

Connecting the Past to Tomorrow with Mendix

Low-code platforms help manufacturers bridge legacy domains and modern digital processes

CIMdata Commentary

Key takeaways:

- *While CAD, PDM, and ERP are often the core solutions in a digital thread, there can be hundreds of ancillary and legacy apps that contribute to the thread. Also, multiple data repositories can contain decades of data.*
- *Connecting data, processes, and people is easier said than done, and once established, keeping the data and integrations current with processes and procedures often requires error-prone manual work or “enrichment” on both sides of any integration.*
- *The digital twin paradigm requires implementing a robust and flexible digital thread to ensure virtual and physical instances function effectively and stay in sync as business and technology operations evolve.*
- *Using low-code solutions to support and complement the core solutions that create the digital threads is becoming a best practice approach.*
- *Modern low-code solutions have become mainstream in general business applications and Siemens’ incorporation of Mendix throughout its Xcelerator portfolio, including Teamcenter, NX, and MindSphere, brings a new approach to developing digital threads and bridging the past with the future.*

Introduction

Manufacturers are under continuous pressure to evolve and improve how they develop, produce, and support their products and services. They are turning to advanced software to address the pressures that include extreme growth in complexity of all products and systems across the Information Technology (IT) and Operational Technology (OT) domains.¹ As with most complex systems, issues happen at the boundaries between areas, such as integration of mechanical and electrical/electronic data, and process domains, such as the handoff from development to manufacturing.²

Adding further to the challenges are various incumbent systems managing data within different functional domains. Each legacy application has varying data semantics and integration capabilities and when integration and data transformation are not effectively automated, manual data enrichment is needed which is often error-prone. Furthermore, poor integration and traversal of system boundaries makes effective search and traceability queries much more difficult.

The purpose of application and process integration is to make needed data more accessible. However, data and process semantics between legacy applications are different, requiring mapping and data transformation via integration solutions to create alignment. Silos also have complex dependencies such as the IT architecture of individual applications that can create mismatches. When integration is done properly, it creates a seamless digital thread that provides the functional environment needed to improve business performance.

¹ See: <https://www.cimdata.com/en/resources/complimentary-reports-research/commentaries/item/17380-mendix-and-mindsphere-integrating-it-and-ot-to-deliver-business-performance-commentary>

² Research for this commentary was partially supported by Siemens Digital Industries Software

Siemens Mendix

Mendix is a low-code application development platform, part of the Siemens Xcelerator portfolio, that helps companies improve business performance. Its rapid application development capabilities and extensive catalog of connectors reduce the effort and skill level required to develop sophisticated integrations and business-tailored applications. Already prior to Siemens' acquisition, Mendix was a well-known development platform used in hundreds of enterprises, including those that use SAP solutions. Since the acquisition, Mendix has been integrated into the Siemens Xcelerator portfolio, enabling Xcelerator solutions such as Teamcenter, NX, Opcenter, and MindSphere to participate more comprehensively in digital threads created using Mendix.

Mendix connectors expose an application's data to a company's business processes and integrate its data to any other connected solution. Connectors, available in the Mendix Marketplace, enable read and write access to data stored with an application and provide programmatic access to its functionality. Having access to an application's data and functional capabilities enables connectivity to be established between multiple business applications, thereby linking data across domain silos. Additional Mendix capabilities include AI-assisted logic bots, multiexperience development, data access, user interface creation, and algorithm development, which enable the creation of applications to solve business-specific issues and increase individual and organizational productivity.

CIMdata believes the connection to Xcelerator is a big win for Siemens' customers. Mendix will help them build comprehensive digital twins that extend beyond the scope of Siemens-only solutions. For Xcelerator users, Mendix supports all its functional domains, including MCAD, ECAD, software, simulation and analysis, service, procurement, logistic, MES/operations, etc. Supporting this broad range of domains enables end-to-end digital threads to be created and maintained.

Mendix is a modern platform that includes full DevOps capabilities. The low-code capabilities enable professional programmers, citizen developers, subject matter experts, and business analysts to create business-tailored applications using drag and drop methods while leveraging marketplace capabilities that accelerate and simplify development. DevOps manages the process of moving applications from the development environment through validation, approval, and production and global deployment via the marketplace.

CNHI Case Study

CNH Industrial (CNHI) is a leading global capital goods company that designs, manufactures, and supports on- and off-highway products. This global company has over 60,000 employees, who work across 67 plants and 56 R&D centers. CNHI has been a Mendix and Siemens customer for many years and has already made good use of Mendix to connect Xcelerator and non-Siemens solutions. CNHI wanted to share data spread across three systems including 2D drawings, 3D designs, and change and attribute data with suppliers. Accessing the data was time-consuming and error-prone.³

They chose Mendix to address a model-based design issue. CNHI developed their Design Product Data (DPD) solution using Mendix to connect Teamcenter, their legacy change management solution, and iView (for 2D drawings) to validate and package information from the three solutions within a single view making data available to all relevant users across the

³ <https://www.mendix.com/blog/in-case-you-missed-it-enabling-supply-chain-collaboration-enterprise-model-based-definition-with-cnh-industrial/>

extended enterprise in just 11 weeks. “It would have taken not only significantly longer than 11 weeks, but [also] many more resources to accomplish it without the low-code environment from Mendix,” according to Mr. Tom Grigas, IT Director of Product Design Systems. Using Mendix reduced the effort to package and validate data by 85%.

Conclusion

Application landscapes are complex and often contain many best-of-breed solutions and platforms with different technology stacks, user interfaces, data storage approaches, purposes, and vintages. The variability among the applications makes integration and interoperability difficult.

Integration is often fragile and incomplete, since keeping it up to date with ever-changing software versions and business processes is difficult. What remains is a hybrid environment that requires manual, error-prone effort for people to get their jobs done. What a business needs are business-specific, personalized solutions that can be easily adapted to their changing processes, user devices, and work locations.

A robust low-code platform like Mendix can connect to these solutions and platforms and make developing cross application solutions that connect legacy solutions from the past with current and future solutions faster and easier. Siemens’ use of Mendix across its Xcelerator portfolio is a game changer. It enables Xcelerator customers such as CNHI to connect the myriad legacy and modern applications across their enterprise landscape and build tailored applications quickly to adapt to changing business requirements.

Companies building digital threads, and especially those already using Siemens products, should consider Mendix to support their low-code integration and automation development needs and connect both their legacy and future applications. Mendix provides leading edge capabilities for both Siemens and non-Siemens solutions.

About CIMdata

CIMdata, an independent worldwide firm, provides strategic management consulting to maximize an enterprise’s ability to design, deliver, and support innovative products and services through the identification and implementation of appropriate digital initiatives. Since its founding nearly forty years ago, CIMdata has delivered world-class knowledge, expertise, and best-practice methods on a broad set of product lifecycle management (PLM) solutions and the digital transformation they enable. CIMdata also offers research, subscription services, publications, and education through certificate programs and 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.