

CONTACT's InSync Helps Deliver High Quality User Experiences

CIMdata Commentary

Key takeaways:

- *Over the last forty years, the quantity and capability of digital tools to support the product lifecycle has exploded, and the solutions employed to manage lifecycle data and processes have evolved in tandem.*
- *In the last decade, enterprise software has evolved to a platform approach where the platform offers core technical capabilities to help synthesize more sources of data to better support cross-functional collaboration and decision making.*
- *CONTACT Software embraces the platform concept and offers CONTACT InSync, a user interface design system based on comprehensive usability standards to help create first-class user experiences for solutions based on the CONTACT Elements platform.*

Since our beginnings early in the Industry 3.0 era, CIMdata has witnessed the application of digital technologies broadly and deeply across the product lifecycle from idea through life. A range of applications are used to create intellectual assets that describe the product, its manufacture, deployment, use, maintenance, and end of life. The concept of product lifecycle management (PLM) coalesced around 2000, focused on the creation, management, and collaboration on these intellectual assets. Enterprise-grade solutions emerged to provide the needed data and process management capabilities to enable PLM strategies. Over the last decade, the broader enterprise software market moved toward delivery of platforms that often supported their own ecosystems of both organic and partner applications. The PLM market joined that trend, with many providers expanding their solutions to mashup data from multiple sources to support new and more sophisticated use cases. The “consumerization of IT” phenomenon drives business users to want their business applications to be as simple to use as their personal devices, while demanding ever more complex applications. PLM users want the same kind of simple, yet powerful user experience (UX).

CONTACT Software, a leading independent provider of PLM-enabling solutions, is addressing this need with their new CONTACT InSync, the focus of this commentary. Research for this commentary was partially supported by CONTACT Software (CONTACT).

From Industry 3.0 to Platformization

The talk in industry today is about Industry 4.0, the on-going transformation of products, manufacturing, and commerce to being smart and connected. But we are entering the Industry 4.0 era, one that will require new ways of working, running on mostly legacy technology from the Industry 3.0 era.

About twenty years ago, the idea of PLM emerged. Companies have always managed their products through their life. They may have designed them using 2D drafting and paper drawings, figured out how to make them and to sell them to the market, supporting them for their useful life, if that support was part of their full product offering. Now companies are using digital tools to take products from ideas through life. That notion of the lifecycle is the core of CIMdata's PLM definition. It is not a technology. We see PLM as a strategic business approach that is enabled by technology and a consistent set of business processes. The technologies used may vary because manufactured products can range from fighter jets to toothpaste. All

have digital intellectual property that needs to be managed, and often collaborated on by increasingly global value chain partners.

The solutions that help manage this lifecycle information have evolved in the last ten years, in part in response to a broader enterprise software trend of delivering capabilities through platforms that more readily embody data from many sources and offer ready access to applications from multiple providers. Several years ago, CIMdata teamed with other leading PLM industry analysts to produce agreed-upon definitions of a platform around the PLM realm. At the core of the definition, PLM strategies are enabled at the product innovation platform level, which focuses on enabling continuous creativity, yielding successive improvements in existing products and processes, and inspiring new products across full lifecycles and across multiple product generations.¹

Historically, PLM solutions focused on product-related managed data, but in today's business environment, data is coming from every direction and organizations want to mine that data, combine multiple data sources, and provide actionable insights to their users all in a manner that is flexible and intuitive to them. Most PLM-enabling platforms readily allow these “mashup” capabilities to combine PLM data with data from other enterprise systems, the Internet of Things (IoT), weather, location services, or any other source that can help identify issues and quickly lead to timely solutions. That vision is being realized today using technologies like HTML5, low-code/no-code development, microservices, and artificial intelligence/machine learning (AI/ML) to surface that data and leverage it to support important use cases and improved decision making.

Meeting all of these requirements demands improvements in the user experience. Many business computing systems are barely tolerated by their users, but the consumerization of IT applies here as well. In the PLM space the solutions are often liked by power users and barely tolerated by more numerous casual users. In any case, people come to their work computing environment with usability expectations from their experience with the Web and their smartphones. They want the same clean, simple user interfaces they see in their home life mimicked to support complex product lifecycle processes at work. That is a difficult problem, made even more complex by the wide range of applications, data types, and use cases that span the complete lifecycle. Yet, solving it is essential because today's data-driven strategies—in particular the IoT, AI/ML, analytics, and cloud—can deliver the enhanced decision-making capabilities that industrial companies seek.

