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Schneider Electric Positions EcoStruxure As The Backbone Of A Smart Building Strategy

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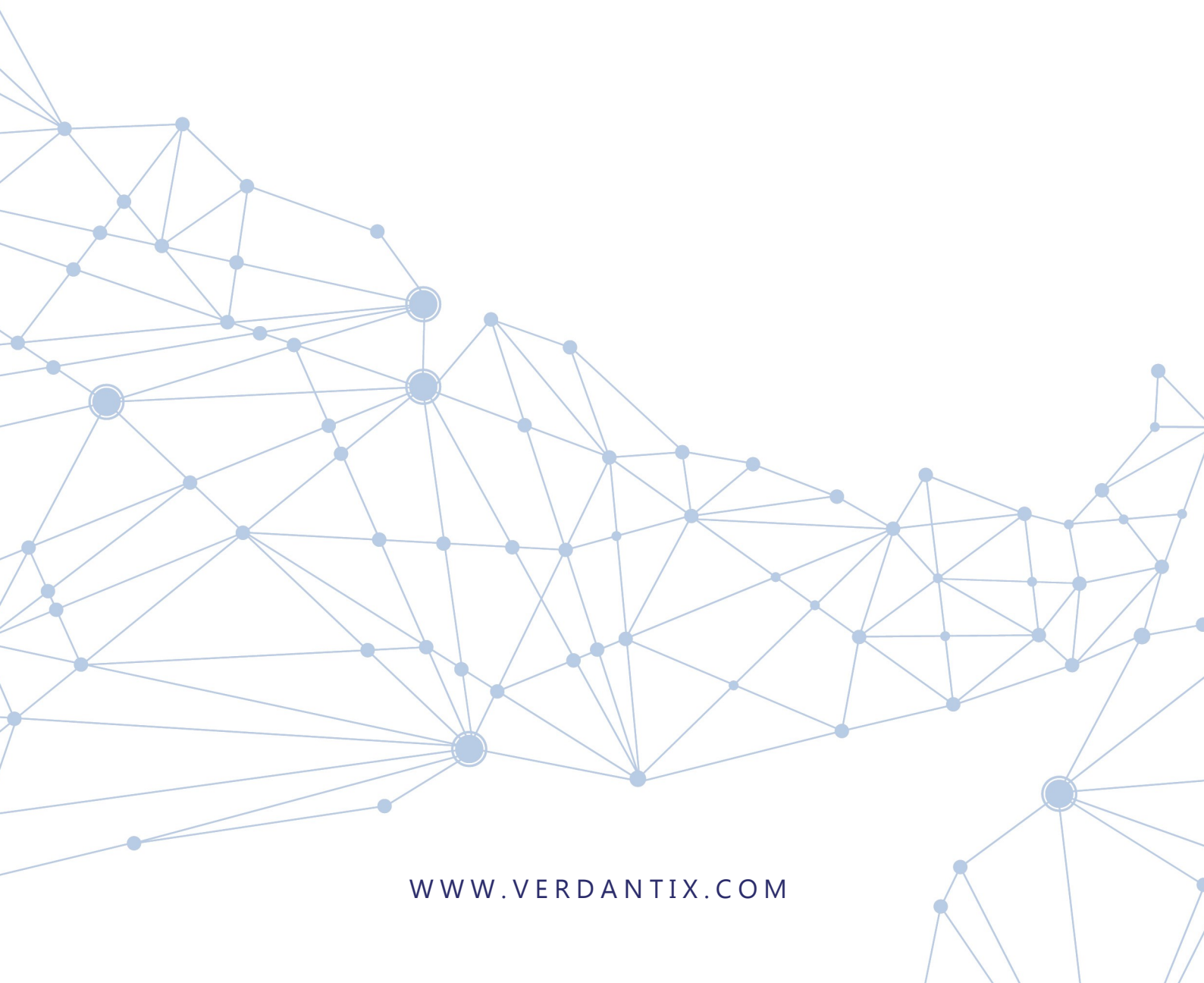

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Internet of Things (IoT) based energy and facility management solutions offer service providers and building owners the opportunity to develop comprehensive building monitoring and control solutions. With the proliferation of products and vendors, building owners are faced with deciding what systems to invest in and how to insure the return on investment is not compromised by technology that quickly becomes obsolete. Schneider Electric has positioned its EcoStruxure platform to provide a solution to these challenges. To better understand the market implications of the EcoStruxure solutions, Verdantix spoke with Robert Hemmerdinger, Director Business Development at Schneider Electric.

