PLM Weekly Summary

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CIMdata News

Aras' Cloud Strategy – A CIMdata Blog Post

8 January 2021

Stan Przybylinski, Vice President of CIMdata, had the pleasure of speaking with Mark Reisig, VP of Product Marketing at Aras, to learn more about Aras' cloud strategy. Among the topics on the table for discussion were:

- How important are cloud-based solutions to the strategy of Aras?
- What about the ecosystem of infrastructure, applications, and other partners that are part of your offerings?
- How does your solution and its go-to-market strategy address the issues raised by your customers and prospects?
- How would you describe your primary target customers?
- Can you provide any information on your installed customer base?
- How are your offerings going to evolve in the short to medium term?
- What are the primary themes/strategy in your roadmap?

Learn the answers to these questions and more in the full blog post available at https://www.cimdata.com/en/resources/cimdata-blog/item/14804-aras-cloud-strategy-an-interview-with-mark-reisig

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Product Definition Drives Integrated MBSE - a CIMdata Commentary

Key takeaways:

Product Definition in the automotive industry is continuous, expanding to include vehicle use.

Integrated Model-Based Systems Engineering (MBSE) provides engineers the ability to see the effects in context of a vehicle's multiple architectures, including off board support services.

Automotive development processes and modelling methodologies are evolving including architecture and usage insights.

Siemens' Software & Systems Engineering (SSE) Product Definition capabilities enable an integrated MBSE environment.

Product Definition Must Evolve

In the world of automotive vehicle development, product definition has historically been an early activity done with a product's charter—its scope and performance requirements driven by the voice of the customer. Vehicle development and operations in the future need to utilize a modern and integrated PLM environment that enables holistic systems engineering (SE). As all disciplines making and servicing vehicles discover new insights, systems engineers will continuously explore the vehicle architecture and performance to better comprehend and minimize risks. But to be successful, SE must be integrated and used throughout a vehicle's life. CIMdata has defined and encouraged industry leaders to embrace a system of systems mindset and the need for a comprehensive and integrated PLM ecosystem to help manage it all. Note our definitions for SE, PLM, and Discovery.[1]

Systems Engineering (SE)—is a trans-disciplinary and integrative approach to enable the successful realization, use, and retirement of engineered systems, using systems principles and scientific, technological, and management methods. In this definition, the terms "engineering" and "engineered" are used in their widest sense: "the action of working artfully to bring something about." SE improves decision making which spans product lines and lifecycles. Models of all sorts improve understanding and thus robust product decision making.

Product Lifecycle Management (PLM)—is a strategic business approach that applies a consistent set of business solutions in support of the collaborative creation, management, dissemination, and use of product definition information across the extended enterprise, and spanning from product concept to end of life—integrating people, processes, business systems, and information. A PLM platform provides services to find contextual data from different sources, while also taking advantage of computing evolution. It is where "digitalization" really comes from.

Discovery (aka learning)—the best SE organizations continually understand their requirements' adherences and balances throughout product lifecycles. Tools supporting discovery should make context viewing and collaboration intuitive.

Today's modern automobiles have an architecture that allows future features to be added and enhanced, often after mass production. Many of these features are solely enabled by software. Some of the software is off board in services for infotainment and navigation applications. As cloud computing and consumer demand for autonomous driving expands, system boundaries may change, further increasing systems complexities. Automotive products are just starting to take advantage of this connectedness.

A broader product definition done well is needed as vehicle systems complexity grows across their lifecycles. This means that product definition is no longer just an early phase of a product's lifecycle (i.e., during traditional development), rather it is becoming an ongoing activity that needs the skills of lifecycle-focused systems engineering and must include multiple discovery and learning cycles. Additionally, with the advent of almost free product upgrades with new features implemented in software, it is critical to understand how a new feature plays with the existing product already in a customer's hands.

Modeling future vehicles with their applications will require improved tools, especially centered on systems engineering. In fact, we expect more and more disciplines will use systems engineering models to answer the question: "Will our existing products in customer's hands work with the new feature?" Thus, product definition is not just part of vehicle conception, but also occurs throughout the vehicle's life. Figure 1 emphasizes this operational lifecycle model-based approach and the fundamental shift needed by the automotive industry.

Figure 1—Model-Based Approach Bridge Disciplines
(Courtesy of Siemens)

All engineers need to answer questions about robustness and safety of an in-field product upgrade. The upgrade could even be in the cloud that a vehicle relies on (i.e., consider navigation routing updates and real-time feeds for traffic flow). This started as a feature inside the vehicle, with a cumbersome upgrade process rarely done. Now it is always up to date. The feature comes from a third-party, but the navigation display is still in-vehicle. This is an example of changing system boundaries during the operational lifecycle. As advanced driver-assistance systems (ADAS) features in vehicles continue to expand and autonomous vehicles enter the marketplace integrated MBSE tools are needed to aid in keeping vehicles continually and robustly up to date. Multiple disciplines will use MBSE models and methods to improve decisions—this is crucial to help manage increasing vehicle systems complexities.

SSE Product Definition Aids Managing Vehicle Complexity

Defining a vehicle, assessing it continuously, and re-defining it as usage occurs is the focus of Siemens Digital Industries Software's (Siemens) SSE Product Definition solution. Siemens realizes the need to use MBSE more broadly and to make sure an extended enterprise's PLM ecosystem facilitates this. While SE experts develop SysML models, discipline experts in software, electronics, and mechanical engineering will use these "understanding" models to improve their designs and changes. Ideally, they will do this in a user experience (e.g., visualization) they already know. The product definition work is expanding beyond requirements and parameter management to include features, architecture, and product lines and even service upgrades. Siemens' SSE Product Definition capabilities address these challenges as summarized in Figure 2.

Figure 2—SSE Product Definition Capabilities

(Courtesy of Siemens)

Already, some automakers use motion models with mechanical packaging designers to make sure motion sensors are placed into the vehicle at the best location for safe operations. In the not-so-distant-future, manufacturing assembly and wiring harness designers will work collaboratively, in real-time, making sure the wiring placement is producible, reliable, and serviceable. Being able to view the effects of a proposed change improves product robustness. Reviews for cho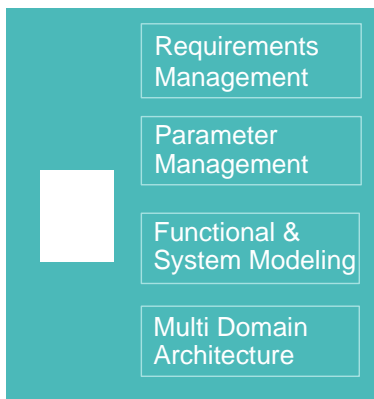osing amongst alternatives will accelerate and improve as all disciplines interact with models—coordinated by the system-understanding framework. This framework needs PLM and integrated MBSE to provide interactive views for authors, investigators, and decision makers. A common, evolving understanding will lead to robust products.

Some future vehicle complexity will undoubtingly come from changing system boundaries. With an established SE framework of a product in its operational environment, as these system boundaries change, a product manager could quickly assess the changing environment interactivity as the SE models improve through field experiences. Performance engineers will convey what the customers are telling them by upgrading the performance digital twin, a group of models, which can then be managed by system engineers and others to assess risk and plan product upgrades. In the future, models will no longer be constructed by decision point with modelling experts but will be configured on demand using the best insights from the field. Figure 3 graphically depicts the domain of Product Definition used by all disciplines and managed by systems engineering.

Figure 3—SE Manages Product Definition
(Courtesy of Siemens)

CIMdata has commented previously on consistent configuration use within the electrical development ecosystem, Capital.[2] Vehicle configuration capability is a hallmark of the automakers. It was perfected for supply chain management and efficient mass production. The rules of configuration provide a basis for parts, subsystems, logistics, and their planned volumes. What drove corporate efficiency in manufacturing can also apply to engineering and information technology (IT). The architecture tools need consistent, real-time product and service configurations. Siemens' overall approach and their Product Configurator are the needed advances to enable on-demand comprehensive digital twins—accessible and always accurate. One can imagine using the same capability for a vehicle in use to understand a new failure and more quickly explore likely causes. The on-going root cause investigation

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[2] See: https://www.cimdata.com/en/resources/complimentary-reports-research/commentaries/item/14411-capital-expansion-addresses-e-e-systems-complexity-commentary

is improved with every sample of data from the field, which thanks to connectivity (aka IoT) technology, is now near real-time. No more waiting and no more confusion on the specific vehicle configuration when sampled.

Siemens' advancements on the way to integrated MBSE are enabling continuous product definition as shown in Figure 4. By supporting proven exchange standards, an ability to easily integrate across the extended enterprise is realized—creating open ecosystems allowing external tools and data sources to be seamlessly integrated. CIMdata will elaborate on this in a future commentary on Connected Engineering.

