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## CIMdata News

### *Enabling Global Value Chain Collaboration*

#### CIMdata Commentary

##### Key takeaways:

- Global value chains are growing more complex and expansive with every passing day. The dynamism in value chain participants, and the pace and complexity of their interactions, demands a highly secure and easy to use solution.
- Eurostep, a company known for their expertise in product data exchange standards, has offered ShareAspace, a standards-based on-premise value chain collaboration solution, for over 15 years. It powers global value chains of leading organizations like BAE Systems, Volvo, Siemens Energy, and the French Army.
- A new cloud-native offering, ShareAspace Design to Manufacturing, builds on this knowledge to support important use cases for smaller firms that have the same complex problems as OEMs but lack the resources and expertise to use more traditional PLM-enabling solutions.

Global value chains increasingly need to share intellectual property at an ever-faster pace. Traditional product lifecycle management (PLM) enabling solutions are often not the appropriate choice to handle the dynamism, pace, complexity, and security requirements of these value chains. In addition, some data needed in the value chain may come from other sources such as enterprise resource planning (ERP), maintenance, repair, and overhaul (MRO), model-based systems engineering (MBSE), etc. making the use of a classic PLM system even less appropriate. To meet these needs, Eurostep Group (Eurostep), well known for their work in the global data standards community, leveraged that knowledge to create ShareAspace, their solution to enable secure collaboration across enterprises and value chains. Their success with their on-premise version led to the introduction of a cloud service, ShareAspace Design to Manufacturing, the focus of this commentary.

Research for this commentary was partially supported by Eurostep.

Things were much simpler at the dawn of the 2nd Industrial Revolution. In the 1920s industrial behemoths like Ford and their River Rouge complex were vertically integrated, with iron ore, coal, sand, rubber, and other raw materials transformed into electricity and finished products rolling off the assembly line. Yes, there were some components, but this extreme example is just that, an example. It provides a stark contrast to the situation today.

Companies in many industrial markets compete globally. They source mechanical, electrical and electronic, software, and engineering skills globally. What was once a short, compact supply chain has become a global value chain as illustrated in Figure 1. Multiple tiers of suppliers provide a range of

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value-added components. Those at the higher tiers may collaborate directly with their original equipment manufacturers (OEMs) on key subsystems and components. Those at the lower tiers may build to print or even build to stock. But in most cases, all have to share some level of product data. Most have to get intellectual property (IP) from their OEMs to do their work, and some have to share their IP, at some level, with their OEMs.

It is these types of dynamic global collaboration scenarios that PLM was envisioned to support, including key capabilities like configuration management and engineering change. To CIMdata, PLM is not a technology but a collaborative strategic business approach that can use a range of technologies that may create IP, depending on the products being developed, created, and deployed. But at the core there needs to be strong data and process management to underpin the collaboration. Because there are a range of possible technologies for creating IP there will also be a wide range of data types that need to be stored and managed. These include geometric data, often in proprietary formats. The PLM vision describes enabling seamless collaboration among global collaborators. The reality is often something entirely different.

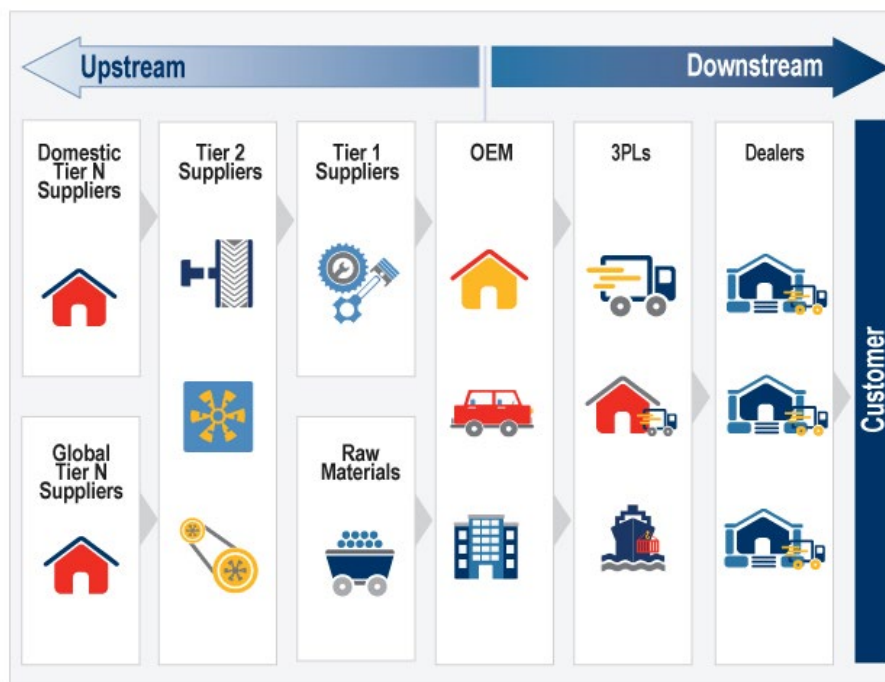


Figure 1—From Vertical Integration to Global Value Chains  
(Courtesy of EDI Basics<sup>1</sup>)

Data incompatibility issues have plagued digital product development almost from its inception. The proposed answer has many times been standards, but they vary in effectiveness. For product data, early standards like IGES were not strong enough. ISO STEP was going to change all that and did make some improvement but many challenges remained. Success requires a broad commitment to standards and openness, and initiatives like the Codex of PLM Openness and CIMdata's Aerospace and Defense PLM Action Group have had positive impacts.

But data is only one complexity facing global supply chain collaboration. Even if an OEM has a strong PLM implementation, they may want to limit those partners allowed into their internal systems, particularly those who may be transient collaborators. Some collaborations require sharing of data

<sup>1</sup> <https://www.edibasics.com/edi-by-industry/the-automotive-industry>

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classified as secret for commercial or defense reasons. To maintain that separation, many companies use systems outside their firewall to enable collaboration. Whether inside or outside the firewall, security is paramount. Yes, all of the data must be protected from outside the collaboration but it also must be protected, selectively, from collaboration participants. Suppliers do not want their OEMs to know too much about their business, lest it be used to demand future price cuts. CIMdata experience with industrial clients shows that today's collaborator may well be tomorrow's competitor.

Many companies are looking to the cloud to better support global collaboration. Cloud-based systems are much easier to provision. No servers to buy or admins to run them. For the same reason they are easy to scale up, to add new value chain partners, or to scale down as collaboration needs decrease. With few exceptions, cloud-based systems are potentially available everywhere from a web browser, accessible by PCs and mobile devices. To meet this requirement, Eurostep is introducing ShareAspace Design to Manufacturing, a cloud-native value chain collaboration solution that leverages their experience with their ShareAspace on-premise offering. This new cloud solution was designed to be a no/low touch offering, a vital attribute in their intended markets.

Eurostep is well-known for their work on standards that enable product data exchange and collaboration. Founded in 1994, Eurostep has been a key proponent of openness and standards, with a focus on ISO 10303, formally known as "Automation systems and integration — Product data representation and exchange," but better known as STEP, the Standard for the Exchange of Product model data. STEP Application Protocol 242 (AP 242 or ISO 10303-242) defines "managed model-based 3D engineering," dictating how 3D content is to be shared.<sup>2</sup> In the PLM context, ISO 10303-239, the Product Life Cycle Support (PLCS) standard, is equally important as it defines "what information can be exchanged and represented to support a product through life."<sup>3</sup> In today's parlance, PLCS helps define the digital thread. Eurostep's work on standard data formats and structures to support global collaboration was core to their mission. Taking it one step farther, they introduced ShareAspace in 2001, the first value chain collaboration solution built around data exchange standards like ISO 10303, ISO 10303-239, and ISO 10303-214/242.

Eurostep describes this offering as "a technical data repository and publishing platform that enables the sharing of, and collaboration associated with, technical specifications and requirements in order to assure quality by increasing transparency and data management process enablement." It helps users in a wide range of roles to share data from a myriad of enterprise systems, as illustrated in Figure 2.

Their global customers include many familiar names from industries that design, build, and maintain some of the world's most complex products. Aerospace and defense organizations like BAE Systems, the French Army, Swedish Defence Material Administration, Kongsberg, and Saab rely on ShareAspace for helping to manage IP sharing across global value chains. Automotive customers include Scania, Renault, Volvo Cars, and Volvo Trucks.

Siemens Energy uses ShareAspace for collaboration between Siemens and hundreds of suppliers, both small and large. At Renault, ShareAspace is used to transfer full digital mock-ups (DMUs) between Renault and Nissan. BAE Systems Maritime/United Kingdom Ministry of Defence is using ShareAspace as a repository for all data related to operations and maintenance for new aircraft carriers in the UK. This repository includes imported data creating a digital thread that spans the early phases of the digital thread in design, manufacturing, and integrated logistics support (ILS).

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<sup>2</sup> <http://www.ap242.org/welcome>

<sup>3</sup> <http://www.plcs-resources.org/ap239/>

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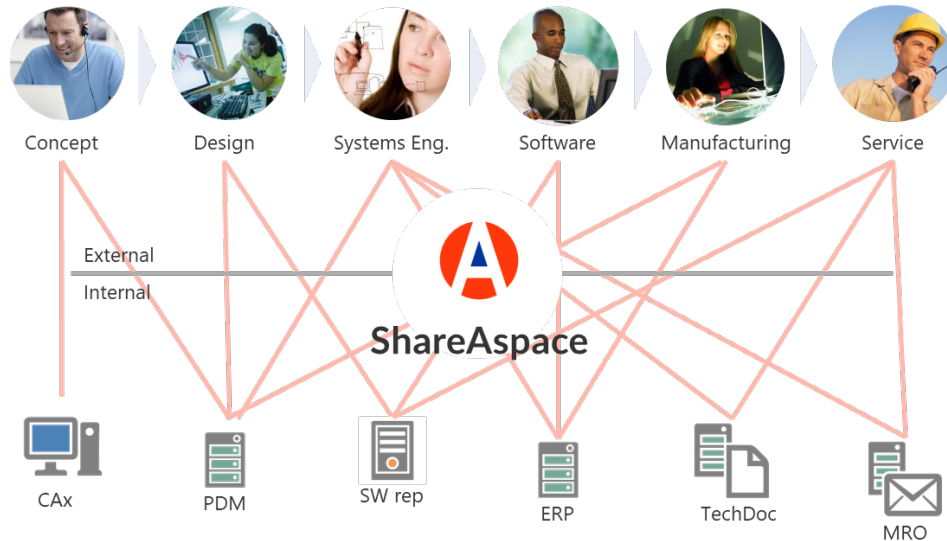


Figure 2—ShareAspace Enables Broad-Based Collaboration  
(Courtesy of Eurostep)

As stated previously, companies are looking to the cloud to better enable collaboration including the capability to be up and running on short notice. The leading PLM solution providers have been slow to move to the cloud, but CIMdata reports increasing interest in that deployment option and some growth in revenues. Most of the leading PLM solutions providers are promoting and supporting a hybrid solution, where some functionality remains on-premise, often engineering work-in-process management, and other workload and use cases around business process collaboration are enabled in the cloud. Small and medium sized enterprises (SMEs) looking to adopt a PLM strategy often look to the cloud because of the ease of deployment. But even these firms may end up pursuing hybrid strategies just because there is so much on-premise legacy IP that will continue to be used.

But the picture is somewhat different when it comes to external data sharing and exchange. Many companies are relying on simple offerings like email, Dropbox, Boxx, or Microsoft SharePoint to share intellectual property. This approach can work for simple file exchange, but these offerings are not built to support product data exchange or sharing. They also were not built with an understanding of bills of material (BOMs), product data standards, versioning and revisioning, and fine-grained security. This makes it difficult to use them to support more complex interactions.

To fill this gap, Eurostep began investing in a cloud-based ShareAspace offering in early 2019. A broad-based survey on current product data sharing and collaboration helped supplement their experience from the on-premise version of ShareAspace. As with many software development efforts, Eurostep is operating an active beta testing program with several lead customers.

ShareAspace Design to Manufacturing targets smaller companies that are suppliers to OEMs. They have the same needs as their larger partners but may not have the skills and resources to implement the more complex PLM offerings relied upon by OEMs. The cloud service is based on the ShareAspace platform and Microsoft Azure.

ShareAspace Design to Manufacturing has several high-level design goals. First and foremost, the service should be as easy to use as possible while still delivering value. It will not allow for customization, one of the downfalls of many PLM implementations, but will support limited configuration. Eurostep will offer something that is “Dropbox-like” but that goes beyond mere file sharing. Their initial offering focus on the Build to Print process. This emphasis makes perfect sense given their SME targets. Suppliers today can get the necessary IP in many ways, from paper to PDF,

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from native file to lightweight visualization, Excel files, and everything in between. You can't make the right part at the right time without the right IP. Using a collaboration space in the cloud helps ensure suppliers can and will access the right data. It also makes it possible to share more complex information as shown in Figure 3. The OEMs can push the right data to ShareAspace to ensure suppliers are building to the right "print" and the suppliers can suggest and push change requests back to the OEM.

The focus is on exchanging information to support manufacturing planning, as shown in Figure 3. Many companies rely on 3DPDF to create such technical data packages but Eurostep's approach supports more dynamism and complex data types. More importantly, it also helps manage any changes to the data, such as change requests and change orders, that result from interactions between design and manufacturing with business partners.

