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CIMdata News

Summary of the First Day of PLM Road Map & PDT Fall 2021

16 November 2021

Written by [Ken Versprille](#)



Day 1 of the virtual conference, **PLM Road Map & PDT Fall 2021**, was held today, November 16, 2021, under the title “*DISRUPTION—the PLM Professionals’ Exploration of Emerging Technologies that Will Reshape the PLM Value Equation.*” Mr. Peter Bilello, President and CEO of CIMdata and Mr. Håkan Kårdén, Director of Marketing, Eurostep, welcomed over 150 attendees. After a brief introduction, they passed the baton to Dr. Ken Versprille, Executive Consultant, CIMdata, who moderated the speaker sessions.

Mr. Peter Bilello gave the keynote address, “*The Critical Dozen: 12 familiar evolving trends and enablers of digital transformation that you cannot or should not live without.*”

Mr. Bilello spoke of the speed-up of change that CIMdata has seen in industry to digitalize and automate their processes. He noted the interrelated factors forcing change, including the extraction of data, disruption in the supply chain, the growth of electronics in product development, new manufacturing techniques, and new materials, His list of the 12 trends and enablers included:

1. End to end connectivity
2. Data & process management
3. Ensuring all data is under Configuration Management control
4. Bill of information – the core product model
5. Model-based structures
6. Digital thread
7. Digital twin
8. IoT and PLM
9. A changed view of “product”
10. Big data and analytics
11. Data governance
12. Digital skills transformation

His closing message to industrial companies was that they must address all the elements to succeed.

Next was a joint presentation by Mr. Kenny Swope, Senior Manager - Architecture Integration &

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Interoperability Standards, of Boeing Commercial Airplanes and Mr. Jean-Yves Delaunay, PLM Interoperability Expert, of Airbus on data and process standards, titled “*The Business Value of Standards-based Information Interoperability for Aerospace & Defense.*” The presentation detailed the interoperability problem that aerospace companies have with data and the business value of a proper solution.

They noted the “Quadrant” of criteria included expert users defining their standards need, solution providers incorporating the standards, the aerospace supply chain using the standards, and the industry fully adopting them. They then listed the specific standards, many of them ISO approved, that the A&D PLM Action Group administered by CIMdata has recommended for use by their different workgroups.

After a short break, Mr. Torbjörn Holm, a Founder of Eurostep, continued with the standards topic. He gave examples in history for the need for standards. He emphasized industry requirements, avoiding vendor lock-in, and the need to manage products in a long lifecycle. In his opinion, most technical leaps include standards, and he offered that the best standards are user-driven.

Mr. Greg Weaver, Director of Corporate PLM at Gulfstream Aerospace, delivered the next presentation. The catchphrase title was “*Indexing Content – Finding Your Needle in the Haystack.*” He offered that 3D model-based definition was the pinnacle of design. He asked the rhetorical question—at what level do you drive your MBD requirements into the supply chain? Mr. Weaver noted that the digital model and the paper world do co-exist. He detailed how Gulfstream deployed Dassault Systèmes’ Exalead search engine to index the past 35 years of documents. Today Gulfstream users can search and retrieve document information in minutes.

Mr. Martijn Dullaart, Business Architect Enterprise Configuration Management, ASML, ended the day with his upbeat presentation on configuration management titled, “*The Next disruption please ...*” He emphasized the impact model-based has on configuration management. He also alluded to the idea that the digital thread is more of a network. In ending, he said the focus on configuration management must support rapid change, be adaptive and adjust for change, as well as digital to allow automation.

Summary of the Second Day of PLM Road Map & PDT Fall 2021

17 November 2021

Written by [Ken Versprille](#)



Day 2 of the virtual conference, [PLM Road Map & PDT Fall 2021](#), was held today, November 17, 2021, under the title “DISRUPTION—the PLM Professionals’ Exploration of Emerging Technologies that Will Reshape the PLM Value Equation.” Mr. Peter Bilello, President and CEO of CIMdata and Mr. Håkan Kårdén, Director of Marketing, Eurostep, again welcomed the attendees. Mr. Håkan Kårdén introduced Mr. Ken Webster, Director, IS4CE (International Society for the Circular Economy) who’s keynote presentation was titled, “In the future, you will own nothing, and you will be happy.”

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As a circular economy pioneer, Mr. Webster spoke of the Biosphere, where products are manufactured by companies and bought by users and then ultimately discarded. He then linked it with the Technosphere, where companies manufacture products but users subscribe to their use.

He noted that climate change requires a focus on materials, not just emissions. Mr. Webster made an interesting point that a product as a service business model avoids over-specification of the product.

That was followed by a presentation titled, “Digital Disruption in Maritime,” given by Mr. Rob Clifford, Head of Data, Maritime and Land Sector, BAE Systems. He spoke of the need to corral innovation and described the architecture of BAE’s PropheSEA digital asset management solution. The architecture focused on the enterprise rather than individual product stages. During his presentation, he wove in a number of aspects, including digital footprint and digital thread, enterprise market twin, and the benefits of data analysis. He noted that BAE recognized it was important to deliver immediate impact with the maintenance twin.

Dr. Rodney Ewing, Director of PLM - Components Business Unit, Cummins, next presented “A Balanced Strategy to Reap Continuous Business Value from Digital PLM.” Dealing with five business units, each with a different level of maturity, Cummins partnered with TCS (Tata Consultancy Services) to implement multiple process tracks on a common foundation focusing on future capabilities.

Their development work used the Digital Thread as the backbone across a product’s lifecycle, and priorities looked for quick wins for all to see the added value. They used key PLM building blocks with a focus on the enterprise level. He described a number of projects and voiced that they paid attention to train users on new tools. During the Q&A, he spoke of the need for PLM champions and attention to KPIs and metrics.

Dr. Patrick Hillberg, an Adjunct Professor at Oakland University, where he teaches graduate courses in engineering management, then spoke. He emphasized the need for systems thinking but cautioned on possible systematic problems depending upon the type of system. He gave several examples where lives were lost, and millions of dollars were wasted.

The conference concluded with a roundtable discussion titled. “State of the Industry—a Fireside chat with industry leaders.” Dr. Ken Versprille posed a series of questions to the three panelists: Mr. Peter Bilello, President & CEO, CIMdata, Dr. Patrick Hillberg, Professor, Oakland University, and Mr. Torbjörn Holm, Co-Founder, Eurostep.

The questions included:

1. We often talk of the three pillars of product development – design, manufacturing, and service. Can you offer up what disruptive technology looms today in your opinion as the most impactful in each of the three?
2. Can you give examples of a disruptive technology that has been adopted and commercialized with speed that surprised you and why?
3. The gap between what is used in reality and promising new technology is widening every year with the explosion in tech. How do you see large enterprises in A&D, automotive, and the like managing this to be part of the disruption and avoid being disrupted by external forces? Is there a pattern for successfully or at least partly remaining “on top”? (skunkworks, tech fellows, phantoms works, incubators, etc.)

Acquisitions

Revalize Further Expands Operations in Europe

16 November 2021

Revalize, the worldwide leader in sector-specific revenue operations software for manufacturers, their distributors and their specifiers, announced the planned acquisition of three European software companies comprising five respected brands. The addition of the companies will both extend the Revalize solution portfolio and its European operations.

This strengthened position in Europe accelerates the company's already rapid growth since its formation in June 2021, nearly doubling the planned revenue objectives for the first year of operations.

Joining the Revalize solution portfolio are:

- **PROCAD Group**, headquartered in Karlsruhe, Germany, boasts proven product lifecycle management (PLM) and product data management (PDM) solutions that enable companies to manage their product lifecycles in a world of ever-growing complexity, delivering a substantial efficiency boost to customers in the discrete manufacturing sector. The PROCAD Group was created in 2021 from the merger of PROCAD with **keytech**, which also specializes in PLM, and **ACATEC**, a developer of CPQ solutions for manufacturers of complex products. The PROCAD Group brings more than 1,350 customers and more than 250 employees at 12 locations to Revalize. Revalize has entered into a definitive agreement to acquire PROCAD, which subject to customary regulatory approvals, is expected to close in December.
- **SpecPage**, headquartered in Kussnacht, Switzerland, is a recognized developer of innovative PLM and quality assurance solutions for recipe-based, process manufacturers. The company brings innovative and user-friendly software solutions to manage the unique and complex aspects of product labelling in the global competition for CPG products. This acquisition brings the SpecPage PLM cloud platform, global support expansion and a comprehensive CPQ integration to Revalize. Revalize closed on the acquisition of SpecPage earlier in October.
- **TENADO**, headquartered in Bochum, Germany, is a leading provider of computer-aided design (CAD) software solutions for the metal and wood fabrication trades, mechanical engineering, fire protection and traffic management sectors. TENADO serves craftsmen, carpenters, safety inspectors and transportation planners, and has more than 30,000 active users. Revalize closed on the acquisition of TENADO earlier in November.

The inclusion of these brands aligns with Revalize's mission, expands the company's capabilities to support end-to-end, design-to-cash workflows and strengthens its operational presence in Europe. With the expanded offerings and reach, Revalize aims to enhance its market position as the worldwide leader in CPQ and revenue operations solutions for manufacturers, and the only global, at-scale provider of sector-specific manufacturing solutions.

"Europe now accounts for nearly half of our business worldwide. Our multinational customers in the U.S. have been asking us to support their plans with an operational footprint in EMEA; and similarly, the customers of our European businesses need product and service coverage in North America. The addition of these five brands to the Revalize portfolio is a great win for all of our customers and any manufacturer worldwide that wants to build their digital capabilities across the design-to-cash cycle," said Jim Contardi, CEO of Revalize.

Maintaining a flexible, global workforce is part of the Revalize mission. The company will continue to

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grow its Jacksonville headquarters and staff while supporting offices in regions where it has a high concentration of employees, including in Europe.

Sandvik to acquire US based round tools manufacturer GWS Tool Group

22 November 2021

Sandvik has signed an agreement to acquire 100% of the equity interests of the US based company GWS Tool Intermediate Holdings LLC (“GWS” or the “Company”) from its beneficial owners, L Squared Capital Partners and GWS management. GWS is an established and fast growing provider of made-to-order round tools with a large exposure to the general engineering and aerospace segments. The Company will be reported in Walter, a division within the business area Sandvik Manufacturing and Machining Solutions.

“With the acquisition of GWS, we take an important step in our shift to growth strategy where we have a clear ambition for our machining solutions business to increase market share in round tools and to enhance our presence in the North American market”, says Stefan Widing, CEO and President of Sandvik.

GWS primarily sells made-to-order products, such as polycrystalline diamond tools and taps, which are complementary to Walter’s standard product offering. GWS’ strong operational presence in the US and speed to market capabilities improves Walter’s value proposition and position in the manufacturing of advanced components and light-weight materials, while strengthening and complementing Walter’s current customer end-market exposure.

“We are pleased to add the GWS product portfolio to our existing US offering and become a one-stop shop for round tools for our North American customers. GWS brings us complementary production capabilities and strengthens our foothold within general engineering and aerospace, while having only a limited, low-single digit exposure to internal combustion engines. With its solid position within custom round tools and strong customer focus, GWS is a great fit for Sandvik Machining Solutions”, says Nadine Crauwels, President of Sandvik Machining Solutions.

GWS is headquartered in Florida, USA, and has around 490 employees. For 2021, on a pro forma basis, the Company is expected to have revenues of approximately SEK 875 million. GWS has had strong revenue growth historically, and is expected to grow at a high single digit organic growth rate in the medium term. The impact on Sandvik’s EBITA margin and earnings per share will initially be neutral. The parties have agreed not to disclose the purchase price. The transaction is expected to close during the fourth quarter of 2021 and is subject to relevant regulatory approvals.

Company News

Announcing Mastercam’s 2021 Wildest Parts Competition Winners

15 November 2021

Mastercam has announced the 2021 Wildest Parts Competition winners. The Wildest Parts Competition is held each year to encourage student interest and participation in manufacturing. The competition is open to students at the secondary and postsecondary levels to create parts demonstrating creativity and technical skill using Mastercam. The Wildest Parts Competition also has a division for professional Mastercam users to enter parts they created.

“We always look forward to seeing all the entries we receive for Wildest Parts,” said Peter Mancini,

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Product Manager, Education at Mastercam. “There are so many talented and dedicated teachers, and the quality and originality of their students’ work with Mastercam is inspiring.”

