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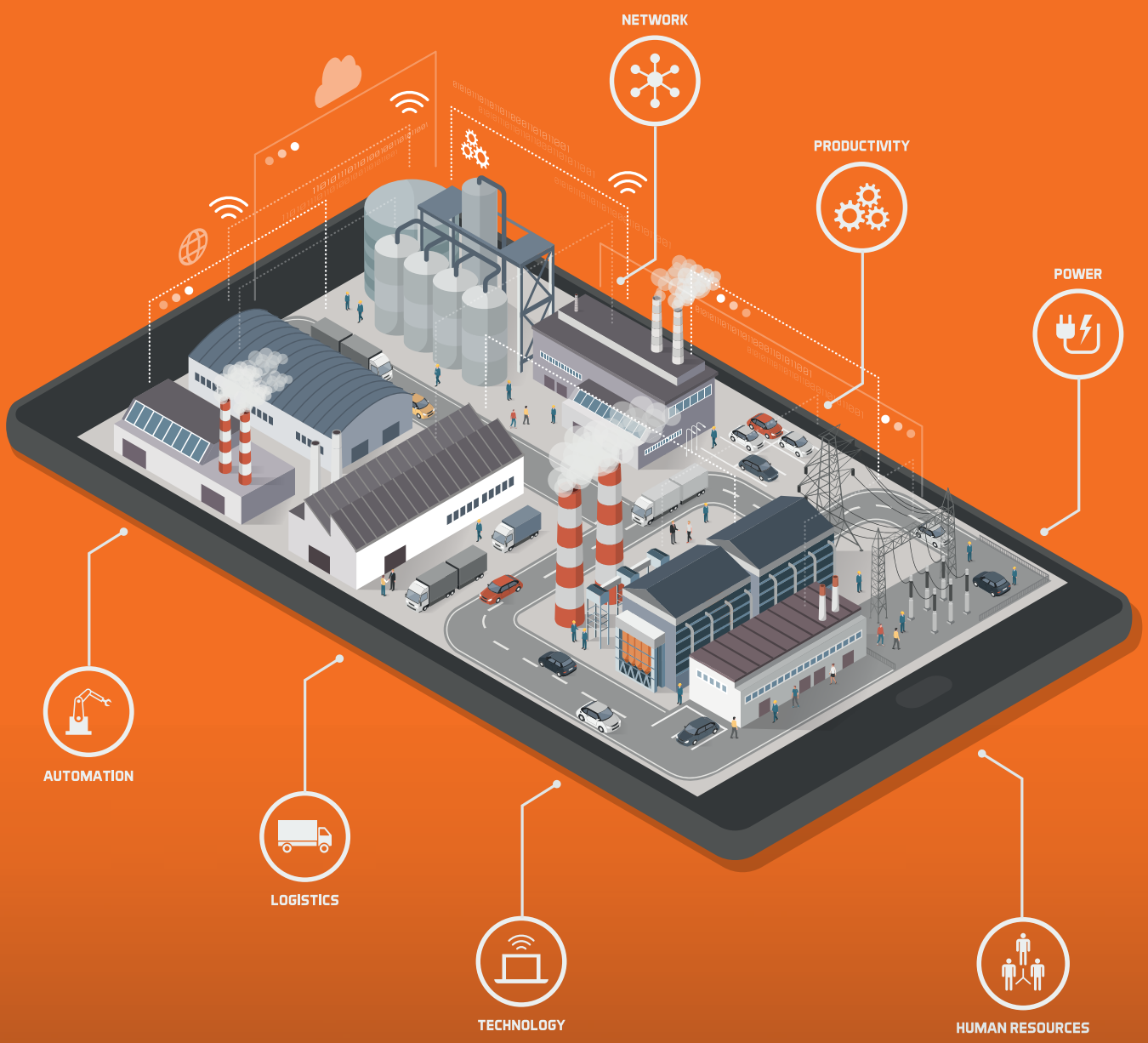

HOW DOES CLOUD ERP ENABLE IIOT IN MANUFACTURING?

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ERPNEWS

CEO & PUBLISHER
Harun DOYURAN
harun@erpnews.com

MANAGING DIRECTOR
Pinar SENGUL
pinar@erpnews.com

EDITOR
Yagmur SAHIN
yagmur@erpnews.com

ASSOCIATE EDITORS
Katie SLIMOV
katie@erpnews.com

Burcu Nihal DEMIRCI
burcu@erpnews.com

ART DIRECTORS
Alex MIRZAI
alex@erpnews.com

Sena Çarlık
sena@erpnews.com

FOR ADVERTISING
advertise@erpnews.com

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Yagmur Sahin

EDITOR'S NOTE

Hello to everyone from the 10th edition of ERP News Magazine,

We are going through a period of uncertainty which is also quite risky from the perspective of the business world. As the ERP News team, we continue to keep the pulse of the software industry and ask the right questions to the prominent names in the industry for you.

In this edition, our focus is IIoT, Industry 4.0, and ERP and we have compiled the most up to date news, articles, and success stories for you once again. Also, the question of the month is "How does Cloud ERP enable IIoT in the manufacturing industry?" and we have gathered various answers of ERP professionals for you to explore deeper into the manufacturing industry.

We see once again, especially in these unprecedented times, that Cloud ERP with its flexibility offers a much more valuable structure when it comes to IIoT.

Until our next issue, we will continue to do our best to bring you the most up to date and true content about the industry. See you in the next issue...

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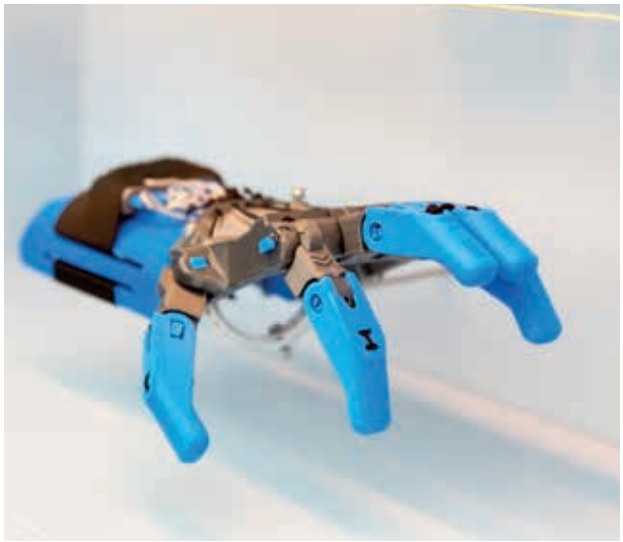

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Applied DNA Sciences, Jason Warlock

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Sage, Mike Edgett

InCloud Solutions, Lucy Thorpe

OptiProERP, Allan Lessing

QAD, Brent Dawkins

Sage Software Solutions Pvt Ltd., Kalyani Chaudhari

Rootstock Software, David Stephans

Pemeco, Jonathan Gross

Target Integration, Rohit Thakral

SIEMENS AND SAP JOIN FORCES TO ACCELERATE INDUSTRIAL TRANSFORMATION

Siemens and SAP SE (NYSE: SAP) announced a new partnership that will leverage their industry expertise and bring together their complementary software solutions for product lifecycle, supply chain and asset management so their customers can deliver new innovation and collaborative business models that will accelerate industry transformation globally.

Together, industry leaders Siemens and SAP will deliver integrated end-to-end software solutions across product lifecycle, supply chain and asset management.
Partnership leverages expertise and technology of both companies to provide a true digital thread that helps enterprises eliminate process and information siloes, drives digitalization and delivers a comprehensive solution for the 4th industrial revolution (Industry 4.0).
SAP will offer Siemens' Teamcenter software as the core foundation for product data management. Siemens will offer SAP Intelligent Asset Management solutions and SAP Portfolio and Project Management applications to maximize business value for customers over the entire product and service lifecycle and enable new collaborative processes between manufacturers and operators.

Through this agreement, both SAP and Siemens will be able to complement and integrate their respective offerings in order to offer customers the first truly integrated and enhanced solutions for product lifecycle management (PLM), supply chain, service and asset management. This will enable customers to form a true digital thread integrating all virtual models and simulations of a product or asset with real-time business information, feedback and performance data over the entire lifecycle.

"Digital transformation will be critical for the manufacturing industries to increase productivity, flexibility and accelerate innovation, so companies must come together in new ways to enable the digital enterprise," said Klaus Helmrich, Member of the Managing Board of Siemens AG and CEO of Siemens Digital Industries. "This exciting collaboration between two industry leaders is about more than just interoperability and interfaces; it is about creating a truly integrated digital thread that unites product and asset lifecycle management with the business that enables customers to optimize production of products."

Silos between engineering and business have existed in enterprises for decades. This new partnership will help customers to break down these siloes so manufacturers, product design teams and service managers have the information needed to quickly create and manage customer-centric product and service offerings.

"As manufacturers design and deliver smarter products and assets, access to real-time business information across networks is critical to bring new and improved innovations to market faster," said Thomas Saueressig, member of the Executive Board of SAP SE and responsible for SAP Product Engineering. "Bringing together expertise from SAP and Siemens to offer Industry 4.0-enabled business processes allows enterprises to create a digital thread for the entire product and asset lifecycle. With this end-to-end solution, teams across the business network can efficiently work together to design and deliver innovative products productively, profitably and sustainably."

Going forward, both SAP and Siemens will be able to offer new solutions that combine their technologies in order to help companies shorten time to market by leveraging Industry 4.0-enabled data using intelligent assets and products. This will also give organizations the benefit of incorporating customer insights into product development through a comprehensive solution, from product design to service and asset management. As a first step in the partnership, SAP will offer Siemens' Teamcenter software as the core foundation for product lifecycle collaboration and data management and Siemens will offer SAP Intelligent Asset Management and SAP Portfolio and Project Management software to maximize the business value for manufacturers and operators across networks. Both companies will collaborate to develop applications from an end-to-end lifecycle perspective to help customers achieve a seamless digital thread that improves overall business performance.

"Combining Siemens' Teamcenter and SAP S/4HANA software provides companies an end-to-end process capability from product design to decommission," said Bob Parker, Senior VP of Industry Research at IDC. "The IT benefits of pre-integration of PLM, ERP, asset management and supply chain applications and the business benefits from having a more resilient response to changing market demand make this a compelling consideration for companies seeking a competitive advantage in the digital economy."

For more information on Siemens Digital Industries Software and the Xcelerator portfolio of software and services, visit www.sw.siemens.com or follow us on LinkedIn, Twitter, Facebook and Instagram. Siemens Digital Industries Software – Where today meets tomorrow.

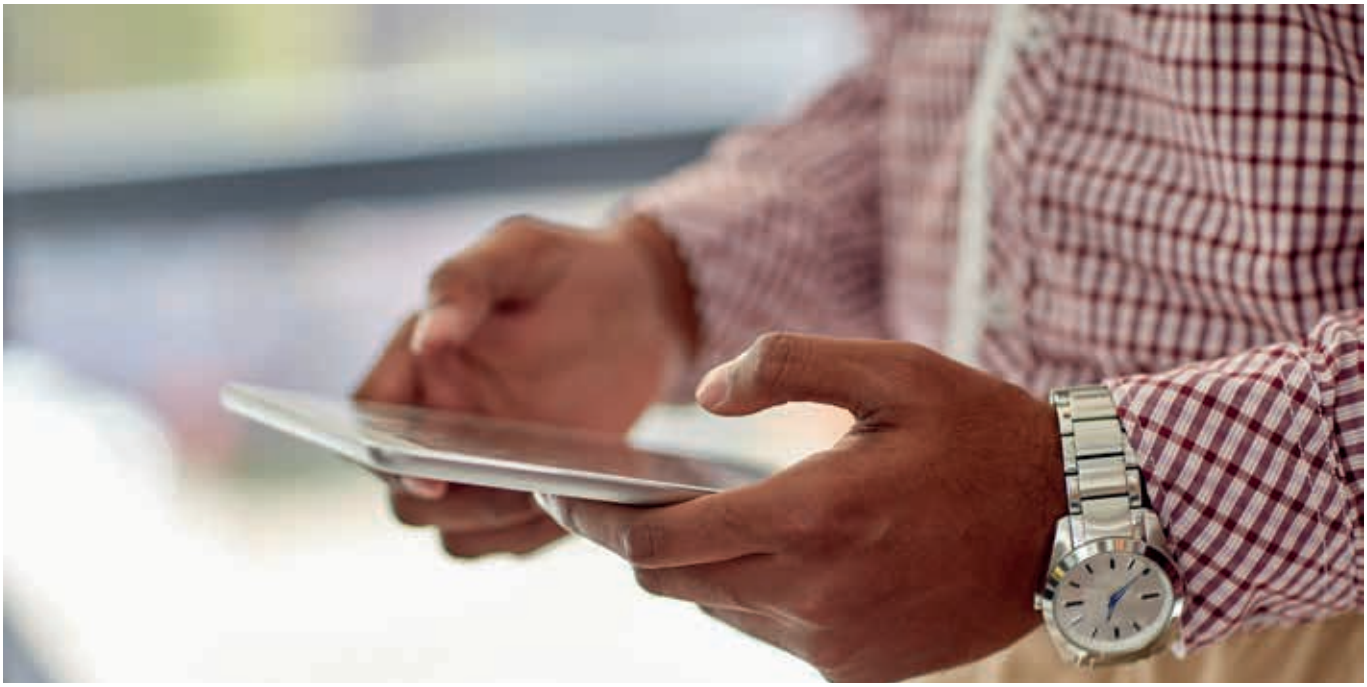
For more information, visit the SAP News Center and follow SAP on Twitter at @SAPNews.

Siemens Digital Industries (DI) is an innovation leader in automation and digitalization. Closely collaborating with partners and customers, DI drives the digital transformation in the process and discrete industries. With its Digital Enterprise portfolio, DI provides companies of all sizes with an end-to-end set of products, solutions and services to integrate and digitalize the entire value chain. Optimized for the specific needs of each industry, DI's unique portfolio supports customers to achieve greater productivity and flexibility. DI is constantly adding innovations to its portfolio to integrate cutting-edge future technologies. Siemens Digital Industries has its global headquarters in Nuremberg, Germany, and has around 76,000 employees internationally.

