Asset Performance Management (APM) 4.0

Platform Vendors

LNS research

lnsresearch.com

Asset Performance Management (APM) 4.0

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Revision Notes

On rare occasions, LNS Research may revise this guide to reflect material changes in the market. Changes may include a new vendor, commentary about consolidation of two or more vendors through mergers and acquisitions, or in rare cases a vendor leaving the market. Document revisions will not reflect changes in details about any vendor, given the rapid pace of product evolution, particularly for Cloud software. For continued coverage and deeper analysis contact your LNS Research client services representative to schedule a briefing with an analyst. Check here for the most current edition of the guide.

Date	Vendor(s) Affected	Note
March 6, 2018	n/a	Solution Selection Guide released
April 2, 2018	Schneider Electric, AVEVA	Revision to reflect the transaction between AVEVA and Schneider Electric that resulted in AVEVA operating the software business for most of the Schneider Electric APM functionality previously described.
June 8, 2018	Uptake	Addition of Uptake as a new vendor in the APM 4.0 space that LNS views as having impact in the market.

Introduction

As LNS profiled the market for APM 4.0 technologies it became obvious that some suppliers are building a rich set of capabilities that will address most, although typically not all, of the needed capabilities to support an Industry 4.0 facility. Others are focusing on a narrower spectrum of solutions, some in a single functional area, while others are taking a broader approach with a focus on one or two underlying capabilities.

We segment the vendors as being either platform providers or ecosystem specialist suppliers; in this document we only present those with an ability to serve as an APM 4.0 platform. In a future publication we will address ecosystem providers that deliver advanced-grade APM 4.0 predictive analytics.

As with past solution selection guides, LNS categorizes vendors by their geographic support, industry-specific capabilities, and the typical company size that each most often serves. Unlike previous APM solution selection guides, this edition only describes functionality at a macro level. This allows industrial companies to quickly identify which vendors to investigate further.

Given the rapid pace of product evolution, particularly for Cloud software, specific functions at a micro level can be upgraded and deployed continuously, therefore detailed functional analysis becomes rapidly out of date.

Solution Selection Guide Research Methodology

This solution selection guide helps industrial organizations identify a shortlist of vendors best suited as APM 4.0 platform vendors. For inclusion in the guide, each vendor must demonstrate:

- A compelling combination of successful multi-site and multi-geography implementations across a range of industries;

- Broad and deep functionality;

- A modern technology platform;

- A robust roadmap; and

- Adequate resources and viability to improve the offering into the future.

LNS analysts and research associates prepared this guide collecting data in a variety of ways. Vendors were provided with a detailed questionnaire, which most vendors completed, followed by one or multiple briefings. Analysts also checked references provided by the solution vendors. Other end user references came from LNS Research program members, other consulting clients, or meetings at user group events and other industry events. Prior to publication vendors had the opportunity to verify details for factual accuracy.

LNS Research made every effort to examine all vendors with potential solutions for the specific space. Many vendors are not included in this publication because they do not meet the full qualifying conditions described above. Those excluded might still be a viable option for niche areas of the market;

some are start-ups while others are legacy players. You may discover some of those excluded today in a future report, and undoubtedly there are emerging vendors that LNS hasn't yet heard of.

If you're interested in vendors not mentioned in this guide, don't hesitate to inquire.

In a few cases vendors aren't included because they declined to provide a response to the questionnaire, to conduct a vendor briefing, or both. Some vendors couldn't accommodate the timing of the research while others explicitly declined participation.

How to Use This Guide

The information in this publication represent the opinions of LNS Research analysts based on industry experience and their perception of the data collected using the methodology described above.

The APM solution market is evolving more rapidly today than in recent decades. Several factors contribute to incite and accelerate change. First, digitalization doesn't just affect industrial companies; even software vendors often take advantage of advanced technologies across software research and development, product lifecycle management, new product release, business models and so much more. The result is more robust offerings introduced at a faster rate. Second, Industry 4.0 is both a driver of need and an agent that compels of new ideas and requirements. As industrial companies conduct Digital Transformation and their capability maturity grows, so do their technology needs evolve. In tandem, as they leverage advanced technology they discover or imagine new ways to leverage existing or future technologies. These forces along with mergers and acquisitions and the evolution of other disciplinary technologies (like Industrial Internet of Things (IIoT) platforms, Manufacturing Operations Management (MOM) solutions, Quality management system solutions, and many others) combine to stimulate rapid and vast changes in functionality and industry-specific solutions.

The highly dynamic market makes it difficult for industrial companies to create a shortlist of potential vendors. Any organization pursuing an Industry 4.0 or Smart Manufacturing initiative and seeking to implement an APM platform should work within an appropriate framework to align people and processes and define technology requirements accordingly. The LNS Research Digital Transformation framework enables organizations to establish an Operational Architecture to support Strategic Objectives and Operational Excellence while simultaneously driving the APM platform requirements.

LNS DIGITAL TRANSFORMATION FRAMEWORK
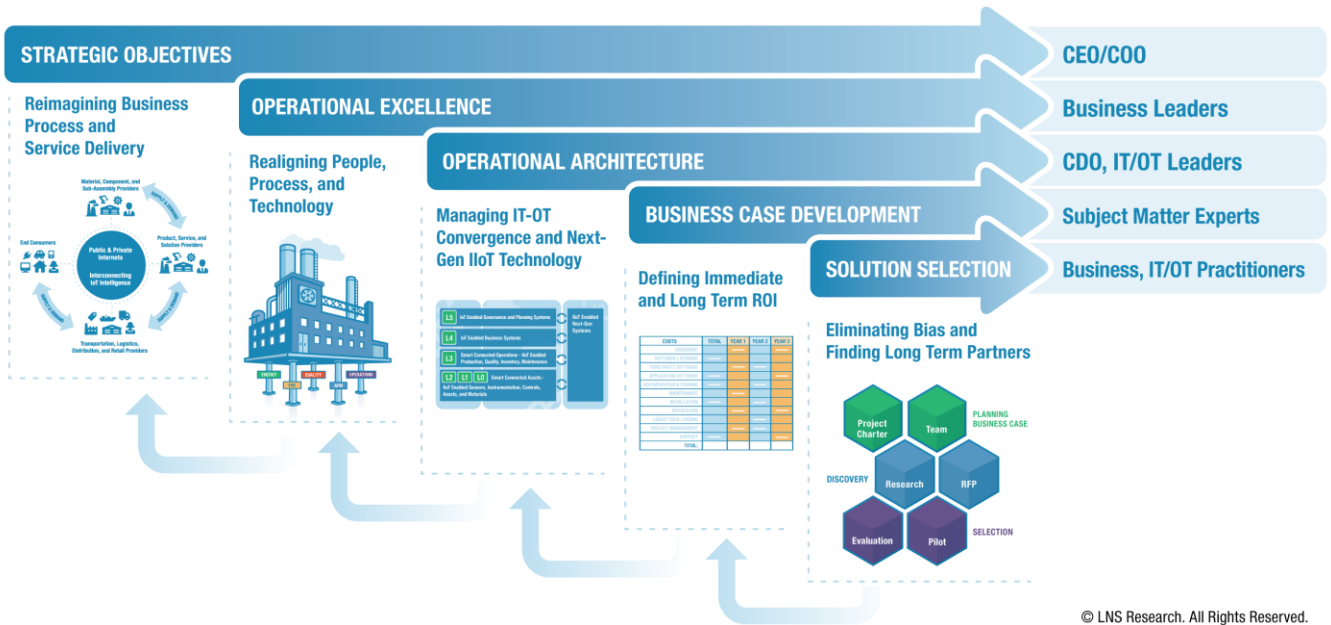
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OPERATIONAL ARCHITECTURE
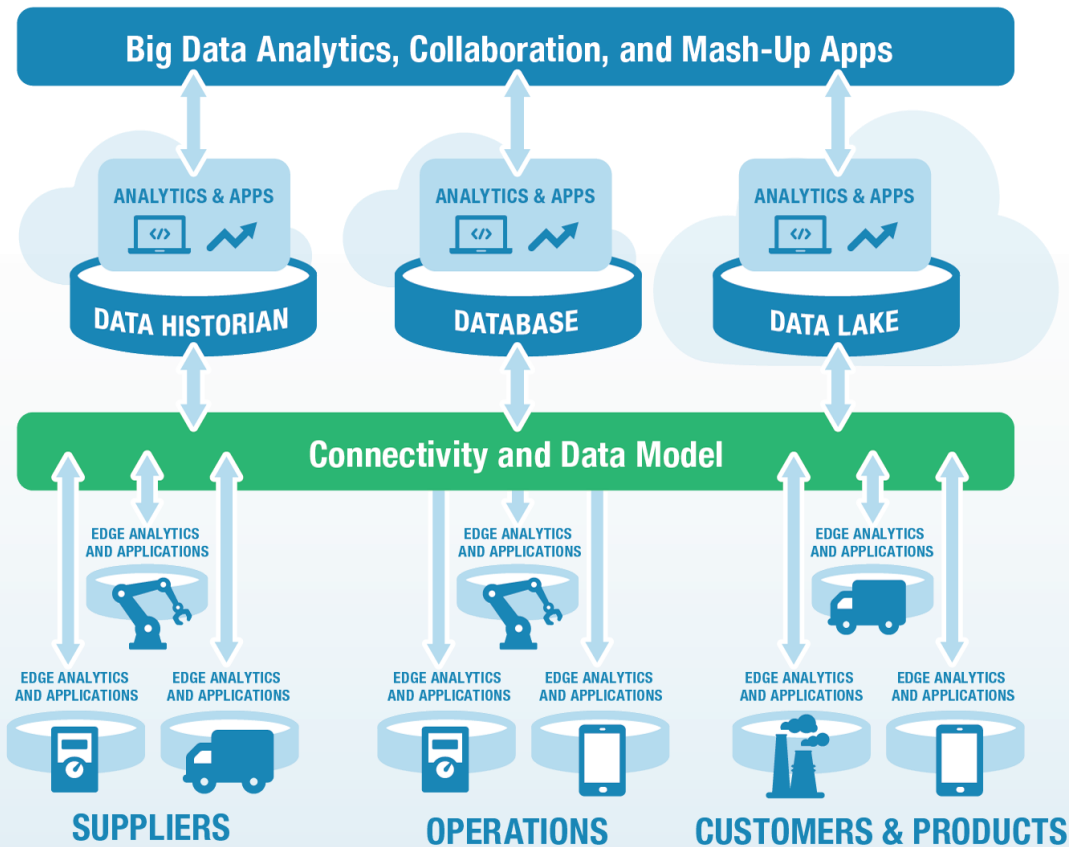
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LNS RESEARCH "3P" EVALUATION MODEL

LNS has developed a framework called the "3P evaluation model" to qualitatively evaluate suppliers. End-user companies have asked for a construct to identify which companies are strategically aligned with an APM 4.0 (or other) vision going forward. Accordingly, we developed a three-axis model based on positioning, presence and potential criteria:

POSITIONING | How well the vendor's portfolio of technology and tools allows customers to accomplish the functionality associated with best-in-class performance in a market. In the APM 4.0 context, this is a reflection of the supplier's breadth and depth of their offering vis-à-vis the LNS definition of APM 4.0 functionality.