In the Secondary Division, Wes Bruski from Capital High School, Montana, submitted a domino and dice cup game set. Wes and his family have always enjoyed games, so Wes had the idea to make a custom set of dominos and dice cup. Wes made the prototypes out of wood, then machined the final set. He enjoyed every second of this project and learned so much about machining throughout the process. Second place went to Cadogan Wheat from Hamilton High School, Montana, who designed a model of a padlock.

In the Postsecondary Division, Gus Bronk from Washington State University submitted a keyboard. Gus wanted to design and machine a unique keyboard from exotic materials. The main case is machined from a Boeing Surplus Forged billet of 2000 series aluminum from the 1970s! This project contained the largest single part and the most parts Gus has ever machined and assembled. He learned a lot more features in Mastercam while making this part. Jim Courtney from Erie Community College, New York, placed 2nd with a working carousel, and Jonathan Hughes from Erie Community College came in 3rd with a marble machine.

In the Teams Division, Wrindy Hauser’s team from Grand Rapids Community College, Michigan submitted Thor’s hammer. The team members belong to a machinist apprenticeship program at GRCC. In making Thor’s hammer, they said they wanted to make something that gets people excited about machining. When anyone looks at their project, they are going to think it’s awesome and want to learn how to make it! Jiao-Hao Wun’s teammates from Vanung University, Taiwan, placed 2nd with their modern museum. Ming-Yang Chen’s team from Vanung University placed 3rd with their robot.

In the Professional Division, Andy Beach from Grand Rapids Community College submitted Ironman, which was created to test out a brand new UMC 500 Haas Mill where Andy works. The machine was the first 5- axis machine installed at Grand Rapids Community College. Andy wanted to give the machine a thorough test by machining a multiaxis part that would push the size constraints of the machine. David Berry from Southwestern Illinois College placed 2nd with a dodecahedron of Mastercam toolpaths, and PUTEN PLUS came in 3rd with a wireless charging disc.

Every participant receives a Mastercam t-shirt, and the winning entrants receive cash awards, certificates, and other prizes for entering the competition.

Even as this year’s winners are announced, it’s time for teachers, students, and professionals to start thinking about what they will submit for the 2022 Wildest Parts Competition.

Ansys Receives 2021 TSMC OIP Partner of the Year Awards for Next-Generation Design Enablement

23 November 2021

Ansys has been recognized by TSMC as a recipient of two 2021 OIP Partner of the Year awards for Joint Development of 4nm Design Infrastructure and Joint Development of 3DFabric™ Design Solution. The Partner of the Year award honors TSMC Open Innovation Platform® (OIP) ecosystem partners’ pursuit of excellence in next-generation design enablement over the past year. Ansys and other OIP ecosystem partners’ collaborative efforts effectively promote innovation in the semiconductor industry. TSMC announced award winners at its 2021 OIP Ecosystem Forum, a one-of-a-kind event that brings together the semiconductor design ecosystem partners and TSMC customers, providing an ideal platform to discuss the latest technologies and design solutions for HPC, mobile, automotive, and IoT applications.

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Ansys provides a broad range of multiphysics analysis tools that help address matters that have become increasingly central concerns for advanced semiconductor manufacturing. Traditional signoff analyses, like voltage drop and electromigration, become more acute at 3nm and N4 technologies as the number of transistors grows, the complexity increases, and ultra-low supply voltages lead to vanishing safety margins. Ansys secured an award in the category of Joint Development of 4nm Design Infrastructure for working closely with TSMC on these issues leading to the certification of Ansys RedHawk-SC™ and Ansys Totem™ for TSMC's most advanced 3nm and N4 processes.

TSMC 3DFabric technologies provide the industry with a solution for greater integration density. Realizing the advantages of 3DFabric requires not only higher capacity analysis platforms but also the integration of new physics into the design process. Ansys earned an award in the category of Joint Development of 3DFabric™ Design Solution for Ansys RedHawk-SC Electrothermal™ development on for full chip-and-package thermal analysis.

“Congratulations to Ansys as the winner of the 2021 TSMC OIP Partner of the Year awards,” said Suk Lee, vice president of Design Infrastructure Management Division at TSMC. “Your continuous collaboration and effort make us able to be at the forefront of technology development, while enabling our customers to take full advantage of the significant power, performance, and area improvements of TSMC's advanced technologies to accelerate innovation for their differentiated products.”

“TSMC is one of the foremost technology developers in the entire semiconductor industry and working closely with TSMC has been a critical factor in the success of our signoff technology products,” said John Lee, vice president and general manager of Electronics and Semiconductor Business Unit at Ansys. “Thanks to this close collaboration, our joint customers are able to use Ansys tools with confidence on the most challenging and advanced single and multi-die design projects in the industry.”

The title of OIP Partner of the Year is awarded to partner companies working relentlessly to achieve the highest standards of design, development, and technology implementation. Ansys will continue working with TSMC to enable next generation designs and recently presented a paper on thermal analysis of 3DFabric designs at this year's TSMC OIP Ecosystem Forum: “A Comprehensive Hierarchical Thermal Solution for Advanced 3DIC System” by Norman Chang et al.

Growing Customer Demand For IFS Motivates Plan To Create A Services-Focused Joint Venture Between IFS And BearingPoint

22 November 2021

IFS, the cloud enterprise software company, announced plans to extend its current partnership with BearingPoint to form a joint venture. The newly formed business would provide services to support the continued increase in demand for IFS software. Following non-binding discussions between the parties, the launch of the joint venture remains subject to applicable employees' information and consultation procedures, customary merger control clearances and final documentation.

As a standalone entity, the joint venture would operate as a unique organization focused on business transformation enabled by IFS Cloud software products. The new entity is expected to focus on opportunities in France, Netherlands, Belgium, Italy, Germany, Austria, Switzerland and UK. In each of these countries, IFS and BearingPoint will look to invest resources to lay the foundation of the venture and ensure a positive start while continuing to develop their own inhouse customer services capabilities and support their growing ecosystems to offer customers a compelling choice.

Both companies have a strong common client base and a track record of delivering successful projects and significant value to their customers over the last five years. BearingPoint is already an IFS Platinum

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service partner and winner of the 2020 IFS Global Systems Integrator of the Year and 2021 IFS Growth Partner of the Year awards.

IFS CEO Darren Roos commented; “IFS is dedicated to providing the best possible experience to its customers, and as our business continues on its growth trajectory, we are committed to delivering outstanding Moments of Service to our customers, while enabling them to do the same for theirs. This includes providing a choice of partner with whom they can work.” Roos added: “BearingPoint has been a highly proactive and successful partner for several years and has always invested in growing its IFS practice; it therefore makes complete sense to move to a more structured set up.”

Kiumars Hamidian, Managing Partner at BearingPoint explained: “We have accomplished many successful projects together in recent years and are collaborating closely as trusted partners. So, it is a logical step that we explore how to expand this strong partnership.” Hamidian added: “Our companies are well-matched organizations and we look forward to nurturing those synergies.”

Hexagon forges a strategic alliance with Deloitte’s infrastructure, capital project and portfolio management practice, focusing on enterprise project performance

17 November 2021

Hexagon’s PPM division, a leading global provider of enterprise project performance (EPP) and engineering software for the design, construction and operation of industrial facilities, today announced a strategic alliance with Deloitte’s capital assets advisory services practice, which helps client organizations manage and enhance complex investments more effectively. The alliance furthers Deloitte’s existing focus on critical infrastructure and capital project and portfolio management.

Capital projects will continue to be the lifeblood of transformation in any industry as companies pivot, reframe or continue to invest in new growth strategies to create efficiency and return on investment for their shareholders in changing market conditions. This constant evolution exerts pressure on clients to adopt a data-driven execution strategy to improve capital efficiency.

Together, Hexagon and Deloitte will aim to help clients accelerate their transformation of capital project and portfolio management, inclusive of helping them to address capital planning, control and asset operational challenges with organizations spanning multiple verticals and geographical markets.

“As our clients face constant pressure to evolve their business processes and management of major capital asset and critical infrastructure projects, this new strategic alliance will offer those organizations contending with capital planning, control and asset operational challenges – within one industry vertical or geography, or multiple – both Hexagon’s EPP technology and Deloitte’s services to manage throughout a project’s lifecycle,” said E. J. Huntley, Deloitte Risk & Financial Advisory’s capital asset advisory leader and a principal, Deloitte Transactions and Business Analytics LLP.

“Deloitte is a leader in positioning capital assets for success by translating complex landscapes into sound processes,” said Mark White, senior vice president for Portfolio Strategy & Enablement, Hexagon’s PPM division. “We’re excited to leverage their experience with Hexagon technology like EcoSys™ Enterprise Project Performance software, where the combination will deliver greater efficiency, predictability and control to organizations working to derive superior strategic and financial performance from their capital projects.”

Infosys Foundation Inaugurates Three Infrastructure Projects in Mysuru

18 November 2021

Infosys Foundation, the philanthropic and CSR arm of Infosys, announced the inauguration of three infrastructure development projects in Mysuru, Karnataka.

The Foundation has supported the rejuvenation of the Hebbal Lake and Sewage Treatment Plant construction at a cost of INR 107 Crore, and the building of the Gorilla Enclosures I and II at the Sri Chamarajendra Zoological Gardens in Mysuru at a total cost of INR 7.3 Crore. These projects were virtually inaugurated by Dr. Goutham Bagadi, DC - Mysuru, and Mrs. Sudha Murty, Chairperson, Infosys Foundation.

The inauguration of the Hebbal Lake, Gorilla Enclosure I and the stone laying for Gorilla Enclosure II at the Sri Chamarajendra Zoological Gardens, was also virtually attended by Sri Ravi B P, IFS, APCCF & Member Secretary, ZAK, and Sri Ajit M Kulkarni, IFS, Executive Director.

Speaking at the event, **Mrs. Sudha Murty, Chairperson, Infosys Foundation** said, “Infosys Foundation has always embraced its responsibility to create a positive impact on the environment and the communities it works in. We are happy to complete these infrastructure projects in Mysuru and are grateful to the Government of Karnataka for their support in this endeavor.”

As part of these projects in Mysuru, Infosys Foundation will also enable support infrastructure including walkways, permanent fence walls, lighting, garbage disposal, drinking water facility, parks, and tree covers.

Siemens receives three 2021 TSMC OIP Partner of the Year awards for next-generation design enablement

23 November 2021

Siemens Digital Industries Software announced it has been recognized by TSMC as a recipient of three 2021 OIP Partner of the Year awards. These prestigious awards honor TSMC Open Innovation Platform® (OIP) ecosystem partners like Siemens for demonstrating excellence in next-generation system-on-chip (SoC) and 3DIC design enablement over the past year.

For this year’s achievements, TSMC recognized Siemens in the categories of “Joint Development of 4nm Design Infrastructure” for the optimization of Siemens’ Calibre® nmPlatform software and Analog FastSPICE Platform, “Joint Development of Cloud-Based Productivity Solution” for Siemens’ Calibre nmDRC solution and “Joint Development of 3DFabric™ Design Solutions” for collaboration on Siemens’ Xpedition™ Substrate Integrator, Xpedition Package Designer, HYPERLYNX™, Calibre 3DStack/nmDRC/nmLVS/xACT and Tessent™ solutions.

“Congratulations to Siemens Digital Industries Software as the winner of three 2021 TSMC OIP Partner of the Year awards,” said Suk Lee, vice president of Design Infrastructure Management Division at TSMC. “Our OIP ecosystem partners’ continuous collaboration helps us remain at the forefront of technology development, while enabling our customers to fully leverage the significant power, performance, and area benefits of TSMC’s advanced technologies.”

The title of OIP Partner of the Year is awarded to partner companies working relentlessly to achieve the highest standards of design development and technology implementation. Siemens will continue working with TSMC to enable next-generation designs with certified solutions and services for TSMC’s latest technologies.

“Siemens is pleased and honored that our long history of collaboration with TSMC continues with these

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2021 OIP Partner of the Year recognitions,” said Michael Buehler-Garcia, vice president of Product Management for Calibre Design Solutions at Siemens Digital Industries Software. “TSMC and Siemens are delivering solutions that address not only the complexities of advanced semiconductor process, but our joint collaboration on Cloud use models and 3DIC design flows also helps to give mutual customers choices in how they choose to bring these increasingly sophisticated designs to life.”