Siemens AG (Berlin and Munich) is a global technology powerhouse that has stood for engineering excellence, innovation, quality, reliability and internationality for more than 170 years. The company is active around the globe, focusing on the areas of power generation and distribution, intelligent infrastructure for buildings and distributed energy systems, and automation and digitalization in the process and manufacturing industries. Through the separately managed company Siemens Mobility, a leading supplier of smart mobility solutions for rail and road transport, Siemens is shaping the world market for passenger and freight services. Due to its majority stakes in the publicly listed companies Siemens Healthineers AG and Siemens Gamesa Renewable Energy, Siemens is also a world-leading supplier of medical technology and digital healthcare services as well as environmentally friendly solutions for onshore and offshore wind power generation. In fiscal 2019, which ended on September 30, 2019, Siemens generated revenue of €86.8 billion and net income of €5.6 billion. At the end of September 2019, the company had around 385,000 employees worldwide. Further information is available on the Internet at www.siemens.com

About SAP

As the Experience Company powered by the Intelligent Enterprise, SAP is the market leader in enterprise application software, helping companies of all sizes and in all industries run at their best: 77 percent of the world's transaction revenue touches an SAP system. Our machine learning, Internet of Things (IoT) and advanced analytics technologies help turn customers' businesses into intelligent enterprises. SAP helps give people and organizations deep business insight and fosters collaboration that helps them stay ahead of their competition. We simplify technology for companies so they can consume our software the way they want — without disruption. Our end-to-end suite of applications and services enables more than 440,000 business and public customers to operate profitably, adapt continuously and make a difference. With a global network of customers, partners, employees and thought leaders, SAP helps the world run better and improve people's lives. For more information, visit www.sap.com.



ARE LEGACY ERP SYSTEMS HOLDING A&D MANUFACTURERS BACK FROM PROGRESS?

COVID-19 and the resulting market forces have highlighted the need for flexibility.

External forces have always affected the aerospace and defense (A&D) industry, be it regulatory changes, shifting business priorities or new technology opportunities. The COVID-19 crisis has thrown an extreme stress test in front of A&D manufacturers, severely affecting supply and demand and triggering regulatory mandates such as the U.S. Government invoking the Defense Production Act. There have been some leading trend-setters in A&D manufacturing during the pandemic—take CAE Inc. shifting its focus from manufacturing flight simulation systems to developing an easy-to-build ventilator to help combat the crisis in Canada.

But in fact, recent IFS webinar research found that only 8 percent of A&D manufacturers have effortlessly altered production to meet changing market demands during the pandemic. So, what is it that's holding A&D manufacturers back from adapting to change?

The same webinar also unearthed some deep-seated questions around legacy ERP software implementations identified by attendees, which included leading aerospace manufacturers, aviation organizations and industry consultants. Almost half of the respondents (46 percent) said that their current ERP platform was hindering their ability to adapt to changing market demands. With this in mind, it becomes highly relevant to take a look at the four key ERP 'stress tests' and scenarios facing A&D manufacturers when they look to advance their operations.

1. Unique industries need unique software

The unique nature of A&D manufacturing means organizations need tailored applications—software for managing daily retail business processes just won't cut it in a defense supply chain. All too often, A&D manufacturers begin an implementation and discover they need costly and complex customizations to accommodate critical processes such as precision part engineering and intensive quality control. A&D manufacturers need a systems infrastructure that supports the current and future business needs of their industry—rather than dance to the tune of their software supplier.

...and not necessarily found in the cloud

Many generic ERP vendors are pushing their customers to the cloud as a prerequisite. This may be a sensible choice for other industries, but A&D manufacturers are involved in a sensitive supply chain. Failing to adhere to strict government mandates means A&D manufacturers lose out on valuable military RFPs. It's important for A&D manufacturers to have full control over supporting enterprise software deployments—whether it's a physically secure on-premise installation, a full SaaS-based deployment or a hybrid environment. This was reflected by IFS webinar attendees, with only 3 percent currently deploying completely cloud-based ERP.

2. A common interface doesn't necessarily mean connected operations

IFS webinar research shows that A&D manufacturers are lagging behind on the Industry 4.0 or smart manufacturing curve. Only 20 percent of participants were actively looking to leverage 4.0 technology, identifying it as an enterprise-wide priority, while 68 percent were still researching how these initiatives can drive digital transformation.

But it's the architecture of manufacturers' ERP platforms that is most likely to impede this digital transformation. General purpose ERP suites commonly consist of multiple software products comprising disparate applications that are clumsily combined into what is called a common user interface. So, for A&D manufacturers with these inflexible ERP deployments it's then a case of having to customize and add to existing implementations before they are able to gather—and mine—the terabytes of information available from sensors and intelligent assets. Only then can they unlock new insights for themselves and for the military organizations they serve. Compare this with industry-specific manufacturing ERP software built on API-driven architecture. This isn't a problem. Data streams can be linked to the core ERP system from the start without the need for additional customizations.

3. Say goodbye to silos

Introducing data into a supporting enterprise solution is just the start—extensive analysis is then needed to gain insights into operational and business performance. A&D manufacturers need a full view of manufacturing operations and back-end business processes to make quicker, better-informed decisions. But all of this data is useless if it's sitting in separate silos.

Solutions should visualize information to support decision-making both strategically and tactically, providing relevant insight and context. This can only happen with one unified platform which aligns with the organization's business objectives, while integrating all of the vital programs feeding into their operations including Manufacturing Execution Systems (MES) and Customer Relationship Management (CRM).

4. Keep compliance top of mind

In A&D, compliance is essential and 'one-size-fits-all' ERP systems simply don't contain the industry specificity to keep A&D manufacturers watertight for both the physical products they deliver and their digital presence. For businesses involved in regulated materials or military contracts, functionality specifically designed for export control and cybersecurity regulations such as International Traffic in Arms Regulations (ITAR) and the U.S. DoD Cybersecurity Maturity Model Certificate (CMMC) is a must.

Without a fully integrated application suite allowing data to flow between supply chain management, manufacturing, engineering and CRM, it's difficult to know which products, parts or transactions may put A&D manufacturers in jeopardy—and this will only become more important as they evolve in the future.

Make ERP the catalyst of manufacturing change

The leading aerospace manufacturers, aviation organizations and industry consultants attending our webinar had real reservations about their ERP platforms' ability to flex in times of need. They spoke from experience. Today, A&D manufacturers must compete with technology advancements, new business opportunities, security restrictions and disruptive market forces. Organizations must be agile. Those who can't adapt will fall behind.

To find out more about how A&D-specific ERP solutions can improve A&D manufacturers' ability to transform business operations, read this white paper.

priority™

PRIORITY SOFTWARE ANNOUNCES NEW PRODUCT LOCALIZATION FOR GERMANY

New localization package enables customers to maximize Priority ERP for businesses in Germany and full compliance with local tax laws and banking regulations

Priority Software Ltd., a leading global provider of business management solutions, announced its newest product localization package for Germany, with Priority ERP software translated into German, and fully compliant with local tax and government regulations. This initiative enables a significantly easier implementation process for Priority's global customers with operations in Germany, and for German customers with foreign branches, to fully utilize and benefit from Priority's standard system functionality.

To enable its customers to grow their business on a global scale, Priority supports localization in close to 20 countries. The new German localization is an integral part of Priority's consistent growth strategy, and in keeping with the company's continued expansion into Western Europe, including Belgium, France, Portugal, and other countries in the region.

To achieve certification and comply with Germany's federal tax laws and banking regulations, Priority deployed the services of one of Germany's leading accounting firms to ensure a streamlined certification and compliance process. After meeting stringent auditing requirements, Priority ERP is now certified with Germany's IDW PS 880, in full accordance with local accounting system standards.

> **"PRIORITY'S PRODUCT LOCALIZATION PACKAGE FOR GERMANY WILL HELP LOCAL COMPANIES MAXIMIZE THE POWER OF PRIORITY ERP. IT IS A FURTHER TESTAMENT TO OUR CUSTOMERS THAT WE BUILD SOLUTIONS TO ADDRESS THEIR IMMEDIATE NEEDS**

With the new German localization, new or existing Priority customers will be able to optimize Priority ERP for business in Germany and with German customers, comply with local tax reporting, and enjoy bank payment features, including:

• Tax reporting: German VAT (BwH), GoBD, eBilanz extract, and export to DATEV, to transfer financial data export

• Bank payments: SEPA, to simplify bank transfers in Euro; European DATZV, for transactions in foreign currency, and the commonly used MT940 bank statement format, to easily upload bank statements

A leading ERP solution provider, Priority Software thrives on innovation, delivering the tools and functionality to meet its customers' unique needs, including product localizations, and product enhancements, all in response to customer demands. Priority's cloud and mobile ERP applications are powered by the system's flexibility and openness, supported by a suite of robust mobility tools. Priority supports operational business processes and workflows by delivering the necessary tools to achieve this flexibility, including Business Process Management (BPM), mobile application generator, user-level personalization, business rules generator, and more.

"Priority's product localization package for Germany will help local companies maximize the power of Priority ERP. It is a further testament to our customers that we build solutions to address their immediate needs," said Keren Sherer-Taiber, VP Product Management at Priority Software. "We are proud to deliver our German localization to ensure Priority's local tax compliance, unify the system's processes, business rules, and financial reporting, and in turn, help our customers to expand their operations, and grow their business."

About Priority

Priority Software provides flexible, end-to-end business management solutions for organizations of all sizes in a wide range of industries. Recognized by top industry analysts and professionals for its product innovation, Priority improves business efficiency and the customer experience, providing real-time access to business data and insights in the cloud, on-premise, and on-the-go. With offices in the US, UK, Belgium, and Israel and a global network of business partners, Priority enables 75,000 companies in 40 countries to manage and grow their business. For more information, visit www.priority-software.com

tvarana

Success Story

M&C Saatchi Pushes the Envelope with Tvarana

Digital Transformation is rewriting the fundamental principles of the business world, and is more than just a buzzword. It has a wide-ranging impact on industry, creating both opportunities and challenges. In the area of marketing, especially, digital transformation can bring about some exciting and profitable changes for those who are on this journey.

We are all aware that digital has transformed the marketing approach, and agencies are rapidly changing their business models to adapt. M&C Saatchi, who has been making waves in the advertising industry since 1995, is one such company that is firmly on the path to success in their journey of digital transformation.

Early in this process, M&C Saatchi made the decision of choosing one of the leading providers of ERP software for their organization – Oracle NetSuite. M&C Saatchi was well aware that by implementing the right ERP solution, they could successfully assimilate emerging technologies, and the digitization process would be much easier. Using the right ERP system meant opening the door to greater efficiencies and opportunities for innovation.

M&C Saatchi went through their implementation process with a Netsuite partner. NetSuite SuiteSuccess implementations generally aim to go-live in a 90-day period, during which the product is configured according to business processes. Tvarana started working with M&C Saatchi in 2018 for NetSuite post-implementation support services following their ERP implementation.

Achieving a Global Go-live with Tvarana

Go-live is a pivotal moment in ERP implementation; one where the efforts of the preceding days pay off, but also where incipient problems may surface. It is merely the starting point for a robust ERP system, with considerable ongoing effort required for building a framework that is not just stable, but also efficient.

Tvarana encourages customers to go-live with their implementation as soon as possible to maximize ROI. With the go-live being a major milestone in an ERP project, scheduling and testing at every stage are integral to its success.

Following their go-live in the UK with their implementation partner, M&C Saatchi was able to independently execute the same process in the US and Singapore with the support of Tvarana. Thanks to Tvarana's involvement in the process, M&C Saatchi went live globally in a more efficient and cost-effective manner.

Systems Analysis and Post-Implementation Requirements

During the course of their implementation, M&C Saatchi had several requirements that were not part of their original scope-of-work. Requirements that had been fulfilled were at varying stages of completion, with some having been tested, and others not. Testing is the heart of a successful go-live, and should be conducted at regular points during the process.

At the beginning of their engagement, Tvarana conducted a thorough systems analysis in order to chalk out all business requirements for M&C Saatchi. Once Tvarana had made an accurate account of all requirements, and the completion time had been estimated, a plan was put in place for systematically addressing and fulfilling each and every requirement on the list. Additionally, Tvarana ensured that each requirement was thoroughly tested and up and running.

The project, which hinged on a successful post-implementation strategy, was completed at a ¼ of the cost of what other service providers offered. In this case, it was proven how critical post-implementation support services are to the success of an ERP implementation. M&C Saatchi was able to achieve a lot more within their budget by partnering with Tvarana.

Expense Management and File Storage Problem

Expense management is a crucial process to every business, and should be tracked within a digital environment. To begin with, M&C Saatchi was using NetSuite for their expense management needs. However, with close to 600 employees uploading receipts, they quickly hit their 10 GB file storage limit on NetSuite, and going beyond that would be an expensive proposition. As a solution, M&C Saatchi switched to SkyDoc, a Suiteapp designed by Tvarana for unlimited cloud storage. SkyDoc helped M&C Saatchi to expand on their existing NetSuite file storage at a reasonable price-point.
SkyDoc enhances Netsuite's storage capabilities by integrating seamlessly with Amazon S3. Scalable, cost-effective and secure, SkyDoc is the complete storage solution for NetSuite users.

