Digitalization is enabling stronger, smarter and greener grids.

The future is now.
Digital transformation for transmission utilities.

- Insight from the field to the boardroom
- Digital transformation technology
- Unlocking the benefits of the digital grid
The future is smarter.
Utilities are embracing digital transformation solutions to address today’s and tomorrow’s energy challenges.

Aging infrastructure, new regulations, distributed energy resources and the convergence of information technology and operations technology (IT/OT) are just a few of the issues that are dramatically changing the utility landscape today.

ABB Grid Automation provides tailored digital solutions and products for the differing needs of utility providers. From advanced diagnostics that prevent unplanned downtime to the control room of the future, ABB Ability™ enables utility providers to know more, do more, do better, together.

Our industry-leading digital capabilities are combined with decades of experience with utilities. This includes over 120 years of experience across the electricity value chain, more than 50,000 experts currently on our team, 7,000 distributed control systems and 5,000 power and water installations worldwide.

The digital transformation, widely recognized as the “Fourth Industrial Revolution” can be a daunting exercise for businesses to handle on their own. The upside is early adopters reap multiple benefits such as optimizing asset performance, ensuring reliable power supply, minimizing carbon footprint and much more.

Being a pioneer in power transmission technology and having implemented multiple digital transformation-enabling projects around the globe, ABB is well-equipped to help customers on their digital transformation journey.

ABB Ability™

ABB’s grid automation portfolio solutions are developed by industry experts who have spent many years solving complex energy challenges for utilities. These technology offerings are designed to help utilities create a stronger, smarter and greener future without compromising profits – ensuring reliable, high-quality and sustainable power for everyone.

Built for the future

The ABB Ability Ellipse® connected asset lifecycle management solution leverages the connectivity and speed of advanced Microsoft® Azure® technology including machine learning, cognitive services and cloud computing to enable faster, better-informed decisions in daily operations.

Ellipse interfaces all operational functions to deliver a unified source of truth for the business. Analytical reporting allows for more comprehensive and insightful long-term planning and modeling to improve safety, reliability and sustainability.

We protect investments while stepping up to meet the challenges of tomorrow.

ABB’s digital technology creates a much safer working environment. By digitizing data out in the switchyard, the digital substation bans dangerous voltages from the protection and control cubicles, creating a safer environment for operators.

Additionally, the digital substation is based on a standardized technology. This secures your investment by enabling both interoperability as well as future extensions of your distribution automation systems.
**The future is stronger.**
Make the first steps on your digitalization journey, ready for tomorrow’s demands.

No matter what technology requirements you have or what digitalization stage you are in, ABB can support you and lead you with fully optimized solutions. Take a look at some of the examples that ABB has already delivered.

**The performance orchestration of priority, process and people**

**ABB Ability Ellipse, connected asset lifecycle management**

ABB Ability Ellipse is ABB’s connected asset lifecycle management solution that unifies world-class functionality for enterprise asset management (EAM), workforce management (WFM) and asset performance management (APM).

**Operational confidence**

**ABB Ability™ Network Manager™ EMS**

ABB Ability Network Manager Energy Management System (EMS) helps provide reliable and high-quality bulk electric supply. An integrated wide-area monitoring system (WAMS) and other advanced applications help transmission operators achieve and maintain an optimal operating state.

**Ready for the challenges of today and tomorrow**

**Mission-critical communications solutions for utilities**

ABB wired and wireless communications portfolio offers long lasting support for utilities specific communications, while also delivering on the requirements of digitalized grids of the future.

**Bridging the gap between analog and digital technologies**

**Enabling digital substations**

The ABB Digital Substation is a core enabler to increase safety, productivity and reliability for grid operators and to reduce the overall substation cost.

**American Electric Power, United States of America**

Asset performance management solution further enhances the performance and reliability of the electric transmission network

The ABB Ability Ellipse APM solution integrates equipment-based operational technology (OT) from ABB and enterprise Information Technology (IT) from ABB, while also leveraging deep operational and diagnostic expertise contributed by AEP. It is designed to automate what can otherwise be a time-consuming process requiring highly skilled individuals to gain visibility into the condition of critical assets, recognize performance issues, and prioritize maintenance and repair activities.