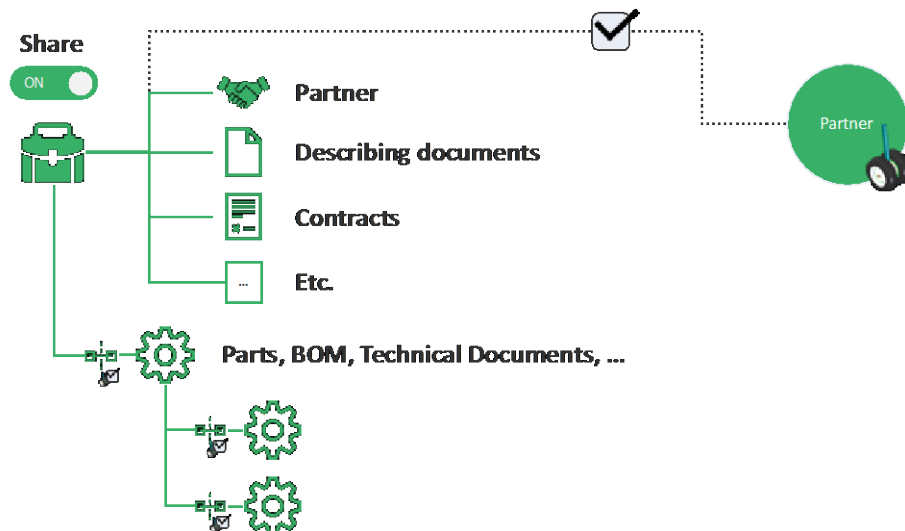


Figure 3—Sharing Complex Work Packages with Manufacturing Partners  
(Courtesy of Eurostep)

One of Eurostep's cloud solution launch customers is Weda AB, a Swedish company with fewer than 10 employees. Weda designs and manufactures pool cleaning robots. While this may sound simple it is actually quite complex. These robots also support more complex operations like cleaning water cooling tanks in nuclear plants. By using Eurostep's cloud solution, Weda claims they will have a much better, flexible, and controlled way to address any issues and changes with supplier components. It also makes it possible to invite Weda staff and suppliers to review and work on the same data in collaborative sessions. It makes it easy for Weda to share the same data with several suppliers, giving them a traceable data set to be shared in a controlled way without impeding the process.

CIMdata sees Weda as a good example that illustrates Eurostep's market proposition: offering complementary ShareAspace SaaS collaboration services for the SME market. This solution would also work well for niche processes in large enterprises. Eurostep is well-positioned to deliver these cloud-based ShareAspace offerings to this segment, all based on the ShareAspace platform, a sound and market proven technology. While their plans are more expansive, this initial ShareAspace Design to Manufacturing/Build to Print offering fills an important need that helps ensure the right product gets made at the right time. Eurostep is hoping to mimic the success of ShareAspace on-premise and this focused offering ably fills that market need.

Today's global value chains are getting increasingly dynamic and complex. Intellectual property (IP) is the life blood of these collaborations, and companies need secure ways to power data exchange and collaboration across geography, process, and data type. CIMdata has witnessed the success of

ShareAspace in international markets and in supporting value chains for complex products. Their experience in addressing these problems have guided their product development and has served them well with their OEM-oriented clientele.

CIMdata believes this will also serve them well in meeting the needs of smaller companies around value chain collaboration and manufacturing. SMEs have similar needs to their OEM partners but fewer resources to deploy collaboration solutions. In fact, they might not even have an inhouse PDM or PLM system but still need to collaborate with their suppliers. ShareAspace for Design to Manufacturing nicely fills the gap for IP sharing and collaboration. The initial release is due in the Q4 of 2019 and CIMdata looks forward to seeing how this solution evolves to empower design and manufacturing SMEs in their value chain collaboration and digitalization journey.

## ***Wipro's Product, Process, and Factory Digital Twins***

### **CIMdata Commentary**

Key takeaways:

- Wipro has leveraged its expertise in PLM, IoT, analytics, AR, and systems integration to enable digital twins as a promising application of digital thread.
- Wipro enables digital twins for products, processes, and factories at different levels of detail as desired by its customers.
- Wipro has broad expertise in digital twin enablement that has been proven in several industries including aerospace, automotive, consumer goods, retail, and industrial equipment.

Internet of Things (IoT) has helped product and process developers with an unprecedented level of feedback about the performance of their creations in near real-time. The performance feedback can be incorporated into any stage of product and process development, employing a host of innovative closed-loop lifecycle management capabilities. The creativity lies in exploring new and value-adding features and functions for product lifecycle management (PLM) solutions at the intersection of product and process sensor-data, analytics applied to the data, numerical simulation of product and process response, advanced constructs like blockchain, and technologies such as augmented reality (AR).

A concept enabled by closed-loop PLM innovation that is being widely explored in different industries is the digital twin, in which, the value mainly results from relating the virtual and the physical worlds of products and processes. Digital twins allow companies to evaluate product and process decisions based on analytics performed on the digital representations of the products and processes, simulations of the products and processes responses, and the measured data. Products and processes can be visualized as they function in real-time in their environments. Physical assets can be inspected, maintained, and upgraded remotely reducing service costs. Distinct systems and processes can be connected for improved monitoring and troubleshooting, resulting in quick issue resolution. Finally, the performance of complex processes and systems-of-systems can be remotely controlled and optimized.

Developing, implementing and scaling digital twins needs a disciplined approach from executing pilot projects to employing digital twins systematically across different domains of an enterprise. As a first step, one needs a high-level view of the value that the digital twin could bring and how that value could be derived through improved efficiency or through enhanced customer satisfaction or both. Next, one should pick a pilot or demonstrator project that presents the highest potential of delivering the anticipated value with a good chance of successful execution. Broader projects that have the potential to scale across the organization and are applicable to different physical assets and processes should be preferred over very specific digital twins that necessitate deep analysis and could yield high return on investment (ROI) but may prove too complex as a first step. The chosen pilot should be initially focused

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on a specific area of the business and it must allow demonstration of value. Then, one should work towards realizing the pilot digital twin and focus on the initial ROI objectives by employing an agile and iterative development strategy.

Finally, the project should transition from a pilot to an established solution. This should occur through improvements in performance and leveraging the new resources derived from the digital twin. The constraints originally imposed to control the scope of the pilot digital twin should be removed and the insights from the development and deployment of the digital twin should serve as an initial framework for other areas of the enterprise interested in similar applications. Lessons learned and methodologies formed while producing the pilot should be used to improve the process. Additionally, the digital twin should be assessed based on anticipated benefits such as improvements in yield, quality, efficiency, and robustness, as well as cost reduction. This assessment should lead to further refinement of the digital twin.

Wipro has a long and successful history of providing engineering consulting services, as well as PLM-related systems integration and large-scale data migration. Relatively recently, Wipro has been leveraging its HOLMES offering to develop new and innovative applications for its customers by applying analytics to PLM- and IoT-related data. Wipro HOLMES offers a wide spectrum of advanced analytics capabilities including machine learning, natural language processing, genetic and deep learning algorithms, semantic ontologies, pattern recognition, and knowledge modelling technologies, which as a comprehensive set is very helpful in mining insights and generating innovations across different disciplines.

Wipro possesses demonstrated capabilities in delivering custom digital threads<sup>4</sup> at manufacturing businesses by tying together PLM and other enterprise solutions like ERP and MES, layered with IoT-connectivity so that new and innovative applications can be developed. Wipro offers a digital twin platform (see Figure 1) that bridges the gap between design and operations, creating a closed-loop PLM environment that uses Wipro's sophisticated asset modeling frameworks to stitch together the two apparently distinct systems in a seamless manner.

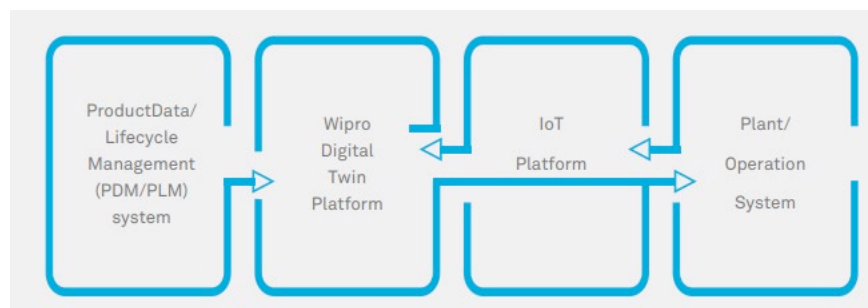


Figure 1—Wipro's Digital Twin Platform  
(Courtesy of Wipro)

Wipro's closed-loop PLM architecture for developing digital product twins begins with smart devices or assets from which the sensor-data is picked up (see Figure 2). The raw data goes through a first level of processing according to Wipro's knowledge base that applies Wipro's engineering understanding to prepare the data for subsequent transformation based on suitable analytics. The knowledge base applies Wipro's semantic ontologies and knowledge models to prepare the data for next level machine learning, deep learning, and natural language processing analytics.

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<sup>4</sup> Digital Thread refers to the communication framework that allows a connected data flow and integrated view of an asset's data (i.e., its Digital Twin) throughout its lifecycle across traditionally siloed functional perspectives.



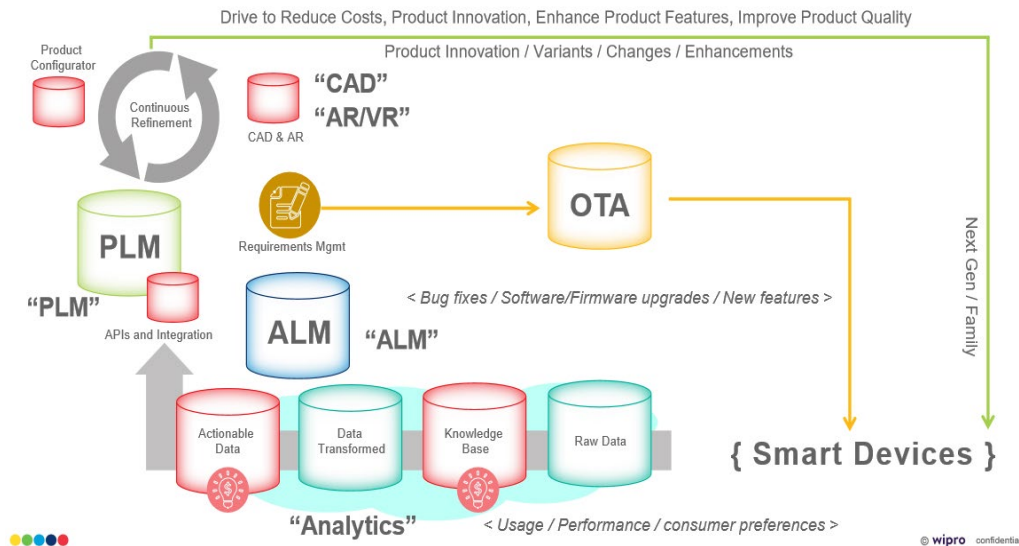


Figure 2—Wipro’s Closed-Loop PLM Architecture for Enabling Digital Product Twin (Courtesy of Wipro)

In the next stage, the actionable information suited for use by PLM and application lifecycle management (ALM) solutions connected to the IoT application is readied. The connection of the IoT application to the PLM and ALM solutions is managed through APIs and other forms of integration. For example, the actionable information from the connected assets may drive bug fixes, firmware upgrades, or new features that will be dealt with by the ALM solution and the resulting software updates can be sent back to the assets over the air. On the other hand, the actionable information from the smart assets, which might be useful for continuous product refinement, may be linked to a product reconfiguring system and can leverage advanced simulations or virtual reality (VR) and/or AR, or mixed reality (MR). The redesign cycles can target cost-reduction, innovation of new features and functions, improved quality, adopted variants, or incremental enhancements.

Wipro’s digital process twins focus on operational efficiency, collaboration, and traceability based on detailed process models. Wipro’s process models are set at desired levels of refinement depending upon the complexity needed to be represented. The higher the level of interaction between the process design parameters, the higher the needed level of refinement in the process models. Like in the case of the digital product twins, the digital process twins take the process measurement data and work them through the process knowledge base before applying appropriate analytics to come up with actionable information for refining the process analytical models. The digital process twins are very useful in visualizing the improved efficiency and robustness of the process under consideration.

Wipro’s digital factory twins are mainly geared towards manufacturing asset performance optimization and robustness. The factory twins are closest in their development and use to Wipro’s digital product twins with the main difference being that the redesign cycles are slower while the reconfiguration and software update cycles are faster in comparison. Additionally, the digital factory twin may have more than one manufacturing asset represented by a single digital twin due to the strong interdependence between several assets.

CIMdata has been tracking the development of the concept of digital twin as an application of IoT for many years. Although digital twins can be quite different, depending upon the solution providers enabling their development and the manufacturing businesses leveraging the digital twins, the common theme consists of a digital (or virtual) representation of the system under consideration that is complemented by measurements of the physical system that are communicated to the digital model

through IoT. The communication between the physical systems and their virtual representations become more efficient if some form of a digital thread is realized, which usually is understood to be an IoT supported connectivity within PLM, as well as between PLM and other enterprise systems such as ERP and MES.

Finally, if manufacturing businesses want to strategically invest in digital twins then they must plan for a digital transformation that involves the realization of a digital thread and envision digital twins as applications of the digital thread. This vision requires partnership with a company such as Wipro, which has broad and deep expertise not only in deploying a large number of enterprise applications of PLM/ERP/MES, they also have strong capabilities in IoT, analytics, VR, and AR, as well as strategic consulting for companies in many industries. Wipro has demonstrated its expertise in connecting all the elements necessary to build digital threads in manufacturing businesses of different sizes. In addition, Wipro has developed a platform for realizing digital twins for products, processes, and factories and demonstrated their applicability in industries such as aerospace, automotive, consumer goods, retail, and industrial equipment. CIMdata feels that Wipro ranks very high amongst the list of potential partners that a manufacturing business should consider engaging with for realizing digital twins as a part of long-term vision for digital transformation.