Figure 4—Software & Systems Engineering Pillars

(Courtesy of Siemens)

Summary

Over the last several years, SE has expanded with the power of computing, allowing faster exploration of solutions and safety margins of candidate designs. Simulation accuracies continue to advance as AI/ML techniques are applied. A common product configuration engine used across mechanical and electrical disciplines is a cornerstone of modern PLM platforms. It provides an accurate digital twin that improves vehicle design, manufacturing, and usability understanding. The combination of integrated MBSE tools and methods with consistent vehicle configuration enables a comprehensive digital twin, always accurate to the latest discoveries.

Siemens continues to build a comprehensive set of solutions across the engineering and other lifecycle disciplines. Engineering skills expanding beyond their original disciplines to better understand the effects in other domains will improve vehicle quality. Improved understanding will improve robust vehicles and ADAS services, even as systems evolve for autonomous vehicles after their mass production.

Siemens evolving SSE Product Definition solution enables the evolution of SE beyond a silo of experts to a competitive advantage practiced by most of the organization. Their intelligently integrated PLM ecosystem is realizing a comprehensive product development environment.

CIMdata recommends that companies consider Siemens' SSE portfolio of solutions, especially Product Definition driven by integrated MBSE, when evaluating and/or migrating current vehicle development solutions. Roles and skills will need to change and expand to take advantage of these tools. As computers are pervasive in vehicles today and tomorrow, a comprehensive, integrated, and multi-disciplinary product development environment is essential.

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Acquisitions

3D Systems Completes Sale of Cimatron and GibbsCAM Businesses and Provides Preliminary Financial Results for Fourth Quarter 2020

8 January 2020

3D Systems has completed the sale of its Cimatron and GibbsCAM software businesses to a subsidiary of ST Acquisition Co., an affiliate of Battery Ventures, on January 1, 2021, resulting in purchase price proceeds of approximately $64.2 million, after certain adjustments and excluding $8.9 million of cash amounts transferred to the buyer.

Using a portion of the proceeds from the sale, the company paid off approximately $21 million of outstanding balances under its senior secured term loan facility. With the paydown of the term loan, the company is now free of any outstanding debt but continues to have availability under its senior secured revolving credit facility, which remains fully undrawn at this point. The company also terminated the previously announced at-the-market equity program ("ATM Program"), under which no shares of common stock were sold during the fourth quarter of 2020.

Additionally, the company is providing preliminary financial data for the quarter ended December 31, 2020. The company expects revenue for the fourth quarter of 2020 will be in the range of $170 million to $176 million and fourth quarter non-GAAP operating income in the range of $11 million to $19 million[1]. The GAAP operating (loss) income for the fourth quarter is expected to be in the range of $(8.6) million to $0.5 million. This non-GAAP operating income range compares favorably to the non-GAAP operating income of $5.6M reported in Q4 2019 and $0.0M reported in Q3 2020. The GAAP operating loss for Q4 2019 was $(4.7) million and for Q3 2020 was $(67.6) million.

Dr. Jeffrey Graves, President and CEO of 3D Systems, said, "In the summer of 2020, we laid out a four-stage plan to deliver increased value to our customers and shareholders. This plan included: reorganization into two business units, Healthcare and Industrial Solutions; restructuring of our operations to gain efficiencies; divesting of non-core assets; and investing for accelerated, profitable organic growth. We are pleased to now see significant progress from these efforts, as reflected in accelerated top-line growth and rapidly strengthening operating margins. Our Team's ability to deliver over 20% consecutive-quarter revenue growth in both business units, while executing large scale restructuring, was particularly gratifying to see. This was even more impressive when viewed with a backdrop of continuing headwinds from the COVID virus, which impacted our operations and those of our customers. Having surpassed our prior year, pre-COVID revenue performance in Q4, and with continued strong focus on operational execution, we are excited about the trajectory we are on as we enter the new year."

Dr. Graves continued, "The divestiture of Cimatron and GibbsCAM, which were businesses focused on subtractive technologies, was an important step in our plans to refocus our company on our core mission – 'to be the leader in enabling additive manufacturing solutions for applications in growing markets that demand high reliability products.' These divestitures strengthened our balance sheet, enabling us to both pay off our debt and terminate the ATM Program much earlier than originally planned."

Dr. Graves concluded, "With the benefits of our organizational alignment, our technology and application leadership, and our relentless focus on operational execution, we are more optimistic than ever about the exciting future we see ahead in 2021 and beyond."

The company has not yet completed its financial and operating closing procedures for the fourth quarter and full year 2020, including but not limited to, review of various estimation accounts, recording of the divestures completed late in the fourth quarter, completion and review of reconciliations, and various other year-end closing procedures. Additionally, the preliminary financial data above has not been subject to audit, review or other procedures by the company's independent registered public accounting firm. As a result, actual results may differ materially from the preliminary results shown above and will not be publicly available until the company reports its fourth quarter and full year 2020 results in late February 2021.

1. See Appendix for reconciliation of GAAP and non-GAAP operating loss.

Fourth Quarter and Full Year 2020 Financial Results Timing

3D Systems will release its financial results for the fourth quarter and full year 2020 and file its Form 10-K after the U.S. stock markets close on Wednesday, February 24, 2021. The company will hold a conference call and simultaneous webcast to discuss these financial results the next morning, Thursday, February 25, 2021, at 10:00 a.m. Eastern Time.

Conference Call Details

Date: Thursday, February 25, 2021

Time: 10:00 a.m. Eastern Time

Listen via webcast: www.3dsystems.com/investor

Participate via telephone: 201-689-8345

The webcast replay will be available approximately two hours after the end of the conference call at www.3dsystems.com/investor.

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Merger Expands Virtual Prototyping and Advanced Engineering Simulation Capabilities of InFlow Technology Subsidiary

7 January 2021

Computer Aided Technology (CATI), a leading provider of product development solutions, expands its capabilities by merging their InFlow Technology subsidiary with Caelynx, an engineering consultancy and Dassault Systèmes Platinum Partner based in Ann Arbor, MI. This merger continues CATI's initiatives to bring to market the best product development solutions and services for their clients.

The Caelynx team specializes in engineering simulation software and services. Their dedicated team of experts service a vast range of industries including transportation, aerospace & defense, consumer goods & packaging, industrial machinery, electrification and more. As a consultancy with thousands of engineering projects completed for hundreds of customers, Caelynx has been helping customers innovate through advanced virtual prototyping for fifteen years. This CAE mastery has made them a recognized and reliable authority as a Dassault Systèmes Platinum Partner specializing in Abaqus Unified FEA, CST Studio Suite (electromagnetic simulation), 3DEXPERIENCE, and more.

Joe Formicola, president and chief engineer of Caelynx, adds: "Our goal has always been to provide the highest levels of customer service and support. With the merger, Caelynx clients will gain access to additional technical resources as well as products and services. Caelynx clients should see an immediate benefit to their business."

"We are continually looking for ways to provide more value to our customers. One way we do that is by listening to find the right solution for their unique business challenges. More and more, we discuss with clients the need to expand their simulation and virtual prototyping capabilities. That makes this merger with Caelynx a great fit at the right time, said Rich Werneth, CEO, CATI. "The addition of Caelynx staff members will not only enhance our current offerings, but also will ensure a smooth transition for Caelynx clients. We welcome Joe Formicola and his team to the CATI and InFlow organization.

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QuantiTech Acquires Systems Engineering Group

5 January 2021

QuantiTech LLC ("QuantiTech"), a portfolio company of Sagewind Capital LLC ("Sagewind"), announced that it has acquired Systems Engineering Group, Inc. ("SEG") from Griffon Corporation.

Headquartered in Columbia, Maryland, SEG is a leading provider of threat engineering and modeling and simulation services to the U.S. Government, primarily supporting the Naval Surface Warfare Center, Missile Defense Agency, and Office of Naval Intelligence. SEG provides advanced, physics-based threat modeling, engineering, and analytics services in support of U.S. Government requirements for weapons and missile systems development, simulation, testing, and analysis.

"SEG has been looking to partner with a new parent organization that is more strategically focused on government technical services," said Michael Anderson, President of SEG. "We are thrilled to have found that partner in QuantiTech and are energized by the opportunities created through this combination. QuantiTech's complementary customers and capabilities will allow us to expand our presence as a leader in threat engineering and modeling & simulation."

"We are extremely excited to welcome SEG to the QuantiTech family," said Randy Cash, Chairman of the Board of QuantiTech. "This combination brings together two companies with an extraordinary depth of talent and expertise in high-end engineering.   By strengthening our capabilities in the missile defense, hypersonics, and intel markets, we will be even better positioned to continue serving the important missions of the U.S. Government."