TCS Joins Hands with Heriot-Watt University to Transform Higher Education

18 November 2021

Tata Consultancy Services (TCS), a leading global IT services, consulting and business solutions organisation, has entered into a strategic partnership with Heriot-Watt University in Edinburgh, to collaborate on research, co-innovation, talent development and encourage the exchange of ideas and resources among teachers, scholars, students, researchers, staff, and TCS’ business partners.

TCS will provide thought leadership on the future of higher education and leverage its cross-sector expertise, to support Heriot-Watt’s strategy to provide seamless education to students across the world, no matter where or how they are studying. The partners will also explore how Heriot-Watt’s ambitious target to be a key research hub for robotics and AI, through their National Robotarium, can help advance TCS’ services and support clients in this rapidly evolving sector.

The partnership envisages Centres of Excellence in areas of mutual interest such as cyber security and will also focus on creating a framework for superior online interactions between students, academic professionals, and global business leaders.

Heriot-Watt will explore setting up a global talent development academy for TCS and its partners. Additionally, TCS and Heriot-Watt will look at co-creating learning courses to support its partners in navigating through digital transformation and related themes.

*“This partnership emphasises our steadfast commitment to improving educational outcomes and strengthens our position as a strategic partner to global schools, colleges and universities,” said **Ankur Mathur, Head, Education Business, TCS.** “TCS has the technical capabilities and industry experience to pioneer new methods for both collaborative learning and research and innovation. We look forward to working closely with Heriot-Watt University in building their ‘Campus of the Future’.”*

*“The University is renowned as a world-leader in the practical application of specialist research and providing the learning needed for industries of the future. Our partnership with TCS will ensure students and teachers can engage with a global network of academic professionals,” said **Dr Gillian Murray, Deputy Principal, Heriot-Watt University.** “By encouraging information to be shared across a borderless exchange, our students will have more opportunities to realise their full potential and we are excited to be working closely with TCS to transform the education sector.”*

In 2021, Heriot-Watt University celebrates the 200th anniversary of its founding in Scotland. Now a global institution with campuses across Scotland, Dubai, and Malaysia, its pioneering research and education has made a positive impact on the global stage, as it continues to push new frontiers in the fields of science, technology, engineering, business, and design.

Event News

Hybrid is the new normal — Archicad takes center stage at European BIM Summit 2021

18 November 2021

Although more than 18 months have passed since the start of the COVID-19 lockdown in Spain, the construction industry is heavily impacted by restrictions regarding safety measures. One of the new dimensions of returning to a new normal is a hybrid of digital and in-person professional activities to reduce risks while increasing productivity. As part of this hybrid approach, Graphisoft's distributor and training center in Spain, SIMBIM solutions, participated in the face-to-face and streaming summit and presented Archicad in both the physical and virtual exhibition.

At the end of the **European BIM Summit 2021**, **Dr. Mohsen Shojaee-Far** presented a practical case study of the renovation of **Fundació Pascual Maragall** in Barcelona, Spain, which was designed using multiple software solutions from the **Nemetschek Group** — specifically, Archicad and Bluebeam Revu. The case study highlighted several points critical to the construction industry that require continuous collaboration between project stakeholders, while COVID-19 limits opportunities for on-site teamwork.

“The construction industry relies on many people working together to make projects happen,” said Dr. Mohsen Shojaee-Far, CEO and Senior BIM Consultant at SIMBIM Solutions. “Ideally, we want to bring the best people together, even if they are working from home. This project, Graphisoft Archicad and Bluebeam Revu helped us streamline workflows and led to time and cost savings across all aspects of the project,” he added.

“Digitalization in the design and construction industry is exploding and this applies to design methodology as well,” said Gabor Udvardi, International Sales Manager at Graphisoft. “This case study proves how digitalization benefits the design and construction process, especially during the communication crisis imposed by COVID-19,” he added.

The case study of collaboration between SIMBIM Solutions, **Sanabria&Planas-Gallego Arquitectes**, and the northeast delegation of **Elecnor Group** presented a collaborative process to establish a relationship with the design and construction team and update the BIM model according to issues that need to be resolved in a short time. This practical presentation focused the audience's attention on why a collaborative digital workflow was essential to the success of the project.

Nemetschek Group with 10 Brands at BIM World Munich 2021

22 November 2021

BIM World Munich 2021 is opening its doors tomorrow. Ten brands of the Nemetschek Group, one of the world's leading software vendors for the AEC/O industry, will present themselves on site with lectures, workshops, and a joint booth.

BIM World Munich is the leading networking platform for national and international players in the digitization of the construction, real estate, and infrastructure industry for six year. The annual event in Munich consists of a two-day international congress and a trade fair with integrated open forums. With over 200 speakers on six stages, BIM World Munich is an important event for all stakeholders in the AEC/O industry. With the motto "Shape the World", the Nemetschek Group brands Allplan, Bluebeam, Data Design System, dRofus, FRILO, Graphisoft, NEVARIS, SCIA, Solibri and Vectorworks will showcase their solutions (booth 10, EG).

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The adoption of open standards, the necessary collaboration between individual professions, increasing digitalization and the ecological and economic challenges of the construction industry - these topics are in the focus of the event.

The presentations of the Nemetschek Group at a glance:

11/23/2021 - Breakout Session (Location: Stage 1) – 2:00 pm

"BIM2Factory – Automated manufacturing of buildings from the BIM model. Just a vision?"

Stefan Kaufmann, Product Manager BIM Strategy and New Technologies, Allplan.

11/24/2021 - Keynote (Location: Congress Stage 1) - 11:00 am

"Building more efficiently, sustainably and longer-lasting? Ways to a sustainable construction industry"

Nemetschek Group.

11/24/2021 - Breakout Session (Location: Stage 1) - 2:00 pm

"Solibri – Quality control and assurance by all means".

Andreas Verfürth, Country Manager D/A, Solibri.

BIM World Munich will take place on November 23 and 24, 2021 at the International Congress Center Munich.

Financial News

Autodesk, Inc. Announces Fiscal 2022 Third Quarter Results

23 November 2021

Autodesk, Inc. reported financial results for the third quarter of fiscal 2022.

All growth rates are compared to the third quarter of fiscal 2021, unless otherwise noted. A reconciliation of GAAP to non-GAAP results is provided in the accompanying tables. For definitions, please view the Glossary of Terms later in this document.

Third Quarter Fiscal 2022 Financial Highlights

- Total revenue increased 18 percent to \$1,126 million;
- GAAP operating margin was 17 percent, down 1 percentage point;
- Non-GAAP operating margin was up 2 percentage points to 32 percent;
- GAAP diluted EPS was \$0.61; Non-GAAP diluted EPS was \$1.33;
- Cash flow from operating activities was \$270 million; free cash flow was \$257 million.

"Our customers continue to embrace and prioritize digital transformation to drive growth, efficiency and sustainability, generating strong demand for Autodesk's platform," said Andrew Anagnost, Autodesk president and CEO. "We are rapidly innovating and optimizing our business to enable more customers to experience our ecosystem, and realize the opportunities ahead."

"Demand was robust in Q3, driving strong new subscriptions growth and renewal rates. We expect it to remain so in Q4," said Debbie Clifford, Autodesk CFO. "However, supply chain disruption and resulting inflationary pressures, a global labor shortage, and the ebb and flow of COVID, are impacting the pace of our recovery and outlook."

Additional Financial Details

CIMdata PLM Industry Summary

- Total billings increased 16 percent to \$1,168 million.
- Total revenue was \$1,126 million, an increase of 18 percent as reported, and 17 percent on a constant currency basis. Recurring revenue represents 97 percent of total.
- Design revenue was \$994 million, an increase of 17 percent as reported, and 15 percent on a constant currency basis. On a sequential basis, Design revenue increased 5 percent as reported and on a constant currency basis.
- Make revenue was \$94 million, an increase of 23 percent as reported and on a constant currency basis. On a sequential basis, Make revenue increased 5 percent as reported and on a constant currency basis.
- Subscription plan revenue was \$1,071 million, an increase of 21 percent as reported, and 19 percent on a constant currency basis. On a sequential basis, subscription plan revenue increased 5 percent as reported and on a constant currency basis.
- Maintenance plan revenue was \$18 million, a decrease of 56 percent as reported and on a constant currency basis. On a sequential basis, maintenance plan revenue increased 4 percent as reported, and 1 percent on a constant currency basis.
- Net revenue retention rate remained within the range of 100 to 110 percent.
- GAAP operating income was \$193 million, compared to \$168 million in the third quarter last year. GAAP operating margin was 17 percent, down 1 percentage point.
- Total non-GAAP operating income was \$365 million, compared to \$287 million in the third quarter last year. Non-GAAP operating margin was 32 percent, up 2 percentage points compared to the third quarter last year.
- GAAP diluted net income per share was \$0.61, compared to \$0.59 in the third quarter last year.
- Non-GAAP diluted net income per share was \$1.33, compared to \$1.04 in the third quarter last year.
- Deferred revenue increased 14 percent to \$3.34 billion. Unbilled deferred revenue was \$888 million, an increase of \$239 million compared to the third quarter of last year. Remaining performance obligations (RPO) increased 18 percent to \$4.23 billion. Current RPO increased 21 percent to \$2.88 billion.
- Cash flow from operating activities was \$270 million, a decrease of \$91 million compared to the third quarter last year. Free cash flow was \$257 million, a decrease of \$83 million compared to the third quarter last year.

Third Quarter Fiscal 2022 Business Highlights

Net Revenue by Geographic Area

Three Months Ended October 31, 2021	Three Months Ended October 31, 2020	Change compared to prior fiscal year	Constant currency change compared to prior fiscal
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CIMdata PLM Industry Summary

					year		
<i>(In millions, except percentages)</i>	\$	\$	\$	%	%	%	%
Net Revenue:							
Americas							
U.S.	\$ 383.2	\$ 328.5	\$ 54. 7	1 7	%	*	
Other Americas	78.7	64.4	14.3	2 2	%	*	
Total Americas	461.9	392.9	69.0	1 8	%	17	%
EMEA	433.2	364.3	68.9	1 9	%	16	%
APAC	230.7	195.2	35.5	1 8	%	17	%
Total Net Revenue	\$ 1,125.8	\$ 952.4	\$ 173 .4	1 8	%	17	%
Emerging Economies	\$ 139.7	\$ 114.9	\$ 24. 8	2 2	%	20	%

* Constant currency data not provided at this level.

Net Revenue by Product Family

Our product offerings are focused in four primary product families: Architecture, Engineering and Construction ("AEC"), AutoCAD and AutoCAD LT, Manufacturing ("MFG"), and Media and Entertainment ("M&E").

Three Months Ended October 31,	Three Months Ended October 31,	Change compared to prior fiscal year
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CIMdata PLM Industry Summary

<i>(In millions, except percentages)</i>	2021	2020	\$	%
AEC	\$ 511.1	\$ 419.4	\$ 91.7	22 %
AutoCAD and AutoCAD LT	318.4	278.8	39.6	14 %
MFG	225.0	194.1	30.9	16 %
M&E	63.0	54.0	9.0	17 %
Other	8.3	6.1	2.2	36 %
	\$ 1,125.8	\$ 952.4	\$ 173.4	18 %

Business Outlook

The following are forward-looking statements based on current expectations and assumptions, and involve risks and uncertainties, some of which are set forth below under "Safe Harbor Statement." Autodesk's business outlook for the fourth quarter and full-year fiscal 2022 takes into consideration the current economic environment and foreign exchange currency rate environment. A reconciliation between the fourth quarter and fiscal 2022 GAAP and non-GAAP estimates is provided below or in the tables following this press release.

Fourth Quarter Fiscal 2022

Q4 FY22 Guidance Metrics	Q4 FY22 (ending January 31, 2022)
Revenue (in millions)	\$1,185 – \$1,200
EPS GAAP	\$0.71 – \$0.77
EPS non-GAAP (1)	\$1.41 – \$1.47

(1) Non-GAAP earnings per diluted share excludes \$0.62 related to stock-based compensation expense, \$0.11 for the amortization of purchased intangibles, \$0.02 for acquisition-related costs, partially offset by (\$0.05) related to GAAP-only tax benefit.