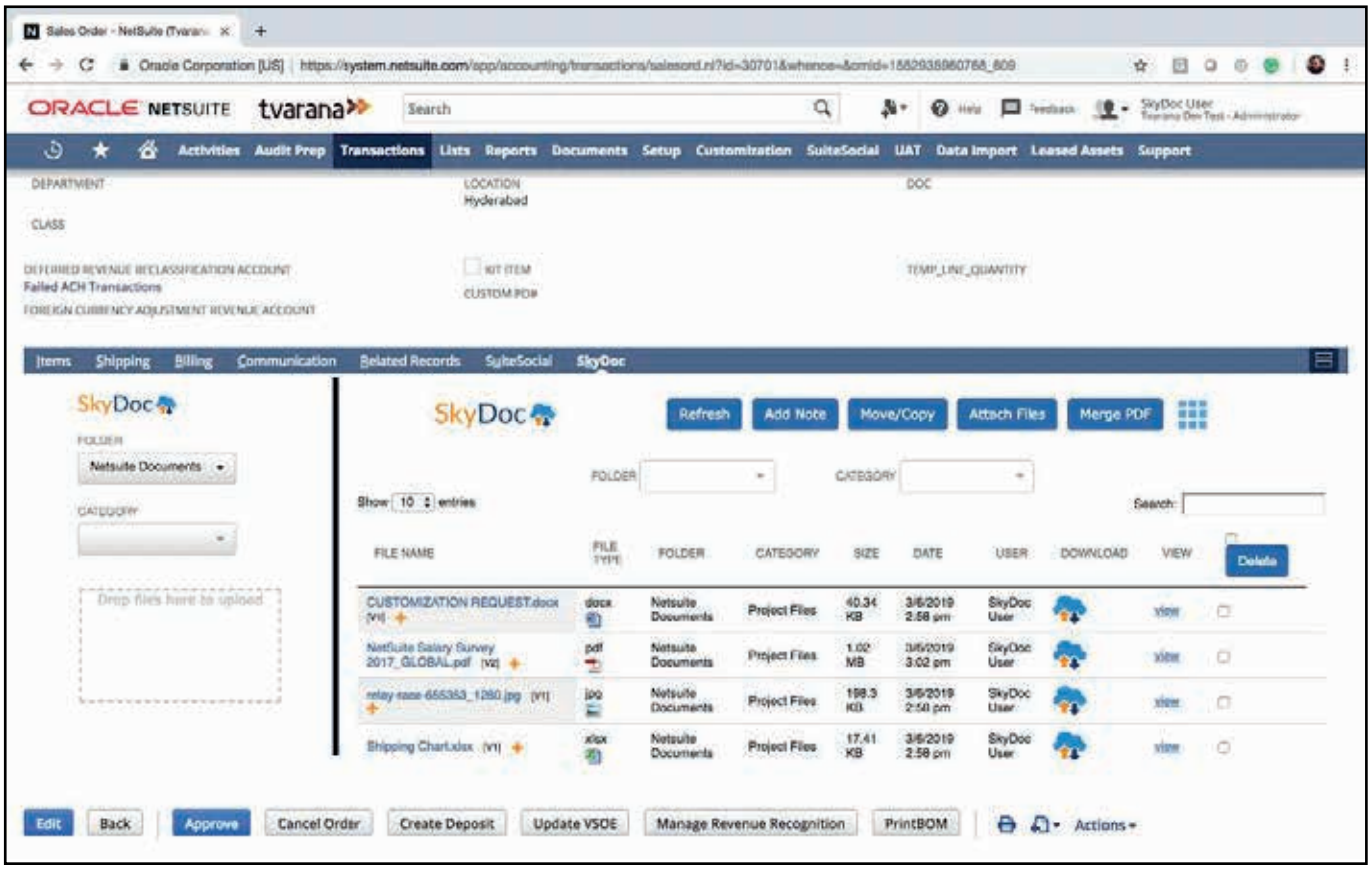


Figure 1 - SkyDoc App for Netsuite

With SkyDoc, M&C Saatchi can now drag and drop files, sort documents by categories, preview files, add and delete files, and have control of their versioning, effectively streamlining their file sharing processes.

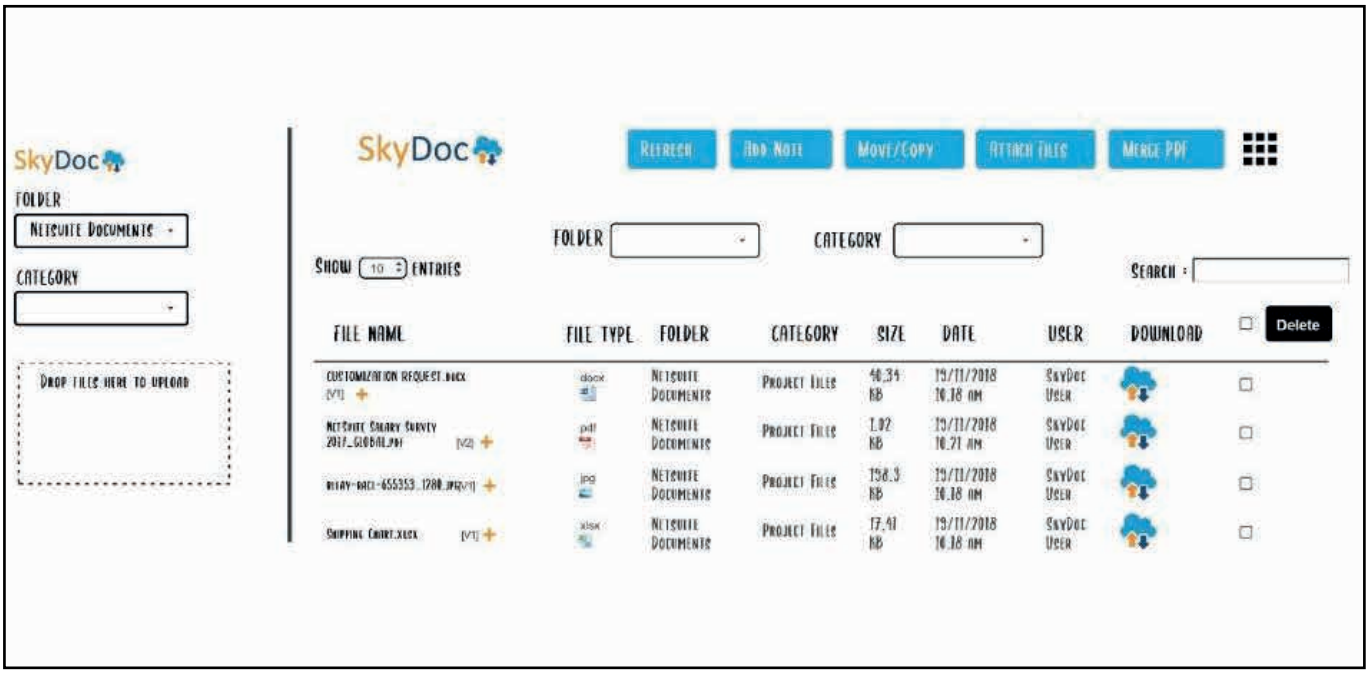


Figure 2 - Storage Management with SkyDoc7

SkyDoc allows M&C Saatchi to create folder structures and restrict access based on IP, role, or users. SkyDoc provides a portal for authorized people outside of their NetSuite environment to view, upload, and collaborate on documents. In essence, M&C Saatchi can create a highly secure and efficient collaborative environment using SkyDoc.

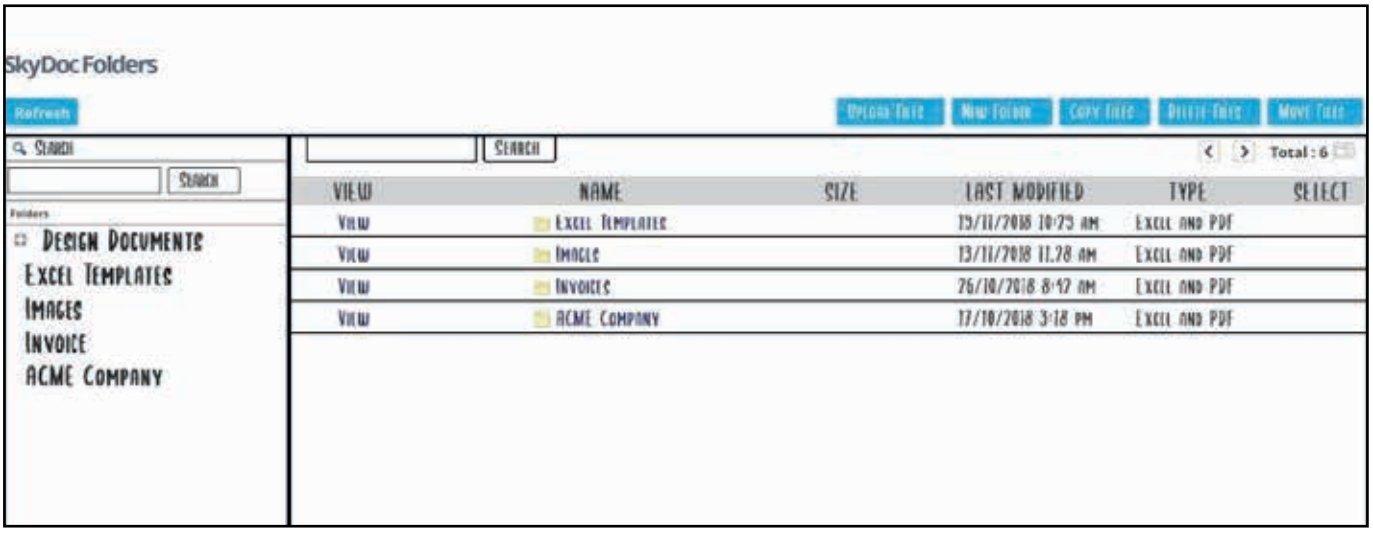


Figure 3 - Collaboration with SkyDoc

An automated approval workflow is triggered when users upload a document to SkyDoc. This workflow makes the approval process easy and straightforward. The dashboard or email reminders notify users of pending documents.

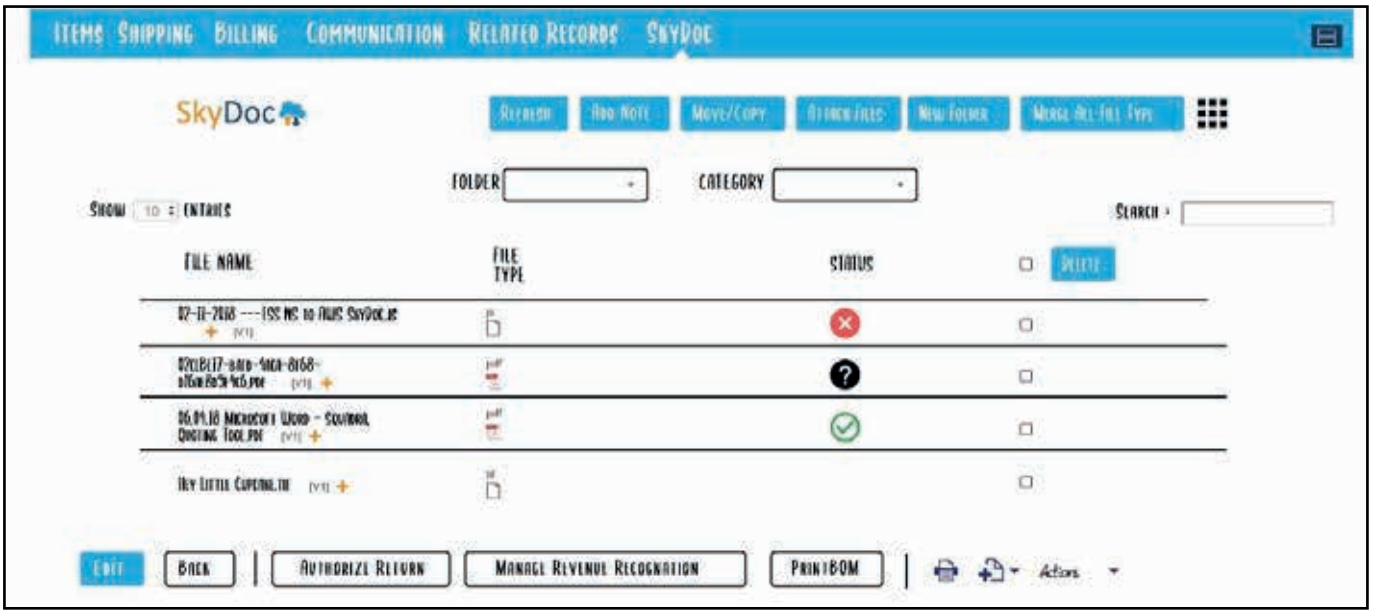


Figure 4 - Approval Workflows with SkyDoc

GDPR Compliance

As of May 2018, new privacy law has come into effect in the European Union (EU) called the General Data Protection Regulation (GDPR). ERP users were faced with the issue of NetSuite not being GDPR compliant. Compliance with GDPR mandates enhanced customer data visibility within ERP systems, so that all private data can be found and removed on request. Tvarana was able to solve this issue and help M&C Saatchi with their GDPR compliance. In addition to expanded storage capabilities, SkyDoc which is built on the NetSuite platform, is GDPR and SOX compliant as a result of its integration with Amazon AWS S3. Having fulfilled all requirements, Tvarana is extremely proud to have successfully provided its services to a large global customer. M&C Saatchi's ERP system is now fully integrated, GDPR compliant and has unlimited document storage, made possible through SkyDoc.

About Tvarana

Tvarana is a NetSuite Consulting Firm that has deep expertise in cloud-based enterprise applications, with a focus in Managed Services. Founded in 2007, Tvarana is a NetSuite SDN partner with 9 apps listed on Suiteapp.com. They have successfully completed over 500 projects involving customization, cloud integration and app development. With NetSuite implementations being targeted at an aggressive 90-day completion period, where in the product is configured to your business, there is not much room left for product customization or other enhancements. Tvarana's end-to-end managed services offerings can help your business reach its post-implementation goals.

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LUMENIA PUBLISHES NEW WHITE PAPER - ERP CONTRACTS: A FOUNDATION FOR CONTROLLED ERP PROJECTS

ERP projects are collaborative design and build projects that get to the heart of business processes. Without having clearly contracted scope, responsibilities and deliverables – like any design and build project - they can run far over budget and schedule and diverge from any original notional scope.

Lumenia Consulting's latest white paper on ERP Contracts: A foundation for controlled ERP projects, explores as to how ERP Contracts are clearly a foundation for successful ERP projects. This white paper examines the various contractual elements of typical ERP programmes, where the main risks for scope creep and budget might lie, and how to mitigate those in well-constructed commercial documentation and contracts. It also explores the factors and opinions to be considered when contracting partners for an ERP project.

Lumenia Consulting is a leading independent consulting organisation and has vast experience supporting ERP projects in diverse and complex businesses. Lumenia has developed tried and tested methodologies for Business System Strategy development and system selection to ensure that you never start with a blank page.

The white paper is available to download from Lumenia's website at http://www.lumeniaconsulting.com For further information on ERP Contracts contact Ian O'Toole, Consulting Manager at info@lumeniaconsulting.com

> "LUMENIA CONSULTING'S LATEST WHITE PAPER ON ERP CONTRACTS: A FOUNDATION FOR CONTROLLED ERP PROJECTS, EXPLORES AS TO HOW ERP CONTRACTS ARE CLEARLY A FOUNDATION FOR SUCCESSFUL ERP PROJECTS.

