Market Guide for Operations Intelligence Platforms

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A growing number of analytics and business intelligence modernization projects are deploying analytics that continuously monitor and help manage their business operations. This guide helps data and analytics leaders understand how operations intelligence platforms differ from other products.

Key Findings

- Increasing business demands for situation awareness in daily operations, and the need to sense and respond to emerging situations more quickly, are prompting companies to deploy more operations intelligence systems.

- Operations intelligence platforms play a different role to those played by business intelligence (BI) reporting, data discovery, advanced analytics, application performance monitoring (APM) and business process management (BPM) products.

- Some vendors offer dedicated commercial off-the-shelf (COTS) operations intelligence platforms, but others bundle similar capabilities into packaged applications, SaaS, intelligent business process management suites (iBPMS) and other software products.

Recommendations

Data and analytics leaders should:

- Use an operations intelligence platform to provide monitoring, alerting and interactive decision-making capabilities on top of a set of applications or devices that may be new, or retrofit on those already in production.

- Choose between packaged operations intelligence platforms described in this Market Guide and piecemeal platforms that can be assembled by combining multiple software products.

- Complement and support — not replace — incumbent BI reporting and analytic solutions with operations intelligence platforms to improve visibility into the organization's processes and business operations.

- Use additional information provided in the companion research — "Toolkit: Operations Intelligence Platform Vendor Selection" — as an input to shortlist vendors based on their vertical industry, application type, analytics and rule-processing capabilities, natively supported interfaces and geographic region.

Strategic Planning Assumption

Between 2016 and 2019, spending on real-time analytics will grow three times faster than spending on non-real-time analytics.

Market Definition

Analytics and BI modernization programs are expanding their use of operations intelligence platforms (formerly called operational intelligence platforms [see Note 1]).

> Gartner defines the operations intelligence platform as a suite of development and runtime software tools that monitor, alert and support interactive decision making by providing data and analytics about current conditions.

These platforms have adapters to receive and send data; event processing logic to detect threats and opportunities; rule processing; analytics; dashboards; alerting facilities; and capabilities to trigger responses in applications, devices or workflow tools. The platforms apply to the operational aspects of a business. Business *operations* are activities that produce, deliver or directly enable goods, services and information products. Examples include sales operations, manufacturing, supply chain, transportation operations, customer contact center operations, field service operations, insurance claims processing, and payment processing.

Operational decisions address immediate concerns — for example, the state of one customer order or a set of orders, the condition of a machine, the performance of a customer service agent or a team of agents in the contact center, the length of the queue for callers into the contact center, or delay in a particular shipment or multiple shipments. The transactional aspects of business operations are supported by a variety of other systems that include applications and services such as enterprise resource planning (ERP), supply chain management (SCM), customer relationship management (CRM) and human capital management (HCM). Operations do not include high-level corporate strategy, long-range planning, research and development and other staff functions that are not directly related to producing goods, services or information products.

Applications built on operations intelligence platforms work at the oversight level; they do not directly control work at a detailed level. Machines, moving vehicles and other physical devices are run at a detailed level by people and control systems, such as supervisory control and data acquisition (SCADA) systems, which send command signals to actuators and receive direct

feedback from sensors to adjust subsequent commands. Similarly, business applications are controlled by low-level programming logic, scripts and business process orchestration engines that direct the flow and timing of computation and data movement. As they control work at a detailed level, devices and applications usually also perform some type of continuous data collection and monitoring of their own activities at a local level, but don't provide broad visibility into the health of the overall operation.

Broad visibility is a function of operations intelligence. Operations intelligence systems typically get information from heterogeneous sources, which may be business applications, databases, sensors, web logs, SCADA systems, context brokers or other sources, to synthesize a high-level "360 degree" view of what is happening. They provide situation awareness across multiple devices or applications, detect threat and opportunity situations, and enable human or automated responses that resolve the situation. In simple terms, situation awareness means knowing what is going on so you can decide what to do.[1]

These platforms monitor operations from one or more of three perspectives:

1. The *resources* (such as machines, IT systems and people) that perform the work. Is this machine running? How many units did it produce in the past hour? How much work is on this person's task list? Where is this truck or medical instrument located now? What is the schedule for this hospital operating room today?

2. The *processes* (including behaviors and interactions) by which the work is being done. How long did it take, on average, to execute Step 3 in this six-step process today? Where are the bottlenecks that are impeding the volume or speed of this process? Will this payment be delivered to another bank before the 4 p.m. deadline?

3. The *input and output work items, such as raw materials, incoming business transactions (information artifacts), intermediate goods or results, finished goods and outgoing information artifacts*. Where is this incoming bank payment message now? Do we have enough raw material on hand or is it time to re-order? Where is this shipment of goods, and when will it arrive? What is the history of the movement (track and trace) of this bottle of prescription medicine? Was this shipment of perishable food kept within the proper temperature range for the duration of its trip?

Resources, processes and work items are highly interrelated. Resources execute processes to turn input materials, or information artifacts such as bank deposits, into output products, including finished goods and revised information artifacts (such as bank account balances). Some problems can be tracked and managed from multiple perspectives. For example, if a customer order is stuck in an application system in the order fulfillment process because the product number was coded wrong, the issue may be noticed as a resource problem (the application shut down because it didn't have an appropriate error detection and resolution capability), a process problem (this particular instance of a business process did not complete within the target time limit), or a work item problem (this customer's order was in an input transaction queue but there was no matching pick list item in an output queue). A process instance is usually associated with multiple work items and resources, and a resource may participate in multiple processes.

Operations intelligence is a type of BI and analytics, but it differs from BI and analytics applications that are used to make tactical and strategic decisions (see "Approach Operational Decisions Differently From Tactical or Strategic Decisions"). Operations intelligence should lead directly to changes in execution. It is woven into the fabric of day-to-day and minute-to-minute production and support activities. Some operational decisions can be fully automated. Dozens or more of significant operational decisions are made in the course of each instance of a typical business process. By contrast, many traditional BI and analytics applications serve the needs of middle and upper management making longer-term, offline decisions that apply to many process instances or many departments.