Full Year Fiscal 2022

FY22 Guidance Metrics	FY22 (ending January 31, 2022)
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Billings (in millions) (1)	\$4,740 – \$4,800 Up 14% – 16%
Revenue (in millions) (2)	\$4,360 – \$4,375 Up Approx. 15%
GAAP operating margin	Approx. 15%
Non-GAAP operating margin (3)	Approx. 31%
EPS GAAP	\$2.54 – \$2.60
EPS non-GAAP (4)	\$4.98 – \$5.04
Free cash flow (in millions) (5)	\$1,420 – \$1,460

(1) Excluding the approximately \$45 million impact of foreign currency exchange rates and hedge gains/losses, billings guidance would be \$4,695 – \$4,755 million.

(2) Excluding the approximately \$55 million impact of foreign currency exchange rates and hedge gains/losses, revenue guidance would be \$4,305 – \$4,320 million.

(3) Non-GAAP operating margin excludes approximately 13% related to stock-based compensation expense, approximately 2% for the amortization of purchased intangibles, and 1% related to acquisition-related costs.

(4) Non-GAAP earnings per diluted share excludes \$2.48 related to stock-based compensation expense, \$0.41 for the amortization of purchased intangibles, \$0.12 related to acquisition-related costs, partially offset by (\$0.06) related to gains on strategic investments and dispositions, and (\$0.51) related to a GAAP-only tax benefit.

(5) Free cash flow is cash flow from operating activities less approximately \$65 million of capital expenditures.

The fourth quarter and full-year fiscal 2022 outlook assume a projected annual effective tax rate of 16 percent for GAAP and non-GAAP results, respectively. Shifts in geographic profitability continue to impact the annual effective tax rate due to significant differences in tax rates in various jurisdictions. Therefore, assumptions for the annual effective tax rate are evaluated regularly and may change based on the projected geographic mix of earnings.

PTC and Rockwell Automation Issue Statement in Response to Berenberg Capital Markets Research Report

23 November 2021

PTC and Rockwell Automation issued a joint statement in response to a research report published by Berenberg Capital Markets this morning incorrectly stating that Rockwell is "cutting financial ties with PTC" and that "it was announced yesterday that Rockwell will be selling its entire stake, an 8.98% ownership, in PTC." Both statements are incorrect and Berenberg has since issued a retraction. Rockwell has made no announcement that it is "cutting financial ties with PTC" or that it is selling its entire investment in PTC. The parties are continuing to bring value-added solutions to manufacturing customers through their strategic alliance.

PTC and Rockwell have been parties to a Strategic Alliance Agreement since 2018. In connection with that agreement, Rockwell made an approximately \$1 billion investment in PTC common stock pursuant to a Securities Purchase Agreement (Purchase Agreement). The Purchase Agreement contemplates that Rockwell would have flexibility to sell its PTC shares, subject to certain volume and time limitations. Under the Purchase Agreement, Rockwell also has a right to designate a representative to the PTC Board of Directors as long as Rockwell maintains at least a 5% equity position in PTC.

In connection with the Purchase Agreement, the parties also entered into a Registration Rights Agreement pursuant to which PTC was required to file and maintain a resale registration statement covering the resale by Rockwell Automation of its PTC shares. Yesterday's resale registration statement was filed by PTC with the U.S. Securities and Exchange Commission (SEC) to comply with its contractual obligations under the Registration Rights Agreement and to replace the expiring resale registration statement filed in November 2018 for the potential resale of Rockwell's PTC shares.

On November 8, 2021, Rockwell filed an amended Schedule 13D with the SEC stating its intent to sell some of its shares of PTC common stock under certain market conditions consistent with the limitations included in the Securities Purchase Agreement and stating that Rockwell would enter into one or more 10b5-1 plans to effect such sales.

At Rockwell's investor day held on November 10, 2021, Blake Moret, CEO of Rockwell, stated that the Rockwell/PTC relationship is as "strong as ever" and that he intended to remain on the PTC Board of Directors.

Implementation Investments

AlMalki Group Takes Warehousing to Next Level with Infor and SNS

22 November 2021

Infor, the industry cloud company, and partner SNS, a leading provider of supply chain consultancy and software implementation, announced that AlMalki Group, has deployed the latest version of Infor WMS warehouse management system. Supporting warehouse operations for the distribution of perfume and cosmetics, watches and jewellery, and fashion and accessory brands, including Bvlgari, Hermes, Mont Blanc, Rimowa, Versace, Tom Ford and Cartier, Infor WMS will increase efficiency, space utilization and order reliability, while ensuring full traceability from receipt of goods through to shipping.

Founded in 1952, AlMalki Group is headquartered in Jeddah, Saudi Arabia, and is one of the region's largest distributors and retailers of luxury goods. The company employs over 1,600 people and represents more than 105 luxury brands. The company relies on efficient and dynamic warehouse

CIMdata PLM Industry Summary

operations to support large numbers of outbound orders generated via e-commerce channels. Having used Infor WMS for many years, the group has now upgraded and expanded the solution to support a more digitalised operation and underpin future growth.

Infor WMS version 11.4.1 was selected based on its ability to deliver entirely paperless picking and packing methods to boost productivity, and capture all data, both inbound and outbound, to instill visibility and expedite decision-making and customer service. Put-away strategy, cluster picking, labels, catch data, wave processing and billing functionality were also key to the upgrade. Delivered entirely remotely as a result of COVID restrictions, the project was managed by SNS with integration supported by the AlMalki Group team following go-live.

“Luxury brands demand the very highest standards across the entire customer experience, and it’s imperative that we not only adhere to such standards, but that we do so in the most efficient way possible in line with our ambitious growth plans,” comments Khaled EIDamouri, AlMalki supply chain and logistics director. “With more than 105 brands, we operate high numbers of SKUs, and as such, require seamless warehouse processes and technology from which to maximise efficiency, space utilization and order reliability.

“SNS is a true partner, providing in-depth expertise and a wealth of experience of similar deployments, allowing us to pursue our digitalisation plans and achieve our warehouse management goals.”

“Warehouse efficiency, reliability and capacity are the cornerstones of any distributor operating today and, in the field of luxury goods, consistency and the very highest service standards are paramount,” comments Mario Ghosn, SNS general manager. “We’re delighted to be working with AlMalki Group, delivering the best warehouse platform via Infor WMS, and helping the group to embrace growing e-commerce demand in the coming years across the region.”

Callaway Drives Efficiency into Their Business with Centric PLM

22 November 2021

Callaway Golf, an unrivaled tech-enabled golf company delivering leading golf equipment, apparel and entertainment, has selected Centric Software®’s Product Lifecycle Management (PLM) solution, Centric PLM, becoming the 500th customer. Centric Software provides the most innovative enterprise solutions to plan, design, develop, source, and sell products such as apparel, footwear, sporting goods, furniture, home décor, personal care, food & beverage and luxury to achieve strategic and operational digital transformation goals.

Callaway Golf, founded in 1982, features a portfolio of global brands including Callaway Golf, Topgolf, Odyssey, OGIO, TravisMathew and Jack Wolfskin. Through an unwavering commitment to innovation, Callaway manufactures and sells premium golf clubs, golf balls, golf and lifestyle bags, golf and lifestyle apparel and other accessories, and provides world-class golf entertainment experiences through Topgolf, its wholly-owned subsidiary.

VP of Global Operations and Development, Apparel & Soft Goods at Callaway Golf, Jeff Cross says, “Centric PLM will drive increased efficiency into our product development process. We create a wide variety of products in diverse categories, and this is going to enable greater efficiencies across our multi-branded apparel, footwear, and accessories. These products require distinctly different workflows and Centric is an exceptional technology solution to handle the vastness and complexity of our global business.”

“I am delighted to welcome Callaway, a thriving, innovative company as our 500th customer!” says Chris Groves, President and CEO of Centric Software. “We are gratified that Callaway has chosen

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Centric PLM as their digital product development foundation. On this historic occasion we are grateful to them and to all our customers who have placed their trust in us. We anticipate a fruitful partnership in the years to come.”

Dassault Systèmes’ 3DEXPERIENCE Platform in Use by Spanish Winery Familia Torres to Digitally Manage Innovation Development Process

24 November 2021

Dassault Systèmes announced that Familia Torres, a family-owned producer of wines and spirits sold in more than 150 countries, is using the 3DEXPERIENCE platform on the cloud to transform the innovation development process at its main winery near Barcelona.

As Familia Torres’ fifth generation of winemakers sets its sights for the future on the sustainable production of its brands, the “Perfect Package” industry solution experience based on the 3DEXPERIENCE platform helps its manual project management become an efficient, secure digital approvals process that accelerates innovation and time to market.

Familia Torres can manage documentation for hundreds of projects each year – from changes to labeling, physical bottles and cap shapes, to the creation of special promotional packaging for new or restyled product releases – in a collaborative digital environment that enhances decision-making and reduces the risk of errors.

“The 3DEXPERIENCE platform has made a big impact on our continuous improvement approach. It provides one repository for all project data and designs that can be accessed any time by stakeholders in an agile, traceable process with real-time visibility on a project’s status. This has brought more order and control to day-to-day tasks, and reduced the length of the approvals process by 50%,” said Francesc Gómez Montenegro, COO, Familia Torres. “The 3DEXPERIENCE platform also contributes indirectly to achieve our sustainability goals. We use it to better manage project requirements that integrate objectives like reducing the carbon footprint of packaging by minimizing weight, parts or materials.”

Creating just one new product label can involve up to 50 different documents and 20 people. Efficient project management is needed to ensure that such material is approved and prepared when a product is ready to be bottled, as well as when updated regulatory information is required on packaging, or when new products are launched to adapt to consumer demand. These challenges are compounded by sustainability trends that are driving wineries to consider products that respond to issues such as water usage and product claims.

“The 3DEXPERIENCE platform is an instrument for enterprise collaboration and innovation. Familia Torres gains digital insights for innovation management in record time, with all the flexibility and scalability that the cloud offers,” said Philippe Loeb, Vice President, Consumer Packaged Goods & Retail Industry, Dassault Systèmes. “Wine is a passion, and Familia Torres’ passion for innovations that delight its customers and are admired by its peers is bolstered by this new digital business experience.”

Infosys Public Services Helps South Florida Water Management District Transform their ERP Systems with SAP S/4HANA

18 November 2021

Infosys Public Services (IPS), a US-based subsidiary of Infosys, successfully upgraded South Florida Water Management District’s (SFWMD) ERP system to the SAP S/4HANA platform. The migration will drive greater efficiencies, improve analytical capabilities, and prepare the business for necessary

CIMdata PLM Industry Summary

technological transformations to follow.

SFWMD manages water resources for 16 counties and 9 million residents. As the region's oldest and largest water management district, SFWMD is responsible for several critical programs – from flood control to water supply and quality. However, the agency's legacy SAP systems, which support all business functions from accounting to payroll, were last updated well over a decade.

IPS leveraged the proven Infosys SAP S/4HANA Migration Framework, and tools such as Infosys S/4Assist and HANA Code Migration and Optimization (CMO), to replace outdated SAP ECC-based systems with the SAP S/4HANA platform. SFWMD moved to the HANA platform without disrupting its existing business processes, while at the same time delivering a more engaging and intuitive experience to its employees. IPS also migrated SFWMD's existing Business Data Warehouse application to the HANA database enabling the agency to generate actionable, real-time data insights.

“The SAP S/4HANA platform and partnership with Infosys has allowed us to deliver a better user experience,” said **Ronda Albert, IT Bureau Chief, South Florida Water Management District**. “We have seen value from this latest transformation. Business processes are significantly optimized, user experiences are enhanced with Fiori, and data management cycle times were reduced by 70 percent. This program has established a foundation for SFWMD's future business capabilities.”

IPS completed the migration in less than one year. The transformation improved application response times by an average of 10 percent, and in some cases by over 90 percent, due to the use of in-memory-processing provided by the SAP S/4HANA platform. The new system also delivers improved employee experience with productivity increasing by 10 percent. With the new upgrade, employees execute transactions quickly and are able to shift their focus to higher value tasks, resulting in a continued boost in productivity.

Eric Paternoster, President and CEO, IPS, said, “We thank South Florida Water Management District for giving us the opportunity to migrate their administrative system to the new SAP S/4HANA platform. Our proven execution, SAP S/4HANA capabilities and public sector expertise enabled us to deliver this program ahead of schedule and without any disruptions, providing South Florida Water Management District with an intelligent and resilient foundation to support their strategic priorities more effectively.”

Lacoste Footwear PCL Invests in Accelerating Footwear Development with DeSL's PLM Solution

19 November 2021

Lacoste Footwear PCL (PENTLAND CHAUSSURES LIMITED) has selected DeSL's Product Lifecycle Management (PLM) solution to manage every aspect of the development of their footwear. DeSL is a market leader in digital transformation solutions including integrated end-to-end PLM software for the fashion, apparel, textile, footwear, and retail sectors.