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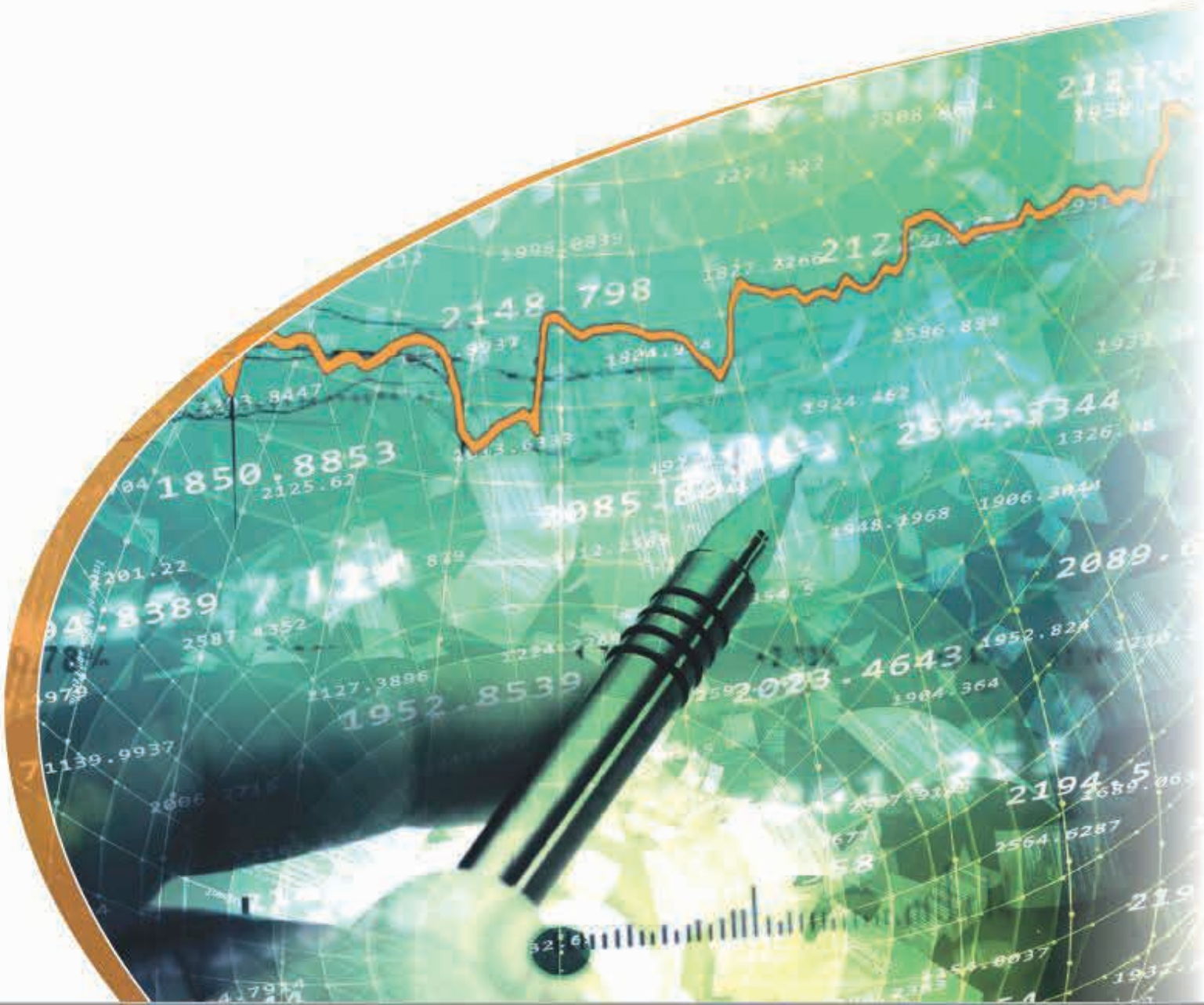
ERP Contracts

A foundation for controlled ERP projects



WHAT IS THE FUTURE OF SEED TO SALE IN CANNABIS ERP?

*Article by **Jason Warlock,***
Cannabis Advisor for Applied DNA Sciences

Starting with Proposition 215 and the first Medical Cannabis legalization law in California in 1996, regulatory bodies, law enforcement, and governments have been struggling to maintain control over the legal and illegal cannabis business. Even now, as the industry has exploded with over 30 states and almost 30 countries worldwide allowing either medical use or adult-use cannabis, the mandate remains how to monitor, tax and control the legal trade, while limiting the grey or black market.

In each case, the governing body has required a "seed to sale" protocol or monitoring system to record the cultivation, manufacturing, disposal, and ultimately sale of cannabis products to the dispensary or retail locations.

With a rush of a new industry, many new software companies sprung up to support the market and in many States, the government-mandated a specific singular platform to better collectively manage and report the data. Unfortunately, the ability to move almost all the early companies from the grey and black market into the regulated regime caused a significant hurdle for many producers to adopt. When coupled with large data and security breaches from the initial versions of the leading Seed to Sale company's platforms, the industry and governance were caught switching between programs and creating bottlenecks in the ability of these producers to legally cultivate or move product to market.

The basics of a "seed to sale" system are similar to that of a traditional ERP, however, the particular legal requirements of cannabis production require that the product, in all forms, from biomass to flower, to extraction, to disposal, to always be recorded. Basically, every ounce of material produced, transformed, or disposed off in a facility must be accounted for. However not all cannabis is the same and a particular strain or genetic profile can vary considerably both in the yield, but also the potency and dominant cannabinoid constituents.

Further to that the cultivation methodology, be it a greenhouse, outdoor, or hydroponics, all have a dramatic impact on the yields to say nothing of the skill and knowledge of the master grower. As cannabis is often sold and therefore taxed, as a relative product of the cannabinoid strength (for example products containing above 20% tetrahydrocannabinol or "THC") and quality of the delivered product, the basic tracking of weight was an insufficient metric to govern seed to sale.

As states and counties evolved their understanding of the intricacies of the cannabis business, new protocols were required to better track the business. Radio-Frequency Identification (RFID) tags and limited batch processing with SKUs uploaded to government portals for approval, were added to better manage the different types of cannabis businesses.

While the governments struggled to maintain control of the business and the associated tax revenue, the industry grew, and small farmers became big farms and big brands,

operating over multiple states. These Multi-State Operators (MSOs) were faced with a new challenge -- each state and even county may have a different seed to sales system mandated, different requirements, and different software to manage. These larger MSOs would then have silos of businesses running different systems and then a master system or traditional ERP running the collective.

Convergence in the industry has started slowly but has recently begun to gain some speed. With numerous versions of seed to sale systems in the market, companies like Akerna Corp and Helix Technologies Inc. have begun to amalgamate several systems under their own platforms. Akerna also recently announced they have developed specific APIs to communicate more effectively with METRC which has the largest install base with State mandated systems, including 13 current state agreements, for better cross-platform tracking and reporting.

The future however is still difficult to predict. The inherent nature of the cannabis industry was taking a product, predominately produced illegally, into medical and/or recreational markets. Complexity, tax pressure, and oversight have not made this a smooth road to success. Many States have large illicit production still eroding tax revenues and exposing the public to increased risk of untested and even dangerous products.

In 2019 a series of vaping related illnesses and deaths were in large part attributed to illicit THC used in these vape pens, with the Centers for Disease Control and Prevention (CDC) going so far as to claim illegal THC was "fueling the epidemic".

> **THE FUTURE OF SEED TO SALE WILL NEED TO GET MUCH SMALLER AND MUCH BIGGER TO MEET THE CHALLENGES OF A GLOBAL CANNABIS MARKET.**

For a future seed to the sales system to operate effectively it will also have to eventually be tracked and traced over the state and country borders. International shipments of THC and Cannabidiol (CBD) products are already taking place between places like Columbia, Canada, Australia, and Germany. In these cases, a Certificate of Analysis (COA) and proof of license is required, but exceedingly difficult to prove on products like refined isolates or oils which may have multiple producers' products mixed in.

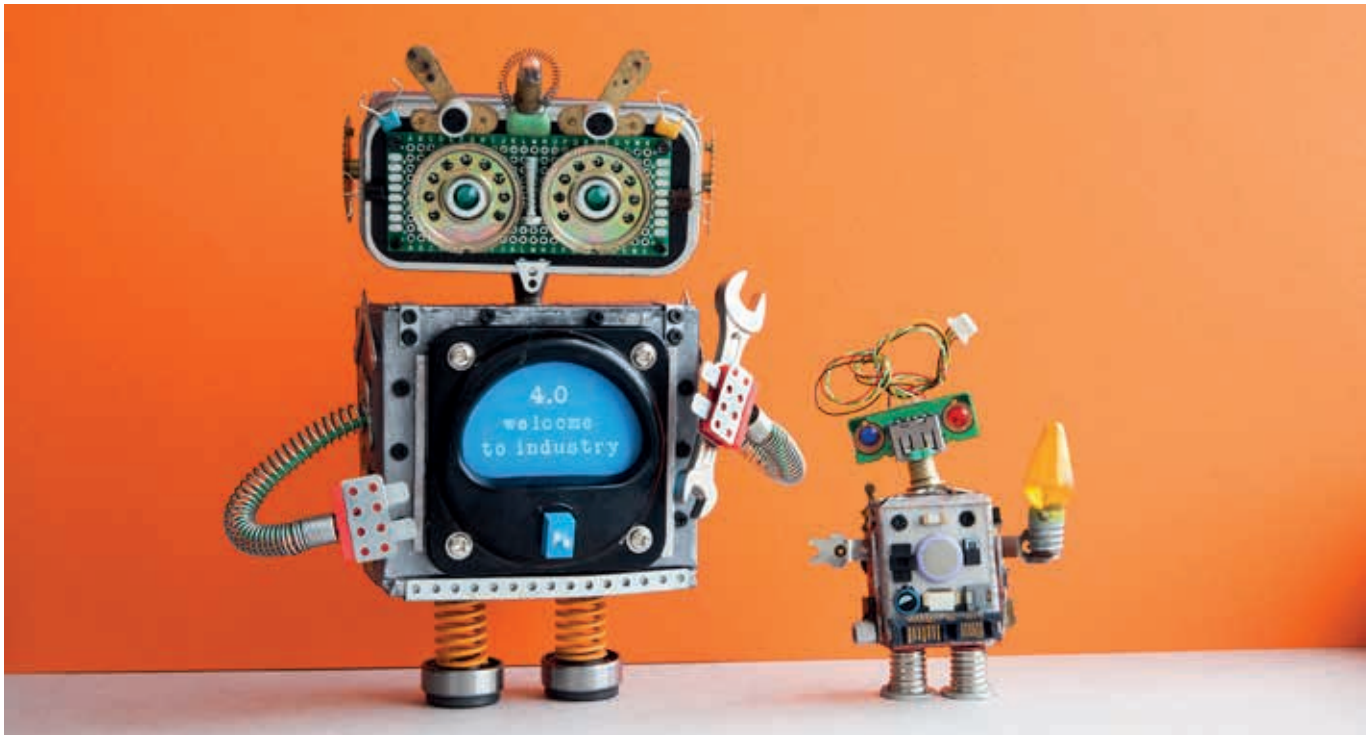
Chain-of-custody at every point on the supply chain requires a definitive indicator of authenticity and point of origin. The true provenance of material will be a collaboration between data and tags using molecular technology on the plants, oils, finished products, and even packaging. Blockchain systems, unique molecular tags, safe and undetectable by counterfeiters will pair with seed to sales systems to bring global transparency to the industry. The future of seed to sale will need to get much smaller and much bigger to meet the challenges of a global cannabis market.

Jason Warlock

Jason Warnock is a strategic thinker specializing in international market development, brand advocacy and integrated communications. Jason has worked with high profile brands for over 20 years to articulate sustainable, resonant campaigns in architecture and design, energy, and the cannabis market. Jason had spent his career as a marketing and business consulting lead, building companies and brands while working on M&As through his advisory practice.

About Cannabis Advisor for Applied DNA Sciences

Applied DNA provides its CertainT® platform to cultivators, processors, wholesalers, and other cannabis product manufacturers the ability to use molecular technology to Tag, Test, and Track its products through its supply chain. This allows for true transparency, traceability, and trust with consumers that the claims being made are authentic and can be proven with science.



HARNESS THE POWER OF BIG DATA AND EMBRACE INDUSTRY 4.0

Article by ***Nicolas Morin,***
VP of Professional Services at Genius Solutions

Industry 4.0—the fourth industrial revolution that is bringing an increasing level of digitization, automation, and inter-connectivity to the manufacturing sector—is well underway. Cloud computing, big data, greater capabilities in analytics and business-intelligence, advances in artificial intelligence, as well as the continued development of the industrial internet of things (IIoT) are all driving change in the manufacturing industry.

Manufacturers need to both understand and embrace these changes in order to stay competitive. Companies that have already started to adopt new technologies, such as IIoT, are seeing a 7% revenue growth advantage over their peers, according to a report by McKinsey.
And the economic and social downturn caused by the current COVID-19 crisis will only deepen the divide between manufacturers who have just started to digitize, and those who are much further along on their digital journey.

Luckily many manufacturers already have a tool in their arsenal that is helping them to embrace Industry 4.0, and putting them on the right side of the digital divide: An ERP system.

Today's ERPs aren't just about replacing back-office functions and systems like inventory management, accounting, order fulfillment, and shipping: Today's ERPs not only include these important functions but also automation, analytics, and business intelligence—all important elements of Industry 4.0.

ERPs—and learning to harness the full power of an ERP system—are one the most important steps manufacturers can take towards Industry 4.0.