Most operations have some decisions that can be improved by the selective use of operations intelligence technology. Business analysts and process modelers should work with business managers and subject matter experts to pinpoint areas of the business for which operations intelligence would be beneficial, as part of every project to design a new process or make improvements in an existing process (see Figure 1).

Figure 1. Capabilities of an Operations Intelligence Platform
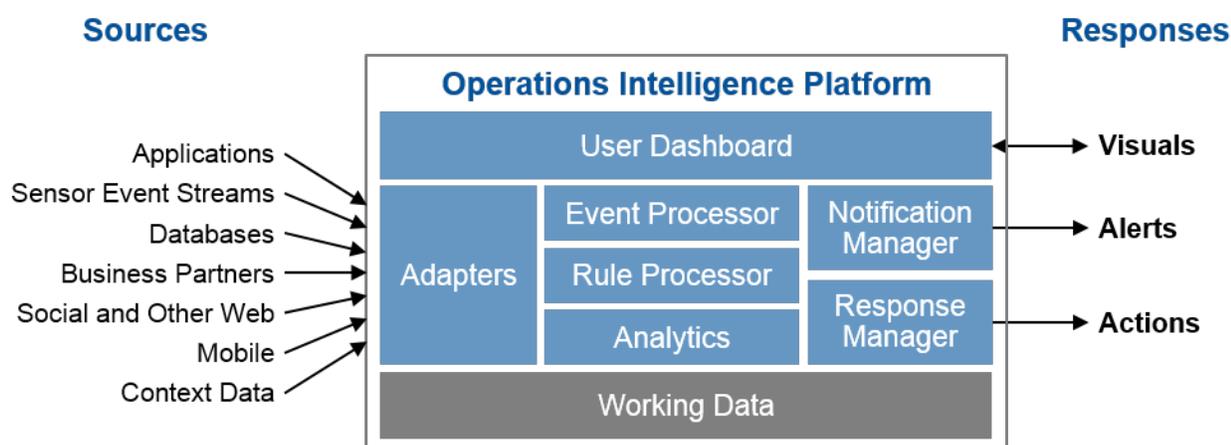
Source: Gartner (December 2016)

Operations intelligence platform products include all of the above capabilities, although with varying degrees of robustness:

- **Adapters to receive and send data.** The most common adapters are for RESTful APIs, message-oriented middleware (MOM), files and databases. Some platforms also have adapters for web services, packaged applications, or for sensor data in event streams or historian databases.

- **Event processor.** All platforms filter incoming event data and can detect simple patterns that represent threats and opportunities (including exceptions or anomalies). Some platforms have stream analytics engines capable of sophisticated complex-event processing (CEP), including generalized event correlation, high throughput, low latency and the ability to detect intricate temporal or spatial patterns in sliding time windows.

- **Rule processor.** A rule processing capability determines the appropriate response to conditions that have been detected. It may be implemented in a scripting language, production rule engine (inference engine) or similar tool.

- **Analytics.** Platforms execute algorithms to compute key performance indicators (KPIs) and other insights. Many products have features for predictive analytics, scoring, machine learning or other advanced analytics (see "Extend Your Portfolio of Analytics Capabilities").

- **User dashboard.** Continuously refreshing, real-time dashboards are typically updated every second, every few seconds or every few minutes (see Note 2 for an explanation of the term "real time" in this context). Visualization features generally include charts, maps and tables of text or numbers. Virtually all platforms support standard browsers and mobile devices.

- **Notification manager.** These are facilities for sending email, text messages or other alerts.

- **Response manager.** Platforms have facilities to trigger responses in applications or devices. Some have full process orchestration or workflow engines, complete with user task-list management for coordinating resolution processes that include human actions.

- **Working data.** Platforms manage a working set of data in memory, and may persist data in an external file or database. In some cases, the data can also be accessed directly by external applications.

- **Application authoring and administration.** All platforms have features to support development, deployment and system operations.

Most platforms also have optional horizontal or vertical solution accelerators, although these are not required by the definition of the product. They may include specialized, domain-specific input/output adapters or predefined rules, KPIs, dashboards or problem resolution process templates.

Operations intelligence platforms are sourced in three ways:

1. As "packaged" platforms that include all the capabilities listed above in one COTS integrated suite (these are the products reviewed in this report and accompanying Toolkit).

2. As "piecemeal" platforms that leverage multiple point products (such as adapters, rule engines, business activity monitoring [BAM] or stream analytics engines, charting libraries, alerting capabilities, workflow and other products) that come from one vendor but are sold separately.

3. As "homegrown applications" built by writing custom code in conjunction with software tools from one or more sources.

Packaged platforms may be called, among other labels, operations intelligence platforms, stream analytics suites, event processing or CEP suites (see "Market Guide for Event Stream Processing"). BAM and stream analytics products that lack some of the capabilities listed above may be used as part of piecemeal platforms described below (see also Note 3). Compared to piecemeal platforms, packaged platforms generally provide lower time to solution and time to modification as business requirements change, thanks to their accelerators, tighter internal integration, and additional development and deployment features. For example, Axway provides reusable design patterns for a

handful of commonly occurring scenarios, and Vitria has a KPI builder tool that helps configure KPIs.

Piecemeal platforms are available from vendors such as FICO, Fujitsu, IBM, Informatica, Information Builders, Microsoft, Oracle, Red Hat, SAS, TIBCO Software and WSO2. They offer all of the capabilities listed above as separate products. The products have generally been tested to work together. However, piecemeal platforms are not as tightly integrated as the packaged platforms, and typically lack solution accelerators and other optional features. Nevertheless, they are a good approach for some situations, particularly if the component products are strong (we have not included piecemeal platforms in this research).

Homegrown operations intelligence applications are developed by combining custom code with open-source software or tools from multiple vendors. This appeals to data and analytics leaders who prefer to build rather than buy because their particular business needs are not addressed by any COTS-packaged platform, or because they want to trade off additional development time and effort to pay lower software license fees.