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Sandvik completes the acquisition of CGTech

31 December 2020

Sandvik has completed the previously announced acquisition of US based CGTech, a global market leader in software for numerical control (NC/CNC) simulation, verification and optimization.

In 2019, CGTech had revenues of about SEK 470 million and around 180 employees. The deal will initially have a neutral impact on Sandvik's earnings per share.

CGTech will be part of Sandvik Machining Solutions' division Sandvik Coromant, within the business area Sandvik Manufacturing and Machining Solutions.

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Stratasys Completes Acquisition of Origin, Accelerating Expansion Into Mass Production Additive Manufacturing

5 January 2021

Stratasys Ltd. announced it has completed the acquisition of Origin, effective as of Dec. 31, 2020. The acquisition adds Origin's software-centric additive manufacturing solution that offers best-in-class printing technology based on digital light processing for production-oriented polymer applications.

"The completion of this acquisition marks an important milestone for Stratasys, positioning us to generate meaningful incremental revenue from a wide range of new market opportunities for mass production," said Stratasys CEO Yoav Zeif. "I'm confident that Origin's innovative solutions will be a key contributor to strong company growth beginning in 2021 and help us further realize our strategic goal to fortify our leadership position as the 'first choice' for polymer 3D printing."

As previously indicated on December 9, 2020, the impact of the acquisition on Stratasys' diluted non-GAAP earnings per share is expected to accelerate the company's growth rate and be slightly dilutive to non-GAAP earnings per share in 2021, and accretive to non-GAAP earnings per share by 2023.

Based in San Francisco, **Origin** is pioneering a new approach to additive manufacturing of end-use parts. Origin One, the company's manufacturing-grade 3D printer, uses Programmable PhotoPolymerization to precisely control light, heat, and force, among other variables, to produce parts with exceptional accuracy and consistency. The company works with a network of partners to develop a wide range of commercial-grade materials for its system, resulting in some of the toughest and most resilient materials in additive manufacturing. The company was founded in 2015 and is led by alumni from Google and Apple. Investors include Floodgate, DCM, Mandra Capital, Haystack, TDK Ventures, Stanford University, and Joe Montana.

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Company News

Alan Klug Named Tecplot President

7 January 2021

Tecplot, Inc. announced that Alan Klug is named Tecplot President. Alan will run day-to-day operations at Tecplot USA. In addition, he will oversee the FieldView CFD and Tecplot Europe business units. Tom Chan will continue as Tecplot CEO in an advisory role but will focus on managing the portfolio of acquisitions within the **Vela Software Group**.

Tecplot also announced that Charles Schnake, previously with Rolls Royce and Aerion Supersonic, is named Tecplot Director of Customer Development.

"As Tecplot's Vice President of Customer Development, Alan has been instrumental in our transition and growth under Vela/CSI ownership. I am excited for Tecplot's future under his direction as President. Please join me in congratulating Alan on his promotion," says Tom Chan, Tecplot CEO.

"From aerospace to life sciences, our customers continue to make outstanding achievements, even during the difficult past year. I look forward to working closely with them to provide best-in-class solutions and find better ways to serve them," says Alan Klug, Tecplot President. "And I welcome the

experience and expertise Charles brings to Tecplot as he steps into the customer development leadership role."

"It is my honor and pleasure to assume leadership of Tecplot's Customer Development team," says Charles Schnake, Tecplot Director of Customer Development. "Alan has left behind some big shoes to fill, but fortunately we will continue to benefit from his experience and guidance. I am excited to add my energy and perspective to an already successful team, and to forge relationships with our customers and partners."

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AlphaSTAR announces Industry Veteran, Amir Mobayen, as Chief Executive Officer

7 January 2021

AlphaSTAR is delighted to announce the appointment of Amir Mobayen as its CEO, effective January 4th, 2021. Amir brings to the position a wealth of knowledge and an array of experiences in the software technology industry on a national and global level.

Amir has been a key member of AlphaSTAR's Board of Advisors since 2012 and brings a 20+ year record of success, generating new business and accelerating sustained profitable growth in the competitive technology marketplace. Additionally, he brings an international perspective with a multicultural/multilingual background, focusing on a market driven customer focus, product innovation and development of best-in-class talent.

Announcing Amir's appointment, AlphaSTAR CTO Dr. Frank Abdi says: "Amir is an exceptional leader. His track record in the transformation and growth of multiple technology businesses in North America, EMEA, and Asia, will position AlphaSTAR for continued growth." He continues, "Pushing the envelope of cutting-edge technology has always been the backbone of AlphaSTAR. I am personally thrilled to be welcoming a hands-on business leader that values the importance of scientific excellence and is passionate about sharing our simulation capabilities with more of the industry".

"It is extremely exciting and an honor to be named AlphaSTAR's CEO" said Amir. We are uniquely positioned in the center of the simulation and additive manufacturing technology value matrix. We have a tremendous opportunity to firmly drive our strategic leadership and market position as we accelerate helping our customers and partners achieve their rapidly evolving intelligent manufacturing needs. As we enter our next growth phase in 2021, our strategy will build on AlphaSTAR's prior customer successes in Aerospace, Automotive, Defense and Energy industries by augmenting our talented people, outpacing the industry with continued product innovations, and leveraging our strong relationships to deliver profitable growth. I am extremely thrilled about our direction and future," he concludes.

AlphaSTAR President, Kay Matin, says," It's my pleasure to welcome Amir to the AlphaSTAR Team as CEO. Amir's experience brings the needed leadership to successfully execute our strategy in addressing the rapidly growing simulation software market. Amir is a visionary with a proven track record in execution & delivery of goals relevant to our transformation agenda". She concludes, "His responsibilities will be to align AlphaSTAR's offerings within the digital enterprise market globally and to serve our valued customers & partners with simulation toolsets that will meet their advanced manufacturing needs".

Amir has held executive leadership positions in sales, marketing, and other operating roles during his professional career in North America, EMEA and Asia within public and private equity owned

companies. He was most recently the President of Smartrac Technology's RFID division which was acquired by Avery Dennison in 2020. Amir was formerly the Vice President and General Manager of the Arrow Electronics' Intelligent Systems business in EMEA. Prior to Arrow Electronics, Amir held executive positions at MSC Software Corporation and Avent Electronics.

Amir holds a B.S. degree in Mechanical Engineering from California State University, Northridge; has spent 15 years living & working in Europe and currently resides in Southern California with his wife and children.

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Ansys Announces Winners of 2020 Art of Simulation Competition

6 January 2021

The six winning entries of the first annual Ansys Art of Simulation competition showcase how engineers are using Ansys' cutting-edge simulation solutions to solve critical engineering challenges. The competition, which was launched to commemorate the company's 50th anniversary, asked Ansys software users to share their most aesthetically pleasing simulation images to demonstrate the art that emerges from science.

The winning images range from the radiation patterns of the most complex fighter aircraft radar system to an analytical approach to improving kidney dialysis.

Internal judges narrowed down more than 200 submissions to select finalists across six categories for public voting. More than 3,600 votes were cast across the categories of 3D design, electromagnetics, structures, fluids, healthcare and multiphysics.

Art of Simulation Winners:

Healthcare:

- Tamás Büki, CTO at YourAnastomosis, simulated the changes occurring in the walls of an artery used for kidney dialysis to better understand the changes seen during microscopic analysis of the artery tissue.

Structures:

- Boukhssas Salim, a mechanical engineering student at the Mohammadia School of Engineers in Morocco, studied the structural deformation of a train disc brake to minimize brake distortion during operation and improve safety.

Fluids:

- Rituja Kulkarni, CFD research assistant at the University of Cincinnati, analyzed the airflow in her apartment by simulating the wind entering through a window and balcony door, along with the effect of a rotating ceiling fan.

3D Design:

- Rodrygo Karassawa Zanoni, senior specialist engineer with FEM3D, analyzed the structural stress and deformation of a jacket seafastening.

Electromagnetics:

- Alexander Shalaby, a microwave design specialist at Meggitt Airframe Systems, simulated the radiation pattern of an active electronically scanned array radar with more than one thousand

elements behind the nose cone of a fifth-generation fighter aircraft.

Multiphysics:

- Rahul Singh, an engineer with BRP, used multiphysics simulations to account for heating, cooling, pressure and fatigue in the development of a 300 horsepower, two-stroke outboard marine engine.

"We were overwhelmed by the artistic expression of the images that emerged when engineers used simulation to solve their toughest challenges," said Lynn Ledwith, vice president and chief marketing officer at Ansys. "This first year of the Art of Simulation competition was a tremendous success in terms of the number of high-quality submissions we received worldwide. The images showcased not only the winners' technical achievements, but also captured the beauty, art and imagination of their work."