The Digitization of the Manufacturing Industry

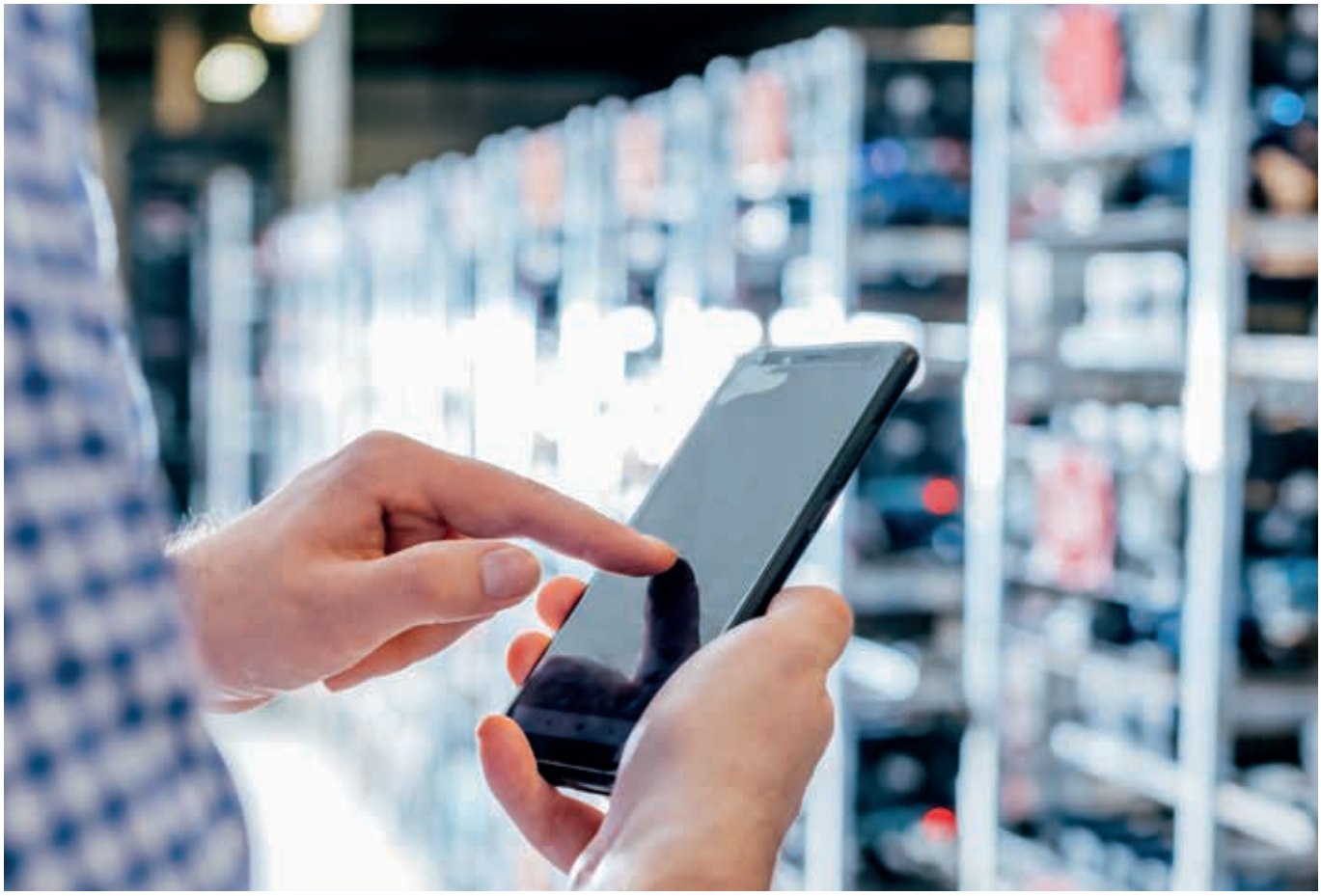
The first digital revolution to disrupt the manufacturing industry was in the late 1960s when computers were introduced and completely changed how manufacturers did business.

Now technologies such as big data, IIoT, and cloud computing are vastly increasing the connectedness of computing technology—and are changing the game again. As Industry 4.0 unfolds, computers will continue to connect and communicate with one another, and ultimately make decisions without human involvement.

Perhaps Forbes summed it up best when they said: "Industry 4.0 optimizes the computerization of Industry 3.0."

Manufacturers need to take these innovations seriously and start thinking about how they will impact their business. According to Deloitte "Overall, just over 20 percent of manufacturers rated themselves as 'highly prepared' to address the emerging business models the fourth industrial revolution brings. The coming year is one that is expected to separate the digital leaders from the followers, and it could leave some companies dangerously behind."

Forbes predicts that in 2020 spending on IoT technologies, solutions, and apps will reach 267 billion USD, with much of this boom in spending coming from the manufacturing industry—as manufacturers continue to digitally transform and connect their business processes. Expect everything from shop floors to supply chains to become more connected, making manufacturers more efficient and productive.



> **MANUFACTURERS NEED TO BOTH UNDERSTAND AND EMBRACE THESE CHANGES IN ORDER TO STAY COMPETITIVE. COMPANIES THAT HAVE ALREADY STARTED TO ADOPT NEW TECHNOLOGIES, SUCH AS IIOT, ARE SEEING A 7% REVENUE GROWTH ADVANTAGE OVER THEIR PEERS, ACCORDING TO A REPORT BY MCKINSEY.**

Embracing digital technology will be an important factor in determining which manufacturers stay strong and competitive, and which lag behind in the new world of Industry 4.0.

How to Use Your ERP System to Harness Big Data

Learning how to collect, but also transfer, store, and analyze data is one of the biggest things that manufacturers can do to embrace Industry 4.0.

Data is one of the key drivers behind industry 4.0, and manufacturers need to learn how to harness the data that they already have coming into their shops to both become more efficient now—and to set them up to deal with future trends and technologies.

If a manufacturer is using an ERP to manage their manufacturing shop, they already have access to a large amount of real-time data. But, unfortunately, when it comes to analytics, many plants still rely on manual processes and Excel spreadsheets to determine asset availability, draft maintenance schedules, or make critical decisions.

However, using the full capacity of an integrated ERP solution will connect a shop and give manufacturers better control over their data—and the important business processes and decisions that rely on it—making shops run smoother and more efficiently.

Without an integrated ERP system, manufacturers need to comb through numerous spreadsheets and systems to pull out relevant data, and then analyze the data to create meaningful reports and actionable items. Not only is this time consuming, but it also leaves a lot of data out of play, meaning manufacturers aren't getting the full picture—or optimizing operations.

But an ERP makes it simple, as it can sift through data for manufacturers, and create customized reports to better understand operations and processes—and help manufacturers make better business decisions. Data can show where there are gaps or inefficiencies in production lines, and help improve manufacturing processes to increase cost-effectiveness.

Using the business intelligence features of an ERP to their full extent will help manufacturers become even more efficient, lean, and productive organizations—as well as will also help them to continue their digital transformation, and be prepared to adopt and embrace other digital technologies like automation and IIoT.

> **DATA IS ONE OF THE KEY DRIVERS BEHIND INDUSTRY 4.0, AND MANUFACTURERS NEED TO LEARN HOW TO HARNESS THE DATA THAT THEY ALREADY HAVE COMING INTO THEIR SHOPS TO BOTH BECOME MORE EFFICIENT NOW—AND TO SET THEM UP TO DEAL WITH FUTURE TRENDS AND TECHNOLOGIES.**

Using business intelligence to improve operations has a major impact on a business's bottom line. According to the Aberdeen Group ERP software that provides accurate, real-time information about daily operations help companies reduce operational costs by 23% and administration costs by 22%.

Closing Thoughts

Many manufacturers have been sitting on reams of data coming out of their machinery and systems for years, but didn't know what to do with it.

Learning how to use this data to create more efficient—and smarter—shops is what Industry 4.0 is all about.

Greater connectivity and analytics helps manufacturers avert quality issues, improve efficiency, and increase throughput—all while reducing costs. Additionally, getting comfortable with data today will help prepare manufacturers to use the connected technology that will come with Industry 4.0.

Nicholas Morin, With over 15 years of experience in technological fields of expertise such as industrial automation, information technology in manufacturing environment and management, Nicholas is an engineer and has also completed the executive MBA from Université du Québec à Montréal / UQAM. Nicholas has managed hundreds of ERP implementations in small to medium-size manufacturers across North America. Nicholas makes sure the project success with his innovative solutions when it comes to the challenges faced by fast-growing manufacturing companies and their implementation of new processes with limited resources.

About Genius ERP

Genius Solutions delivers a complete enterprise resource planning (ERP) solution, including software, implementation services, and field expertise for small to mid-sized custom manufacturers across the US and Canada. Genius ERP is built for SME manufacturers handling make-to-order, engineer-to-order, custom-to-order, and assemble-to- order manufacturing. Gain complete oversight of your shop, including accurate estimating, product engineering, inventory control, production planning, and accounts management. Simplify complex manufacturing with Genius ERP.

"HOW DOES CLOUD ERP ENABLE IIOT IN MANUFACTURING"

IIoT is all about connectivity, just like cloud ERP solutions.

Cloud ERPs give manufacturers more flexibility and connectivity to collaborate, manage operations, monitor production—and take advantage of new technologies like IIoT. At the end of the day technology is about enabling manufacturers to become more efficient and more productive,to better serve their customers. That's our goal, and only goal.

Nicholas Morin

VP of Professional Services, Genius Solutions

Genius ERP

sage

F&B MANUFACTURING IN AN UNCERTAIN TIME: STAYING AHEAD OF THE CURVE

*Article by **Mike Edgett**,*
U.S. Product Marketing Director, Medium Segment, Sage

Industrial Internet of Things (IIoT) is not a new concept for Food & Beverage manufacturers. In fact, when IIoT first became a buzzword, many manufacturers in the F&B space yawned at the conversations. Using technology to monitor processing and filling equipment so operators know when a piece of machinery needs maintenance or if it's operating safely has always been a critical piece to a modern food plant.

However, what many companies are understanding now is how IIoT can help increase the overall operational efficiency, and not just within the plant, but from the farm all the way to store shelves. With IIoT, it's possible to have a holistic view of the operation, monitor how the product was packed, where the product is on the delivery truck, even what temperature the product is being stored in. This full view of operations can impact business in a big way. This includes ongoing data that can be analyzed for efficiency, predictive maintenance, and more.

It's no secret the state of the industry is in flux. And with the lingering uncertainty brought about by COVID-19, F&B companies are prioritizing IIoT and other tools for digital transformation to keep their business attuned to changing expectations, regulations, and new business models. When it comes to digital transformation, understanding how new expectations and ways of working can impact existing operating models is essential to successful implementation.

A New World of Expectations

COVID-19 has, without question, transformed the way the world operates. For F&B manufacturers, in particular, changing channels to market, uncertain demands, and unexpected plant shutdowns are not the only areas disrupting typical operational processes: vendor expectations are also forcing F&B companies to rethink their operations.

What does the food industry look like when human interaction is decreasing? In the restaurant business, there has been an obvious impact on how restaurant owners continue to serve customers and drive revenue. Yet, how does this shift translate into the retail environment? Will we see more cases of check-in lines without cashiers, or touch screens that no one wants to touch, or an increase in Amazon Go-type shops? Will we see businesses completely changing their models to support this shift, and how will this impact the supply chain for manufacturers?
Typically, F&B manufacturers ship their goods directly to a distributor or manage distribution themselves through direct store delivery, and the process from farm to the

> **"WITH IIOT, IT'S POSSIBLE TO HAVE A HOLISTIC VIEW OF THE OPERATION, MONITOR HOW THE PRODUCT WAS PACKED, WHERE THE PRODUCT IS ON THE DELIVERY TRUCK, EVEN WHAT TEMPERATURE THE PRODUCT IS BEING STORED IN.**

manufacturer to the customer has been pretty straight forward – until now. New COVID-19-related changes in the channels to market have created an urgency to revisit business models and expand servitization. Foodservice suppliers have been particularly hard hit while some typical CPG companies have found themselves unable to meet demand. All of this is creating an evolution of expectations and needs from distributors, customers, and vendors. Some firms have been moving towards a full-service approach. These kinds of changes amidst an outdated ERP system can be dire for business and lead to a lack of efficiencies. IDC's report also stated that at least 40% of companies worldwide are stuck in heavily customized ERP systems. This can work in certain niche micro-verticals; within F&B, however, amidst this pandemic, businesses that are quickly changing operations must have the capability to change the way that they work and fast. With outdated systems or a matrix of excel sheets, some are struggling.

Adopting Automation: A Balancing Act

Without question, a company with an integrated, modern cloud-based ERP that leverages IIoT will give truly actionable insights for faster response to a changing environment, help cut costs, and raise margins. In the post-COVID world, F&B manufacturers must be more flexible and agile than ever before.

To date, F&B companies have prioritized efficiency above all else to stay ahead of the competition. The ability to operate quicker and more accurately remains key. Yet, with market fluctuations from Covid-19 and impending uncertainty, F&B manufacturers must also balance between efficiency and agility. A business operation that can easily pivot to support vendors changing expectations, such as manufacturing ventilators in the face of social need and lower business demand for their own products, has become critical to keep the business going amidst uncertainty. Understanding what the future holds from a regulatory perspective also has become important. These regulations oftentimes add additional, unforeseen layers for certain manufacturers that they had otherwise not accounted for; their digital operating and tracking procedures have to temporarily adjust to new policies and must be able to do so quickly.

As businesses start to adapt existing operations around such sudden changes, they must determine the correct balance between flexibility and efficiency. As a first step, manufacturers should ask themselves: Do I need to have multiple channels to market? How many different suppliers do I need so as to reduce the risk of shortages? What do I do when my employees can no longer report to work? Some may decide there are certain parts of the business that are straightforward, while other parts of the business that need to be flexible to the market, vendor, and regulatory changes.

> "AS BUSINESSES START TO ADAPT EXISTING OPERATIONS AROUND SUCH SUDDEN CHANGES, THEY MUST DETERMINE THE CORRECT BALANCE BETWEEN FLEXIBILITY AND EFFICIENCY.

As manufacturers move further towards automation, IIoT will be vital to predictively maintain equipment and utilizing data gathered from operations to make sure that the business is operating at peak efficiency. Yet manufacturers need to understand – fundamentally – what is the balance between efficient automation for processes that are not expected to change and automated business operations that may need to be adjusted to meet new expectations and policies.

The Ideal Business Environment, Now

The Food & Beverage industry is said to be the only industry poised for growth in 2020, but that doesn't mean F&B manufacturers that are doing well can rest on their laurels. The barriers to entry can be small in the F&B space, so it is very likely that new competitors jump into the space, as investors keep their eyes on opportunistic growth.

