

Transmission and Distribution Utilities Context: 'Magic Quadrant for Enterprise Asset Management Software'

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T&D companies often lack insights on the benefits of best-of-breed and ERP-suite-based EAM software, which may delay success in an asset management initiative. This research helps CIOs evaluate EAM solutions specific to the T&D sector, and provides insight on the current state of the market.

Market Differentiators

(Note: The term "transmission and distribution" as used in this document includes electricity transmission and distribution, gas transmission and distribution, and water/wastewater.)

Enterprise asset management (EAM) is a mature software market that historically has experienced low-single-digit growth and a low churn rate. For transmission and distribution (T&D) companies, this is the result of a combination of internal and external factors, including:

- Cost justification/budget allocation
- Significant investment and familiarity in current solutions
- Availability of industry-specific extensions
- Extensive customizations and integrations with other systems
- Maturity of technology
- A switch in focus to asset performance management (APM) solutions

Some T&D companies have more than one EAM system, while others have standardized on one enterprisewide system.

The focus of this software segment is to keep plant, equipment facilities and linear (pipe or wire) assets available, with minimal downtime and at the lowest cost to maximize revenue and service. Support of legacy systems has become increasingly difficult due to:

- Years of substantial customizing

- The profusion of data
- Closed platforms
- Emergence and proliferation of smart devices, sensors and other technologies

Many T&D utilities are considering upgrading or reinvesting in EAM software. With increased concerns about aging assets, the aging workforce and network reliability, regulators are likely to decide favorably on cost recovery for these investments. Also, T&D utility companies are seeking maximum returns on their assets, so operational asset optimization and life extension becomes more important. To avoid penalization from regulators due to negative rate case adjustment, utilities must be able to justify these projects with defined cost and service improvements. (Service and reliability improvement to end-user customers are not necessarily required but are viewed favorably.)

T&D utility companies should consider adoption of an EAM solution that fits their particular operational needs and organization requirements. While a comprehensive EAM solution would deliver value for some T&D utilities, all the capabilities and functionalities may not be needed for most organizations, and the value should be weighed against the investment and total cost of ownership. The most relevant use case for EAM solutions in this industry subsector is for plant and equipment management. EAM products provide maintenance support for:

- Fixed plants, such as substations and water plants
- Linear distributed assets, such as power lines and distribution supply pipe
- Fleets of equipment, such as service equipment, transformers, or solar or wind farms

While the utility industry has lagged in fully embracing cloud for EAM, it is slowly accepting cloud delivery models for aggregating and analyzing operational technology (OT) data to support asset management. Most utility CIOs are interested in cloud, but they are challenged with concerns such as capital bias, regulatory treatment, skill sets and cybersecurity. In addition, we have seen an increased interest in cloud/SaaS delivery in smaller utilities, which may be due to differences in business structures of government-owned and municipal utilities versus investor-owned utilities (IOUs).

The procurement process for public-sector entities (that is, municipals, IOUs, co-ops and government utilities) typically dictates T&D buying behaviors for EAM solutions. Industry and regional regulations, as well as fiscal budgets, typically have the most impact. Based on Gartner insights, to date, most T&D companies are more likely to invest in best-of-breed individual site products rather than an enterprisewide solution or a suite product. And they sometimes separate out equipment maintenance planning and work management into two separate products.

T&D utilities are progressing on their digital transformation journey. With the goal of becoming a data-driven enterprise and reducing operating expenditure (opex), organizations are utilizing technologies such as drones, lidar and augmented reality/virtual reality (AR/VR) to more efficiently monitor and analyze the condition of their assets and rights of way. Additionally, T&D utilities' investments in other enterprise applications, such as mobile workforce management (MWM) and APM, will be different from other industries' investments. All this creates a new landscape of options

for CIOs to better manage the total business (assets, maintenance workforce and back office), giving them more control of cost and outcomes.

The static characteristics of many T&D assets drive more long-term planning. Thus, there is not as much midterm APM-driven analytics needed for direct forecasting and equipment failure. For example, transformers are not as dynamic as monitoring rotating equipment. T&D utilities also require closer integration to OT system infrastructure, and grid management tools providing a link to the actual network.

Utility CIOs should build the right business case for EAM by assessing the potential benefits of the solution in the context of IT implementation cost and complexity, business process impact, change management, and business readiness. EAM has the potential to provide an additional layer of data and analytics through offering advanced capabilities such as reliability-centered maintenance (RCM) and predictive or prescriptive analytics for improved decision making.

Considerations for Technology and Service Selection

Component (best-of-breed) EAM products suitable for T&D companies are a specialized area of software. Some suite vendors also actively market their EAM modules as stand-alone offerings and market them as specialized maintenance solutions. (Other suite vendors may offer integrated packages as part of the ERP suite, and so have a market for EAM that is limited to their own customer base.)

In the T&D utility sector, CIOs will need to evaluate their application portfolio to understand how EAM solutions will fit in with a system architecture, business design and portfolio rationalization strategy. Key integrations worthy of specific attention include geographic information system (GIS), customer information system (CIS), and outage management and work scheduling systems that are often included in both customer service and asset operations business processes.