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Aspen Technology Joins Alliance to End Plastic Waste

8 January 2020

Aspen Technology, Inc., a global leader in asset optimization software, today announced it has joined the Alliance to End Plastic Waste. AspenTech will work with fellow members to support innovation to build a more sustainable global plastic value chain. From industrial process design to driving greater efficiency in industrial operations, AspenTech solutions help producers reduce waste and emissions from plastic production, and accelerate innovation for recycling process technologies and other new solutions for the circular economy.

The Alliance to End Plastic Waste is an international non-profit organization partnering with government, environmental and economic development NGOs and communities around the world to address the challenge of plastic waste in the environment. Through programs and partnerships, the Alliance focuses on solutions in four strategic areas: infrastructure, innovation, education and engagement, and clean up.

"We welcome Aspen Technology as a member of the Alliance and its commitment to support and advance our mission. The collaboration among more than 50 member companies, strategic allies and supporters at the Alliance will bring us closer to our vision of ending plastic waste in the environment. Ultimately, we are unlocking scalable and sustainable solutions towards a circular economy," said Jacob Duer, President and CEO of the Alliance to End Plastic Waste.

"AspenTech's mission is to help our customers operate their businesses to be safer, greener, more reliable and more efficient," commented Antonio Pietri, President and CEO of Aspen Technology. "We are honored to have the opportunity to join some of the world's leading companies in making a greater commitment to industry and doing all we can to help address the challenge presented by the global plastic waste problem. As a member, we will invest funding, research and development and provide industrial AI focused resources to drive the innovation required for this new economy."

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AVEVA achieves Microsoft Gold Application Development competency and Silver Cloud Platform, Data Analytics, and Data Center competencies

8 January 2020

AVEVA, a global leader in engineering and industrial software today announced it has attained a **Gold Application Development competency and Silver Cloud Platform, Data Analytics, and Data Center competencies**, demonstrating a 'best-in-class' ability and commitment to meet Microsoft Corp. customers' evolving needs in today's mobile-first, cloud-first world and distinguishing itself within a small percentage of the Microsoft partner ecosystem. A portfolio of competencies showcases that AVEVA is committed to focusing on on-demand, business solution areas, along with ensuring it can meet the evolving needs of our mutual customers.

To earn a Microsoft competency, partners must successfully complete exams (resulting in Microsoft Certified Professionals) to prove their level of technology expertise and, for Gold competencies, designate these certified professionals uniquely to one Microsoft competency, ensuring a certain level of staffing capacity. Partners must also submit customer references that demonstrate successful projects and pass technology and/or sales assessments. For gold competencies, partners must also implement a yearly customer satisfaction study and, for many competencies, meet a revenue commitment.

"AVEVA is enabling industrial organizations to embrace innovative digital platforms that will allow them to deploy faster, reduce energy consumption and emissions, and work more collaboratively, "commented Steen Lomholt-Thomsen, Chief Revenue Officer at AVEVA. "These Microsoft competencies not only showcase our technology expertise, but also demonstrate our commitment to supporting customers and embracing innovation. By deploying our solutions, customers can be empowered to deliver better business outcomes, which will in turn help to accelerate their own success."

"By accomplishing a portfolio of competencies, partners demonstrate true commitment to meeting customer technology needs today and into the future," said Gavriella Schuster, corporate vice president, Worldwide Partner Group at Microsoft Corp. "These partners' proficiency and expertise of Microsoft technology is instrumental in helping our mutual customers continue to drive innovative solutions."

All 17 Microsoft technology competencies differentiate a partner's specific technology capabilities, helping customers find qualified solution providers with expertise in discrete areas quickly and easily.

Application Development

Earning the Application Development competency helps partners differentiate themselves as a trusted expert to their customers through development and deployment of commercial or custom applications built using core Microsoft technologies like Windows Server and Windows 8 operating systems, the Windows Azure platform, Microsoft Visual Studio 2012 development system, Microsoft BizTalk Server and emerging cloud-based and web business models. By gaining access to a comprehensive set of benefits through the Application Development competency, partners can acquire new customers and help them be more productive and profitable through deployment of business applications, advanced web portals or rich client user interfaces that run on premises or in the cloud.

Cloud Platform

The Cloud Platform competency is designed for partners to capitalize on the growing demand for

infrastructure and software as a service (SaaS) solutions built on Microsoft Azure. Differentiate your company with the Cloud Platform competency, and you will be eligible for Signature Cloud Support, Azure deployment planning services, Azure sponsored credit, direct partner support, eligibility to deploy certain on-premises, internal use software on Microsoft Azure, and access to the cloud platform roadmap.

Data Analytics

The Data Analytics competency recognizes partners who demonstrate expertise in specific aspects of Microsoft BI solutions to deliver, deploy, and support BI projects. Differentiate your company with this competency and receive access to internal use software licenses, technical and presales support, training for your IT professionals, developers, incentives, and marketing through the Partner Marketing Center and Pinpoint. Strengthen relationships with your customers by becoming a provider of SQL Server deployment planning services or SharePoint deployment planning services.

Data Center

The Datacenter competency recognizes partners who are transforming data centers into more flexible, scalable, and cost-effective solutions. Partners can deepen customer relationships by becoming a provider of Private Cloud, Management, and Virtualization Deployment Planning Services. Differentiate your company with this competency and receive access to internal use software licenses, technical and presales support, training for your IT professionals, incentives, and access to the Microsoft Partner server and cloud site with exclusive content and resources to help you win new deals to deliver projects successfully.

The Microsoft Partner Network helps partners strengthen their capabilities to showcase leadership in the marketplace on the latest technology, to better serve customers and to easily connect with one of the most active, diverse networks in the world.

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Capgemini announces appointment of Olivier Sevillia as Group Chief Operating Officer
8 January 2020

Capgemini announces the appointment of Olivier Sevillia as its Group Chief Operating Officer, effective January 1, 2021. In this role Olivier is responsible for the Group's strategic business units and sales, with a focus on applying the Group's deep and broad industry expertise to be a strategic business partner to its clients.

"At the start of this new year, it is my pleasure to recognize Olivier Sevillia as the Group's Chief Operating Officer. Having been with Capgemini for thirty years, Olivier has built an impressive track record in leading and operating strategic businesses across the Group," comments Aiman Ezzat, CEO of the Capgemini Group. *"As Chief Operating Officer, Olivier's breadth of experience and proven business acumen will add great value to our client partnerships worldwide, while supporting me and the rest of the leadership team in realizing our Group priorities."*

Biography: Olivier Sevillia

Group Chief Operating Officer

Group Executive Board Member

Up until December 2020, Olivier had been CEO of Capgemini's Europe Strategic Business Unit since

July 2018.

Before this, from 2011, Olivier led the Application Services Continental Europe Strategic Business Unit. In January 2014 Olivier joined the Group Executive Board and his role expanded to managing the operations of two additional Strategic Business Units: Business Services and Capgemini Consulting. From January 2016 he also steered the Group's Digital strategy and service line.

In January 2009, Olivier joined the Capgemini Group's Executive Committee as Head of South Europe and France for Systems Integration.

Prior to that, from 2007 to 2008, he established and developed Capgemini Consulting Western Europe after acting as Head of Capgemini Consulting France between 2003-2006.

Olivier joined Capgemini in 1990 where, until 2002, he successively had business development and general management responsibility for profit centers in Capgemini's Systems Integration business in France.

Olivier holds a Master of Science in IT from ENSIIE (1987) and is a graduate from HEC Paris (1990), where he gained a MBA and from the Stanford Business School Executive Program (2008).

Olivier also supports the institutions where he studied, having been the Chairman of the board of the Master of Science he attended at ENSIIE and is currently the Chairman of The HEC Paris Foundation.

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CNC Software, Inc. Appoints New Marketing Director

6 January 2021

CNC Software, Inc., the developers of Mastercam, announced that Paco Agrafojo has been hired in the role of Marketing Director. Mastercam is the world's most widely used CAM software in both domestic and international markets. Agrafojo will lead efforts in support of the brand's ongoing market dominance and to further develop the company's position as a global leader in manufacturing technology.

Paco Agrafojo comes to CNC Software with a wealth of experience within the industrial and manufacturing industry, creating market and product strategies for several top brands in his 20+ years of experience. Based in Suffield, Connecticut, he joins CNC Software as the Marketing Director to continue to build on Mastercam's success.

"I'm very proud to join the CNC Software family at such a critical time of growth," said Agrafojo. "I look forward to driving engagement with the Mastercam brand through partnerships with key customers, influencers, and ultimately end-users. As a leader in the CNC industry, it is also important for Mastercam to focus on inspiring the next generation of machinists, programmers, and engineers."

Sandy Moffat, Chief Market Officer, commented, "As we continue to grow our brand and presence, we are thrilled to have Paco join our ever-expanding team. He comes to us with a very solid background in creating market and product strategies, and with experience that will help benefit CNC Software worldwide."

