Power and Utilities Grid Management Buyers Guide

Software Provider and Product Assessment

ISG Research

Power and Utilities Grid Management

The global population is projected to reach 9.7 billion by 2050, from 8 billion in 2023, fueling efforts to meet growing energy needs. The demand for all types of energy sources—including traditional fossil fuels such as coal, oil and natural gas, along with nuclear and renewable sources like solar, wind and hydropower—has introduced a spectrum of innovative energy-delivery technology that must be continuously operated and governed. Now intertwined with governments, the public and the private sector, these systems require physical and digital protection to ensure the continuity of power and utilities everywhere on the planet.

Global trends are changing how regions and countries transform energy infrastructure. Impacts include the steadily increasing demand for renewable energy and sustainability, government regulations, the development of smart cities, geopolitical situations and fossil fuel prices. The decarbonization and clean energy transition is driven by significant legislative support and investments to reduce emissions while maintaining market prices that support consumer and business economics.

> **Global trends are changing how regions and countries transform energy infrastructure.**

This requires the power and utilities industry to keep pace with functional needs, such as:

- Focusing on grid transformation. For reliability and flexibility, especially in the face of increasing weather and climate-related challenges, advanced delivery mechanisms such as virtual power plants and microgrids are essential for supporting cleaner and more reliable energy sources.
- Managing supply chain resilience. Accessibility of critical components such as steel, aluminum and transformers is key to minimizing disruptions, developing domestic supply chains and reducing dependency on foreign materials.
- Incorporating clean and renewable energy sources. These energies are growing in utilization, creating new demand for technologies to support them and the intertwining of operations with traditional sources.
- Keeping pace with technology. Artificial intelligence and smart infrastructure with meters and grids play a significant role in the integration of centralized and alternative energy sources to ensure flexibility in meeting supply and demand.

The power and utilities industry is in a state of flux, with demand for electricity on the rise. Driven by economic growth and electrification trends, the path forward is peppered with challenges and opportunities. The clean energy transition is a major driver of renewables, particularly solar and wind, and is projected to surpass coal as the leading source of global electricity generation.

The grid, however, is struggling to keep pace with the changing energy landscape. Aging infrastructure, coupled with the integration of distributed energy resources like rooftop solar, presents reliability concerns. Transformation efforts are underway but require significant capital investment, which is further complicated by rising interest rates and cycles of inflation that impact the cost of fuel and resulting prices. Regulatory frameworks pressure the balance between ensuring grid resilience and keeping energy affordable.

The power and utilities industry relies heavily on a vast network of infrastructure and equipment, including power plants, substations, transmission lines and distribution grids. The technology to support power and utilities is always in operation, but in some ways also inevitably in crisis. Ensuring consumer consumption across traditional power grids and equipment requires continuous support.

Central to the power grid is the generation, distribution and transmission of energy in one of the world's most complex infrastructures. The grid requires connection and continuity and serves as the connective tissue of the energy ecosystem, ensuring that electricity is delivered where needed. Additionally, the grid ensures continuity by maintaining a steady, uninterrupted flow, even as supply and demand fluctuate. The increasing complexity of energy challenges, coupled with the aging infrastructure of the grid, makes this task more difficult than ever before.

The transformation of the grid requires advanced, interoperable software to support grid orchestration, enhance connectivity to the edges of the network and improve asset management. The current grid infrastructure cannot support the ongoing energy transition, particularly as the energy mix shifts toward renewable sources like wind and solar. Additionally, the rise of the "prosumer"—individual consumers who generate electricity, often through solar panels or electric vehicles—further complicates the system. These prosumers contribute to both the consumption and production of energy, transforming the once-passive role of consumers into a vital part of the grid. Through 2027, over two-thirds of the power and utilities industry will invest to substantially renovate grid technologies, ensuring continuity and diversity of energy sources.

Transforming the grid has challenges that vary by geographic region. Europe's reliance on energy imports—almost two-thirds—and the need to decarbonize have exposed gaps in grid capacity. The EU requires investments in renewable energy and grid connections to reach its 2050 carbon neutrality goals.

The aging U.S. power grid faces significant challenges as electric demand rises and clean energy transition accelerates. Outdated systems, compounded by climate change, are increasingly vulnerable to severe weather events, leading to declining grid reliability. Government investments and initiatives like the Grid Resilience and Innovation Partnerships Program will provide over $10 billion through 2026.

In Asia Pacific, economies face significant challenges in upgrading transmission grids to accommodate the expansion of renewable energy essential for meeting net-zero goals. Over the next decade, the region will invest more than $3 trillion in power generation, with 60% dedicated to renewables and storage. The transition to clean energy and integrating these resources, often far from existing grids, poses significant challenges, with bidirectional energy flows and distributed energy resources becoming more prevalent.