PRESENCE | The current market penetration of the vendor vis-à-vis the spectrum of capabilities associated with a particular market. This is a reflection of each supplier's market share in the areas it focuses on.

POTENTIAL | How well the vendor's view of where they are taking their product set aligns with the LNS vision for that particular market. In the APM 4.0 context, this is a reflection of each supplier's strategy going forward and how well it aligns with what LNS research data says customers are looking for in APM 4.0-class solutions.

While the 3P model facilitates a numeric ranking, LNS has found that the relative weighting varies widely by industry, geography and even economic fluctuations. Therefore a static numerical score is usually not valuable. Instead LNS provides a prosaic rating – a narrative of the relative strengths or challenges a company faces. Clients with specific needs or who desire a quantitative 3P assessment should schedule an advisory meeting with LNS Research.

With the widely available information on company-specific websites and business directory sites, LNS does not provide general corporate background information except for small companies that may not be well known. This edition continues the specific product callouts that were typical in previous editions of the solution selection guide.

COMPANY APM 4.0 SNAPSHOT

USING THE SNAPSHOT SECTION | Company snapshots are a table-style representation of each supplier's capabilities vis-à-vis APM in general. Since APM 4.0 is still very much an evolving vision of capabilities, LNS has not restricted mapping solely to proven APM 4.0 delivery capabilities. Today nearly no supplier can claim to have a strong customer base for APM 4.0. Projects are mostly in the proof of concept phase or pilot stages. Outside of some of the more advanced machine learning and predictive analytics solutions, or some of the AR/VR presentation capabilities in support of Digital Twin, APM 4.0 is an aspirational state and we advise companies to look at how a supplier delivers the building blocks and the platform they offer.

FUNCTIONAL FOOTPRINT | This table identifies how the vendor delivers capabilities in six key functional areas related to APM 4.0:

- Core work and materials management and optimization, traditionally associated with enterprise asset management (EAM) or computerized maintenance management system (CMMS) applications

- Maintenance, repair and operations (MRO) materials management and optimization

- Data capture and analytics most often characterized as condition-based maintenance (CBM), reliability centered maintenance (RCM), and predictive (or prescriptive) maintenance

- Specialized functionality such as vibration analysis for rotating machinery, thermography, corrosion monitoring or other advanced predictive technologies

- Asset strategy and risk characterization, which is most often associated with first generation APM; it is the basis of and critical to the ability to deliver APM 4.0 capabilities

- Support for Mobility and Digital Twin; includes augmented reality (AR) and virtual reality (VR) support, engineering and design software integration, modeling of future behavior, ability to support a model from concept to "what-if" scenarios

DEPLOYMENT MODEL | This table identifies how the supplier delivers products, ranging from perpetual licensed software at the user's site, to Cloud or other hosted approaches, to delivering APM capabilities as a service

GEOGRAPHIC FOOTPRINT | This table identifies how the vendor delivers and supports products in the various regions of the world.

INDUSTRY FOOTPRINT | This table identifies how the supplier delivers in various industries and whether it has functional capabilities specifically tailored to certain industries.

TARGET MARKETS | This table identifies how the vendor delivers products to organizations based on size.

We encourage organizations to contact LNS Research since much more detail is available than we can reflect in a summary or snapshot.

Market Overview

Asset performance management (APM) solutions can cover a wide spectrum of application and business process areas, almost as broad as Operational Excellence itself. For businesses that use physical assets to produce goods or services, ensuring those assets deliver optimal performance encompasses everything from collecting data about how they are currently performing, to the tools and applications that enable how to predict the best use for those assets to achieve operational goals in the most cost-effective manner.

The tools and applications needed to manage such a broad range of processes are numerous. In some cases, the functionality for certain business process management may reside in multiple applications, even in those traditionally thought of as belonging to other domains. Over the last several years an architectural shift has occurred as the Industrial Internet of Things (IIoT) has emerged. The

proliferation of smart connected devices has fundamentally changed the physical environment to manufacture goods or to deliver services within asset-intensive industrial sectors like oil and gas, mining and metals, utilities or transportation.
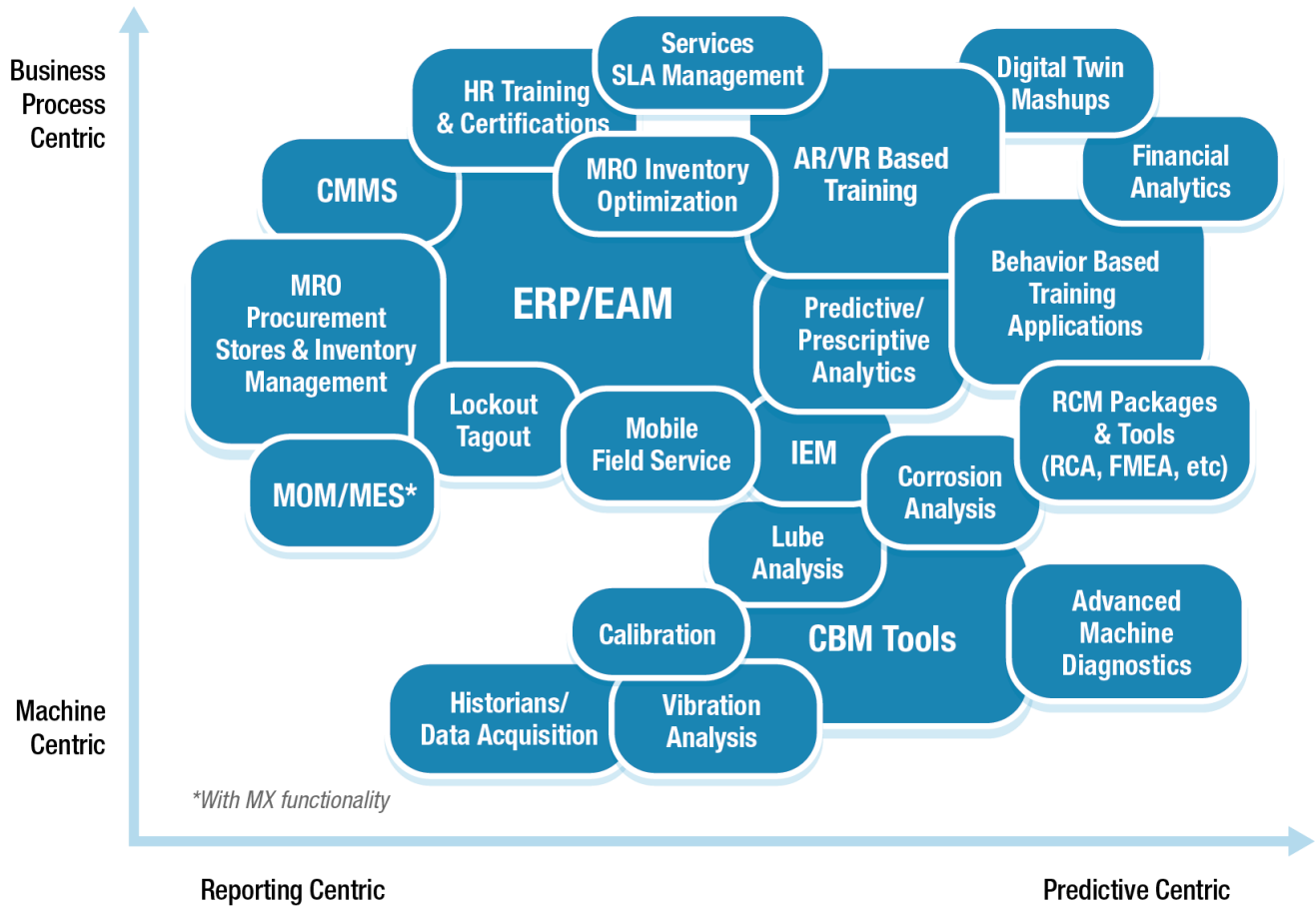
Just as Industry 4.0 (Industrie 4.0) has become synonymous with the operational model of the digitally enabled plant, APM 4.0 is the best way to describe the increased functionality available for the modern plant to keep it operating optimally. LNS defines APM 4.0 as an extension of our 2013 APM market definition, and in the context of a digitally enabled business as described in the Industry 4.0 model. LNS introduced APM 4.0 early in 2017 in the ebook, APM 4.0: Redefining Asset Lifecycle for Industry 4.0. As with our earlier APM definition, APM 4.0 encompasses the technology and processes associated with asset care, from those that are machine-centric to those are business oriented, and it stretches from the reporting perspective, being backward-looking, to forward-looking predictive and prescriptive.

Several essential building blocks enable APM 4.0. As asset owners and operators look to build out a complete APM 4.0 solution they should focus on these critical capabilities:

- Prescriptive analytics enabled by machine learning and AI
- Support for IIoT platforms
- Ability to distribute across the Cloud and at the Edge
- Comprehensive support for Mobility
- Augmented reality (AR) / virtual reality (VR) / mixed reality (MR) support
- Utilization of Digital Twin technology
- Support for current and evolving best practices and standards

In most cases, these technologies are interdependent and imply additional underlying capabilities such as simulation and engineering model support being inherent in any digital twin deployment.

Business Process Centric

Services SLA Management

HR Training & Certifications

Digital Twin Mashups

Financial Analytics

CMMS

MRO Inventory Optimization

AR/VR Based Training

MRO Procurement Stores & Inventory Management

ERP/EAM

Predictive/ Prescriptive Analytics

Behavior Based Training Applications

Lockout Tagout

Mobile Field Service

IEM

RCM Packages & Tools (RCA, FMEA, etc)

MOM/MES*

Corrosion Analysis

Lube Analysis

Calibration

CBM Tools

Advanced Machine Diagnostics

Historians/ Data Acquisition

Vibration Analysis

Machine Centric

*With MX functionality

Reporting Centric

Predictive Centric

ABB

http://new.abb.com/

ABB has become a very credible provider of APM 4.0 capabilities over the last 12-18 months. It released ABB Ability IIoT platform which can underpin an APM 4.0 platform and serve as the foundation to layer on ABB's EAM, analytics, asset strategy and nascent Digital Twin capabilities. While automation products span a wide spectrum of industries, its strength in APM vis-à-vis APM 4.0 is more limited, specifically within the utilities sector and mining.

3P EVALUATION OF APM 4.0 OFFERINGS

POSITIONING | ABB has a rich portfolio of asset management and optimization solutions that fulfill most requirements needed to be a solid APM 4.0 platform. It continues to invest in extending capabilities around asset strategy and lifecycle management. ABB has partnerships to deliver on the AR/VR elements of asset information visualization and only needs stronger capability on the modeling and simulation front outside some elements of power grid management where it has some capability.

PRESENCE | Within utilities, both the power generation and the transmission and distribution (T&D) side of the business, ABB has a very good APM presence, and in the context of APM 4.0 it is gaining recognition as a go-to option. In mining, it also has a good APM presence due to Ellipse, its EAM offering, and its mining operations products have a good presence but not to the same degree as in utilities. In transportation it is an emerging presence, and elsewhere it is minimal in context of APM 4.0.

