

Cool Vendors in Manufacturing Industry Solutions

Published 11 May 2020 - ID G00720383 - 20 min read

By Analysts [Alexander Hoeppe](#), [Pablo Arriandiaga](#), [Gaspar Valdivia](#), [Ivar Berntz](#)

Initiatives: [Industry Markets and Technologies](#)

Technology and service providers selling into the manufacturing market often identify gaps in their portfolio that they cannot fill due to lack of skills and resources. These Cool Vendors may be of interest for providers to create more complete solutions for their customers.

Overview

Key Findings

- The manifold set of manufacturing industry specialists makes it difficult for technology and service providers (TSPs) to find the right partner to extend their offerings and market reach.
- Sales cycles are too often too long because sales storytelling is perceived too theoretical and does not sufficiently address the operational problems of buying personas – especially those that are practice-focused.
- Technology and service providers aim to continuously enhance their portfolios in order to provide more complete manufacturing industry solutions consisting of software, hardware and services.

Recommendations

As a technology and service provider aiming to complete or enhance your solution portfolio for the manufacturing industries marketplace, you should:

- Demonstrate how IT/operational technology (OT) integration works in practice by selecting partners that can functionally cover and integrate both disciplines. OT vendors (such as Semiotic Labs or NOWI) that know the challenges on the factory floor could be the right partners for IT-focused vendors.
- Increase sales effectiveness by leading with clear examples that show concrete results from customers or pilot projects. ProGlove builds on hands-on experiences for end users to shorten sales cycles.
- Build a modular and configurable solution by following Industrie 4.0 or smart factory guidelines. Cognite's modular portfolio increases flexibility, integrability in partner solutions and scalability.

Analysis

This research does not constitute an exhaustive list of vendors in any given technology area, but rather is designed to highlight interesting, new and innovative vendors, products and services. Gartner disclaims all warranties, express or implied, with respect to this research, including any warranties of merchantability or fitness for a particular purpose.

What You Need to Know

Digital transformation in manufacturing industries is happening at a slower pace compared to other verticals. According to the Gartner CIO Survey 2020, only 23% of heavy manufacturing enterprises have reached the scale or refine phase of their digital initiatives. ¹ Table 1 shows maturity stages of digital initiatives for different vertical industries with heavy manufacturing at the lower end.

Table 1: Maturity of Digital Initiatives by Industry

n	Industry	No Digital	Ambition	Design	Deliver	Scale	Refine	Breaking the Barrier
46	Insurance	2%	7%	17%	24%	33%	17%	50%
121	Financial Services (Banking and investment)	1%	12%	16%	26%	23%	22%	45%
130	Government	3%	15%	13%	23%	32%	13%	45%
39	Healthcare Providers	3%	10%	18%	31%	23%	15%	38%
195	Higher Education	6%	18%	16%	23%	21%	16%	37%
209	Asset-Intensive	0%	20%	16%	33%	20%	11%	31%
31	Transportation	3%	13%	19%	39%	19%	6%	26%
47	Heavy Manufacturing	0%	17%	19%	40%	17%	6%	23%

n = varies by segment; all answering. Percentages may not add up to 100% because of rounding. Question: Which of these best describes the stage of your organization's digital initiative

(specifically, your organization's digitalization efforts)? Note: Breaking the barrier is the sum of scale and refine. Taken from Gartner CIO Survey 2020.

Source: Gartner (April 2020)

Smaller vendors provide agile approaches and look for implementation partners helping them to scale while larger vendors struggle with provision of fast proof of concept (POC).

Flexible, smaller vendors can accelerate early stage digital transformation as they can provide early look-and-feel experiences by demonstrating the ability to deliver demonstrators and POCs much faster than larger vendors. By building solutions based on a modular approach that leverages standards and guidelines for secure and efficient connectivity and interoperability across a large variety of data endpoints, smaller vendors can attract partners helping them scale their solutions across the POC or prototype stage toward the scale and refine stages. This also applies to co-creation projects with customers and other ecosystem partners to develop new industry solutions in less time. In an agile customer environment, macro trends can make rigorous changes to portfolios or go-to-market (GTM) strategies necessary, in order to expose new application areas at short notice or to address cost optimization measures on the customer side.