The general design pattern of an operations intelligence platform is also incorporated into some purpose-specific, vertically or horizontally specialized commercial software products in areas such as customer contact center monitoring, governance, risk and compliance (GRC), security information and event management (SIEM), SCM, truck fleet management and manufacturing. This report does not address purpose-specific products that cannot be easily applied in multiple domains. Manufacturing is a particularly active market for operations intelligence and is covered in other Gartner research (see "How to Reach Higher Maturity Levels in Your Manufacturing Operations," "Helping Manufacturers Move Beyond Visibility to Advanced Analytics" and "Market Guide for Manufacturing Execution System Software"). Another type of specialized operations intelligence platform called real-time visibility platform is used by logistics and transportation leaders to track orders and shipments (see "Supply Chain Brief: Real-Time Visibility Platforms Provide Transportation Leaders With Advanced Capabilities")

Operations intelligence platforms should not be confused with APM, algorithmic IT operations (AIOps), BAM, BI reporting, data discovery, automated business process discovery (ABPD), enterprise business process analysis (EBPA), stream analytics, iBPMS or business operating system (BOS) products, as each of these solves different business problems (see Note 3 and "Practical Ways to Make Business Operations More Intelligent").

Market Direction

Here, we list the primary forces driving demand in the operations intelligence platform market:

- **Increasing need for situation awareness** and the capability to sense and respond to operational issues in near real time.

- **Business requirements for holistic, "360 degree" visibility.** Most companies have some real-time information from dashboards and alerts provided by packaged applications and physical devices. However, these narrow "stovepipe" or "keyhole" views into individual applications and

devices do not show issues that involve multiple applications or devices (systems of systems) or end-to-end processes. In the absence of a holistic monitoring solution, such as an operations intelligence platform, processes and operations run largely "in the dark."

- **Preference to buy rather than build.** Many companies still build their own purpose-specific operations intelligence applications by combining custom code and off-the-shelf software from multiple vendors or open-source software. However, the trend is for more companies to use a COTS-packaged or piecemeal operations intelligence platform product from one vendor. This minimizes or eliminates the need for low-level programming and software integration.

- **The Internet of Things (IoT).** As companies incorporate physical devices and sensors in more aspects of their operations, they need software that is capable of combining operational technology (OT) data, such as sensor data, with IT business data.

However, sales of operations intelligence platform products are constrained by two key factors:

1. Many potential **buyers are still unaware** that this category of product exists.

2. Many **companies use data discovery products** (for example, Tableau), **Excel spreadsheets** or **BI reports** to provide a periodic window (hourly or daily) into their operational metrics. Although this approach lacks the up-to-the-minute visibility of continuous monitoring, and also lacks the pattern detection, connectivity, alerting and response management capabilities of an operations intelligence platform, it is "good enough" and "recent enough" for many situations, especially where users are accustomed to the limitations of this approach.

Trends:

- **Prebuilt horizontal/vertical solution accelerators.** The majority of sales in this market will continue to come from products that are sold with prebuilt solution accelerators (55% of revenue for the vendors in our survey is now associated with accelerators). However, general-purpose platforms will always be needed for unique business requirements and market niches for which there are no commercial accelerators. The large number of horizontal and vertical business situations will continue to create opportunities for smaller vendors that can bring domain-specific expertise and accelerators to bear on market subsegments that are too small for large vendors to address.

- **Purpose-specific tools.** There is some overlap of general-purpose operations intelligence platforms with purpose-specific tools in markets such as customer contact-center monitoring, GRC, manufacturing operations, SCM, SIEM and truck fleet management. In some cases, vendors or users will apply a general-purpose platform, such as those profiled in this report, in these domains to address business requirements that are not fulfilled by the purpose-specific tools. For example, several operations intelligence platform vendors mentioned in this analysis, including Axway, Every Angle Software Solutions, Kinaxis and OpsVeda, address certain SCM-related scenarios that are not directly addressed by mainstream SCM tool suites.

Although the operations intelligence platform market is gaining momentum, it is still in the adolescent phase of maturity, with a market penetration of less than 5% of the possible target

audience. Gartner predicts that it will take between five and 10 years to reach mainstream adoption (see "Hype Cycle for Business Intelligence and Analytics, 2016").

Market Analysis

In this section, we analyze several key operations intelligence platform market characteristics and trends. The comments, charts and tables are based on the analysis of survey data provided by representative vendors in this market. For more details on the survey, see the Representative Vendors section.

Vendors Continue to Derive the Majority of Their Revenue From Software Licenses and Maintenance

The vendors surveyed for this research garnered about 75% of their revenue from software licenses and maintenance in 2015 (up almost 5 percentage points from last year). The remaining 25% came from optional services, consulting and training for their clients (see Figure 2). Data and analytics leaders that acquire an operations intelligence platform should either use a third-party services provider or their own staff to implement the solution because the platform vendor typically only provides expertise that is limited to its own product.

Figure 2. Percentage of Revenue Derived From Software Licenses Versus Services in 2015
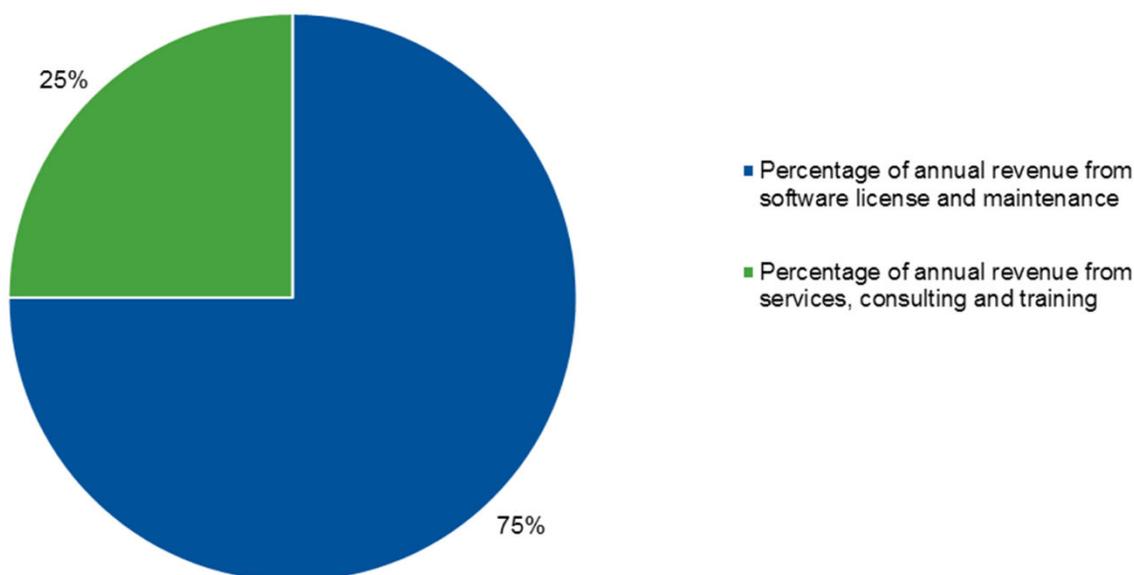

n = 20
Survey question: What percentage of your organization's revenue (for your operations intelligence platform) came from services, consulting and training versus software licensing and maintenance?

