PLM Weekly Summary

Editor: CIMdata News Team

20 March 2020

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CIMdata News

CIMdata and Dassault Systèmes Publish eBook on Digitalization

17 March 2020

CIMdata, Inc., the leading global PLM strategic management consulting and research firm, announces the publication of an eBook on digitalization, the first such eBook published as part of a multi-sponsor collaborative research program on digitalization / digital transformation in industrial companies.

According to Mr. Stan Przybylinski, CIMdata's Vice President, "For many, digitalization is about applying digital technologies to change a business model, resulting in new revenue and value-producing opportunities. CIMdata believes that if you are a product company that is pursuing a digitalization or digital transformation initiative it will be difficult to succeed without a strong PLM foundation. In this research we asked industrial companies to describe their as-is digital environment and where they may go next, as well as the impacts of concepts like the digital twin, the digital thread, advanced variant configuration management, simulation data and process management, and smart manufacturing."

CIMdata enlisted several leading PLM solution and service providers as sponsors of this research: ANSYS, Dassault Systèmes, and HCL. The extended research program team collaborated to help identify the crucial issues facing companies addressing these issues.

The research program comprised several elements, including interviews with thought leaders from sponsors and their lead customers published on the CIMdata.com blog: www.CIMdata.com/blog. "This interview series has provided some great insights into both solution provider strategies and their customers' actions," stated Mr. Przybylinski.

A CIMdata eBook highlights the key issues facing adopting organizations. Entitled "Speeding Your Digital Transformation Journey" the eBook seeks to frame the discussion around the key concepts, like digitalization, digital transformation, digital twin, digital thread, and the rest using standard terminology, supporting the discussion with selected data from the survey results and quotes from interviews conducted. "The survey results highlight just how dominant these trends are in industry," claimed Mr. Przybylinski. "In three years, 96% of the respondents claimed that smart, connected products would be very important or important to their company strategy. That includes 16% who said it was not at all important today. Similarly, only 11% say they have digital twins in production today, ramping up to 34% in three years. Another 43% expect to be in pilot three years from now. These results are consistent with other research on these topics and show just how much these trends are impacting industrial firms, and just how fast they are acting to address them. This will create a lot of opportunity in the market and also reduce the potential for confusion, one reason why we try to frame the discussion using the eBooks."

According to Garth Coleman, Vice President, Marketing with ENOVIA, "Digitalization, a key component of Dassault Systèmes vision, uses the virtual world to extend and improve the real world. The **3D**EXPERIENCE twin, also known as a virtual twin, is an enhanced 3D digital representation that can be simulated and optimized, holistically and virtually, so the "virtual" extends and improves the 'real.' Our vision of digitalization unites and empowers everyone to become business and industry innovators to discover new ways to continuously deliver innovative new experiences to their customers."

To find out more and to download the eBook on Digital Transformation, visit: https://discover.3ds.com/speeding-your-digital-transformation-journey

About CIMdata

CIMdata, a leading independent worldwide firm, provides strategic management consulting to maximize an enterprise's ability to design and deliver innovative products and services through the application of Product Lifecycle Management (PLM) solutions. Since its founding in 1983, CIMdata has delivered world-class knowledge, expertise, and best-practice methods on PLM solutions. These solutions incorporate both business processes and a wide-ranging set of PLM-enabling technologies.

CIMdata works with both industrial organizations and providers of technologies and services seeking competitive advantage in the global economy. In addition to consulting, CIMdata conducts research, provides PLM-focused subscription services, and produces several commercial publications. The company also provides industry education through PLM certificate programs, seminars, and conferences worldwide. CIMdata serves clients around the world from offices in North America, Europe, and Asia Pacific. To learn more about CIMdata's services, visit our website at www.CIMdata.com, follow us on Twitter: http://twitter.com/CIMdataPLMNews, or contact CIMdata at: 3909 Research Park Drive, Ann Arbor, MI 48108, USA, Tel: +1 734.668.9922. Fax: +1 734.668.1957; or at Oogststraat 20, 6004 CV Weert, The Netherlands, Tel: +31 (0) 495.533.666.

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XSB SWISS Completes the Digital Thread with Engineering Documentation - A CIMdata Commentary

18 March 2020

Key takeaways:

- *XSB, Inc. enters the product development market with a solution that brings engineering documentation into the digital thread of design and manufacturing.*
- *XSB's SWISS solution builds an AI-enabled knowledge graph of technical information that drives the design, manufacturing, and support of a product. The knowledge graph is integrated with popular PLM systems.*
- *SWISS creates interoperability between related documents and related concepts within documents, reducing the time that engineers spend looking for answers.*
- *SWISS can show users what has changed in product-supporting technical specifications from inside and outside the enterprise, thereby reducing the use of outdated information and improving compliance.*
- *SWISS facilitates new document creation using (and reusing) data from authoritative sources, with live links back to those sources for constant change monitoring.*

The term Digital Twin has risen to the forefront of interest in the product development and manufacturing industry. A digital twin is a virtual replica of a physical product, process, or system. It bridges the physical and digital worlds. CIMdata defines the digital thread as 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. So far, companies and products that enable the Digital Thread have focused almost exclusively on an asset's design data (geometric dimensions, tolerances, etc.), but have largely ignored other key elements of the asset including its critical supporting documentation such as work instructions, compliance requirements, and

more. Most of this support documentation remains in static formats (such as PDF, Word, or even print) which has created steep challenges for engineering organizations aiming to reduce manual labor and increase automation.[1]

XSB, Inc. is a New York-based software provider that provides solutions that they position as "systems of intelligence."[2] Their implementations use artificial intelligence (AI) technology that leverages the attributes of manufactured products, such as parts, materials, processes, and even prices to give users previously unknown insights that help them make better decisions faster. The XSB solutions combine and formalize a company's internal proprietary data sources plus external industry data to help:

- Commercial and government procurement officers buy smarter
- Parts managers reduce duplicative and obsolete inventory
- Product designers and manufacturers avoid errors, reduce manual labor, and manage change

The Problem

Conventional product design and manufacturing is centered around product geometry, dimensions, and tolerances, but not semantics. The tools used to engineer products don't intelligently interact with non-geometric information such as text, tables, graphs, equations, images, or references to other content. This static text-based information often identifies critical information about the product, such as a material type (and potential hazardous contents), exceptions and exemptions, manufacturing work instructions, compliance to industry standard requirements, and test methods.

Today, static documents for design and manufacturing standards, be they proprietary or public, force designers and manufacturing engineers to expend considerable effort to locate, copy/paste, re-enter, and interpret technical data leading to redundancy, inconsistencies, and errors. Company documents, industry standards, and other external inputs can change unbeknownst to the engineer, resulting in design and manufacturing problems. For example, the manufacturing work instructions of a product component will often reference an industry standard process. However, given the rate of change seen in manufacturing processes today, especially for additive manufacturing, the specification may change at some point in the product lifecycle. The manufacturing engineer unknowingly uses out-of-date information, resulting in a less than optimal production process, or worse, compliance and liability issues.

The SWISS Solution

The SWISS solution expands the digital thread view of engineering requirements to non-3D geometric product data by enabling documents as "intelligent digital data" within the virtual product under development. Users employ SWISS to import their company-proprietary documents as well as public and industry standards, while SWISS automatically generates semantic tags and indices for those documents. In doing so, as shown in Figure 1, SWISS builds a linked data model—a knowledge graph—of smart, connected assets that are change-aware within the enterprise and optionally, within the PLM system. SWISS ensures that every concept in the knowledge graph knows its meaning, its status, and its relationship to other data in the graph, resulting in an intelligent system of interoperable data that can communicate changes up and down the product lifecycle.

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[2] See: https://news.greylock.com/the-new-moats-53f61aeac2d9
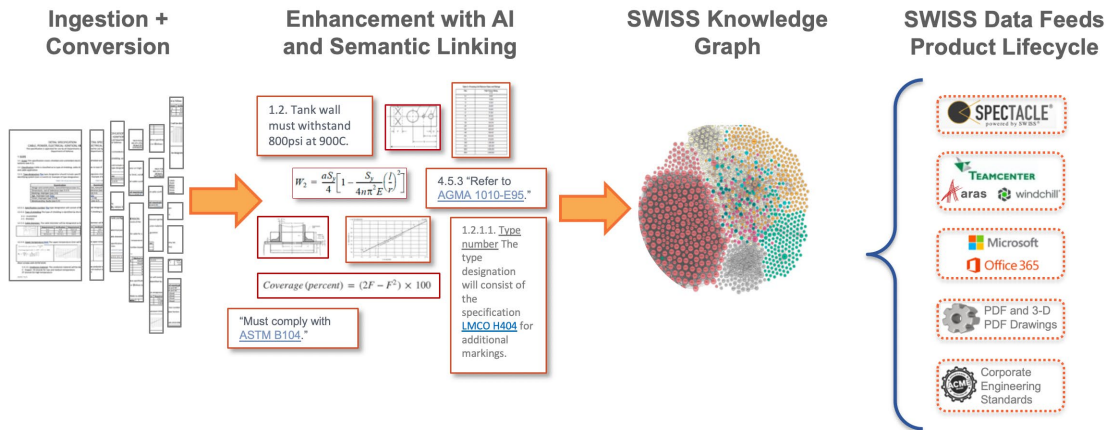
Figure 1—SWISS Transforms Documents into Digital Assets
(Courtesy of XSB, Inc.)

Once the SWISS knowledge graph is established, it can proactively feed other applications with SWISS data, and other systems may access and query the knowledge graph through the SWISS application programming interface (API). XSB reports they currently have integrations with Siemens Teamcenter, PTC Windchill, ARAS Innovator, and Microsoft Word.