EAM solutions in T&D utilities should include:

- Asset management and materials management (for example, parts inventory and purchasing) functionality.
- Mobile workforce capabilities or partnerships.
- Compatible unit capabilities.
- Outage management system integration.
- Distribution management system integration.
- Asset performance management (APM) integration.
- Linear asset management.
- Integration with native or third-party ERP to support improvement in supply chain management and procurement, particularly for stores.

- GISs to support improvement in network-level risk assessment, scoring and work prioritization.
- CISs to support customer service.
- Capital construction planning (based on compatible units) defining linear assets and geographic locations.
- Long-term maintenance, project and work schedules (integration with GIS).
- Short-term maintenance, client requests and failure recovery work schedules. Functionality must include distributed asset support, with particular importance attached to:
 - Linear asset structures
 - Remote locations of assets
 - Short-term work
 - Reactive or failure-triggered work
 - Condition and performance monitoring
 - Preventive maintenance
- Construction capability for network extensions. Particular emphasis is placed on the planning and execution processes.

Notable Vendors

Vendors included in this Magic Quadrant Perspective have customers that are successfully using their products and services. Selections are based on analyst opinion and references that validate IT provider claims; however, this is not an exhaustive list or analysis of vendors in this market. Use this perspective as a resource for evaluations, but explore the market further to gauge the ability of each vendor to address your unique business problems and technical concerns. Consider this research as part of your due diligence and in conjunction with discussions with Gartner analysts and other resources.

An asterisk (*) signifies that the vendor was not included in the related Magic Quadrant because it did not meet all our inclusion criteria for general EAM. However, its offering is relevant and remains popular within the T&D EAM market.

ABB (Ellipse)

ABB is an approximately \$34 billion power and industrial automation company based in Zurich, Switzerland. The Ellipse product focuses on utilities, with T&D utilities representing a sizable customer base and with the majority being electric T&D clients.

Ellipse 8.9 is the latest release and supports all core EAM functionality, including linear assets support in the product. The product is particularly well-suited for large electrical T&D deployments and small to midsize water/wastewater and gas deployments. The International Organization for

Standardization (ISO) 55000 standard is supported. ABB's top service providers for utilities include TCS and Wipro.

T&D utility organizations looking for deployment flexibility should include ABB (Ellipse) in their shortlist.

IBM

IBM is an approximately \$80 billion global technology and consulting corporation with headquarters in Armonk, New York. Maximo is deployed in a broad cross-section of asset-intensive subsectors around the globe, including utilities.

Maximo 7.6 is the latest major release of the product and provides support for linear assets and calibration in addition to the full set of core EAM functionality. IBM also offers several industry solutions with enhanced functionality, such as Maximo for Utilities, which includes Compatible Unit Estimating, Smart Meters as Assets, Revenue Meter Sampling and Spatial. The products align with both Publicly Available Specification (PAS) 55 and ISO 55000 compliance, with customers who have certifications. Esri GIS interface is available in IBM's EAM product. The top service providers for Maximo include Cohesive Solutions and EY.

T&D utilities looking for a broad range of EAM functionality should include IBM Maximo in their shortlist.

IFS

IFS is a \$430 million global enterprise application software vendor based in Linköping, Sweden. IFS sells its products to midsize to large enterprises in a wide range of industries, including utilities. T&D is a primary industry focus, with both large and small deployments.

IFS Applications 9 is the latest release of the IFS ERP/EAM product and has capabilities for fleet and linear assets, compatible units, GIS integration, and field workforce scheduling. The product offers general ERP utility applications (touch apps) used in an EAM context. Utility applications are developed on native platforms, or as HTML5 for cross-platform availability, and can be published in various app stores. Apps include Audit Companion, Time Reporting, Expense Reporting, Nonconformance Reporter, ERP Notifications (including authorizations) and Quick Reports. IFS's top three service providers for utilities are Novacura, Affecto and Tech Mahindra.

T&D utilities looking for a strong presence in European geographies should include IFS in their shortlist.

Infor

Infor is an approximately \$3 billion global enterprise application software vendor based in New York. Infor has broadened its EAM product focus across multiple industries to include water/wastewater utilities specifically, with a limited secondary focus on electrical T&D and gas distribution.

Infor EAM 11.3.1 is the latest release. It supports core EAM functionality such as planning, work orders, inventory and procurement. Support for linear assets was added in the 1Q16 release. Infor has built out specific capabilities to support ISO 55000, with customer success in becoming certified. Infor's top three service providers for utilities are Information Systems Engineering, Watermark Solutions and Guide Technologies.

T&D utilities looking for a strong presence in water/wastewater should include Infor EAM in their shortlist.

Infor Public Sector*

Infor is an approximately \$3 billion global enterprise application software vendor based in New York. Infor Public Sector (originally acquired from Hansen) is defined by client type (the public sector, particularly water authorities) rather than functional process.

Infor Public Sector 8.4 is the latest version of the product. In addition to core EAM functionality, it supports linear assets, spatial integration and mobile functionality. The product aligns with the ISO 55000 standard. Infor Public Sector's top service providers specific to utilities include Information Systems Engineering, Watermark Solutions and Guide Technologies.

