

Digital transformation in building operations

Unify data to unlock insights and
optimize facility operations



Navigating the future of facility management

The facilities management industry is in the midst of a significant transformation, driven by the evolving digital landscape and the mounting pressure to decarbonize the built environment. As building operators start their digital transformation journey, new tools are emerging to connect data across the building lifecycle and unlock new insights and operational efficiencies.

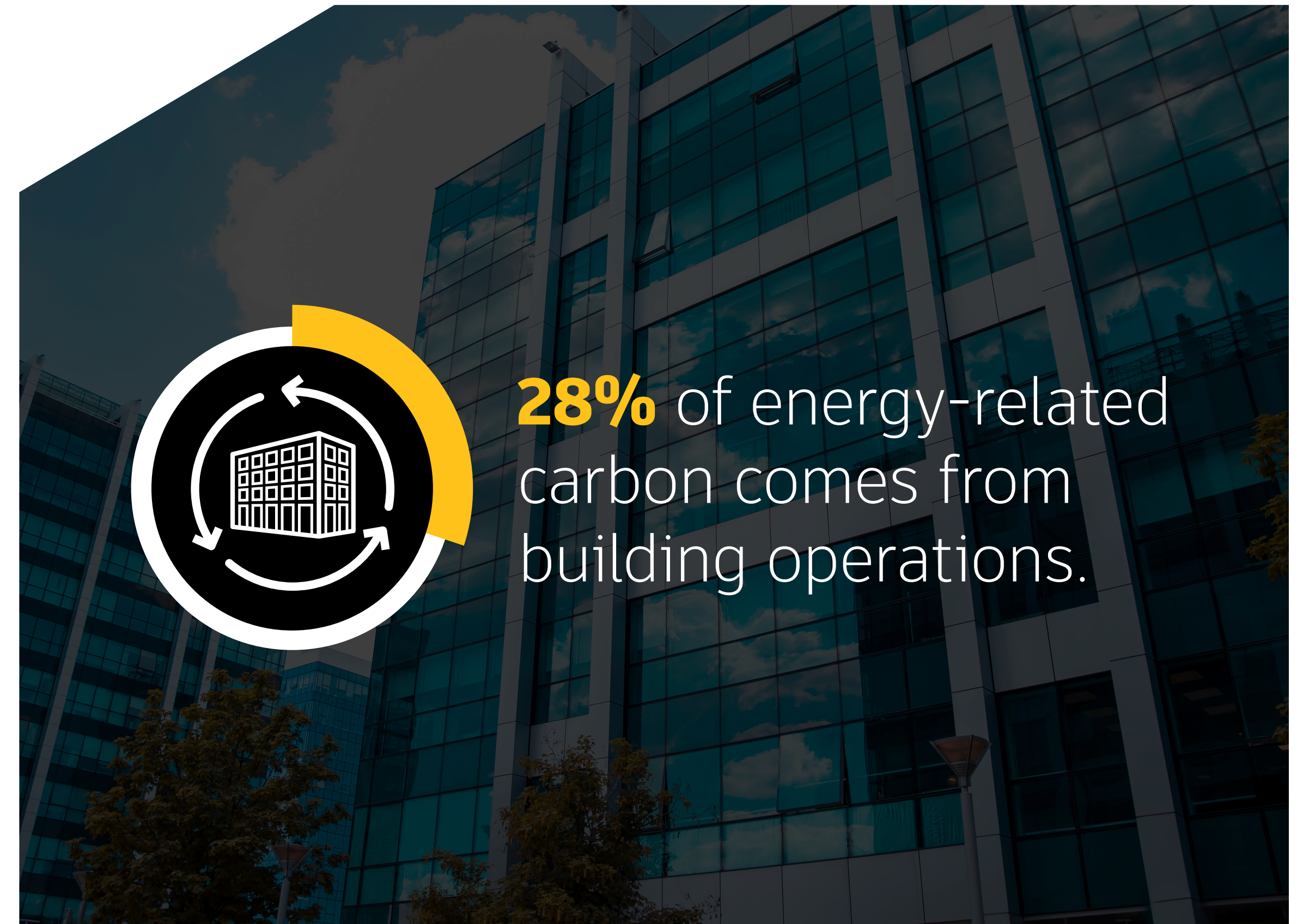
This eBook delves into the ever-evolving landscape of facility management, uncovering major challenges and exploring innovative solutions that showcase the potential of connecting BIM, digital twin, and worktech technologies. Navigate the path towards a future in facility management that thrives on the synergy between data-driven insights and industry collaboration.