The SWISS knowledge graph also creates new interoperability between data sets. For example, if company-proprietary documents reference public documents or industry standards (such as ASTM, MIL, SAE, ISO, and others), SWISS identifies those references automatically and creates clickable links between the data. The resulting network of documents, data points, and concepts helps users pinpoint the exact information they need to get to the next step in their workflow. Just as important, it shows them "what they don't know:" previously unseen relationships that provide better insight into design and manufacturing dependencies. Together, the unique data view helps organizations get their product to market faster, with lower cost, and better compliance.

User Interaction

Industry best practice dictates that prior to sending a technical data package (TDP) of part models and supporting documentation to a supplier, the sending organization should review all the technical documents and specifications referenced in the data package. With today's conventional methods, this investigation could take days or even weeks to verify all the references and make sure everything is up to date. Even after this tedious manual check is complete, it can become obsolete quickly due to changes happening every day with internal and external documentation. As shown in Figure 2, using SWISS, the user simply queries the solution to trace all references and report on their status—valid or changed since the TDP was authored. The user can then easily ask SWISS to display the changed specifications showing what had been added and deleted to determine if those changes affect the current product TDP. This process of impact assessment can be reduced from days to minutes.

SWISS also addresses a daily challenge that is the source of significant manual labor and frequent user error. Design and manufacturing engineers regularly create new internal documents (for example, a test plan) which often contain or reference material from other internal or external documents (like MIL Specs or industry standards). Extracting this source material from static text formats into the newly created test plan entails the age-old habits of copy/paste and manual re-key, both of which are tedious, time-intensive, and have the potential for human error. SWISS provides a patented method of dragging and dropping data from one document to another creating a perfectly rendered view of the mashed-up source material along with a live link to the authoritative source. That live link also serves as a constant change monitor; when changes occur at the source, a notification appears automatically on the new test plan. See Figure 3.

Figure 2—SWISS Display of Changed Specification Using the Spectacle Browser
(Courtesy of XSB, Inc.)

Figure 3—Display of Test Requirements Created within SWISS Using Authoritative Source Material—the Color-Coded Flags Indicate What has Changed in the Source Materials
(Courtesy of XSB, Inc.)

Summary

As product development companies continue to evolve their implementation of the digital twin and its digital thread, they would be remiss not to include the wealth of technical documentation behind their designs and manufacturing processes. Without proper validation of the specifications upon which their products are developed they have an incomplete digital twin. They run the risk of, at best, of a less optimal product and, at worst, introducing errors into the product, which can then lead to rework or, worse yet, product liability.

CIMdata recognizes the efforts and the ingenuity of the XSB SWISS organization to deliver a highly innovative solution for design and manufacturing engineers and many other users of product data. Companies that wish to reduce their time to market, minimize error rates, and eliminate tedious manual labor would do well to consider SWISS as part of their digital thread efforts.

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Acquisitions

Hexagon enhances its simulation solutions for Smart Factories and Smart Industrial Facilities with the acquisition of CAEfatigue

17 March 2020

Hexagon AB announced the acquisition of CAEfatigue Limited, a provider of mechanical fatigue simulation solutions used to improve manufacturing product design, quality, and reliability.

Manufactured products face a multitude of stresses over their lifetime that can cause fatigue and result in everything from safety problems to structural failure. For example, a vehicle's chassis needs to be able to withstand a variety of dynamic forces - such as road roughness, vehicle speed and movement type - over hundreds of thousands of kilometres of operation. Similarly, piping systems in industrial facilities need to endure dynamic changes in temperature, pressure, weight and other forces over long operational lives. Fatigue analysis of a digital twin enables manufacturers and engineers to predict in-service durability and improve quality before production starts.

CAEfatigue's software suite, including its flagship product, CAEfatigue Vibration, provides industry-leading performance and accuracy using frequency-domain response, which provides faster, more accurate and more intuitive analysis of the qualitative behavior of systems than the time-domain alternative. Its solutions are used by global manufacturers across multiple industries, including automotive and aerospace and are interoperable with leading computer-aided engineering (CAE) packages.

"CAEfatigue offers solutions for validating design and manufacturing methods - from choice of material to fabrication - enabling decisions during the design phase that improve quality and product life, while saving time, reducing costs and eliminating waste," says Hexagon President and CEO Ola Rollén. "Not only do these technologies provide a valuable addition to our Smart Factory solutions portfolio, but they also enhance our portfolio of Smart Industrial Facility solutions, which already include a leading suite of analysis tools for pipe stress used by customers in both the design and operation of process plants."

Founded in 2012 and based in the United Kingdom, CAEfatigue's team of internationally recognised experts in fatigue research will operate as part of Hexagon's Manufacturing Intelligence division. The acquisition has no significant impact on Hexagon's earnings.

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Company News

3D Printing Technology Supports Coronavirus Containment Efforts

17 March 2020

3D Printing technology may lend a hand in preventing the spread of the Coronavirus. Materialise, a Belgium-based pioneer in 3D printing, has designed a 3D printed door opener that makes it possible to open and close doors with your arm, removing the need for direct contact with door handles. The company is offering the printable design for free and calling upon the global 3D printing community to 3D print the door opener and make it available all around the world.

Experts believe that COVID-19 can survive on surfaces for an extended time, and door handles represent a high risk of contamination. The 3D printed door opener can be attached to existing door handles and features a paddle-shaped extension that allows people to open and close doors with their arm instead of their hands. For safety reasons, not all doors can remain open and by removing the need to touch door handles, the 3D printed door opener can help to reduce the spread of the virus.

The hands-free door opener can be fitted to a door handle without drilling holes or replacing the existing door handle. The first model can be attached to cylindrical handles but Materialise plans to introduce additional designs using different 3D printing technologies as needed in response to the spread of the Coronavirus.

The idea for the 3D printed door handle originated at an internal meeting to define measures to protect Materialise employees and visitors. It soon became clear that more people could benefit from this design and the company decided to make it available for free. Anyone with access to a 3D printer can download the design and 3D print it locally in a matter of hours. Through this technology, the 3D printed door opener could become available all over the world very quickly. In 2018 more than half a million 3D printers were sold globally. The file can be downloaded at https://www.materialise.com/en/hands-free-door-opener

3D printing is a digital manufacturing technology that makes it possible to create products quickly and in small batches. 3D printing also makes it possible to manufacture locally. As travel and transport become more difficult, the ability to manufacture locally becomes more important.

"The power of 3D printing in combination with Materialise's three decades of 3D printing expertise made it possible to turn an idea into an innovative product in less than 24 hours," says Fried Vancraen CEO of Materialise. "By making the design available digitally, it can be produced on 3D printers everywhere and become available around the world in a matter of hours. In this case, we designed the product in Belgium and people in China, Europe or the U.S. can now 3D print the door opener locally."

People who don't have access to a 3D printer or a local 3D print factory can also order the door opener via the i.materialise portal. A set of two hands-free door openers, including screws, is available for 40 euro. Materialise has three decades of experience in 3D printing and runs one of the largest 3D print factories in the world.

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Accenture and SAP Launch Upstream Oil and Gas Solution to Help Streamline Processes and Costs
20 March 2020

Accenture and SAP have launched a co-developed solution for upstream oil and gas companies based on SAP S/4HANA® Cloud. Using intelligent technologies such as artificial intelligence (AI), the SAP S/4HANA Cloud solution for upstream oil and gas helps clients to further increase visibility into operations and cash flow.

Now generally available globally, SAP S/4HANA Cloud for upstream oil and gas is a scalable solution that can help oil and gas companies reduce total cost of ownership and operational costs, as well as create new revenue opportunities. Tools for pre-configured, integrated and user-friendly business processes are included so that companies can shrink implementation time while working to reduce risk of business disruption. The solution delivers new industry standards, that help simplify operations and free up resources to drive more business value.

To define market-standard end-to-end processes that are preconfigured within the solution, Accenture and SAP are working with a consortium comprised of leading exploration and production companies – including BP, Chevron, ConocoPhillips, Equinor and Shell.

"ConocoPhillips collaborated with SAP and Accenture for more than two years to launch this solution, based on a flexible cloud architecture, that can scale and deliver real-time insights into oil and gas upstream processes," said Mike Pfister, CIO, ConocoPhillips.

"This release represents an important milestone demonstrating the impact of our ongoing collaboration. We look forward to continuing to work together to deliver a mature solution that creates business value for the upstream oil and gas industry," added Scott Wahl, CIO Upstream, Shell.

"Accenture and SAP are delivering a solution that brings in innovative technologies like AI to deliver real-time insights, greater visibility and better decision-making," said Jan van den Bremen, senior managing director and lead for Accenture Intelligent Platform Services in Europe. "We are proud to be the only SAP co-development partner working side-by-side to deliver leading oil and gas industry solutions. We've worked with SAP and leaders in the oil and gas industry to co-develop a solution that helps enable faster adoption of new technologies to better manage changing market conditions."

"Working together with Accenture and a consortium of industry leaders, we have delivered an industry-defined intelligent solution that has the capabilities upstream oil and gas companies need to reduce complexity by using market standards," said Benjamin Beberness, SAP global vice president of the Oil and Gas Business Unit. "SAP S/4HANA Cloud for upstream oil and gas is a flexible and agile solution that can provide customers a 360-degree view of the intelligent enterprise — from operations to the boardroom, enabling operational excellence."

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Centric - Remote Work and Team Collaboration in the Face of Market Disruption

18 March 2020

Responding to the disruptions faced during the COVID-19 outbreak and requests from the market, Product Lifecycle Management (PLM) market leader Centric Software® announces the launch of a new series of quick-start, online collaboration packages designed to get brands, retailers and manufacturers working remotely in only a few days. 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.