Government entities and T&D utilities looking for leak detection and conservation management capabilities should include Infor Public Sector in their shortlist.

IPS Intelligent Process Solutions*

IPS is a privately held company headquartered in Bavaria, Germany, that specializes in electrical power utilities.

IPS-Systems include IPS-Energy, IPS-SmartGridDI and IPS-EPIS, all of which are the latest release of the product. There are three modular options (Core, Executive and Enterprise). The functionalities offered include asset management, APM, intelligent electronic device (IED) configuration management, maintenance concept, planning, work ordering, work execution, maintenance analysis, and mobile workforce management, with mobile access to technical documentation and a geolocation interface. The products offer comprehensive types, models and analytical libraries shared across the entire customer base. The products are aligned to ISO 55000 and PAS 55 standards, as well as others in the industry. Specialized service providers for IPS-Systems are Siemens, Schneider Electric and Atos.

T&D utilities looking for a product tailored to an engineering focus on physical characteristics should consider IPS-Systems in their shortlist.

Mainsaver

Mainsaver is relatively small (\$10 million to \$20 million), independent, stand-alone EAM software vendor based in San Diego. Mainsaver targets small to midsize enterprises with a small presence in water/wastewater, and it is particularly well-suited for small to midsize deployments. It is primarily focused on North American markets, but it has a growing partnership network outside the continent.

Mainsaver 12.9 is the latest version and supports core EAM functionality, including planning, work orders, inventory and procurement. The company did not provide Gartner with the names of its specific utility service providers at the time of data gathering for this document.

T&D utilities looking for a strong presence in water/wastewater should include Mainsaver in their shortlist.

Oracle

[Oracle](#) is an approximately \$38 billion global technology company with headquarters in Redwood Shores, California. Oracle Utilities Global Business Unit is based in San Francisco but in a separate location from the main Oracle headquarters. The product supports all subsectors of T&D and includes municipalities.

Oracle Work and Asset Management (WAM) 2.2 is the latest version of the product and supports the full set of EAM functionality, as well as linear assets. Oracle also provides Operational Device Management (ODM), a product to manage the maintenance of intelligent devices in the field (including smart meters) via WAM. It offers several industry extensions: Oracle Utilities Operational Device Management (ODM) 2.2 and Oracle Utilities Operational Device Cloud Service (ODCS). T&D asset extensions include Oracle Utilities Construction and Work Management (WAM 2.2) and Oracle Utilities Work and Asset Cloud Service (WACS). Fleet management extensions include Oracle Utilities Work and Asset Management Enterprise Edition (WAM 2.2) and Oracle Utilities WACS. Oracle supports the ISO 55000 standard and interfaces with GIS, investment planning and Oracle Utilities Analytics. Oracle acquired Opower (a cloud-based energy software company) in 2016. Its top three utility service providers are Infosys, Accenture and EY.

Municipalities and Oracle platform T&D utilities should include Oracle in their shortlist.

Ramco Systems

[Ramco Systems](#) is part of the Ramco Group headquartered in Chennai, India. The vendor provides ERP and human capital management (HCM) suites, along with a maintenance, repair and operations solution in several industries. These industries include T&D utilities, with deployments in electrical T&D and water/wastewater. Market penetration is mainly in India, North America, the Middle East, Australia and Asia.

Ramco Enterprise Series 5.3 is the latest version. It supports EAM within a broad ERP software package. The product is aligned with the ISO 55000 standard and handles most implementations directly.

T&D utilities looking for a cloud solution for small to midsize deployments should include Ramco Systems in their shortlist.

SAP

SAP is an approximately \$21 billion global enterprise application software vendor based in Walldorf, Germany. SAP offers a complete ERP suite designed for a cross section of industries, including T&D utilities. Its EAM customers are located in every major region of the world.

SAP is transitioning its ERP customer base from ECC 6.0 to S/4HANA (on-premises or cloud). Both products support all core EAM functionality as well as extended functionality, such as calibration, linear assets and compatible units. Some SAP EAM clients have the ISO 55001 certification. SAP did not provide Gartner with the names of its utility-specific service providers at the time of the survey for this document.

T&D utilities using SAP ERP or looking for an ERP-suite-based EAM should include SAP's EAM product in their shortlist.

Schneider Electric

Schneider Electric is an approximately \$29 billion electrical distribution and industrial automation company with headquarters in Paris. Schneider Electric's Avantis EAM product gains approximately half its revenue in a diverse set of energy and utility subsectors (particularly hydro and water/wastewater), with a small presence in electrical T&D and gas distribution. Schneider has a global presence, with 28% of revenue originating in North America.

Avantis.PRO 6.0 is the latest version of the product. It supports all core EAM functionality, as well as extended functionality, such as linear assets and fleet management. Schneider offers IntelaTrac as an integrated operator rounds product to Avantis that enables operators to initiate a work order based on an inspection finding. The ISO 55000 standard is supported. Schneider did not provide Gartner with the names of specific T&D utility service providers at the time of data gathering for this document.

T&D utilities looking for a product with strong OT links should include Schneider Electric in their shortlist.

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