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Enterprise information management (EIM) is essential for any business that transforms itself into a highly competitive business environment today. Business manufacturing operations can benefit greatly from enhanced systems that support effective management and use of digital information. Attend this webinar to hear about OpenText EIM solutions and the success stories of manufacturers using our solutions as we explore 4 key elements of EIM in manufacturing:• Technical information management• Content in context• Manufacturing notebooks• Corporate information management (EIM) governance and compliance are critical for any business that transforms itself for today's highly competitive business environment. Business manufacturing operations can benefit greatly from enhanced systems that support effective management and use of digital information. Attend this webinar to hear about OpenText EIM solutions and the success stories of manufacturers using our solutions as we explore 4 key elements of EIM in manufacturing:• Engineering information management• Content in context• Manufacturing notebooks• Industry 4.0 governance and compliance may sound like a SimCity-style tycoon game, but it's really the biggest shift to hitting global manufacturing since automation. Centered around advanced robotics and automation, a new way of human-machine interaction and a lot of data and connectivity driven, Industry 4.0 is ready to modernize manufacturing and improve the competitiveness of western industries. Coupled with the emerging internet of things (IoT), Industry 4.0 offers manufacturers the ability to collect, analyze, and act on a huge inventory of data like never before, and then organize those actions in motion with highly efficient automated robotics. Result? High quality products with lower operating costs. What is Industry 4.0? Industry 4.0, also called manufacturing 4.0, is the marriage of IT and manufacturing operations - the maturation of digital technology in the manufacturing industry. Mark Holleran, formerly CEO of Xplore Technologies, said it represents a holistic shift from centralized manufacturing to decentralized, requiring adaptation of processes, talent, business structures and technology. Technologies, including advanced robotics and artificial intelligence, advanced sensors, cloud computing, IoT, data capture and analytics, and digital fabrication ... all are united in ushering in the next industrial revolution, Holleran told Business News Daily. Here are some of the key components that pave the way forward for manufacturing 4.0 and how they work. Together, they create an ecosystem of high-tech smart devices that achieve an optimized and efficient workplace. Internet of thingsAll the number of smart devices and the amount of data captured, analyzed, and stored is growing, connectivity and communication only become more important. Both within the company and third parties companies will need their data to be shareable and compatible to enable higher levels of operation. Declan Keir-Saks, director of Deskera, said IoT is a bridge that allows granular insights provided by high-tech solutions to merge together into a coherent enterprise-level picture for modern manufacturers. IoT manufacturing enables virtual tracking of capital assets, processes, resources, and products, Keir-Saks said. This gives the company full visibility, simplifying business processes and optimizing supply and demand. When implemented correctly, decision makers will be equipped with more and better information, automated processes, and the ability to intervene based on predictive or preventive to avoid downtime or other problems that may ding production output. Artificial intelligence and machine learning Information delivered by IoT-driven sensors and systems is too broad for humans to analyze reasonably. AI algorithms and machine learning can conceptualize data anomalies and flags or make recommendations. [AI and machine learning] can help detect early warning signals for unhealthy assets, said Derick Jose, co-founder and chief data scientist at Flutura Decision Sciences and Analytics. For example, a top drive RPM temperature anomaly could be a signature of future damage. In addition, AI serves to improve efficiency in overall operations, Jose said. By quickly returning predictions about the impact of small changes, decision makers can understand the effects before they apply anything new. AI is especially useful when it comes to digesting large streams of information captured by IoT-supporting sensors and devices. That vast data is almost impossible for human operators to conceptualize, so allowing computers to do so actually makes the captured data worthwhile. Mixed realityMixed reality is also a major component of Industry 4.0. Large companies already issue mixed reality devices such as helmets and goggles to employees in the hope that improved communication and contextual data visualization will improve productivity and smart decision-making. Mixed reality is a real game changer in manufacturing, Tim Lynch, CEO of Psychsoftpc, says. For repair personnel, it allows them to 'look into' machines that require repair or 'look through walls' into the wires and pipes at the back to know exactly where to drill or cut. Pair those capabilities with predictive maintenance enabled by IoT and AI, and you've got a recipe for high-tech success. If the data