CONTACT Elements from CONTACT, a leading independent PLM solution provider, is a great example of a product innovation platform. To address usability requirements, CONTACT is expanding their offering to include CONTACT InSync, its new UX design system with capabilities focused on helping design and deliver high-quality user experiences for solutions built on the CONTACT Elements platform.

CONTACT InSync

Founded in 1990 in Bremen, Germany, CONTACT is a leading independent provider of PDM solutions. While the company always provided strong PDM capabilities, their vision was always much broader. CONTACT has pushed the boundaries of product lifecycle support, always focused on a core aspect of their mission: “making complex product data more accessible and connecting employees across technical and organizational boundaries.” One key way

¹ More detail on the platform definitions can be found in an earlier CONTACT Software commentary: <https://www.cimdata.com/en/resources/complimentary-reports-research/commentaries/item/12102-contact-elements-a-future-proof-digital-platform-commentary>

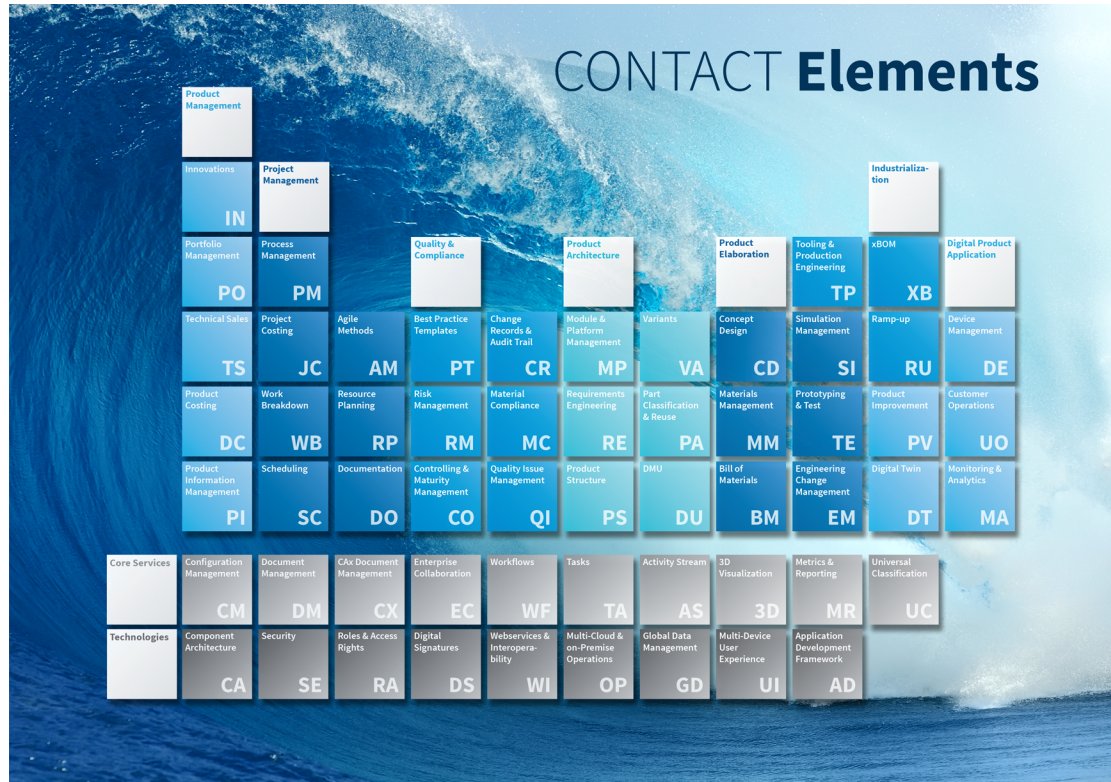


Figure 1 – The CONTACT Elements Platform
(Courtesy of CONTACT Software)

CONTACT worked to make data more accessible was to be a leading early proponent of openness in PLM solutions. Their diligence helped lead to the Code of PLM Openness, a core statement of principles acknowledged by the leading players in the PLM market.² CONTACT also expanded their platform to support digital product models and systems engineering, making key technology acquisitions as needed. The company was also early to the platform concept, with companies like Zuken and ISKO engineers AG building commercial solutions on top of the CONTACT Elements platform, their core product offering. On 7 November 2019, CONTACT Software announced their acquisition of a majority stake in ISKO.