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CONTACT Software expands partner network at high-tech hub Taiwan

04 January 2021

The CONTACT Global Ecosystem has a new partner in the "Silicon Valley" of Taipei. PilotSoft Technology, specializing in product design and development management applications, now supports Taiwan's high-tech industries and contract manufacturers with outstanding solutions and services around the CONTACT Elements platform.

The Taiwanese industry is best known as a manufacturer of electronic components and products such as semiconductors, panels, notebooks and smartphones. Here, for example, Foxconn, one of the world's largest companies in this field, manufactures electronics and computer parts for Apple, Dell, Intel, Microsoft, Nintendo, Sony and many other international IT companies.

"Increasing competition is forcing the local industry to radically modernize their product development processes," said Alan Lee, General Manager of PilotSoft Technology Co. Ltd. "With the CONTACT Elements platform, we now offer best-in-class solutions that enable companies to make their product development more efficient and successfully implement Industry 4.0 projects."

CONTACT's new partner in Taiwan is a leading provider of CAD, PLM and IoT software. His customers are manufacturers of consumer electronics and high-tech industries. PilotSoft Technology is headquartered in Taipei's Nankang Software Park. Many multinational corporations such as Asia Pacific Telecom, Hewlett-Packard, IBM, NXP Semiconductors and numerous other technology companies have settled here, so that the Nankang district is today considered the Asian "Silicon Valley".

PilotSoft Technology's experts have already started initial projects with customers who want to modernize their development and manufacturing processes with new PLM and IoT solutions.

"With PilotSoft Technology, we have a strong partner with excellent market access in one of the fastest growing industrial regions in the world," says Michael S. Murgai, Director Strategy & Operations at CONTACT Software. "Together, we can significantly support the companies located there on their way to smart manufacturing."

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INTRODUCING OPENBOM PARTNER – MATRIX, ISRAEL

8 January 2020

The world is moving towards online connectivity and manufacturing companies, contractors, and supply chain are catching up to realize the power of the cloud / SaaS solutions as well as the opportunity that SaaS connected platform can bring. OpenBOM is leading the way for the PLM industry to realize the opportunity of connected services and scalable solutions that can grow from a single engineer to large organizations including their suppliers and contractors.

Last year, we announced a partnership program at OpenBOM for consulting and online services. As we grow, we realize the importance of partnership with a local and global service organization to support our global customers from a different perspective – training, education, custom integration, and implementation services.

Today, I'm excited to introduce our new partner – Matrix, Israel.

Matrix is the leading technology services company in Israel. The company specializes in the implementation and development of leading technologies, software solutions, and products, providing its customers with infrastructure and consulting services, IT outsourcing, offshore, training and assimilation and serves as representatives for the world's leading software vendors.

OpenBOM is collaborating with an amazing team of people working in the domain of engineering software at Matrix and looking forward to expanding our collaboration and services in Israel.

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JETCAM and Airborne collaboration for creating a digital interface for automated kitting
5 January 2021

In response to significant demand from the market, JETCAM International s.a.r.l. and Airborne jointly announce a collaboration on integration between the Airborne's Automated Kitting solution and JETCAM's CrossTrack composite material tracking software.

The integration ensures seamless data exchanges between the two systems as plies are unloaded from the cutting table and then automatically sorted into ordered kits by the Airborne's kitting system. As the operator loads each ply to the kitting machine it is scanned and its shape identified, along with its stacking order. The robot sorts, sequences and stacks all subsequent plies until the kit is complete, automatically updating its status within CrossTrack without any user input. When the completed kit leaves the buffer its location status is updated, completely automating the process from cutting through to moving onto layup.

CrossTrack is an advanced material tracking software package, that ensures that composite materials are tracked from the freezer storage until curing in the autoclave, on an individual ply basis. By connecting the Automated Kitting software to CrossTrack it is ensured that this fully automated step is also fully digitally connected. The interface is based on CrossTrack Web Services platform, which allows any external app to safely and securely exchange data with CrossTrack, with triggers and alerts also ensuring that data is automatically exchanged when an event occurs, such as a ply's location or status changing. All transactions will be logged automatically in CrossTrack's traceability logs.

The connector will be available as an option for companies wanting to connect Airborne's Automated Kitting solution with JETCAM's CrossTrack composite software.

Said Martin Bailey, General Manager of JETCAM International s.a.r.l.; *"Many companies move from producing static single kit nests to using nesting software, creating highly efficient dynamic nests, often containing multiple kits. However, this leads to bottlenecks at the cutter as staff try to unload and sort plies into kits, often removing some or all of the material savings made. With our relationship with Airborne and their kitting technology and experience, companies can have the best of both worlds, with highly optimized nests that are quickly and automatically sorted."*

Said Arno van Mourik, CEO of Airborne; *"We see from our clients that automating the kitting process has two main business drivers: one is to reduce cost and secondly, it creates much more flexibility and control in a digital factory. To capture those benefits, it's crucial to be connected to the software systems our customers are using. Therefore we are thankful to JETCAM for this collaboration to create the digital connection between the software solutions of both companies."*

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PROS Appoints Martin Simoncic as Chief Customer Officer

6 January 2021

PROS®, a provider of AI-powered solutions that optimize selling in the digital economy, announced that Martin Simoncic, a seasoned leader with deep expertise in customer success and professional services, has joined the company as Chief Customer Officer (CCO). Reporting directly to Les Rechan, PROS Chief Operating Officer, Simoncic will lead the Customer Experience and Engagement (CEE) organization to drive end-to-end customer engagement and platform adoption to further support the company's aggressive growth plan.

In this role, Simoncic will be responsible for customer success, customer support, professional services, training and enablement on a global basis. He succeeds John C.P. Allessio, Executive Vice President and CCO, who will retire from the company in mid-January 2021.

As PROS first CCO, Allessio defined the CEE organization and implemented key customer-facing functions, along with next-generation business partner enablement programs, to further transform the PROS customer experience on a global basis. His key accomplishments span the launch of the Customer Success value and adoption practice, evolution of customer training curriculum and certification, redefining of Professional Services practices for B2B and Travel portfolios, as well as advancement and integration of the PROS Customer Support model.

"John has made a great impact on both our customers and partners at PROS," said Rechan. "Through effective leadership and relentless focus on customer success, he established the CEE functions and programs needed to drive broad adoption of our AI technology platform and deliver greater lifetime value of PROS solutions. I am grateful for the contributions John has made."

Simoncic rejoins PROS after serving as Vice President, Customer Success and Professional Services at Vertafore, where he was responsible for driving high-velocity onboarding and adoption across its customer base of 20,000+.

Prior to Vertafore, Simoncic spent 11 years at PROS, where he started as an Implementation Consultant leading many of the company's largest implementations. During his tenure at PROS, he served in a number of roles including VP of Professional Services, where he led the global B2B professional services team through periods of high growth, and VP of Product Management, where he had the opportunity to define and drive B2B product strategy forward during the company's transition to SaaS.

Simoncic also serves as an Adjunct Professor at Rice University's Jesse H. Jones Graduate School of Business, educating graduate students on the key strategic and tactical concepts of advanced pricing, omnichannel optimization and revenue management.

"Martin is a proven leader who brings extensive experience and deep passion for customer adoption and retention," continued Rechan. "Added to this is Martin's appreciation for our rich history and culture at PROS, which best positions him to lead a diverse, global team to further support our customers and partners along a continuum to achieve the greatest lifetime value of PROS solutions. We are thrilled to welcome Martin back to PROS."

"I am excited to join PROS at a time when the company is laser-focused on deepening its customer-centric culture and prioritizing consistent delivery of business outcomes and outperformance for each and every customer," said Simoncic. "I look forward to leading knowledgeable and successful teams

that collectively impact the end-to-end customer experience and defining the next-level strategies and programs that enable PROS to drive enhanced customer engagement, value and adoption at scale."

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Synopsys-Sponsored CISQ Research Estimates Cost of Poor Software Quality in the US $2.08 Trillion in 2020

6 January 2021

Synopsys, Inc. announced the publication of The Cost of Poor Software Quality In the US: A 2020 Report. Co-sponsored by Synopsys, the report was produced by the Consortium for Information & Software Quality (CISQ), an organization which develops international standards to automate software quality measurement and promotes the development and sustainment of secure, reliable, and trustworthy software. The report's findings reflect that the cost of poor software quality (CPSQ) in the US in 2020 was approximately $2.08 trillion. This includes poor software quality resulting from software failures, unsuccessful development projects, legacy system problems, technical debt and cybercrime enabled by exploitable weaknesses and vulnerabilities in software.