shows the machine is overheating, for example, and the machine learning algorithm marks it as sufficient anomaly to Shipping maintenance, workers can use mixed reality to determine whether the machine is starting to overheat and precisely which components are affected. To go further, imagine a maintenance person diagnosing the affected machine recognizing the problem but not having to fix it. Mixed reality devices can connect someone with the right skills with the person in place, who can then show them step by step, through digital overlays, how to make improvements. For training purposes, mixed reality creates an environment where employees can experience virtual situations relevant to their work without risking actual equipment or manufacturing uptime. In training, workers can practice on virtual products to gain experiences that will bring to the real world, Lynch said. They can be put in a simulated situation that they can face in doing their job and learn how to handle it virtually before exposing them at work. 3D printing3D printers have been around since 1983, although often only in the hands of large companies. Back then, the term was prototyping fast, and they certainly continue to do that today. But it's not just prototypes anymore; 3D printers are also used in low volume manufacturing, perhaps to test products or bring samples to trade shows. When small companies develop new products and need to make 50 parts to test, or just to bring to trade shows, tools for traditional manufacturing can be very expensive, Doug Collins, owner of Avid 3D Printing, said. They may not have the capital to cope with [traditional manufacturing]. 3D printers allow low volume production without that much investment so they can save that capital for other important things, such as marketing. As technology continues to improve, it is more common to find 3D printed parts in larger projects. One example is GE Aviation's 3D printed fuel nozzle, which is part of the CFM LEAP aircraft engine. By printing certain components, manufacturers can save time and money to create the same final product. What are the advantages? With such great promise and cutting-edge technology, Industry 4.0 needs a big investment upfront. According to a 2017 survey of 1,000 small and medium-sized Canadian manufacturers, for example, digital adopters invest an average of \$250,000. For larger businesses, the cost will definitely be higher. But the expected results - connected, smart devices and automated production processes - promise a huge return on investment. The software system does more than just trade data, said Srivats Ramaswami, CTO of 42Q. They eliminate many of the human interventions that run by managing them. Next-generation automation - using big data, analytics, and artificial intelligence - is one of the most important drivers behind digital manufacturing and Industry 4.0. Ramaswami added that the advantages that manufacturers have in reaping from the application of such technologies include: Improved competitiveness. Outsourcing to the world's low-wage regions is a must for manufacturers who want to remain competitive. However, investment in technology now allows richer countries to compete once again. As a result, ramaswami said, manufacturers can now choose locations based on ability and proximity to consumer demand, rather than decisions driven primarily by wages. Increased productivity. Automation, analytics, and machine learning algorithms have taken a lot of step-by-step work out of the hands of human operators. That means faster and more efficient production all the time, with human operators mainly monitoring and maintaining systems. Increased revenue and profitability. Industry 4.0 not only creates a more efficient and higher quality production process, but enables things like predictive and preventive maintenance and improvement, resulting in lower downtime and less capital expenditure over time. Optimization of manufacturing processes. With more connectivity, shared data, and better analytics, closer collaboration across the entire supply chain is possible, leading to long-term efficiency, optimization, and innovation across the manufacturing industry. Machine-to-machine communication and integrated systems will encourage greater collaboration among manufacturers, suppliers and other stakeholders along the value chain, Ramaswami said. Seamless logging and traceability. The capture and analysis of very large data also means better archiving and recording search capabilities. This has consequences for government regulatory compliance with customer satisfaction. Unlike traditional relationships where feedback about products and services takes time to gather, auto-closed feedback loops are an inherent component of Industry 4.0, Ramaswami said. Seamless logging enabled by digital systems speeds up traceability, while limiting liability, warranty costs, and recalls. Despite these advantages, the shift is still in its early stages. According to research from Capgemini, only 6 percent of manufacturers considered digital masters have reached an advanced stage in digitizing the production process. However, the movement is real; Capgemini estimates that 76 percent of manufacturers already have smart factory initiatives in the works or are currently under formulation. What is clear is that Industry 4.0 and advanced digital technology will soon become the norm for manufacturing around the world. Those who adopt early have a better chance of positioning themselves favorably in the future. 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