There's no denying that COVID-19 has in some cases completely changed the way that manufacturers are looking at how they operate. Many are speeding up their investment into IIOT, ERP, and other digital technologies. These technologies may prove paramount during this time to give facilities the ability to quickly shift focus, while still maintaining maximum productivity. Machine Learning in particular can use AI to optimize processes from top to bottom. One thing is certain in the modern age of digital transformation: the F&B manufacturing sector is speeding up even as it becomes more agile, data-driven, and efficient.

To keep ahead of increasing competition, F&B manufacturers must ensure their business models can adapt to the changing expectations unfolding, while also continue on their digital journey towards operational efficiency.

About Sage Software

Sage is the global market leader for technology that provides small and medium businesses with the visibility, flexibility and efficiency to manage finances, operations and people. With our partners, Sage is trusted by millions of customers worldwide to deliver the best cloud technology and support. Our years of experience mean that our colleagues and partners understand how to serve our customers and communities through the good, and more challenging times. We are here to help, with practical advice, solutions, expertise and insight. Find out more at www.sage.com.

Mike Edgett is an enterprise technology & process manufacturing expert with 20+ years leading business strategy for brands such as Infor, Quaker Oats and Bunge Foods. At Sage, Mike leads the US Product Marketing team focused on the medium segment. This group drives the go-to-market strategy for Sage's solutions designed to meet the business needs and challenges across the manufacturing, distribution and service industries. Mike earned an MBA in Marketing and Operations Management from the Simon School of Business at the University of Rochester and a Bachelor of Science in Chemistry from Houghton College.

"HOW DOES CLOUD ERP ENABLE IIOT IN MANUFACTURING"

The internet of things works very well with cloud ERP solutions of all sizes and can be easily scaled up to include a multitude of sensors and to process large amounts of data. The solution will allow you to create detailed reports and analyze your operations with every sensory data imaginable. It can also allow you to spot anomalies in your operations even before they have happened.

Lucy Thorpe,
Head of Content, InCloud Solutions

INCLOUD SOLUTIONS

HOW CLOUD ERP OF ALL SIZES CAN ENABLE IIOT IN MANUFACTURING INCLUDING: TOP 5 USE CASES FOR THE INTERNET OF THINGS IN THE INDUSTRY 4.0 ERA

*Article by **Lucy Thorpe**,*
Head of Content, InCloud Solutions

Computers and automation have been part of the manufacturing scene for some time – in fact, they were the signature technological development that characterised the 3rd wave of industrial innovation. But then came Industry 4.0 building on what had gone before and enhancing it with smart systems fuelled by data and machine learning.

A key element of this progression has been the advent of the Internet of Things (IoT) – which can refer to many scenarios where everyday objects are connected to the internet but the Industrial Internet of Things (IIoT) is where the magic happens. Those interconnected sensors, instruments, and devices - networked together – allows the collection of data that can then be analysed and exchanged, leading to improved productivity and efficiency.

For those blazing the trail, the benefits of these breakthroughs are being felt here and now while for many others it's a matter of finding the best use cases for their own individual situation or industry.

Every business has its own set of objects that can provide meaningful information about their everyday operations. By connecting them to the internet, they can begin collecting and analysing information in ways that are useful for them.

Endless Possibilities for Use

One of the most exciting things about the IoT is the endless possibilities for use.

For example – using sensors to gather data on overall equipment health in a factory or facility – making it possible to predict any equipment failure before it happens. Equipment downtime costs the average factory between 5% and 20% of its productive capacity with unplanned downtime affecting manufacturers by an estimated $50 billion annually. By turning maintenance from something reactive into something proactive – time and money can be saved.

> **"EVERY BUSINESS HAS ITS OWN SET OF OBJECTS THAT CAN PROVIDE MEANINGFUL INFORMATION ABOUT THEIR EVERYDAY OPERATIONS. BY CONNECTING THEM TO THE INTERNET, THEY CAN BEGIN COLLECTING AND ANALYSING INFORMATION IN WAYS THAT ARE USEFUL FOR THEM.**

But it doesn't have to be in a traditional factory setting. In fact, we recently heard about a Housing Corporation which had installed sensory devices into their facilities – it was being used to track among other things room temperature to detect anomalies. Linked to their ERP system – which happened to be SAP Business ByDesign - it was able to capture data that enabled them to detect issues when a certain

temperature threshold was exceeded. If the sensors detected that the temperature had got too high then a service request was automatically issued and the relevant staff received an e-mail. The nature of the problem could then be investigated to see if further action was required.

It should be emphasised that this was something created via the flexibility of the SAP Cloud Platform into the midmarket solution Business ByDesign – so not a huge ERP system - but even at this level you now have the flexibility to build your own applications for your specific business needs, handling your data entirely as you wish. This kind of flexibility is the way things are going to be done in the future.

> **THE INTERNET OF THINGS CAN WORK VERY WELL WITH A MIDMARKET CLOUD ERP SOLUTION AND CAN BE EASILY SCALED UP TO INCLUDE A MULTITUDE OF SENSORS AND TO PROCESS LARGE AMOUNTS OF DATA.**

The internet of things can work very well with a midmarket cloud ERP solution and can be easily scaled up to include a multitude of sensors and to process large amounts of data. The solution will allow you to create detailed reports and analyze your operations with every sensory data imaginable. It can also allow you to spot anomalies in your operations even before they have happened and handle them pro-actively.

So, as you see, the possibilities are endless.

Here are our top 5 use cases for the Internet of Things in the Industry 4.0 era

Predictive Maintenance of Equipment

With sensors on the manufacturing equipment reporting back, using some AI/Machine Learning you could enable predictive maintenance on equipment which then be scheduled proactively, minimising impact to production rather than reactively having the production line halted.

Inventory Management

For certain materials used in production in bulk, or difficult to replenish or expensive, via sensors on the storage units the system could capture inventory usage and automatically place replenishment orders to again minimise downtime.

Environmental Monitoring

Important for some industries, e.g. clean environments, so ensuring the right conditions are maintained

Remote monitoring

Remote monitoring of assets in dangerous environments minimising the risk to employees

Amazon button style solution

Allow production operatives to quickly request items e.g. consumables at the push of a button rather than complex online forms

This technology is not new, but recent advances have dramatically improved the efficacy and functionality available. As IoT platforms mature, the relative cost of monitoring devices has gone down, while the ability to not only monitor, but manage devices remotely has grown remarkably.

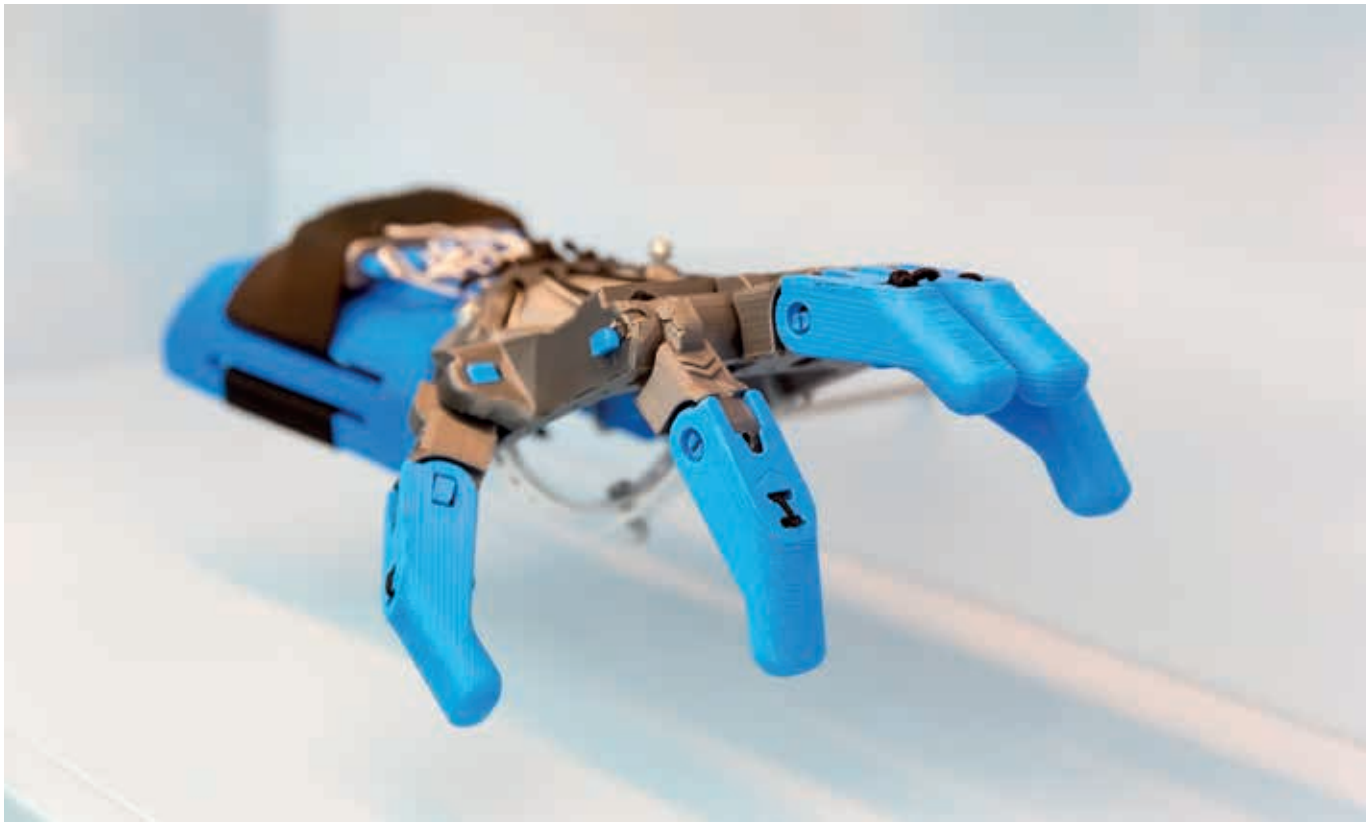
"AS IOT PLATFORMS MATURE, THE RELATIVE COST OF MONITORING DEVICES HAS GONE DOWN, WHILE THE ABILITY TO NOT ONLY MONITOR, BUT MANAGE DEVICES REMOTELY HAS GROWN REMARKABLY.

As we have seen, the current buzz is around predictive analytics. With enough data over time, algorithms can actually predict when a piece of hardware will fail, which is obviously extremely useful for minimising downtime. But it is also worth remembering that this is all within the grasp of the growing band of midsized cloud ERP users. With a flexible Cloud Platform like the one developed by SAP, you can integrate data and business processes – to open up a whole world of IoT possibilities!

Lucy Thorpe is the chief content creator for In Cloud Solutions – a Platinum SAP partner as part of the United VARs network offering expertise in SAP Business ByDesign.

About InCloud Solutions

InCloud Solutions are an SAP Platinum Partner offering ERP software solutions, training and consultancy to SMEs and SMBs all around the United Kingdom. In Cloud Solutions Ltd is a proud member of the United VARS. In Cloud Solutions are experts in the ERP solution SAP's Business ByDesign, one of the best cloud-based ERP solutions in the world. The company already has over 35 ByDesign Customers in the UK and Europe, with operations across the US, Australia, Africa, Japan, and China.



OptiProERP® MANUFACTURING

IT'S TIME TO FIND A WAY FORWARD WITH INDUSTRY 4.0

Article by ***Allan Lessing,***
Director of Customer Solutions at OptiProERP

Industry 4.0 is the progressive step in a manufacturing company's digital transformation maturity curve, focusing on combining information technology and operational technology to modernize the value chain in new ways.

IIoT is one of the leading Industry 4.0 technologies that is fueling business growth for manufacturers. In simple terms, the Industrial Internet of Things (IIoT) is a framework that connects numerous industrial machines together with the help of sensors, devices, software, and the internet. Industrial machines that are connected together through the internet include robots, sensors, cranes, compressors, and more.

For our manufacturing customers, IIoT enables remote connectivity, monitoring, and predictive maintenance of their machines on the shop floor. Cloud, connected devices, sensors, artificial intelligence, big data, cyber-security, and additive manufacturing, are a few subcomponents of their IIoT strategy. With the help of interconnected systems, sensors, and devices, their manufacturing workforce can access the machines from their office, assess their performance, and view insights as well as log files remotely – anytime, anywhere.

Any variation or deviance from the set parameters can be identified by smart machines and communicated to those responsible for operating it. Also, intelligent sensors help automate the decision making process on the shop floor.

When you install a new smart machine, it should be compatible with the existing setup and machines from the OEMs. Also, strong connectivity between the devices enables data sharing, establishes predictive maintenance, and minimizes security risks.

Industrial machinery often requires frequent maintenance. The good news is that with IoT-enabled ERP systems, manufacturers can preemptively know and predict when the operational failure of the industrial machine is imminent using sensors and cloud-based analytics.

> **"THE MAJOR OBJECTIVE OF CLOUD ERP AND IIOT IS INCREASING ORGANIZATIONAL EFFICIENCY. WE ALREADY KNOW THAT IIOT IS A FRAMEWORK OF SMART MACHINES WITH EMBEDDED SENSORS AND NETWORK CONNECTIVITY.**

Big players in manufacturing such as Boeing, Bosch, Airbus, etc. rely on IIoT for various reasons. Airbus has launched an initiative: Factory of the Future that focuses on wearable technology and integrated sensors which are designed for safety and reduced errors. Bosch launched a track and trace program that automates factory operations, tracks the workers, and guides assembly operations.

Cloud is an omnipotent component of IIoT-enabled ERP

The major objective of cloud ERP and IIoT is increasing organizational efficiency. We already know that IIoT is a framework of smart machines with embedded sensors and network connectivity. Cloud allows this framework to collect, send, and receive data without any manual intervention.

Cloud ERP and IIoT run parallel with each other. While IIoT generates a massive amount of data, cloud ERP creates a pathway for it to travel and reach its destination. Whether it is about tracking the data generated from machines or about knowing how many products have been procured and dispatched, cloud ERP lets you see everything from a single platform. In simple words, IIoT generates crucial data for the organization and cloud ERP streamlines and protects it. A Gartner research says that IoT's rapidly evolving technologies have ushered in innovative disruptions at a staggering pace, in five key areas:

- Sensing — IoT endpoints
- Communicating — IoT communications
- Securing — IoT security
- Understanding — IoT data and analytics
- Acting — IoT artificial intelligence (AI)

Source: Gartner

Integrating ERP with IIoT leads to data availability in real-time. Integrating ERP software with IIoT transforms the supply chain drastically. How? When IIoT devices talks to your ERP applications, it promotes visibility at a detailed SKU level. For example, when you know that components you require for production are to be shipped internationally, ERP allows you to track the time of arrival as products are tagged and you get constant information of its whereabouts. ERP and IIoT applications work together to transform the way information is being received by us. It lets you monitor equipment and the production line 24/7.

