – bringing you the benefits of the 4th industrial revolution – continue the conversation directly with one of our Digital Transformation Specialists here.