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## Company News

### ***Altair Launches All-In-One Industrial Design Solution***

16 October 2019

Altair announced it has launched its new 3D design and rendering solution Altair Inspire Studio.

Inspire Studio is a new solution for innovative designers, architects and digital artists to create, evaluate and visualize designs faster than ever before. With unrivaled flexibility and precision, its unique construction history feature along with multiple modeling techniques empowers users throughout the creative process. Building on the functions of Altair Evolve, Inspire Studio introduces a sleek, enhanced user experience. Each tool and workflow are now optimized for an efficient design experience from initial sketches to exploring styling with freeform, solid and PolyNURBS parametric modeling.

Also included in the launch is Inspire Render, a 3D rendering and animation software that enables users to quickly generate photorealistic renderings and animations of their products with physically-based lighting.

“We are very pleased with these two new solutions for the global industrial design community,” said James Dagg, CTO at Altair. “Inspire Studio builds on our previous industrial design tool, Evolve, while going beyond Evolve’s capabilities. Inspire Studio will enhance designers’ creativity by letting them drive their designs. It offers an intuitive user interface and a powerful construction history, allowing them to quickly create and explore multiple iterations of their design. Relying on the same modern user experience with powerful interactive, full progressive and raytracing rendering engine, Inspire Render will help designers quickly run photorealistic renderings and walkthrough animations on GPUs and CPUs.”

Running on both MacOS and Windows as a standalone product or under Altair’s flexible units-based

licensing model, Inspire Studio and Inspire Render open up designers' creativity from the constraints of traditional CAID tools, all while ensuring the export of robust digital models for product development.

“Altair Inspire Studio is the ideal tool that enables me to experiment, research, and discover shapes that otherwise would be just an idea, an image in my mind,” said Luca Palmini, designer and owner of Row Design. “As a designer, I appreciate the quality of the modeler and the simplicity managing individual components, allowing me to continuously apply changes in the quest for the perfect balance between form and function.”

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## ***Autodesk Names 2019 AEC Excellence Award Winners***

17 October 2019

When it comes to the AEC industry, projects come in all shapes and sizes. So does the innovative use of technology — whether it's for an arena, a bridge, a metro line or a mixed-use development. That's why Autodesk's AEC Excellence Awards honor the small, medium and large-sized projects for infrastructure design, building design and construction that are making an impact with advanced approaches and pioneering achievements. They're reflective of how far we've come and inspire us all to do even more.

Along with co-sponsors Construction Dive, Informed Infrastructure, Smart Cities Dive, and Society for Marketing Professional Services, Autodesk is thrilled to reveal the groundbreaking winners of the AEC Excellence Awards 2019. Autodesk thanks its independent group of judges who pored over more than 230 submissions to determine the winners.

Autodesk is also excited to announce the 2019 Innovator of the Year who was chosen from a diverse group of 41 finalists from around the world. This award recognizes a person who is leading, changing and transforming the design and/or construction process in a positive way. Congratulations to Amr Raafat, Director of Virtual Design and Construction at Windover Construction. His innovative use of BIM with drone mapping, virtual reality, mixed reality, laser scanning and much more demonstrates an incredible passion and example for what is possible to advance the industry.

Autodesk looks forward to honoring the nine winners and the Innovator of the Year at Autodesk University Las Vegas in November at a celebration ceremony where the winners — including the Innovator of the Year — will present their projects.

### **Infrastructure Design – Large Project (over \$500 Million)**

Ümraniye-Ataşehir-Göztepe Metro Line

Gülermak Nurol Makyol Joint Venture and Yüksel Proje

This metro line in Istanbul, Turkey, will stretch to a total length of 8 miles and connect 11 different transit stations. By using BIM technology, the team achieved a 16% cost savings across the whole project. Tunnelling was also much more efficient: 35% of cable loss and 15% of traction power transformer loss was avoided during tunnelling.

### **Infrastructure Design – Medium Project (\$100 Million – \$500 Million)**

## Istanbul Rail System Design Services – Phase 1

### Yüksel Proje

With phase one of a metro line in Istanbul, Turkey, that will eventually cover 37 miles in total, it is an example of how BIM software and modern construction technology can seamlessly integrate and coordinate diverse disciplines, including HVAC, plumbing, electrical and more.

## Infrastructure Design – Small Project (less than \$100 Million)

### Luchuan Service Area of Yulin-Zhanjiang Expressway (Guangxi Section)

Tianjin Port Engineering Design & Consulting Company Ltd. of CCCC First Harbor Engineering Company Ltd.

While designing this 46-mile, four-lane expressway in China, the team used clash detection processes to prevent more than 100 potential issues, avoiding expensive rework during construction.

## Building Design – Large Project (over \$200 Million)

### European Spallation Source

ÅF Infrastructure, Sweco Architects and Skanska Sverige AB

Not only one of the largest building projects in Europe, the European Spallation Source will be the world's most advanced and first sustainable research facility based on the world's most powerful neutron source. By using Autodesk technology, the team — consisting of stakeholders from 13 countries for the project located in Sweden — is able to collaborate better and achieve their goal of having as much information as possible in each model.

## Building Design – Medium Project (\$20 Million – \$200 Million)

### Buildings on East Artificial Islands of Hong Kong-Zhuhai-Macao Bridge

CCCC-FHDI Engineering Co, Ltd.

The East Artificial Islands play a key role in the Hong Kong-Zhuhai-Macao Bridge Authority operations. BIM technology helped the project team save more than \$1.1 million and shortened the construction process by nearly three months.

## Building Design – Small Project (Less than \$20 Million)

### REVITalisation for Design, Construction and Operations of Pre-World War Buildings

Urban Renewal Authority & AECOM

Located in Mongkok, Hong Kong, the project is a mix of residential and commercial veranda-style houses for redevelopment and preservation. By going paperless and opting for a centralized BIM platform developed with Autodesk Forge, the team saved an incredible \$250,000 in printing costs alone.

## Construction – Large Project (Over \$500 Million)

Chase Center & Warriors Mixed-Use Office and Retail Development

Mortenson | Clark, a Joint Venture

From the outset, integrating innovative technology was essential to the team's workflow for the \$1.2 billion sports and entertainment complex in San Francisco. The team worked concurrently in a master model and established a 3D and 4D approach during the preconstruction phase.

## Construction – Medium Project (\$100 Million – \$500 Million)

E03 Canada Court and E05 Quebec, Wembley Park

John SISK & Son

For a residential development in the United Kingdom, SISK avoided £90,000 worth of concrete rework through clash detection processes and achieved a time savings of 35% on their quality assurance by moving to BIM and away from paper.

## Construction – Small Project (Less than \$100 million)

CANVAS

Windover Construction, Inc.

CANVAS is an upscale apartment community covering 153,000 square feet in Beverly, Ma. The team used modular construction techniques to address the site constraints and to expedite the process, resulting in completion three months earlier than would be expected by using conventional construction methods.

## Innovator of the Year

Amr Raafat, Director of Virtual Design & Construction, Windover Construction, Inc.

Amr Raafat is a virtual design and construction expert with more than 16 years of experience combining AEC expertise to leverage leading-edge technologies for construction visualization. Leading the VDC Department for creation of 4D animations, 3D realistic renderings, integration of BIM, VR and more, his core goal is to assist clients and project teams in enhanced planning, change management, scheduling, construction logistics, safety planning, and visualization throughout all construction phases.

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## ***Capgemini signs a contract extension with HMRC***

14 October 2019

London, Paris – September 30, 2019 – Capgemini has today announced the signing of a two-year

extension to its existing contract with Her Majesty's Revenue and Customs (HMRC) in the UK. Under the agreement, Capgemini will continue as a strategic supplier to HMRC, primarily providing data, digital and cloud technologies, alongside applications management services, until June 2022. As part of this extension, Capgemini will also support HMRC in its strategic transformation programs and in growing HMRC's own IT capability.

This extension builds on a successful 15-year partnership between the two organizations, which has been instrumental in the delivery of services that underpin the collection of UK tax revenues.

Paul Margetts, Managing Director of Capgemini's UK Business Unit and Group Executive Committee Member, commented: "I am delighted that we are continuing our strong relationship with HMRC. Capgemini's expertise in digital and cloud technologies, coupled with our understanding of the HMRC organization and a collaborative approach to working with HMRC and its other suppliers, will play a significant role in supporting HMRC to drive its transformation agenda. Today's agreement underlines Capgemini's continued commitment to the UK and UK public sector."

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### ***Cenit Completes 3D Print Process Chain in CATIA V5***

17 October 2019

Research Goal Achieved: Over the last three years, the international consortium made up of nine partners has succeeded in developing more resource-efficient production processes for the aviation industry. CENIT played a critical role by providing the upgraded CATIA V5 CAD system that includes the relevant interfaces. The system can now map the 3D printing process of components completely in a single software solution - from design to post-processing. Thanks to the bionic support structures for the 3D-printing parts on the basis of unit cells recently developed by Fraunhofer Research Institution for Additive Manufacturing Technologies IAPT, software users can save material, time and thus costs in the future - with improved quality results. The research findings from "Bionic Aircraft" serve as the basis for cross-industry solutions in the field of additive production. Initial software training has already begun.

"From the start, 3D printing and bionic design played a fundamental role in the research project funded by the EU Commission. Ultimately, we had an ambitious goal, which was to reduce the weight of aircraft components and in doing so to ultimately reduce fuel consumption", explains project coordinator Dr. Philipp Imgrund from Fraunhofer IAPT located in Hamburg.

Additive production: closed process chain

With the interface from the CAD system CATIA V5 developed by CENIT for the 3D printer, for the first time ever, components can now be printed from the CAD software directly. "Decisive in connection with this is that all process steps, including post-processing, can be mapped in CATIA V5", says Jochen Michael, Senior Consultant at CENIT and adds: "There is no need to exit the development environment and no data needs to be converted, which saves time and increases quality."

Bionic support structures: inspired by nature

The research work by Fraunhofer IAPT was literally inspired by nature. Whether butterfly wings or tree crown, each grid and branching structure inspired the project team to develop support structures for 3D parts using less material and at lower costs, with the added benefit that they are easier to remove.

Support structures provide the needed support to additive manufactured components at certain areas and must be removed after the 3D print either manually or by milling. In addition to the latest development,

the Fraunhofer IAPT team has validated existing support structures and assigned them to certain application scenarios. As a result they can be automatically selected during the 3D printing process in the future.

Final milestone: the unit cell

In particular, the focus of the project partners over the past few months has been to iron out the fine details of the 3D printing process chain. With the resulting toolset, the support structures are now implicitly created. This means that in CATIA V5 a volume is created instead of the individual geometries. And the volume is attached to an attribute in the form of a color. The volume is only filled with the geometry of unit cells in one of the following steps. “The unit cells make it possible to freely develop the support geometry, without affecting the performance of the CAD system. What is possible now, for example, are graded support structures in various layers that can differ in their structure,” explains Jochen Michael the Innovation.

A unit cell can be imagined as a cube of any size, in which a geometry is generated. These unit cells are divided into layers. The color (attribute) is linked with the corresponding unit cell in the configuration file. The advantage: The unit cells are only created once and can be re-used as many times as you want. The slice data are stored in a neutral XML format. Then, in a last step, the post processor developed by CENIT is applied. It generates the specific data for the machine. It generates the paths that the laser passes through during the exposure process and fills the areas with prefabricated unit cells. “The actual final geometry is not created until this point”, explains Dr. Imgru.

### BIONIC AIRCRAFT: MORE RESOURCE EFFICIENCY IN THE AVIATION INDUSTRY

Since September 2016 to August 2019, the objective of the “Bionic Aircraft” research project funded by the European Commission (grant number 690689) has been to increase resources efficiency in the aviation industry. Nine international consortium partners from industry, research and development, among them also the IT specialist CENIT and the Fraunhofer Research Institution for Additive Manufacturing Technologies IAPT, are collaborating to come up with new methods and concepts. The focus was on additive production and bionic design.



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### ***CONTACT Software and Zuken integrate mechatronic processes***

15 October 2019

Elektronic and electrical engineering are central components of many products and production systems. Now, two leading R&D software providers are enabling companies to bring mechatronic products to market faster. A new standard module integrates Zuken's DS-2 platform into CONTACT Elements and links E/E development with enterprise-wide Product Lifecycle Management (PLM).

In plants, vehicles, machines and many other products, electronics and electrical engineering are controlling an increasing number of functions. Topics such as Industry 4.0, e-mobility or smart cities are reinforcing this trend and require that the different engineering disciplines work more closely together in product development. CONTACT Software and Zuken are now providing a solution that enables end-to-end data and process management in mechanical, electrical and electronic design from the very first

design phase.

The new standard module for CONTACT Elements and Zukens DS-2 supports the secure synchronization of part master data, parts lists, documents and files between the ECAD systems E3.series (electrical and fluid engineering), CR-5000/8000 (PCB design) and CIM Database. In the PLM system, the data can thus be easily merged into a mechatronic holistic view and validated at an early stage.