To drive improved performance for their footwear team and implement further digital transformation plans, Lacoste Footwear has partnered with DeSL to deliver a complete PLM system. With an aim to strengthen collaboration and reduce development timelines, DeSL's software offers one unified platform. The web-based interface and real time data enables teams along Lacoste's Footwear supply chain to plan, design, track, and deliver with improved accuracy and efficiency.

“We depend on DeSL for the flexible line planning functions, creating online tech packs, and all vendor communication,” states Rachid Chioukh, Head of Footwear Development. “We now are taking advantage of the opportunity to expand our use of DeSL's PLM to improve our costing processes and

strengthen our supplier collaboration.”

DeSL is pleased to support the Lacoste footwear team from line planning to design through to sourcing. DeSL looks forward to the continuous long-term partnership with Lacoste Footwear and is committed to supporting the brand’s ongoing supply chain improvements.

QEV Technologies Uses the 3DEXPERIENCE Platform from Dassault Systèmes in Race to Deliver Cleaner, More Sustainable E-Mobility

23 November 2021

Dassault Systèmes announced that QEV Technologies, a Spain-based e-mobility and R&D specialist with extensive expertise in electric race cars, is deploying the 3DEXPERIENCE platform on the cloud to optimize its performance and support its growth as it works to develop cleaner, more sustainable mobility experiences for car manufacturing customers.

QEV Technologies will use the 3DEXPERIENCE platform on the cloud to accelerate the development of all its engineering and electrification projects. The 3DEXPERIENCE platform on the cloud unifies design and engineering across the enterprise in a single digital environment connecting the multiple disciplines involved in the development of a project. QEV Technologies’ teams can seamlessly collaborate, design and engineer in real time - from anywhere at any time - share their diverse knowledge and know-how, improve product traceability, and reduce costs.

“Our vast experience in motorsport and e-racing led our company to develop cutting-edge technologies. We have become a leader in terms of development and manufacture of applied solutions in electromobility, being the perfect technological and engineering partner that meets our customers’ expectations. These manufacturers have expectations for longer battery autonomy, high customization, reliability, performance and fast time to market,” said Joan Orús, CEO of QEV Technologies. “We were already using Dassault Systèmes’ CATIA applications and decided to move to the 3DEXPERIENCE platform on the cloud to benefit from collaboration and project management, develop our products faster, and win more business. Dassault Systèmes and its extensive references in the EV industry worldwide were also key factors in this decision.”

As the automotive industry evolves toward electric, connected and autonomous vehicles, innovative companies and technologies are impacting vehicle design. New approaches are needed in a competitive marketplace to rethink and advance the vehicle experience, manage project complexity, and accelerate the delivery of smart, safe and high performing mobility systems.

“Dassault Systèmes has a long history in diverse sectors of the automotive industry including specialist technology companies in racing that focus on bringing competitive new technology to the racetrack as quickly as possible,” said Laurence Montanari, Vice President, Transportation & Mobility Industry, Dassault Systèmes. “With the 3DEXPERIENCE platform, QEV Technologies can optimize collaboration and concepts, and streamline communication between all players involved. This significantly accelerates the greater industry’s transition to e-mobility.”

Realtek and Ansys Accelerate Complex IC Design for RFIC & High-Speed IC with Advanced Simulation Workflow

18 November 2021

Realtek has adopted a leading-edge and user-friendly electromagnetic (EM) simulation workflow developed by Ansys to accelerate complex RFIC design and improve efficiency by shrinking silicon

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area. Realtek uses RaptorH's silicon-optimized modeling flow to substantially decrease simulation time and reduce wasteful overdesign by accurately predicting EM coupling in applications ranging from RFIC and high-speed IC to cutting-edge Internet of Things products.

RFIC advanced node designs must manage the growing challenge of EM interference caused by high-frequency, millimeter wave signals and occurring across different RF blocks. To improve the efficiency of design margins, Realtek IC designers rely on Ansys® RaptorH™'s large capacity engine to analyze complete circuit blocks with high fidelity.

By adopting this silicon-optimized modeling flow, Realtek designers are accelerating EM modeling times by 3x – 10x. Additionally, they are shrinking silicon real estate by drastically reducing block-to-block EM crosstalk in extremely complex designs.

“RaptorH delivers a highly intuitive graphical user interface with a simplified setup that does not require any manual modifications to the layout or foundry tech files for performing EM coupling analysis,” said Yee-Wei Huang, vice president at Realtek. “It helped our engineering team identify EM coupling problems in our on-chip design flow. This predictive accuracy, together with its high capacity and speed, enabled our designers to minimize area and increase the value without compromising fidelity in new, extremely complex chips.”

“RaptorH plays an integral role in our industry-leading, gold standard simulation platform for modeling EM and multiphysics interactions across the latest generation of IC layout structures,” said John Lee, vice president and general manager of the electronics and semiconductor business unit at Ansys.

“Providing an optimum user experience and delivering reliable results, this product's cutting-edge S-parameter and reduced SPICE models help Realtek designers capture the behavior of very high-frequency signals to solve complex IC layout problems with increased confidence, resulting in more efficient and reliable products.”

ROHM Recognized as a Preferred Supplier of SiC Power Solutions by UAES

18 November 2021

ROHM has recently been certified as a preferred supplier of SiC power solutions by United Automotive Electronic Systems Co., Ltd., (UAES), a Chinese Tier 1 comprehensive automotive manufacturer.

ROHM and UAES have been collaborating and carrying out detailed technical exchanges on the development of automotive applications utilizing SiC power devices from 2015.

In 2020 ROHM established a joint SiC technology laboratory at UAES headquarters (Shanghai, China) with the goal of strengthening cooperation on the development of innovative power solutions centered on SiC, and mass production of a number of automotive products equipped with ROHM SiC power devices is already underway, such as onboard chargers for electric vehicles.

Mr. Guo Xiaolu (right), Deputy General Manager, UAES, and Mr. Raita Fujimura (left), Chairman, ROHM Semiconductor (Shanghai) Co., Ltd.

More recently, ROHM's industry-leading SiC power device performance along with power solutions that include peripheral components were highly evaluated, resulting in ROHM being selected as the first preferred supplier in this field. ROHM SiC power devices are also being used in inverter modules currently being developed by UAES to extend the cruising range of electric vehicles and reduce battery size. And in the future, the two companies will continue to accelerate the development of SiC power solutions to achieve technical innovation for electric vehicles.

Mr. Guo Xiaolu, Deputy General Manager, United Automotive Electronic Systems Co., Ltd.

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We have been conducting ongoing technical exchanges with ROHM, a leader in SiC power devices. The high rating that ROHM devices and peripheral solution proposals have received has led to ROHM being selected as a preferred supplier. For us at UAES, vehicle applications utilizing SiC are an important business that is about to go into full swing, and we have now entered a concrete stage of mass production of SiC-equipped inverters and other products. We would like to thank ROHM for their previous efforts and look forward to building a long-term collaborative relationship using this certification as a new start.

Dr. Kazuhide Ino, Managing Executive Officer, CSO and Director of Accounting & Finance
Headquarters, ROHM Co., Ltd.

We are very appreciative to have received this recognition by UAES, the largest Tier 1 manufacturer in China. As the automotive market moves quickly towards electrification, we see an important opportunity to help UAES develop advanced applications that meet customer needs. ROHM offers a broad range of products in addition to SiC, including IPMs, IPDs, gate drivers, and LED drivers that are ideal for onboard inverters and chargers. Going forward, we look forward to deepening our relationship with UAES and promoting the development of a wide range of products utilizing ROHM's cutting-edge technologies that will contribute to the further evolution of electric vehicles.

SoundHound Inc. Selects Oracle as its Strategic Cloud Infrastructure Provider

18 November 2021

Oracle announced that SoundHound Inc., a global leader in voice artificial intelligence (AI), has selected Oracle Cloud Infrastructure (OCI) as its strategic cloud infrastructure provider for its core cloud requirements. OCI will power SoundHound's voice AI platform as it processes billions of queries and scales to support explosive growth and global expansion. This will include SoundHound migrating its core suite of AI capabilities to OCI to achieve improved performance at a lower cost.

SoundHound has developed an independent voice AI platform that allows businesses across industries to integrate conversational voice assistants into their products and services. Offering a variety of connectivity options, including cloud-only and hybrid solutions—that combine the power of the cloud with embedded technology—the company is driven by the promise to deliver exceptional voice experiences. To deliver on that promise, SoundHound has selected OCI for its superior performance, high availability, built-in security, and lower costs.

“Migrating our platform to OCI further accelerates our global expansion efforts and increases the availability of SoundHound's services to existing and prospective customers,” said Keyvan Mohajer, CEO and co-founder, SoundHound Inc. “As a result, we're doubling-down on our commitment to provide the fastest and most accurate voice AI to our customers and accelerating our research, development, and training of Artificial Intelligence models.”

SoundHound's technology currently powers the voice experience in millions of products from leading global brands, including Hyundai, Mercedes-Benz, Pandora, Deutsche Telekom, Snap, VIZIO, KIA, and Stellantis. By providing a high-performance cloud infrastructure, OCI will help SoundHound process more than 100 million queries each month—a number which doubled in the last six months—with queries projected to exceed 1 billion in 2021 alone.

“SoundHound is at the forefront of the voice AI field, providing brands with fast and accurate voice experiences that customers and employees rely on for daily tasks,” said Chris Gandolfo, senior vice president, North America cloud and technology sales, Oracle. “As a company that has doubled its query traffic to over 100 million in just six months and is set to continue its rapid global expansion,

SoundHound is a perfect example of how OCI can help organizations increase their market presence, reduce costs, and deliver exceptional services to customers around the world.”

Telefónica and Wipro Engage to Offer Network Automation Through CI/CD/CT Adoption in Germany and Brazil

23 November 2021

Telefónica and Wipro Limited, a leading global information technology, consulting and business process services company, announced an agreement to initiate the transformational journey towards Network Operations by introducing Continuous Integration, Continuous Deployment and Continuous Testing (CI/CD/CT) in Telefonica’s German and Brazilian markets, with the perspective of expansion to Spain and UK.

With 5G, born cloud native and based on containers and microservices, suppliers have endorsed a CI/CD/CT approach in their industrialization process dramatically increasing the number of product releases and the volume of testing. Operators need to be radically agile to face this new situation without compromising the right level of quality, performance, scalability and time to market.

Telefonica plans to leverage a common CI/CD/CT framework for all the markets which can be implemented locally to meet specific local integration needs, with the support of Wipro. This will ease collaboration among Telefonica OpCos allowing to share design, parametrization/configuration, test plans and results.

The solution, developed by Wipro, will be built over opensource tools and open to evolution, allowing rapid adaptation to future technological changes. Common repository test tools will also be used, with the possibility of future integration with the CI/CD/CT pipeline.

Wipro will work with Telefonica to automate the associated Network Operations and, thus, enable the transition to the Telco Cloud and the adoption of the virtualized Network Functions. This framework will allow for industrialization of the process, coping with the increased volume and complexity of the Network Functions while adopting an Agile working methodology in parallel to the industry.

Telefonica Germany considers CI/CD/CT to be an important tool when implementing automation strategy. “Agile working methods and delivery mechanisms will play an important role in the future to be a successful player in the market. With Wipro, we have chosen a service provider that can build converged solutions for us to optimally serve all technology segments. Fast, reliable and standardized automation of all tasks from build to production will improve our time to market as well as service quality,” said **Thomas Braun, Manager Test Environments & Integration, Telefónica Germany**.

Telefonica Brazil considers the initiative fundamental in its cloudification and network transformation strategy. “Automation of testing and continuous delivery will be one of the pillars to address the new construction model for 5G networks and even for traditional fixed and mobile networks” said **Elmo Rocha, Director of Planning and Technology, VIVO**.

Although the initial target is 5G Core Network, the strategy is to expand the solution to other areas such as Transport, Access and Infrastructure.

Furthermore, Telefonica and Wipro will collaborate in implementing and incorporating the CI/CD/CT framework in the Telefonica Technology & Automation Lab (based in Madrid). Wipro will support Telefónica in implementing different use cases over Telco Cloud environments and will build an automated and programmable environment based on Artificial Intelligence/Machine Learning where both partners will work jointly with the objective to achieve Zero touch network testing and deployment

without a maintenance window.

