VISUALIZE, ANALYZE, DECIDE

YOUR GUIDE TO ELECTRICAL NETWORK DIGITAL TWINS

MAKE SMARTER GRID DECISIONS

Bentley®

DISRUPTION IN **POWER AND UTILITIES**

Your decisions around grid modernization are essential to delivering **safe, reliable, affordable,** and **clean energy – now and into the future**. As leaders in sustainability, you enable customers and communities to thrive economically while adhering to environmental policies and stewardship.

As the global power industry transitions toward decentralized and decarbonized energy sources, most electric utilities will confront business challenges achieving their clean energy goals. Among them include developing a balanced investment strategy between modernizing the grid while investing in grid-edge assets, and, at the same time, understanding what the impact of renewables will be on grid performance. And, with continuous change in the utilities sector, you need to have the right applications to understand the massive amounts of data available to create new models and simulations. These applications are critical for making important risk assessment and business decisions.

Generally, electric utility assets are aging and many need to be replaced. Some utilities are gradually transitioning from a conventional age-based asset replacement strategy toward an asset condition/reliability replacement strategy. However, as many of these assets are in remote or inaccessible locations, utilities also lack visual and engineering insight into these mature assets.

Modeling the decentralized electrical grid is an inherently complex task that requires a comprehensive understanding of the grid's performance across a utility's generation, transmission, distribution, and grid-edge networks to ensure resilience and reliability.

So, how do you model an integrated power grid and simulate power flow at such a massive scale? Furthermore, how do you transform and improve decision-making with greater confidence while minimally impacting existing data, workflows, and systems?

Bentley's OpenUtilities™ solutions can help you address these challenges.

TRANSFORM DATA INTO INSIGHT

INTRODUCING **OPENUTILITIES DIGITAL TWIN SERVICES**

OpenUtilities Digital Twin Services helps you create a digital representation of physical grid assets, processes, and systems, as well as the engineering information needed to understand and model their performance. It converges engineering, operational, and informational data into a connected data environment, allowing you to visualize grid assets, monitor network status, perform analysis, and generate insights. OpenUtilities Digital Twin Services gives you the power to visualize the integrated grid, coalesce and analyze multiple sources of data within a single network, and enhance your ability to make accurate, informed decisions for optimizing grid reliability and resilience.

OpenUtilities can consolidate, validate, and align 2D and 3D design, GIS, reality, performance, simulation, and other enterprise data across departmental and workflow silos to form a consolidated view of the grid's condition and performance at any given moment.

This holistic view of the entire power system provides an immersive experience to help you achieve a deeper understanding of your grid. With a digital twin of your assets, you can improve your decision-making and achieve greater outcomes.

> **"With the onset of digital twin technologies and digital workflows, it is now possible to contextualize information to provide better planning, design, analysis, and simulation across the entire network."**
>
> *– Jim Taylor, vice president of digital grid business development, Siemens Smart Infrastructure USA*

Bentley's digital twin solutions for the electric utilities industry provides your entire organization with a digital foundation to improve your understanding, performance, and decision-making.