A comprehensive smart factory or Industrie 4.0 solution consists of many building blocks delivered by a variety of technology or capability-focused specialist vendors. This Cool Vendors research examines different providers that range from software (industrial Internet of Things [IIoT]/artificial intelligence [AI]/digital twin) via human-machine interactions and the connectivity and interoperability of physical data sources (sensors, devices, assets machines).

Working with these Cool Vendors gives product managers great opportunities to expand their product portfolios and shorten their sales and project cycles.

Cognite

Lysaker, Norway (www.cognite.com)

Analysis by Alexander Höppe

Why Cool: Cognite is cool because its product Cognite Data Fusion (CDF) helps heavy-asset, highly regulated industries transform to digital more easily by using standard APIs to integrate with a large variety of IT and OT systems in the cloud, at the edge, and on-premises. It also has strong data visualization and augmented decision-making capabilities.

Cognite is a global industrial AI and DataOps software as a service (SaaS) company enabling the full-scale digital transformation of heavy-asset, highly regulated industries, especially oil and gas, power and utilities and process manufacturing. The core software product, CDF, powers companies with contextualized OT/IT data to develop and scale solutions that increase safety, sustainability and efficiency, as well as drive revenue.

Cognite Data Fusion is an industrially specialized DataOps and AI platform that optimizes manufacturing facilities intelligently by reducing downtime, improving equipment effectiveness and optimizing forecasting. Through integrated hybrid AI analytics tools, advanced visualization in real-time dashboards and low-code application development services, Cognite Data Fusion enables heavy asset customers to operationalize and scale their digital programs to unlock ROI at scale.

The vendor offers a modular services portfolio and pricing model allowing clients to enhance functionality and scale the solution step by step. Cognite offers four service levels – basic, premium, enterprise and business-critical – to address a client’s specific needs and digital maturity levels.

Cognite is a great example of a vendor that supports the product or asset data backbone concept as described in [“How Innovative TSPs Can Utilize the Product Data Backbone Concept to Succeed in Manufacturing Industries.”](#) Core functionality is the aggregation and contextualization of structured and unstructured data from a large variety of data endpoints. The so-called Cognite Extractors – built on standard protocols like representational state transfer (REST), OPC Unified Architecture (OPC-UA) – allow for rapid data integration with a variety of OT/IT data sources (AspenTech, Maximo, OSIsoft, SAP, among others) and control systems (ABB, Emerson, Honeywell, Siemens and others) directly or via application connectors such as Apache Spark, Emerson AMS, Microsoft Azure, Microsoft Power BI and TIBCO Spotfire.

CDF’s AI services contextually enrich IT and OT data, providing an open, unified industrial data model that humans and applications can access easily. When it comes to data visualization, great importance is attached to the provision of immersive working environments for operational and supervisory staff. This is achieved through realistic 3D visualizations of complex assets and even entire plants or refineries in the form of multilayered 3D views (that make it possible to virtually walk through entire factories). Cognite leverages open frameworks and toolboxes and AI algorithms to generate these 3D models efficiently without any manual computer-aided design (CAD) modeling work or the need for third-party 3D computer-aided design CAD systems. The 3D models are augmented with context-specific metadata (for instance, operation conditions of a pump) to identify inefficiencies and build stepwise additional capabilities in the form of preconfigured use cases (such as condition monitoring and predictive maintenance).

Challenges:

- Cognite is growing very fast – from 100 to 390 software developers, data scientists, designers, 3D specialists and industry professionals within a year. The vendor needs to find the right balance between a SaaS or platform as a service (PaaS) approach and project work, in order to manage increased global demand and ongoing support services.
- The verticals Cognite focuses on are not only highly regulated (its main focus is industry oil and gas) but is also very heterogeneous in terms of digital maturity in multiple dimensions (culture, organization, skills, processes, equipment, infrastructure). Cognite must keep track of standards and regulations and ensure scalability (which is a major challenge without strong

implementation partners in the OT space). OT-focused partners include Honeywell, Siemens and Wood.