The jointly developed solution is already being used successfully by customers. "With Zuken, we have implemented an application that is highly scalable thanks to our open technology platforms," says Michael S. Murgai, Director Strategy & Operations at CONTACT Software. "This allows us to flexibly extend the standard integration when new software functions or customer requirements arise".

At the Zuken Innovation World 2019, CONTACT Software recently presented the new solution and its benefits for companies using practical examples.

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### ***Hexagon & MSC Software Showcases the Power of Autonomous Mobility and Immersive Experience at the New India Facility***

17 October 2019

MSC Software Corporation (MSC) today announced the launch of its new Customer Experience Centre in Pune, India. Visitors will be able to access its Virtual Test Drive simulator - the first to be open to anyone in India - and experience how immersive Virtual Reality (VR) technology can be used to understand complex simulated phenomena in a more relatable visualisation.

The centre is split between two experience zones. The first focusses on MSC's Virtual Test Drive (VTD) solution, which provides a complete toolchain to simulate vehicle driving applications. VTD allows for the creation, configuration, presentation and evaluation of virtual environments for road and rail simulations. It is used for the development of Advanced Driver Assistance Systems (ADAS) and autonomous driving systems, and to create real-world scenarios for vehicle driver training simulators.

The VTD zone will showcase the capabilities of the open and flexible modular platform, from the generation of 3D visualisations to the simulation of complex traffic scenarios and simplified or physical sensor models. Demonstrations will show VTD in use throughout the automotive supply chain for Software in the Loop (SiL), Driver in the Loop (DiL), Vehicle in the Loop (ViL) and Hardware in the Loop (HiL) applications, and coupled with MSC and third party or custom packages for high fidelity co-simulations.

The second zone is a Virtual Reality experience zone showcasing the powerful capabilities of Cradle Computational Fluid Dynamics (CFD) suite, and how it is used to help non-CFD specialists conceptualise design choices. For example, it allows a viewer to virtually fly over skyscrapers to understand how wind is channeled, to see air flows inside a room to understand effectiveness of simulated air-conditioning, or to look around a graphics card to understand which components are at risk of overheating or thermal fatigue.

Sridhara Dharmarajan, Executive Vice President and Managing Director, Hexagon Manufacturing Intelligence, India and MSC Software Indo-Pacific, MSC Software commented on the significance of the Center, "Building a driverless car requires that an autonomous system learns to drive as good as a human. Its artificial intelligence needs to 'drive' a high-fidelity representation of the actual vehicle for



billions of miles. Our VTD simulator will show customers how they can test all the systems involved to make this complex engineering challenge possible and enable close synchronization of the engineering effort throughout the supply chain. Similarly, our VR zone is designed to provide a truly immersive experience that will aid better design and engineering by including stakeholders from the beginning to the end of product development."

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### ***PROLIM and Edge2Web Partner to deliver high-value IIoT Solutions***

17 October 2019

PROLIM is excited and proud to announce its partnership with [Edge2Web](#). This partnership will be a collaboration between Edge2Web and [PROLIM](#) to build robust cloud-based visual industrial applications by leveraging PROLIM's technical expertise and domain knowledge of IoT and MindSphere.

"With Edge2Web and MindSphere partnerships, PROLIM now has an added advantage of developing complex IIoT applications easily and quickly. Our IoT team recently demonstrated this capability with their Windmill monitoring project using Edge2Web and MindSphere" said [Ashwini Patil](#), VP Information Technology at PROLIM.

"We are excited to partner with PROLIM to deliver advanced digital solutions to industrial customers worldwide," said Fred Holahan, co-founder, and CEO at Edge2Web. "PROLIM's proven expertise, combined with Edge2Web's unique app development platform, enables our customers to accelerate their digital industrial initiatives."

PROLIM and Edge2Web together will provide a complete end to end IIoT solutions and help our existing and future customers achieve innovative digital outcomes. Edge2Web's visual tools can integrate data and applications across a growing portfolio of IoT, IT and enterprise cloud environments. Edge2Web's secure SaaS-based platform minimizes IT disruption while scaling elastically to meet a wide range of industrial use cases.

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### ***SAP Sets Course for the Future with Next-Generation Leadership Team***

14 October 2019

SAP SE today announced that Bill McDermott has decided not to renew his contract and is stepping down from his position as chief executive officer. In activating the company's long-term succession plan, SAP Executive Board Members Jennifer Morgan and Christian Klein have been appointed co-chief executive officers, effective immediately, with the approval of the Supervisory Board of SAP SE.

McDermott will remain in an advisory capacity until the end of the year to ensure a smooth transition.

"SAP would not be what it is today without Bill McDermott," said Professor Hasso Plattner, chairman of the Supervisory Board of SAP SE. "Bill made invaluable contributions to this company and he was a

## CIMdata PLM Late-Breaking News

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main driver of SAP's transition to the cloud, which will fuel our growth for many years to come. We thank him for everything he has done for SAP. We also congratulate Jennifer and Christian for this opportunity to build on the strong foundation we have for the future of SAP. Bill and I made the decision over a year ago to expand Jennifer and Christian's roles as part of a long-term process to develop them as our next generation of leaders. We are confident in their vision and capabilities as we take SAP to its next phase of growth and innovation."

"Every CEO dreams of being able to transition a company to its next generation from a position of significant strength," said McDermott. "When you look at where we were and where we are, I simply could not be prouder of what this company has achieved over the past decade. I am thankful for the opportunity to lead one of the world's finest companies. Now is the moment for everyone to begin an exciting new chapter, and I am confident that Jennifer and Christian will do an outstanding job. I look forward to supporting them as they finish 2019 and lay the foundation for 2020 and beyond. To every customer, partner, shareholder and colleague who invested their trust in SAP, I can only relay my heartfelt gratitude and enduring respect."

McDermott joined SAP in 2002. As head of North America, SAP was able to significantly increase its market share in the region, putting the company on its path to becoming a global powerhouse. He eventually led customer operations worldwide and joined the Executive Board in 2008. For the past decade, McDermott has served as CEO and has overseen a period of dramatic growth for SAP, including expanding its portfolio and initiating a major shift to cloud computing. Under McDermott's leadership, key metrics including market value, revenue, profits, employee engagement and environmental sustainability have all strengthened substantially since 2010.

With the formal endorsement of the Supervisory Board, the company activates its leadership succession plan, designed to preserve continuity and empower its next-generation leaders in advance of the formal kickoff to calendar year 2020.

"As they have already demonstrated, Jennifer and Christian complement each other perfectly and will be strong co-CEOs, a leadership model that is time-tested at SAP with multiple prior instances of success." Plattner added.

Morgan and Klein bring decades of experience in the enterprise applications software industry. Both serve on the Executive Board. Morgan, who joined SAP in 2004, most recently served as president of the Cloud Business Group, overseeing Qualtrics, SAP SuccessFactors, SAP Ariba, SAP Fieldglass, SAP Customer Experience and SAP Concur. She was named an Executive Board member in 2017.

Morgan said, "I could not be more grateful to Hasso Plattner and the Supervisory Board for placing their trust in me and Christian to lead this next chapter for SAP. We accept the challenge with a high degree of humility, but also with a sincere belief that the best is yet to come for SAP. We have the finest, most talented colleagues in the world who give us so much confidence in the road ahead. Bill McDermott has been not only a tremendous leader, but a mentor and a role model for so many of us. In Bill, we stand on the shoulders of a giant and look forward to building on his legacy of success."

Klein, who started his career at SAP two decades ago as a student, most recently served as the company's chief operating officer, also overseeing product development for the flagship ERP solution

SAP S/4HANA®. Previously, he worked as SAP SuccessFactors chief financial officer and as SAP chief controlling officer. Klein was appointed to the Executive Board in 2018.

Klein said, “As someone who began my career in the halls of SAP, this is the highest honor I can imagine to become co-CEO together with Jennifer. Hasso Plattner has given us a tremendous opportunity and we are truly thankful to him and the Supervisory Board. SAP has the most comprehensive solution portfolio in the industry. We have an unprecedented opportunity to finish what we started and deliver the intelligent enterprise. This will be the best way to honor our predecessor, Bill McDermott. We will always strive to be leaders who bring out the best in people like Bill has always done.”

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### ***UMaine Composites Center receives three Guinness World Records related to largest 3D printer***

16 October 2019

More than 250 federal and state officials, business executives, University of Maine System leaders and community members were on hand to witness the UMaine Advanced Structures and Composites Center receive three Guinness World Records on Oct. 10 for the world’s largest prototype polymer 3D printer, largest solid 3D-printed object, and largest 3D-printed boat.

The event culminated with the world’s largest 25-foot, 5,000-pound 3D-printed boat, named 3Dirigo, being tested in the Alford W2 Ocean Engineering Laboratory, an offshore model testing facility equipped with a high-performance wind machine over a multidirectional wave basin.

The new 3D printer is designed to print objects as long as 100 feet by 22 feet wide by 10 feet high, and can print at 500 pounds per hour. The one-of-a-kind printer will support several ambitious initiatives, including development of biobased feedstocks using cellulose derived from wood resources, and rapid prototyping of civilian, defense and infrastructure applications.

A \$20 million research collaboration with Oak Ridge National Laboratory (ORNL), the U.S. Department of Energy’s largest science and energy laboratory, will support fundamental research in key technical areas in large-scale, biobased additive manufacturing. The partnership between UMaine and ORNL will advance efforts to produce new biobased materials conducive to 3D printing of large, structurally demanding systems. The research will focus on cellulose nanofiber (CNF) production, drying, functionalization and compounding with thermoplastics, building on UMaine’s leadership in CNF technology and extrusion research. By placing CNF from wood into thermoplastics, bioderived recyclable material systems can be developed with properties that may rival traditional materials, possibly even metals.

“This is an exciting achievement in our partnership with the University of Maine,” said Moe Khaleel, associate laboratory director for Energy and Environmental Sciences at ORNL. “This new equipment will accelerate application and integration of our fundamental materials science, plant genomics and manufacturing research to the development of new sustainable bioderived composites, creating economic opportunity for Maine’s forest products industry and the nation.”

The cluster brings together the expertise of UMaine researchers and marine industry leaders to further develop and commercialize 3D printing to benefit boatbuilders in the state. By 3D printing plastics with 50% wood, boat molds and parts can be produced much faster and are more economical than today's traditional methods.

To demonstrate the new printer's capabilities, UMaine 3D printed a 25-foot patrol boat with a hull form developed by Navatek, a leader in ship design and a UMaine Composites Center industrial partner. The 5,000-pound boat was printed in 72 hours — from Thursday, Sept. 19 to Sunday, Sept. 22. The massive printer, with both additive and precise subtractive manufacturing capabilities, enables rapid prototyping for both defense and civilian applications.

UMaine also showcased a 3D-printed, 12-foot-long U.S. Army communications shelter. The new printer will support programs with the U.S. Army Combat Capabilities Development Command (CCDC) Soldier Center and its mission to develop rapidly deployable shelter systems for soldiers. Other use areas include concealment applications, structural shelters and high-temperature fire retardant materials for vehicle-mounted shelters.

“We are truly honored to be working with leaders from the Maine boatbuilding industry, Maine Forest Products Industry, the national construction industry, Maine Technology Institute, Oak Ridge National Laboratory, the U.S. Dept of Energy Advanced Manufacturing Office, the U.S. Office of Naval Research, the U.S. Army, and the U.S. Army Corps of Engineers,” said Habib Dagher, executive director of UMaine's Advanced Structures and Composites Center. “With this large printer, we will be able to accelerate innovation and prototype development in both the civilian and military sectors.

“This 3D printer is an outgrowth of research we have been doing for 15 years in combining cellulosic nano and micro fibers with thermoplastic materials,” Dagher said. “Our goal is to print with 50% wood products at 500 pounds per hour, and achieve properties similar to aluminum.”

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## Acquisitions

### ***Accenture Interactive Announces Intent to Acquire French Data Marketing Firm Sutter Mills***

14 October 2019

PARIS; Oct. 11, 2019 – Accenture has agreed to acquire Sutter Mills, a French firm that specializes in developing and executing data-driven marketing strategies for clients. The acquisition requires prior consultation with the relevant works councils and would be subject to customary closing conditions. Financial terms of the transaction are not disclosed.

The acquisition would strengthen Accenture Interactive's ability to help brands, in France and throughout Europe, to leverage data to deploy innovative marketing strategies. The combination of Sutter Mills' and Accenture Interactive's expertise would enable companies to create hyper-relevant experiences at scale across all customer touchpoints.

Headquartered in Paris, Sutter Mills works with some of the most well-known French and European companies across various industries, including luxury goods, automotive and financial services, helping them develop more engaging relationships with their customers. The firm provides consulting and implementation services that enable clients to improve customer insights, increase the efficiency of their marketing strategies, and drive higher returns on their marketing investments. Sutter Mills has expertise in all major martech and adtech platforms, as well as deep expertise in implementing the technical infrastructures required to create hyper-relevant experiences.

“The acquisition of Sutter Mills would be a key step in our growth strategy,” said Olivier Girard, country managing director of Accenture in France and Benelux. “Its expertise, combined with Accenture Interactive’s leading capabilities in experience design and digital commerce, would further our ability to provide clients with the services they demand to support their evolving growth agendas. By helping companies better exploit data to create hyper-personalized interactions that influence consumers’ buying decisions while enabling them to measure the return on their marketing investments, we can give chief marketing officers the tools needed to demonstrate their contribution to their companies’ growth.”