POTENTIAL | ABB's potential vis-à-vis APM 4.0 is highly dependent on sector. Within power it is very good, in mining and transportation it's moderate, across oil and gas it's emergent, and in other industries it is somewhat limited. Much of this stems from how ABB positioned its enterprise software asset within the overall corporate structure. ABB has not made APM, 4.0 or otherwise, front and center in its go-to-market strategy so there's potential but it's not in a position to be realized.

BOTTOM LINE VIS-À-VIS APM 4.0 | In utilities, ABB is a good choice to build out an APM 4.0 platform. In mining, it is also a platform choice but carries more risk as ABB has not positioned the mining product set organizationally where it might better flourish. In transportation and oil and gas it's a limited platform choice but a very strong ecosystem partner. In all other industries, ABB should be considered an APM 4.0 ecosystem provider.

ABB APM 4.0 Snapshot

FUNCTIONAL FOOTPRINT

Functional Area	Support
Traditional EAM / CMMS capabilities	Asset Suite and Ellipse
MRO materials management and optimization	Management in Asset Suite and Ellipse, optimization in Ellipse
CBM, RCM, predictive maintenance capabilities	CBM in Asset Suite and Ellipse, Asset Health Center stronger analytics
Specialized functionality	Shutdown planning in Asset Suite
Asset strategy and risk characterization	Asset Health Center
Mobility, Digital Twin, AR/VR	Asset Suite and Ellipse for mobility, AR/VR in Service Suite

DEPLOYMENT MODEL

Market Characterization	Models
Not provided	ABB hosted on dedicated or own Cloud
Available	Third-party hosted, Azure and AWS Cloud
Preferred or predominant model	On-premise for all products

GEOGRAPHIC FOOTPRINT

Market Characterization	Regions
Market with some customers, supported either remotely or via partners	
Target market with substantial customer base, local support either direct or by agent	Depending on industry ABB has presence globally and all geographies supported
Not a supported geography	

INDUSTRY FOOTPRINT

Market Characterization	Industries
Market with some customers	Chemicals, paper and forest products, telecommunications
Target market with reasonable customer base	Mining, oil and gas, public infrastructure, water/wastewater
Target market with substantial customer base, primary focus	Mining, public transit, transport/marine, utilities
Specialized industry functionality	Defense forces, mining, public transit/transportation, utilities
Not a supported industry	Any not explicitly listed above

TARGET MARKETS

Business Size	Presence
Small (<$50M revenue)	Via partners/agents
Mid-size (>$50M to <$500M revenue)	Supported
Large (>$500 Million to <$1B revenue)	Primary market
Very Large (>$1B revenue)	Primary market

Aptean

http://www.aptean.com/solutions/application/enterprise-asset-management-solutions

Aptean enters the 2017 APM 4.0 solution selection guide via its acquisition of AssetPoint, covered in the 2015 edition. Being part of a larger organization, and with a broader focus than just TabWare EAM justifies including them. LNS does not view Aptean's TabWare EAM as a potential APM 4.0 platform across a broad swath of industries. We do see it as a potential APM 4.0 ecosystem partner, thanks to the ability to better access information from the plant floor, and becasue it integrates other solutions with TabWare, a platform provider in selected industries.

3P EVALUATION OF APM 4.0 OFFERINGS

POSITIONING | In the context of APM 4.0 Aptean's EAM solution is limited to EAM/CMMS capabilities but integration to shop floor devices has been enhanced by its other products set. So, despite being a limited presence we include them in this solution selection guide.

PRESENCE | The TabWare solution has had a long history and with its evolution to Aptean TabWare EAM has a presence in many industries, both asset-intensive and now a broader set including discrete and batch manufacturing. So, while LNS sees Aptean APM 4.0 presence as limited today it is better under the Aptean banner than it has been in the past.

POTENTIAL | Aptean's potential in the context of APM 4.0 is very early stage but for existing TabWare EAM customers the Aptean ownership has made APM 4.0 achievable, albeit a longer-term proposition. Aptean's potential is best characterized as an ecosystem partner than as a platform provider.

BOTTOM LINE VIS-À-VIS APM 4.0 | Thanks to the acquisition by Aptean, TabWare EAM is gaining the potential to evolve to more in line with LNS' vision for APM 4.0. Existing clients should engage with Aptean to better understand the role TabWare EAM will play in their APM 4.0 strategy going forward.

Aptean APM 4.0 Snapshot

FUNCTIONAL FOOTPRINT

Functional Area	Support
Traditional EAM / CMMS capabilities	TabWare provides
MRO materials management and optimization	TabWare provides management, limited optimization using analytics package and/or via services
CBM, RCM, predictive maintenance capabilities	Have RCA and CBM capabilities, others emerging
Specialized functionality	Calibration and PMEL
Asset strategy and risk characterization	
Mobility, Digital Twin, AR/VR	Limited other than mobility support

DEPLOYMENT MODEL

Market Characterization	Models
Not provided	Hosted on dedicated server (anywhere except as noted below)
Available	Cloud/SaaS hosted on AWS, on-premise
Preferred or predominant model	

GEOGRAPHIC FOOTPRINT

Market Characterization	Regions
Market with some customers, supported either remotely or via partners	EU directly, Latin America via partner/agent
Target market with substantial customer base, local support either direct or by agent	North America
Not a supported geography	Non-EU Europe, Middle East/Africa, APAC, Oceana: (planned via partners)

INDUSTRY FOOTPRINT

Market Characterization	Industries
Market with some customers	Agriculture, automotive, CPG, durables, mining, paper and packaging, utilities, water/wastewater
Target market with reasonable customer base	
Target market with substantial customer base, primary focus	Chemicals, food and beverage, metals, oil and gas
Specialized industry functionality	Same as focused market industries
Not a supported industry	Those not explicitly listed above are engaged on a case by case basis

TARGET MARKETS

Business Size	Presence
Small (<$50M revenue)	Some customers
Mid-size (>$50M to <$500M revenue)	Target/focused market
Large (>$500 Million to <$1B revenue)	Target
Very Large (>$1B revenue)	Some customers

Aspen Technology

http://home.aspentech.com/

Aspen Technology (AspenTech) is best known for process engineering tools and for historian/process manufacturing execution system (MES) capabilities. However, over the last 12-18 months it has become a more prominent provider in the APM space due to expanded internal development and a number of acquisitions that have been integrated with its core technology set. In the last edition of the APM solution selection guide we covered Mtell as an innovative predictive analytics provider and in 2016, it was acquired by AspenTech, along with several other companies as AspenTech looks to become a broader solution provider in the process industries, adding "Maintain" to its tagline of "Design/Operate." Its most recent acquisition, IoT integration capabilities through RtTech, add to its footprint and demonstrates the company's commitment to the APM 4.0 space. This is a logical expansion of capabilities and for companies in asset-intensive heavy process industries, AspenTech's move is timely and welcome.

3P EVALUATION OF APM 4.0 OFFERINGS

POSITIONING | Thanks to the breadth of its portfolio AspenTech is gaining in positioning. The company is rounding out its portfolio specifically to position itself as one that helps companies achieve maximum return from production assets. A solid marketing message and expanding its industry coverage footprint are tasks AspenTech is pursuing and will help it improve position over time. While there is strength in the AspenTech position from a coverage perspective, the market position is still emerging leaving us to assess their current position as moderate but strongly improving.

PRESENCE | In the context of APM 4.0 AspenTech has a solid presence thanks to process engineering and design tools, critical for creating the Digital Twin in heavy process industries, its recent acquisitions, and its IIoT data integration capabilities inherent in its operations software. What it lacks from a presence perspective is a consolidated APM 4.0 go-to-market strategy and acknowledging its capabilities vis-à-vis APM 4.0. Outside the heavy process industries, AspenTech's presence is limited and emerging.

POTENTIAL | Within the petrochemical industry AspenTech has a strong potential to become a key APM 4.0 platform provider but it faces stiff competition from enterprise software providers coming at APM from the EAM and analytics side and from automation providers with IIoT and analytics capabilities. For AspenTech to realize its full potential it needs to capitalize on the Digital Twin aspects of APM 4.0 and continue to push aggressively to differentiate machine learning prescriptive analytics capabilities. If it does so and expands beyond its core industry base, it will increase its APM 4.0 potential from emerging to moderately strong.

BOTTOM LINE VIS-À-VIS APM 4.0 | For companies already AspenTech customers, either in the design or operate phase of their business, AspenTech represents a very strong candidate to serve as either the foundation of their APM 4.0 platform or a critical element if they opt to build out APM 4.0 on another platform. Modeling and simulation are a key component of APM 4.0 and AspenTech is extremely

capable in this area, and thanks to multiple acquisitions, and now rounding out the portfolio of capabilities to deliver APM 4.0.

Aspen Technology APM 4.0 Snapshot

FUNCTIONAL FOOTPRINT

Functional Area	Support
Traditional EAM / CMMS capabilities	
MRO materials management and optimization	Can do risk and reliability analysis to aid in optimization
CBM, RCM, predictive maintenance capabilities	aspenONE APM provides predictive analytics and an asset framework
Specialized functionality	Unique petrochemical industry functionality, IIoT Edge connectivity
Asset strategy and risk characterization	Provides critical analysis capabilities
Mobility, Digital Twin, AR/VR	Support in this area is strong except AR/VR display

DEPLOYMENT MODEL

Market Characterization	Models
Not provided	AspenTech hosted, Azure Cloud
Available	On-Premise, 3rd party hosted, AWS Cloud
Preferred or predominant model	On-premise

GEOGRAPHIC FOOTPRINT

Market Characterization	Regions
Market with some customers, supported either remotely or via partners	Oceana
Target market with substantial customer base, local support either direct or by agent	Rest of world
Not a supported geography	

INDUSTRY FOOTPRINT

Market Characterization	Industries
Market with some customers	Food and beverage, CPG, mining and metals, paper, transport, water/wastewater
Target market with reasonable customer base	Pharmaceuticals
Target market with substantial customer base, primary focus	Chemicals, oil and gas
Specialized industry functionality	
Not a supported industry	Those not listed above

TARGET MARKETS

Business Size	Presence
Small (<$50M revenue)	
Mid-size (>$50M to <$500M revenue)	
Large (>$500 Million to <$1B revenue)	Yes
Very Large (>$1B revenue)	Yes

Bentley Systems

https://www.bentley.com/en

Bentley Systems, due to the breadth of its engineering and design capabilities, offers a substantial portion of the functionality associated with APM 4.0. The AssetWise suite of solutions provides classic EAM / CBM / RCM / predictive maintenance (PdM) elements, and its engineering software positions it via-a-vis the Digital Twin elements of APM 4.0. Its asset lifecycle model was one of the first to consider the asset throughout entire lifecycle, from design through retirement, so it's very comprehensive. Because of Bentley's strength on the engineering side in infrastructure and asset-intensive facilities such as utilities, refining, and mining it has full support for linear assets, and Bentley was early to recognize the benefits of AR/VR, a key component APM 4.0. AssetWise Operational Analytics round out the functional footprint for APM 4.0.