Leveraging a combination of market-driven, technology innovations and industry best practices, brands, retailers and manufacturers can collaborate closely, continuing business-critical operations such as sample reviews, design reviews, buying and go-to-market meetings and more – all remotely. Adopting technology and best-practices also future-proof organizations while cutting time-to-market and streamlining costs.

Three Centric 8 PLMTM Quick-Start Collaboration Packages are now available. Each is deployed in days, not weeks or months.

"Our customers are looking for ways to stay operational while respecting health guidelines on social distancing, remote working and travel," says Ron Watson, VP of Product at Centric Software. "In response, we have created packages that enable remote work for sample & fit reviews, vendor

collaboration and buying sessions. These can be implemented in days so that businesses can be agile and proactive, gain critical oversight and alter strategies quickly."

Each of the three packages was conceived for a different stage in a company's digital journey:

For those new or unaccustomed to remote collaboration and digital work, a Sample and Quote Package digitalizes fit reviews, both physical and 3D materials, product sample reviews and vendor quote management. Leveraging innovations like cloud-based technologies, easy to use mobile apps and/or industry-leading 3D solutions as well as industry best-practices like guidance on holding online product/fit reviews, taking photos, etc., companies can take first steps into remote group collaboration.

For companies with Centric PLM but who are not yet fully collaborating with vendors remotely, a second Vendor Collaboration Package gets them up and running with industry-specific innovations for co-design, sample reviews, RFQ management, evaluation and assortment building.

If challenged by holding online buying, Centric's digital board solution, Centric Visual Innovation Platform (CVIP), can be rapidly deployed using out-of-the-box configurations whether or not a company already has a PLM solution in place. With the Buying Session Package, develop global, regional and store assortments, get regional feedback, finalize product quantity commitments and more in a highly visual and fully digitalized manner regardless of where teams are based.

"Most of our employees are still working from home," says Fanny Fan, from the merchandising department of Chinese fashion brand MAXRIENY. "Centric PLM greatly supports the normal operation of our business, and product development work has not been interrupted. Members of all departments can enter, view and share information online at any time using up-to-date data resources to ensure efficient collaboration. Our R&D teams can follow the progress of all samples in real time."

Zoe Wang, a designer at Chinese womenswear brand GLORIA, says, "Fortunately, our design department has Centric PLM, so we can work at home. Unlike other systems that can only be operated on the company premises, we can easily log into Centric PLM online to check and update development progress anytime, anywhere. The color and material libraries enable us to understand the characteristics of colors, fabrics and accessories without physical objects. Because PLM contains detailed, up-to-date images and data, we can design, match and combine products without using physical samples."

Centric Quick-Start Collaboration Packages are available now from Centric Software, and the Centric team is ready to respond to the emerging challenges of existing and new customers as market disruptions unfold.

"External influences make the marketplace increasingly unpredictable," says Chris Groves, President and CEO of Centric Software. "Our new packages have been developed in response to requests from our customers to be hyper-responsive to change. Our team will get customers up and running quickly on an easy-to-use, 'single actionable source of the truth' digital platform that has been developed specifically to facilitate remote meetings and digital work. We are prepared to help our customers be ready to meet new challenges in the weeks, months and years ahead."

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Graitec wins Autodesk Platinum Awards for fifth consecutive year

16 March 2020

Graitec has won the Autodesk Platinum Awards for the fifth consecutive year, for 'Top Reseller in Net Subscription Growth' from the UK and additionally, and a second award for 'Highest Customer Adoption Rate' in Canada

Graitec's strong customer-centric focus throughout the year continues to deliver success for the brand culminating in the company winning not only one Autodesk Platinum award, but also a second.

Winning both awards further cements the group's progressive 'Create, Simulate, Fabricate and Manage' growth strategy.

Says Steve Houlder, Graitec COO, said: "We are delighted to achieve not only one but two Autodesk Platinum Awards this year. The awards reflect both the continued loyalty of our customers as well as our commitment to their success by helping them to not only adopt world-class Autodesk technology in the first instance but also extend usage of the software across their businesses to maximise software investment returns.

"The awards also reflect on the professionalism, experience and commitment of the Graitec teams who continue to deliver successful outcomes for our global clients year on year."

Says Manuel Liedot, Graitec CEO, added: "The achievement of both awards clearly illustrates our ongoing determination and commitment to the goal of becoming a leading global BIM provider and principal Autodesk Partner, as the group continues to invest further to strengthen our local teams, technology and our customer service delivery.

"I would like to congratulate all the Graitec teams involved for their hard work and dedication, as well as thanking all our loyal and new customers around the globe for their continued support."

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iBASEt – Technology investments in Down Markets

19 March 2020

It has been about 12 years since the world experienced the Great Recession, the period of economic downturn from 2007 to 2009. At that time, the world suffered an extreme liquidity crisis following the burst of the U.S. housing bubble and the ensuing global financial crisis. Today, we face an extreme market disruption related to a huge global supply chain challenge surrounding the coronavirus. One thing, however, is consistent. In times of economic uncertainty or decline, the importance of technology investment made in new or existing IT systems can have a really big impact on how companies are able to weather the storm.

Here are some observations and recommendations based on research conducted by those that experienced the last downturn – with the objective of providing insights and suggestions that you can apply and learn from.

Invest in Systems and Processes to Improve Operational Flexibility

When first entering a period of economic and market uncertainty, recognize that initial thoughts and strategies will likely be changed several times. As new information becomes apparent, new business opportunities and market directions will make sense. As time passes, these directions will likely need to be adjusted once again. If you can execute new strategic directions faster than your competition, you will be in a far superior competitive position, so able to better capitalize on the new market direction.

From an IT perspective, research findings confirm the importance of technology investment, via an increasing focus on investing in modernization roadmaps and architectures that support greater reliance on the internal and external use of APIs and microservices. The trimming of legacy IT systems – and the resulting maintenance and support costs necessary to keep these systems running – is another important way to stay lean and extract the greatest value from your IT budgets during economic downtimes.

Don't Stop Existing Digital Transformation Initiatives

It is important to continue investments in long-term strategies, such as digital or industrial transformation programs. These initiatives can take years to implement and refine.

Read more on this topic in this article: What Manufacturers Can Learn from the Digital Transformation of Other Industries

The companies that become leaders in their space find a way to continue this investment in expanding and contracting markets. This means having the resources available to continue forward with these programs while also having a way to show progress and validate that this strategic direction is the right choice.

It is well documented that the organizations that successfully navigate through downturns become the next leaders once markets rebound. Investing in systems and processes that streamline operations, improve margins, and enable greater operational agility will ultimately become tomorrow's leaders.

Stay Laser Focused on Your Strongest Product and Service Offerings

From a product offering perspective, your strategy differs based on if you are running a smaller business or a large enterprise organization. Big companies that already have a wide-spanning solution portfolio serving many markets and geographic regions will allocate resources from one focus to another to best navigate a downturn. Smaller companies, however, need to take a different perspective. Instead of considering investment into new markets or regions, their focus must be concentrated on how best to serve specific markets.

By "doubling down" on the markets you best service, the message you will tell is that this market is your most important. You aren't going anywhere and will continue to invest time, resources and capital into maintaining your leadership position in that market.

Alternatively, if the market sees you trying to invest in new areas, questions will emerge as to how that is possible? Where will the investment funds, resources and time come from? Does that mean you are abandoning your core markets? These types of questions will be asked by your customers and pointed out by your competition. None of these scenarios are the type of narrative you want to be told about your decision on how to best navigate a way forward through a down market.

While I have no way of knowing the future, one thing is certain. The disruptions we have all experienced over the past few weeks have been sudden and severe. We will get through this, which will then lead to a period of rebuilding and getting back to a "new" normal. In the interim, I find it helpful to stay focused on the original vision that was part of founding our company. That vision is still intact. What has changed is how to accomplish that vision – and how to do so in new, compelling ways that our customers continue to find and recognize value from investing in our solutions. The more things change, the more the focus on delivering bottom-line business value stays the same.

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Nemetschek Group extends value of BIM beyond building design and construction
17 March 2020

The Nemetschek Group offers software solutions for buildings and infrastructure projects across their entire lifecycle. The working standard Building Information Modeling (BIM) enables seamless communication and collaboration between all those involved in the building design and construction process. But it has not yet made the transition into the operations phase. As a pioneer of the collaborative lifecycle BIM idea, the Nemetschek Group, and its brand Spacewell, are now taking an

essential step to bridge the gap with facilities management by embedding BIM into Integrated Workplace Management System (IWMS) software. Owners and project teams can thus benefit from BIM digital data, intelligence and visualization in the manage-and-operate phase of a building.

By embedding BIM "as-built' data into IWMS and keeping this data alive with information from building sensors and ongoing operations, the software also opens the way to create digital twins that help landlords and operators leverage intelligence throughout the useful life of the building.

"Building management is set to become smarter and more people-centric. By embedding BIM data into the Integrated Workplace Management System and connecting with the Internet-of-Things (IoT) to collect data about operations and building utilization, we are extending the value of BIM beyond design and construction," explains Koen Matthijs, Chief Division Officer, Operate & Manage Division at the Nemetschek Group.

"Our compelling approach to digitize the entire building lifecycle is becoming more and more sound and powerful, now expanding BIM to the manage and operate phase of a building", says Dr. Axel Kaufmann, spokesman of the Executive Board of the Nemetschek Group. "The IWMS solutions are then able to integrate BIM models, leveraging BIM data for facility operations. This is great news for our customers."

The Manage Division in the Nemetschek Group provides solutions for all real estate management processes, including modular and integrated software solutions for real estate, facility and workplace management (IWMS, Integrated Workplace Management System).