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ORGANIZATIONS MENTIONED

Black & Veatch, Capgemini, CBRE, Deloitte, Digital Realty, Duke Energy, Dyn, enel, Hilton Worldwide, Institute of Electrical and Electronics Engineers, Intel, Lawrence Berkeley National Laboratory, Microsoft, National Australian Built Environment Rating System, neoen, Nestle, OVG Real Estate, Panasonic, Pepsico, Philips, PTC, Sanofi, Servicemax, Sky, Sigfox, Xerox, Zigbee, Zuora

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EcoStruxure Centralizes The Linkages Across Schneider Electric's Smart Building Ecosystem

Initially launched in 2010, EcoStruxure is Schneider Electric's platform to provide one source of building operation monitoring and control. Schneider Electric's EcoStruxure platform:

- **Supports building operators with a single source of building operational data.**
  EcoStruxure is Schneider Electric's product to provide a single platform that connects and controls the building energy ecosystem across a corporate portfolio. The platform links products within energy domains for the management of power supply, process functions, building management systems, security and third-party applications such as IoT-based sensors. For the latest iteration of EcoStruxure, Schneider Electric is leveraging Microsoft's Azure cloud platform to improve delivery of analytics, software applications and global services.

- **Is deployed across four energy domains.**
  EcoStruxure is used in data centres by firms such as Capgemini and Digital Realty. Global professional services firm Deloitte and healthcare firm Sanofi have deployed the solution within their buildings and industrial firms, such as Black & Veatch, Nestle and Pepsico, use the solution in their manufacturing facilities. Utilities, such as Duke Energy, enel and neoen, have also deployed EcoStruxure to help improve grid efficiency through activities such as geographic information system data transfers into distribution management systems.

- **Provides comprehensive building system interconnectivity.**
  The Lawrence Berkeley National Laboratory estimates that integrating new building systems such as remote monitoring software with existing building automation systems can cost from $30,000 to $50,000 per system. Around 10% of that cost goes towards an initial equipment investigation to understand project needs, such as whether additional hardware is needed to implement solutions. EcoStruxure, through its ability to enable connectivity between legacy and newer building systems, seeks to reduce the time and expense required for integrating elements such as smart electrical panels with other building systems (see Verdantix Schneider Electric Innovates To Lower Cost Of Smart Buildings).

- **Enables expanded use of mobile communication for facility management.**
  Mobile devices, such as smart phones and tablets, are not just for entering data on-the-go. Reductions in the cost of wireless sensors and improvements in wireless networks such as Bluetooth, IEEE 802.11s and Zigbee have enabled vendors to develop software solutions that provide situational awareness, to identify a user's location and push pertinent data such as prioritized maintenance requests.