3P EVALUATION OF APM 4.0 OFFERINGS

POSITIONING | As stated above, Bentley is well-positioned vis-à-vis APM 4.0 due to the ability to support the critical asset lifecycle, AR/VR, Digital Twin and analytics elements. It is less positioned from an IIoT perspective in that it has chosen to not pursue its own IIoT platform, but, when deployed in conjunction with an automation provider's IIoT platform, it makes for a nearly complete portfolio. The relationship they have with Siemens is one way to address this. Hence, we rate its current position as strong in the infrastructure and asset-intensive industries and fair in general manufacturing.

PRESENCE | Within the industries where Bentley has a strong engineering presence it also has a good APM presence. Outside these asset-intensive industries its APM presence is less established. In late 2016 Bentley and Siemens agreed to partner with products and solutions in the utilities sector increasing Bentley's presence in that sector; its presence in factory design and simulation are growing in manufacturing. We see Bentley's presence as strong in selected industries but developing in others.

POTENTIAL | As APM 4.0 (and the equivalent model in infrastructure) become more in demand Bentley will have the potential to be a formidable player with its broad portfolio. Outside its core industries, we see its potential as just that – a potential, unexplored but certainly with all of the critical elements covered.

BOTTOM LINE VIS-À-VIS APM 4.0 | Bentley is well positioned to serve as the foundation for an APM 4.0 platform, especially in infrastructure and asset-intensive industries that have settled on Bentley's engineering portfolio for their design and construction management activities. Even companies that haven't adopted Bentley's engineering tools will find that in industries where Bentley has strengths such as power, infrastructure and transportation, that the functionality will move a company well along the APM 4.0 continuum.

Bentley Systems APM 4.0 Snapshot

FUNCTIONAL FOOTPRINT

Functional Area	Support
Traditional EAM / CMMS capabilities	Fully provided
MRO materials management and optimization	Full management, no optimization
CBM, RCM, predictive maintenance capabilities	Fully provided
Specialized functionality	Strong linear capabilities and lifecycle costing
Asset strategy and risk characterization	Fully provided
Mobility, Digital Twin, AR/VR	Good coverage

DEPLOYMENT MODEL

Market Characterization	Models
Not provided	AWS or other Cloud
Available	On-premise, hosted by Bentley or third-party
Preferred or predominant model	Azure Cloud

GEOGRAPHIC FOOTPRINT

Market Characterization	Regions
Market with some customers, supported either remotely or via partners	
Target market with substantial customer base, local support either direct or by agent	Global support within target industries
Not a supported geography	

INDUSTRY FOOTPRINT

Market Characterization	Industries
Market with some customers	Aerospace and defense, automotive, food and beverage, CPG, defense forces, industrial equipment, paper and forest products, pharmaceuticals
Target market with reasonable customer base	Mining and metals, chemicals
Target market with substantial customer base, primary focus	Oil and gas, and those in specialized functionality below
Specialized industry functionality	Public infrastructure and transit, transport/rail, utilities, water/wastewater
Not a supported industry	Agriculture, consulting, durables, education, hi-tech, med devices, packaging, publishing, semiconductor

TARGET MARKETS

Business Size	Presence
Small (<$50M revenue)	Direct or partner/agent supported
Mid-size (>$50M to <$500M revenue)	Direct or partner/agent supported
Large (>$500 Million to <$1B revenue)	Direct or partner/agent supported
Very Large (>$1B revenue)	Direct support

GE

https://www.ge.com/digital/asset-performance-management, (plus individual business unit websites) GE's offerings in the APM 4.0 space are a combination of solutions from GE Digital and each of the separate business units. GE serves customers in industrial sectors like transportation, aviation and power industries, with sector-unique offerings related to the hard assets GE delivers such as locomotives, jet engines or medical devices. GE Digital has a suite of horizontal solutions that support non-GE assets and are applicable across any industry and many service businesses. The product list of solutions that plug into what we consider an APM 4.0 platform framework include: GE Digital's APM, GE's unified solution including legacy Meridium APM, SmartSignal predictive diagnostics, Bitstew, and wise.io, the Predix Platform and HMI/SCADA solutions. Additionally, the GE industrial business units offer: GE Oil & Gas Intellistream and System 1 solutions, GE Digital Mine and GE APM for Power. In addition, GE also owns ServiceMax, a field service management product.

GE was one of the first companies to recognize that Industry 4.0 offered both challenges and opportunities related to APM and made early investments in technologies like SmartSignal and Csense, followed by first investment in and then purchase of APM pioneer Meridium. For several years GE has been on a Digital Transformation journey in its own operations and as a supplier of technology to other industries. APM has been central to that Digital Transformation story since 2014. In 2017 GE underwent some significant leadership changes, at the same time it tried to come to grips with the magnitude of the change required to becoming a major software and solutions provider. The costs of making major moves into power and oil and gas just as the nature of those businesses were changing and the economics of investment greatly tightened have impacted its APM progress. While GE is regrouping somewhat, allowing others to gain ground, its lead from early investments in APM means it fits squarely in the APM 4.0 space as a full APM 4.0 platform provider.

3P EVALUATION OF APM 4.0 OFFERINGS

POSITIONING | In the context of APM 4.0 GE has accumulated a rich portfolio of functionality that it is currently integrating, realizing full integration later in 2018. The unified APM solution representing a common SmartSignal/Meridium/BitStew product on the Predix platform is an example of its direction and strategy. The ServiceMax product has the potential to provide the work and MRO inventory management and reporting functionality, more often associated with EAM / CMMS, but currently does not market itself as an EAM / CMMS product. GE slowed its acquisition pace in the second half of 2017 so its ability to fill some of the functional gaps may be somewhat slower than the pace it exercised earlier. Fortunately, the Predix ecosystem has allowed GE, combined with its partners to deliver more than GE can alone. GE has positioned its approach to APM 4.0 capabilities using a two-pronged approach of operational performance management (OPM) and asset performance management (APM). OPM embodies more of the LNS APM 4.0 forward-looking capabilities while APM is more aligned with traditional APM capabilities, not surprising given the Meridium heritage within GE now. As GE makes OPM and APM more central to its approach, instead of focusing on the Predix infrastructure elements, we see GE's position vis-à-vis APM 4.0 as strong compared to many of its competitors.

PRESENCE | GE's presence in the APM 4.0 market is highly dependent on the specific functional area within the APM 4.0 space and the products GE leverages to provide those capabilities. In traditional APM asset strategy and reliability, particularly in asset-intensive industries, the legacy Meridium product has a footprint that establishes GE as a major provider. In other industries where Meridium is not a good price fit, or where other capabilities are more valued, GE's presence is more varied. In the EAM / CMMS aspects of APM 4.0, GE currently has no capabilities of its own but relies on partnerships and interfaces to traditional EAM providers like SAP or IBM's Maximo. Overall, this partner versus build approach across the spectrum of APM 4.0 capabilities yields a fair rating, although individual products may have a very strong presence in certain aspects of APM 4.0. GE has demonstrated its ability to partner with other solution providers, and the Predix IIoT platform ecosystem has garnered support from a number of service and third-party solution providers that enables the Predix platform ecosystem to deliver APM 4.0 grade functionality. The entire ecosystem of APM 4.0 capabilities on Predix is approaching a good presence in the market while GE's solo ability is still evolving.

POTENTIAL | GE Digital and its industrial business units like Oil and Gas, and Power and Aviation, have many of the building blocks of APM 4.0. For the last three to four years GE was racing far ahead of the market towards APM 4.0. Recently GE has come under intense market pressure to alter its business structure to become a better investment for shareholders. This has caused measurable retrenchment and it remains to be seen if GE will be able to see the race to the finish "in the money." GE Digital leadership has reiterated its commitment to the delivery of the full spectrum of APM 4.0 capabilities. However work still to be done includes finishing the migration of all of the APM and OPM components to the Predix technology stack, rationalization of the product structure and pricing models in light of the push for profits against the market demand of incrementalism.

BOTTOM LINE VIS-À-VIS APM 4.0 | GE set the bar high early in the Digital Transformation space and helped set the stage for essential functionality vis-à-vis AM 4.0. Whether it can maintain the pace and emerge as the winner is unknown at this point. The next 12-24 months will tell if GE emerges as an APM 4.0 leader or not. End users should certainly examine GE's solution set and make their own judgment as to whether they see GE as a strategic long-term partner and the Predix platform as their APM 4.0 platform.

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GE APM 4.0 Snapshot

FUNCTIONAL FOOTPRINT

Functional Area	Support
Traditional EAM / CMMS capabilities	Via partnerships with traditional suppliers, no intrinsic
MRO materials management and optimization	Via partnerships with traditional suppliers, no intrinsic
CBM, RCM, predictive maintenance capabilities	APM Health, APM Reliability, APM Strategy, APM Integrity (legacy SmartSignal and BitStew analytics, Meridium)
Specialized functionality	System 1 Vibration, Intercal calibration mgt., GE 4Sight
Asset strategy and risk characterization	APM Health, APM Strategy (legacy Meridium)
Mobility, Digital Twin, AR/VR	APM Reliability (digital twin predictive analytics), APM Health & APM Integrity (native mobility functionality for inspections, rounds, health, and proof tests)

DEPLOYMENT MODEL

Market Characterization	Models
Not provided	Dedicated hosted
Available	Heritage on premise, future on AWS or Azure, product dependent
Preferred or predominant model	Predix on own site but transitioning to AWS and Azure

GEOGRAPHIC FOOTPRINT

Market Characterization	Regions
Market with some customers, supported either remotely or via partners	
Target market with substantial customer base, local support either direct or by agent	All global geographic regions except as listed below
Not a supported geography	Russia, Iran, North Korea

INDUSTRY FOOTPRINT

Market Characterization	Industries
Market with some customers	Agriculture, defense, education, packaging, paper and forest, public infrastructure / transport, pharmaceutical, semiconductor, water/wastewater
Target market with reasonable customer base	Aerospace and defense, automotive, food and beverage, chemical, consumer durables, consumer goods, industrial equipment, medical devices, transport
Target market with substantial customer base, primary focus	Metals, mining, oil and gas, utilities
Specialized industry functionality	
Not a supported industry	Consulting, high-tech, publishing, telecommunications

TARGET MARKETS

Business Size	Presence
Small (<$50M revenue)	Have customers, generally partner or agent supported
Mid-size (>$50M to <$500M revenue)	Have customers, generally partner or agent supported
Large (>$500 Million to <$1B revenue)	Have customers, target and primary market, sometimes via partners
Very Large (>$1B revenue)	Have customers, target and primary market, typically direct

Honeywell

http://www.honeywellprocess.com

Honeywell approached the APM market with an asset-centric approach but has started to take a more holistic view. It considered APM as advanced process management but is broadening the definition to be more in line with the market's perspective of APM 4.0. Customers should look beyond its current marketing material to understand where Honeywell is going, not just where it has been. Key products currently in the APM 4.0 footprint:

- Honeywell Connected Plant™

- APM Solutions

- Process Reliability Advisor

- Uniformance® Suite

- Uniformance Asset Sentinel

- Mobile Equipment Monitor

- Corrosion Predict® Suite

Honeywell also delivers some capabilities under the moniker of operations management in the same vein as GE with OPM. More importantly, Honeywell is expanding its perspective to take an all-encompassing view that centers around the interaction of maintenance excellence, process excellence and financial optimization. It has used its "Connected Plant" and "Connected Assets" vision to bring together a focus on assets, people, and process. In addition to the APM solutions offered by the Process Automation division, Honeywell's Aerospace and Transportation units have offerings specific to APM for Honeywell products delivered by those divisions.