Source: Gartner (December 2016)

Most Vendors Sell Their Operations Intelligence Platforms With Solution Accelerators

When selecting a platform, data and analytics leaders should favor vendors with relevant solution accelerators and domain-specific expertise, if there are such vendors for the particular business scenario. Accelerators and expertise reduce the time to solution and the project risk. In this market, 55% of revenue comes from deals that include off-the-shelf vertical or application-specific accelerators (see Figure 3). Some vendors derive all of their revenue in deals that involve accelerators or when they cater specifically to one industry (such as healthcare, manufacturing or finance) or if they offer functional expertise in a certain domain (such as SCM, HCM or CRM). Other vendors position their products as general-purpose, industry-neutral tools.

Figure 3. Degree of Product Specialization
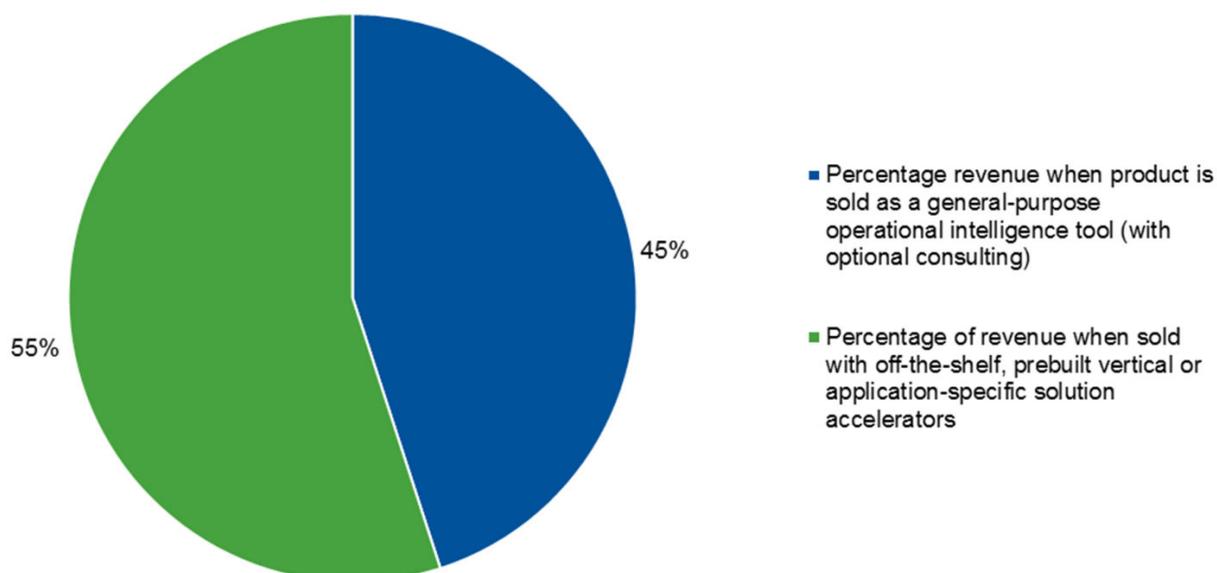
n = 18
Survey question: What percentage of your organization's revenue came from when your operations intelligence platform was sold as a general-purpose operations intelligence tool, versus sold with horizontal or vertical solution accelerators?
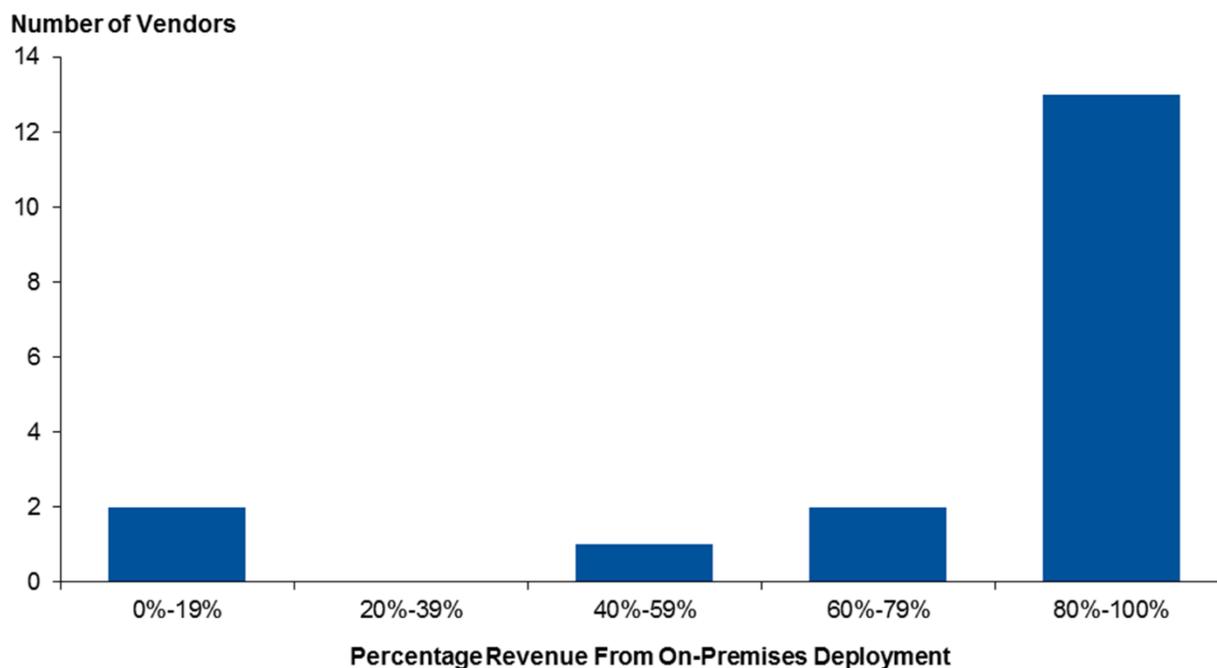
Source: Gartner (December 2016)