Claude Chaffiotte, head of Accenture Interactive in France and Benelux, added, “New growth engines are driven by a company’s ability to create experiences that are unique to each of potentially millions of customers. This requires capturing and responding to customers’ expectations in near real-time, with personalized messages delivered through relevant media. Sutter Mills’s mastery of data, adtech and martech would enhance our ability to provide clients with these hyper-relevant experiences, enabling us to even better support our clients in achieving their growth objectives.”

Sutter Mills founders Guillame Cardon, Oliver Mazon and Xavier Cardon, said, “We created Sutter Mills to be a key business partner for companies by combining a deep understanding of their strategic business issues with strong expertise in adtech, martech, data analysis and artificial intelligence. The mastery of these domains is the reason why many brands have relied on us to support them in defining and executing their marketing strategies. Joining Accenture Interactive would be a fantastic opportunity for our teams to develop their expertise on larger scale and global initiatives, and we are excited about the new opportunities it would bring.”

Sutter Mills would mark the second acquisition made by Accenture Interactive in France, following the 2017 acquisition of French digital commerce agency Altima. It would also represent Accenture’s overall fifth acquisition in France in four years, following the acquisitions of OCTO Technology in 2016, Arismore and the aforementioned Altima in 2017, and Cirruseo in 2019.

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### ***CATI Merges with FISHER UNITECH***

14 October 2019

Computer Aided Technology (CATI), a leading provider of product development solutions from SOLIDWORKS, Stratasys, Creaform, and Dassault Systèmes, expands their reach by bringing Fisher Unitech, a SOLIDWORKS and Stratasys reseller based in Pleasant Ridge, MI, into the Computer Aided Technology family. This merger makes Computer Aided Technology, the largest SOLIDWORKS and Stratasys solutions provider in North America.

“We look forward to working with and supporting Fisher Unitech and their clients,” said Rich Werneth,

President, Computer Aided Technology. “Like CATI, Fisher Unitech has built its business around ensuring their customers’ success. That’s what makes this merger a great fit.”

Over the years, CATI and Fisher Unitech established themselves as industry-leading providers of SOLIDWORKS software and Stratasys 3D Printing technologies, helping thousands of companies with solutions to their product development challenges. Clients will benefit from the combination of resources, including an expanded solution portfolio, additional technical resources, and live local support personnel assisting clients 12 hours per day. “The CATI Team is one of the best in the business. Their depth of technical resources and ability to support the entire SOLIDWORKS and Stratasys portfolio, as well as the Dassault Systèmes 3DEXPERIENCE Platform, makes them stand out in this industry.” This will be a smooth transition with many added benefits for both Fisher Unitech and CATI clients,” said Matt Wise, President and CEO, Fisher Unitech.

Fisher Unitech customers will also have access to CATI’s subsidiary, InFlow Technology, to serve their PLM/PDM strategies. InFlow has deployed hundreds of successful PDM and PLM systems since 2001, including the 3DEXPERIENCE Platform from Dassault Systèmes. The InFlow team consists of industry experts fully dedicated to PLM and PDM solutions.

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## Events

### ***Expo 2020 Dubai Runs SAP to Help Personalize Visitor Experiences***

18 October 2019

SAP SE announced today that it is helping to power the digital transformation of Expo 2020 Dubai, the upcoming World Expo taking place in UAE between October 20, 2020, and April 10, 2021.

The organizers are using solutions from SAP to help optimize processes and costs and deliver personalized experiences for an expected 25 million visits and 192 participating countries. The announcement will be made at Expo 2020’s Global Media Briefing held on October 20–22, 2019, to build international participant and visitor excitement a year ahead of the World Expo’s October 20, 2020, opening date.

“SAP is helping Expo 2020 Dubai transform the on-site experience for its visitors,” said Luka Mucic, member of the Executive Board and chief financial officer of SAP SE. “We are using global best practices so Expo 2020 Dubai can combine customer experience data, so-called X-data, with operational data, O-data, in real time. This helps Expo 2020 Dubai listen, understand and act on millions of participant and visitor data points in real time as part of our commitment to helping organizations become intelligent enterprises in the experience economy.”

Expo 2020 Dubai is currently using SAP S/4HANA for back-end financials, HR and procurement and the SAP C/4HANA suite for real-time visitor information. It is using the SAP Analytics Cloud solution and SAP Digital Boardroom for real-time analytics and visualized reporting for enhanced decision-making. Expo 2020 Dubai is also planning to implement the SAP Customer Checkout application to process retail sales transactions from hundreds of points of sale across the site.

At the Expo 2020 Global Media Briefing, SAP will demonstrate PODium, its interactive technology platform to assist People of Determination effectively navigate the Expo 2020 site. As an innovative

enterprise software partner, SAP has co-developed the platform with Expo 2020 Dubai through the SAP Co-Innovation Lab location in UAE. The platform optimizes experiences for People of Determination based on their accessibility requirements, using analytics and experience management technologies from SAP – coupled with input from Internet of Things (IoT) and mobile tracking technologies.

“SAP is key to helping Expo 2020 Dubai deliver a seamless, integrated experience for organizers, participants and visitors,” said Mohammed Al Hashmi, chief technology officer, Expo 2020 Dubai. “We’re using the latest solutions from SAP in areas such as analytics and customer profiling to help tailor the Expo experience for millions of visitors based on their personal preferences.”

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## Financial News

### ***LTI Constant Currency Revenue growth up 11.9% YoY; Digital revenues at 40%***

18 October 2019

Larsen & Toubro Infotech announced its Q2 FY20 results today.

In US Dollars:

Revenue at USD 363.8 million; growth of 2.0% QoQ and 10.8% YoY

Constant Currency Revenue growth of 2.4% QoQ and 11.9% YoY

In Indian Rupees:

Revenue at Rs 25,707 million; growth of 3.4% QoQ and 10.3% YoY

Net Income at Rs 3,604 million; growth of 1.3% QoQ and (10.0%) YoY

“In Q2, we delivered a steady 11.9% YoY growth in constant currency driven by on-track ramp up of large deal wins that we announced earlier. We won three large deals in this quarter, all of them from new clients, aggregating to net-new TCV of ~US\$100 million. A healthy pipeline, continued large deal momentum and fast-growing Digital services across all verticals make us optimistic about the future. We are delighted to announce the acquisition of Powerup, a born-in-Cloud company that has completed 150+ engagements in Cloud. Powerup has deep expertise in building Cloud and AI solutions and is a premier consulting partner of AWS. “

– Sanjay Jalona, Chief Executive Officer & Managing Director, LTI

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### ***SAP Pre-Announces Outstanding Third Quarter Results***

14 October 2019

WALLDORF, Germany — After an initial review of its third quarter 2019 performance, SAP SE today

## CIMdata PLM Late-Breaking News

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announced its preliminary financial results for the third quarter ended September 30, 2019. All 2019 figures in this release are approximate due to the preliminary nature of the announcement.

New Cloud Bookings Up 38%, Software License Revenue Down 1%

Cloud Revenue Up 37%

Total Revenue Up 13%

IFRS Operating Profit Up 36%; Non-IFRS Operating Profit Up 20%

IFRS Operating Margin Up 4.2pp; Non-IFRS Operating Margin Up 1.7pp

EPS Up 28% (IFRS) and Up 14% (Non-IFRS)

Rapid Cloud Gross Margin Expansion Continues

Outlook Reiterated

“The growth story at SAP continues with maximum strength. I couldn’t be prouder of this very significant top line and bottom line expansion,” said Bill McDermott, SAP. “The future is bright!”

“We have delivered a very strong result on the bottom line based on further acceleration of our operational excellence initiative and restructuring benefits in the third quarter. In parallel we have continued to execute extremely well on our cloud transition in the first nine months – a dynamic cloud business growing at 41% combined with a stable core, leading to double digit topline growth” said Luka Mucic, SAP. “It is with great confidence that we reiterate our 2019 outlook.”

In the third quarter, new cloud bookings were up 38% (33% at constant currencies) and up 50% excluding Infrastructure-as-a-Service (IaaS). A cloud deal with a major partner contributed 17 percentage points to Q3 new cloud bookings growth. The deal has a term of 3 years, with revenue recognition starting in the fourth quarter 2019.

Cloud revenue grew 37% year over year to €1.79 billion (IFRS), up 37% (non-IFRS) and 33% (non-IFRS at constant currencies). Software licenses revenue was down 1% year over year to €0.93 billion (IFRS), down 1% (non-IFRS) and down 4% (non-IFRS at constant currencies). Cloud and software revenue grew 12% year over year to €5.63 billion (IFRS), up 13% (non-IFRS) and 10% (non-IFRS at constant currencies). Total revenue grew 13% year over year to €6.79 billion (IFRS), up 13% (non-IFRS) and 10% (non-IFRS at constant currencies).

Adding more than 500 customers in the quarter, SAP S/4HANA adoption grew to more than 12,000 customers, up 25% year-over-year.

The share of more predictable revenue grew by 2 percentage points year-over-year to 69% in the third quarter.

Cloud gross margin increased 5.9 percentage points year over year to 64.5% (IFRS) and increased by 5.4 percentage points year over year to 69.0% (non-IFRS) and 5.5 percentage points to 69.0% (non-IFRS at constant currencies).

Operating profit increased 36% year over year to €1.68 billion (IFRS), up 20% (non-IFRS) and up 15% (non-IFRS at constant currencies). Operating margin increased 4.2 percentage points year over year to 24.7% (IFRS) and expanded by 1.7 percentage points year over year to 30.6% (non-IFRS) and 1.5 percentage points to 30.4% (non-IFRS at constant currencies).

Earnings per share was up 28% to €1.04 (IFRS) and up 14% to €1.30 (non-IFRS).

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## ***Singapore's EDBI Invests in Structo***

15 October 2019

Structo, a global dental 3D printing solutions provider headquartered in Singapore, announced today the close of its latest funding round backed by government-linked global investor EDBI. Structo aims to use this latest round of funding to help them continue pushing the envelope of digital additive manufacturing solutions specifically for the dental industry and launch new products that focus on leveraging automation to enable mass production of custom patient-specific products.

“Structo is a great example of how an idea born in our local university can reach the global market with government-linked and private investors working closely together to provide funding at different stages of its growth. Such support is especially important in nurturing deep tech startups and ensuring a vibrant innovation ecosystem in Singapore,” says Chu Swee Yeok, CEO & President of EDBI.

Structo is currently the only 3D printing company worldwide that focusses solely on solutions for the dental industry. The company was founded in 2014 as a project out of the National University of Singapore (NUS) that grew into an industry leader today with its printers installed across 5 continents and producing hundreds of thousands of dental appliances per month.

With the support of world leading venture capital funds including GGV Capital (Silicon Valley and China) and Wavemaker Partners (Los Angeles and Singapore), Structo has very rapidly expanded globally and now has its own presence in the United States, Canada and the UK – in addition to the Singapore headquarters where all engineering and development take place. Structo has fostered numerous partnerships in the dental industry that helped them develop a series of application-specific solutions across hardware, software and photopolymer resin enabling them to offer a start-to-finish workflow to end-users.

Huub van Esbroeck, co-Founder and CEO of Structo explains why additive manufacturing paired with automation is so uniquely positioned to address the critical needs of the dental industry. “The recent rise in consumer demand for clear aligners, an orthodontic appliance that can only be produced through additive manufacturing has accelerated the demand for more novel and customized solutions,” says Huub. “At Structo, we believe there is no one-size-fits-all solution for any specific end-use, in particular for an industry that is as diverse in size and requirements as dental.

“Partners such as EDBI have been instrumental in getting Structo to where it needs to be,” explains Huub. “EDBI’s support has allowed our team to develop capabilities in Singapore in engineering, product development, material sciences and manufacturing. By leveraging EDBI’s strategic industry partners, investor community and network of talent, we were able to push the boundaries of additive manufacturing. EDBI’s investment in our company is a testament to the successes our team has achieved in a short period of time. It will help us continue to fulfil the dental industry’s need for novel solutions for mass customization through digital manufacturing. It will help us continue to fulfil the dental industry’s need for novel solutions for mass customization through digital manufacturing”.

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## ***Wipro Results for the Quarter ended September 30, 2019***

15 October 2019

Highlights of the Results for the Quarter ended September 30, 2019:

- Gross Revenue was ₹151.3 billion (\$2.1 billion), an increase of 4.0% YoY
- IT Services Segment Revenue was at \$2,048.9 million, an adjusted<sup>2</sup> increase of 2.5% YoY
- Non-GAAP<sup>3</sup> constant currency IT Services Segment Revenue increased by 1.1% QoQ. Adjusted<sup>2</sup> Non-GAAP<sup>3</sup> constant currency IT Services Segment Revenue grew 3.8% YoY
- IT Services Operating Margin<sup>4</sup> for the quarter was at 18.1%, an increase of 3.1% YoY
- Net Income for the quarter was ₹25.5 billion (\$361.4 million), an increase of 35.1% YoY
- EPS for the quarter was ₹4.3 (\$0.061 ) per share and grew 36.7% YoY

Performance for the quarter ended September 30, 2019

Abidali Z. Neemuchwala, CEO and Managing Director said, “We had a good in-quarter execution on both revenues and margins. The overall growth was broad based with 6 out of 7 industry verticals growing on a YoY basis and we signed a large deal in India aligned to our strategy of taking global offerings to India customers.”

Jatin Dalal, Chief Financial Officer said, “We delivered operating margins in a tight range after absorbing the impact of two months of wage hike. Growth remains our priority and we remain invested for future. We also successfully completed the Share Buyback program in September, which saw strong participation from our investors.”