MCS Integrated Workplace Management System by Spacewell is a solution that helps organizations leverage the opportunities of agile workplaces and smarten up facility services and building management. It also connects with the IoT to enable activity-based service delivery, drawing on real-time data about how spaces and services are being used. The product release MCS 20, scheduled for Q4 2020, will feature a unified user interface design, a cohesive user experience across devices and the integration of BIM data.

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SAP and Goldman Sachs Innovate to Offer Global Payments on Ariba Network

17 March 2020

SAP SE and Goldman Sachs announced that they have joined forces to make it easier for companies to do business with the millions of suppliers worldwide on Ariba Network, where more than US$3.2 trillion in commerce is transacted annually.

Goldman Sachs' tech-forward and secure cross-border Global Payments capabilities will be available in select SAP Ariba solutions, making it simpler and less costly for buyers to pay foreign suppliers in local currencies.

"We continue to expand our portfolio of ecosystem partners to add more value for customers," said Sean Thompson, executive vice president, Network and Ecosystem, SAP Procurement Solutions. "Partnering with Goldman Sachs Transaction Banking allows us to deliver more innovative financial solutions, starting with these cross-border payment capabilities, which is critically important for so many of our customers on Ariba Network doing business in the global economy today."

"We put clients at the center of this product to create a frictionless payment experience and provide competitive and transparent pricing," said Hari Moorthy, global head of Transaction Banking at Goldman Sachs. "We are proud to partner with SAP to introduce this innovative yet simplified approach

to making payments across the globe on Ariba Network."

Benefits of this partnership and these capabilities for buyers and suppliers include:

Streamlined process for paying foreign suppliers in local currencies at lower cost with competitive foreign exchange rates

Improved operational efficiency through easier reconciliation of payments to corresponding invoices

Real-time payment tracking, reducing payment-related supplier inquiries

Cost transparency on bank fees

Optimized payment routing offered by Goldman Sachs' advanced machine learning techniques

Reduced risk as a result of improved visibility and control over foreign exchange payments and currency exposures for stakeholders in procurement and treasury

Improved buyer-supplier relations with transactions conducted in each party's preferred currency with minimal change management required

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SAP Enterprise Support Advisory Council Lays the Foundation for a New Decade of Inspired Customer Success

18 March 2020

SAP Enterprise Support Advisory Council has enjoyed a front-seat view of every twist and turn in this digital continuum that seems to travel faster than the speed of light. Yet 2019 felt a little different. The pace continued to accelerate and technologies continued to evolve with greater intelligence. But for SAP customers, 2019 became a launchpad of inspired innovation, laying the foundation for their success in 2020 and beyond.

Last year, 365 customers touched by 195 engagements across 157 companies chose to work and innovate with the advisory council, free of charge. Their outcomes were nothing less than impressive. Creating over 25 new workstreams and developing at least 90 assets, this global network is influencing the future design of SAP Enterprise Support offerings based on real-life requirements and early adoption of cutting-edge enablement tools and services.

Throughout 2019, SAP documented 25 particularly interesting customer successes. Below, is a small glimpse into what some of our members of the SAP Enterprise Support Advisory Council achieved.

At Fairfax County Water Authority, Expert Training and Support Help Uphold Customer Trust

With a proud history as a respected industry leader, Fairfax County Water Authority is known for safe, delicious water, and relies on analytics for insight into its business performance.

However, maintaining that reputation proved more challenging as batch jobs delayed the generation of real-time operational and customer reports.

With the expertise of SAP Enterprise Support Advisory Council, Fairfax County Water Authority explored the potential of SAP S/4HANA embedded analytics and prepared its change management strategy. Access to a portfolio of live demo sessions, predefined learning assets, and outcome-driven use cases to become familiar with available reporting options. Best practices and outcome-driven technical consulting helped demystify the business and technology prerequisites needed to gain full advantage of the new solution investment.

As a result of this engagement, the company gained the real-time predictive insights it needed to make

better decisions faster. More importantly, Fairfax Water customers can trust that the service is reliable and the water flowing in their homes is exceptional in quality.

Indelpro Maximizes Cloud Technology to Better Support Customer Demands

Already using cloud solutions to enhance customer relationships and experiences, Indelpro wanted to get even more out of its IT investment. But the only producer of polypropylene resins in Mexico first needed expert guidance to understand the opportunities for extending its cloud solution capabilities.

A series of four weekly empowerment sessions, provided by SAP Enterprise Support Advisory Council, helped kick off Indelpro's initiative by getting the entire business on the same page. Then, through technical enablement workshops, hands-on experience with services, creation of a clear road map, the company defined how it realizes the promise of SAP C/4HANA solutions in a manner scaled to meet its current business needs and flexible enough to address future requirements.

By optimizing the use of SAP C/4HANA solutions with the assistance of the advisory council, Indelpro is ready to support client demand and provide improved customer experiences. The company's efforts are paying off as it kick-starts a future of intelligent enterprise transformation.

Casa Luker Guides 110-Year-Old Company Toward the Cloud

Steeped in more than a century of tradition, Colombian company Casa Luker wanted to become a more modern, more intelligent enterprise. The high-quality food provider for national and international markets saw cloud technology as an essential step toward improving business processes and creating a better experience for consumers in today's dynamic economy.

With expert guidance from SAP Enterprise Support Advisory Council, Casa Luker has developed the tools to create a bold future that continues to fill homes around the world with aroma and flavor. The company saved more than 40 hours of consulting while empowering its team to develop cloud-based solutions based on SAP Cloud Platform.

These benefits were made possible through temporary access to a training environment at no cost and support for the development and testing of a proof of concept. Then, functional tests were completed to prove the cloud platform's reliability when approving requisitions and purchase orders. SAP also engaged cloud implementation training with exercises on the SAP Cloud Platform Discovery Center portal and helped plan and budget for future development of the cloud environment.

Fueling a New Era of Success with Proven Expertise and Innovation

Watching how customers like Fairfax Water advance their business through digitalization provides a promising glimpse into the opportunities the next decade will likely offer.

As SAP Enterprise Support Advisory Council grows, the community of customers and SAP experts will continue to reveal the full promise of the 2020s by incubating ideas and developing new solutions and innovations. Better yet, with such a high level of collaboration, we'll discover new ways to make work simpler, customer experiences more engaging, and business processes more productive.

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SHIMA SEIKI Releases Knitting Data for WHOLEGARMENT Masks
19 March 2020

In light of the recent worldwide shortage of surgical masks due to the spread of the COVID-19 coronavirus infection, leading flat knitting solutions provider SHIMA SEIKI MFG., LTD. of Wakayama, Japan has released knitting data for producing a 3D knitted version of the masks on its

WHOLEGARMENT knitting machines.

Data is meant to be for cotton masks knitted on SWG041N2, SWG061N2 and SWG091N2, as well as on the rest of SHIMA SEIKI's compact WHOLEGARMENT knitting machines also known as "WHOLEGARMENT Mini" type machines that are suited to production of small accessory items, in 15 gauge. Mask data is available for download from the SHIMA SEIKI Users' Site, an archive featuring over 10,000 knit samples for use by SHIMA SEIKI customers.

Seam-free 3D WHOLEGARMENT masks provides superior fit and comfort. Ear straps that are knitted in one-piece together with the mask portion offers reduced stress on the ears, and require no further sewing for quick response production. A filter-pouch is also knitted-in for inserting available virus filters and other filtration fabrics.

Knitted cotton masks can be washed and reused repeatedly. It should be noted however that unlike common non-woven surgical masks, knit masks do not have virus- and pollen-filtration functionality. Their main use is for prevention of spray from coughing and sneezing, and for reducing exposure to allergens.

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SolidCAM and Roboris join together to integrate G-Code simulation with SolidCAM

16 March 2020

SolidCAM and Roboris are pleased to announce that they have signed a Partnership Agreement to integrate Eureka Virtual Machining technology into SolidCAM.

Under the agreement, SolidCAM will widen its offer with a new module, powered by the Eureka library: SolidCAM G-Code Simulator, for an accurate simulation of postprocessed ISO programs. All kinds of machine tools are supported, including complex multi-channel mill-turn and SwissCAM machines.

"The Eureka capabilities are a valuable addition to our current CAM offering", says Emil Somekh, SolidCAM Managing Director. "Being able to simulate the ISO output provides our users with an enhanced and accurate virtual representation of the process, before committing the toolpath to the actual machine."

"Our business development strategy is based on partnerships within three main channels: CAD/CAM companies, Machine Tool makers, and OEM's", adds Gianluca Bioli, Roboris co-founder. "Signing this agreement with SolidCAM is an important step in becoming a leading provider of virtual machining libraries to the CAM industry."

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TCS Launches Business Ecosystem Integration Services to Accelerate Digital Integration Across Enterprises

19 March 2020

Tata Consultancy Services has launched the Business Ecosystem Integration Services (BEIS) suite, to help businesses integrate with larger ecosystems and create new customer-centric, augmented offerings.

In a Business 4.0™ world, enterprises are reinventing their business models to create new products and services, switching from a product mindset to a more customer-purpose centric mindset. They are collaborating with ecosystem partners who offer complementary products and services, to put together holistic and compelling customer experiences and create new business models. Pursuing such ecosystem

strategies requires the technology stacks of participating entities to be connected and to communicate appropriately.

TCS' BEIS suite was conceptualized as the glue to integrate heterogeneous and often legacy technology stacks, within the enterprise as well as outside, facilitating seamless communication with each other and enable collaboration across organizations. The suite has three components:

Advisory Services – Identification of business use cases, assessment of appropriate integration technologies, and definition of the common architecture and roadmap, incorporating best practices.

Integration Services – Building a pervasive integration backbone using APIs, iPaaS/ cloud integration, enterprise service bus, event brokers and B2B integration, creating seamless pathways for real-time data exchange across ecosystem partners and achieve the required business outcomes.