CONTACT Elements provides an expansive set of capabilities as illustrated in Figure 1. Key capabilities support application areas like product management, project management, quality & compliance, product architecture, product elaboration, industrialization, and digital product applications. These leverage core technologies and services for managing documents and CAX models, developing and deploying workflows, configuration management, classification management, and a range of other functions. CONTACT also offers applications dedicated to specific tasks like requirements engineering, model-based systems engineering (MBSE), product costing, and simulation data management. There is much more detail on the technical aspect of the CONTACT Elements platform in the previous CIMdata commentary cited earlier.³

CIMdata has worked with CONTACT for nearly twenty years and has watched their evolution with great interest, in part because their vision was as expansive as any other PLM solution provider. In our interactions with the company it was also clear that CONTACT Software could

² <https://www.prostep.org/en/projects/code-of-plm-openness/>

³ Please see <https://www.cimdata.com/en/resources/complimentary-reports-research/commentaries/item/12102-contact-elements-a-future-proof-digital-platform-commentary>

be described as a “reflective practitioner,” a concept from the innovation literature.⁴ The company has always demonstrated great skill in the technical areas they chose to pursue. But, as Mr. Schon described in his article, they also have an ability to step back, consider what they have done, and find ways both to improve it and to generalize from it. This ability to reflect on practice, and CONTACT’s responsiveness to their customer’s needs, led to the expansive set of capabilities shown in Figure 1.

CONTACT’s focus on customer experience motivated their introduction of CONTACT InSync (InSync). CONTACT supports a wide range of user perspectives from their work across multiple, varied industries like automotive and mobility, machinery, plant engineering, infrastructure, consumer goods, high-tech and electronics, and medical devices. Their use of the CONTACT Elements platform, often from well outside discrete manufacturing, served to push the boundaries of UX. Beyond their own customers they also had experience with others, like Zuken and ISKO, building new solutions on top of the CONTACT Elements platform.

To support these requirements, CONTACT developed a set of tools for their own development team and codified their use. CONTACT relied on de facto standard technologies to provide these new capabilities, including HTML5 and the React framework, a JavaScript library for building user interfaces from UI component libraries,⁵ Their reliance on such standards is typical of CONTACT Software but is also important for another reason. Skills with these standards are common in the marketplace, making it easier for customers to adopt and use InSync. Figure 2 illustrates a user interface that was created using InSync, detailing key process indicators from a digital twin.

Today, the InSync design system is a component library of design patterns and associated best practices to guide UX design on the CONTACT Elements platform. InSync also provides underlying design guidelines such as design principles, icons, and other resources to create high-quality Web applications consistent with the InSync design principles. CONTACT believes this approach leaves room for expressing unique brand identity for their own product editions,