On-Premises Deployment Prevails

Most operations intelligence platforms run on-premises near the systems and devices that they are helping to manage. All of the vendors in our survey support on-premises deployment, and although most (72%) also have some cloud-based customers, only 17% of the vendors (three of 18 vendors) get a majority of their revenue from the cloud (see Figure 4). Data and analytics leaders whose application systems and devices are mostly or entirely operating on their own premises, or with high security concerns, should generally favor on-premises deployments. Other leaders who deal with widely distributed data sources and users, and who want to minimize their set-up and deployment

work, should favor cloud-based deployments. We expect more users will shift toward cloud-based deployment as their use of cloud-based applications and distributed devices increases, but on-premises work will predominate for the next five years or more.

Figure 4. Percentage of Revenue Derived From On-Premises Deployment

Number of Vendors

n = 18
Survey question: What percentage of your organization's revenue came from on-premises versus cloud deployment of your operations intelligence platform solution?
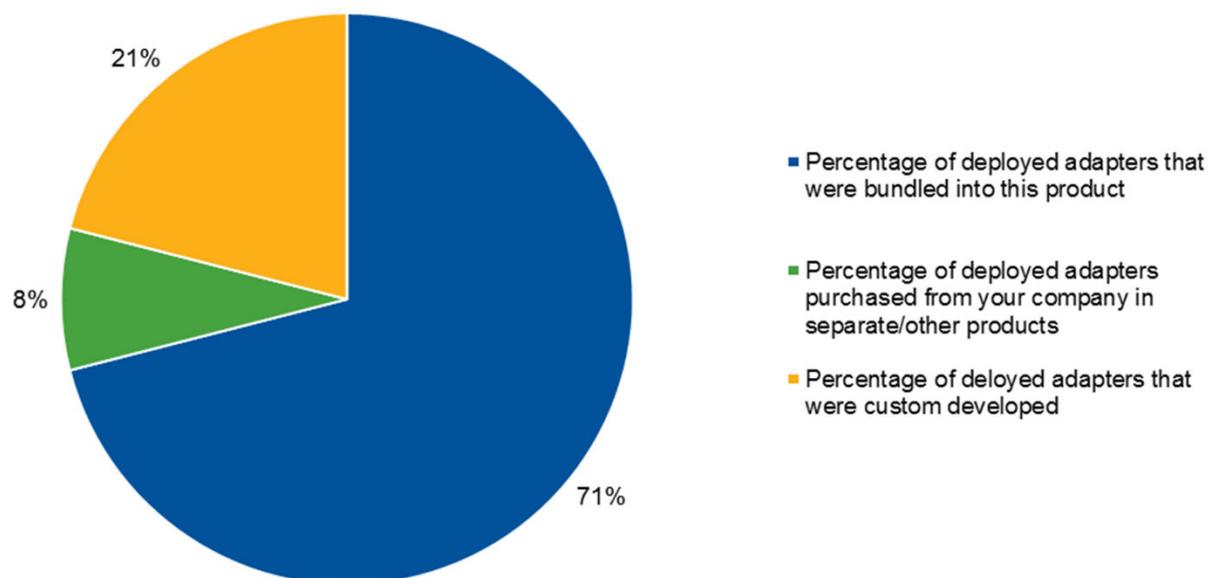
Source: Gartner (December 2016)

Most Projects Use Off-the-Shelf Input/Output Adapters Provided by the Vendor

Adapters are key capabilities of operations intelligence platform projects because they enable access to a variety of data types and data sources. The most common adapters are for RESTful APIs, MOM, files and databases. Some platforms also provide adapters for web services, packaged applications, or for sensor data in event streams or popular data repositories such as data lakes and data warehouses.

Data and analytics leaders should obviously leverage COTS adapters if they are available, and favor vendors that offer the relevant adapters in their selection process. According to our survey, more than 70% of the deployed adapters were bundled within the COTS operations intelligence platform offering (see Figure 5). Another 8% were provided by the vendor as separately-purchased products. However, 21% of customers required some custom coding to connect to data sources. Going forward, we expect vendors will continue to invest in more prebuilt adapters to make it easier for customers to connect to additional data sources.

Figure 5. Input and Output Adapters

- Percentage of deployed adapters that were bundled into this product
- Percentage of deployed adapters purchased from your company in separate/other products
- Percentage of deloyed adapters that were custom developed

n = 20
Survey question: How were the deployed input/output adapters in your operations intelligence platforms sourced?

Source: Gartner (December 2016)

Representative Vendors

The vendors listed in this Market Guide do not imply an exhaustive list. This section is intended to provide more understanding of the market and its offerings.

This section summarizes a selection of representative vendors and products in this market (see Table 1). Each product is a packaged platform that can be tailored for many kinds of applications in many industries. However, most vendors have domain expertise in certain industries or applications, so most of their sales are concentrated in a limited domain. These platforms are available on their own, not bundled into a larger application, cloud service, IoT platform, iBPMS or other software suite.

The vendors and products listed here are representative because they have achieved some level of visibility and traction in this market. Vendors are widely diverse in their capabilities, although all support the capabilities described earlier in this analysis. Gartner encourages decision makers to inspect the product under consideration for the detailed functionalities included in each of the core capabilities.

For each vendor listed in Table 1:

- Vendors have been listed in alphabetical order

- The "Top Industries/Vertical Alignment" are listed in order of decreasing share of revenue, and only industries that account for 10% or more of revenue are shown.

- The "Pricing/Licensing Model," "Top Industries (and) or Applications for Which Vendor Offers Off-the-Shelf Accelerators or Domain Specialization" and "Top Three Customer Applications (Drivers/Use Cases)" columns have been populated using the information that was reported to Gartner by the vendors in our survey.