“CI/CD/CT is a must in our 5G strategy enabling the robustness and reliability of our Network while ensuring adaptability and accelerating the time to market. This is one of the key steps in the path of automation of our networks. We see Wipro as the best partner for this journey given the knowhow and the experience we have in some other projects of automation like SDN implementation” said **Cayetano Carbajo, Director of Core, Service Platforms and Transport, Telefonica CTIO**.

Thomas Mueller, CTO – Engineering and R&D Services, Wipro Limited said, "Network disaggregation, O-RAN and automation are at the core of our investments to enable cost efficient, scalable networks of the future. Our decade long partnership with Telefonica is continuing to thrive through this agreement. Wipro will now leverage our investments into open-source based network automation and support Telefonica in future network transformation."

Wipro had also recently announced a five-year strategic partnership with Telefónica Germany / O2 for a Radical IT Transformation (RAITT) program.

Product News

Atos launches Atos OneCloud Sovereign Shield to support digital sovereignty needs of industries and governments worldwide

18 November 2021

Atos announces the launch of **Atos OneCloud Sovereign Shield**, a set of solutions, methodologies, and operational cloud services that is unique on the market, enabling clients across the world to meet the challenges of managing their data in the edge to cloud continuum, in line with the highest jurisdictional data governance requirements. Part of the Atos' OneCloud initiative, **Atos OneCloud Sovereign Shield** is a comprehensive edge to cloud platform ecosystem and highly secure service that improves the level of control clients have over the data they produce and exchange, helping them regain control and effectively deal with legal dependencies.

Rather than a binary vision of digital sovereignty, Atos creates a range of risk controls, supporting industries and governments in deploying hybrid and multi cloud strategies in terms of data segregation, infrastructure, applications, security, and operations. Atos offers **a customized version of the solution depending on the sensitivity of client data**. Atos OneCloud Sovereign Shield can be deployed on: a private disconnected cloud – adapted to clients' requirements, ensuring data segregation; through a regional or local public cloud - immune to non-European access; and on a global public cloud - delivered with sovereign controls.

Atos OneCloud Sovereign Shield is based on an optimized framework of:

- **Proprietary technological building blocks** – leveraging Atos' expertise in open-source software, as well as Atos designed and manufactured BullSequana Edge servers, its Trustway range of encryption products, its Evidian Identity and Access Management software, IDnomic Trusted Identities, Atos Managed Detection and Response (MDR) cybersecurity monitoring services and Trusted Third Parties.
- **Local and specific partnerships** – ensuring control, processing, and jurisdictional treatment of data, by partnering with strategic players per geography and providing local experts and consulting accordingly. These partnerships, which are currently being developed, will be announced as and when they are signed.

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- **Global partnerships** – ensuring public cloud access, connectivity and vendor choice from Google GCP, Amazon AWS, Microsoft Azure, OVHcloud, VMWare, and Red Hat.

Additional partnerships are to be announced shortly.

The solution **leverages Atos' key differentiators** which are its expertise and ability to:

- Ensure that data, including data in-transit from edge to cloud, is **managed in a fully secure and auditable way** according to customers' sovereignty requirements, as well as future industry standards such as **Gaia-X labels** and European Cybersecurity Scheme (ENISA). This is supported by the Atos leadership in data security and in its edge to cloud continuum data management and orchestration.
- Ensure **territorial jurisdiction** so that data is processed and operated locally, in full compliance with existing local regulations.
- Leverage Atos' **sovereign technology, developed in Europe, and expertise with 900+ patents** and leading capability in protecting data at rest, in-transit and in use.
- **Support operations** with its consulting expertise and a network of local certified experts in each territory, enabling processing of data for customers in alignment with local regulations, and allowing customers to define the exact location, nationality, and accreditations of the operators.

“Atos OneCloud Sovereign Shield was born out of our experience supporting governments and large organizations across Europe where there is a fast-growing need for greater control and protection of data, data exchange and infrastructure, in line with national and international requirements. I'm excited that Atos is now able to meet those requirements with our Atos OneCloud Sovereign Shield, working hand-in-hand with all leading cloud providers and integrating Atos' proprietary solutions to provide the most flexible and responsive sovereign offering available and as such unique on the market,” said **Pierre Barnabé, Interim co-CEO and Head of Big Data and Security, Atos.**

“To meet our challenges of domestic growth, international business expansion and data sovereignty, we have defined a strategy leveraging the best combination of private and public cloud. Atos supports us in this definition while providing the right set of services to analyze data segregation and security requirement in order to select appropriate solutions with the right sovereignty approach. With Atos and its partners, we appreciate the range of choices that meet differentiated needs, local and international, making it possible to conciliate sovereignty and competitiveness.” said **Xavier Etienne, Executive VP-Technology & International, FDJ.**

Atos OneCloud Sovereign Shield can be customized for a dedicated group of users and will be available for the defense industry in a separate and enhanced version.

Hexagon enables big ambitions for Directed Energy Deposition DED additive manufacturing

17 November 2021

Hexagon's Manufacturing Intelligence division has revealed new developments that advance the application of Directed Energy Deposition (DED) technologies to industrial applications, including collaborations with printer manufacturers pro-beam, Sciaky, DM3D, Gefertec and Meltio.

DED incorporates several metal 3D printing technologies used to produce parts by melting and fusing material as it is deposited. Applicable to a broad range of part sizes, it is attractive for the cost-effective production of large parts – from one to six or more metres – that may be impossible to manufacture using powder bed fusion (PBF) technologies. Indeed, SmarTech Analysis estimates revenues from large-

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format metal additive technologies and related areas will reach US \$739 million in 2026.

Sharing core technologies with mature coating and welding processes, DED is rapidly gaining traction for military and aerospace Maintenance, Repair and Operations (MRO) because it can repair or rebuild high-end equipment, such as turbine blades. It also offers innovation potential within hybrid manufacturing processes, where it can add material and features to workpieces finished with wire EDM or milling processes.

Driven by interest from the aerospace and defence industries, parts are often made from high-performance metal alloys such as titanium and high-temperature and stainless steels. Hexagon is working with printer OEMs, customers and service providers to help predict how these materials behave when subjected to the thermal-mechanical stresses of DED processes, which are compounded in large structures.

“We see significant demand for the use of our technologies in tandem to create customised, cost-effective solutions that meet the needs of specific additive manufacturing technologies in a variety of applications,” said Mathieu Pérennou, global business development director for additive manufacturing, Hexagon’s Manufacturing Intelligence division. “Optimising deposition production processes may entail taking advantage of powerful simulation tools, state-of-the-art scanning technology, robust reverse-engineering and analysis software, or a combination of all of these technologies to achieve the required quality and repeatability.”

pro-beam, a global expert in electron beam technology and machines has combined 45 years of experience in welding to build its new WEBAM (Wire Electron Beam Additive Manufacturing) 3D printers, including the electron beam guns, in-house. Its new PB WEBAM 100, unveiled at Formnext 2021, employs an innovative vacuum chamber design to produce high-quality parts from challenging materials such as pure copper and titanium. Using Hexagon technologies, it validated a 100% virtual design-for-manufacturing workflow for this new wire-based electron beam printer using a structural aerospace part.

Hexagon’s Simufact Welding was used to create a robust a DED simulation model that accounts for all pro-beam’s proprietary vacuum conditions, clamping locations, and power adjustments to predict stresses, strains, and distortions. The new printer successfully produced the part from 35 layers of titanium wire using an electron beam in the vacuum chamber. The printed part was scanned using Hexagon’s state-of-the-art AS1 Absolute scanner and REcreate reverse engineering software, then compared to the final part geometry predicted by the simulation using VGMETROLOGY geometry analysis software from Volume Graphics.

Verena Uhl, product manager, pro-beam commented: “Hexagon has the capability to both accurately predict and then accurately measure our WEBAM process, which gives us and customers confidence in our innovative new additive methods. The simulation has a very strong dimensional correlation and shows very similar bending of the base plate to the real part. Having reduced simulation time by a factor of 13 without any loss of result quality, it is clear we can rely on Hexagon’s technologies for robust virtual engineering.”

Sciaky, Inc., a leading provider of additive manufacturing solutions, has likewise formed a partnership with Hexagon to ensure that its customers can use the company’s electron-beam (EBAM®) 3D printers to their full potential. Pairing EBAM printers with Hexagon’s process simulation software for DED applications ensures that the sophisticated printing technology can be leveraged for optimal productivity.

DED service bureau and machine builder DM3D used Hexagon measurement technologies to prove that

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it could meet NASA's tolerance requirements in producing a full-scale NASA RS-25 nozzle liner, 111 inches (app. 2.8 meters) in height and 96 inches (app. 2.4 meters) in diameter, as part of NASA's Rapid Analysis and Manufacturing Propulsion Technology (RAMPT) project.

"Hexagon's experience and portable metrology technology has proved very valuable for validating the RAMPT RS-25 liner part and generating an accurate model for finish machining," commented Dr. Bhaskar Dutta, president, DM3D Technology: "It is one of the largest DED builds ever made, so we needed a good and reliable inspection technique for part validation. It's obviously not practical to move a 2-ton rocket engine part to a CMM for inspection. By accurately and quickly measuring the part inside the machine, we also see the opportunity to perform any rework on the part, had it been needed."

Meltio, a disruptive laser metal deposition technology manufacturer, has added Hexagon's ESPRIT CAM computer-aided manufacturing (CAM) software to its technology ecosystem, offering machine shops a single interface for preparing and programming high-quality hybrid direct energy deposition (DED) production and machining.

The collaboration streamlines subtractive and additive manufacturing workflows for users of the Meltio Engine CNC Integration system. Meltio's hybrid manufacturing solution allows for the creation of complex parts with precision machining tolerances in a single step. Combining this pioneering technology with Hexagon's ESPRIT CAM system CNC programming, optimisation, and simulation for both additive and subtractive processes results in an advanced but easy-to-use manufacturing workflow in a single tool.

Hexagon implements additive build preparation in ESPRIT CAM software to streamline hybrid manufacturing and scale up production

17 November 2021

Computer-aided-manufacturing (CAM) software introduced by Hexagon's Manufacturing Intelligence division provides the digital tools needed to prepare 3D-printed components for manufacturing using powder bed fusion (PBF) technologies. Because hybrid manufacturing entails performing both additive and subtractive processes, integrating build-preparation tools within CAM software streamlines workflows per part and offers significant efficiency improvements when scaling up additive manufacturing volumes.

Today, PBF is the most mature additive manufacturing technology for industrial production and represents 86 percent of the worldwide machine install base*. PBF is used to build 3D parts by heating successive layers of powder, typically at the micron-level, and generally produces parts that require finishing with conventional CNC machine tools to achieve a high-quality surface finish.

Hexagon's ESPRIT CAM software now offers a build preparation workflow within the CAM environment to provide a single, streamlined platform for both the additive build and finishing operations. Its patented Part-to-Build™ workflow was developed to change the prevailing 3D-printing paradigm from the preparation of rapid prototypes to industrialisation with a true CAM experience that includes build-preparation steps and the programming tools for post-processing printed parts with wire Electrical discharge machining (EDM) and milling machine tools. In series production, a given part will be produced hundreds of times with the same build plates, orientation, support structure generation, exposure strategy assignment. The Part-to-Build workflow addresses Part preparation and Job preparation with dedicated functionality within one piece of software, making manufacturing smarter by enabling volume efficiencies and automating repetitive tasks such as slicing.

Designed for CAM programmers, ESPRIT CAM's build preparation employs a workflow based on

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parametric data that ensures high accuracy and adherence to the geometry of the original CAD model until it is sliced in preparation for 3D printing. The software reads and manipulates all popular parametric CAD formats and automatically identifies those surfaces that require support. The software also assists with the creation of support structures, generating parametric surfaces with teeth, fragmentation, and perforation. Support generation can be automated for future builds by assigning pre-set to a region in the surface, capturing valuable production know-how and improving future productivity. Because the majority of models for 3D-printed parts are STL-based, ESPRIT CAM also provides an STL (mesh) slicer that leverages a built-in software kernel.

Once a part is sliced, it can be imported to the software's Job preparation environment and re-used whenever needed. Here, exposure strategies are automatically assigned according to the chosen machine set-up. As the part is already sliced, the programmer need only nest them and the corresponding machine file is generated based on the target machine set-up. Hexagon enjoys close collaboration with machine manufacturers, providing factory-certified machine files for optimal performance and confidence, and partners with world-leading additive research institutions to continuously apply the latest cutting-edge technologies.