Operational Models – Delivery management, portfolio definition, governance and co-selling of digital integration offerings to business.

"In the digital era, enterprises are increasingly thinking beyond their organizational boundaries and taking a more value-centric approach towards product and services innovation by leveraging broader ecosystems to augment their own offerings," said Suranjan Chatterjee, Global Head, Cloud Apps, Microservices and API practice, TCS. "Using our new BEIS suite, we can very quickly build future-ready and pervasive yet nimble integration backbones to help our customers realize their ecosystem strategies."

A leading European multinational utility company partnered TCS for the transformation of its legacy core to foster business growth. TCS leveraged its BEIS suite and Software AG's hybrid integration platform to create a modern and future-proof integration platform that enables seamless data exchange across the ERP system, CRM system, HR systems, legacy applications, partners, and channels. This has helped the utility accelerate its internal transformation, improve customer experience and drive innovation.

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Wipro, PLEXIS Healthcare Systems Ink Global Strategic Partnership to Accelerate Digital Transformation for Healthcare Payers
16 March 2020

Wipro Limited announced its global strategic partnership with PLEXIS Healthcare Systems.

This partnership will enable a streamlined, efficient, accurate and integrated plan administration solution to support healthcare payers and plan sponsors worldwide. The aim is to offer secure, compliant, high-value, end-to-end "digital first" plan administration solutions at a cost-effective price point along with enhanced customer experience. The partnership will initially focus on supporting Medicare and Managed Medicaid programs, but will expand to support Accountable Care Act and commercial lines of business.

At its core, Wipro's Medicare platforms will combine with PLEXIS' healthcare payer claims and care management platforms, to deliver a state-of-the art technology backbone. This will enable Wipro to deliver world class Business Process as-a-Service (BPaaS) for efficient and effective management of the entire value chain including enrollment processing with Centre for Medicare and Medicaid Services (CMS) member billing, fulfillment, care management, claims processing and Encounter Data Processing to CMS.

Wipro-Plexis partnership will provide Medicare and Medicaid plans, a CMS compliant, easy and

affordable turnkey option, with focus on member satisfaction, improved care outcomes, data collaboration and reduced administrative costs.

Jorge Yant, President and CEO, PLEXIS Healthcare Systems, said, "The healthcare market is going through a major digital transformation. Operating an intelligent back-office is instrumental to increase productivity, revenue and quality and optimized technology to enable intelligent operations will be the key to transform the payer enterprise. Partnering with Wipro will allow us to deliver the very best combination of secure, compliant, on-demand software to unlock the full potential of digital transformation and place our clients on the best path for success."

Mohd Haque, Sr. Vice President and Global Head of the Healthcare Business Unit, Wipro Limited, said, "With technology playing an increasing role in every aspect of global healthcare services delivery, healthcare payers recognize the need to accelerate the development of integrated, cost-effective digital solutions to ensure they remain on the competitive vanguard. The Wipro-PLEXIS partnership brings together deep domain expertise in payer software and business process and technology strategy to support healthcare payers through successful digital transformations."

Wipro launches Microsoft Business Unit for digital transformation solutions

18 March 2020

Wipro Limited announced the launch of its Microsoft Business Unit. The unit will focus on the development and evangelization of solutions leveraging Microsoft's enterprise cloud services. This initiative is an outcome of Wipro's expanded global alliance with Microsoft to accelerate cloud adoption and digital transformation for its customers across sectors.

Wipro's Microsoft Business Unit consists of a team of trained and certified Azure consultants and specialists. The new unit will offer domain-based solutions and solution accelerators, including the following:

Wipro's Cloud Studio which delivers migration for different workloads on Microsoft Azure, Data, Microsoft Dynamics 365. The studio is an 'as-a-service' model for cloud transformation with standardized tools, technologies and processes.

Wipro's LiVE Workspace™ solution which leverages Microsoft's Modern Workplace, Microsoft 365 as well as LUIS and the Power platform to help customers unbox an intelligent, future-ready workplace where apps and data can be accessed from anywhere, anytime and on any device.

Wipro's Data Discovery Platform (DDP) empowers customers with actionable insights by exploring varied data sources through sophisticated techniques such as pattern discovery, Auto ML, visual sciences and storytelling to simplify interpretation and decision-making. The core of this platform brings together the Wipro HOLMESTM Artificial Intelligence and Microsoft Azure.

Bhanumurthy B.M, President and Chief Operating Officer, Wipro Limited said, "Our newly formed Microsoft Business Unit will aid organizations in accelerating their innovation and modernization journey by leveraging Wipro's deep domain expertise along with Microsoft's futuristic enterprise-class offerings. With this partnership, we will co-innovate in industry domain services focused on data, analytics, security and customer/employee experiences."

Nitin Parab, Senior Vice President and Global Head, Technology Business Unit, Wipro Limited said, "We are excited to expand our partnership with Microsoft. By integrating our unique offerings such as Cloud Studio, DDP and LiVE WorkspaceTM with Microsoft's Intelligent Cloud, we will be able to

better address our customers' digital goals."

Wipro recently completed a cloud migration project leveraging Microsoft Azure for Mitie, a leading facilities management and professional services company headquartered in the UK. The successful migration of workload from on-premise to cloud environment helped the client achieve business flexibility, security and scalability, thereby improving the company's overall operational efficiency.

Cijo Joseph, Chief information Officer, Mitie Group PLC said, "We wanted to move our 'on-premise' landscape to cloud for performance enhancement, evergreen capability and operational efficiency. Our long-term strategic partnership with Wipro gave us an exposure to the company's leading-edge capabilities and it has a solid reputation in the marketplace. We selected Microsoft Azure Cloud as our cloud service platform, for its business agility, high availability, low business disruption risk and other favorable factors including implementation time and complexity. Wipro's vast experience in executing similar cloud migration projects leveraging its proprietary framework "Safe Passage to Cloud" helped in a seamless and risk-free upgrade to migrate SAP to Azure cloud."

"At Microsoft, digital transformation is a core focus that enables organizations to improve how they engage customers, empower employees, optimize operations and transform products. Our expanded partnership with Wipro will allow them to better serve customers' digital needs by leveraging Microsoft Azure, Microsoft 365 and Microsoft Dynamics 365," said Judson Althoff, Executive Vice President, Microsoft.

Wipro and Microsoft have been strategic partners for decades. Wipro has demonstrated its commitment to this relationship by investing in new industry leading solutions for customers on the Azure platform. Wipro is a Microsoft Gold Competency Partner.

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Events

SAPinsider 2020 Flagship Event Rescheduled for August 11-13 in Austin, TX

17 March 2020

SAPinsider announced that they have successfully rescheduled the upcoming SAPinsider 2020 event to August 11-13 in Austin, TX. The move is in support of lingering travel concerns over the Corona Virus (COVID-19) and the overall safety of the global community. The event will take place at the Austin Convention Center and partnering hotels will be announced shortly on the event website.

"We heard from all our partners and attendees how important this event is to their annual plans and their strong desire for us to run the conference with over 83% supporting the rescheduling for later this year. After exploring many options, we are excited to work with the city of Austin and all of our partners to deliver an amazing event experience this August for 2000+ SAPinsiders," says James Bedard, CEO, SAPinsider. "It's amazing to see the energy, dedication, and support from this vibrant community. Our members are truly committed to engaging and growing their knowledge in the SAP space. We remain truly grateful for their feedback and support."

SAPinsider's flagship event is in its 18th year and draws over 2,000 attendees from 25 countries across the globe featuring content and speakers across six distinct programs for teams evaluating, implementing, running, and optimizing SAP solutions. The event features four days of expert-led

sessions, case studies, networking, and hands-on training to support business transformation and escalate companies' growth to become best-run businesses. Topics covered include SAP S/4HANA, Financials, GRC, BI and HANA, Cybersecurity, and Admin, Infrastructure and Platform.

SAPinsider is automatically transferring current attendees' registrations to the August 11-13, 2020 event. Attendees who are unable to make the rescheduled date will have the opportunity to transfer their event pass to any SAPinsider event or summit in 2020 or for next year's SAPinsider 2021 annual event.

Current attendees will also be given complimentary access to a virtual event to be launched in April, as well as a three-month trial subscription to premium content, including SAPinsider benchmark research and reports, expert articles and videos, case studies, event presentation materials, and much more.

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Financial News

Accenture Reports Very Strong Second-Quarter Fiscal 2020 Results
19 March 2020

Accenture reported financial results for the second quarter of fiscal 2020, ended Feb. 29, 2020, with revenues of $11.1 billion, an increase of 7% in U.S. dollars and 8% in local currency over the same period last year.

Diluted earnings per share were $1.91, a 10% increase from the second quarter last year. Operating income was $1.49 billion, a 7% increase over the same period last year, and operating margin was 13.4%, an expansion of 10 basis points.

New bookings for the quarter were $14.2 billion, with consulting bookings of $7.2 billion and outsourcing bookings of $7.0 billion.

Julie Sweet, Accenture's chief executive officer, said, "The world is now facing a global health crisis and significant disruption in the global economy. I am incredibly proud of how our leadership team and all our people have rallied to ensure the safety and well-being of each other while continuing to serve our clients at this time of great need. We exited the first half of our fiscal year in a clear position of strength — delivering excellent results, gaining significant market share and continuing to successfully execute our growth strategy. As we move forward, we will focus on helping our clients navigate and succeed in this uncertain period and continue to invest in our business and our people for the long term."

Financial Review Revenues for the second quarter of fiscal 2020 were $11.14 billion, compared with $10.45 billion for the second quarter of fiscal 2019, an increase of 7% in U.S. dollars and 8% in local currency, at the top end of the company's guided range of $10.85 billion to $11.15 billion. The foreign-exchange impact for the quarter was approximately negative 1%, consistent with the assumption provided in the company's first-quarter earnings release.