SOLUTION OVERVIEW FOR
OPENUTILITIES DIGITAL TWIN SERVICES

EXPLORE MORE >

DIGITAL TWIN

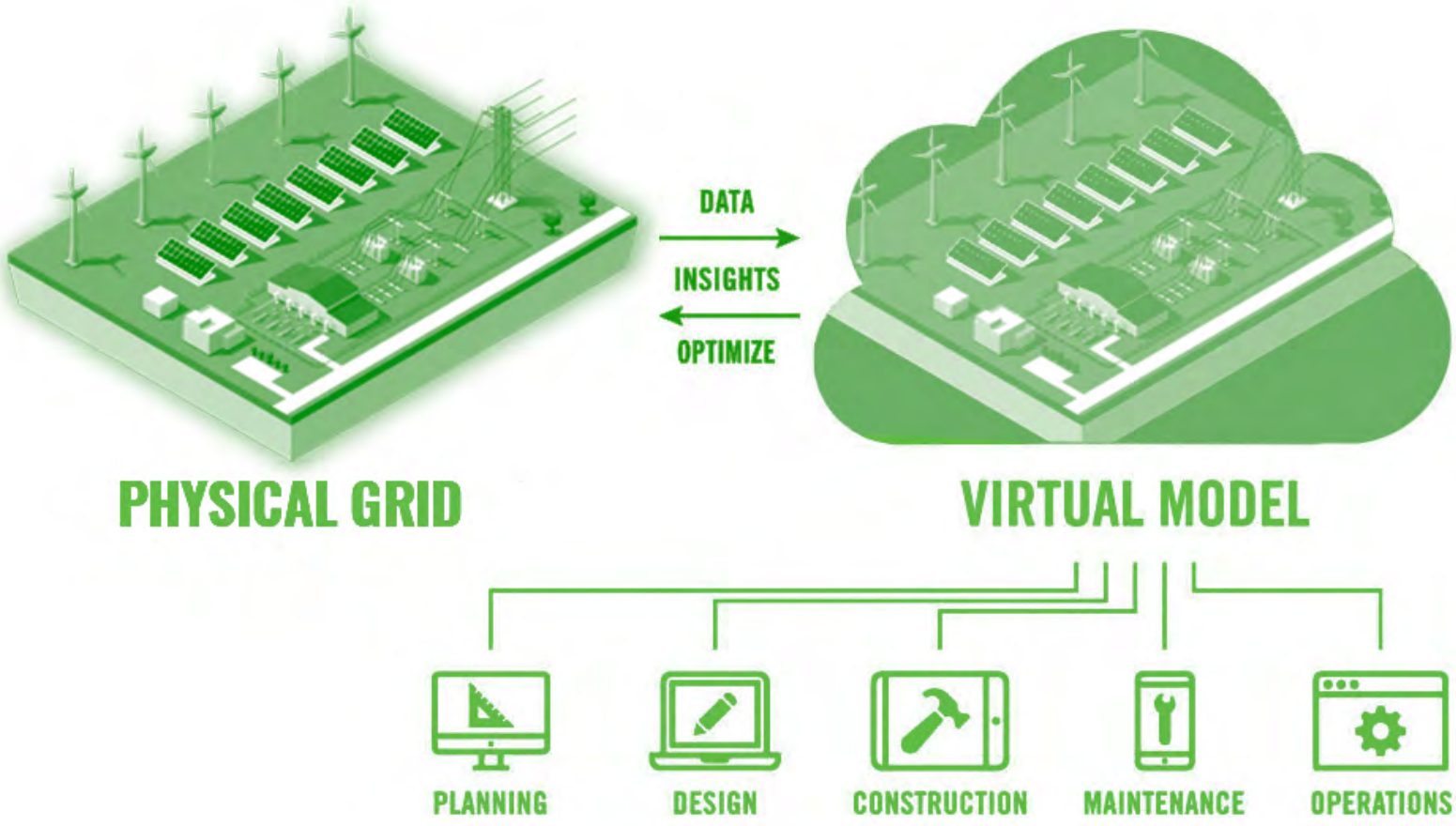
VISUALIZE

ANALYZE

DECIDE

UTILITY SOFTWARE

ELECTRICAL NETWORK **DIGITAL TWIN**



VISUALIZE – THE POWER TO OBSERVE

OpenUtilities helps you advance beyond BIM or GIS so you can visualize the current state of real-world infrastructure assets and their components, as well as utility network data all at once.

Visualize Physical Infrastructure Assets and Their Components

OpenUtilities enhances your perception of the grid. Viewing options include:

- 3D/4D visualizations
- Reality modeling
- A mix of virtual and augmented reality
- Geotechnical engineering information

Visualize Utility Network Data

Deepen your insights with thematics, heatmaps, and photogrammetry. Visualizing the data model is a result of aggregating information from a variety of sources, such as:

- Sensors and continuous surveying
- Reality meshes
- 2D and 3D design models
- Geospatial information systems

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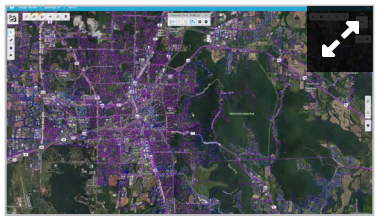

ANALYZE – THE POWER TO UNDERSTAND

Using OpenUtilities to bridge siloed information and dark data improves your understanding of the grid and provides you with actionable insights. You rely on analysis for planning, designing, operating, and maintaining your grid. Without accurate and up-to-date data from all your assets, you can't be sure that your grid analysis is reliable.