Cloud is the gateway to modern manufacturing. It allows manufacturers to access information about the functioning of products after they have been shipped to the customers. Manufacturers can monitor the product's behavior, its maintenance, wear and tear, and solve any problem that occurred in the product remotely.

As the Director of Customer Solutions at OptiProERP, Allan is responsible for the company's global customer success. He serves as OptiProERP's resident operational and business process advisor and leads quality management oversight of solution delivery. Allan has more than 35 years of experience as an Executive with various global manufacturing companies and has deep expertise in manufacturing operations and IT systems experience.

About OptiproERP

OptiProERP is an industry-leading ERP solution for manufacturing and distribution. OptiProERP delivers best-in-class industry functionality embedded into SAP Business One, the market-leading business management platform for small and midsize enterprises. Customers gain an end-to-end business management solution, including financials, accounting, sales, CRM, and industry-specific functionality that fully leverages deep industry expertise of over 20 years dedicated to serving manufacturers and distributors.
OptiProERP is an eWorkplace Manufacturing solution. eWorkplace Manufacturing is SAP's strategic industry partner for manufacturing and distribution and its first OEM partner as part of SAP's global PartnerEdge Program. Serving manufacturers and distributors for over 20 years with OptiProERP and BatchMaster as its two ERP solutions, eWorkplace Manufacturing has gained the trust of over 3,000 customers globally.
For more information, visit www.optiproerp.com.

HOW DOES CLOUD ERP ENABLE IIOT IN MANUFACTURING

Cloud ERP lays the foundation for collaboration, automation, and increased efficiency in a manufacturing environment. When you tie cloud ERP with smart industrial devices, it lets you see a holistic view of the shop floor and access data from anywhere and through any internet-enabled device.

IIoT primarily covers all industry sectors where industrial machines are used. It becomes easier for manufacturers to check the parameters, maintenance schedule, assembly process, and optimize different parts on the shop floor.

Cloud ERP brings every chunk of information in a single system. With integrated IIoT, manufacturers can more fully view accounting details, production completion status, inventory levels, customer input, defect (if any), shipment schedule, and minor details of everything happening on the shop floor.

Allan Lessing

Director of Customer Solutions, OptiProERP

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A CONNECTED SUPPLY CHAIN IS MORE IMPORTANT THAN EVER IN INDUSTRY 4.0

*Article By **Brent Dawkins**,*
Director of Product Marketing, QAD

The impact of COVID-19 on supply chain operations is gaining national attention through media outlets and varies depending on the industry. Producers of toilet paper, cleaning wipes, and personal protective equipment have seen spikes in demand that require the running of additional shifts. Farmers have to dump milk and break eggs as sales to restaurants, hotels, and cafeterias dry up. Sales of trampolines, playground sets, exercise equipment, and outdoor furniture are booming as families seek to keep their children entertained and maintain physical activity throughout the summer months. These are just a few examples of how supply chain disruptions present challenges for supply chain professionals today.

The current pandemic-related spikes and shortages are a stark reminder that when a market disruption occurs, connectivity with supply chain trading partners and the ability to rapidly respond to turbulence in demand matters more than ever. Of course, the coronavirus is the most prevalent and recent supply chain disruption covered in the media, but supply chain leaders consistently prepare for unplanned events that include labor shortages, natural disasters, geopolitical issues, and other events. Increasingly, we see manufacturers placing less emphasis on cost savings and more importance on supply chain connectivity, agility, and collaboration. In fact, a 2018 KPMG report highlighted that nearly two-thirds of manufacturing respondents stated that acting with agility is "the new currency of business; if we're too slow, we will be bankrupt." The goal is to develop adaptable sourcing and connected supply chain networks that intelligently address customers' issues and expectations.

Additionally, Industry 4.0 is having a transformative effect on manufacturing supply chains. Digitalization is creating greater access to information across trading partners aided by advanced technologies such as IoT, artificial intelligence, predictive analytics, RPA, and others. For example, extending digital capabilities allows companies to accurately track the location of materials and products whether they are on-order, in-transit, or in a facility. For many manufacturers, improved connectivity, automation, and transparency with supply chain partners will take on greater importance as they prepare for future disruptions similar to COVID-19 and new business models like Industry 4.0.

Boosting connected supply chain strategies helps managers increase responsiveness and intelligence across the end-to-end supply chain. Manufacturers gain a rapid and more intelligent approach to supply chain decision-making, enabled by Industry 4.0 and real-time data collected between and shared with supply chain partners. Consider the following areas to expand supply chain connectivity and mitigate the risks of future supply chain shocks.

Real-time Supply Chain Visibility

Supply chain visibility is a hot topic for many manufacturers, especially for those that rely on outdated processes or have overlooked the importance of rapid access to data for delivering global business performance improvements. KPMG's 2018 Global Manufacturing Outlook found that "only 6% have achieved full supply chain visibility, despite acknowledging its growing importance." It's not uncommon for manufacturers to rely on several disparate IT systems across their supply chain operations. This situation reduces efficiency, responsiveness, and real-time insights. Without immediate access to information, supply chains have limited visibility and, therefore, limited ability to respond quickly to unforeseen supply chain events.

> **"MANUFACTURERS GAIN A RAPID AND MORE INTELLIGENT APPROACH TO SUPPLY CHAIN DECISION-MAKING, ENABLED BY INDUSTRY 4.0 AND REAL-TIME DATA COLLECTED BETWEEN AND SHARED WITH SUPPLY CHAIN PARTNERS.**

By leveraging digital capabilities and increasing supply chain connectivity, manufacturers gain the supply chain insights required to exceed customer expectations with the comprehensive collection of operational data. Employees can gain quick access to the information needed to cost-effectively manage supply chain operations. As a result, manufacturers can access deeper insights, make real-time supply chain decisions, enhance shipment and order traceability, and improve on-time delivery performance.

Digital Technology Adoption

In an era of constant disruption, manufacturers need to start thinking about ways to effectively adopt new technologies like IoT, analytics, machine learning, artificial intelligence, RPA, and digital twins. Digital transformation and new technologies continue to take hold around the globe and constantly introduce challenges and opportunities for maximizing supply chain performance. A 2019 Gartner Supply Chain report devoted an entire section on the importance of digital technologies as a competitive necessity and a crucial part of delivering efficiency. But which technologies will produce positive business outcomes and which will go the route of extinction, like smartphone-maker BlackBerry?
While the adoption of digital technologies varies from company to company, many manufacturers are implementing or reviewing new technologies they hope will boost supply chain connectivity, flexibility, and responsiveness. A pragmatic approach is, to begin with, smaller prototype projects like machine learning to improve forecast accuracy, IoT techniques to increase shipment visibility or advanced analytics to enhance decision-making. Only to the extent that advanced technologies make a meaningful impact on supply chain performance, can manufacturers fully support the investment. As a result, manufacturers are left to decide on which new technologies provide the potential competitive advantages for their business.

Global Trade Compliance

Many trade compliance programs have simply been created to avoid global regulatory fines and penalties. Today, manufacturers better understand the impact compliance operations have on global supply chain performance. There are a host of questions that must be answered, including:

- How is on-time delivery performance impacted when shipments are delayed at Customs due to missing information?
- Can safety stock be lowered by improving cycle time for international shipments?
- Are we taking advantage of free trade agreements?
- Have all duties and tariffs been considered when deciding where to build a plant or making other strategic supply chain decisions?
- What is the best way to access and share accurate information to ensure cross-border shipments and trade?

To transform trade compliance and global supply chain operations, manufacturers must recognize the connected interactions required to establish global trade management operations and address cumbersome regulations with the appropriate processes. An effective global trade approach will collect the appropriate supply chain data required, document the necessary import/export data, and rapidly share the information with global trading partners. With connected global compliance and supply chain operations, manufacturers are in a more advantageous position to reduce global trade risks and improve supply chain performance.

> **IN AN ERA OF CONSTANT DISRUPTION, MANUFACTURERS NEED TO START THINKING ABOUT WAYS TO EFFECTIVELY ADOPT NEW TECHNOLOGIES LIKE IOT, ANALYTICS, MACHINE LEARNING, ARTIFICIAL INTELLIGENCE, RPA, AND DIGITAL TWINS.**

B2B Integration

B2B system integration is complex because suppliers, customers, and other network partners rely on a variety of communication standards, data formats, and integration methodologies. This results in a challenging web of integration to include B2B and B2C networks, where seamless integration is vital for increasing supply chain performance and ensuring customer satisfaction. For example, manufacturers expect and frequently demand greater visibility and access to order status, shipment status, associated duties, inventory availability, and other information. Additionally, the manufacturer's customer expects access to this same information.

Supply chain integration is not a new topic for many of you, and you realize how important it is, but some manufacturers misunderstand the key role integration plays in driving global supply chain performance improvements. Supply chain professionals are constantly striving for that "one version of the truth" that allows all partners to make intelligent decisions based on the same information. This scenario is much better than the one where disparate information resides in multiple systems, making accurate and cost-effective supply chain decisions almost impossible.

Enterprises still rely on EDI for integration but, today, software technology providers offer a variety of modern capabilities to address internal and external integration requirements. Increasingly, companies are introducing new cloud-based business integration capabilities and collaboration networks that deliver end-to-end supply chain visibility and improved data integrity. With a more agile and connected supply chain approach, multinational organizations can increase supply chain responsiveness and improve data quality throughout the global supply chain.

Improved supply chain connectivity is a game-changer for taking full advantage of Industry 4.0 digital capabilities and enhancing supply chain responsiveness. Digital supply chain connections improve communication, agility, and decision-making. As a result of transforming supply chain collaboration strategies, manufacturers can rapidly respond to unplanned disruptions, achieve a single source of truth with partners, and boost global supply chain performance. How effective are your supply chain connectivity strategies today, and how effective would you like them to be?

About QAD

QAD Inc. is a leading provider of flexible, cloud-based enterprise software and services for global manufacturing companies. QAD Adaptive ERP for manufacturing supports operational requirements in the areas of financials, customer management, supply chain, manufacturing, service and support, analytics, business process management and integration. QAD's portfolio includes related solutions for quality management software, supply chain management software, transportation management software and B2B interoperability. Since 1979, QAD solutions have enabled customers in the automotive, consumer products, food and beverage, high tech, industrial manufacturing and life sciences industries to better align operations with their strategic goals to become Effective Enterprises.

Brent Dawkins is QAD's Director of Product Marketing with over 20 years of manufacturing and supply chain experience. In his spare time, you can find him hiking the Rocky Mountains of Colorado, coaching youth hockey or enjoying time with family.

"HOW DOES CLOUD ERP ENABLE IIOT IN MANUFACTURING"

As a provider of cloud ERP to manufacturers, we've seen growing use of IIoT in this space. This trend has been amplified by many companies now leveraging recurring revenue models, in which they now offer service along with their products. Field service—whether that is maintenance or repair—has led to a greater need and adoption of cloud-connected devices to measure and monitor data that can be used to better serve customers.

Cloud ERP has three key traits that helped to enable IIoT. One is scalability. With cloud ERP, companies can quickly accommodate a growing volume of users, devices and data. The second trait is universal mobility. Even before COVID-19, companies were moving to remote work models, so employees could work from anywhere at any time. To enable IIoT, connected devices must follow suit and connect to the cloud. The result is universal connectivity, with IIoT enabled through the cloud, which in turn is connected to cloud ERP. Companies with legacy ERP have found compliance with social distancing and remote work more challenging than the pioneering companies that already had cloud ERP and cloud-enabled IIoT in place.

Finally, the third trait is open APIs; cloud ERP enables extensive interconnectivity through these APIs. This has enabled nascent IoT to move from single direction, incoming data to the "industrial" strength IIoT with more sophisticated bidirectional flow of information that allows for both collection and response. As a result, companies have the data and insights to facilitate decisions and responses that are immediate and intelligent.

David Stephans

CRO at Rootstock Software

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HOW DOES CLOUD ERP ENABLE IIOT IN MANUFACTURING

Cloud ERP plays a vital role in the enablement of the Industrial Internet of Things (IIoT) by providing a robust opportunity to automate, integrate, collaborate, and enhance activities across multiple processes. It helps manufacturers create a holistic approach for monitoring multiple processes and access the data in real-time.