Outlook for the Quarter ending December 31, 2019

We expect Revenue from our IT Services business to be in the range of \$2,065 million to \$2,106 million\*. This translates to a sequential growth of 0.8% to 2.8%. \* Outlook is based on the following exchange rates: GBP/USD at 1.23, Euro/USD at 1.11, AUD/USD at 0.68, USD/INR at 70.59 and USD/CAD at 1.32

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## Implementation Investments

### ***Australian Military Bank Powers Digital Transformation with Infosys Finacle on Cloud***

14 October 2019

Australian Military Bank (AMB), one of Australia’s longest serving mutual financial institutions, and Infosys Finacle, part of EdgeVerve Systems, a wholly-owned subsidiary of Infosys (NYSE: INFY), announced the go live of the Finacle banking solutions suite to drive AMB’s ambitious digital transformation program. The comprehensive, Australia ready digital banking solution stack, has been implemented in a fully SaaS model, hosted out of Infosys datacenters in the country. Finacle has enabled AMB with significant operational benefits and cost efficiencies, along with enhanced security and scalability. AMB is now able to provide both its staff and members, a world class banking experience, equal or better than leading global banks.

## CIMdata PLM Late-Breaking News

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The Finacle solution stack replaced AMB's legacy systems to enable the bank to keep pace with new technology developments and allow a speedy response to market demands. Additionally, the Finacle solution enables open application programming interfaces (APIs) that overcome limitations for the bank's ability to work effectively with ecosystem partners.

### Highlights:

- The entire implementation of the Finacle solution stack, including core banking, origination, payments and channels, was completed in just 10 months, providing feature rich, truly digital retail banking functionalities for AMB.
- Since go live, the bank has been processing on average of 40,000 mixed transactions per day, along with 22,000 card transactions and close to 7,000 composite payments transactions on average per day.
- The new origination system has helped the bank make the origination process simpler and drive the creation of a pipeline of over AUD61 million worth of loans during just the first month post go live.
- AMB is now able to onboard new members and open accounts, complete with transactions enabled, within minutes. The bank has signed up close to 3,000 new accounts across different account types since go live.
- The new Internet Banking & Mobile Banking channels have seen a 46% increase in registrations and more notably a 116% increase in the Mobile App registration.
- For the first time, AMB users have access to an integrated Personal Finance Management tool which enables among other things budget creation, goal settings and ability to track spends.
- Cutting-edge localization capabilities in the solution, including 16 integration touch points, have empowered AMB to establish seamless end-to-end integration with major allied services providers and key partners such as credit bureau, ATM providers and payments solution providers. The Finacle solution also provides the bank out of the box capability for required regulatory reporting.
- The solution is hosted out of Infosys datacenters in Australia that conform to ISO-27001 standards for information security. The application has also been certified as being PCI-DSS compliant.

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### ***Cobian Leaps Forward with Centric Footwear PLM***

16 October 2019

Cobian, the California-based footwear company, has selected Centric Software's Product Lifecycle Management (PLM) solution for emerging enterprises, Centric SMB. Centric Software provides the most innovative enterprise solutions to fashion, retail, footwear, outdoor, luxury and consumer goods companies to achieve strategic and operational digital transformation goals.

Cobian's sibling co-founders, John and Claudia Cobian, are inspired by a generational heritage of sandal-making. John Cobian's godfather founded Calzaletas, a Mexican brand famous for its durable yet affordable Fisherman's Sandal, which was popularized in the USA by adventurous surfers. John improved upon the original Calzaletas design to create a unique DNA for Cobian Footwear, which draws upon the time-tested approach of 'Form Follows Function' to produce practical designs at affordable prices.

Travis Brown, Technical Project Manager at Cobian, explains that Cobian sought a footwear PLM solution to improve their product development process as the company continues to grow and be more agile to better respond to market trends.

"Like many growing companies, logistics is a regular challenge. We want to develop quality products efficiently and get sampling and quality control done in our factories overseas without relying on spreadsheets and shipping product samples around the world. Our goal is to combine work across teams in different locations, eliminate spreadsheets and maintain product development records with Centric PLM."

"To keep growing and penetrate new product segments such as shoes and slippers, we need to take a leap forward. Transitioning product design to a stable digital environment is an important strategic goal," he continues.

Cobian selected Centric SMB based on an impressive demo and Centric Software's industry reputation.

"Centric SMB is set up specifically for growing businesses like ours," says Brown.

"With a footwear PLM solution in place, we can run development cycles faster and at a lower cost, making it possible to develop and launch more products efficiently. We'll be able to hire independent design contractors, as they can easily plug into a well-built system. We'll be more agile and able to react effectively to demand on the sales side to start developing new designs."

"We'd like to welcome our latest partner in the footwear industry, Cobian," says Chris Groves, President and CEO of Centric Software. "Cobian is a fast-evolving company that combines heritage with innovation, and we're excited to help them drive their digital transformation."

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## ***Damen partners with TCS for increased vessel connectivity***

16 October 2019

With its eyes firmly on the future, Damen has partnered with Tata Consultancy Services (TCS) in the development of an integrated IoT platform. With this, Damen vessels become increasingly connected and Damen is able to gather and analyse data from the 10-15,000 sensors on board its vessels.

The results of this are significant, offering predictive maintenance, remote services access and savings in fuel consumption. Furthermore, this is a platform with which Damen can collaborate - sharing its knowledge with the wider maritime eco-system.

It also assists Damen in its graduation from shipbuilder to maritime services provider - assisting its clients throughout the entire lifecycle of their vessel, from lead to decommissioning.

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## ***Elevenate Reaches New Heights With Gerber Technology's YuniquePLM®***

15 October 2019

Elevenate, a high-quality performance gear company from Sweden, has joined forces with ACG Nyström and Gerber Technology. This exciting partnership will allow the outdoor performance brand to implement Gerber's easy-to-use product lifecycle management solution, YuniquePLM, in order to gain more control over their supply chain and further streamline their processes to meet increasing customer demand.

Gerber Technology, the global leader in flexible material and fashion technology, empowers their customer base by providing them with integrated technology solutions that will allow them to scale the highest peaks of the on-demand market.

Elevenate is a global brand with pure adventure in its DNA, and deep roots in Swedish mountain culture. Founded in 2010 in Åre, the skiing capital of Scandinavia, Elevenate successfully proved the concept of in-house product development and pattern design with Gerber's AccuMark® CAD software, as well as quality-controlled manufacturing with carefully selected partners, who also use AccuMark CAD software. Known the world over as a premium performance and casual wear brand dedicated to providing the market with sustainable, quality clothes built to last, Elevenate believes that mountain culture is a state of mind, thus redefining the boundaries of their product offerings with innovative production techniques extended to product offerings even outside of the mountain habitat.

For Elevenate to bring their brand to new heights, they needed a solution that would streamline their design and development process, and also allow them to keep up with increasingly challenging demands. With YuniquePLM, Elevenate is able to gain greater insight into their supply chain, reduce errors, and decrease their time to market through enhanced integration with the other pieces of their workflow.

“Implementing cloud-based YuniquePLM is a huge step towards making our business more streamlined and agile,” said Tim Larsson, Project Manager at Elevenate. “Gerber is a leader within the textile industry and constantly updating their products to ensure their customers always have the latest tools at their fingertips, which is crucial not just for our success, but also to enable sustainability in the current and future consumer climate.”

Gerber's cloud-based YuniquePLM allows for easy management of the entire supply chain -- from design, all the way through to production. With cloud capabilities, users can gain valuable insight into their workflow and easily communicate with their team members from anywhere in the world. The easy-to-use product lifecycle management system provides a single source of the truth by consolidating data, designs, and 3D samples into one place, making it easily accessible for every member of the team.

YuniquePLM is part of Gerber's innovative end-to-end solution, meaning it can seamlessly integrate with their full suite of industry-leading software solutions, such as AccuMark CAD. Additionally, YuniquePLM integrates with many commonly used industry applications, such as Adobe® Illustrator® and True Fit®. YuniquePLM's powerful integrations eliminate bottlenecks by allowing users to quickly pass data to their favorite applications, all without having to leave the PLM solution. For Elevenate, the powerful Adobe Plug-In will help to reduce their time-to-market by allowing users to upload their designs and make changes directly within YuniquePLM.

"We are incredibly excited to welcome Elevenate into our family," said Michael Lock, Vice President of Gerber's Global Software Business. "In listening to the current issues the Elevenate business has in their product design process, we are convinced YuniquePLM will truly help them compete and win in the ever-changing consumer climate", added Per-Martin Dahlqvist, Business Area Manager at Gerber partner ACG.

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### ***ITI Limited signs MoU with IESA to set up electronics system design manufacturing ecosystem for electronics and telecom products in India***

14 October 2019

Bengaluru, 10 October 2019: To strengthen the electronics system design and manufacturing (ESDM) ecosystem in the country at-large, ITI Limited, a public sector undertaking in the telecommunications technology segment today signed a Memorandum of Understanding (MoU) with India Electronics & Semiconductor Association (IESA), a not-for profit industry body that works towards enhancing and promoting made-in-India products for world markets. Shri K. V Suresh, General Manager, Projects & Planning, ITI Limited and Shri Anil Kumar Muniswamy, Board Member & Advisor, IESA signed the MoU in the presence of Shri R. M Agarwal, CMD, ITI Limited, Shri S. P. Gupta, Director-HR, ITI Limited, IESA Executive Council, senior officials from ITI Limited and senior officials from Department of Telecommunications and members from IESA. Under the MoU,

ITI will provide its infrastructure to manufacture electronic products with special focus on telecom and allied smart electronic products. The MoU envisages setting up of infrastructure to enable ITI develop intelligent electronics ecosystem in the country inclusive of product design, development and manufacturing with a focus not limited to areas such as Telecom, Internet of Things, Smart Cities, Smart Manufacturing, Smart Agriculture and others.

IESA will be the exclusive knowledge and transformation partner for unlocking value of in-house knowledge, technologies, expertise and of spareable, delicensed, large physical infrastructure of ITI. The initiative will facilitate small and medium enterprises and start-ups to utilize ITI's existing infrastructure for prototyping, testing and certification purpose. Highlighting the MoU tie-up, Shri R. M. Agarwal, Chairman and Managing Director, ITI Limited said, "ITI has a long legacy for telecom equipment manufacturing in India. This initiative not only opens the door for small and medium enterprises but also enables them to reach out to global market for their indigenous electronic products.

The initiative exhibits ITI's commitment to the Government of India's flagship initiative like the Make in India and Smart City programmes". One of the flagship activities under the MoU is to create a first of its kind 5G Village at ITI premise that will focus on design, development, prototyping, testing and manufacturing of 5G related and enabled equipment, devices, solutions for needs of the country. The 5G village will be equipped with Telepreneur Hub, Systems Innovation Lab, Systems Certification Lab, Radiated Application Test beds and a Regulatory Sandbox.

The objective of the MoU is to build an intelligent electronics ecosystem in the country, promotion of make-in-India and startup India initiatives. "IESA is deeply committed to developing India as a global hub for design-led manufacturing in Intelligent Electronics through its continued partnership with the Industry, Government and Academia. Working towards this goal, we are excited to partner with ITI to accelerate innovation and strengthen the hardware startup & electronic systems design and manufacturing ecosystem in India. ITI with its expertise and competencies of running a world-class electronics manufacturing facility in Bengaluru, will suitably complement IESA4NEW, IESA's initiative for enabling investors and companies to set up their operations in the country," said Jitendra Chaddah, Chairman, IESA and Senior Director, Strategy & Operations, Intel India.

The partnership also aims to setup a demo Assembly, Testing, Marking and Packaging (ATMP) line, as a first-of-its-kind facility in the country. The facility will host a training facility and support fabless startups in prototyping their designs and setting up of a Deeptech and Intelligent Electronics Park through a mix of co-working and independent office, lab, workspaces and ITI's existing physical, knowledge infrastructure. The electronic park will also have an Experience Zone for emerging solutions in areas such as smart cities, smart agriculture, smart healthcare among others for startups, companies in these domains to showcase their latest offerings.

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### ***Joseph Ribkoff Selects NGC's Andromeda Cloud Platform to Streamline Business Processes and Support International Growth***

New Generation Computing, Inc. today announced that Joseph Ribkoff, one of Canada's most respected fashion designers, is implementing NGC's Andromeda PLM® and Andromeda SCM®.

Joseph Ribkoff is a Montreal-based fashion designer that sells in boutiques and specialty stores in 64 countries. The company sought an innovative, integrated digital platform to help manage its rapid growth and standardize its global operations. Joseph Ribkoff selected NGC's Andromeda Cloud Platform® to support its digital transformation initiative including PLM data and processes to efficiently manage line plans and timelines, and proactively anticipate and respond to market trends.

"Joseph Ribkoff is growing quickly, and Andromeda® provides the strategic digital platform we need to streamline business processes and support our continued global expansion," said Claude Collard, vice president of information technologies, Joseph Ribkoff. "NGC has a fantastic team with decades of fashion technology experience, and they have quickly become a strategic partner as we leverage the Andromeda Platform to accelerate and streamline our business."

Using Andromeda PLM, Joseph Ribkoff will benefit from a common platform and use workflow calendars to manage line plans, track progress, alert users about unexpected delays, and collaborate with international teams. Andromeda SCM will help ensure Joseph Ribkoff has the information it needs to make better business decisions faster by optimizing supply chain lead times and enabling a demand-driven supply chain.

“Joseph Ribkoff has been a leader in the Canadian fashion industry for more than 60 years, and Andromeda will help the company be more efficient, proactive and responsive as it continues to grow,” said Mark Burstein, president, NGC. “With Andromeda, Joseph Ribkoff can ensure that its fashions are on time, on trend and on budget.”