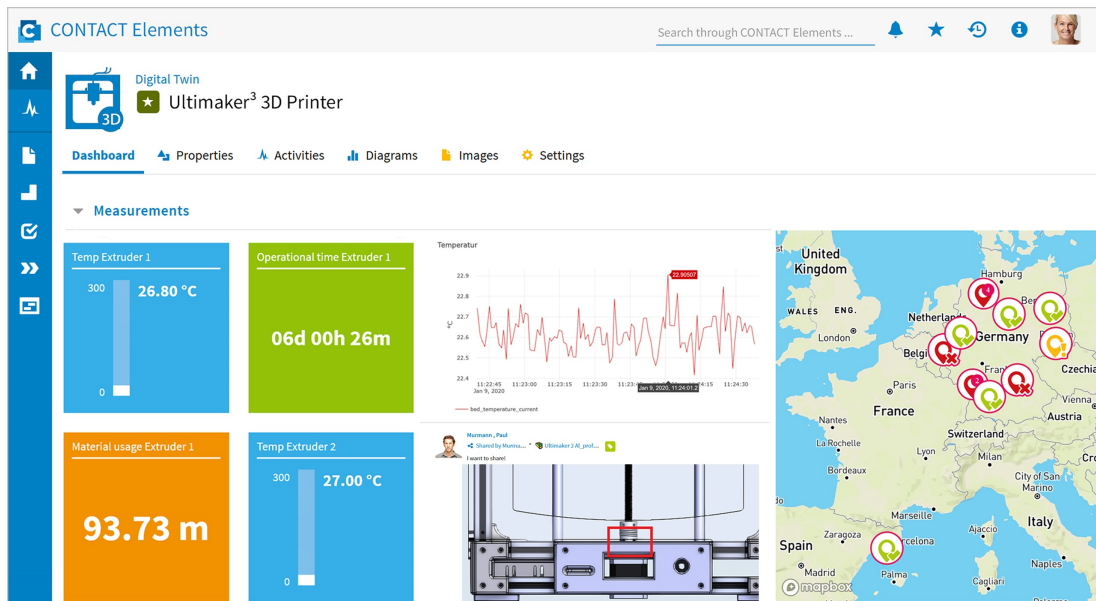


Figure 2—Sample Digital Twin Dashboard Created Using InSync
(Courtesy of CONTACT Software)

⁴ Donald A. Schon (1983). *The Reflective Practitioner: How Professionals Think in Action*. New York: Basic Books, Inc. Publishers.

⁵ <https://reactjs.org/>

as well as offering those same capabilities for OEMS, partners, and customers to develop their own proprietary solutions. The InSync resources are part of the CONTACT Elements platform and are made available to customers and partners through CONTACT's software product delivery and its customer and partner portals.

Finally, it is important to note that most applications today are developed using agile methods like Scrum. The goal is to efficiently develop software, starting early, even before all requirements are known and stable. InSync includes methods and tools to support such agile approaches. In more traditional development processes, UIs used to be delivered fully formed, making changes hard and expensive to incorporate. Sticker Sheets, an InSync library of visual user interface components, can be used to easily create realistic UIs to quickly get user input into the design and development. Using Sticker Sheets, mockups can be created in minutes or hours that can mimic nearly 100% of planned functionality, thereby making it easier to get more detailed feedback from the user community early. CONTACT reports very positive experiences in their deployments from having early and deep feedback on UX design, a capability now better enabled by InSync. CIMdata believes this is a sound approach. Support for Agile development is crucial and this is another example of CONTACT learning from their experience and helping their clients reap the benefits.

Companies will soon be able to easily experience CONTACT Elements and InSync for themselves. CONTACT plans to offer cloud demonstrators for PLM and IoT scenarios. CONTACT anticipates that these InSync-based cloud demonstrators will be available in Q1 2020.

Conclusion

The computing era has wrought great changes in how products are defined, manufactured, and supported through life. The notion of PLM has been around for at least twenty years and the range of solutions enabling PLM strategies have greatly expanded, pushing existing data and process management solutions beyond their intended use. Product innovation platforms emerged as the way PLM strategies are enabled, and most such platforms help users to mashup PLM and non-PLM data sources to improve collaboration and decision-making.

CONTACT InSync brings professional-grade tools to users and partners to help them quickly and efficiently adapt the CONTACT Elements platform to their needs. These new capabilities are based on CONTACT Elements design standards and their application across the CONTACT Elements user base. InSync supports developing a high-quality UX consistent with the design elements and usability of core CONTACT Elements. CIMdata believes that this consistency will help support user adoption and acceptance of the CONTACT Elements solution in any industrial application.

About CIMdata

CIMdata, an independent worldwide firm, provides strategic management consulting to maximize an enterprise's ability to design and deliver innovative products and services through the application of Product Lifecycle Management (PLM). CIMdata provides world-class knowledge, expertise, and best-practice methods on PLM. CIMdata also offers research, subscription services, publications, and education through international conferences. To learn more about CIMdata's services, visit our website at <http://www.CIMdata.com> or contact CIMdata at: 3909 Research Park Drive, Ann Arbor, MI 48108, USA. Tel: +1 734.668.9922. Fax: +1 734.668.1957; or at Oogststraat 20, 6004 CV Weert, The Netherlands. Tel: +31 (0) 495.533.666.