Consulting revenues for the quarter were $6.17 billion, an increase of 7% in U.S. dollars and 8% in local currency compared with the second quarter of fiscal 2019.

Outsourcing revenues were $4.97 billion, an increase of 6% in U.S. dollars and 8% in local currency compared with the second quarter of fiscal 2019. Diluted EPS for the quarter were $1.91, compared with $1.73 for the second quarter last year. The $0.18 increase in EPS reflects:

a $0.14 increase from higher revenue and operating results; and

a $0.04 increase from higher non-operating income. Gross margin (gross profit as a percentage of

revenues) for the quarter was 30.2%, compared with 29.2% for the second quarter last year. Selling, general and administrative (SG&A) expenses for the quarter were $1.87 billion, or 16.8% of revenues, compared with $1.67 billion, or 16.0% of revenues, for the second quarter last year.

Operating income for the quarter increased 7%, to $1.49 billion, or 13.4% of revenues, compared with $1.39 billion, or 13.3% of revenues, for the second quarter of fiscal 2019. The company's effective tax rate for the quarter was 17.1%, compared with 17.1% for the second quarter last year.

Net income for the quarter was $1.25 billion, a 10% increase from $1.14 billion for the second quarter last year.

Operating cash flow for the quarter was $1.53 billion and property and equipment additions were $165 million. Free cash flow, defined as operating cash flow net of property and equipment additions, was $1.37 billion for the quarter. For the same period last year, operating cash flow was $1.36 billion; property and equipment additions were $140 million; and free cash flow was $1.22 billion.

Days services outstanding, or DSOs, were 39 days at Feb. 29, 2020, compared with 40 days at Aug. 31, 2019 and 40 days at Feb. 28, 2019.

Accenture's total cash balance at Feb. 29, 2020 was $5.4 billion, compared with $6.1 billion at Aug. 31, 2019.

New bookings for the second quarter were $14.2 billion and reflect a negative 1% foreign currency impact compared with new bookings in the second quarter last year.

Consulting new bookings were $7.2 billion, or 50% of total new bookings.

Outsourcing new bookings were $7.0 billion, or 50% of total new bookings.

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C3D Labs Reports FY2019 Corporate Results

20 March 2020

C3D Labs, the provider of development toolkits for engineering software, announced today that it had increased its revenues by 53% in 2019, replicating its growth in 2018. The company expanded its presence in the European market by landing new customers in Luxembourg, Spain, and the UK.

C3D Labs is best known for delivering the most complete software development kit (SDK) to the engineering industry. The SDK consists of five modules: a robust geometric modeling kernel, a flexible constraint solver, a standards-based data exchange module, a ground-breaking 3D polygonal mesh to B-rep converter, and a speedy 3D visualization engine. All modules are based on the company's own sophisticated mathematical algorithms applied to advanced software development technologies.

The SDKs from C3D Labs have become trusted by well-known software houses and innovative startups from twelve countries. Customers new to C3D Labs include the following:

Artec 3D is a global leader in handheld and portable 3D scanners headquartered in Luxembourg. For in-house software to work with 3D scan files, they licensed the C3D Modeler geometric kernel and C3D Converter.

VR Concept is a Russian software vendor focused on industrial-level virtual reality. To allow customers to download CAD models in ACIS SAT, C3D, IGES, JT, Parasolid X_T and X_B, and STEP files into their VR application, the company deployed C3D Labs' file converters.

CYPE is a Spanish company experienced in developing software for the building information modeling (BIM) industry. To support 3D modeling and interoperability in their newly released CYPE 2020 line of products, they implemented C3D Labs' geometric kernel and file converters in a record of just six months.

Companies continuing to build their engineering software products with C3D Toolkit include Altium, Ascon, Elecosoft, Mubitek, Nanosoft, Renga Software, the Russian VNIIEF and VNIITF federal nuclear centers of Rosatom, Tera Analysis, and more. All of them appreciate the responsiveness of the staff at C3D Labs to their requests, as well as the excellent level of technical support. Last year, C3D Labs resolved 1,306 customer tickets for new functions, improvements to existing features, and fixes.

Along with revenue growth, C3D Labs development team itself grew by adding mathematicians and programmers at the R&D centers in Kolomna and Nizhny Novgorod.

"Choosing the right geometric kernel determines the strategy of software companies for years to come. Our customers have confidence in our products," said Oleg Zykov, CEO of C3D Labs. "As we value their trust, we take into account the requirements specific to everyone, and so become genuine partners in development.

"We are trusted by companies in some of the most innovative fields of engineering software," he added. "Our technology is recognized worldwide."

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North American Semi-Conductor Equipment Industry Posts February 2020

20 March 2020

North America-based manufacturers of semiconductor equipment posted $2.37 billion in billings worldwide in February 2020 (three-month average basis), according to the February Equipment Market Data Subscription (EMDS) Billings Report published today by SEMI . The billings figure is 1.2 percent higher than the final January 2020 level of $2.34 billion, and is 26.2 percent higher than the February 2019 billings level of $1.88 billion.

"February billings of North American equipment suppliers extended a robust uptrend that began in December 2019," said Ajit Manocha, SEMI president and CEO. "Despite continuing industry disruptions from the global spread of COVID-19, monthly billings for the year still remain above 2019 levels."

SEMI publishes a monthly North American Billings report and issues the Worldwide Semiconductor Equipment Market Statistics (WWSEMS) report in collaboration with the Semiconductor Equipment

Association of Japan (SEAJ). The WWSEMS report currently reports billings by 24 equipment segments and by seven end market regions. SEMI also has a long history of tracking semiconductor industry fab investments in detail on a company-by-company and fab-by-fab basis in its World Fab Forecast and SEMI FabView databases . These powerful tools provide access to spending forecasts, capacity ramp, technology transitions, and other information for over 1,000 fabs worldwide. For an overview of available SEMI market data, please visit www.semi.org/en/MarketInfo .

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Implementation Investments

Physical Optics Corporation and Ansys Streamline Avionics Development for U.S. Military Aircraft
16 March 2020

Physical Optics Corporation (POC) is using Ansys simulation software solutions to develop avionics for U.S. military aircraft. Ansys® SCADE® Solutions for ARINC 661 Applications (Ansys SCADE for ARINC 661), will enable POC to reduce development time and accelerate certification — integrating new functionality at a much lower cost and enabling a faster path to market.

U.S. Department of Defense legacy aircraft equipped with aging avionics and controls require costly upgrades to add new capabilities. As avionics software becomes increasingly sophisticated, complying with complex requirements, satisfying safety-critical standards and reducing costs present major development challenges. Efficient model-based software development with qualified code generation offers a more streamlined approach to decrease software cost and development while effectively managing highly complex designs.

"We selected Ansys SCADE for ARINC 661 with the hope of significantly streamlining model-based software development and lowering the risk path to certification," said Omar Facory, vice president of Mission Systems at POC. "Ansys SCADE 661 is instrumental for driving interoperability and reusability — enabling our team to easily update new functionality for military aircraft as it becomes available."

Ansys SCADE for ARINC 661 provides excellent model-based software development and automatic qualified code generation to quickly create and certify avionics software. Development time can be greatly reduced while adhering to ARINC 661, DO-178C and the FACE Technical Standard. Driving reusability across aircraft platforms, Ansys SCADE 661 expedites integration of new functionalities and greatly reduces platform-specific design.

"Ansys SCADE for ARINC 661 provides the ability to rapidly generate avionics software in full compliance with ARINC 661 and enables alignment to the FACE Technical Standard," said Eric Bantegnie, vice president and general manager at Ansys. "This delivers outstanding reliability, dramatically increases productivity, achieves a top-tier level of quality and swiftly expedites software certification, while fully qualifying with DO-178C."

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Vectorworks, Inc. Partners with Headlong Dance Theater to Support Community of Philadelphia Designers
16 March 2020

Global design and BIM software provider Vectorworks, Inc. continues its support of the Philadelphia

Design Center, recently acquired by Headlong Dance Theater, by donating computers and software licenses to the local community of designers and creative professionals. Headlong fosters the creative ecosystem by providing educational opportunities, financial advice and strategic planning.

"Vectorworks has been an amazing partner over the years with their in-demand software being invaluable to our members and their willingness to assist whenever we had questions about the software," said Karen DiLossi, director of arts in sacred places at Partners for Sacred Places. DiLossi was part of the team that spearheaded efforts for the opening of the Philadelphia Design Center. "There would have been no Philadelphia Design Center without their contribution and continued support in this new phase of life. More businesses and corporations should think like Vectorworks when it comes to the communities they serve and who benefits the most from using their products."

In 2016, Vectorworks donated software, computers and training opportunities during the grand opening of the Philadelphia Design Center. With this continued partnership, 12 Vectorworks Designer licenses and 12 iMac computers will be donated to both the South Philadelphia and Center City computer labs.

As of August 2019, Headlong took over the Philadelphia Design Center. When DiLossi's team was looking for the next best step for the Center, they wanted to ensure the organization that was selected kept their core values of accessibility, affordability and creativity all packaged in a supportive environment. According to DiLossi, "Headlong rings true to all of those values, and we couldn't be happier handing off our Design Center to their capable hands and minds. They've been a supportive and innovative thinker in Philadelphia's cultural community for a long time, so it makes sense that they wanted to take the Design Center to a higher level."

"Headlong is passionate about supporting the vital work of independent designers in Philadelphia through our partnership with Vectorworks," said David Brick, co-founder and artistic director of Headlong. "With Vectorworks' generous support we are able to provide design tools for the cutting-edge work of artists, designers and performance productions. With this program, independent and low-to-the-ground designers working in Philadelphia's rich and diverse performance and art scene will have access to design tools as sophisticated as their vision."