Table 1. Representative Operations Intelligence Platforms and Their Details

Vendor	Operations Intelligence Platform Product(s)	Pricing/Licensing Model	Top Industries/Vertical Alignment	Top Industries and/or Applications for Which Vendor Offers Off-the-Shelf Accelerators or Domain Specialization	Top Three Customer Applications (Drivers/Use Cases)
Alpha Insight	iControl	Licensing model based on "price per target" or "price per KPI"* reported by end users	Nonmanufacturing: banking (retail, wholesale, capital markets, other)	Banking	Payments; risk and control; stability and transparency
Axway	Axway Decision Insight	Perpetual licensing model, price depends on the number of users and number of dashboards being supported	Manufacturing: consumer goods Nonmanufacturing: banking (retail, wholesale, capital markets, other); retail trade; government/public sectors	Banking; supply chain; healthcare; accounting	Customer view; process performance; workforce performance
Bentley Systems	AssetWise Connect Edition	Subscription (consumption model); perpetual license	Manufacturing: oil and gas; chemicals; process and resource industries Nonmanufacturing: transportation (airline, railroad, truck, maritime operations); power generation, water, waste water and other utilities; refrigeration	Water and waste utilities; oil and gas; power transmission and distribution	IT/OT/ET convergence; performance optimization; reduced operations costs
DevonWay	YourWay	Perpetual and subscription-based licensing options, based on the rate of use of the software	Manufacturing: oil and gas; chemicals; process and resource industries Nonmanufacturing: power generation, water, waste water and other utilities; government, public sector	Power generation; engineering and construction; government	Continuous improvement; bespoke/custom applications; work management

Vendor	Operations Intelligence Platform Product(s)	Pricing/Licensing Model	Top Industries/Vertical Alignment	Top Industries and/or Applications for Which Vendor Offers Off-the-Shelf Accelerators or Domain Specialization	Top Three Customer Applications (Drivers/Use Cases)
Every Angle Software Solutions	Every Angle Software Suite	Subscription-based licensing, depending on the number of users and activated prebundled content	Manufacturing: consumer goods; industrial discrete; oil and gas, chemicals, process and resource industries Nonmanufacturing: banking (retail, wholesale, capital markets, other)	Fashion: apparel and footwear; aerospace and defense	Data quality control; process control; process performance control
Guavus	Guavus Reflex	Combination of perpetual, annual and limited-duration** licensing	Nonmanufacturing: telecommunications	Wireless telecommunication; cable/multiple-system operator (MSO); wireline (fixed) telecommunications	Real-time prescriptive operations; alarm prioritization and correlation; DevOps and agile change management
Icaro Tech	Advanced Dashboards, Dash Analytics	Fixed or floating user licenses for on-premises option, fixed licenses for SaaS Pricing depends on the number of users, the number of servers and the number of data sources	Nonmanufacturing: telecommunications; energy	Telecommunications; energy	Network monitoring; operations monitoring; service level monitoring
Intelligent In-Sites	Intelligent In-Sites	Either perpetual (with annual maintenance and support) or a subscription license model Pricing will depend on modules chosen, number of users and number of "tags"	Nonmanufacturing: healthcare	Healthcare	Patient flow (outpatient clinics, acute care inpatient units, emergency departments); participating provider-level management; asset utilization reporting and analytics

Vendor	Operations Intelligence Platform Product(s)	Pricing/Licensing Model	Top Industries/Vertical Alignment	Top Industries and/or Applications for Which Vendor Offers Off-the-Shelf Accelerators or Domain Specialization	Top Three Customer Applications (Drivers/Use Cases)
Interfacing Technologies	Enterprise Process Center	Support for various licensing options including an on-site perpetual and an on-site subscription model Options also include a cloud-hosted perpetual plan and a SaaS pricing plan	Manufacturing categories: life sciences; aerospace and defense Nonmanufacturing categories: government, public sector; insurance; telecommunications	Audit; SAP apps; Microsoft Dynamics apps	Process performance indicators/process health monitoring; key risk indicators — operational risk monitoring; strategy/objective and operations
Kinaxis	RapidResponse	Subscription-based licensing model depending on the number of requested applications and number of users	*Not provided by the vendor*	High-tech/electronics; life sciences; variant and planning BOM	End-to-end supply chain visibility; sales and operations planning; mismatch detection between plan and actuals
Omnivex	Moxie	Perpetual licensing model based on the number of output screens.	Manufacturing: automotive; high tech Nonmanufacturing: banking (retail, wholesale, capital markets, other); transportation (airline, railroad, truck, maritime operations); government/public sectors	Transportation (air, rail, road); manufacturing; education (college and university)	KPI dashboards; real-time messaging and notifications; field services
OpsVeda	OpsVeda	Subscription model, licensed by processes, named user counts or the volume of data	Manufacturing: high tech; other manufacturing (apparel/footwear); life sciences	Apparel, footwear, fashion and retail; high tech; life sciences	Operations orders/logistics/supply; predictive maintenance; supply chain visibility
Oversight	Insights On Demand	Subscription-based pricing model that is usage-based and depends on the volume of data analyzed,	Manufacturing: high tech; consumer goods; energy Nonmanufacturing: healthcare;	Across industries: procure-to-pay (P2P)/accounts payable (AP); travel and	T&E fraud and misuse; P2P fraud and misuse; FCPA for T&E and AP

Vendor	Operations Intelligence Platform Product(s)	Pricing/Licensing Model	Top Industries/Vertical Alignment	Top Industries and/or Applications for Which Vendor Offers Off-the-Shelf Accelerators or Domain Specialization	Top Three Customer Applications (Drivers/Use Cases)
		the number of insights and the frequency of analysis	government, public sectors; power generation, water, waste water and other utilities	expense (T&E); procurement cards; Foreign Corrupt Practices Act (FCPA)	
SAP	SAP Operational Process Intelligence	Available within the SAP Intelligent Business Operations solution, which is licensed by cores	Manufacturing: consumer goods; industrial discrete Nonmanufacturing: power generation, water, waste water and other utilities; telecommunications; transportation (airline, railroad, truck, maritime operations)	*Not provided by the vendor*	Procurement operations; claims processing; order processing
Software AG	Digital Business Platform	Various licensing options available ranging from per user, per core, data instances, perpetual or limited duration depending on individual project requirements	Manufacturing: oil and gas, chemicals, process and resource industries Nonmanufacturing: banking (retail, wholesale, capital markets, other); transportation (airline, railroad, trucks, maritime operations); telecommunications	SAP (Sales & Distribution and Materials Management); sales; finance	Supply chain optimization; manufacturing IoT; financial services — compliance and trading
Space-Time Insight	Situational Intelligence Suite (SI)	Perpetual or limited duration license Scaling is based on the number of users and volume of data Cloud deployments are also offered on a subscription basis	Nonmanufacturing: power generation, water, waste water and other utilities; transportation (airlines, railroad, trucks, maritime operations); other	Utilities; transportation; logistics	Asset analytics; technical/nontechnical losses; workforce scheduling