“There needs to be more collaboration between AEC and FM relative to Building Lifecycle Management. AEC owns a project for 18-36 months, but Operations deals with it for the next 75-100 years.

‘Value Engineering’ in projects will frequently impact the effectiveness of future operations. Technology is no longer a constraint, but the CRE industry must adopt a lifecycle management mindset that spans its policies, standards, and procedures.”

Dean Stanberry,
IFMA Chairman



Building operations challenges

Today, building owners face significant challenges driven by inadequate utilization of building design and asset data in operations.

Poor and fragmented data contributes to ineffective decision-making and inefficient operational processes.

60% of space is underutilized due to poor real-estate decisions and new workplace trends

50% of maintenance inefficiency is due to poor workflow management

30% of energy wasted is due to ineffective asset operation

Inefficient processes



of operators struggle with poor and fragmented data



of facility managers rate data as a top-three problem in 2024



average time wasted from current data practices

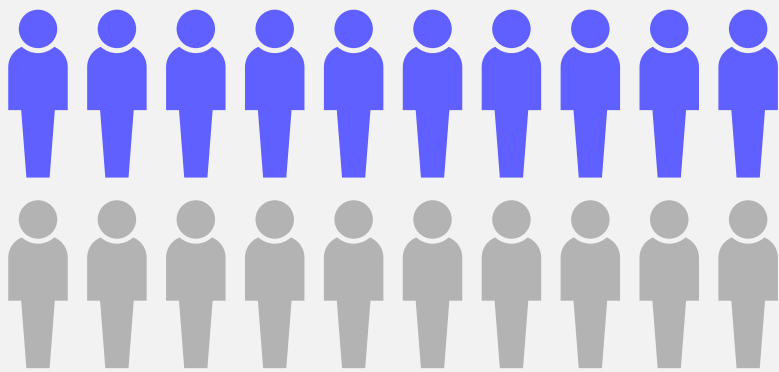
Fragmented data processes

Facility managers often only have access to outdated data and inefficient processes, such as spreadsheets and emails, leading to errors and isolated data silos. This hampers their ability to optimize building operations based on true conditions.

Due to these outdated tools, half of the facility managers who participated in the survey estimate wasting more than 10% of their time dealing with fragmented and poor data. Nearly a quarter of them estimate wasting over 20% of their time for the same reason.

A significant contributor to these challenges comes from the ineffective utilization of engineering design and asset information in operations – even when they have an IWMS/CMMS system, 38% of firms who participated in the survey struggle with poor data exchange between their BIM and operational systems.

Facility manager survey results



50% reported they waste more than 10% of their time dealing with fragmented data



Nearly 25% suggest they waste more than 20% of their time dealing with poor data



38% of those surveyed struggle with poor data exchange between systems

Today's facility management agenda

Current trends in building operations and maintenance have intensified the role of facility managers as key influencers in building space redesigns, capital upgrades, and renovations.

The imperative for any facility manager's agenda now includes the need to implement greater process efficiencies to optimize cost, enhance sustainability, and improve occupant satisfaction.

Top trends

Space optimization demands.

Space optimization requires firms to prioritize efficiency, ensuring that every space contributes strategically. This involves tracking usage, optimizing layouts, reallocating space use, and rationalizing portfolios.

Demand for renovation projects.

Renovation demand is rising due to aging buildings and shifting dynamics of work schedules. In Europe, the Renovation Wave Strategy, aims to double the building renovation rate in the EU by 2030. This is shaping the role of facility managers, with 38% of respondents rating building renovation as a top priority.

Greater collaboration with designers on the horizon.

A majority of facility managers surveyed predict increased collaboration with workplace designers, highlighting their growing impact on workplace redesign and facility upgrades. Facility managers expect their role to evolve over the next three years, with greater visibility from the C-suite and more collaboration with business stakeholders.