"It's remarkable to have another opportunity to help grow and develop Philadelphia's most diverse design talent," said Vectorworks Marketing Director Alice Lowy. "Providing our most versatile set of design and 3D modeling tools to a diverse group of visionaries helps them to take on challenges, and aids in fulfilling their creative dreams and beyond."

Headlong Dance Theater was founded in Philadelphia in 1993 with the belief that art and performance are an ideal place for human engagement and transformation. Headlong dance and performance productions are celebrated for innovations in how audiences engage and participate in performances that inhabit significant cultural sites — for example, hotel pools, an abandoned church, individual homes and a reclaimed pier that welcomed over a million immigrants to the US between 1870 and 1915.

Headlong community programs foster the creative eco-system by providing support and services for artists and projects at their community hub in South Philadelphia with studios, office, workspace and a 5-bedroom apartment. Headlong provides space grants to artists, strategic planning support and co-operative programs that seek to share resources as part of creating a more connected and sustainable artistic community. Headlong supports outstanding artists through its fiscal sponsorship program, and the Headlong Performance Institute is an intensive residency and training program accessible to artists regardless of financial circumstance.

Product News

Cadence Digital Full Flow Optimized to Deliver Improved Quality of Results with Up to 3X Faster Throughput

18 March 2020

Cadence Design Systems, Inc. announced that the new release of the Cadence® digital full flow—proven with hundreds of completed advanced-node tapeouts—has been enhanced to further optimize power, performance and area (PPA) results across a variety of application areas including automotive, mobile, networking, high-performance computing and artificial intelligence (AI). The flow features multiple industry-first capabilities including unified placement and physical optimization engines plus machine learning (ML) capabilities, enabling design excellence with up to 3X faster throughput and up to 20% improved PPA.

 "The new digital full flow enhancements build upon the widely adopted integrated flow, further advancing Cadence's digital and signoff design leadership position and enabling customers to achieve SoC design excellence," said Dr. Chin-Chi Teng, senior vice president and general manager of the Digital & Signoff Group at Cadence. "We've collaborated closely with our customers who are under pressure to meet compressed schedules with increasingly large designs, offering them the features they need to realize PPA gains more efficiently."

The Cadence digital full flow consists of the Innovus Implementation System, Genus Synthesis Solution, Tempus™ Timing Signoff Solution and Voltus™ IC Power Integrity Solution. It provides customers with a fast path to design closure and better predictability and supports the company's Intelligent System Design™ strategy, which enables advanced-node system-on-chip (SoC) design excellence.

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Fujitsu and France's Inria Jointly Develop Technology to Automatically Create Anomaly-Detecting AI Models

17 March 2020

Fujitsu Limited, Fujitsu Laboratories Ltd., and Inria, the French national research institute for digital science and technology, today announced the development of technology that automatically creates AI models capable of detecting anomalies in time-series data taken from IoT devices and other sources.

With the continued progress of AI technology in recent years, there has been greater deployment of AI in a variety of business fields. Despite demand for greater levels of automation, the most common means of creating AI models still involve painstaking, manual work by specialized AI engineers. Moreover, because the process of building new AI models continues to rely on trial and error, it demands significant man hours, often leading to delays in field deployment.

Leveraging proprietary time-series data analysis technology developed by Fujitsu Laboratories that utilizes improved topological data analysis (TDA)(1), Fujitsu and Inria project-team DataShape have now developed a new technology to automatically create AI models that can detect anomalies by extracting the necessary information from time-series data. Time-series data, which can include sensor data from IoT devices or biological data, such as heart rates and brain waves, consists of information of a wide range of types with complicated interconnections. This means that time-series data is often

subject to severe volatility, making it difficult to discern when meaningful patterns or anomalies occur in the data.

This technology enables any software engineer to easily create AI categorization and anomaly detection models for time-series data, while also reducing the man hours required to one hundredth that of previous methods. This will ultimately help to accelerate the deployment of new AI models in a variety of business fields, allowing even engineers with no specialized training to create anomaly detection models.

This newly developed technology has been incorporated into GUDHI, an open source TDA library developed by Inria, and will be available for users globally for free from March 16. This will not only promote the use of AI in companies, research institutions, and other organizations--it will also enable the creation of AI models for a variety of use cases as feedback from those organizations is reflected in ongoing technology improvements. Fujitsu Laboratories will continue to refine this approach as one of the core technologies supporting its Fujitsu Human Centric AI Zinrai portfolio of solutions.

This technology will be presented at the 23rd International Conference on Artificial Intelligence and Statistics (AISTATS 2020), an international conference on machine learning that will be held in Palermo, Italy, from June 3-5.

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Introducing GRANTA EduPack 2020 – refreshing materials education
19 March 2020

Ansys Granta announces the release of Ansys GRANTA EduPack 2020. GRANTA EduPack is the new name for CES EduPack, the leading software used by educators at over 1,000 universities and colleges to introduce engineering students to materials and material selection for mechanical design. Besides a fresh look for the EduPack software, GRANTA EduPack includes databases to support biomedical and design courses, and extended software functionalities to support project work.

Originating in the work of Professor Mike Ashby and collaborators at the University of Cambridge, CES EduPack was developed for over twenty years by the team at Granta Design in partnership with the Materials Education community. Following the 2019 acquisition of Granta by Ansys, the work of the Ansys Granta Education Team continues, as demonstrated by this latest release, which also reflects the Team's new home by refreshing the EduPack brand and user experience.

GRANTA EduPack 2020 provides a comprehensive database of materials and process information, powerful tools and teaching resources to support a wide variety of approaches to materials education. The GRANTA EduPack software is an engaging, interactive, visual way to support students of materials from an introductory level through to advanced capstone design projects. The new release offers:

For introductory materials teaching: tools to support the introduction to materials from multiple perspectives and to drive student progression. New databases for biomedical and design courses augment existing resources targeted at areas including mechanical engineering, civil engineering, and materials science.

For advanced engineering course work: resources that help to give teaching 'real world' relevance, now including additional advanced materials selection tools and the ability to export materials data into simulation software for design projects.

GRANTA EduPack 2020 download instructions will be sent to current EduPack customers with an active license during the next two months, enabling preparation for its use in teaching during the next academic year.

Oracle Announces Java 14

18 March 2020

Oracle announced the general availability of Java 14 (Oracle JDK 14). Java 14 continues Oracle's commitment to accelerate innovation by delivering new enhancements to enterprises and the developer community with a new feature release every six months. The latest Java Development Kit (JDK) delivers new features, including two new highly anticipated preview features – Pattern Matching for instance of (JEP 305) and Records (JEP 359), as well as a second preview of Text Blocks (JEP 368). Additionally, the latest Java release adds Java language support for switch expressions, exposes new APIs for continuous monitoring of JDK Flight Recorder data, extends the availability of the low-latency Z Garbage Collector to macOS and Windows, and adds, in incubator modules, the packaging of self-contained Java applications and a new Foreign memory access API for safe, efficient access to memory outside of the Java heap.

"Java 14 is further validation of the benefits of the six-month release cadence, giving developers access to features that they would otherwise be waiting years to get their hands on," said Georges Saab, vice president of development, Java Platform, Oracle. "Not only does JDK 14 have a number of enhancements that will improve developer productivity, but we're also seeing the first major content to come from projects like Project Panama, with a Foreign-Memory Access API enhancement (JEP 370), and continuing improvements from Project Amber, with Pattern Matching (JEP 305) and Records (JEP 359). These significant enhancements are testament to all of the hard work in these groundbreaking projects."

The Java 14 release is the result of industry-wide development involving open review, weekly builds, and extensive collaboration between Oracle engineers and members of the worldwide Java developer community via the OpenJDK Community and the Java Community Process. The new features delivered in Java 14 include:

JEP 305: Pattern Matching for instance of (Preview) – This preview feature enhances Java with pattern matching for the instance of operator. This improves developer productivity by eliminating the need for common boiler plate code and allows more concise type-safe code.

JEP 343: Packaging Tool (Incubator) – Provides a way for developers to package Java applications for distribution in platform-specific formats. This helps developers with modern applications where constraints require runtimes and applications to be bundled in a single deliverable. This tool is introduced in an incubator module, which is a way of putting non-final APIs and non-final tools in the hands of developers to get their feedback while the APIs/tools progress towards either finalization or removal in a future release.

JEP 345: NUMA-Aware Memory Allocation for G1 – Improves overall performance of the G1 garbage collector on non-uniform memory access (NUMA) systems.

JEP 349: JFR Event Streaming – Exposes JDK Flight Recorder (JFR) data for continuous monitoring. This will simplify access to JFR data for various tools and applications and spur further innovation.

JEP 352: Non-Volatile Mapped Byte Buffers – Adds a file mapping mode for the JDK when using non-volatile memory. The persistent nature of non-volatile memory changes various persistence and performance assumptions which are leveraged with this feature.

JEP 358: Helpful NullPointerExceptions – Improves the usability of NullPointerExceptions by describing precisely which variable was null and other helpful information. This will increase developer productivity and improve the quality of many development and debugging tools.

JEP 359: Records (Preview) – This preview feature provides a compact syntax for declaring classes which hold shallowly immutable data. This feature can greatly reduce boilerplate code in classes of this type, but the biggest benefit allowing the modeling of data as data. It should be easy, clear and concise to declare these shallowly-immutable nominal data aggregates.

JEP 361: Switch Expressions (Standard) – This was a preview feature in JDK 12 and JDK 13 and is now being added as a standard feature. It allows switch to be used as either a statement or an expression. This feature simplifies every day coding and prepared the way for the pattern matching (JEP 305) feature previewed in this release.