Vendor	Operations Intelligence Platform Product(s)	Pricing/Licensing Model	Top Industries/Vertical Alignment	Top Industries and/or Applications for Which Vendor Offers Off-the-Shelf Accelerators or Domain Specialization	Top Three Customer Applications (Drivers/Use Cases)
Splunk	Splunk Enterprise, Splunk Cloud, Splunk Light	Perpetual and annual term license, based on maximum daily aggregate volume of uncompressed data indexed (expressed in gigabytes per day) Splunk Cloud is available on both a monthly and annual subscription basis	Retail; finance; healthcare	*Not provided by vendor*	IT operations; security compliance and fraud; application delivery
Vitria	Vitria OI Platform	Vitria supports perpetual, SaaS and term-based licensing models where the pricing varies depending on the number of cores Vitria also supports value-based pricing models***	Nonmanufacturing: telecommunications; power generation, water, waste water and other utilities; retail trade	Process discovery and tracking apps; supply chain; order management	Operations command center; supply chain/order management command center; utilities smart grid management
VizExplorer	VizExplorer Platform	Perpetual and subscription licensing options are available Subscription term (monthly or annual) is typically three or five years Pricing varies depending on various factors but primarily is based on the number of instances/locations, users, and data sources Enterprise License Agreement options are also available, where VizExplorer promises access to all current and future products for five years	Manufacturing: industrial discrete Nonmanufacturing: other non-manufacturing (gaming, casinos and sports & entertainment venues)	Gaming (casinos); sports & entertainment; manufacturing and construction	Real-time manual and autodispatch of service technicians for slot machine and player maintenance; real-time locating systems (RTLS) for safety and security; real-time two-way messaging to sales teams and customers based on variety of player actions in casinos

Vendor	Operations Intelligence Platform Product(s)	Pricing/Licensing Model	Top Industries/Vertical Alignment	Top Industries and/or Applications for Which Vendor Offers Off-the-Shelf Accelerators or Domain Specialization	Top Three Customer Applications (Drivers/Use Cases)
XMPro	XMPro Intelligent Operations Monitor (IOM)	Subscription-based pricing, which varies depending on data volume and ROI	Manufacturing categories: oil and gas, chemicals, process and resource industries; industrial discrete; other manufacturing Nonmanufacturing categories: power generation, water, waste water and other utilities	Asset management; oil and gas; mining	Asset performance management; predictive operations; event response solutions

*Price per target/price per key performance indicator (KPI) is a form of outcome based (or value-based) pricing where the customer will work alongside the vendor to define its KPIs or other target outcomes upfront. The vendor (and its professional services teams) will then charge the customer based on the successful attainment of these measurable outcomes/KPIs.
**An annual license is usually a subscription-based license where the customer is charged a platform fee upfront for a year. This usually includes maintenance and support. After the annual subscription is over the vendor asks the client to renew the annual subscription for the same or slightly higher charge.
The limited duration license or term license is similar to an annual subscription license except that the term or length where the customer has full right to the software could be less than a year or even not in multiples of one year. Some companies use this to allow their prospects to conduct small proofs of concept (POCs) (usually in development [Dev] environments) for exploratory purposes on new data types or new data sources.
***Value- (or "outcome-") based pricing models are gaining popularity among some data and analytics leaders since they aim to remunerate software (or services) vendors based on predefined and predecided SLAs/targets or "outcomes" as determined collectively by the customer and the vendor at the beginning of the contract. One example of this could be that the operations intelligence platform vendor and the customer agree that, by the end of the first-year subscription, the customer will derive a minimum of 20% cost savings due to the sense and respond capabilities of the operations intelligence platform, leading to smarter resource allocation.

Source: Gartner (December 2016)

Market Recommendations

Data and analytics leaders who need to improve their response times, accuracy and operational effectiveness should acquire an operations intelligence platform or an equivalent set of capabilities provided through similar software products. Operations intelligence does more than provide alerts and visibility into what is happening. It also provides the means to take action in response to situations that require attention by invoking other applications, triggering business processes and supporting collaboration among decision makers.

Recommendations for data and analytics leaders:

- Review Gartner's research to understand the concepts and best practices in operations intelligence (see "Commercial Operational Intelligence Platforms Are Coming to Market," "Four Lessons From a Successful Operational Intelligence System," and "Case Study: Learn Some Lessons From TXU Energy's Operational Intelligence System").

- Use an operations intelligence platform to provide monitoring, alerting and interactive decision-making capabilities on top of a set of applications or devices that may be new, or retrofit on those already in production. This may span systems of systems that involve multiple business units or disparate application packages.

- Develop plans to train business analysts, process modelers and solution architects on where and how to implement and leverage continuous monitoring systems.

- Compare packaged operations intelligence platforms profiled in this Market Guide with piecemeal operations intelligence platforms that can be assembled by combining multiple software products from one vendor.

- Use operations intelligence platforms to complement and support — not replace — incumbent BI, reporting and analytic solutions to improve the overall visibility of the organization's processes and business operations.

- Don't buy an operations intelligence platform if you have already decided to buy an iBPMS that includes similar operations intelligence features. iBPMSs are used to implement new (or re-engineered) business processes, including BPM-based case management applications (see Note 3).

- Use the additional information provided in the companion research, "Toolkit: Operations Intelligence Platform Vendor Selection" as an input to shortlist vendors based on their vertical industry, application type, analytics and rule-processing capabilities, natively supported interfaces and geographic region.

Gartner Recommended Reading

Some documents may not be available as part of your current Gartner subscription.