"As organizations undertake major digital transformations, software-based innovation and development rapidly expands," said report author, Herb Krasner. "The result is a balancing act, trying to deliver value at high speed without sacrificing quality. However, software quality typically lags behind other objectives in most organizations. That lack of primary attention to quality comes at a steep cost. For this reason, this report offers specific recommendations to software engineers, project teams and organizational leaders to improve the quality of the software they use and build."

Key findings from the report include:

- **Operational software failure is the leading driver of the total cost of poor software quality (CPSQ), estimated at $1.56 trillion**. This figure represents a 22% increase since 2018. That number could be low given the meteoric rise in cybersecurity failures, and also with the understanding that many failures go unreported. Cybercrimes enabled by exploitable weaknesses and vulnerabilities in software are the largest growth area by far in the last 2 years. The underlying cause is primarily unmitigated software flaws.

- **Unsuccessful development projects, the next largest growth area of the CPSQ, is estimated at $260 billion.** This figure has risen by 46% since 2018. There has been a steady project failure rate of ~19% for over a decade. The underlying causes are varied, but one consistent theme has been the lack of attention to quality. Research suggests that success rates go up dramatically when using Agile and DevOps methodologies, leading to decision latency being minimized.

- **The operation and maintenance of legacy software contributed $520 billion to the CPSQ.** While this is down from $635 billion in 2018, it still represents nearly a third of the US's total IT expenditure in 2020.

"As poor software quality persists on an upward trajectory, the solution remains the same: prevention is still the best medicine. It's important to build secure, high-quality software that addresses weaknesses and vulnerabilities as close to the source as possible," said Joe Jarzombek, Director for Government and Critical Infrastructure Programs at Synopsys. "This limits the potential damage and cost to resolve issues. It reduces the cost of ownership and makes software-controlled capabilities more resilient to attempts of cyber exploitation."

Methodologies such as Agile and DevOps have supported the evolution of software development whereby software developers apply enhancements as small, incremental changes that are tested and committed daily, hourly, or even moment by moment into production. This results in higher velocity and more responsive development cycles, but not necessarily better quality. As DevSecOps aims to improve the security mechanisms around high-velocity software development, the emergence of DevQualOps encompasses activities that assure an appropriate level of quality across the Agile, DevOps, and DevSecOps lifecycle.

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Event News

Stratasys CEO and CFO to Present at the 23rd Annual Needham Growth Conference on January 14, 2021

04 January 2021

Stratasys Ltd., a leading polymer additive manufacturing company, is pleased to announce that the company will be participating in the upcoming 23rd Annual Needham Growth Conference. Yoav Zeif, Chief Executive Officer and Lilach Payorski, Chief Financial Officer, will be presenting on Thursday, January 14, 2021, at 2:00 p.m. ET.

The presentation will be available as a live webcast and archived for 180 days at https://wsw.com/webcast/needham103/ssys/2306220. It will also be available as an archive only at https://investors.stratasys.com/news-events/ir-calendar.

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Financial News

PROS Holdings, Inc. Announces Date of Fourth Quarter and Full Year 2020 Financial Results Release, Conference Call, and Webcast

7 January 2021

PROS®, a provider of AI-powered solutions that optimize selling in the digital economy, will release its financial results for the fourth quarter and full year ended December 31, 2020 after the U.S. financial markets close on Thursday, February 4, 2021.

PROS Holdings, Inc. will host a conference call on Thursday, February 4, 2021 at 4:45 p.m. EST to discuss the company's financial results and business outlook. To access this call, dial 1-877-407-9039 (toll-free) or 1-201-689-8470.

The live and archived webcasts of this call can be accessed under the "Investor Relations" section of the Company's website at www.pros.com. A telephone replay will be available until Thursday, February 18, 2021 at 1-844-512-2921 (toll-free) or 1-412-317-6671 using the pass code 13714219.

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Implementation Investments

Aramco continues progress in digital transformation with SAP strategic alliance
28 December 2020

Aramco announced a strategic alliance with SAP Saudi Arabia to expand the digitalization of its Enterprise Resource Planning (ERP) systems. The agreement with SAP is another step in Aramco's digital transformation journey, paving the way for further integration of new technologies in a rapidly evolving technological landscape.

The SAP ERP system will deepen the deployment of innovative IR4.0 technologies including cloud-based services, embedded analytics, mobility, machine learning, artificial intelligence, advanced analytics and Internet-of-Things solutions.

By extending the strategic alliance with SAP Saudi Arabia, Aramco's contribution to the in-Kingdom business ecosystem will be enhanced through job creation, training and by localizing supplier services and R&D. In addition to enabling greater efficiencies, SAP's Data Center in Saudi Arabia will offer new cloud solutions to Aramco and other companies.

Ahmad A. Al Sa'adi, Aramco Senior Vice-President of Technical Services, said: "We are committed to our digital transformation program, which is improving our ability to meet the needs of our customers around the world and setting a new standard for technology deployment in our industry. Technologies and solutions within digital transformation initiatives will touch all facets of our operations. This is just one more example of how we are applying best practice in this space and embracing 4IR solutions. It is an important milestone on our digital journey and also contributes to our iktva target."

Luka Mucic, Member of the Executive Board of SAP SE, Chief Financial Officer, said: "In 23 years of strong collaboration, Aramco and SAP have become strategic partners. With numerous co-innovation initiatives, we have jointly introduced oil and gas best practices, enhanced business operations, and expanded the horizon of opportunities in this industry. Aramco has taken the next step on their digital transformation journey and towards becoming an Intelligent Enterprise, implementing S/4 HANA and the Business Technology Platform amongst others."

SAP's new platform will serve the entire Aramco organization, supporting the Company's Digital Transformation Program and enabling new processes for a majority of the company's enterprise applications and solutions. The new architecture leverages emerging technologies that will propel Aramco into a new era of Intelligent Enterprise and benefits include faster processing, intuitive user experience, real-time reporting, integration with cloud solutions and system consolidation, which reduces total cost of ownership.

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IronOrbit Helps Ulteig Engineering Drive America Forward
5 January 2021

lronOrbit, a privately owned and fully integrated ICT powerhouse, announced that Ulteig Engineering has commissioned them to provide a cloud-based solution to meet the growing demands of the firm all across North America.

With over 400 employees spread out over 6 states working with the nations leading lifeline sector companies, Ulteig needed an affordable, reliable, and efficient way to connect project stakeholders. Their geographically dispersed workforce requires maintaining open lines of communication to keep everyone in sync throughout the lifecycle of the project. Ultieg Engineering knew communication and real-time collaboration was key to controlling costs and managing construction schedules during the pandemic and beyond.

Tyler Voegele, the Enterprise Applications and Systems Lead at Ulteig, said, *"We needed a reliable and scalable VDI technology provider that could meet our performance demands and deliver an excellent ROI. lronOrbit was the best fit for us. We were impressed with lronOrbit's whole package and demonstrated value by resolving technical challenges for us. They have an insightful approach to tackling our industry needs and infrastructure. We will no doubt benefit from their expertise and extensible customer service."*

lronOrbit CEO, Alexander Saca, said, *"Our focus on the AEC space led us to hone our GPU-Accelerated technology. This helped us win one of the largest, most well-respected engineering firms in the U.S. After a year of scrutiny, trials, and testing, our solution met their high standard. Ulteig found lronOrbit's GPU-Accelerated INFINITY Workspaces had the most features and fastest performance available."*

Just a few weeks ago, multi-state AEC firm MSA Professional Services commissioned lronOrbit to provide cloud-based GPU-Accelerated workspaces to its employees, many of whom work in rural areas with poor internet connections. As a result, MSA engineers enjoy powerful GPU Accelerated cloud workspaces with latency-free, high-speed rendering capabilities, reliable 24/7 access, and real-time collaboration across project teams in multiple regions. INFINITY Workspaces, optimized by proprietary SMX Speed Technology™, will empower MSA to increase productivity and do more for their clients. Through the use of lronOrbit's purpose-built cloud solutions, MSA is in a better position to meet the growing demands of AEC Firms.

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Oracle Helps ENGIE Manage Its 170,000 Strong Workforce

8 January 2020

Oracle announces that ENGIE, a global group that provides low-carbon energy and services, is extending its HR transformation with Oracle Fusion Cloud Human Capital Management (HCM) to support its 170,000 employees. ENGIE has built its human resources policy around the core elements of open dialogue, continuous improvement and sharing best practices.

ENGIE has expanded its use of Oracle Cloud HCM to leverage new artificial intelligence (AI) and machine learning features in Oracle Fusion Cloud Applications. By using HR data to provide support on recruitment, skills development, and internal mobility, Oracle is helping ENGIE empower its employees throughout their work and careers via one cloud-based system, bringing together previously disconnected data from multiple lines of business.