“Combining build preparation in the CAM environment is the first step on the journey to true computer-aided manufacturing using additive methods, enabling higher levels of automation and productivity,” says Clement Girard, product manager for additive manufacturing and artificial intelligence at Hexagon. “Our goal is to make the programmer's life easier, thereby making the shop floor more productive and future-ready to apply the best available machinery and processes to the part in hand.”

By using ESPRIT Additive PBF in conjunction with other Hexagon products, such as MSC Apex Generative Design, Simufact Additive, customers can further optimise their part designs for additive manufacturing.

Hexagon industrialises high quality additive manufacturing with open ecosystem strategy

17 November 2021

Hexagon's Manufacturing Intelligence division has revealed its plans to build the industry's most flexible and open additive manufacturing (AM) ecosystem to help overcome complexities in 3D printing processes and support customers in effectively building their product development and manufacturing workflows.

With several new additions to the ecosystem announced this week alone – Sciaky, Meltio, CADS Additive, AMcubator and Additive Center – and many more under way, Hexagon's suite of AM partners and products is becoming one of the most comprehensive on the market. Plans to continue building an open ecosystem from concept to customer with the shared purpose of high quality were revealed at 3D printing industry event Formnext 2021, where the challenges of industrialising AM have been at the forefront of discussions.

Paolo Guglielmini, president of Hexagon's Manufacturing Intelligence division, said: “Far from Industry 4.0 creating a ‘connected’ end-to-end supply chain, today many 3D printers and protocols are creating ‘walled kingdoms’ of hardware that are incompatible with certain CAE tools, and vendors are introducing machines with proprietary connectivity, standards and protocols designed not to work with machinery from rivals.

“Just as large manufacturers drove the provision of open factory automation, it's important we vendors now break down barriers to new manufacturing technologies that offer more flexibility and efficiency.

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Instead, open data standards should be seen as a growth enabler.”

Hexagon’s AM ecosystem offers customers a broad spectrum of solutions as a result of working closely with material suppliers (e.g., Solvay, COVESTRO), printer and machine-tool companies (e.g., Stratasys, Markforged, Renishaw, Additive Industries, Sciaky, GEFERTEC, Meltio), software and platform providers (e.g., Authentise, CADS Additive, Elise), and service bureaus. Through open collaboration, it is helping manufacturers to build confidence in performance, quality, and repeatability, while allowing customers to integrate new AM technologies with their existing solutions, tools and workflows. Solutions that leverage Hexagon and ecosystem partners are used by every part of the supply chain, from part producers to global OEMs, with the common aim of producing high quality parts to global industrial standards.

Hexagon’s Manufacturing Intelligence division has a consultative approach, developing long-term relationships with the biggest players in global manufacturing, as well as disruptive new players. With a community of more than 500,000 users, its product development and manufacturing technologies are used throughout the supply chain. Hexagon also invests 10% of net sales in R&D and holds thousands of active patents. In additive manufacturing, the company collaborates with leading research institutes and projects, including the EU MANUELA project, Lift, RMIT University, Purdue University, Materials Innovation Guild (MIG) at the University of Louisville, and more. It is also an active contributor to the development of emerging standards, including ASTM International groups, and joined the 3MF Consortium in November 2021 to contribute to the development of effective interoperability between additive manufacturing software tools.

Mathieu Pérennou, director of strategy and global business development for additive manufacturing at Hexagon, said: “Through continued openness, our ecosystem benefits both sides of the exchange. Our partners can benefit from Hexagon’s technologies and expertise while getting the opportunity to collaborate and solve problems for our extensive global manufacturing customer base, while our customers benefit from that deeper collaboration and ability to build workflows based on truly best-of-breed solutions that are fully tailored to their individual goals.

“We want to continue to expand that ecosystem to industrialise AM and realise its benefits for high performance components, meeting the same quality expectations that our customers have for traditional methods, and we need to make it possible at higher volumes than AM with consistent results at every global plant.”

Jeff Hemenway, Vice President, Business Segments for Stratasys, commented: “We fully agree that an ecosystem-based approach is required to enable manufacturers to understand the full potential of AM, as demonstrated through our recently launched GrabCad AM platform and our new open approach to material development. Our partnership with Hexagon allows customers to accelerate the design and simulated testing of parts and material performance for printing. And, as the committed global leader in advancing polymer-based Additive Manufacturing - together with Hexagon, and across industries, we are propelling our customers’ ability to realize the value of AM in production.”

Alex Redwood, head of design AM, Additive Industries, commented: “We are often printing complex parts of varying size and shapes and we need to get them right first time. Our unconstrained base plate technology is particularly important to simulate accurately when it comes to the behaviour of large components during build. We have found that Hexagon’s Simufact Additive build simulation captures this behaviour incredibly well with short simulation times. We look forward to pushing the limits of industrial AM design and exploring other synergies through the projects we are currently undertaking.”

Daniel Stadlmayr, technical director, CADS Additive, commented: “Our collaboration with Hexagon is

a win for all the industry, helping our customers to achieve the best possible results with accurate build simulation, optimal use of materials and a shared passion for innovation to help our customers solve their most challenging design challenges for metal AM.”

hyperMILL® VIRTUAL Machining Virtually Maps All Process Steps for CNC Manufacturing

18 November 2021

OPEN MIND closes the gap between CAM systems and physical machine environments with its *hyperMILL® VIRTUAL Machining* solution that is an integrated all-in-one system that eliminates the need for various software solutions. It maps all steps virtually, thus giving manufacturers absolute control over the machining process. This includes programming, NC code generation and optimization, simulation of the NC code, and networking with the machine.

At OPEN MIND, the development of a safe simulation solution starts long before the NC code. The CAD/CAM developer relies on in-house innovative solutions to build an integrated system where NC code generation and simulation are closely interlinked. The generated NC code is tested extensively, taking into account machine limitations. It is guaranteed to run on the respective machines. All process-relevant data is available in the NC code simulation, delivering an unsurpassed level of accuracy and safety.

Three modules for merging the virtual and real world

OPEN MIND has equipped *hyperMILL® VIRTUAL Machining* with three modules for merging the virtual and real worlds. In the Center module, real machining situations are virtually mapped for the machine and controller. They are then simulated based on the NC code. The CONNECTED Machining module enables in-depth networking and synchronization with the machine. For example, the simulation software can detect deviations in the origin or tool positions.

The Optimizer module provides powerful optimization algorithms that ensure efficient multi-axis machining. It also automatically identifies the best solution for top machining results. Moreover, users can write the CAM programs for portal milling machines in the same way as for 5-axis milling centers. The Optimizer automatically adds the rewinds necessitated by rotary and linear axis limits and by collision control based on the machine’s digital twin. This eliminates unnecessary retract movements to safety positions between two machining steps with the same tool. When combining jobs with the same tool (linking), 2D and 3D machining steps are transformed into smooth movements. The Optimizer can also distinguish between roughing and finishing operations.

Intelligent part alignment at the push of a button

Another tool for ensuring greater efficiency and cost-effectiveness in machining is the intelligent component alignment in CAM in real-time using *hyperMILL® BEST FIT*. The unaligned part is probed on the machine using 3D probing, and the probing points are sent back to the CAM system as a measurement log. *hyperMILL® BEST FIT* then precisely adjusts the NC code to the actual part position. The adapted NC code is subsequently simulated in the virtual machine on the actual clamping setup and optimized automatically. To ensure safe and accurate machining, the machine operator performs a final verification measurement. After that, he can start machining without having to align the part on the machine beforehand. The advantages include immense time savings, safe machining, and well planned processes.

iBASEt Announces Model-Based Enterprise Offering

18 November 2021

iBASEt, the company that simplifies how complex products are built and maintained, announced the launch of a Model-based Enterprise (MBE) offering that can accelerate a manufacturer's Industry 4.0 journey. The first version, based on Solumina iSeries i050, provides a way for manufacturers to start operating as a "Validated, Model-Centric" enterprise, as referenced at the Model-Based Enterprise Summit that was hosted March 31-April 2, 2020.

Manufacturers challenged with intelligent change management are implementing model-based programs to extend model-data connectivity between engineering and manufacturing operations. Companies can't easily capture this relevant data, which often requires manual inputs or duplicate work, to generate digital continuity or a digital thread. iBASEt's MBE offering overcomes these challenges by easing how this data is shared between design and manufacturing to simplify the complexities caused by design changes inherent in model-based engineering.

NIST has provided guidance on how an MBE strategy can yield substantial business value by:

- **Pursuing new revenue** opportunities, such as offering manufacturing-as-a-service
- **Lowering business risk** by agility when shifting to serve different industry sectors
- **Reducing costs** with more on-demand, pull business processes, such as those in maintenance, repair, and overhaul (MRO) operations

"Manufacturers are looking to become more resilient in today's uncertain world. This objective has now become mission-critical, with the pandemic and ongoing supply chain and business disruptions," said Julie Fraser, Vice President of Research for Operations and Manufacturing at Tech-Clarity. "A structured MBE program can move companies toward greater efficiency, quality, and reliability – even those manufacturers with limited IT resources and budget."

"iBASEt is pleased to launch this new MBE offering, which underscores our knowledge and commitment to leading customers on their Industry 4.0 journey," said Naveen Poonian, CEO, iBASEt. "Whether it's enterprise manufacturers challenged with picking the right partner, or midsized manufacturers implementing an agile strategy, we look forward to guiding each of our customers to achieve these goals."

iBASEt's iSeries-based solutions are built on a microservices, cloud-native architecture, which provides a better approach for manufacturers to advance their Industry 4.0 strategy. This MBE offering can accelerate the realization of becoming a data-driven business void of paper-based or manual processes.

Synopsys Full EDA Flow First to Achieve Samsung Foundry 4LPP Process Certification

17 November 2021

Highlights:

- Synopsys Fusion Design Platform and Custom Design Platform are first to achieve Samsung Foundry certification on 4LPP process, part of the foundry's comprehensive technology roadmap to help chipmakers design and deliver faster, more power-efficient chips
- Synopsys 3DIC Compiler has been validated for the Samsung Foundry Multi-Die Integration (MDI) flow, which incorporates the latest 4LPP process technology advances and provides scalability for hundreds of billions of transistors

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- Synopsys DesignWare IP for 4LPP process delivers low latency, maximum power efficiency and high bandwidth while minimizing integration risks

Exemplifying a commitment toward accelerating the development of power-efficient, advanced-node chips, Synopsys, Inc. announced that its full EDA flow has been certified by Samsung Foundry for its new 4LPP (4nm Low Power Plus) process. The 4LPP process, which is available now, represents the latest implementation of Samsung Foundry's unique FinFET technology, which delivers chip density, performance and power advantages for SoCs fueling some of today's most in-demand applications, including high-performance computing, AI, and 5G infrastructure.

The Synopsys solutions certified for Samsung Foundry's 4LPP process encompass the full digital, analog and mixed-signal implementation and signoff flow. In addition, collaboration between the two companies has resulted in the availability of Synopsys 3DIC Compiler solution for the Samsung Foundry Multi-Die Integration (MDI™) flow, which is proven on 4LPP technology. 3DIC Compiler is a full exploration-to-signoff 3D solution to manage the complexity of hundreds of billions of transistors, while driving power, performance and area (PPA) per cubic mm silicon optimization. Synopsys is also developing a portfolio of DesignWare® Foundation IP and Interface IP that delivers low latency, high bandwidth and power efficiency for chips developed on the 4LPP process.

"Samsung Foundry is pleased to have worked closely with Synopsys to ensure readiness of its full EDA flow for our 4LPP process," said Sangyun Kim, vice president of Foundry Design Technology Team at Samsung Electronics. "Synopsys is an ideal partner to join forces on pathfinding efforts to facilitate new-node enablement as we further advance our roadmap on new technologies such as our upcoming 3nm gate-all-around process."

As the first EDA vendor to achieve full-flow certification for the 4LPP process via the SAFE-QEDA program, Synopsys is poised to accelerate a smooth adoption process for customers, minimizing risk and reducing turnaround time and costs. The SAFE-QEDA program is designed to mitigate risks of new node adoption.

"Our close collaboration continues to accelerate technology advances to drive innovation in high-performance computing, AI accelerators, AR/VR and other popular application areas," said Shankar Krishnamoorthy, GM and corporate staff for the Silicon Realization Group at Synopsys. "The certification of our platforms for Samsung Foundry's 4LPP process ensures the highest level of silicon correlation and design robustness to enable chipmakers to realize best-in-class PPA and faster turnaround times."