JEP 364: ZGC on macOS and JEP 365: ZGC on Windows – While most users that require ZGC also require the scalability of Linux-based environments, there are often needs for deployment and testing to support ZGC on macOS and Windows. There are also certain desktop applications targeting Windows and macOS which will benefit from ZGC.

368: Text Blocks (Second Preview) – After receiving end-user feedback when Text Blocks was first introduced as a preview feature as part of Java 13, enhancements have been added and Text Blocks is being offered as a preview feature again in Java 14 with the goal of becoming standard in a future JDK release. Text Blocks make it easy to express strings that span several lines of source code. It enhances the readability of strings in Java programs that denote code written in non-Java languages; It supports the migration from string literals by stipulating that any new construct can express the same set of strings as a string literal, interpret the same escape sequences and be manipulated in the same ways as a string literal.

370: Foreign-Memory Access API (Incubator) – An API to allow Java programs to safely and efficiently access foreign memory outside of the Java heap.

For users and enterprises seeking commercial support, Oracle also offers the Oracle Java SE Subscription, a low cost and predictable support solution. This offering is currently used by thousands of large and small organizations globally who receive the Java SE license, and comprehensive support, for the systems they need, and only for as long as they need it. These customers benefit from the flexibility and regular access to tested and certified performance, stability, and security updates for supported releases directly from Oracle.

Java continues to be the #1 programming language preferred by software developers. And as the on-time delivery of innovations with Java 14 demonstrates, through thoughtful planning and ecosystem involvement, the Java platform continues to power modern application development.

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Synopsys Unveils RTL Architect To Accelerate Design Closure

18 March 2020

Synopsys, Inc. announced the immediate availability of RTL Architect™, an innovative product that signifies a shift-left for RTL design closure. Synopsys RTL Architect is the industry's first physically

aware RTL design system, which reduces the SoC implementation cycle in half and delivers superior quality-of-results (QoR).

RTL teams are increasingly faced with the challenges of rapidly exploring domain-specific RTL architectures to achieve significant power, performance and area (PPA) gains to meet the requirements of new market verticals like artificial intelligence and automotive applications. Existing point tool solutions for estimating RTL quality are severely limited due to poor accuracy to downstream implementation. These early design cycle inaccuracies cause downstream implementation tools to compensate, often having to go back and make RTL changes to meet the PPA goals. RTL Architect addresses these challenges utilizing a rapid multi-objective prediction engine derived from the Synopsys Fusion Design Platform implementation environment to predict PPA of downstream implementation accurately. RTL Architect enables RTL designers to pinpoint bottlenecks in their source code to improve RTL quality.

"Renesas is designing complex state-of-the-art automotive system on chips (SoCs), which require architecture tuning to drive the highest QoR to differentiate ourselves in our target markets," said Hideyuki Okabe, Director, Digital Design Technology Department, Shared R&D EDA Division, Renesas Electronics Corporation. "Synopsys' RTL Architect will enable us to quickly explore and validate various architectures at the RTL stage and identify the best one without having to worry about late-stage surprises."

"Our collaboration with Synopsys on the RTL Architect product is the next step in helping to accelerate our RTL development cycle for the next-generation of Arm®-based processor cores," said Jeff Kehl, vice president of CPU engineering, Central Engineering Group, Arm. "RTL Architect technologies in our advanced core development design methodology will enable Arm to develop better CPUs that allow our mutual customers to meet the power and performance requirements for a number of new markets."

The RTL Architect system is built on a unified data model that provides multi-billion gate capacity and comprehensive hierarchical design capabilities to accommodate the growing design and block sizes at advanced process nodes. It directly leverages Synopsys' world-class implementation and golden signoff solutions to deliver results that are accurate early in the design cycle and correlate-by-construction.

RTL Architect uses a fast, multi-dimensional implementation prediction engine that enables RTL designers to predict the power, performance, area, and congestion impact of their RTL changes. Synopsys' PrimePower golden signoff power analysis engine is directly integrated for accurate RTL power estimation and optimization for energy-efficient designs. RTL Architect provides a unified workflow environment for simplified ease-of-use and seamless analysis of key PPA quality metrics. For existing users of PrimePower at the gate-level, PrimePower RTL power estimation is also available, enabling a consistent RTL to signoff power analysis flow.

Vectorworks 2020 SP3 Launch Brings Quality and Performance Improvements
19 March 2020

Global design and BIM software solutions provider Vectorworks, Inc. releases Vectorworks 2020 Service Pack 3 (SP3) with quality and performance improvements as the central theme of this update. As part of the SP3 release, Vectorworks is introducing additional partner integrations with Enscape and

NBS Chorus, as well as providing key updates for users of its BIM, landscape and entertainment design product line.

"Our release of the Vectorworks 2020 Service Pack 3 is the perfect example of our focus and drive to improve software quality and performance and to further enable Vectorworks to be a design hub for many workflows," said Steve Johnson, vice president of product development at Vectorworks. "By continuing to develop connections to the latest technologies and partner solutions, we're delivering a design ecosystem that is helping designers around the world to ideate, discover and realize their design visions."

With Vectorworks Spotlight 2020 SP3, lighting devices and their Schematic Views have been re-engineered, improving overall file open time and performance. Specifically, issues with Schematic Views related to project sharing, the display of 2D label legends and how views are updated with model changes have been implemented, which will provide users with significant speed gains. Additionally, quality fixes have been made to optimize snapping and attaching loads to rigging objects in 3D, as well as to improve the graphic generation of lighting fixtures when using Duplicate, Mirror, Rotate and Move by Points commands.

"We've heard our Vectorworks Spotlight customers loud and clear — they want improved performance speeds and quality fixes above all else," said Darick DeHart, vice president of product management for Vectorworks. "We've addressed several priority areas in Spotlight and are happy to share these improvements in Service Pack 3. In testing of Service Pack 3, we're confident in sharing that Vectorworks Spotlight users will notice file opening and Schematic view creation/manipulation are up to two times faster and that duplicating lighting devices for large projects can be five to 10 times faster."

With SP3, the workflow for using GDTF data in Vectorworks Spotlight is greatly improved. GDTF files can now be directly imported into Spotlight, can be applied to any Vectorworks lighting device and can be managed directly from the Resource Manager. These lighting devices can then be sent to any previz or console that supports GDTF, including Vision which will now recognize GDTF files when using the MVR Import. Other improvements to Vision include the integration of the GDTF fixture builder to allow for direct editing and the customization of fixture attributes such as gobos, colors, effects and more. This enhanced GDTF support streamlines the MVR workflow and creates a fully connected workflow between Vectorworks Spotlight, Vision and consoles that support these open file formats. This video showcases the MVR and GDTF updates.

In keeping with Vectorworks' dedication to integrating new technology that brings direct benefit to customers, they have teamed up with Enscape, providers of real-time rendering and Virtual Reality (VR) solutions.

Enscape goes beyond other real-time rendering applications by developing plugins that work directly inside Vectorworks, so users can accurately gauge the impact of their design decisions as they are being made. Enscape is providing a free beta plugin to all Windows users in the Vectorworks 2020 Service Pack 3.

The plugin provides a suite of Enscape rendering tools inside Vectorworks which can control the visualization in Enscape. As geometry, lighting, textures or views are changed or added in Vectorworks, users will see these real-time changes in Enscape. For easy virtual reality, the Enable/Disable VR Headset tool connects Vectorworks models directly to a VR headset like Oculus Rift S or HTC Vive with little to no setup.

"Traditionally, high-quality rendering can be difficult and time-consuming, reserved for specialists and relegated to design reviews and presentations," said Moritz Luck, CEO and co-founder of Enscape.

"With Enscape, models can be rendered with one click and design changes are immediately reflected — there's no uploading to the cloud, importing files or syncing models. Enscape is the perfect companion to the designer's workflow. Users can have Vectorworks open on one monitor and Enscape open on a second to see the impact of their design changes as they happen."

Data and information is what makes a BIM model useful throughout the project lifecycle. The NBS Chorus integration enables users to access and dynamically link their models to the NBS online specification database, keeping the model as the central source of project information. Users will be able to open a web palette in Vectorworks, letting them work concurrently with their model and NBS Chorus. Any data modified in NBS Chorus via the web palette will update in the data record of the model, ensuring accurate and up-to-date specification information is accessible at all times from the model.

The NBS Chorus integration is another step in creating a holistic BIM environment within Vectorworks.

NBS Chorus integration will be available to users of Vectorworks Design Series products with an active Vectorworks Service Select membership.

The BIM Collaboration Format (BCF) is widely used for quality checking, clash detection, coordination and issue tracking in BIM workflows. Vectorworks Architect, Landmark and Spotlight 2020, through Service Pack 3, will support BCF 2.1, the latest and most optimized version of the format. BCF 2.1 gives Vectorworks users extended capabilities in issue tracking and adds new information for spaces and openings. The BCF Manager tool has also been updated to reflect the changes needed to support BCF 2.1, making a more streamlined BCF workflow.

Creating compelling renderings for presentations can be time consuming and may not be possible due to deadlines or other constraints (like unfamiliarity with Renderworks settings). The Vectorworks Cloud Services web portal will now have the ability to transfer a "style" of one image to another through machine learning. This means that rendering styles can be derived from an image and applied to a simple Vectorworks rendering — all via the cloud — making artistic rendering presentations more accessible and customizable.

This Service Pack is available as a downloadable updater for all U.S. English-based versions of Vectorworks 2020, including Vectorworks Architect, Landmark, Spotlight, Designer, Fundamentals, Braceworks, ConnectCAD and Vision. To install, click here or select "Check for Updates" from the Vectorworks menu (Mac) or Help menu (Windows). To find out more about this release, read the tech bulletin. Contact Email Contact with any technical questions.