- Cognite has historically positioned itself in the broad field of business transformation, but has more recently started moving to a more focused AI and DataOps platform positioning. Cognite should keep the focus on a pragmatic, operational approach based on the visualization of complex interrelationships, thus creating a clear differentiation from these providers and should enter into concrete partnerships with them. Cognite already partners with different service providers such as Boston Consulting Group (BCG), McKinsey & Company, PwC and Wood. The handover to strategic advisors and consultants should be clearly defined.

Who Should Care:

- IT services providers and business consultants acting as trusted advisors across large-scale smart factory or Industrie 4.0 initiatives that aim to improve management and end-user engagement to accelerate Industrie 4.0 or smart factory initiatives.
- System integrators and business software vendors – especially manufacturing execution systems (MES), product life cycle management (PLM), supply chain management (SCM)/ERP providers that seek to enrich their software products with IIoT, standard APIs and AI capabilities in order to improve IT, OT and engineering technology (ET) integration.
- Industrie 4.0 and smart factory initiative leaders (chief data officers [CDOs], CIOs or COOs) of asset-intensive manufacturing, natural resources and utilities industries, where products and/or assets are complex and business processes are highly regulated. Cognite already has a global customer base and generates a major proportion of business directly from end-user clients. Large enterprises like Aarbakke, OMV or Saudi Aramco, are on their reference list.
- Equipment manufacturers that want to enrich their physical products with services such as remote maintenance or digital workplace solutions for operations personnel, supported by augmented decision making with the help of Cognite's digital twin technology.

NOWI

Delft, Netherlands (www.nowi-energy.com)

Analysis by Ivar Berntz

Why Cool: Low power sensor nodes using NarrowBand Internet of Things (NB-IoT), long-range (LoRa) or Bluetooth low energy (BLE) often need to operate for over 10 years without any cables or battery changes. NOWI has developed an energy-harvesting chip with a small assembly footprint that enables Internet of Things (IoT) devices to be “plug-and-forget,” ultimately, maintenance-free for the duration of the application.

NOWI's energy-harvesting power management integrated circuit (PMIC) is designed to let companies use the energy that is already readily available around the devices. Its technology can use a range of ambient energy sources (including light, temperature gradients, motion and radio frequency). It starts by capturing energy via a photovoltaic cell or antenna, adjusting continually for changes, then converting and storing it in a capacitor to feed the equipment on demand.

NOWI's PMIC is based on a different topology than alternative energy-harvesting power management integrated circuits (ICs) and can function with as little as one small external capacitor. This reduces the printed circuit board (PCB) assembly footprint by 10 to 30 times and eliminates 94% of the bill of materials (BOM) cost as a result. NOWI's energy-harvesting PMIC is both available as a discrete component and as an intellectual property (IP) license. Integration of the energy-harvesting IP into the device itself enables an energy autonomous full "solution-on-chip."

The solution is applicable to connected devices where battery replacement isn't desirable or economically viable. Examples of such devices with low power requirements range from IoT beacons and smartwatches to road infrastructure monitoring solutions. The starting assumption is that, for these devices, both the size and limited lifetime of batteries will become increasingly problematic since basic functionalities such as connectivity, processing and power will become ever more integrated.

Challenges:

- The offering is innovative and has to create its own market. Considerable effort has to be dedicated to overcome objections, educate the market and show the applicability and suitability of the solution. This can reduce profitability during the time its patents protect intellectual property (IP) exclusivity.
- Standards and certifications for such solutions are incipient or nonexistent, requiring additional efforts to demonstrate durability.

Who Should Care:

- Technology and service providers (TSPs) that plan to enrich their portfolio in the areas of low power; OT sensor devices and physical connectivity of assets and equipment in the industries that NOWI is already active in (retail, infrastructure, smart cities and low power devices such as wearables and sensor nodes).
- Communications service providers that have equipment in locations that use backup generators since they would be able to attempt remote recovery procedures, even during an outage.
- TSPs that deliver industry solutions for manufacturers that need to monitor fixed and mobile equipment, both within as well as outside of their facilities. Sensors can gather, analyze and send relevant data for maintenance, safety, usage, consumption, application or other purposes,

as needed. This also includes equipment manufacturers (production machines, cells or entire production lines) and machine setters.