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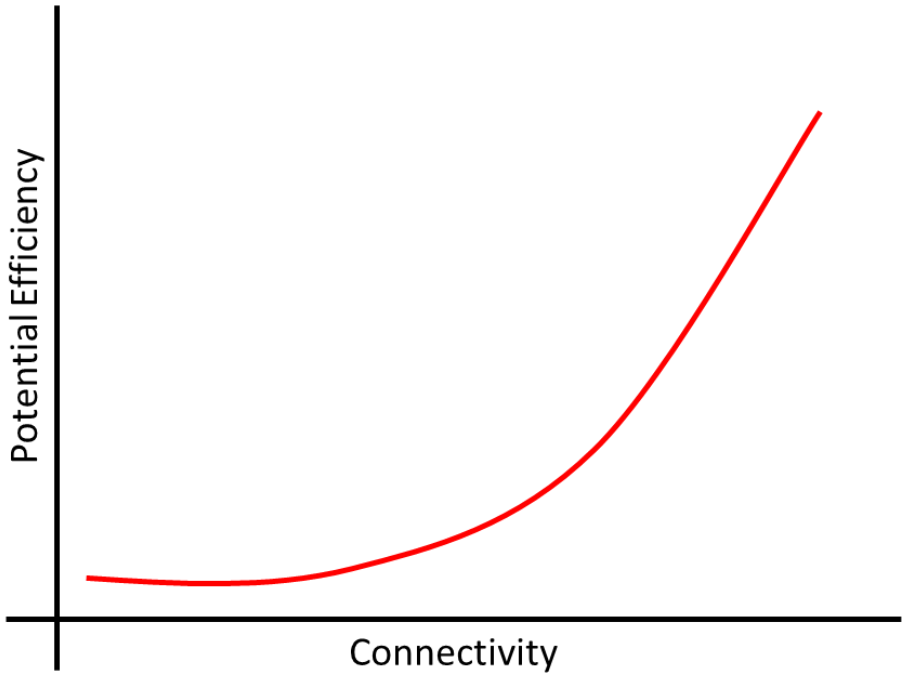
FIGURE 1

Potential Impact Of Increased Connectivity Across Building Systems



Source: Verdantix

- **Allows the deployment of edge device analytics and control.**
  Building equipment with embedded intelligence, such as smart lighting systems, enables devices spread throughout a building to analyse performance data as it is created. The use of embedded equipment intelligence, in the form of edge analytics and control solutions, enables equipment to monitor performance in relation to expected operating parameters and external data, such as temperature or electricity prices, to get the most efficient performance from its operations (see Figure 1). Edge analytics and control enables the use of remote equipment management solutions, such as remote HVAC monitoring and operational control.

- **Operates under dedicated Schneider Electric cybersecurity infrastructure.**
  To counter the threat of equipment becoming unable to function from a breach, EcoStruxure development is supported by a dedicated cyber security team charged with supporting clients through installations and providing ongoing support to help clients develop cyber secure building information infrastructure. As more pieces of equipment are brought online, through the proliferation of IoT-based sensors and devices in buildings, the threat of cybersecurity will increase. This idea hit home in 2016 after the distributed denial of service (DDoS) attack on US-based Dyn from hijacked equipment connected to the internet.

Schneider Electric Uses Partnerships To Extend EcoStruxure Usage Scenarios

EcoStruxure enables smart technology to help facility managers be more effective as they do their job while continuously on-the-go. To accomplish this and scale-up the impact of EcoStruxure, Schneider Electric seeks to dismantle the system siloes that permeate throughout building operations – even in the era of IoT (see Figure 2). Schneider Electric is scaling up the platform by:

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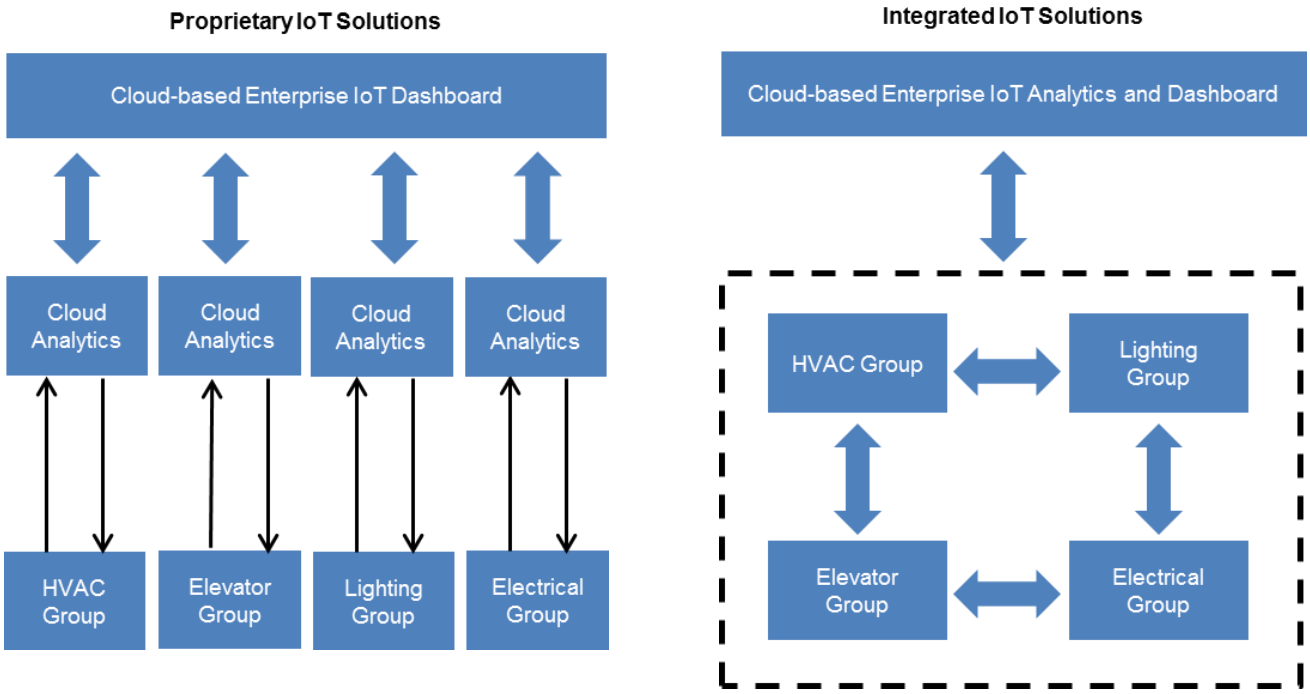
FIGURE 2

Potential Impact Of Increased connectivity Across Building Systems



Source: Verdantix

- **Enabling solution providers to develop products for use on EcoStruxure.**
  Schneider Electric is developing partnerships with building management hardware and software vendors, such as PTC, Sigfox, Servicemax, Panasonic and Zuora. For example, the Panasonic collaboration enables direct communication between Schneider Electric's software and Panasonic's variable refrigerant flow systems for HVAC products. This wireless connectivity enables building owners to have a single interface to monitor the performance of critical building systems and to identify actionable energy efficiency and cost saving insights. Schneider Electric aims to grow the community of solution developers for its EcoStruxure product as more hardware firms seek to integrate software into equipment to enable reduced integration costs, central asset monitoring and control, and remote monitoring of asset performance (see Verdantix Energy Management In The Age Of The Internet Of Things).

- **Partnering with specialist firms to increase reach of the solution.**
  Schneider Electric is partnering with firms with complimentary domain expertise to develop a comprehensive solution set for clients. For example, the firm has partnered with Intel to deploy intelligent field programmable gateway devices to power a range of sensors, devices and gateways for cloud services, such as remote equipment fault detection and diagnostics.

Schneider Electric's EcoStruxure Paves The Way To Improved Building Experiences

Schneider Electric plans to scale the usability of its EcoStruxure platform through partnerships with hardware and software solution providers. Improved levels of connectivity across building systems have the potential to help building operators create a more seamless experience for building tenants. Schneider Electric's platform will support customer needs by:

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- **Allowing clients to reduce electrical equipment capital expenditures.**
  Schneider Electric's strategy to reduce the cost of smart buildings involves helping clients transition from a CAPEX-led building systems budget to one based on building-assets-as-a-service (BaaS). In this scenario, instead of spending CAPEX to purchase assets, building owners would rent an electric breaker or an HVAC unit. The asset-as-a-service business model has been successfully used in other industries, such as the printer-as-a-service model developed by firms such as Xerox or municipal lighting installations by Philips.

  Verdantix Take: Having to pay for the initial upfront cost of equipment upgrades is a primary barrier preventing many firms from investing. Addressing this concern will help firms be more accepting when evaluating energy and facility efficiency solutions. However, this type of business model does increase the amount of risk a vendor takes on, because they have to guarantee equipment efficiency, uptime and safety.