3P EVALUATION OF APM 4.0 OFFERINGS

POSITIONING | The portfolio of operational and asset performance capabilities provides Honeywell with a position for growth in the APM 4.0 space. Its Honeywell Sentience IIoT which leverages Microsoft technology provides a capable mechanism to tie offerings together. Honeywell is still evolving messaging around APM 4.0 and is starting to clarify both its operator and OEM strategy, first doing so in oil and gas. So far it has been focused on emphasizing functionality and user experience as its differentiating characteristics. Technologically Honeywell is moderately well positioned but needs to execute on its plan to broaden its approach to the market.

PRESENCE | Within the industry segments that Honeywell targets, specifically heavy process, mining and metals, and the industrial units related to aerospace and transportation, Honeywell has a portfolio of APM 4.0 related solutions that can serve as a substantial part of a plant-centric APM 4.0 platform. This is especially true when coupled with a business-centric solution such as an enterprise asset management (EAM) / enterprise resource planning (ERP) provider's system of record capabilities. Honeywell has taken a lead in providing performance-based contracting which reduces risks for

customers. Honeywell's Universal Oil Products (UOP) process optimization capabilities strengthen their portfolio in the entire petrochemicals segment.

POTENTIAL | Within the oil and gas sector we see Honeywell's APM 4.0 potential tied to their overall success as the dominant automation provider in this space. The evolving marketing messaging focusing on a performance-based value proposition should play well in the sector, Honeywell just needs to deliver on that message. In other industry segments, we see Honeywell having the potential to serve as an APM 4.0 ecosystem partner but not as a platform in the short term. However, as it builds out its new approach it will gain in potential over the next year to 18 months.

BOTTOM LINE VIS-À-VIS APM 4.0 | Existing Honeywell customers should investigate Honeywell's Asset Management and Operations Management portfolio to see what capabilities can support their APM 4.0 strategy. Customers in the oil and gas sector should definitely look at Honeywell's solution set as a part of their APM 4.0 platform. Users in other industries should still view Honeywell from an APM 4.0 ecosystem perspective as they have some unique capabilities that plug into an APM 4.0 framework; keep an open mind on seeing them as a platform provider in the future.

Honeywell APM 4.0 Snapshot

FUNCTIONAL FOOTPRINT

Functional Area	Support
Traditional EAM / CMMS capabilities	
MRO materials management and optimization	
CBM, RCM, predictive maintenance capabilities	Corrosion monitoring
Specialized functionality	Certification and training management
Asset strategy and risk characterization	
Mobility, Digital Twin, AR/VR	Mobility, limited digital twin, AR/VR via partner support

DEPLOYMENT MODEL

Market Characterization	Models
Not provided	
Available	All other deployment models including Azure, AWS and some other Cloud options, depending on product
Preferred or predominant model	

GEOGRAPHIC FOOTPRINT

Market Characterization	Regions
Market with some customers, supported either remotely or via partners	
Target market with substantial customer base, local support either direct or by agent	All global geographies in select industries
Not a supported geography	

INDUSTRY FOOTPRINT

Market Characterization	Industries
Market with some customers	CPG, pharmaceuticals, utilities, water/waste water
Target market with reasonable customer base	Automotive, metals, mining, paper and forest products
Target market with substantial customer base, primary focus	Aerospace and defense, chemicals, mining, oil and gas
Specialized industry functionality	Aerospace and defense, automotive, industrial equipment
Not a supported industry	Agriculture, defense, durable goods, education, hi-tech, medical devices, packaging, public infrastructure or transit, publishing, semiconductor, telecommunications, transport

TARGET MARKETS

Business Size	Presence
Small (<$50M revenue)	Via partners or agents
Mid-size (>$50M to <$500M revenue)	Target market
Large (>$500 Million to <$1B revenue)	Primary market
Very Large (>$1B revenue)	Primary market

IBM

https://www.ibm.com/internet-of-things/industries/iot-manufacturing/intelligent-assets

IBM like many enterprise software or IT-centric suppliers, defines APM as application portfolio management so users seeking information about IBM's asset performance management capabilities need to explicitly include the asset reference or alternately drive straight to one of the core components of APM 4.0, predictive analytics for PdM. With that perspective, potential customers quickly arrive at IBM's key value proposition in the APM 4.0 space. It begins with its Maximo EAM / CMMS solution, and then builds with analytics, particularly those driven by IBM's Watson technology. IBM represents a viable APM 4.0 platform solution for many companies, particularly those in which the IT organization drives much of the technology architecture. To fully understand IBM's capabilities vis-à-vis APM 4.0 companies shouldn't just look at Maximo and Watson but also at IBM's IoT for Manufacturing, as much of the process and asset optimization capabilities manifest themselves in this part of the solution set.

3P EVALUATION OF APM 4.0 OFFERINGS

POSITIONING | IBM has a strong presence in the EAM / CMMS element of APM 4.0 with Maximo being one of the most widely deployed solutions in this class and having set a functional benchmark for the industry much of the last 20 plus years. With Watson, it also has a strong presence in the machine learning and predictive analytics related PdM area. IBM Global Services provides implementation on a nearly global scale so IBM's presence vis-à-vis APM, in general, is very strong. From an APM 4.0 perspective, it is still strong, but messaging has not been APM 4.0 functionality-focused outside the analytics space.

PRESENCE | IBM has a rich portfolio of IIoT integration, analytics and machine learning, and classic EAM/CMMS capabilities that position it as one of the broader APM 4.0 platform providers. It has work to do vis-à-vis the Digital Twin capabilities needed for APM 4.0, but overall IBM is well positioned.

POTENTIAL | IBM's potential is good within the realm of APM 4.0. It has shown every indication it sees the space as a growth market even though it has yet to refine its approach to the APM 4.0 integrated vision.

BOTTOM LINE VIS-À-VIS APM 4.0 | IBM has had some mixed press regarding the Watson capabilities in complex industrial environments. We see far more success stories where companies, particularly those with Maximo as a starting point, have developed a clear path towards APM 4.0. For organizations with IT organizations that have a good relationship with IBM, existing IBM customers, and companies with a vision of APM 4.0 being able to transform their business into a services model, IBM is a "must evaluate" option.

IBM APM 4.0 Snapshot

FUNCTIONAL FOOTPRINT

Functional Area	Support
Traditional EAM / CMMS capabilities	Maximo
MRO materials management and optimization	Maximo and analytics
CBM, RCM, predictive maintenance capabilities	Maximo Asset Health Insights, Predictive Maintenance, and Watson based analytics, some via partners
Specialized functionality	BIM
Asset strategy and risk characterization	Some inherent in Maximo Asset Health Insights and Maximo Health, Safety, & Environment, some via partners such as MaxGrip
Mobility, Digital Twin, AR/VR	Some inherent, some via partnerships such as Daqri and Autodesk

DEPLOYMENT MODEL

Market Characterization	Models
Not provided	Hosted on any platform other than IBM
Available	IBM Cloud
Preferred or predominant model	On-premise, hosted by IBM on IBM servers

GEOGRAPHIC FOOTPRINT

Market Characterization	Regions
Market with some customers, supported either remotely or via partners	
Target market with substantial customer base, local support either direct or by agent	Available globally either directly or through agents/partners
Not a supported geography	

INDUSTRY FOOTPRINT

Market Characterization	Industries
Market with some customers	
Target market with reasonable customer base	
Target market with substantial customer base, primary focus	All other industries except consulting
Specialized industry functionality	Varies by product
Not a supported industry	Consulting

TARGET MARKETS

Business Size	Presence
Small (<$50M revenue)	Via partners and agents
Mid-size (>$50M to <$500M revenue)	Both direct and via partners/agents
Large (>$500 Million to <$1B revenue)	Primary market also served via partners/agents
Very Large (>$1B revenue)	Primary market also served via partners/agents

Infor

http://www.infor.com/solutions/eam/

Infor is a well-regarded provider of EAM software that was among the first enterprise software providers to move aggressively into the Cloud, focus on the power of analytics, and to concentrate on the user experience. It has robust IIoT data integration capabilities and a strong manufacturing foothold across many segments, being one of the first enterprise software providers to look at micro verticals for product positioning. It has many but not all of the critical elements essential for an APM 4.0 platform approach. Depending on the industry and the relative importance it can be a platform provider for APM 4.0 such as in discrete manufacturing, or a strong APM 4.0 ecosystem provider in industries like oil and gas or other asset-intensive industries.

3P EVALUATION OF APM 4.0 OFFERINGS

POSITIONING | Infor has about one-half to two-thirds of the functional footprint of APM 4.0 either covered directly or through hooks to partner or common industry solutions. As it moves forward with its investment by and linkage to Koch industries and its strategic investment in acquisitions like Birst we see positioning expanding. Infor has currently positioned itself as an EAM provider far more than as an APM provider, and when extending APM to the 4.0 model, we see them as only moderately positioned but definitely improving in 2018.

PRESENCE | Across a wide swath of manufacturing, municipalities, transportation and service industries Infor has a strong presence as an EAM provider with some predictive analytics capabilities. For EAM in the Cloud, it rivals some Cloud-only providers. In the asset strategy, AR/VR and Digital Twin areas, and the full asset lifecycle modeling capabilities it has minimal acceptance as companies generally pair Infor EAM with more plant-centric traditional APM solutions. From an APM 4.0 perspective we consider Infor's market presence as emerging and at the ecosystem level for most asset-intensive industries, but at the platform level for discrete and light process manufacturing.

POTENTIAL | Infor has a lot of potential. It is driving to Cloud (on the AWS platform), has all of the integration technology and has demonstrated the ability to react to the market ahead of many competitors. Its acquisition of Birst in June of 2017 provides it with the analytics and visualization engine to serve as the basis of a richer APM 4.0 capability. In Infor's favor is that APM 4.0 is a cutting-edge strategy and still early in the market, so it has time to adapt and make a strong play in the APM 4.0 space; we rate them with good potential.

BOTTOM LINE VIS-À-VIS APM 4.0 | Infor represents a very viable APM 4.0 ecosystem partner for almost any manufacturing company and if EAM is a critical need and Cloud deployment is desired, a good APM 4.0 starting point. For more asset-intensive industries, it is also a good ecosystem partner, but users need to recognize they will likely need to knit together additional elements to achieve a full APM 4.0 endpoint.