- Automakers may monitor different parts of the vehicle or its components without the risk of draining the battery. This can be particularly useful for battery electric vehicles (BEVs), or in cold climates, where monitoring could send an alarm if warranted.
- Consumer electronics manufacturers that want to eliminate batteries for existing devices or new ones, like Bluetooth-enabled glasses, smartwatches and jewelry; or smart home automation devices for remote control or those that are voice activated.

ProGlove

Munich, Germany (www.proglove.com)

Analysis by Pablo Arriandiaga

Why Cool: ProGlove provides hands-free wireless bar code scanners that provide instant feedback to workers. The bar code scanner is integrated in a glove that is ergonomically designed to reduce time for scanning, allowing the worker to use both hands at the same time. The bar code reader is triggered by the worker with his thumb and can be removed from the glove for charging.

ProGlove is totally hands-free, and its main strength compared to similar products is the ergonomics and usability; at 1.4 ounces (40 grams), it weighs one-fifth of traditional scanners, helping diminish worker fatigue. The instant worker feedback mechanism includes acoustic signals, vibrations, LEDs and an e-ink display depending on the model. This mechanism provides real-time feedback to the user identifying unnecessary steps and errors in the work process, cutting wasted time or repetitive work. Unlike other solutions available in the market, ProGlove's clients claim to have reduced scanning time from 40% to 50% or up to four seconds per scan. The scanner has an encrypted connection using standard Advanced Encryption Standard (AES) and also uses Bluetooth low energy or 915 megahertz (MHz) and 868MHz radio frequency (RF), depending on the region, in order to send the data.

Challenges:

- ProGlove could potentially expand its connectivity means to Wi-Fi or low-power wide-area (LPWA) to be more integrated in the communications infrastructure of the facilities. Yet doing this could put at risk battery life and the size of the module, so this is more unlikely to happen and could impact buyers' thinking to expand their facilities into those connectivity technologies.
- ProGlove evolves the way data is captured by including the option to collect photographs, but this could also require more bandwidth and impact battery life. Providers should discuss with ProGlove the roadmap and potential impact of this promise from the vendor when this evolution is key to partnering with the vendor.

- ProGlove's approach to the cloud is through a point-solution hosted in Amazon Web Services (AWS) that provides analytics, asset tracking, battery health information and device management capabilities. ProGlove provides a software development kit (SDK) and open APIs to allow for IT friendly integration, for example, into common industry browsers. Unless this environment provides preintegrated capabilities to some industrial IoT platforms that enable the glove to receive actionable insights through the collection of more information than the one generated by ProGlove's cloud module, some vendors may require additional effort trying to integrate the solution. This may need ProGlove to expand its partner ecosystem beyond pure resellers, which is the initial focus of ProGlove's partner strategy.
- ProGlove raised \$40 million in funding during September 2019 to drive its international expansion. However, vendors can still find limited local capabilities and support out of Germany although most of ProGlove's clients are currently based in Germany. ProGlove has established North American headquarters in Chicago to offer local capabilities since it's the market out of Germany where it is experiencing more commercial traction with large clients. ProGlove also provides local support in the U.K., and via remote support for other countries.

Who Should Care:

- Product managers at technology and service providers selling IIoT platforms or building industrial IoT solutions for the verticals mentioned previously could see ProGlove as a partner to increase the scope of their end-to-end (E2E) solutions in those verticals, and improve their go-to-market through a richer ecosystem.
- Product managers in existing bar code reader providers lacking this type of hands-free solution could use ProGlove to enhance their portfolio since they only sell through indirect channels.
- Innovation leaders in the manufacturing industry, in factories that are transitioning to smart factories and want to scout for innovations seeking capabilities that provide a quick ROI with measurable improvements.
- Innovation leaders in other industries where ProGlove could have a quick impact such as logistics (inbound logistics, picking, staging, reverse logistics, packaging). Another industry could be retail where innovation leaders could test and quickly apply the technology, measuring ROI in terms of time to process, or client throughput and satisfaction.