Synopsys digital design solutions that are part of the certified flow are anchored by the Fusion Design Platform™, which, with its single data model and machine learning capabilities, spans the entire design-to-silicon lifecycle, accelerating development of innovative, hyper-convergent designs. The solutions in this flow include:

- Synopsys Fusion Compiler™ RTL-to-GDSII digital implementation solution
- Synopsys IC Compiler™ II place-and-route solution
- Synopsys 3DIC Compiler unified exploration-to-signoff 3D solution
- Synopsys Design Compiler® Graphical synthesis solution
- Synopsys Design Compiler NXT RTL synthesis solution
- Synopsys TestMAX DFT advanced design-for-test solution
- Synopsys TestMAX ATPG advanced pattern generation solution

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- Synopsys StarRC™ golden signoff parasitic extraction solution
- Synopsys PrimeTime® static timing analysis solution
- Synopsys PrimePower RTL to signoff power analysis solution
- Synopsys IC Validator™ physical verification solution

Synopsys custom design solutions that are part of the certified flow are anchored by the Custom Design Platform, which includes PrimeSim™ Continuum simulation solution and provides a unified suite of design and verification tools for analog and mixed-signal designs. The PrimeSim Continuum solution includes PrimeSim HSPICE, PrimeSim SPICE, PrimeSim Pro and PrimeSim XA simulators. Other solutions in this flow include:

- Synopsys PrimeSim EMIR analysis solution for transistor-level power signoff
- Synopsys Custom Compiler™ design environment for full-custom analog, custom digital and mixed-signal ICs
- Synopsys SiliconSmart® cell, I/O and memory characterization solution
- Synopsys PrimeLib unified library characterization and validation solution

Synopsys is also developing a broad DesignWare IP portfolio for Samsung's 4LPP process, including:

- Synopsys Multi-Protocol 32G PHY IP, including PCI Express® 5.0 and 25G Ethernet
- Synopsys Embedded Memories, including TCAMs
- Synopsys Logic Libraries
- Synopsys General-Purpose I/O (GPIO)
- Synopsys High Performance Core (HPC) Design Kit

TOPSOLID SAS announces the availability of TopSolid 2022 Beta to its network of partners.

9 November 2021

TOPSOLID SAS announces the availability of TopSolid 2022 (v7.16) Beta.

Each year **TOPSOLID SAS** invests nearly 20% of its turnover in R&D and enriches its **TopSolid** product line with hundreds of improvements and new features inspired by the feedback from our partners and customers. This new version of **TopSolid** is particularly rich and offers the market numerous innovations in existing products as well as new products to meet the needs of Industry 4.0.

To mark its commitment to Industry 4.0, TopSolid changes its visual identity and introduces "Integrated Digital Factory", the integrated software suite for the mechanical, metalworking and digital engineering industries.

TopSolid'Design 2022 is enriched with nearly 400 new features in **Design, Steel, Mold and Electrode**:

- The realistic rendering module has been improved with the introduction of several major new features allowing high quality realistic rendering.
 - A new Studio document to prepare realistic rendering scenes: ground management, noise reduction post-processing to compute ray-tracing images faster, photo camera to integrate realistic rendering on shots.
 - New PBR materials for more realistic materials. Easy import of textures from specialized

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websites.

- FBX import with texture management and UV map to decorate scenes with textured objects from the many sources available on the Internet.

- Improved part marking to quickly mark multiple parts with properties, text, or a sketch.
- Copy and paste parameters between different documents while preserving the expressions and relationships between these parameters.
- Section nesting for fast optimization of profile flow.
- FreeShape: notable improvements allowing to produce associatively modifiable parts coming from import, whatever the source.
- Geometry recognition on a points cloud: It is now possible to select an area of a points cloud and recognize geometric entities such as planes, axis, landmarks and cylinders.
- Distribution with orientation management to respond to inclined distributions (rampant railings, stairs...)
- Grouping header and subtotals that improve the understanding of BOM tables in the drawing by creating groups with subtotals.
- Calculated BOM column allowing the entry of formulas based on other columns (concatenation of information, calculation of dimensions, subtotals...)

TopSolid'Steel 2022 benefits from the same improvements as **TopSolid'Design** and it now offers a major functionality:

- New command dedicated to the design of multi-flight staircases that assists the designer in the distribution of steps and landings.

TopSolid'Pdm 2022 integrates two major new functions:

Activate data replication and share your projects between all your production sites, wherever they are in the world, thanks to **TopSolid'Pdm Multisite**.

- An affordable multi-site sharing solution.
- Simple to set up.
- Ability to replicate data on multiple remote servers.
- Compatible with all **TopSolid** business modules.
- Compatible with any type of Active Directory.

TopSolid'Pdm WebExplorer, the remote PDM project explorer, using a simple internet browser, has been significantly improved:

- The ergonomics have been redesigned for greater ease of use.
- The view panel now integrates the management of representations as well as the view filters for the Tooling documents.
- Import of non-CAD documents from the browser.
- Document sharing by e-mail.
- Package export from the browser.

TopSolid'Pdm WebExplorer allows you to collaborate remotely with your design office teams.

TopSolid'Cam 2022 has been enriched with almost 180 new features and developments in all modules:

Grinding

TopSolid'Cam has been enriched with a grinding module including 4 dedicated operations:

- Linear grinding by face and contour grinding.
- Cylindrical grinding by face and contour grinding.

5 axis (ModuleWorks integration)

- Addition of 5-axis "Port Machining" operations for the automatic machining of port in roughing, finishing and residual machining.
- Addition of an automatic deburring operation in 5 continuous axis.
- Improved multi-axis pocketing function with the addition of side finishing and bottom finishing operations.

Turning

- Integration of the **PrimeTurning™** method which allows turning in all directions with much greater efficiency and productivity than conventional approaches. **PrimeTurning™** is a technology of **Sandvik Coromant**. **TopSolid** and **Sandvik Coromant** have signed a Licensing and Distribution Agreement to integrate and distribute this technology.
- Addition of a machining operation in the YZ plane for external turning operations and for parting off.
- Automatic management of the movements of the steady and tailstocks mounted on a turret or off-axis.

2D Milling

- New and more user-friendly contour roughing operation.
- Added anti-collision control between the workpiece and the tool integrated to end milling and side milling operations.
- Automatic trimming of nested parts in a plate by analysis of the machinable shapes.

3D Milling

- Optimization of 3D finishing toolpaths by improving the algorithm for deleting out-of-stock paths.

TopSolid'Cam Operator 2022 is the new name for the **TopSolid'ShopFloor Cam** product. It allows the operator to visualize, simulate and verify the machining sequences produced by TopSolid'Cam. Depending on the authorizations granted, the operator can adjust the machining program at the machine stand. The software thus improves the collaboration between the design office and the operators in the workshop.

- A solution connected to the PDM to avoid any risk of machining the wrong part.
- Access to the editing features is configurable on a user-by-user basis.
- Program changes are tracked and logged.
- Intuitive ergonomics that makes the application easy to learn and use.
- A graphic interface compatible with touch screens.
- Reliable and accurate simulation functions.

TopSolid'Cam Simul 2022 is the ISO code simulation solution integrated in **TopSolid'Cam**.

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- A fully integrated ISO code simulation solution, complementary to routing simulation and verification.
- **TopSolid'Cam Simul** reproduces the exact behavior of the machine.
- The calculation of operation and interoperation times is even more accurate.
- The solution has a program optimization function and can save up to 15% of machining time.

TopSolid'Inspection 2022: The ballooning and dimensional control solution dedicated to the quality department of production companies which allows the creation of inspection reports.

- Implementation of the ISO GPS standard to facilitate the capture of geometric tolerances.
- Phase management and choice of inspection points per phase, this new feature allows you to manage the entire production line in a single project.
- Management of the first and last parts in the inspection frequencies.
- Management of additional balloon shapes and moving frames.
- Automatic generation and management of inspection projects from **TopSolid'Erp**.

TopSolid'Cut 2022: The integrated CAD/CAM solution that enables the design and industrialization of sheet metal, from the simplest to the most complex.

2D cutting

- Management menu integrating new machining parameters: priming, micro-attachments, cutting, scheduling, burning, drilling, etc.
- Catalogue of standard primers offering the possibility to create easily and quickly all types of primers by proposing calculation formulas. The centralization and sharing of your know-how with all your collaborators are guaranteed.
- Functional enhancement:
 - New cutting strategies by part or by sheet with sorting of the parts in the holes
 - Ability to force I/O
 - Automatic assignment of micro-clips
 - Smoothed out trajectories
 - Pointing, burning and drilling operations
 - Sketch cutting
 - Operator files
 - Import/Export to Work Manager and ERP

The nesting module has been enriched with new features:

- Ability to schedule the placement of parts, especially to place large parts in priority
- Control of the number of references per support to save processing time at the machine
- From an empty format, realization of a manual placement with control parameters
- Tube nesting

5-axis cutting

- Speed step management: this feature is particularly important for optimizing the programming of waterjet cutting machines.

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- Possibility of assigning micro-attachments to the part to guarantee a quality cut.
- Management of additional cuts such as loops, fillets, etc. to perfectly cut the corners of the part.

TopSolid'Erp 5.16 2022 integrates more than a hundred improvements as well as a lighter graphic design making it more agile to use. A new CMMS module has been added to the functional scope of **TopSolid'Erp**.

- A modern, clean design makes the interface lighter and easier for the user to read. This results in a more agile use.
- The UX of the scheduling module has been improved allowing, among other things, to choose the scale of visualization in a single click with synchronization of the display areas.

A new integrated CMMS module (Computerized Maintenance Management System) to facilitate the follow-up of the machines and to ensure their good condition to optimize the production. This module allows to ensure:

- **Corrective maintenance of your equipment**, maintenance to be carried out after a malfunction or breakdown. A technician intervenes to repair or replace the defective elements once the damage is noted.

- **Preventive maintenance**, which allows to anticipate the defects, following a calendar of interventions for the revisions. This type of proactive maintenance allows to avoid breakdowns and costs of production stops with sometimes big repairs.

Main features of the CMMS module:

- Declaration of equipment to be maintained
- Declaration of spare parts
- Declaration of corrective and preventive maintenance operations
- Assigning tasks to maintenance employees
- Maintenance Order Processing
- Recalibration of the production schedule considering the Maintenance Orders

TopSolid'Quote 2022: The technical quotation software for sheet metal parts and assemblies.

- With **TopSolid'Quote**, you can easily and quickly quote for tenders based on 2D and 3D geometries.
- Customize and parameterize your technical costing rules as closely as possible to your production resources.

Quote module

- Import your 2D (dxf, dwg) or 3D (STEP, IGES, Parasolid, Acis, SolidWorks, SolidEdge, ...) documents.
- Management and storage of the CAD structure of your projects associated with quotes in the **TopSolid PDM**,
- Automatic recognition of sheet metal parts, tubes and profiles.
- Modify imported 2D and 3D geometries using the power of **TopSolid'Design**.

TopSolid'Quote natively integrates pre-configured calculation rule models for all types of operations: punching, cutting, cutting, bending, welding, painting, subcontracting, etc.

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- Integrated 1D/2D nesting module for material requirement calculations.
- Automatic routings with calculations from the execution of calculation rules based on the geometry and properties of the parts.
- Direct entry of routings and operations with semi-automatic execution of calculation rules.
- Considering the costs of transport, manpower, packaging, etc.
- Visualization of the calculation details.
- Integrated tool for customizing document editions.
- **TopSolid'Quote** integrates the essential functions for the commercial follow-up of quotes.

Modelling module for time and cost calculation rules

- With **TopSolid'CostDesigner**, you can graphically create your own calculation rules, capitalize and reuse your know-how.
- Pairing of variables in your rules with CAD properties and quote data.
- Integration of customized charts.
- Management of all types of operations: punching, cutting, cutting, bending, welding, painting, subcontracting.

Are you an enthusiastic **TopSolid** user? Do you want to be one step ahead of the latest technologies before they are made available to the public? Do you want to have a direct impact on the functionality and quality of **TopSolid**? Consider joining the TopSolid beta community!

Contact your local office to participate in the **TopSolid** 2022 Beta Program.

The official release of **TopSolid** 7.16 is scheduled for March 1st, 2022.