Infor APM 4.0 Snapshot

FUNCTIONAL FOOTPRINT

Functional Area	Support
Traditional EAM / CMMS capabilities	Full capabilities in current release
MRO materials management and optimization	Full management capabilities in current release
CBM, RCM, predictive maintenance capabilities	Partner with others for complex but have some inherent analytics
Specialized functionality	FDA and FAA implementations possible
Asset strategy and risk characterization	Through partnerships today, Birst being integrated in 2018
Mobility, Digital Twin, AR/VR	AR/VR capabilities through partner, no complex first principles models

DEPLOYMENT MODEL

Market Characterization	Models
Not provided	
Available	Any deployment model available
Preferred or predominant model	AWS Cloud

GEOGRAPHIC FOOTPRINT

Market Characterization	Regions
Market with some customers, supported either remotely or via partners	Rest of World not listed below
Target market with substantial customer base, local support either direct or by agent	North America and Europe with some Middle East countries
Not a supported geography	

INDUSTRY FOOTPRINT

Market Characterization	Industries
Market with some customers	Agriculture, consulting, durables, packaging, paper and forest products, publishing semiconductors, telecommunications,
Target market with reasonable customer base	CPG, education, industrial equipment, metal and mining,
Target market with substantial customer base, primary focus	Aerospace and defense, automotive, food and beverage, chemicals, defense forces, hi-tech, med devices, oil and gas, pharmaceuticals, public infrastructure and transit, transport, utilities, water/wastewater
Specialized industry functionality	Transit, Federal businesses/public sector
Not a supported industry	

TARGET MARKETS

Business Size	Presence
Small (<$50M revenue)	Via partners/agents
Mid-size (>$50M to <$500M revenue)	Mostly via partners/agents
Large (>$500 Million to <$1B revenue)	Mostly direct with some via partners/agents
Very Large (>$1B revenue)	Mostly direct with some via partners/agents

Oracle

https://www.oracle.com

Oracle, as an enterprise software provider, has long played in the EAM space and has had IIoT integration capabilities though they are more focused on manufacturing operations. It is now providing EAM in the Cloud and analytics capabilities linked to its EAM portfolio. Given these developments, LNS sees Oracle as a credible provider of capabilities as part of the APM 4.0 ecosystem. For manufacturing companies with Oracle's ERP or EAM solutions, today maximizing the use of the APM 4.0 enabling features within the Oracle suite of solutions will allow incremental movement towards an APM 4.0 environment.

3P EVALUATION OF APM 4.0 OFFERINGS

POSITIONING | Oracle has a full set of EAM functionality, good analytics capabilities, and the ability to manage assets throughout the life cycle but is just beginning to deal with the Digital Twin aspects of APM 4.0. For these reasons, we consider Oracle's current position in the APM 4.0 space as an ecosystem provider.

PRESENCE | Oracle's presence in the market is primarily as an EAM provider with an increasing presence in the predictive analytics space. Thanks to its growing presence as a Cloud provider for EAM we expect Oracle to maintain a viable presence in the APM 4.0 ecosystem space.

POTENTIAL | Due to Oracle's strong Cloud focus we believe they could become a stronger APM 4.0 player in the future, so we see adequate potential. However, we also believe that for Oracle to become more prominent in the APM 4.0 context it needs to increase its focus on the Digital Twin and asset lifecycle functionality critical to becoming a full APM 4.0 platform play.

BOTTOM LINE VIS-À-VIS APM 4.0 | No one should ever discount Oracle's ability to respond to the market. With APM 4.0 still an emergent concept Oracle's current go-to-market strategy does not put it at a significant disadvantage for the mainstream manufacturing market. For asset-intensive industries that are pushing the APM 4.0 vision to the forefront of their asset performance management strategy, Oracle is a credible ecosystem player with the potential to evolve into a platform provider in the future.

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Oracle APM 4.0 Snapshot

FUNCTIONAL FOOTPRINT

Functional Area	Support
Traditional EAM / CMMS capabilities	EBS, CMRO and Cloud
MRO materials management and optimization	EBS, CMRO and Cloud for management
CBM, RCM, predictive maintenance capabilities	With analytics
Specialized functionality	Robust FAA in CMRO product
Asset strategy and risk characterization	
Mobility, Digital Twin, AR/VR	Strong mobility, some Digital Twin and AR/VR support

DEPLOYMENT MODEL

Market Characterization	Models
Not provided	Third-party Cloud support
Available	All other models
Preferred or predominant model	On-Premise for EBS and CMRO, Oracle Cloud for Cloud Maintenance

GEOGRAPHIC FOOTPRINT

Market Characterization	Regions
Market with some customers, supported either remotely or via partners	
Target market with substantial customer base, local support either direct or by agent	All global geographies
Not a supported geography	

INDUSTRY FOOTPRINT

Market Characterization	Industries
Market with some customers	
Target market with reasonable customer base	All industries
Target market with substantial customer base, primary focus	
Specialized industry functionality	Complex MRO product offers FAA compliance support
Not a supported industry	

TARGET MARKETS

Business Size	Presence
Small (<$50M revenue)	Oracle serves all market segments
Mid-size (>$50M to <$500M revenue)	Oracle serves all market segments
Large (>$500 Million to <$1B revenue)	Oracle serves all market segments
Very Large (>$1B revenue)	Oracle serves all market segments

Rockwell Automation

https://www.rockwellautomation.com/rockwellsoftware/applications/asset-performance-management.page

Rockwell Automation has generally approached APM based on a collection of product and services all related to maintenance, where APM is considered the highest level of maturity in the space. Of all the automation vendors covered in the solution selection guide, Rockwell Automation is the most service focused, relying heavily on partnerships, channels, and third-party products to deliver APM functionality. As such, its APM 4.0 footprint is difficult to describe.

Much of the Rockwell Automation focus on APM is from the automation perspective and is based on tools like Asset Inventory which then feeds to FactoryTalk AssetCentre which facilitate the maintenance of the automation elements in the plant. It also provides a number of tools for OEM's and device manufacturers embedding Rockwell Automation technology to provide predictive maintenance capabilities for the products they sell. The most APM 4.0-like offering is FactoryTalk Analytics which end users can leverage for PdM. Its energy and manufacturing operations management capabilities cross over into the APM 4.0 domain and customers are using those applications to support elements of APM 4.0. In addition, Rockwell Automation IIoT capabilities give it a strong technology foundation in the space as well.

3P EVALUATION OF APM 4.0 OFFERINGS

POSITIONING | Rockwell Automation has a somewhat fragmented APM 4.0 portfolio and compared to the competition, lacks an APM 4.0 approach to the market. Its positioning is largely focused on enabling the connected enterprise, of which the company sees maintenance as an important part – but is less focused on asset performance in part based on their focus on less asset-intensive industries like automotive, food, beverage, consumer packaged goods, and pharmaceuticals. Much of the company's recent innovation has been on next-generation analytics, including TeamONE, FactoryTalk Analytics for Devices and Machines (in the context of the Rockwell Automation Scalable Analytics strategy), Project SCIO (Big Data analytics data model), and Project Sherlock (anomaly detection on the Edge). LNS believes Rockwell Automation is trying to rationalize its go-to-market approach, reliance on partners and a capable but limited product set to articulate a stronger APM 4.0 aligned approach. As such, Rockwell Automation's APM 4.0 position is "early stage."

PRESENCE | Rockwell Automation has points of presence in the APM 4.0 footprint, but they are not integrated. When it comes to maintenance of the automation associated with an Industry 4.0 plant, Rockwell Automation fares much better. So, from an overall perspective, LNS rates the Rockwell Automation APM 4.0 presence as "developing."

POTENTIAL | Rockwell Automation has been successful with its current approach to the market in the automation space and APM has not been central to that success. As Rockwell Automation continues to evolve "The Connected Enterprise" vision and aligns its robust and emerging analytics capabilities, it has the potential to move beyond its services-centric approach to APM and deliver a much more robust set of asset focused analytics supporting APM 4.0 and the Digital Twin. LNS sees Rockwell

Automation as less of a platform provider for APM 4.0 and more as an ecosystem partner with point APM 4.0 capabilities that can round out an overall APM 4.0 strategy on other platforms.

BOTTOM LINE VIS-À-VIS APM 4.0 | Rockwell Automation is an entrenched automation player with a role to play in many end users' APM 4.0 strategy. They offer solutions that can deliver some elements of APM 4.0 and Rockwell Automation customers should look to them as they build out their APM 4.0 platforms. We do not see them as a strategic APM 4.0 contender at present. For a full perspective of Rockwell Automation's capabilities, read the forthcoming IIoT and MOM solution selection guides from LNS Research.

Rockwell Automation APM 4.0 Snapshot

FUNCTIONAL FOOTPRINT

Functional Area	Support
Traditional EAM / CMMS capabilities	Rely on third-party products
MRO materials management and optimization	Rely on 3rd party products, AssetInventory for Rockwell assets
CBM, RCM, predictive maintenance capabilities	Some capabilities via FactoryTalk Analytics and AssetCentre for Rockwell Automation assets
Specialized functionality	Yes for Rockwell Automation assets
Asset strategy and risk characterization	
Mobility, Digital Twin, AR/VR	Rely on third-party products

DEPLOYMENT MODEL

Market Characterization	Models
Not provided	Hosted at our or third-party site as single instance/multi-tenant or third-party site on dedicated server
Available	Hosted on commercial Cloud services such as AWS or Azure
Preferred or predominant model	Perpetual license on-site

GEOGRAPHIC FOOTPRINT

Market Characterization	Regions
Market with some customers, supported either remotely or via partners	Rest of World
Target market with substantial customer base, local support either direct or agent	North America
Not a supported geography	

INDUSTRY FOOTPRINT

Market Characterization	Industries
Market with some customers	Aerospace and defense, durable white goods, high tech, paper/forest products
Target market with reasonable customer base	Chemicals, CPG, industrial equipment, metals and mining, packaging, semiconductors, water/wastewater
Target market with substantial customer base, primary focus	Automotive, food and beverage, oil and gas
Specialized industry functionality	Pharmaceutical, medical device, automotive, food and beverage
Not a supported industry	Agriculture, consulting, defense, education, infrastructure, transit and transportation, utilities

TARGET MARKETS

Business Size	Presence
Small (<$50M revenue)	Covered primarily through channel partners
Mid-size (>$50M to <$500M revenue)	Mix of partners and primary coverage depending on products
Large (>$500 Million to <$1B revenue)	Mostly primary but supported by partners
Very Large (>$1B revenue)	Mostly primary but supported by partners

SAP

http://www.sap.com

SAP has leveraged its enterprise software computing capabilities to become one of the most aggressive APM 4.0 platform capable providers in the market today. SAP's ERP / EAM capabilities coupled with its Leonardo IIoT environment and analytics provides an APM 4.0 capable platform that virtually any existing SAP customer can build upon. It makes SAP an alternative that non-SAP customers may want to evaluate. SAP considers the following product set as all elements of its APM go-to-market approach:

- SAP HANA
- SAP Cloud Platform
- SAP Leonardo IoT Foundation
- SAP Leonardo IoT Edge
- SAP Enterprise Asset Management
- SAP Asset Intelligence Network*
- SAP Asset Performance and Strategy Management*
- SAP Predictive Maintenance and Service*
- SAP Predictive Engineering Insights
- SAP Work Manager (mobility)
- SAP 3D Visual Enterprise
- SAP Geographical Enablement Framework

* Available as packaged Leonardo applications

SAP's product set and complementary partner solutions cover virtually every aspect of APM 4.0. Asset optimization and performance is central to its strategy and messaging in all the appropriate industries. SAP has long been viewed by many large asset-intensive companies as their system of record vis-à-vis asset management and now it endeavors to be their system of innovation as well, according to their marketing language. SAP's APM 4.0 position today is strong.