- **Offering building asset performance management-as-a-service.**
  Facilities such as hospitals and airports with critical operations can't afford to lose power and suffer business disruption. EcoStruxure enables the deployment of equipment fault detection through predictive analytics to identify asset performance parameters that can lead to failure. This will enable building operators to perform corrective actions before critical equipment failure, such as HVAC system chiller or motor failure, instead of scrambling to perform emergency corrective work. By connecting disparate building systems, EcoStruxure enables Schneider Electric domain experts to have a granular view of equipment performance and those factors effecting performance to get ahead of potential faults with corrective actions.

  Verdantix Take: Corporates and public agencies with limited in-house expertise but a growing complement of energy and facility data sets increasingly look to outsource energy data management processes (see Verdantix Global Energy Leaders Survey 2016: Budgets And Priorities). For those firms seeking to move beyond conventional reactive or basic scheduled maintenance, it will be more cost-effective to integrate equipment performance management by domain experts into existing facility management contracts. These experts will be able to identify improvement opportunities more efficiently while helping to optimize equipment uptime.

- **Supporting the deployment of IoT solutions for improved facility tenant experiences.**
  Corporate workplace trends continue to prioritize occupant well-being. For example, global consultancy Deloitte partnered with Schneider Electric and commercial real estate developer OVG Real Estate to build their new smart office 'The Edge'. In this new building, Schneider Electric's solution is paired with a lighting over ethernet (LOE) solution to enable employees to control lighting and temperature at individual workstations.

  Verdantix Take: In its 2016 workplace study, CBRE found that meeting worker preferences was a major concern for corporates. In some cases, prospective building tenants or corporate employees will make decisions based on their perception of buildings. For example, in Australia, many building tenants make leasing decisions based on the National Australian Built Environment Rating System (NABERS) of ratings for buildings and how that will impact their own brand perception within the market.

- **Providing 24/7 remote services to reduce the cost of equipment downtime.**
  EcoStruxure enables Schneider Electric to provide remote equipment operation monitoring services. This value proposition uses Schneider Electric domain experts to help clients in segments such as the hotel industry identify and correct equipment faults before they become critical. Domain experts, with remote equipment access, can also advise clients of the real-time cost of not performing corrective actions,

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which helps the decision-making process. In addition, remote services enable Schneider Electric to notify customers immediately if equipment faults occur – instead of having them find out through customer complaints.

Verdantix Take: Remote equipment monitoring and operations management can provide clients with multiple benefits, such as faster identification and resolution of maintenance events, fewer maintenance events and improved building operational efficiency. However, there is still hesitation on the part of clients to invest in these solutions as many don't understand the technology, are concerned about the accuracy of results and are also concerned about the upfront cost of deployments (see Verdantix Is Demand-Side Energy Management Ready For The Internet Of Things).

EcoStruxure Should Be A Core Component Of A Smart Building Strategy

The current release of EcoStruxure is updated to facilitate easier building owner adoption of IoT products and solutions. For IoT vendors, getting the right components in place to drive adoption is only part of the struggle. To be successful, Schneider Electric will also need to:

- **Help clients understand the business case for investment.**
  For many organizations, energy management cost savings, by themselves, may not be significant enough to incentivize investment (see Verdantix Global Energy Leaders Survey 2015: Budgets and Priorities). However, when energy management is combined with asset and maintenance management, potential OPEX savings can be 15% or more (see Verdantix Why Building Owners Should Review The Business Case For Facility Optimization). Over the past five years, Schneider Electric clients pursuing additional OPEX savings through EcoStruxure have included firms such as Digital Realty, Hilton Worldwide, Nestle, Sanofi, Sky, and Pepsico.

- **Build the case for energy as a catalyst for improved operational efficiency.**
  The Verdantix 2016 global survey of 250 energy and facility decision-makers found that 90% prioritize operational improvements as either 'very important' or 'important' when reviewing spend for energy management. Operational improvements are prioritized just above energy costs. Organizations with energy-intensive complex operations, such as hospitals, can use solutions such as Schneider Electric's Clinical Environment Optimization solution to identify opportunities to improve staff productivity and patient satisfaction – in addition to energy efficiency projects. This solution integrates a hospital's building management systems (BMS) with systems for clinical scheduling, housekeeping, admissions, discharge and transfers. For example, the solution can integrate with patient admission systems to automate the room temperature and lighting settings for discharged patients – in addition to notifying cleaning teams of room vacancies.