Semiotic Labs

Leiden, Netherlands (www.semioticlabs.com)

Analysis by Gaspar Valdivia

Why Cool: Semiotic Labs solves the problem of unplanned downtime in business operations by making it possible for companies to perform predictive maintenance of critical assets. The

company focuses its efforts in providing a smart data-driven solution to enable predictive maintenance of assets such as electric AC motors and rotating equipment operating in industrial environments. Unlike other solutions available in the market – which monitor the asset and perform vibration, thermal, acoustic or oil analysis – SAM4 from Semiotic Labs uses artificial intelligence and innovative machine learning (ML) algorithms to analyze electric waveforms and predict failures with a great degree of accuracy. This way, instead of installing the IoT sensors that gather the data directly on the asset in the field, the SAM4's IoT sensors are placed within the motor control cabinet (protected from humidity, heat or dust) and can also be used to monitor rotating mechanisms.

Data gathered by the sensors are sent over an Ethernet connection, a 4G connection or through the Wi-Fi network available in the facility to a cloud-based control and management platform where the analysis is performed. In the latter, the customer must open a few URLs in their firewalls to allow the data to reach the management platform and will not require hiring additional bandwidth. Most companies will be capable of performing the installation on its own in minutes without requiring third-party-provided support. After a training period, which may last two to six weeks, the self-learning algorithm is ready to deliver predictions to anticipate a failure up to five months in advance of when it actually happens. An online dashboard is used to provide real-time analysis and show failure predictions as well as other insights the customer can use to monitor operation conditions and energy consumption and act accordingly – for instance, scheduling maintenance activities. The solution is provided on an as-a-service commercial model with annual fees depending on number, type and location of the assets to be monitored and an option for customers to acquire the equipment (IoT sensors) upfront.

Planned future evolutions include the development of a version of the management platform that customers can install on-premises and edge deployments. Other planned developments include integration with industrial motor controls, including variable frequency drives and soft starters, as well as further leveraging multiple source data to improve statistical knowledge of specific asset types, such as pumps.

Analysis of social media conversations in the period from February 2018 through February 2020 showed largely positive feedback on SAM4 condition monitoring solution of electric motors and rotating assets. Conversations highlighted SAM4 helps clients in reducing unexpected production downtimes and improving reliability of supply and process safety. Some successful deployments have been mentioned in steel production, airport baggage conveyors, or paper and pulp industry, among others.

Semiotic Labs was founded in 2015 in Leiden, Netherlands. Since early 2018, its SAM4 solution has been commercially available to customers in Europe, North America and Asia/Pacific.

Challenges:

- Although Semiotic Labs claims an over 90% prediction accuracy, the usage of an indirect method for monitoring assets may cause some initial skepticism in many companies.

Maintenance teams are used for other popular methods based on vibration, acoustic, oil consumption or thermal analysis – despite their in-operation life span and performance in harsh conditions which can be suboptimal. In many cases, long-term proofs of concept will be required for Semiotic Labs to gain the buy-in of maintenance teams.

- Semiotic Labs will also need to strengthen its presales and sales capabilities, which are currently performed through a very limited-in-number sales team and a few sales partners.

Who Should Care:

- Companies addressing digital transformation initiatives can leverage AI/ML and industrial IoT in support of improved operations. Companies that can suffer from occasional unplanned production downtimes from failures in AC motors or rotating assets causing economic impacts of several thousand U.S. dollars per hour will see a positive return on the investment in the SAM4 solution.
- Providers of integration and maintenance services for manufacturing, logistics and other industries that use electric motors and rotating equipment in their production systems can leverage this technology to provide a better service to their customers.
- Equipment suppliers of AC motors and rotating assets that are transforming their commercial models from selling assets to providing services can make use of this technology to enhance their service propositions.

This research does not constitute an exhaustive list of vendors in any given technology area, but rather is designed to highlight interesting, new and innovative vendors, products and services. Gartner disclaims all warranties, express or implied, with respect to this research, including any warranties of merchantability or fitness for a particular purpose.