Bridging the data gap

As facility manager responsibilities increase, they recognize the importance of *data driven facility management* to gain real-time insights and better navigate the many new opportunities they face.



87% plan to use more data and analytics for informed decision-making, incorporating current conditions, asset lifecycle, and budget data to optimize facility performance.



78% intend to integrate AI into daily tasks and data analysis, automating processes like fault detection and maintenance scheduling.



70% foresee increased collaboration with IT departments as facility managers shift toward a more software-driven role.



67% will invest in enhancing granular data insights, focusing on BMS analytics, energy monitoring systems, digital twins, or sensors over the next year.

Digital twins for building operations

Transformations in building operations begin with innovations in digital twins solutions.

Digital twins connect rich data to deliver a dynamic, digital replica of an asset, offering a multi-dimensional view of how a facility is designed, built, and performing throughout its lifecycle. They enable the transformation of rich data into building intelligence, that can improve asset management and performance.

20% of firms who participated in the survey plan to invest in digital twins within 12 months to unlock actionable insights that can revolutionize building operations and maintenance.

5 ways digital twins enable building operations excellence

- 1 Visualization**
More effectively understand your facility's components.
- 2 Dynamic asset database**
Improve the maintenance of asset materials and components.
- 3 Planning simulations**
Assess performance impacts under different remodeling and workplace design scenarios.
- 4 Real-time occupancy insights**
Monitor facility conditions and space utilization trends in real time.
- 5 Actionable insights**
Proactively address potential issues before they occur.

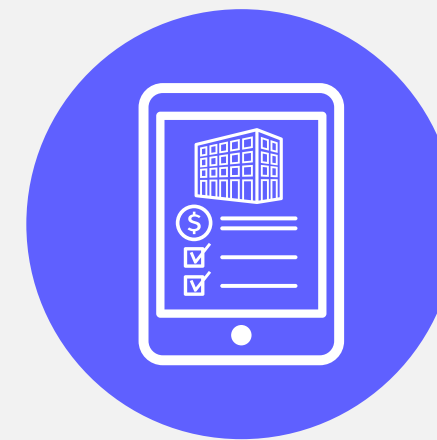
BIM for facility management

Another development impacting the transformation in building operations is BIM, or Building Information Modeling. BIM, enhances collaboration, decision-making, and outcomes for project stakeholders. It gathers various data types like 3D design models, material specifications, equipment details, floor plans, performance data like energy usage and maintenance schedules, and documentation data. This aids in gaining a comprehensive understanding of building assets.

Comprehensive data integration

BIM collects diverse data types, including 3D design and engineering models, material specifications and equipment details, floor plans and elevations, performance data (such as energy consumption and maintenance schedules), and documentation data fostering a holistic understanding of building assets.

Unlocking value through connected data



Detailed data on building components

Delivering detailed data on building components, BIM enables precise asset management and maintenance planning.



Streamlined maintenance processes

By streamlining maintenance procedures, BIM enhances operational efficiency, reducing downtime and improving overall facility performance.



Optimized energy efficiency

BIM provides data insights into energy consumption patterns, aiding in the optimization of energy efficiency measures and sustainability initiatives.

BIM adoption trends in facility operations



BIM for facility operations is on the rise.

32% of firms who participated in the survey already use BIM to support facility operations at one or more facilities, with a higher BIM usage among education, healthcare, and government sectors.



Firms tend to use BIM with a CMMS-IWMS for operations.

80% of firms using BIM for operations also use a CMMS system to empower maintenance processes.



BIM is becoming a common part of projects.

33% of firms intend to use BIM on their projects, indicating an opportunity for facility managers to influence data management processes and request access to BIM deliverables.



Facility managers still see BIM as complex.

While BIM adoption is increasing, facilities managers worry about its operational cost and complexity. Fortunately, cloud-based digital twin platforms are making BIM more accessible to operations stakeholders.