"We are working with ENGIE and innovating to help its HR teams and employees meet the demands of today's evolving workplace," says Karine Picard, Country Leader France and VP Business Development Applications. "Oracle is uniquely positioned to deliver a complete, global HR solution and help ENGIE

standardise processes such as managing HR information, recruitment, learning, performance management, as well as succession plans, career development, and workforce management."

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SODECA's fans and extractors celebrate five years of digitization on the TraceParts platform

7 January 2021

SODECA, a manufacturer of air treatment solutions, has reiterated its trust in TraceParts for digitizing and promoting its industrial fans, ventilation systems and smoke extraction systems.

Since 1983, SODECA has specialized in smoke extraction and pressurization control systems, fans for explosive atmospheres and air purification systems in commercial, industrial and residential areas.

SODECA choose the TraceParts solution five years ago, primarily to deliver free high value-added content to its customers.

Outsourcing the process of creating and publishing our products to TraceParts allows us to give our customers access to quality CAD models in a large number of formats.

Since our CAD models are available over the TraceParts platform, our teams no longer need to worry about responding to requests for technical data and can instead focus on creating new products.

explains Mònica Danés, Head of the Communication Department

Thanks to its products' CAD models that are already available online and can be downloaded by designers and engineers around the world, SODECA can concentrate its activities on air purification systems, with applications in industrial, commercial and residential buildings for preventing viruses and bacteria from spreading through the air, which is essential during the current health crisis.

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T2T Solutions Innovates with Centric PLM for SMB

04 January 2021

Sustainable fashion provider T2T Solutions has selected Centric Software's Product Lifecycle Management (PLM) solution for emerging enterprises, Centric SMB. Centric Software provides the most innovative enterprise solutions to fashion, retail, footwear, outdoor, luxury, home décor and consumer goods companies to achieve strategic and operational digital transformation goals.

Centric SMB is a cloud-based PLM solution tailored for the needs of small and mid-sized businesses to streamline product-related processes that grow more complex as companies scale and expand. Available on a subscription basis (SaaS), Centric SMB is proven to help speed product development, reduce costs and boost efficiency.

Established in 2001 and based in Barcelona, T2T Solutions works with major fashion retailers across Europe, with an impressive roster of clients including Zara, Mango, Desigual, Massimo Dutti, Warner Bros. and Walt Disney Pictures. The company was founded to enable the buying departments of large retailers to rapidly develop collections and respond to an ever, and quickly, changing market. T2T Solutions, a specialized sustainable fashion supplier, offers the design and production of fashion collections, overseeing the entire value chain, and adapting to the specific needs of each brand.

Jordi Blasco, CEO of T2T Solutions explains how they needed better control and visibility to achieve a real QR (Quick Response) and to transition to being more proactive in anticipating unforeseen problems and new trends.

"Not only is Centric SMB crucial for the centralization of data and information — both internally and externally with all our partners, suppliers and customers — but also, it will enable us to completely transform how we work, and increase efficiency."

"There is no doubt that Centric SMB can provide us the best PLM solution, as it is adapted to the fashion industry. It corresponds to all of our digital needs and it will allow us to advance and integrate other projects in parallel, which is a huge bonus."

"We received references about Centric from a number of our customers, which is a testament to Centric's impeccable reputation in our industry. What's more, the SMB solution will enable us to gain greater traceability for sustainable product development, which is a key objective for the business."

"We realize that digitization is necessary now, not the future, and with Centric Software we visualize the creation of viable capsule collections in record time, with the support of suppliers and approval of customers, in just one click. Thanks to the increased control we will have across the board, we expect a real and reliable level of traceability for our customers," explains Blasco.

"Innovation, design, sustainability, digitization, sourcing and technology are concepts linked to T2T, and that's where Centric Software came in", recognizes Blasco.

"We are delighted to be working with T2T Solutions to help them reach both their short and long-term objectives," comments Chris Groves, President and CEO of Centric Software. "T2T Solutions and Centric share many core values, and we are looking forward to this exciting collaboration."

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TraceParts supported Purdue University for their Mechanical Components Benchmark (MCB) research

8 January 2020

A talented team of mechanical engineers from Purdue University in the United States has created the first comprehensive open-source annotated database of more than 58,000 3D mechanical parts, designed to help researchers apply machine learning to those parts in actual machines.

We are in the deep learning era, using computers to search for things visually. But no one is focusing on the parts that go into machines: pipes, bearings, motors, washers, nuts and bolts, and many more. Those are the things that are important to us as engineers and manufacturers. We want to be able to point a camera at a real-world part, and have the computer tell us everything about that part or design.said Karthik Ramani, Purdue's Donald W. Feddersen Distinguished Professor of Mechanical Engineering

Ramani's team experimented with visual search for parts in the early 2000s, but computing power and machine learning techniques were not yet sufficiently advanced. In the years since, researchers have learned that building a solid dataset is all about both quality and quantity.

Deep learning is data hungry. It needs a lot of examples for the computer to learn what humans mean and how things relate to each other. That means we needed a lot of 3D models of parts which also required an underlying engineering classification. Ramani said

The team started by partnering with TraceParts, one of the world's leading providers of 3D digital

content for engineering, in order to get unlimited access via TraceParts API to a extremely comprehensive data vault containing more than 120 millions of 3D CAD models from industrial parts. The team collaborated with the University of Texas, Austin assistant professor Qixing Huang to scour other databases for similar 3D models. They ended up compiling a database of 58,696 mechanical components.

Ramani's team organized the parts by establishing a hierarchical taxonomy of 68 classes, based on the International Classification for Standards (ICS), a system of technical standards created and maintained by the International Organization for Standardization (ISO).

Now when a computer sees a picture of a seal component, it will know that it fits in the category of dynamic seals and then, more specifically, under composite seals.Ramani said

The researchers have just recently published their open-source database, inviting computer vision and machine learning researchers to access it and create their own experiments. They showcased their work at the 16th European Conference on Computer Vision in August.

We are very pleased to partner with TraceParts. As we needed tens of thousands of 3D CAD models for our research, access to the TraceParts database was a fantastic help because it is vast and sufficiently diversified.added Karthik Ramani

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Product News

BETA CAE Systems announces the release of the v21.1.0 of its software suite

28 December 2020

About this release

Consistently trying to minimize simulation turnaround time and accelerate the automatic setup for workflows and processes, BETA CAE Systems proudly presents the release of v21.1.0 of its software suite.

The brand new version offers a plethora of features to unlock new potential for simulation in design and analysis, as well as a range of upgrades and performance improvements for existing workflows.

Do not miss:

- The promising entries of Electronic CAD (eCAD) and Electromagnetics, as well as Thermal for structural applications, as simulation fields of analysis.
- The progressing NVH capabilities from pre- to post-processing.
- The impressively accelerated performance in Crash & Safety post-processing processes.
- The augmented pre-processing potential with the advancements in ANSA VR.
- The continuously enriched capabilities of Machine Learning integration in KOMVOS through ANSA.

Release Highlights

Diversifying multidisciplinary capabilities in ANSA

The introduction of Electronic CAD (eCAD), as well as Electromagnetics, triggers a new potential in

our pre-processing fields of expertize and widen the areas of simulation to new perspectives.

In a similar manner, the introduction of Thermal support for Marc and Pam-Crash solvers paves the way for more efficient pre-processing methods.

One step further, and loyal to our goal to provide steady, but at the same time efficient and swift model management techniques, we empowered Modular Environment with extended capabilities. Collaboration with remote users is now further facilitated, allowing the transfer of DM objects between different DMs, the benefits of which are further augmented by the new capability of data compression.

From the discipline-oriented perspective, the already introduced Marc interface gains ground with even more dedicated capabilities, whereas Actran offers extended functionality with numerous additional features. In a similar manner, Crash & Safety fields offer a progressing interface for Impetus solver, along with numerous newly introduced tools for other applications, such as Marionette Positioning for Pam-Crash analysis.

Not to be missed, the enriched optimization capabilities that vest the new version with a new potential for topology optimization, as well as the ability to morph and modify models through VR and Collaboration in ANSA.

Optimization gaining ground with EPILYSIS

The brand new v21.1.0 heads straight for uplifted optimization with the output of shape optimization results in HDF5 format for SOL200. On top of that, enhancements in Contacts algorithm, in sectors such as Penetration checking and output of intermediate results, give boost to the accuracy in engineering solutions and come hand-in-hand with noteworthy enhancements in memory and disk usage peaks reported in .f04 file.

Elevating post-processing capabilities with META

Boosting graphics performance even more, the brand new GPU Accelerated Smooth Light Calculations provide faster first animation loop with less memory consumption, whereas the ability to place annotations around models in real-time, ensures more dynamic post-processing interaction.

Moreover, acknowledging and further promoting post-processing needs and capabilities in the area of Web Collaboration, its interface has arrived with an uplifted look & feel, hosting pages, windows and states for even smoother user interaction.