Utilities must overhaul the electricity grid to make it smarter, more resilient and more efficient.

Utilities must overhaul the electricity grid to make it smarter, more resilient and more efficient. This requires current technologies such as sensors, automation and data analytics to improve reliability, integrate renewable energy sources and empower customers with greater control over their energy use. ISG Research defines grid management software as the platform and tools to operate efficiently and reliably, spanning management, operations, infrastructure, monitoring and acting upon issues. The software plays a vital role in today's electrical grid, providing enhanced reliability, improving efficiency, integrating distributed energy resources, promoting sustainability and enabling well-informed decisions for optimization and cost savings.

This Buyers Guide report evaluates software providers offering grid management for power and utility enterprises. Key features include monitoring, control and optimization of the electrical grid functioning as a control center. The software should have advanced grid management functionalities, including fault location, isolation and service restoration; Volt/VAr optimization; outage management; and initial and enhanced generations of advanced metering infrastructure.

The ISG Buyers Guide™ for Power and Utilities Grid Management evaluates providers and products based on a capability framework to support advanced distribution management systems, distributed energy resources management, device support, outage management and user interface and experience management.

This research evaluates the following software providers that offer products to address key elements of power and utilities grid management as we define it: ABB, AspenTech, CGI, GE Vernova, Hitachi Energy, Landis+Gyr, Minsait, OATI, Oracle, Siemens, Schneider Electric and Uplight.

Buyers Guide Overview

For over two decades, ISG Research has conducted market research in a spectrum of areas across business applications, tools and technologies. We have designed the Buyers Guide to provide a balanced perspective of software providers and products that is rooted in an understanding of the business requirements in any enterprise. Utilization of our research methodology and decades of experience enables our Buyers Guide to be an effective method to assess and select software providers and products. The findings of this research undertaking contribute to our comprehensive approach to rating software providers in a manner that is based on the assessments completed by an enterprise.

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The ISG Buyers Guide™ for Power and Utilities Grid Management is the distillation of over a year of market and product research efforts. It is an assessment of how well software providers' offerings address enterprises' requirements for grid management software specific to power and utilities. The index is structured to support a request for information (RFI) that could be used in the request for proposal (RFP) process by incorporating all criteria needed to evaluate, select, utilize and maintain relationships with software providers. An effective product and customer experience with a provider can ensure the best long-term relationship and value achieved from a resource and financial investment.

In this Buyers Guide, ISG Research evaluates the software in seven key categories that are weighted to reflect buyers' needs based on our expertise and research. Five are product-experience related: Adaptability, Capability, Manageability, Reliability, and Usability. In addition, we consider two customer-experience categories: Validation, and Total Cost of Ownership/Return on Investment (TCO/ROI). To assess functionality, one of the components of Capability, we applied the ISG Research Value Index methodology and blueprint, which links the personas and processes for grid management to an enterprise's requirements.

The structure of the research reflects our understanding that the effective evaluation of software providers and products involves far more than just examining product features, potential revenue or customers generated from a provider's marketing and sales efforts. We believe it is important to take a comprehensive, research-based approach, since making the wrong choice of grid management technology can raise the total cost of ownership, lower the return on investment and hamper an enterprise's ability to reach its full performance potential. In addition, this approach can reduce the project's development and deployment

time and eliminate the risk of relying on a short list of software providers that does not represent a best fit for your enterprise.

ISG Research believes that an objective review of software providers and products is a critical business strategy for the adoption and implementation of grid management software and applications. An enterprise's review should include a thorough analysis of both what is possible and what is relevant. We urge enterprises to do a thorough job of evaluating grid management systems and tools related to power and utilities and offer this Buyers Guide as both the results of our in-depth analysis of these providers and as an evaluation methodology.

How To Use This Buyers Guide

Evaluating Software Providers: The Process

We recommend using the Buyers Guide to assess and evaluate new or existing software providers for your enterprise. The market research can be used as an evaluation framework to establish a formal request for information from providers on products and customer experience and will shorten the cycle time when creating an RFI. The steps listed below provide a process that can facilitate best possible outcomes.