**RTE, France**

ABB’s digital solution enables the power grid in France to get smarter

ABB Ability Network Manager EMS helps RTE manage and optimize the transmission network across France, maximizing the reliable and efficient delivery of clean power to millions of homes and businesses.

**National Grid, United Kingdom**

Countrywide mission-critical communication network

ABB supplied FOX615 multiservice devices to connect the unconnected countrywide network of more than 300 substation sites. ABB Ability enabling communications technology is built for the challenge of utility environments and can operate in harsh conditions with guaranteed performance for critical SDH/TDM and MPLS-TP network applications.

**Con Edison, United States of America**

ABB digitalizes critical substation in New York City to improve power supply

ABB upgraded a key substation in New York City, where several conventional pieces of power equipment have been replaced with digitally-enabled technology, in collaboration with leading energy utility Con Edison. The bulk power substation, among the largest of its kind in the US, supplies electricity to hundreds of thousands of customers in lower Manhattan.
The future is now.
Digitalization is a core enabler for increased safety, security, productivity and reliability for grid operators.

1. Digital operations
An unparalleled range of solutions

ABB Ability Ellipse Asset Performance Management (APM), Enterprise Asset Management (EAM) and Workforce Management (WFM), and Network Manager EMS help customers to reach new levels of efficiency, reliability, safety and sustainability. This ensures you have the capabilities to integrate information technologies (IT) and operational technologies (OT) to provide complete solutions to answer the business challenges faced by utilities.

2. Historian and system data management
See the unseen from a new perspective

MicroSCADA Pro Historian effortlessly collects, archives and enables you to visualize and analyze the primary process data. System Data Management (SDM600) software provides a solution for the automatic management of service and cyber security relevant data across your substations.

3. Medium-voltage switchgear for digital substations

ABB offers air- and gas-insulated switchgear solutions for primary and secondary distribution that suits various applications like railway power supply and wind farm integration.

4. Mission-critical communications
Ready for the challenges of today and tomorrow

ABB’s FOX multiplexers offer a platform in which TDM (SDH/PDH) and latest packet-based technologies (MPLS-TP) are combined. Designed and type-tested for harsh environments, the FOX multiplexers offer a broad range of services such as integrated teleprotection via IEC 61850 GOOSE messaging and Ethernet over SDH (EoS). With the easy upgrade path and the proven long-term commitment and support, ABB’s FOX family protects the investment of utilities to meet the requirements of today and tomorrow.

5. High-voltage primary equipment
Digitally connecting the field to the process level

Primary high-voltage switchgear air-insulated technology (AIS), gas-insulated technology or hybrid technology (PASS) non-conventional instrument transformers enable smaller substation footprints and easier engineering. Alternatively, existing current and voltage transformers (CTs and VTs) can be connected to stand-alone merging units, which connect the analog measurement signals to the process bus.

6. Protection, supervision and control
Relion® 670 and 650 series

The substation automation, protection and control system solutions ensure reliable power transmission and distribution. To ensure interoperable and future-proof solutions, ABB’s world-leading substation automation, protection and control system is designed to implement the core values of the IEC 61850 standard.

7. Monitoring & diagnostics
Ultimate insight and control of your networks

MicroSCADA Pro SYS600 ensures the optimized control and reliable operation of your switchyard through seamless integration and connectivity between different devices and systems. It supports an extensive range of standard and de facto standard communication protocols and interfaces.

ABB’s digital transformation technologies increase the digitalization of grid facilities by converging data, sensors, communications and controls during the specification phase. This ensures that in the medium term, substantial productivity gains are achievable in operation, thanks to better asset utilization and synergies between various departments such as station control, automation and protection.
The future is now. Digital transformation

The transition may seem futuristic, and possibly overwhelming, but for those that begin today, the rewards can be substantial.

ABB Ability is our unified, cross-industry digital capability, extending from edge to cloud with devices, systems, solutions, services and a platform that enables our customers to know more, do more, do better, together.

ABB Ability is the product of our more than 40 years of experience connecting software and digital capabilities to devices, equipment and systems. No other smart grid solution partner can offer the breadth of systems expertise, equipment, software, and communications technologies.