Vast developments have also taken place in the NVH domain, by the direct support of enforced excitation on tire patch in Modal Response and FRF Assembly, using the large mass method.

Other areas that have recently gained ground in META v21.1.0 are the Crash & Safety, hosting a new tool for the automatic report generation of Human Body Models results. This comes along with a significant speed-up when reading FEMZIP LS-DYNA results, by providing the ability to select and read multiple results simultaneously. On top of that, major performance improvements have also been tracked in ERF and ERF FEMZIP. Specifically, the loading time of ERF and ERF FEMZIP files has been accelerated by approximately 30-35% for both loading geometry and results. The aforementioned implementations, coupled with the support of ERF FEMZIP v11 libraries, boost the overall performance to even greater extend.

Machine Learning in BETA products branching out

Further expanding Machine Learning (ML) potential via its integration in KOMVOS through ANSA, as implemented in prior versions, the brand new version offers advanced capabilities for incremental learning, as well as a fine tuning of Machine Learning parameters, such as Train / Test ratio, Cross

Validation and Confidence level.

On top of that, the introduction and implementation of ML Toolkit v2.0, the new version of Tensorflow (2.2.1), offers an updated and synchronized packaging for both Linux & Windows.

For more details about the new software features, enhancements and corrections please, refer to the Release Notes document.

Compatibility and Supported Platforms

ANSA files saved by all the first and second point releases of a major version are compatible to each other. New major versions can read files saved by previous ones but not vice versa.

META Project files saved from version 21.1.0 are compatible and can be opened by META version 16.0.0 or later. To be readable by META versions earlier than v16.0.0, they have to be saved selecting the option "Version 16.0.0" or "Version <16.0.0".

Support for Mac OS has been discontinued.

Support for 32-bit platform has been discontinued for all operating systems.

Download

Where to download from

Customers who are served directly by BETA CAE Systems, or its subsidiaries, may download the new software, examples and documentation from their account on our server. They can access their account through the "sign in" link at our web site.
Contact us if you miss your account details. The Downloads menu items give you access to the public downloads.
Customers who are served by a local business agent should contact the local support channel for software distribution details.

What to download

All files required for the installation of this version reside in the folders named **"BETA_CAE_Systems_v21.1.0"** and are dated as of **December 28, 2020.** These files should replace any pre-releases or other files downloaded prior to that date.
The distribution of this version of our pre- and post-processing suite is packaged in one, single, unified installation file, that invokes the respective installer and guides the procedure for the installation of the required components.

For the installation of the software on each platform type, download from the respective folders, the .sh file for Linux or the .msi file for Windows.

In addition to the above, optionally, the META Viewer is available to be downloaded for each supported platform.

The tutorials and the example files reside in the folder named "TUTORIALS". This folder includes the complete package of the tutorials and example files, and a package with only the updated ones.

The Abaqus libraries required for the post-processing of Abaqus .odb files are included in the installation package and can be optionally unpacked.

Earlier software releases are also available in the sub-directory called "Previous_Versions" or in a folder named after the product and version number.

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Datakit Updates SOLIDWORKS Converters

8 January 2020

Datakit, a leading CAD data exchange company announces a wide range of new plug-ins.

SOLIDWORKS 3D to UG NX

Overview

- Enables accurate and convenient CAD data transfer from SOLIDWORKS to NX (Unigraphics).
- Does not require a license of NX.
- Converts .prt files

Version

- (SOLIDWORKS: 2007 to 2021) (UG NX: NX 5)

CATIA V4 2D to SOLIDWORKS 2D

Overview

- Enables accurate and convenient CAD data transfer from CATIA V4 2D to SOLIDWORKS.
- Does not require a license of CATIA V4.
- Converts Model files and CAT Export.
- Translates all 2D data.
- Create one SOLIDWORKS drawing file per draft.
- Batch mode process : Batch option or multiple file select (Needs a specific license).
- Included "as is" for free when purchasing the plug-in [CATIA V4 3D to SOLIDWORKS](#)or a SOLIDWORKS plug-ins bundle including a CATIA V4 import.

Version

- (CATIA V4 2D: 4.15 to 4.24) (SOLIDWORKS: 2011 to 2021)

UG NX 3D to SOLIDWORKS

Overview

- Enables accurate and convenient CAD data transfer from UG NX 3D to SOLIDWORKS.
- Does not require a license of UG NX.
- Converts Assemblies and Part :(*.PRT).
- Translates all 3D data.
- Batch mode process available.

Version

- (UG NX: 15 to NX 1946) (SOLIDWORKS: 2011 to 2021)

UG NX 2D to SOLIDWORKS

Overview

- Enables accurate and convenient CAD data transfer from UG NX 2D to SOLIDWORKS.
- Does not require a license of UG NX.

- Converts part and assembly files: (*.PRT).

- Translate all 2D data.

- Batch mode process available.

Version

- (UG NX: NX to NX 1946) (SOLIDWORKS: 2011 to 2021)

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OpenCFD Release OpenFOAM® v2012 (20 12)

23 December 2020

OpenCFD is pleased to announce the December 2020 release of OpenFOAM® v2012 (20 12). This release extends **OpenFOAM-v2006** features across many areas of the code. The new functionality represents development sponsored by OpenCFD's customers, internally funded developments, and integration of features and changes from the **OpenFOAM community**.

OpenFOAM is distributed by OpenCFD under the **GPL license** as:

- **Source code** to be compiled on any Linux system

- Pre-compiled binary installation **for Linux systems**

- Pre-compiled binary installation **for Mac OS X systems**

- **MS Windows installer**

- Bash on Ubuntu on Windows **for MS Windows 10**

Please refer to the **download instructions** to obtain the code. The development **repositories** are publicly available. These repositories are regularly updated with bug fixes and new functionality.

Upgrading

- Help for users is provided in the **user upgrade** guide.

- Help for developers is provided in the **developer upgrade** guide.

Pre-processing

- *snappyHexMesh*: new hybrid layer input

- *snappyHexMesh*: improved gap refinement controls

- *snappyHexMesh*: delete small regions

- *snappyHexMesh*: consistent layer extrusion

- **Community contribution** *extrudeMesh*: new polyLine option

- *blockMesh*: improvements

- Improved *PDRblockMesh*

- Miscellaneous improvements

Numerics

- New run-time selectable geometry calculation

- Improved particle tracking on moving meshes

- Function1: new frequency or period input
- Function1: new time limits

Solvers and physical models

- New vibro-acoustics solver
- New incompressible non-uniform density turbulent model for VOF
- **Community contribution** New generalized Newtonian viscosity models
- **Community contribution** New tabulated thermodynamics
- New noise utility weightings
- New buoyancy fvOption
- New multi-component evaporation and condensation droplet model
- Lagrangian: new recycling of particles

Boundary conditions

- New ACMI patch scaling
- Updated outlet mapped inlet

Post-processing

- Function objects: improved error mode handling
- New Abaqus surface input and output
- Lagrangian: new patch interaction fields
- New particle histogram function object
- Updated heat transfer coefficient function object
- **Community contribution** New Bilger function object
- Updated surfaceFieldValue function object
- **Community contribution** New planeToFaceZone topoSet option
- Updated cuttingPlane
- Updated iso-surfaces
- Updated distance surface
- **Community contribution** Updated searchableSphere
- Updated searchableDisk
- sampledSurfaces: general

Parallel

- New multiple world coupling
- Improved redistributePar utility

Usability

- Improved compiler configuration
- Improved installation scripts
- Rationalized mpi configuration names

- Portability

Release Announcement of CADfeature 16.0 M1 - Elysium

8 January 2020

Elysium has released CADfeature 16.0 M1.

Key Enhancement

Support New CAD Version

CAD	Versions added in 16.0 M1	Supported Versions
SOLIDWORKS	2021	2018 – 2021
Solid Edge	2021	ST10, 2019 – 2021 (Capturer)
Creo Parametric	7.0(*)	3.0 – 7.0

* Parts created in Creo 7.0 will be supported in B-rep mode if multi-body modeling is detected. Multi-body modeling paradigm will be supported in a future release

Release Announcement of Drawing Validator Ver.2.2- Elysium

25 December 2020

Elysium has released Drawing Validator Ver.2.2.

Key Enhancement

Changed support of CAD versions

CAD	Versions added in Ver.2.2	Supported Versions
Creo Parametric	6.0	2.0 – 6.0
NX	1847 Series, 1872 Series, 1899 Series, 1926 Series	12 – 1926 Series

Improved validation capability for Creo

- Fixed an issue that comparison fails because of duplication of sheet name or view name

Improved validation capability for NX

- Improved the performance (validation time)
- Supported comparison of title block
- Fixed an issue that comparison fails because of duplication of sheet name or view name