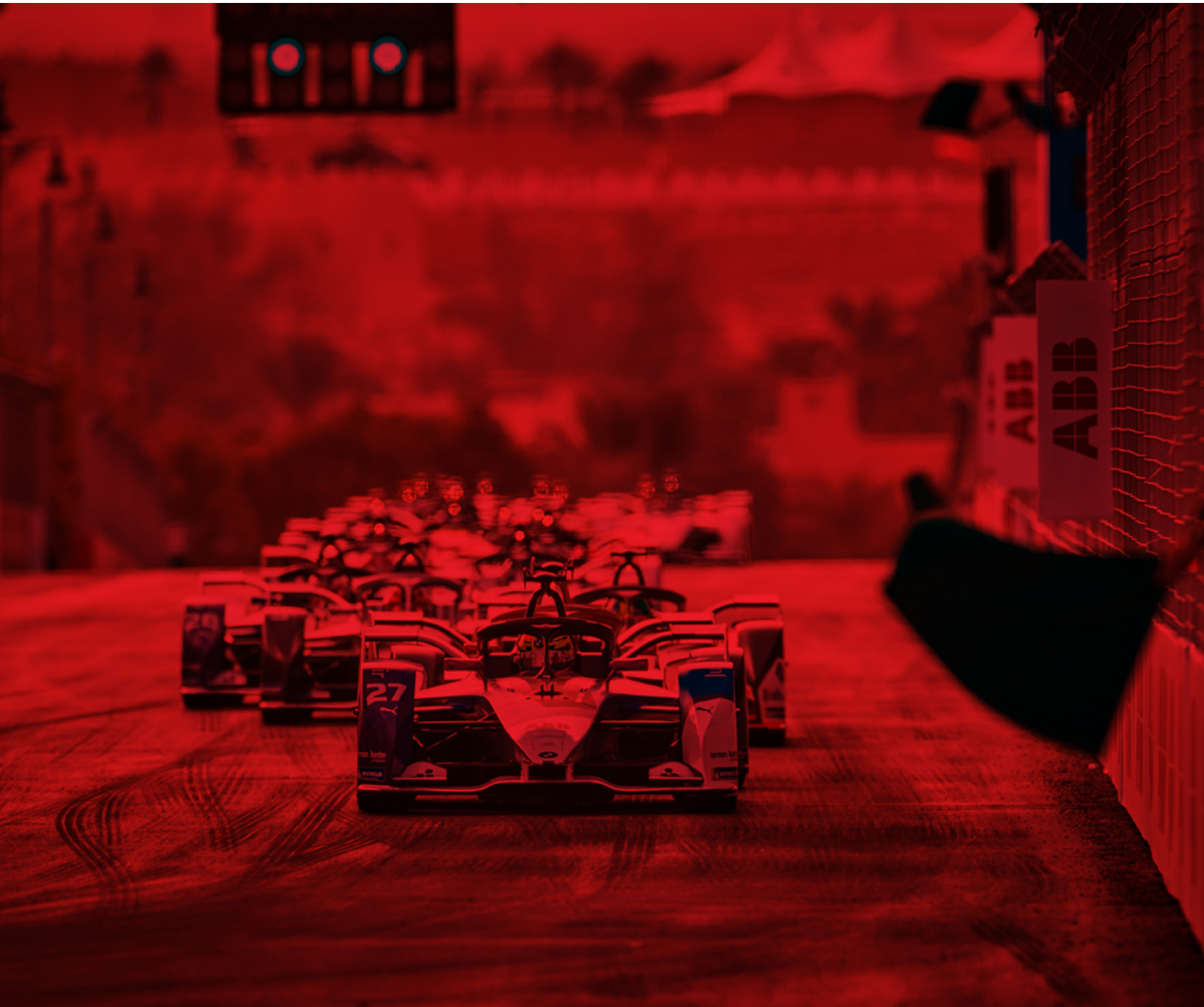
WHITE PAPER

Race to ROI

Game-changing strategies to generate data center revenue in record time



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Executive summary

Since the start of the pandemic, the world's network traffic has increased tenfold.[1] This growth has been driven by increased demand for lower network latency, enterprise cloud-based solutions, and IoT innovations just to name a few examples. in developed and emerging markets, the data center industry is expected to grow by 9.5 percent CAGR between 2021 and 2027.[2]

This presents a golden opportunity for data centers fast enough to seize it. This paper reveals proven, accelerating strategies for developing high-performing colocation data centers that generate ROI in record time.