Since 1957 Joseph Ribkoff has been successfully designing collections for women around the world who lead busy lifestyles. The company and collections have been constantly evolving to meet the multidimensional needs of today's women. Joseph Ribkoff stands out as one of the leading designers in the Canadian fashion industry for over 60 years and over 64 international markets. For more information, visit [www.josephribkoff.com](http://www.josephribkoff.com).

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### ***Ministry of Defence selects Atos to deploy digital transformation of healthcare***

14 October 2019

Atos will provide support to the Ministry of Defence (MOD) in the United Kingdom through a contract worth an estimated total value of £25 million GBP to ensure digital transformation in the delivery of healthcare within the UK's Defence services.

The primary objective of the MOD's CORTISONE Programme is to deliver a suite of Medical Information Services (Med IS) through the exploitation of Commercial off-the-shelf products.

Through the CORTISONE programme, Atos as a delivery partner under service provider 3D, will execute a sustainable, integrated, cohesive and enduring information capability that will fully and effectively support the delivery of evidence-based medical, dental and healthcare outputs, to achieve the aim of the Defence Medical Services.

Atos will maintain and develop the overall solution architecture, artefacts and component integration, providing technical advice and product evaluation, working closely with the MOD ISS (Information Systems & Services) design throughout the process. It will set up and maintain environments, install and configure Commercial off-the-shelf products, build and evaluate interfaces and support data management.

Philip Chalmers, Senior Vice President, Sales and Marketing, Atos in UK and Ireland said: “*By adapting commercial industry standard products to create this suite of Medical Information Services, the CORTISONE programme will provide the Defence Medical Services with an integrated and flexible capability that enables digital transformation in the delivery of healthcare within Defence.*”

The CORTISONE programme will ensure full integration of procured components, supporting implementation and transition. Training services and materials, alongside service management, will also be offered by Atos.

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## ***Saudi Bugshan Barmaja Co. Ltd Partners with Infor for Success***

15 October 2019

Infor today announced that Saudi Bugshan Barmaja Co. Ltd., a major diversified business group in Saudi Arabia, is digitally transforming its businesses in its home market and overseas with a new suite of Infor solutions. Saudi Bugshan Barmaja Co. Ltd. opted for Infor's solutions following a rigorous selection process that included leading competing solutions providers.

Saudi Bugshan was formed in Makkah in the 1920s as a textile business, but quickly diversified into consumer brands. It now has 30 businesses spread across 10 countries and three continents, involved in diverse sectors including fast-moving consumer goods (FMCG), automotive, healthcare, education and real estate.

Saudi Bugshan Barmaja Co. Ltd. is deploying a suite based around Infor LN to provide a single integrated digital platform. Saudi Bugshan aims to digitally transform and automate key business functions including human capital management, customer relationship management, finance, procurement, warehouse and supply chain management.

Saudi Bugshan sees huge potential for growth in Saudi Arabia and beyond. The company has ambitious plans to grow its business and is looking to expand its operations in Africa.

“As we look to expand into new markets in Saudi Arabia and beyond, it is vital that our businesses are operating as smartly and efficiently as possible, with the ability to respond quickly to market trends,” said Dr. Hatem Bakheet, CEO of Barmaja, Saudi Bugshan. “This is what we hope to achieve by digitally transforming our businesses with Infor. From human resources to CRM, and from finance to supply chain management, Infor's solutions have the proven ability to help us increase our efficiency, simplicity and agility.”

Jonathan Wood, GM for Infor Middle East and Africa, said: “Saudi Bugshan is keen to expand its diverse businesses in the Middle East, Africa and Asia, and Infor's solutions are ideally suited to help the company simplify and improve its systems, allowing it to scale up and meet the challenge of delivering excellent services to its customers and fostering successful, sustainable growth.”

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## ***TURBOTECH Revolutionizes Hybrid-Electric Aircraft with ANSYS***

16 October 2019

TURBOTECH is leveraging ANSYS' simulation solutions to transform aeronautical propulsion. Through the ANSYS Startup Program, TURBOTECH is developing an energy storage system capable of powering the hybrid-electric aircraft of the future.

As aerospace manufacturers turn to electrification to reduce emissions, boost efficiency and lower operating costs, engineers race to solve unprecedented design and power challenges. TURBOTECH uses ANSYS fluids solutions to develop regenerative cycle turbogenerators based on small turbines that

recover energy from exhaust gases to reduce fuel consumption. By recharging batteries in-flight, the turbogenerators can improve the endurance of electric aircrafts by 10x — enabling significant weight and cost savings. The turbogenerators can produce electricity from virtually any type of renewable flammable material, including bio-fuel, bio-gas, hydrogen and conventional fuels.

"Developing a turbine is a very complex and iterative process. ANSYS simulation solutions enable us to solve complex calculations for turbines and compressors, replace physical prototypes with virtual prototypes and enhance design exploration," said Damien Fauvet, CEO at TURBOTECH. "By 2020, our patented technology will have initiated a revolution in aeronautical propulsion, targeting new markets and opportunities for electrification and autonomy."

"The global microturbines market is projected to reach \$420 million by 2025. TURBOTECH's vision for the future of hybrid-electric propulsion systems will transform that market and disrupt the aerospace industry," said Paolo Colombo, industry director, aerospace and defense at ANSYS. "As part of the ANSYS Startup Program, TURBOTECH will deliver the next generation of engines with less noise, lower environmental impact and greater flight endurance."

As part of the ANSYS Startup Program, TURBOTECH has access to simulation software bundles that are specifically built to help the company innovate quickly and cost-effectively. The program empowers entrepreneurs around the world to transform their companies from startups to industry leaders. Since inception, the ANSYS Startup Program has worked with over 740 startups, more than 170 in the aerospace and defense industry.

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## Product News

### ***Lectra Releases Fabric Zero-Buffer Cutting Solution***

16 October 2019

Lectra announces the launch of two new solutions for the mass production of fabric car seats and interiors: Vector® Automotive iP6 and iP9. The latest additions to the already-extensive Vector Automotive range combine breakthrough cutting equipment innovation with an optimized software application and specially designed consumables to enable automotive suppliers to achieve zero-buffer cutting on a very wide variety of automotive materials. Lectra's R&D teams devoted three years to developing the technology required for zero-buffer cutting. Improvements in hardware components, an updated equipment pilot with a powerful new algorithm, and a specially designed blade will enable automotive suppliers to achieve hundreds of thousands of dollars in material savings annually as compared to other solutions available on the market. Lectra developed the Vector Automotive iP series in direct response to the cost challenges faced by its automotive customers. Pressure from car manufacturers as well as rising manufacturing costs are driving automotive suppliers to constantly search for ways to cut costs. Material consumption is a particular area of concern, as this is the most significant expense in automotive car seat and interior manufacturing. With Vector Automotive iP6 and

iP9, automotive suppliers will be able to achieve critical savings while minimizing the impact on their margins. Constant, real-time control of the cutting equipment is integral to Vector Automotive iP6 and iP9's ultraprecise cutting. Sensors on the cutting-head camera detect stress and instantly adapt cutting parameters. The new algorithm, an add-on to the equipment software pilot, manages common lines in real time for the greatest degree of accuracy possible while cutting parameters are continually adjusted to the blade's dimensions. In addition to substantially reducing material consumption, automotive customers will also benefit from lower consumable replacement costs and increased cutting time. Just as with materials, the new solutions enable an equivalent gain in paper and plastic films for each 1 mm reduction in buffer. Improvements in the bristle block, sharpening band and blade lifespans reduce maintenance time by half thereby drastically increasing machine availability. Both solutions come with Vector Dashboard, a cloud-based application that allows users to monitor each equipment through daily key performance indicators. Thanks to centralized data, customers can identify key areas of improvement, focus on value-added activities and speed up the decision-making process. "Lectra takes its commitment to being a trusted partner of the automotive industry very seriously. Our ongoing research investments are key in allowing us to develop sophisticated solutions that respond to our customers' challenges, support their continuous improvement initiatives and help them improve their operational excellence. By enriching the Vector range with Vector Automotive iP6 and iP9, we provide our customers with the technology and expertise that will help them keep up with their customers' needs," explains Céline Choussy, Chief Marketing and Communications Officer, Lectra.

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### ***OpenText Core Experience Insights Delivers End-to-End Customer Journey Mapping for Data-driven Marketers***

17 October 2019

OpenText™ today launched OpenText™ Core Experience Insights, a SaaS application that provides marketing leaders full visibility over their customer's journey – from website interactions to email engagement, social media content and call center performance. Core Experience Insights is being premiered at Forrester CX SF 2019 on October 17-18 in San Francisco.

"Modern, insight-driven marketing requires visibility into campaign performance across the customer journey. Customer behavior and satisfaction is driven by a complex set of interactions, so smart marketing decisions require truly omni-channel insights," said Patricia Nagle, Chief Marketing Officer, OpenText. "We built Core Experience Insights to give market leaders visibility into their customers' experiences from the first click to the final purchase decision."

Core Experience Insights is a SaaS application built on OpenText OT2, which tracks data from diverse sources, providing current and historical visualizations across channels throughout the customer lifecycle. It can also integrate data from other systems such as customer communication management, web content management and call center management. With the Voice of Customer application, OpenText Explore, it can also provide a 360-degree view that includes sentiment analysis of customer feedback collected across all channels.

Core Experience Insights uses AI and analytics to reveal campaigns and content that are working best, elevating performance issues early to allow for calibration and correction. Marketers can intelligently

optimize customer journeys to improve customer experience and revenue generation.

“OpenText developed Core Experience Insights to help marketing leaders capture customer interaction data from siloed sources across all touchpoints,” said Muhi Majzoub, OpenText EVP and Chief Product Officer. “With powerful data analysis and customer journey mapping at their fingertips, marketers can strategically tailor customer journey interactions to gain an information advantage.”

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## ***Samsung and Cadence collaborate to deliver an integrated flow for designing analog and mixed-signal applications at the 5nm node***

17 October 2019

Cadence Design Systems, Inc. today announced that its custom and analog/mixed-signal (AMS) IC design flow has achieved certification for Samsung Foundry’s 5nm Low-Power Early (5LPE) process technology. This certification ensures mutual customers of Cadence and Samsung Foundry have immediate access to a highly automated circuit design, layout, signoff and verification flow needed to design efficiently at 5LPE.

The automated Cadence® custom and AMS full flow supports the company’s Intelligent System Design™ strategy, enabling SoC design excellence. For more information on the Cadence custom and AMS flow that supports the Samsung 5LPE process technology, visit [www.cadence.com/go/Samsung5LPE](http://www.cadence.com/go/Samsung5LPE).

The certified Cadence custom and AMS flow enables customers to develop their solutions using the 5LPE process for automotive, mobile, data center, artificial intelligence (AI) and other emerging applications. The tools in the flow incorporate key features that are well suited for digitally assisted analog designs such as high performance, best-in-class analysis and verification capabilities developed in the Cadence Spectre® Accelerated Parallel Simulator (APS). Additionally, the Cadence Virtuoso® Layout flow provides a high level of automation and integration, enabling faster design closure with reduced numbers of iterations critical for completing complex designs at the 5LPE process.

The complete custom and AMS flow that is certified by Samsung Foundry includes the Virtuoso Analog Design Environment (ADE), Virtuoso Schematic Editor, Virtuoso Layout Suite, Virtuoso Space-Based Router, Virtuoso Layout Suite EAD, Virtuoso Integrated Physical Verification System, Spectre APS, Voltus™-Fi Custom Power Integrity Solution, Quantus™ Extraction Solution, Litho Physical Analyzer (LPA), LDE Electrical Analyzer (LEA) and Physical Verification System (PVS). Key technical capabilities include:

**Circuit Design and Verification:** Allows users to perform static and dynamic circuit checks, DC/TRAN/AC/STB corner simulation, transient noise simulation, Monte Carlo simulation and high-yield estimation, electromigration and IR (EM-IR) analysis, PSS-Pnoise and reliability analysis

**Custom Analog and Digital Layout:** Offers users a schematic-driven layout, automated constraint-driven pin-placement and optimization, row-based device placement, layout-dependent effects (LDE) analysis and hotspot detection, automated routing with width spacing patterns (WSP) and pin-to-trunk features, electrically aware design (EAD) for reduced iterations in achieving electrically correct designs, in-design DRC verification using signoff deck and automated digital block implementation

**Physical Verification and Signoff:** Enables parasitic extraction, custom constraint validation, post-layout simulation with Detailed Standard Parasitic Format (DSPF), full-chip DRC and layout versus

schematic (LVS) signoff and design for manufacturing (DFM) pattern-matching checks for detecting and correcting litho hotspots and improving yields

In addition to the custom and AMS flow certification, a process design kit (PDK) techfile is now Mixed-Signal Open Access-ready, allowing customers to use the highly integrated Virtuoso-Innovus™ Implementation System flow. This enables users to create a layout, and to perform static timing analysis and signoff for mixed-signal designs more effectively and in a shorter amount of time.

“We’ve validated that the entire Cadence AMS flow meets our requirements for designing at 5LPE technology,” said Jongshin Shin, vice president of Foundry IP Development Team at Samsung Electronics. “This high-performance flow represents a major milestone in our ongoing collaboration. With the Cadence flow now readily available, customers have access to advanced capabilities needed to design applications more efficiently, while meeting rigorous market requirements.”