1. Define the business case and goals.
   Define the mission and business case for investment and the expected outcomes from your organizational and technological efforts.
2. Specify the business needs.
   Defining the business requirements helps identify what specific capabilities are required with respect to people, processes, information and technology.
3. Assess the required roles and responsibilities.
   Identify the individuals required for success at every level of the enterprise from executives to frontline workers and determine the needs of each.
4. Outline the project's critical path.
   What needs to be done, in what order and who will do it? This outline should make clear the prior dependencies at each step of the project plan.
5. Ascertain the technology approach.
   Determine the business and technology approach that most closely aligns to your enterprise's requirements.
6. Establish software provider evaluation criteria.
   Utilize the product experience: Adaptability, Capability, Manageability, Reliability and Usability, and the customer experience in TCO/ROI and Validation.
7. Evaluate and select the technology properly.
   Weight the categories in the technology evaluation criteria to reflect your enterprise's priorities to determine the short list of software providers and products.
8. Establish the business initiative team to start the project.
   Identify who will lead the project and the members of the team needed to plan and execute it with timelines, priorities and resources.

The Findings

All of the products we evaluated are feature-rich, but not all the capabilities offered by a software provider are equally valuable to types of workers or support everything needed to manage products on a continuous basis. Moreover, the existence of too many capabilities may be a negative factor for an enterprise if it introduces unnecessary complexity. Nonetheless, you may decide that a larger number of features in the product is a plus, especially if some of them match your enterprise's established practices or support an initiative that is driving the purchase of new software.

Factors beyond features and functions or software provider assessments may become a deciding factor. For example, an enterprise may face budget constraints such that the TCO evaluation can tip the balance to one provider or another. This is where the Value Index methodology and the appropriate category weighting can be applied to determine the best fit of software providers and products to your specific needs.

Overall Scoring of Software Providers Across Categories

The research finds GE Vernova atop the list, followed by Schneider Electric and Siemens. Providers that place in the top three of a category earn the designation of Leader. GE Vernova has done so in seven categories, Schneider Electric in six, Siemens in three, Oracle in two and ABB, AspenTech and Hitachi Energy in one category.

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Overall

Providers	Grade	Performance
GE Vernova	A	*Leader* 88.4%
Schneider Electric	A-	*Leader* 84.3%
Siemens	A-	*Leader* 82.6%
AspenTech	B++	80.5%
Oracle	B++	79.9%
ABB	B++	76.0%
CGI	B+	75.0%
Hitachi Energy	B	68.1%
Uplight	B	66.2%
Landis+Gyr	B	65.4%
OATI	B	64.3%
Minsait	C++	50.4%

Source: ISG Research
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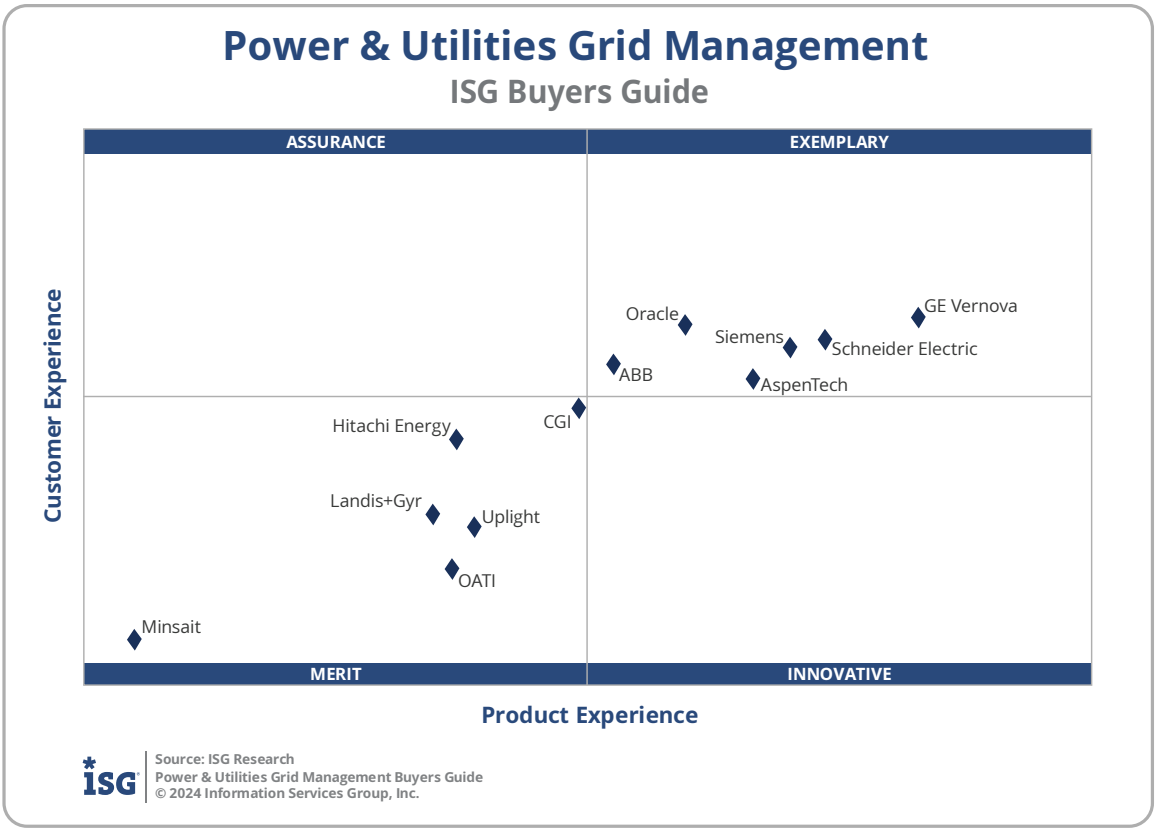
The overall representation of the research below places the rating of the Product Experience and Customer Experience on the *x* and *y* axes, respectively, to provide a visual representation and classification of the software providers. Those providers whose Product Experience have a higher weighted performance to the axis in aggregate of the five product categories place farther to the right, while the performance and weighting for the two Customer Experience categories determines placement on the vertical axis. In short, software providers that place closer to the upper-right on this chart performed better than those closer to the lower-left.