The need for speed in Data Center development

The global colocation market is predicted to grow to over $62 billion by 2022. This is up from $31.5 billion in 2017.[3] The triggers for such explosive growth in the market include:

- The increasing difficulty and cost of managing in-house data centers
- More companies looking to reap insights from big data to stay competitive
- The growing demand for cloud-based services, edge computing, and IoT adoption

Providers race to meet capacity demands while technology evolves faster. They aim to build flexible facilities that meet the demand while generating revenue quickly. That can be difficult to achieve considering the current expected time of constructing a traditional or "stick-built" data center is 18 to 24 months.

Conventional build times and approaches are not sufficient to meet the demand and development speed for data centers. As an illustration, imagine a 10MW colocation facility leasing at $150 kW per month. Every month the data center is still under construction, it misses a chance to generate $1.5 million. Going to market in 6 months instead of 18 months, in this case, earns $18 million, hence the vital need for speed.

	Revenue by 6 months*	Revenue by 9 months*	Revenue by 12 months*	Revenue by 18 months*
6 months build	$0	$4.5M	$9M	$18M
9 months build	$0	$0	$4.5M	$13.5M
12 months build	$0	$0	$0	$9M
18 months build	$0	$0	$0	$0

*Based on a 10MW lease at $150 per kW per month

"Forward-thinking organizations aiming for industry leadership go beyond best practices and industry standards to deploy proven strategies that position them several steps ahead of the pack," stated Brian Johnson, Global Head of Data Centers for ABB.

The focus should be on those strategies that accelerate revenue generation, which means faster construction, lower total cost of ownership, and service refinement.

To build data centers faster, decision-makers must introduce innovative technologies that are proven to speed up the production and engineering process without sacrificing quality. Modular design is the most popular solution, offering a 30 percent cut in deployment time. Modular solutions built off site enable the equipment to be integrated in a controlled environment with factory experts while site preparation runs concurrently.

An integrated modular solution also allows orders to be placed faster. Coordinating through one company with one project manager ensures greater schedule adherence while reducing risks and resources required.

Besides modular building blocks, one way to reduce risk when purchasing components or equipment is through the use of online configurators. Configurators can be used from the design stage to the order stage and are ideal for ensuring accuracy and speed of delivery.

Another method that improves speed to deployment is a more streamlined service strategy. This significantly lowers overhead costs and hastens profitability. Also, deploying digital solutions like digital switchgear and communication systems significantly reduces wiring, improving manufacturing time and decreasing installation and commissioning time.

Each step of the way, it is possible to speed up deployment in a responsible manner that upholds quality. Data centers can use these strategies to generate revenue at breakneck speed.

Strategies to develop data centers more than 30 percent faster

Build and scale faster with modular prefabricated solutions

The traditional way of planning, designing, and building data centers is one reason for the current long construction times. With modern modular prefabricated solutions, the facility can be up and running in less than 18 months.

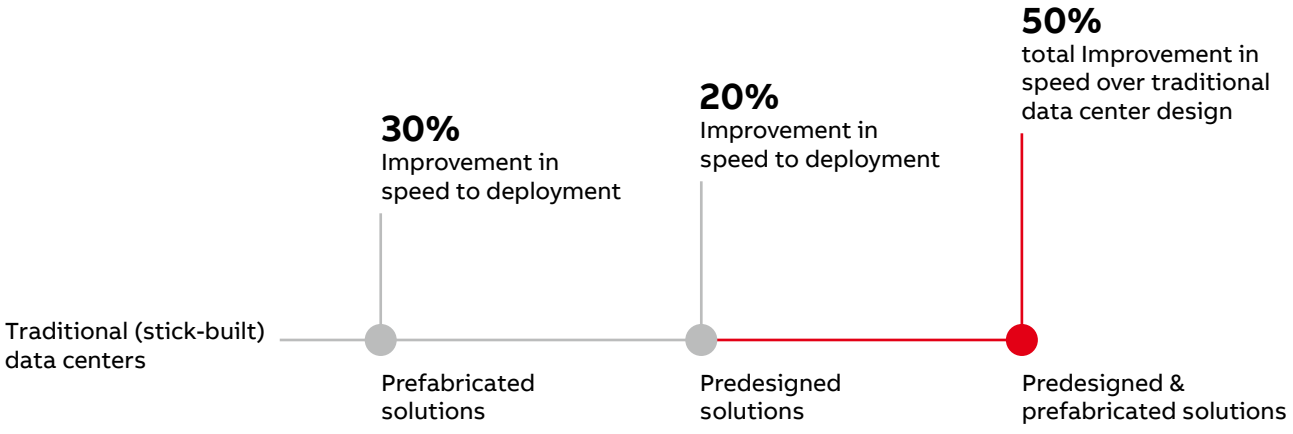
eHouses, for example, are prefabricated transportable power modules that are custom-engineered and factory-tested to meet unique data center specifications. They are ideal for situations where on-site work must be reduced, qualified personnel and materials are inaccessible, or environmental conditions are challenging.