Kalyani Chaudhari

Marketing Manager, Sage Software Solutions Pvt Ltd

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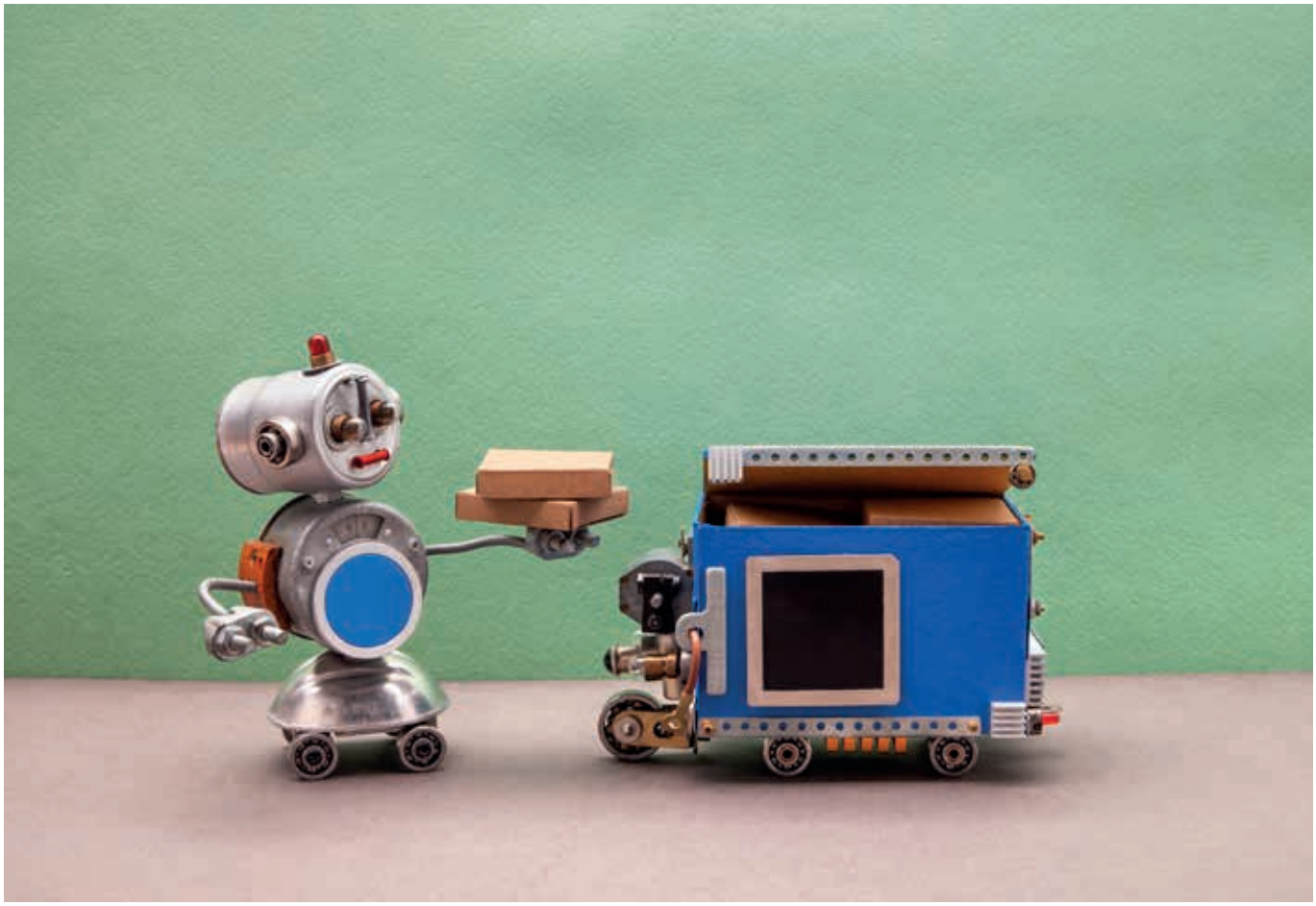

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IIOT, INDUSTRY 4.0 AND ERP

*Article by **Kalyani Chaudhari**,*
Marketing Manager at Sage Software Solutions Pvt Ltd

The IoT (Internet of Things) concept deals with enabling devices through the internet to facilitate comfort and convenience. The IIoT addresses industries like manufacturing, oil and gas, energy, and agriculture in which industrial tools/ machines can be connected through the internet ad drive interoperability.

IIoT

The Industrial Internet of Things (IIoT) sets the base for enabling industrial devices over the internet to increase the scope of data mining and user connectivity. The manufacturing industry can leverage data analytics in multiple ways to accelerate the decision-making process and access data in real-time. Any industrial device can be enabled over the internet as long as it has a sensor. So, for any device to leverage the IIoT technology, there will be three components namely, sensor (input), processor (controller), and actuator (output). Through sensors, the production data can be linked to lot, serial, and batch details and this information can be floated through the cloud to ensure a seamless flow of information. Accessibility to such critical data in real-time can fasten the decision-making process. Businesses can track inventory, forecast sales, and future trends, manage multiple sites and vendors and draw a demand and supply curve by achieving a considerable reduction in maintenance and operational costs.

> **"MODERN ERP SYSTEMS LEVERAGE CLOUD TECHNOLOGY TO HELP USERS ACCESS INFORMATION FROM ANYWHERE, ANYTIME. BEING ON THE CLOUD ALSO IMPLIES THAT IT IS THE VENDOR'S RESPONSIBILITY TO MAINTAIN THE DATA, SECURITY, BACKUP, AND RECOVERY.**

Industry 4.0

Industry 4.0 represents the present automation techniques used in the manufacturing sector like the Internet of Things (IoT) to name one out of many. Industry 4.0 addresses issues like bulk production, global market penetration strategies, connecting multiple devices to get real-time data, and much more. All of this results in increased production, more revenues, and higher profit margins. The Fourth Industrial Revolutions brings about a noticeable change in the way supply chains were handled. Computers and mobile devices are interconnected to reduce human intervention and automate mundane tasks without compromising with the operational outputs.

ERP

Enterprise Resource Planning (ERP) enables manufacturing and supply chain industries with multiple functionalities like organization and control of inventories, supply chains, vendor management, sales and customer service, human resources, finance, and tax compliances. ERP supports Industry 4.0 by offering real-time data viewing of the processes from production to delivery. Modern ERP systems leverage cloud technology to help users access information from anywhere, anytime. Being on the cloud also implies that it is the vendor's responsibility to maintain the data, security, backup, and recovery. This simply means companies can save on the infrastructure cost. Therefore, companies can focus on designing, building, and deploying their products into the market and focus on driving more business without having to worry about the technical aspects of the On-Premise environment.

Benefits of Collaborating IIoT, Industry 4.0 and ERP

When technologies are connected, they have always doubled the performance outputs. Collaborating IIoT, Industry 4.0, and ERP will propel similar results.
Here are a few benefits:

Mobility

Cloud ERP allows freedom of movement and offers the same environment if at physical workstations. Cloud ERP solutions when deployed as SaaS models will help remote users in an equally operational manner as in the static offices. This facilitates lesser exhaustive operations involved in deploying products to the market while maintaining the ROI and streamlined workflow processes.

Automation

The IIoT enables machine-to-machine interaction through the internet which reduces human intervention. This will help you manage your resources in an optimized way. Tasks that are mundane and repetitive can be easily automated leaving you with an extra workforce to be trained for highly smart jobs to do. Also, the brain capacity of every resource can be optimally utilized without having to worry about how to keep them motivated to drive better productivity.

Wireless Networks

The foundation of implementing IIoT into the manufacturing environment is the deployment of tools like mobile devices and cloud ERP with undisrupted network connectivity in the production lines. Further to this, RFID or Bluetooth connection will allow users to communicate with industrial devices. This will also enable data exchange in real-time across the production lines and supply chains as and when needed.

"WHEN TECHNOLOGIES ARE CONNECTED, THEY HAVE ALWAYS DOUBLED THE PERFORMANCE OUTPUTS. COLLABORATING IIOT, INDUSTRY 4.0, AND ERP WILL PROPEL SIMILAR RESULTS.

Summary

Modern ERP solutions aligning with Industry 4.0 concept and enabled with IIoT technology will create digital transformation in the manufacturing space. The applications should be built with not only the requirement to access data in real-time but also the capacity to expand and scale with the business.

Kalyani writes about trending technologies like artificial intelligence, machine learning, and business management applications like ERP and CRM. Her expertise lies in demand generation through inbound and outbound practices, data analysis and campaign management through CRM tools. She works for Sage Software Solutions Pvt. Ltd., a leading provider of ERP and CRM software to small and mid-sized businesses in India.

About Sage Software

Sage Software Solutions Pvt. Ltd. is a leading ERP and CRM solutions provider, driving business transformations. Our ERP software helps manufacturing industries manage their accounts, inventory, and supply chain with faster execution time.

HOW DOES CLOUD ERP ENABLE IIOT IN MANUFACTURING

Generally, companies move computing to the cloud when they want centralized computing horsepower that might otherwise be too expensive or complex to set up and manage themselves. ERP is no different. My moving ERP workloads to the cloud, companies can focus limited resources on business improvement initiatives instead of on IT maintenance. Further, because the vendors assume responsibility for software updates and upgrades, companies can sleep well knowing that they'll have access to the latest functionality and patches.

Currently, cloud centralization is the most common model for IIoT applications. It offers a scalable, on-demand, cost-effective solution. In other words, the barriers to adoption and value realization are fairly low, which is attractive for small and mid-sized companies. Having said that, we do believe that IIoT will increasing move away from cloud to the edge, where latency and data transmission costs are lower. We also believe that companies will increasingly adopt a hybrid architecture where certain requirements are delivered at the edge and others in the cloud.

Jonathan Gross

Managing Director, Pemeco

PEMECO CONSULTING

targetintegration

HOW DOES CLOUD ERP ENABLE IIOT IN MANUFACTURING?

Article by ***Rohit Thakral,***
The Founder & CEO of Target Integration

Are you aware of the fact that we have been part of the fourth industrial revolution? Additionally, do you know this is going on for the last 50 years?

You must be thinking Industrial Revolution 4.0 - What's that?

After the 3rd Industrial Revolution, that has installations of robots connected to the computer & IT systems in their assembly lines. One such example of IIoT 3.0 is of Henry Ford for his Ford car manufacturing.

> **NOW WITH CLOUD ERP SERVICES AND INDUSTRIAL IOT, A MASSIVE AMOUNT OF DATA; SAY LAKHS OF RECORDS CAN BE CALCULATED IN A FEW SECONDS WITH A QUERY OR AN ALGORITHM.**

The next big thing is the Industrial Internet of Things (IIoT) 4.0 integrated with Cloud ERP systems. Consequently, it is a revolution that has cyber-physical systems involved. As a result, now manufacturing industries can have everything on a digital platter.

Not only this, with the huge technological growth, but we can also predict data's analytics with cloud & IIoT. Henceforth, it will help manufacturing businesses in deriving a lot of future predictions. Truly, Cloud ERP with IIoT 4.0 is a valuable addition to the entire manufacturing industry.

Key trends driving industrial applications using IoT

1. Data convergence

An increasing desire by the industrial players nowadays. Modern manufacturers need to analyse the data combined from different operational sites. And connect it with IIoT to derive the data to improve efficiency. Thereby, boosting overall production.

2. Easier extraction of factory data

When we say IIoT in the manufacturing industry, a lot of manufacturers have already installed sensors in their machines. Besides, some have even invested in retrofitted machines with sensors. As a result, these sensors are helping

a way ahead in collecting & extracting a large amount of real-time data.

These real-time data are injected with the use of Cloud ERP systems. It is a very cost-effective manner to extract important insights.

Manufacturing Industry | emergence with Cloud ERP & IIoT 4.0

Indeed, the manufacturing industries have emerged with IIoT 4.0. But, enabling Cloud ERP systems with it, now they have digitally transformed.

Now with Cloud ERP services and Industrial IoT, a massive amount of data; say lakhs of records can be calculated in a few seconds with a query or an algorithm. Yes, it's that fast!

Therefore, meaningful analyses & important data insights are driving a lot of benefits to the manufacturer.

Industrial Revolution 4.0 | IIoT & Cloud ERP Importance

As we are already in the 4.0 industrial era. The manufacturing industries are into a disruptive change. Here, only technology can fuel their engine to work smarter & faster.
Besides this, it is also required as the customer demands & preferences are rapidly changing. They need to adapt to this scenario. As a result, every smart modern manufacturer is getting ready to embrace this Industrial 4.0 revolution. Hence, they are inclining to IIoT, machine learning & artificial intelligence. Also, integrating their machinery with Cloud ERP systems.

Modern manufacturing demands additional investments. Instead of connecting & integrating an on-premise ERP software system, now is the time to move to the Cloud ERP software solutions.

"AN INCREASING DESIRE BY THE INDUSTRIAL PLAYERS NOWADAYS. MODERN MANUFACTURERS NEED TO ANALYSE THE DATA COMBINED FROM DIFFERENT OPERATIONAL SITES.

Furthermore, there is a lot of panic and chaos improving & maintaining IT infrastructure. Besides this, upgrading the traditional ERP software is another challenging task.

On the contrary, Cloud ERP services give you wings as its adoption rate is at a much higher rate.

Moreover, product innovation and overall growth can be achieved with greater flexibility. Cloud ERP with IIoT 4.0 can respond & support at the much more rhythmic level when these unpredictable & dynamic business models demand ever-changing requirements.

Reap 7 Benefits of IIoT 4.0 in Manufacturing

1.Overall Efficiency
Cloud Services with IIoT helps in focusing on the tasks that need immediate attention.

2.Future Predictions on failures
The real-time data helps you know the prediction of failure much earlier. This helps the modern manufacturing owner to avoid downtime.

3.Inventory Management
Get the data insights on how much or how less to manufacture. It leads to cost-saving & eliminating wastage.

4.Quality Assurance
With sensors integrated with Cloud ERP, get the holistic approach of real-time data. Improve scalability & flexibility accordingly.

5.Helps in Asset Tracking & Supply Chain Management.

6.Quick Adaption & Cost-Effective
It helps in lowering the total cost of ownership. Cloud services do not require any infrastructure and maintenance services. Additionally, it adapts quickly as timely upgrades are automated.
7.Easy and faster access to data
Cloud ERP is available on mobile apps version and an online platform where you can easily track your data anytime anywhere.

"

MODERN MANUFACTURING DEMANDS ADDITIONAL INVESTMENTS. INSTEAD OF CONNECTING & INTEGRATING AN ON-PREMISE ERP SOFTWARE SYSTEM, NOW IS THE TIME TO MOVE TO THE CLOUD ERP SOFTWARE SOLUTIONS.

Prepare for Futuristic Growth with IIoT & Cloud ERP

With this hybrid solution of IIoT & Cloud ERP, any enterprise can prepare themselves for future demands. The private cloud can help any business size succeed because of its cost-effectiveness.

Take actionable analytics that can help you automate. Additionally, collaborate with various departments & systems that need to communicate with each other. Get ready to address the upcoming challenges.

Thrust your business with a powerful combination of technologies - Cloud ERP & IIoT. As a result, retain the critical & sensitive information to cope up with the Industrial Revolution 4.0.
That's how we wish Cloud ERP enable IIoT in Manufacturing & can work wonders for you!

About Target Integration

Target Integration was incorporated in 2008 to provide CRM & ERP solutions to help the SME sector in UK & Ireland and now they provide their services in USA also. They are helping organizations to automate their business processes by removing paper and excel based information centers. They helped businesses across industries such as solar, energy, education, manufacturing, automobiles, construction, event, etc. Send us your ERP related query at info@targetintegration.com and we would provide you the best solutions as per your requirements.

Rohit Thakral is the Founder & CEO of Target Integration. He is an electronics engineer and has studied in Pusa Polytechnic in Delhi as well as in Dublin Institute of Technology in Ireland. He is also on the steering committee of Ireland, India Business Association (IIBA) and an ambassador of Dublin Chamber of Commerce.

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