Acronym Key and Glossary Terms

3D	three-dimensional
4G	fourth generation
AC	alternating current
AES	Advanced Encryption Standard
AI	artificial intelligence
API	application programming interface

AWS	Amazon Web Services
BCG	Boston Consulting Group
BEV	battery electric vehicle
BLE	Bluetooth low energy
BOM	bill of materials
CAD	computer-aided design
CDF	Cognite Data Fusion
CDO	chief data officer
CIO	chief information officer
COO	chief operating officer
CSP	communications service provider
E2E	end-to-end
ERP	enterprise resource planning
ET	engineering technology
GTM	go-to-market
IC	integrated circuit
IIoT	industrial Internet of Things
IoT	Internet of Things
IP	intellectual property

LED	light-emitting diode
LoRa	long-range
LPWA	low-power wide-area
MES	manufacturing execution systems
MHz	megahertz
ML	machine learning
NB-IoT	NarrowBand Internet of Things
OPC	Open Platform Communications
OPC UA	Open Platform Communications Unified Architecture
OT	operational technology
PaaS	platform as a service
PCB	printed circuit board
PLM	product life cycle management
PMIC	power management integrated circuit
POC	proof of concept
REST	representational state transfer
RF	radio frequency
ROI	return on investment
SaaS	software as a service

SCM	supply chain management
SDK	software development kit
TSP	technology and service provider
URL	uniform resource locator
Wi-Fi	Wireless Fidelity

Evidence

¹ Gartner CIO Survey 2020 was conducted online from 4 June 2019 through 5 August 2019 among Gartner Executive Programs members and other CIOs. Qualified respondents are each the most senior IT leader (CIO) for their overall organization or a part of their organization (for example, a business unit or region). The total sample is 1,070, with representation from all geographies and industry sectors (public and private), including 47 in heavy manufacturing.

The survey was developed collaboratively by a team of Gartner analysts, and was reviewed, tested and administered by Gartner's Research Data and Analytics team. Results do not represent "global" findings or the market as a whole but reflect sentiment of the respondents and companies surveyed. More details can be found in ["2020 CIO Agenda: Global Perspectives in Heavy Manufacturing."](#)

Recommended by the Authors

[Market Insight: 2020 Technology and Service Provider Agenda for the Manufacturing Industry](#)

[Leverage Ecosystems to Increase Effectiveness in Creating Solutions for Manufacturing Industries](#)

[Product Managers' Guide to Create Compelling Smart Factory Offerings](#)

[Product Managers' Guide to Accelerate Design and Deliver Phases of Their Manufacturing Customers' Digital Journey](#)

[How Innovative TSPs Can Utilize the Product Data Backbone Concept to Succeed in Manufacturing Industries](#)

[Addressing the Cost Optimization Opportunity in Manufacturing](#)

[Cool Vendors in Manufacturing Operations](#)

[Cool Vendors in Digitalization Through Industrie 4.0](#)

[Cool Vendors in IoT Thingification](#)

[Cool Vendors in Edge Computing](#)

Recommended For You

[Report Highlight for Market Trends: Evaluate Drone Opportunities in Manufacturing and Natural Resources](#)

[Market Trends: Evaluate Drone Opportunities in Manufacturing and Natural Resources](#)

[Industry Markets and Technologies Primer for 2020](#)

[Market Trends: How Cloud Managed Service Providers Address the Manufacturing Industry](#)

[Report Highlight for Market Trends: How Cloud Managed Service Providers Address the Manufacturing Industry](#)

© 2020 Gartner, Inc. and/or its affiliates. All rights reserved. Gartner is a registered trademark of Gartner, Inc. and its affiliates. This publication may not be reproduced or distributed in any form without Gartner's prior written permission. It consists of the opinions of Gartner's research organization, which should not be construed as statements of fact. While the information contained in this publication has been obtained from sources believed to be reliable, Gartner disclaims all warranties as to the accuracy, completeness or adequacy of such information. Although Gartner research may address legal and financial issues, Gartner does not provide legal or investment advice and its research should not be construed or used as such. Your access and use of this publication are governed by [Gartner's Usage Policy](#). Gartner prides itself on its reputation for independence and objectivity. Its research is produced independently by its research organization without input or influence from any third party. For further information, see "[Guiding Principles on Independence and Objectivity](#)."

[About Gartner](#) [Careers](#) [Newsroom](#) [Policies](#) [Privacy Policy](#) [Contact Us](#) [Site Index](#) [Help](#) [Get the App](#)

© 2020 Gartner, Inc. and/or its Affiliates. All rights reserved.