3P EVALUATION OF APM 4.0 OFFERINGS

POSITIONING | SAP's product set and complementary partner solutions cover virtually every aspect of APM 4.0; it's position today is strong.

PRESENCE | SAP is present in virtually every geography and industry in midsized and larger companies as an ERP provider and a substantial percentage of SAP customers rely on it for their CMMS / EAM functionality. With the release of Leonardo, SAP has upped the ante and has most of the other

elements essential for APM 4.0 undergoing deployment in a number of proof-of-concept, pilot and early-stage production projects / programs. We give SAP a strong rating in APM 4.0 market presence.

POTENTIAL | SAP is extremely well-positioned vis-à-vis APM 4.0 given its presence, position and articulated plans for the future vis-à-vis asset management and its potential is good. There are issues related to cost, customer readiness, and perceived complexity which preclude a strong, but there is the likelihood that it can achieve that rating if it continues to refine offerings.

BOTTOM LINE VIS-À-VIS APM 4.0 | LNS sees SAP as a very viable provider of an APM 4.0 platform for existing SAP EAM customers looking to extend asset management capabilities into the APM 4.0 model. Non-SAP clients should also consider SAP from an APM 4.0 perspective realizing deployment may be more limited with SAP serving more as a "platform of platforms" than a sole APM 4.0 platform. It's clear that SAP sees APM as a critical path forward, and it's investing appropriately.

SAP APM 4.0 Snapshot

FUNCTIONAL FOOTPRINT

Functional Area	Support
Traditional EAM / CMMS capabilities	Provided by S/4HANA
MRO materials management and optimization	Management provided by S/4HANA, optimization with analytics
CBM, RCM, predictive maintenance capabilities	SAP Predictive Maintenance and Service
Specialized functionality	SAP Predictive Engineering Insights – first principles modeling
Asset strategy and risk characterization	SAP Asset Strategy and Performance Management
Mobility, Digital Twin, AR/VR	Multiple SAP and Partner products required

DEPLOYMENT MODEL

Market Characterization	Models
Not provided	Not disclosed
Available	On-premise and SAP Cloud
Preferred or predominant model	Not disclosed

GEOGRAPHIC FOOTPRINT

Market Characterization	Regions
Market with some customers, supported either re-motely or via partners	
Target market with substantial customer base, local support either direct or by agent	Global coverage
Not a supported geography	

INDUSTRY FOOTPRINT

Market Characterization	Industries
Market with some customers	
Target market with reasonable customer base	All industries
Target market with substantial customer base, pri-mary focus	
Specialized industry functionality	
Not a supported industry	

TARGET MARKETS

Business Size	Presence
Small (<$50M revenue)	
Mid-size (>$50M to <$500M revenue)	
Large (>$500 Million to <$1B revenue)	Target market
Very Large (>$1B revenue)	Target market

Schneider Electric and AVEVA

http://software.schneider-electric.com/solutions/enterprise-asset-performance-management/
and http://www.aveva.com

The combined AVEVA and Schneider Electric offerings in the APM 4.0 space are among the broadest footprint of all the suppliers. Schneider Electric and AVEVA can provide almost all functional elements associated with asset management across an asset's entire lifecycle. The combination of products from the numerous acquisitions have been brought together into four portfolios:

- Engineering (SimCentral, process modeling, DYNSIM, AR/VR, OTS, PRO/II)

- Planning and operations (ROMeo, Spiral Suite, APC, MES, Recipe Management, W&D, Serialization, Line Performance, etc.)

- Asset performance (APM, EAM, predictive maintenance, PRiSM, Avantis.PRO)

- Monitoring and control (Wonderware eDNA, Insight, Intelligence, Alarm Advisor, HMI and SCADA, historians, Citect, OASyS)

These solution set portfolios let Schneider Electric and AVEVA cover APM 4.0 functionality in the following areas:

- Preventative, predictive and prescriptive maintenance

- Condition-based maintenance

- Risk-based maintenance

- Mobile workforce enablement including AR/VR capabilities

- Monitoring services

- Specialized industry APM solutions (such as pipeline management)

In addition, Schneider Electric has partnered with Seeq to introduce ProfitAdvisor, an extension that delivers the financial optimization that is essential to a full APM 4.0 strategy, which is outside the AVEVA relationship.

3P EVALUATION OF APM 4.0 OFFERINGS

POSITIONING | We see Schneider Electric's position vis-à-vis APM 4.0 as very strong compared to many competitors when you figure the AVEVA functionality into the mix. The biggest risk of the merger is that the new software company may have operational conflicts with the hardware-centric Schneider Electric company that remains after this software carve-out. For that reason, we flag that very strong position rating with the caveat that 2018 will be a critical year for Schneider Electric and AVEVA to execute. From a technology perspective, both AVEVA and Schneider Electric need to move more aggressively to the Cloud to keep pace with its most Cloud-aggressive competitors, but the EcoStruxure platform provides it with substantial IIoT integration capability.

PRESENCE | Schneider Electric's and AVEVA's presence in the APM 4.0 market is growing rapidly thanks to its merger and acquisition activity, portfolio breadth, and industry focus. With a unique mix of process and discrete industry products, it has good presence in multiple sectors. It is stronger in some such as utilities with its more analytics PdM-type Predictive Asset Analytics products while other industries where Avantis has a good price fit it has a stronger EAM / CMMS presence. We see the overall presence as good and growing stronger with the AVEVA potential helping to bolster the combined offerings in a number of industries. Schneider Electric has decided to partner for some of its Big Data analytics approach, for example with Seeq for its "Profit Advisor" solutions, which could create some risk (if partners are acquired by a competitor), albeit a minor one.

POTENTIAL | No other company has the intrinsic APM 4.0 potential that Schneider Electric and AVEVA offer. But, past software merger and acquisition execution issues cause us to refrain from an unfettered endorsement of their APM 4.0 potential. Still, we feel that recent performance should reassure the market that Schneider Electric is aware of the challenges and is doing its best to ensure that the new arrangement is successful, so we still see the potential as high. Again, it has some partnering and Cloud related issues that, if not addressed, will potentially slow ability to react to the market; today these issues don't impede progress.

BOTTOM LINE VIS-À-VIS APM 4.0 | 2018 will be the telling year for Schneider Electric and AVEVA in the APM space. End users should definitely evaluate Schneider Electric and AVEVA, remembering there will be some turmoil in the short term. There is a good probability that in the end the APM 4.0 capabilities of the new combined offerings will be one of the richest portfolios and platforms in the APM 4.0 space.

NOTE | LNS revised the Schneider Electric section on April 2, 2018. We did so to reflect the transaction between AVEVA and Schneider Electric that resulted in AVEVA operating the software business for most of the Schneider Electric APM functionality previously described. The revised text remains a single section due to the interconnection between AVEVA and Schneider Electric. Readers should note that Schneider Electric has access to the full portfolio of AVEVA APM technology, while AVEVA can sell its solutions outside the Schneider Electric channel. This is most relevant wherever we mention that Profit Advisor solutions are unique to Schneider Electric. Readers should contact LNS to discuss the significance of the new operating arrangement and how the transaction impacts our assessment of either company.

Schneider Electric and AVEVA APM 4.0 Snapshot

FUNCTIONAL FOOTPRINT

Functional Area	Support
Traditional EAM / CMMS capabilities	Avantis product line
MRO materials management and optimization	Mostly complete, minor materials optimization shortfalls
CBM, RCM, predictive maintenance capabilities	Full range of solutions from Avantis CBM and PRiSM
Specialized functionality	Some industry specific, needs filling out
Asset strategy and risk characterization	Inherent
Mobility, Digital Twin, AR/VR	Complete

DEPLOYMENT MODEL

Market Characterization	Models
Not provided	Hosted multi-tenant on Schneider Electric or third-party site
Available	Product dependent but all models offered
Preferred or predominant model	On-premise or hybrid Cloud

GEOGRAPHIC FOOTPRINT

Market Characterization	Regions
Market with some customers, supported either remotely or via partners	Small minority of geographies supported by agents or distributors depending on product line
Target market with substantial customer base, local support either direct or by agent	All global geographic regions
Not a supported geography	None listed

INDUSTRY FOOTPRINT

Market Characterization	Industries
Market with some customers	Automotive, durables, pharmaceuticals, industrial equipment, pulp and paper/forest products
Target market with reasonable customer base	Metals, mining, minerals
Target market with substantial customer base, primary focus	Chemical, CPG, food and beverage, oil and gas, public infrastructure
Specialized industry functionality	Food and beverage, power/utilities, water/wastewater
Not a supported industry	Aerospace and defense, agriculture, consulting, hi-tech, publishing, defense forces, transport

TARGET MARKETS

Business Size	Presence
Small (<$50M revenue)	Have customers, generally partner or agent supported, not focus
Mid-size (>$50M to <$500M revenue)	Have customers, generally partner or agent supported, industry and geography dependent
Large (>$500 Million to <$1B revenue)	Have customers, target and primary market, sometimes via partners but many direct
Very Large (>$1B revenue)	Have customers, target and primary market, typically direct

Siemens

http://www.siemens.com

Siemens is an automation and technology provider and an industrial company serving multiple industries. It is one of the larger software providers as a result of its investment in PLM technology over the last decade. Siemens is also unique in that it has split its business by discrete (digital factory which includes PLM) and process (process industries and drives which includes other software assets like Comos and xhq) – but this also makes it difficult to deliver a comprehensive APM 4.0 solution. The company also has a substantial position in MES, automation software and in services.

In the APM 4.0 space Siemens' approach is different than the competition in numerous respects. Not surprisingly since its PLM business is by far the largest part of its software revenue, its approach is PLM-heavy with many of the capabilities being manifested in products from its PLM portfolio. These are bolstered by capabilities within the Simatic control portfolio as well. In addition, Siemens has device-specific PdM capabilities and services on offer. It positions its Mindsphere IoT and IIoT platform as the basis of its APM 4.0 go-to-market approach. Siemens is therefore not like the component players like Rockwell nor like the full-fledged APM 4.0 contenders like Schneider Electric or GE. It sits uniquely as a platform contender, thanks to Mindsphere, but also as a rich ecosystem partner.

3P EVALUATION OF APM 4.0 OFFERINGS

POSITIONING | Siemens has a number of elements of APM 4.0 and some advantages. On the Digital Twin front, it has a clear advantage with Comos plant engineering software for process plants and its partnership with Bentley provides it additional capabilities in the Digital Twin area. Mindsphere certainly provides the IIoT integration aspects and the XHQ capabilities give it some strength in predictive modeling. The most conspicuous missing element is EAM / CMMS capabilities but since many customers have products that perform those functions, this is not a critical deficiency. Overall Siemens approaches a moderately good position vis-à-vis APM 4.0.