ABB Ability™ digital solutions
• Bring together all of our digital products and services
• Are built from our unique combination of sector knowledge, technology leadership and digital experience
• Turn data insights into the direct action that closes the loop
• Include Microsoft and IBM® partnerships for enterprise-grade cloud infrastructure and industrial artificial intelligence solutions

The need for faster decisions and real-time action requires visibility of assets across the entire business:

Grid of the future.
Utilities will increasingly have to deal with very dynamic grid conditions.

From the field to the boardroom, the digital transformation is inevitable — and will forever change the way utilities operate.
The future is more secure.  
Helping to defend the digital grid.

Every grid automation system is potentially out of date and constantly needs maintaining and updating. Out-of-date systems are exposed to attack, and the threat increases exponentially.

ABB Grid Automation service offers a three-step approach to cyber security to help defend your systems.

Assess  
To begin the process ABB carries out a cyber security assessment to help you understand how to improve security throughout your system. A detailed cyber security assessment report is then produced and provided to you along with a set of recommended actions for improved cyber security.

Implement  
ABB provides recommended actions for you to implement based on the cyber security assessment and our experts domain expertise. Upon agreement ABB implements the recommendations to your system, ensuring your system is more secure.

Sustain  
With an ABB cyber security care agreement, you benefit from ABB’s global domain expertise. Your system will be regularly assessed by the cyber security care team for any potential infringements, providing you with sustained cyber security vigilance.

Unique security assessment solutions  
Assessment and monitoring services for system software, system hardware and communication networks are fundamental in order to keep a system constantly secure. Overseeing the cyber security status of your system, ABB collects system data for comparison against industry best practices and standards to detect weaknesses within your system’s defense. This pinpoints areas that require action to help protect your system by ensuring it has multiple layers of security.

Security assessment & monitoring

Backup & recovery

Preserving the past for a rapid response to tomorrow’s challenges  
If the worst does happen, and cyber-attack or natural disaster strikes, then the security of an off-site backup will make recovery that much easier. ABB’s backup solutions can ensure the integrity, and availability, of critical data, no matter what happens to the original.

Security updates & hardening

Effortlessly updating and improving your system  
Modern operating systems and embedded software often need to be patched to defend against emerging threats. Efficient patch management is an essential part of any security policy, but one that is often neglected. Products can be made significantly more robust by closing ports and services that are not in use. Our products have been systematically hardened to ensure that the products are robust against attacks and perform their main function.

Malware protection

Evolving protection against sophisticated threats  
Our substation automation systems can be equipped with industry-standard malware and intrusion protection solutions, like anti-virus protection and application white-listing.

Procedures & policies

Educating and supporting system users  
Cyber security will always be a challenge on a global scale; no single solution can keep increasingly interconnected systems secure, so ABB works with customers to understand your processes and procedures, group security policies and computer settings to create a defense-in-depth approach where multiple security layers detect and deter threats – if, where and when they may arise.

Perimeter protection

Constantly vigilant for attacks and breaches  
Firewalls can protect the perimeter of a network and a well-designed security policy will separate the network into distinct, controlled zones, protected by internal firewalls to ensure that a compromised server doesn’t compromise the entire network.
ABB’s Grid Automation team will have project management resources situated close to you, whether on premise or at your local ABB office. The team will be your regular liaison, providing face-to-face interaction with you on all aspects of the project. We will strive to involve you early in the project, to ensure you can gain the greatest understanding of the technology and grant us your valuable input on how we can configure the system to your operational requirements.

Our project managers will draw upon ABB’s global experts to ensure we provide the best solutions throughout the execution and commissioning process. We will always take a pragmatic approach to solving the most complex situations and will make the final decisions together with you.

ABB’s purpose is to lead the world by successfully taking on the most demanding power grid automation and critical infrastructure projects. Our mission is to deliver these as efficiently and cost-effectively as possible for the benefit of our customers.

Operations across the globe.
Close to you, wherever you are.

01 ABB Grid Automation
Global Engineering,
Sales and Service
Support Centers.

02 Making complex
projects, simple with
our complex project
gate model and remote
operations center.

Design

Implementation

Commissioning

Testing

Handover

After
service

Specification

Manufacturing

Remote assistance

Technical support

Collaborative operations

Training
ABB GRID AUTOMATION

We can help you accelerate your digitalization journey. ABB products, solutions and services support your business to create a stronger, smarter and greener grid.

The future is now.