Besides slashing construction time, ehouses are:
- A cost-effective alternative to brick and mortar construction
- Easy to drop in place and move around
- Scalable on demand
- Likely to provide a tax advantage (as they can often be depreciated as equipment rather than a building)

Similarly, skids are equipment installed and interconnected on a frame at the factory. These can be indoor and outdoor, both in the IEC and ANSI world. They enable accelerated project execution with temporary or permanent prefabricated equipment. The outdoor type has the added benefit of saving floor space.

Modular prefabricated solutions can be shipped as a package in one purchase order with one project manager overseeing the equipment. These packaged solutions simplify communications and logistics to a single point of contact. Such streamlined coordination ensures a more effective adherence to project goals and schedules, which lowers capital costs and speeds up the construction cycle.

With the traditional stick-built method, the initial phases from engineering to construction completion take 18 months or more. Using prefabricated solutions, such as eHouses and skids, reduce that time by as much as 30 percent. For even faster speed to deployment, consider predesigned eHouses and skids. They reduce the overall time by another 20 percent over prefabricated solutions or 50 percent over traditionally built data centers.



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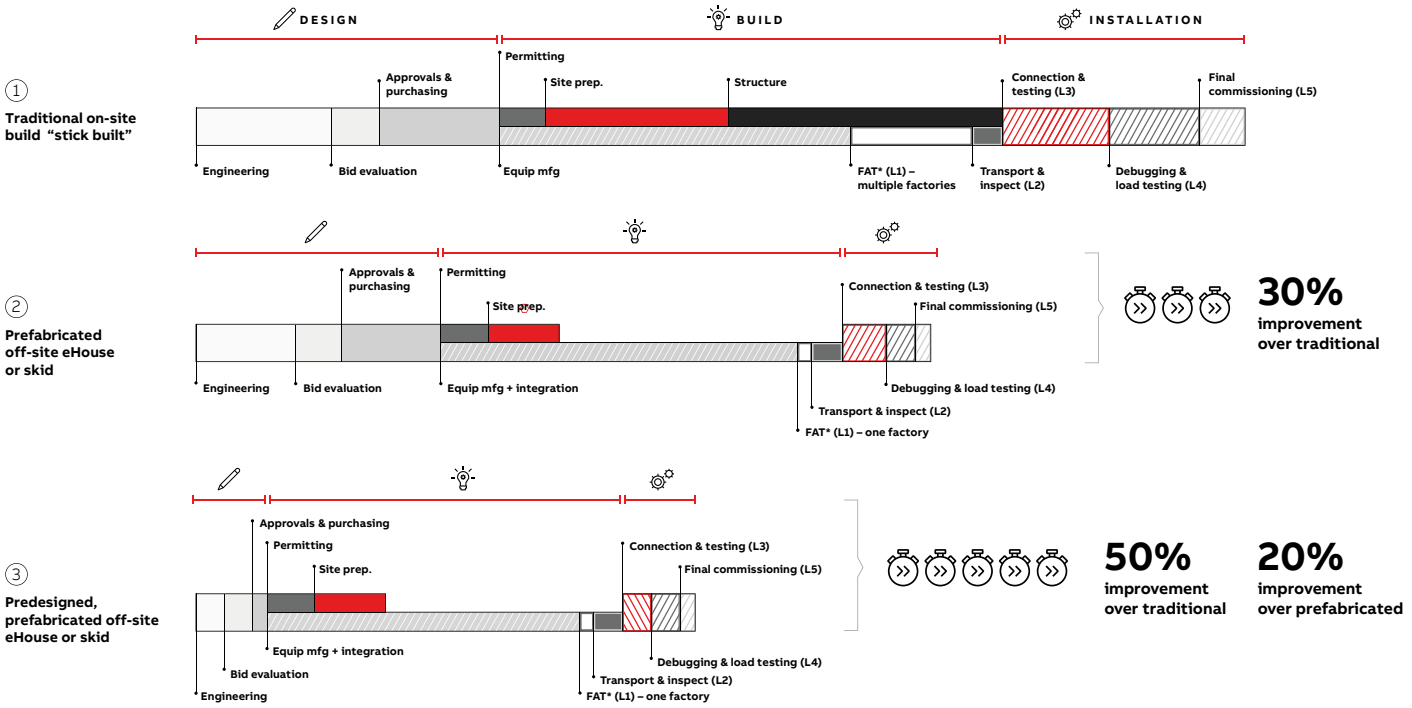
Improve speed to deployment with prefabricated modular solutions
Power module



*Factory Acceptance Testing

There is a perception that modular solutions have reliability issues. In reality, the opposite is true. They allow a stage-by-stage checking of completeness and reliability that stick-built construction does not permit. Manufacturers test and debug the modules at the factory before transporting them to the site. This eliminates rework at site and inconsistencies.