PRESENCE | While Siemens has a number of case studies that demonstrate capabilities in the context of APM 4.0 it does not have the strong market presence of most of its competitors. Much of this centers around Siemens' strength in discrete manufacturing and its PLM centricity and discrete automation focus. A customer trying to identify all of the APM 4.0 capabilities within the Siemens portfolio will likely struggle to identify what components to select and how they plug together on their own. For these reasons, we assess Siemens presence as emerging.

POTENTIAL | For discrete manufacturers with substantial Siemens automation, drives or other technology position Siemens has potential, but for heavy process industries Siemens' potential is more of an ecosystem component provider, not a platform player. Siemens has good potential vis-à-vis APM 4.0 in highly discrete industries, but only limited potential vis-à-vis as an APM 4.0 platform choice in asset-intensive industries at this time.

BOTTOM LINE VIS-À-VIS APM 4.0 | Don't underestimate Siemens. It has demonstrated its ability to become a leading player in markets it actively pursues. In industries like aerospace and defense and automotive, Siemens is a credible choice to start building out an APM 4.0 strategy, at least on the plant floor. In other industries, Siemens represents more of a components provider, but for those with other Siemens technology, a very credible components provider.

Siemens APM 4.0 Snapshot

FUNCTIONAL FOOTPRINT

Functional Area	Support
Traditional EAM / CMMS capabilities	Limited within TeamCenter MRO
MRO materials management and optimization	Limited within TeamCenter MRO and Comos MRO
CBM, RCM, predictive maintenance capabilities	Predominantly for other Siemens equipment, ML in next release, Connectivity and capability to a broader portfolio of vendors available
Specialized functionality	TeamCenter, Comos, DCS, WinCC and SIMATIC IT all have elements supporting APM
Asset strategy and risk characterization	
Mobility, Digital Twin, AR/VR	Point of differentiation because of PLM strength for Digital Twin models and AR/VR

DEPLOYMENT MODEL

Market Characterization	Models
Not provided	
Available	Dependent on product – verify with Siemens current options
Preferred or predominant model	Transitioning to cloud and hybrid deployments

GEOGRAPHIC FOOTPRINT

Market Characterization	Regions
Market with some customers, supported either remotely or via partners	
Target market with substantial customer base, local support either direct or by agent	All global geographic regions depending on industry
Not a supported geography	

INDUSTRY FOOTPRINT

Market Characterization	Industries
Market with some customers	
Target market with reasonable customer base	All industries except those listed as not supported
Target market with substantial customer base, primary focus	
Specialized industry functionality	
Not a supported industry	Public transit, publishing

TARGET MARKETS

Business Size	Presence
Small (<$50M revenue)	Target all markets via combo of direct and partners/agents
Mid-size (>$50M to <$500M revenue)	Target all markets via combo of direct and partners/agents
Large (>$500 Million to <$1B revenue)	Target all markets via combo of direct and partners/agents
Very Large (>$1B revenue)	Target all markets via combo of direct and partners/agents

Uptake

https://www.uptake.com/

Uptake is a new entrant in the APM 4.0 market. The company was founded in 2014 by serial entrepreneur Brad Keywell (who also started Groupon), along with a leadership team of industry notables including Ganesh Bell, formerly of GE Digital. Over the last few months, the company has become a very credible provider of APM 4.0 capabilities. Operating in startup/stealth mode until the beginning of the second quarter of 2018, Uptake has over 50 customers and more than 700 employees, and has positioned itself to become a disruptor in the maintenance reliability segment of the APM 4.0 market. Its April 2018 acquisition of Asset Performance Technologies (APT) gives it the dominant asset strategy library in the market today with approximately 800 equipment types, over 5000 preventive maintenance tasks with intervals, over 55,000 failure mode effects analysis (FMEA) rows and over 175,000 reportable conditions. In addition, APT adds extensive domain expertise in nuclear power, mining and steel, and petrochemicals / oil and gas which complements Uptake's existing expertise in rail, wind energy, and the services sectors. Partners/licensees include GE Digital (Meridium), Bentley, EPRI, Oracle, Silcar and Rolls-Royce.

3P EVALUATION OF APM 4.0 OFFERINGS

POSITIONING | Over the last four years Uptake has built out both an IIoT platform and a credible APM 4.0 solution set, particularly with its acquisition of APT. It has asset reliability at the core of its business model, offering a Cloud-based solution set that covers data acquisition, data reconciliation/integrity and a machine learning based approach to failure signature analysis that allows it drive towards zero unplanned asset downtime. The application Asset Perform provides visibility, reliability and productivity of industrial assets, Service Optimize drives operational efficiency and productivity of workers and tasks and Cyber Secure provides visibility into industrial control systems (ICS) environments to detect and classify potential threats. All of these sit on top of the Uptake Platform, a key element of which is inherent data security. While Uptake lacks the EAM/CMMS elements of LNS's APM 4.0 model as well as some other elements it has robust reliability solution that gives it an overall rating of promising and growing.

PRESENCE | Uptake has approached the market by identifying a key initial customer in an industry segment that works with it to build out an industry-specific solution. The company then pursues additional customers in that industry to build functionality incrementally. To date Uptake has built credible solutions for rail, heavy equipment fleet service, and wind energy, with emerging solutions in other industries such as mining, oil and gas, and agriculture. As mentioned previously APT brings additional presence in other industries. Its customers tend to be larger enterprises that adopted Uptake as a corporate initiative, often by the OEM's but also by end users. Given its relative recent founding but tempered by the acquisition of long-time APM solution provider, APT, we believe Uptake has a good and improving presence in industry.

POTENTIAL | Uptake is a potential APM market disruptor. Its approach to the market is entrepreneurial, aggressive and well-funded. The founder's success as a serial entrepreneur speaks to Uptake's ability to attract the level of funding that smaller but innovative predictive analytics companies lack, and it

will likely outpace the market in growth and functional footprint over time. However, it does face challenges, although any APT leadership that make the transition to Uptake may alleviate some of these. Most significantly, until now Uptake has been in stealth mode and has not crafted a message to the market that puts ahead of the competition. Uptake's ability to differentiate among mainte-nance practitioners needs work, along with its overall reliability message. On one hand we see strong potential based on product and Uptake's access to funding. On the other, we are cautious regarding its go-to-market approach today. We conclude that its potential is good, but likely will become very strong.

BOTTOM LINE VIS-À-VIS APM 4.0 | In only four years Uptake has built out a highly robust predictive ana-lytics platform focused on driving asset reliability. With the acquisition of APT it's now emerging as a key supplier to, and competitor of, a large portion of the APM 4.0 market. Uptake is a potential major APM 4.0 disruptor (one of very few) in the space today. Its capabilities and behavior will chal-lenge smaller competitors and keep the pressure on larger competitors. It still needs to settle on how it's going to scale and what is the best way it can serve a varied and complex market, so scalability is its greatest technical challenge today. Since Uptake has just started to come out of stealth mode, marketing will be something it needs to focus on, but it's a company anyone in the APM 4.0 space will recognize in the near future.

Uptake APM 4.0 Snapshot

FUNCTIONAL FOOTPRINT

Functional Area	Support
Traditional EAM / CMMS capabilities	None
MRO materials management and optimization	Uptake Asset Performance Management (APM)
CBM, RCM, predictive maintenance capabilities	Uptake Asset Performance Management (APM)
Specialized functionality	Inherent data integrity/security, FMEA library (via APT)
Asset strategy and risk characterization	Via APT acquisition
Mobility, Digital Twin, AR/VR	

DEPLOYMENT MODEL

Market Characterization	Models
Not provided	
Available	Cloud
Preferred or predominant model	Cloud

GEOGRAPHIC FOOTPRINT

Market Characterization	Regions
Market with some customers, supported either remotely or via partners	
Target market with substantial customer base, local support either direct or by agent	Uptake has a number of global companies as customers, but North America is its strongest existing base
Not a supported geography	

INDUSTRY FOOTPRINT

Market Characterization	Industries
Market with some customers	
Target market with reasonable customer base	Agriculture, aviation, construction, oil and gas
Target market with substantial customer base, primary focus	Energy (wind and nuclear), rail, equipment fleets, mining and metals, transportation
Specialized industry functionality	
Not a supported industry	Any not explicitly listed above

TARGET MARKETS

Business Size	Presence
Small (<$50M revenue)	Currently not a target
Mid-size (>$50M to <$500M revenue)	Emerging
Large (>$500 Million to <$1B revenue)	Primary market
Very Large (>$1B revenue)	Primary market

Recommendations

Choosing the right solution isn't easy; everyone wants to make a fast, confident technology solution decision. Yet companies often struggle with "scope creep" meaning that focus on a specific feature is too narrow, or the company is trying to "do it all" with a single solution. Add in the competing priorities, needs and biases of different users and departments, and it's a recipe for an evaluation and decision timeline that spans months or years. Companies usually face:

Tight deadlines – The project lead struggles to find time to tackle all the data collection, fact checking, and other due diligence that goes along with solution evaluation, or worse they're already behind schedule.

Stakeholder alignment – Different departments push for what's best for them, without regard to aligning with enterprise objectives. And, as functionality and business needs expand, it gets harder for them to prioritize "needs" versus "wants."

Cost – The greatest cost isn't solution price tag, although it may be a key criterion. Hidden costs and different license agreements by vendor make it difficult to compare solutions. Plus, there's a "cost of delay" for each day the company goes without a solution, or that it takes to get a solution up and running.

Risk – What happens when a company chooses the wrong solution? How can it be sure it hasn't missed any vendors, or is accurately assessing capabilities and in context with corporate strategy? How can decision makers cut through marketing hype? What about all the time lost if the process has to start all over?

These are just a few of the concerns that every company faces when conducting solution selection. Software solution selection is a complex undertaking that demands multi-level, multi-regional, cross-functional, and inter-departmental collaboration. There are many pitfalls and challenges throughout the selection process. To eliminate worries around alignment, time, cost and risk in solution selection, manufacturers should apply a proven methodology to make the right choice, quickly and confidently.

1. **USE A DIGITAL TRANSFORMATION FRAMEWORK** for a systematic effort to connect and orchestrate the many simultaneous and interrelated efforts. Industrial organizations need a pragmatic approach to harmonize the journey in context with overarching corporate objectives and the industry they operate in. The framework should position the company to capture the full value of Digital Transformation and the Industrial Internet of Things (IIoT).

2. **AVOID STARTING IN THE MIDDLE.** Learn how companies conduct successful software selection, avoid the worries around alignment, time, cost and risk, and make faster, better, more confident solution decisions.

3. **GATHER THE RIGHT ADVISORS** and thought leaders. Technology vendors, consultants and systems integrators have deep subject knowledge in their chosen field, but they also have quotas that often cloud their perceptions and advice. Counterparts in similar roles at other companies together with independent third-party analysts can give you an undistorted view of their experiences, pitfalls, success factors, and hindsight observations.

4. **STRIVE FOR COLLABORATIVE DECISION-MAKING.** Business leaders that maintain a departmental posture don't usually make headway with building a business case. Those that look outside their group to other disciplinary leaders for insights almost always learn more about the organization and position themselves to serve the enterprise in a holistic fashion.

Presented by:

ACRONYM
QUICK REFERENCE
VIEW ON BLOG

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