With OpenUtilities, you can explore data from any source to make the right decisions in the right context. The application allows you to easily collaborate with customized dashboards and interactive reports. With shared data, you and your team can eliminate hours of manual data management and realize greater efficiency across information silos.

A key benefit of having the ability to continuously update the grid's digital twin and share it across utility organizations is that it enables you to form a common information model that synchronizes business intelligence and analysis.

Data Quality

OpenUtilities gives you the ability to identify data quality issues, visualize these issues on a map, and resolve issues using smart rules and machine learning. Data quality scoring allows you to quickly assess the integrity of the data and level of trust to use for models and simulations.

Insights

Digital twins can help you predict grid performance and gain deeper insight into current or past performance. With accurate and timely data collection, you can predict and avoid future outages and grid vulnerabilities.

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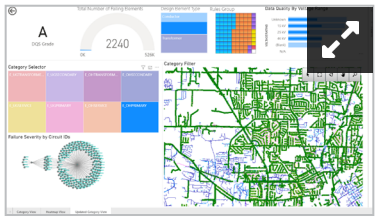

DECIDE – THE POWER TO TAKE EFFECTIVE ACTION

In an industry that is accountable to the public, communities, governments, business entities, and regulatory agencies, even the smallest decisions can bring significant impact and risk. OpenUtilities provides the digital foundation that allows you to ensure that the strategic, operational, and tactical decisions you make every day are as effective as possible.

Here is how digital twins can help you make these informed decisions across organizational boundaries:

Design

- Design for smart buildings and smart communities with DER including PV, EV, and storage.
- Cost estimate designs with DER.
- Identify operating issues and hosting capacity deficiencies in designs and existing infrastructure where design loads are introduced.
- Collaborate with planners on mitigation of design and existing infrastructural issues.

Planning

- Where to deploy microgrids, electric vehicles, and batteries to increase energy supply.
- How to predict electrical equipment failures.
- How to understand the business implications of sustainable strategies.
- How to adjust to changing regulatory policies.

Operations and Maintenance

- When to replace infrastructure assets that are aging and at high risk of failure.
- How to increase understanding of grid performance.
- How to manage power grid reliability with increased DER penetration.
- How to balance fluctuating supply and demand, respond to outages, optimize resource use, and increase efficiency.

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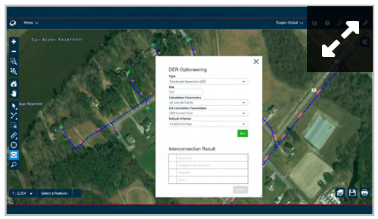

COUNT ON BENTLEY'S EXPERIENCE FOR YOUR **UTILITY SOFTWARE NEEDS**

For more than 35 years, Bentley has provided software solutions to electric utilities around the world. With this background and expertise, the company has come to understand the needs of the energy and utilities industry and the importance of grid reliability and resilience.

Bentley is dedicated to being a leading global provider of comprehensive software and digital twin cloud services for the design, construction, and operations of infrastructure. Its interoperable applications are built on an open platform, with each ensuring that information flows between workflow processes and project team members to enable efficient collaboration.

Bentley's commitment to our user community goes beyond delivering the most complete and integrated software by pairing its products with **exceptional service and 24/7 technical support**. We provide current and future generations of infrastructure professionals with access to a global professional services organization, and continuous learning opportunities through product training, online seminars, and academic programs.

With a broad product range, strong global presence, and user commitment, **Bentley is much more than a leading developer of infrastructure software**. We are engaged members of the global community, advancing both the economy and improved quality of life. Our successes stem from the skills, dedication, and involvement of extraordinary Bentley colleagues around the world.

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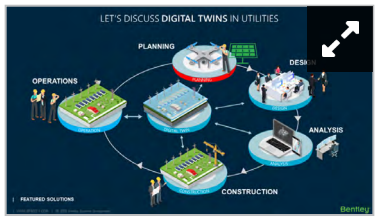

THE POWER GRID OF THE FUTURE
DEPENDS ON YOU NOW

To learn more about OpenUtilities Digital Twin Services speak with our utility engineering experts today.

TELL ME MORE >

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