The result is an optimized solution that is fully integrated and factory-tested, making the installation and commissioning process on-site simpler and quicker. Compared to block and brick construction that requires integration in the field, it significantly reduces the risks, time and resources needed.

Re-engineer service strategy for improved speed, lower Total Cost of Ownership (TCO), and higher reliability

Even the data center's service strategy benefits from prefabricated modules. Data center engineering teams only need to plug in pretested and debugged modules to begin operation. With integration and testing already completed off-site at the factory, installation, site connection, functional testing, and commissioning happen much faster.

"Project scheduling issues have cascading consequences. A delay in one task by one technician affects the efficiency of other tasks that follow. This causes budget overruns, sudden order changes, and increased safety issues." stated Lee Todd, Executive Product Manager for ABB Electrification Services.

Data center engineers can also improve service speed and efficiency through other means besides prefabricated modules. They can achieve a leaner and smarter service strategy that improves productivity and lowers the total cost of ownership by

- Using modern/digital equipment and techniques
- Refining processes
- Adapting to new conditions, and
- Predicting the need for spare parts

Traditional service strategies may demand more resources than are necessary during the installation and commissioning phase as well as the operating phase for high voltage, medium-voltage, and low-voltage equipment in a data center. This can lead to higher operating costs and longer lead times that push the break-even point further into the future.

With advanced life-cycle management and digital solutions, engineers can refine processes to achieve an ultra-efficient service strategy. Condition-based predictive service—as opposed to time-based and break-fix maintenance—improves reliability and reduces the risk of unplanned outages. Service level agreements can also replace extended warranties with standing agreements that keep a history of diagnostics and maintenance in one system so that data center staff knows the condition of the equipment and can react fast to any issues.

To ensure the fastest installation and commissioning possible, have your modular solutions provider also provide installation and commissioning services.

Chose a partner that

Has a thorough knowledge of the relevant electrical standards and grid connection requirements worldwide

Has domain expertise across the entire data center electrical portfolio

Can work with the factory to prevent common scheduling issues

Has familiarity with the equipment and access to experts to prevent schedule delays

Implement digitalization for swift deployment of solutions

The common expectation from digitalization is improved visibility and condition of the data center. Few leverage its potential in speeding up deployment and profitability.

One way to boost speed to deployment is going digital with switchgear. Because it requires less wiring, digital switchgear takes less time to assemble than traditional instrument transformers. Its sensor technology provides the flexibility to change system parameters via software without the disassembly and reassembly required in traditional builds.

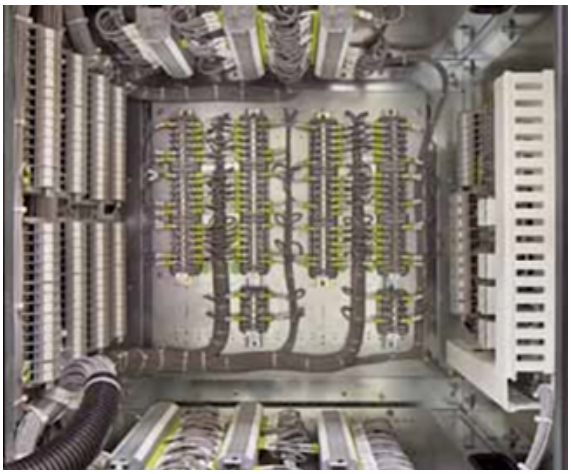
The flexibility also extends to on-site changes which can be carried out when necessary. It is easy to make modifications to equipment functionality by downloading different software or making adjustments via built-in device settings.
Digital switchgear, unlike traditional switchgear that relies on analog current and voltage, is built from fewer components, yet is more reliable, energy-efficient, and safer for personnel as they use low-power output signals from current and voltage sensors.

Going digital leads to about a 90 percent reduction in the number of copper wires, which is an enormous contribution to cost and floor space savings, and safety. With fewer cables, production is simpler and faster.