The research places software providers into one of four overall categories: Assurance, Exemplary, Merit or Innovative. This representation classifies providers' overall weighted performance.



Exemplary: The categorization and placement of software providers in Exemplary (upper right) represent those that performed the best in meeting the overall Product and Customer Experience requirements. The providers rated Exemplary are: GE Vernova, Schneider Electric. Siemens, AspenTech, Oracle and ABB.

Innovative: The categorization and placement of software providers in Innovative (lower right) represent those that performed the best in meeting the overall Product Experience requirements but did not achieve the highest levels of requirements in Customer Experience.

Assurance: The categorization and placement of software providers in Assurance (upper left) represent those that achieved the highest levels in the overall Customer Experience requirements but did not achieve the highest levels of Product Experience.

Merit: The categorization of software providers in Merit (lower left) represents those that did not exceed the median of performance in Customer or Product Experience or surpass the threshold for the other three categories. The providers rated Merit are: CGI, Hitachi Energy, Landis+Gyr, Uplight, OATI and Minsait.

We warn that close provider placement proximity should not be taken to imply that the packages evaluated are functionally identical or equally well suited for use by every enterprise or for a specific process. Although there is a high degree of commonality in how enterprises

handle grid management, there are many idiosyncrasies and differences in how they do these functions that can make one software provider's offering a better fit than another's for a particular enterprise's needs.

We advise enterprises to assess and evaluate software providers based on organizational requirements and use this research as a supplement to internal evaluation of a provider and products.

Product Experience

The process of researching products to address an enterprise's needs should be comprehensive. Our Value Index methodology examines Product Experience and how it aligns with an enterprise's life cycle of onboarding, configuration, operations, usage and maintenance. Too often, software providers are not evaluated for the entirety of the product; instead, they are evaluated on market execution and vision of the future, which are flawed since they do not represent an enterprise's requirements but how the provider operates. As more software providers orient to a complete product experience, evaluations will be more robust.

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Product Experience

Providers	Grade	Performance
GE Vernova	A	*Leader* 71.5%
Schneider Electric	A-	*Leader* 67.8%
Siemens	A-	*Leader* 66.3%
AspenTech	B++	64.9%
Oracle	B++	63.0%
ABB	B+	59.9%
CGI	B+	59.4%
Uplight	B	53.7%
Hitachi Energy	B	53.1%
OATI	B	52.9%
Landis+Gyr	B	52.2%
Minsait	C++	40.3%

Source: ISG Research
Power & Utilities Grid Management Buyers Guide

The research results in Product Experience are ranked at 80%, or four-fifths, of the overall rating using the specific underlying weighted category performance. Importance was placed on the categories as follows: Usability (10%), Capability (30%), Reliability (15%), Adaptability (10%) and Manageability (15%). This weighting impacted the overall ratings in this research. GE Vernova, Schneider Electric and Siemens were designated Product Experience Leaders. While not a Leader, AspenTech was also found to meet a broad range of enterprise product experience requirements.

Customer Experience

The importance of a customer relationship with a software provider is essential to the actual success of the products and technology. The advancement of the Customer Experience and the entire life cycle an enterprise has with its software provider is critical for ensuring satisfaction in working with that provider. Technology providers that have chief customer officers are more likely to have greater investments in the customer relationship and focus more on their success. These leaders also need to take responsibility for ensuring this commitment is made abundantly clear on the website and in the buying process and customer journey.