“In collaboration with Samsung, we’ve achieved certification for our integrated flow for AMS design at 5LPE to drive the advancement of next-generation designs,” said Wilbur Luo, vice president, product management in the Custom IC and PCB Group at Cadence. “Based on the industry-leading Virtuoso and Spectre platforms, the flow enables highly efficient design of AMS IP at this advanced node for use in complex SoCs for mobile, data center and AI applications.”

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### ***Samsung Foundry and Synopsys Deliver Comprehensive Automotive Solutions for Autonomous Driving and ADAS***

17 October 2019

Synopsys, Inc. today shared details of its collaboration with Samsung Foundry to deliver comprehensive automotive chip design solutions to meet target automotive safety integrity levels (ASILs) for autonomous driving and advanced driver-assistance systems (ADAS). As part of this collaboration, Samsung Foundry and Synopsys have enabled Samsung's automotive reference flow to meet target ASILs for safety-critical designs. Developed based on its 8LPP process, Samsung Foundry's automotive reference flow has been finely tuned to deliver benefits on a variety of process technologies.

"Samsung Foundry's goal is to provide creative solutions to our customers' innovation needs through deep expertise in technologies that are well-suited for highly demanding automotive design," said Jung Yun Choi, vice president of Foundry Design Technology Team at Samsung Electronics. "In close collaboration with Synopsys, the EDA leader for complete automotive solutions, we have created a world-class automotive reference flow based on our technology. Samsung Foundry's automotive reference flow enabled using Synopsys' comprehensive automotive solutions will help our customers meet their target ASILs."

Synopsys' comprehensive automotive design solutions deliver complex functional safety (FuSa) analysis, implementation, and verification capabilities. Differentiated offerings for automotive design, such as unified functional safety verification and native automotive solutions, enable designers to prove at the planning and implementation phases that their chip safety architecture can achieve target ASILs. Designers can perform failure mode and effects analysis (FMEA) and failure mode effects and diagnostic analysis (FMEDA) through Synopsys' VC Functional Safety Manager that brings together best-in-class technologies for fault campaign management. Early functional safety analysis at RTL or

gate level can quickly identify candidates for triple-mode redundancy (TMR) and dual-core lock-step (DCLS) redundancy and estimate ISO 26262 metrics for target ASIL. Synopsys' native automotive solutions based on FuSa intent provide the industry's most comprehensive feature set to implement FuSa mechanisms, such as TMR, DCLS, and failsafe finite state machine (FSM), perform formal verification, and check and report that safety mechanisms are properly implemented. Comprehensive digital/analog fault injection and simulation can be performed to produce reliable metrics for FMEDA and roll-up. Synopsys also provides complete solutions to address reliability challenges in automotive design, including electromigration (EM), voltage (IR) drop, device aging, and robust redundant via insertion (RVI) capabilities. Synopsys provides designers with a broad portfolio of automotive IP that is designed and tested for AEC-Q100 reliability, offers ASIL Ready ISO 26262 certification, and supports automotive quality management.

"Achieving the target safety requirements requires innovative, comprehensive and reliable automotive solutions that fulfill our customers' needs," said Sassine Ghazi, general manager for the Design Group at Synopsys. "With this tight collaboration between Synopsys and Samsung Foundry, designers can feel confident that they have the proven solutions they need to address the world's most challenging automotive design requirements."

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### ***Samsung Foundry Certifies ANSYS Multiphysics Simulation Solutions for Multi-Die Integration Advanced Packaging Technology***

17 October 2019

Samsung Foundry certified ANSYS multiphysics simulation solutions for its latest multi-die integration™ (MDI) advanced two and a half dimensional/three-dimensional integrated circuit (2.5D/3D-IC) packaging technology. The certification empowers mutual customers to achieve higher performance and lower power within a smaller form factor when designing 2.5/3D-ICs for artificial intelligence (AI), 5G, automotive, networking and high-performance computing (HPC) applications.

System-in-Package designs — enabled by Samsung MDI — are highly complex with multiple dies integrated on an interposer in a 2.5D/3D packaging configuration. MDI flow combines analysis, implementation and physical verification in a single canvas and uniquely features early-stage system-level pathfinding and complex multiphysics signoff capabilities. These designs are widely used in AI, 5G, automotive, high-speed networking and HPC applications to achieve extreme system bandwidth, low latency and high performance. ANSYS multiphysics simulation solutions for MDI signoff offer a complete 2.5D/3D-IC methodology for power, signal and thermal integrity and reliability analysis across the broad frequency spectrum of chip, package and board and system design to improve engineering efficiency, achieve simulation accuracy and accelerate time-to-results.

Samsung Foundry certifies ANSYS® Icepak® and ANSYS® RedHawk™ family of solutions for power, signal and thermal integrity and reliability analyses. The certification allows for detailed modeling of silicon interposer, through silicon vias, microbumps, high-bandwidth memory, high-speed interfaces and different dies, which is critical for accurately simulating power, signal and thermal integrity effects.

"Samsung Foundry and ANSYS' advanced packaging reference flows for MDI empower our mutual customers to achieve improved power, performance and area requirements, as well as cost and turn-

around time reduction through accurate analysis of complex interconnections across the chip, package and board," said Jung Yun Choi, vice president, foundry design technology team at Samsung Electronics. "ANSYS provides comprehensive chip-package-system co-analysis workflows for addressing complex multiphysics challenges of extraction, power and signal electromigration, thermal-induced stress, signal integrity and reliability in 2.5D/3D-IC packaging technologies."

"2.5D/3D-ICs for AI, networking, 5G, automotive and HPC applications are extremely complex and require comprehensive multiphysics analysis to maximize performance," said Vic Kulkarni, vice president, strategy, semiconductor business unit at ANSYS. "Leveraging ANSYS multiphysics solutions for Samsung MDI enables mutual customers to achieve silicon to system success and accelerate time to market, while reducing costs through smaller form factors."

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### ***Siemens announces new Simcenter system simulation solutions***

17 October 2019

Siemens Digital Industries Software today announces new Simcenter™ system simulation solutions, designed to help industries meet the need for more accurate and competitive system modeling. Simcenter system simulation model authoring tools bring together Simcenter™ Amesim™ software, a simulation platform for mechatronic systems, and Simcenter™ Flomaster™ software, a vertical solution for thermo-fluid systems of any size and complexity. This unique joint solution can further improve user-friendliness and openness, with application capabilities to foster collaboration and enable users to continually innovate to meet the demands of growing engineering complexity.

With applications for the automotive, aerospace, marine and energy and utilities industries, enhanced mechatronic and thermo-fluid system modeling capabilities can help manage complexity and improve model process efficiency. Additional enhancements regarding electrification can help assess both the electromechanical performance and thermal behavior on driving cycles more accurately. Simcenter system simulation solutions 2019.2 offer an improved user experience, allowing for more scalability and reduced turnaround time on modeling, as well as increased openness and interoperability.

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### ***Synopsys Introduces Native Automotive Solutions Optimized for Efficient Design of Autonomous Driving and ADAS SoCs***

15 October 2019

Synopsys, Inc. today announced its new native automotive solutions for more efficient system-on-chip (SoC) design. The accelerating evolution of vehicle technologies means that more automotive chips are required to satisfy higher automotive safety integrity levels (ASILs) for autonomous driving and advanced driver-assistance systems (ADAS). Synopsys' native automotive design solutions enable designers to achieve their target ASILs by providing the industry's most comprehensive feature set to implement functional safety (FuSa) mechanisms, such as triple-mode redundancy (TMR), dual-core lock-step (DCLS), and failsafe finite state machine (FSM).

With the differentiation available through native automotive solutions, designers can generate the industry's first FuSa intent early in the design flow to describe safety mechanism behavior, which is used as input and maintained throughout the digital design flow. Synopsys' native automotive solutions comprise a complete digital design flow incorporating FuSa-enabled technologies, which work together to maximize efficiency. These technologies include:

- TestMAX FuSa performs early functional-safety analysis at RTL- or gate-level and identifies candidates for TMR or DCLS redundancy to achieve single-point fault metric (SPFM) goals for target ASIL
- Design Compiler® NXT synthesis, IC Compiler™ II place-and-route, and Fusion Compiler™ design insert, check, and report the safety mechanisms implemented
- Formality® equivalence checker functionally verifies that the RTL matches the netlist after redundancy or additional logic modules are inserted
- IC Validator physical signoff verifies the layout and reports that all redundancy mechanisms are correctly implemented

"As next-generation automotive applications continue to drive market growth, designers are under increasing pressure to satisfy functional safety requirements yet still meet aggressive time-to-market goals," said Shankar Krishnamoorthy, senior vice president of design implementation for the Design Group at Synopsys. "Synopsys now offers the industry's first complete set of natively integrated capabilities to implement and verify functional safety mechanisms. Designers will benefit from significantly reduced time-to-market and improved quality-of-results for their safety-critical automotive designs."

## Synopsys Automotive Design Solutions

Synopsys' comprehensive automotive design solutions deliver complex FuSa analysis, implementation, and verification capabilities. Differentiated offerings for automotive design, such as unified functional safety verification and native automotive solutions, enable designers to prove at the planning and implementation phases that their chip safety architecture can achieve target ASILs. The unified functional safety verification solution brings together best-in-class technologies for fault campaign management under a single unified cockpit. Early functional safety analysis can quickly identify candidates for TMR and DCLS redundancy and estimate metrics for target ASILs. Synopsys' native automotive solutions provide the industry's most comprehensive feature set to efficiently implement and verify FuSa mechanisms, such as TMR, DCLS, and failsafe FSM. Comprehensive digital/analog fault injection and simulation can be performed to produce reliable metrics for final analysis and roll-up. Synopsys also provides complete solutions to address reliability challenges, including electromigration (EM), voltage (IR) drop, device aging, and robust redundant via insertion (RVI) capabilities. Synopsys provides designers with a broad portfolio of automotive IP that is designed and tested for AEC-Q100 reliability, offers ASIL-ready ISO 26262 certification, and supports automotive quality management.



Furthermore, Synopsys' unified functional safety verification solution includes:

- VC Functional Safety Manager, a high-quality, scalable, and distributed FMEDA automation tool delivering the highest productivity through the FMEA/FMEDA and unified fault campaign process
- TestMAX FuSa performs fast, early functional-safety analysis at RTL- or gate-level
- Z01X™ fault simulator for fast, proven digital fault simulation
- VC Formal™ FuSa App to accelerate fault classification through application of formal filtering
- TestMAX CustomFault™ fault simulator delivers high-performance analog and mixed-signal fault simulation for full-chip functional safety and test coverage analysis
- ZeBu® emulator performs fault emulation for long, software-rich tests
- Verdi® Fault Analysis for debug, planning, and coverage, including integration with industry-leading requirement tracking tools
- Certitude® functional qualification to demonstrate verification flow robustness in support of ISO 26262 Part 8-9 assessments

Synopsys' native automotive solutions will be generally available in December 2019.

For more information, please visit [www.synopsys.com/automotive.html](http://www.synopsys.com/automotive.html).



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## ***Tukatech Releases TUKAcad for Subscription in Native Languages for 4.38 billion People***

16 October 2019

Tukatech releases its latest version of TUKAcad 2019 in multiple languages including Chinese, Italian, Thai, Vietnamese, Bangla, Hindi, Urdu, Spanish, Russian, Korean, English and many more. The pattern making, grading, marker making system has been available to users around the world at affordable monthly cost for over 16 years.

“With 23% of the world population speaking Chinese and a large percentage of design and development happening in China, it is important for the local users to use a system comfortably in their own language,” says Boris Vishnevsky, Chief Technology Officer at Tukatech. “Besides in China, the demand for Chinese Version of TUKAcad has been rising as more Chinese-run factories open in other parts of the world. We have over 100 TUKAcad Chinese systems running in Italy,” he added.

TUKAcad is the apparel industry’s most used digital pattern-making, grading and marker-making solution for the fashion industry. The solution includes built-in, audio/video tutorials in multiple languages to promote self-learning. Also included in the system is a library of reference blocks (many with grading) so users do not have to start patterns from scratch. The graded size sets follow any pattern amendments, reducing time and increasing productivity. TUKAcad Professional Edition also has

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advanced features for pattern card creation, marker generation and built-in plotting and email services. This sophisticated system even generates powerful ISO data to run automatic cutters.

TUKAcad has been available by subscription for 16 years. In 2005, California Apparel News recognized Tukatech as an “Influential 20” company because of this contribution to the apparel industry. The subscription option is used by apparel professionals in 42 countries. Even top United States military contractors design and develop advanced tactical gear using TUKAcad on a subscription basis. The system is also used by large fashion corporations, service providers, and freelance designers.

“TUKAcad is my design lifeline. I have always looked to Tukatech as an intuitive creative system. When I entered the freelance studio side of the industry many years ago, Tukatech was so accommodating with their monthly rental option. Over 700 patterns later we could not have existed without access to the ever-evolving latest software provided,” says Joyce Baran, Founder of Joyce Baron Design LLC.

“I wanted to help the industry as well as the educational institutes to use CAD systems by offering a subscription option. Subscriptions start at \$25 per month for students and go up to \$200 per month for professionals. We make sure everyone can automate their processes as much as possible. Fashion schools in Asia, Americas, and Africa have their students subscribe for lessons, homework, and exams. They take advantage of our \$1.00 trial for the first month. We also have over 50 communal microfactories, TUKAcenters’ located in fashion districts around the world, where they can get hard copies or other services.” say Ram Sareen the founder of Tukatech, TUKAweb and TUKAcenters.

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