This reduction in complexity minimizes errors during the production cycle, installation, and over the life of the equipment. Besides improving safety and shortening commission time, cutting down on wiring saves labor costs since it takes fewer working hours to install equipment.

In addition, digital communications enhance operators' and owners' insight into the system with the ability to visualize health and operational data on HMIs, monitors, and mobile devices. And regarding cybersecurity, the best devices exceed the industry norms for protecting critical infrastructure data.

Interfacing with equipment in this manner creates a clearer window into vital system operation. Engineering teams can refine and handle troubleshooting, energy management, maintenance management, and temperature monitoring even faster. In the end, a smart digitalization strategy contributes to the assurance of continuity of service and fuels the speed of deployment.



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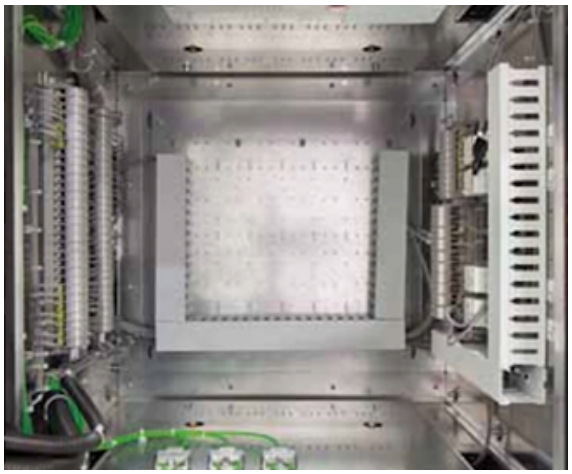
Manual switchgear



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Digital switchgear

Configure accurately and faster with advanced online tools

The conventional way with which data center engineering teams, their consultants, and EPC partners configure low-voltage products and accessories can be time-consuming, difficult, and prone to errors. These errors can cause delays in manufacturing or worse, can mean delivering the wrong product on site.

Using a configurator to place an order (e.g., using a web application with a 3-dimensional visual interface) is a simplified and accurate way to go. It performs like an online store but without the need to comb through huge catalogs and online listings to find the perfect fit in price and specification.

Configurators save time, costs, and eliminate errors to ensure speed of deployment. Their features also help to:

- Easily retrieve product information including images, up-to-date prices, and availability
- Order and reorder custom-configured units
- Access accurate technical information/datasheets, and
- Enjoy a user-friendly selection and configuration of low-voltage products and accessories

With a few clicks, anyone can configure an order. Production, assembly, packaging, and delivery — all done in one streamlined process.

The probability of making an error with online configurators is minimal, significantly lowering the chances of wasting time to correct an order and delay succeeding project tasks. Apart from minimizing errors, orders generated from configurators speed up communication with production. This shortens the time to manufacture from 6 months to a few weeks for many designs.

Now, businesses can place an order in a closed-loop configuration management process that ensures the accurate flow of information. While they avoid the project shooting beyond the planned timeline, they can also speed up the data center construction.

Recommendations

Time is the most critical factor in meeting the demand for more colocation data centers. The fastest build time for new facilities in the past was a year and a half, but customers expect to be up and running in less than a year today. With technologies like modular architecture, this is possible.

The ability to fabricate modules in parallel with other construction work remarkably reduces build time. Also, deploying factory-tested equipment mounted on skids or in eHouses reduces construction complexity to a more direct 'plug-and-play' level while reducing costs, lead time, and eliminating opportunities for errors.

A mindset shift in life-cycle management has the potential to lower overhead costs so data center owners realize ROI sooner. Working with capable technical partners for installation and commissioning keeps projects on track and even speeds up the process. Also, as maintenance teams use a condition-based predictive service strategy, instead of the usual calendar-based or break-fix method, they are more focused and better equipped to prevent and react to asset failure.

Leveraging smart devices and digital switchgear in data center operation is a tremendous cost- and time-saver. Up to 90 percent less wiring means installation can move faster and more safely. Also, using advanced visual online design tools to configure equipment improves accuracy and speed of delivery.

Gartner projects that end-user spending on data centers will hit $200 billion in 2021, and the market will grow year-over-year through 2024.[4] Apart from building new infrastructure to meet demands, retrofitting and upgrading existing structures will be necessary to stay relevant in coming years, which makes the flexibility of modular design a must.

The future of data centers affords ample opportunity for forward-thinking management to realize ROI sooner than usual. With the technologies and tools discussed here, data center owners and operators can add speed without sacrificing functionality, reliability or safety.

For more information on these solutions and how they can speed up data center deployment, click here.

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