The research results in Customer Experience are ranked at 20%, or one-fifth, using the specific underlying weighted category performance as it relates to the framework of commitment and value to the software provider-customer relationship. The two evaluation categories are Validation (10%) and TCO/ROI (10%), which are weighted to represent their importance to the overall research.

Power & Utilities Grid Mgmt.
Customer Experience

Providers	Grade	Performance
GE Vernova	A-	*Leader* 17.0%
Oracle	A-	*Leader* 16.8%
Schneider Electric	A-	*Leader* 16.5%
Siemens	A-	16.4%
ABB	B++	16.0%
AspenTech	B++	15.7%
CGI	B++	15.5%
Hitachi Energy	B+	14.4%
Landis+Gyr	B	12.8%
Uplight	B	12.5%
OATI	B-	11.7%
Minsait	C++	10.1%

Source: ISG Research
Power & Utilities Grid Management Buyers Guide

The software providers that evaluated the highest in the aggregated and weighted Customer Experience categories are GE Vernova, Oracle, and Schneider Electric. These category leaders best communicate commitment and dedication to customer needs. While not a Leader, Siemens was also found to meet a broad range of enterprise customer experience requirements.

Software providers that did not perform well in this category were unable to provide sufficient customer case studies to demonstrate success or articulate their commitment to customer experience and an enterprise's journey. The selection of a software provider means a continuous investment by the enterprise, so a holistic evaluation must include examination of how they support their customer experience.

Appendix: Software Provider Inclusion

For inclusion in the ISG Buyers Guide™ for Power and Utilities Grid Management in 2024, a software provider must be in good standing financially and ethically, have at least $15 million in annual or projected revenue verified using independent sources, sell products and provide support on at least two continents and have at least 20 customers. The principal source of the relevant business unit's revenue must be software-related, and there must have been at least one major software release in the past 12 months.

Software providers with grid management functionality are evaluated on the ability to offer a combination of the following:

- Fault location, isolation and service restoration
- Volt/volt-ampere reactive optimization
- Outage management
- Advanced metering infrastructure 1.0 and 2.0
- Geographic information system interface
- Enterprise asset management interface
- Monitoring for Center for Internet Security benchmarks
- Mobile workforce management
- Power flow
- Conservation through voltage reduction
- Volt/VAR optimization
- Optimal network reconfiguration
- DER aggregation, forecasting and optimization
- Impact assessment on DERs switching actions
- Scheduling for microgrid and distributed generation operation

The research is designed to be independent of the specifics of software provider packaging and pricing. To represent the real-world environment in which businesses operate, we include providers that offer suites or packages of products that may include relevant individual modules or applications. If a software provider is actively marketing, selling and developing a product for the general market and it is reflected on the provider's website that the product is within the scope of the research, that provider is automatically evaluated for inclusion.

All software providers that offer relevant grid management products and meet the inclusion requirements were invited to participate in the evaluation process at no cost to them.

Software providers that meet our inclusion criteria but did not completely participate in our Buyers Guide were assessed solely on publicly available information. As this could have a significant impact on classification and ratings, we recommend additional scrutiny when evaluating those providers.

Products Evaluated

Provider	Product Names	Version	Release Month/Year
ABB	ReliaGrid	2.0	April 2024
Aspentech	Digital Grid Management	NA	Nov 2024
CGI	OpenGrid360	NA	2024
GE Vernova	Grid OS Orchestration	NA	Feb 2024
Hitachi Energy	Grid and Generation Management Portfolio	NA	2024
Landis+Gyr	Grid Flex Control	NA	2024
Minsait	Minsait Onesait GRID portfolio	NA	2024
OATI	OATI GridMind	5.1	August 2023
Oracle	Oracle Utilities Advanced Distribution Management System	2.6.0.2	November 2024
Schneider Electric	EcoStruxure	2024	November 2024
Siemens	Gridscale X	2.0	November 2023
Uplight	Tendril Autogrid	6.2	September 2023

Providers of Promise

We did not include software providers that, as a result of our research and analysis, did not satisfy the criteria for inclusion in this Buyers Guide. These are listed below as "Providers of Promise."

Provider	Product	Revenue	Customer	Capabilities
Corinex	GridValue EMS	No	Yes	Yes
Nexgrid	Innovative Smartgrid	No	Yes	Yes

About ISG Software Research

ISG Software Research provides expert market insights on vertical industries, business, AI and IT through comprehensive consulting, advisory and research services with world-class industry analysts and client experience. Our ISG Buyers Guides offer comprehensive ratings and insights into technology providers and products. Explore our research at www.isg-research.net.

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