"Toolkit: Operations Intelligence Platform Vendor Selection"

"Magic Quadrant for Intelligent Business Process Management Suites"

"Market Guide for Enterprise Business Process Analysis"

"How to Move Analytics to Real Time"

"Develop Good Decision Models to Succeed at Decision Management"

"Add Event Stream Processing to Your Business Analytics Repertoire"

"Four Lessons From a Successful Operational Intelligence System"

"Case Study: Learn Some Lessons From TXU Energy's Operational Intelligence System"

"How a Business Operating System Can Guide CIOs to Digital Business Success"

"Eight Dimensions of Process IQ Determine How Smart Your Process Needs to Be"

"Supply Chain Brief: Real-Time Visibility Platforms Provide Transportation Leaders With Advanced Capabilities"

Evidence

The fact base reported in this research is derived from:

- A vendor survey conducted in August and September 2016

- Discussions and case study research with Gartner clients

- Analysis of related markets, particularly the intelligent BPMS, stream analytics and IoT platform markets

- Data on market size and growth rates for real-time analytics and non-real-time analytics is based on "Forecast: Enterprise Software Markets, Worldwide, 2013-2020, 2Q16 Update" with assumptions on the real-time/non-real-time split by segment

[1] M.R. Endsley. "Toward a Theory of Situation Awareness in Dynamic Systems." Human Factors. 1995.

Note 1 Operational Intelligence Platforms Are Operations Intelligence Platforms

Previous Gartner research called these products "operational intelligence platforms." We have changed "operational" to "operations" to align the terminology with manufacturing operations intelligence.

Note 2 Explanation of the Term "Real Time"

Most vendors and business people use the term "real time" to describe what is technically only near real time or business real time. This report adopts this common usage. Operations intelligence platforms typically operate in near real time because they update a dashboard, send an alert or

trigger an automated response within 15 minutes or less of receiving new information. To the best of our knowledge, none of these products support real time in an engineering sense (see "How to Move Analytics to Real Time").

Note 3 Positioning Operations Intelligence Platforms With Other Products

Operations intelligence platforms are different from the following products:

- **Application performance monitoring (APM)** (see "Magic Quadrant for Application Performance Monitoring Suites") and **Algorithmic IT operations (AIOps) platforms** (see "Innovation Insight for Algorithmic IT Operations Platforms") give IT staff visibility into application, system and network issues. By contrast, the primary audience for operations intelligence platforms is outside of the IT department and mostly deals with issues that do not originate in the IT infrastructure. However, some APM and AIOps vendors, such as Inetco Systems, Nastel Technologies, New Relic, and Tango/04, support some business scenarios, thereby functioning as operations intelligence platforms. Splunk also derives most of its business from this market but explicitly targets business-oriented operations intelligence, so it is included in this report.

- Some products that originated as **BAM** platforms qualify as operations intelligence platforms because they have the required capabilities described in this report. Of these, most lack solution accelerators and have limited rule processing and response management features. However, some BAM products are not categorized as operations intelligence platforms because adapters are not offered as part of the product suite (they must be acquired elsewhere or custom written) or they do not include response management or alerting capabilities. Nevertheless, these products can be used as the basis for piecemeal operations intelligence platforms by complementing them with additional software.

- **Business intelligence (BI) reporting** and **data discovery tools** typically do not have native alerting facilities, extensions for understanding and monitoring multistep business processes with explicit process models, facilities to trigger responses to threats or opportunities, or workflow or process orchestration features for issue-resolution processes. Traditional BI and data discovery products are designed to operate on snapshots of data and do not have adapters to read streaming data. They are generally used for periodic reports (for example, hourly, daily or weekly) or user-driven, interactive data discovery rather than for continuous monitoring. Operations intelligence platforms should be used to complement these products because they address different purposes.

- Business process monitoring tools, including **automated business process discovery (ABPD)** products, have some overlap with operations intelligence platforms. However, most only deal with process events (events related to the beginning and end of activities or events related to activities that are executed within one process). Similarly, **enterprise business process analysis (EBPA) tools** ("Market Guide for Enterprise Business Process Analysis") have some overlap with the process monitoring capabilities of operations intelligence platforms. However, in the absence of analytic capabilities related to other business metrics, neither of these are general-purpose operations intelligence platforms.

- A **stream analytics** or event stream processing (ESP) system (see "Add Event Stream Processing to Your Business Analytics Repertoire"), such as a distributed stream computing platform (DSCP) or complex-event processing (CEP) platform, can be used as the core of a piecemeal operations intelligence platform because of its robust event correlation and pattern detection capabilities. However, some stream analytics products lack bundled adapters, rule processors, alert managers or response managers, so they are subsets of operations intelligence platforms.

- **Intelligent business process management suites (iBPMSs)** are primarily intended to host and manage new or re-engineered business processes in which the activities are related to each other by being part of an explicitly modeled business process or a set of cases (case management). By contrast, operations intelligence platforms are intended to monitor, but not actively implement, activities and processes. Operations intelligence platforms are retrofit on systems that are already in use, or are overlaid on multiple heterogeneous applications, devices, processes or external event data sources that may or may not be part of the same modeled business process or case. However, iBPMSs include BAM capabilities and may have all of the features of an operations intelligence platform, so if a project uses an iBPMS, it generally does not need a separate operations intelligence platform (see "Magic Quadrant for Intelligent Business Process Management Suites"). Two products in this report — Vitria OI Platform and XMPro Intelligent Operations Monitor — provide most or all of the features of an iBPMS, but have specialized capabilities that are designed for operational intelligence and are positioned as operations intelligence platforms in their sales and marketing.

- A **business operating system (BOS)** (see "How a Business Operating System Can Guide CIOs to Digital Business Success") is a superset of an operations intelligence platform. In addition to operations intelligence, a BOS also supplies tools for business modeling, business operating modeling, enterprise performance management and longer-range decision making. For example, IFS has developed a BOS that incorporates the former VisionWaves operations intelligence platform product along with other features. A BOS aligns externally focused, customer-driven interactions with internally focused business operations. It can show and measure this alignment, and deliver real-time feedback on the value of upgrading an enterprise application or pursuing a digital business transformation or other initiative.

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