- **Educate clients on the importance of system integration projects.**
  Schneider Electric partners with over 8,000 system integrators. The ability of a vendor to provide systems integration is an important selection criteria for over half of purchasers of energy services in the UK (see Verdantix Green Quadrant UK Energy Services 2016). This is understandable when you are faced with the seemingly enormous task of integrating (often siloed) systems for items such as boilers, HVAC, lighting, elevators, security, sensors and control technologies such as BMSs. On the other hand, many construction budgets don't have a 'systems integration' line item – this barrier can only be overcome through plenty of client education and time.

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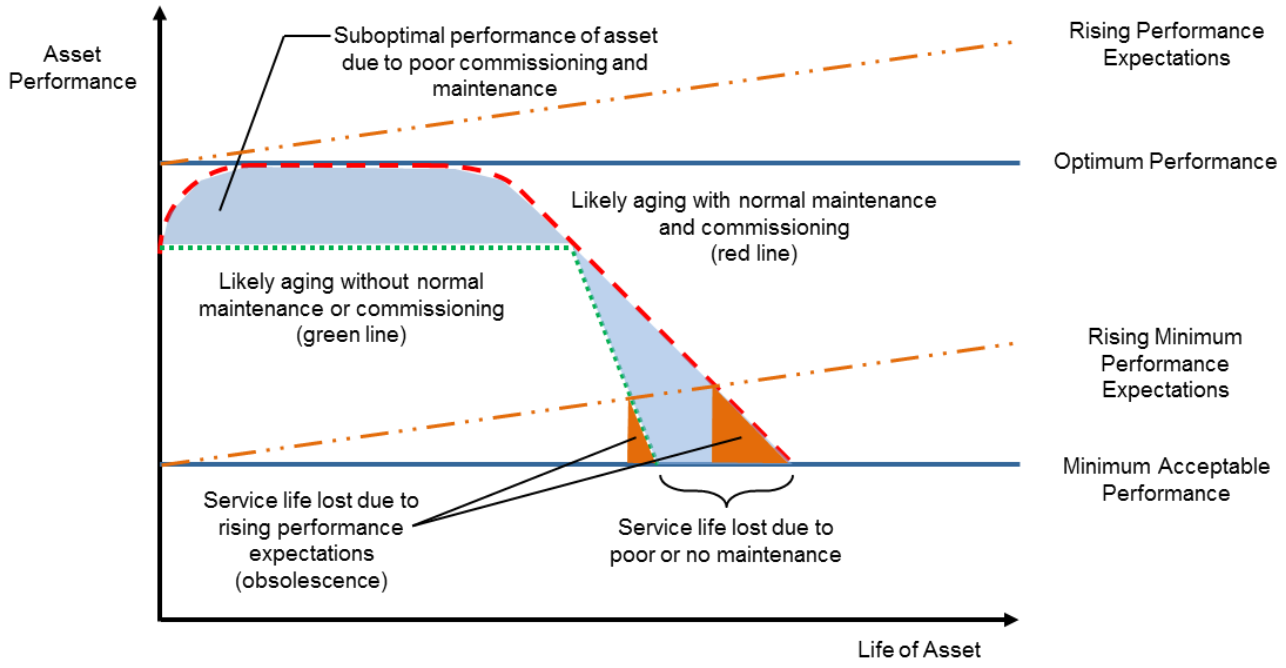
FIGURE 3

Impact Of Rising Asset Performance Needs On Service Life



Source: Verdantix, US Department of Energy

- **Communicate the need to reduce the risk of fast asset obsolescence.**
  The majority of current global building stocks across Europe and North America are 20 or more years old. However, the technologies used to run these buildings efficiently are constantly being updated. Building owners run the risk of investing in technologies that can become obsolete – and not meet expanding needs – before their full investment return is realised (see Figure 3). Obsolescence in buildings can be driven by factors such as changing the uses of buildings or spaces (for example during a tenant change), lower equipment service levels compared to newer technology or changing workplace utilization strategies.

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