Advancing transformations in the building operations lifecycle

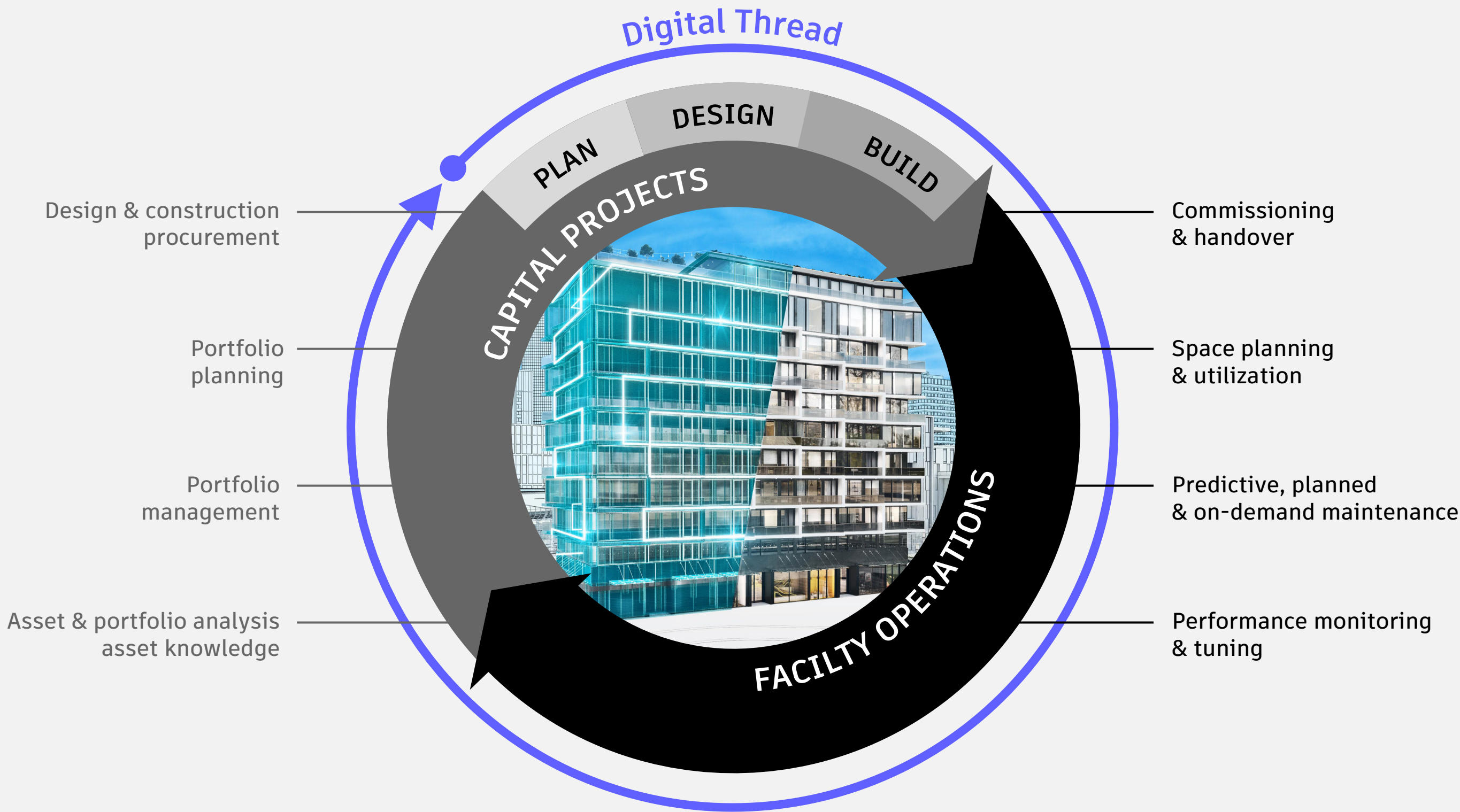
Autodesk’s strategic focus centers on the seamless integration of data throughout the entire building lifecycle, spanning from the initial design phase all the way through ongoing operations.

Streamlining the flow of information enables facility managers to efficiently access and utilize comprehensive data sets that enhance the overall performance and sustainability of the built environment.



“BIM is no longer a tool simply for design and construction; BIM can now be the backbone for managing buildings throughout their lifecycle.”

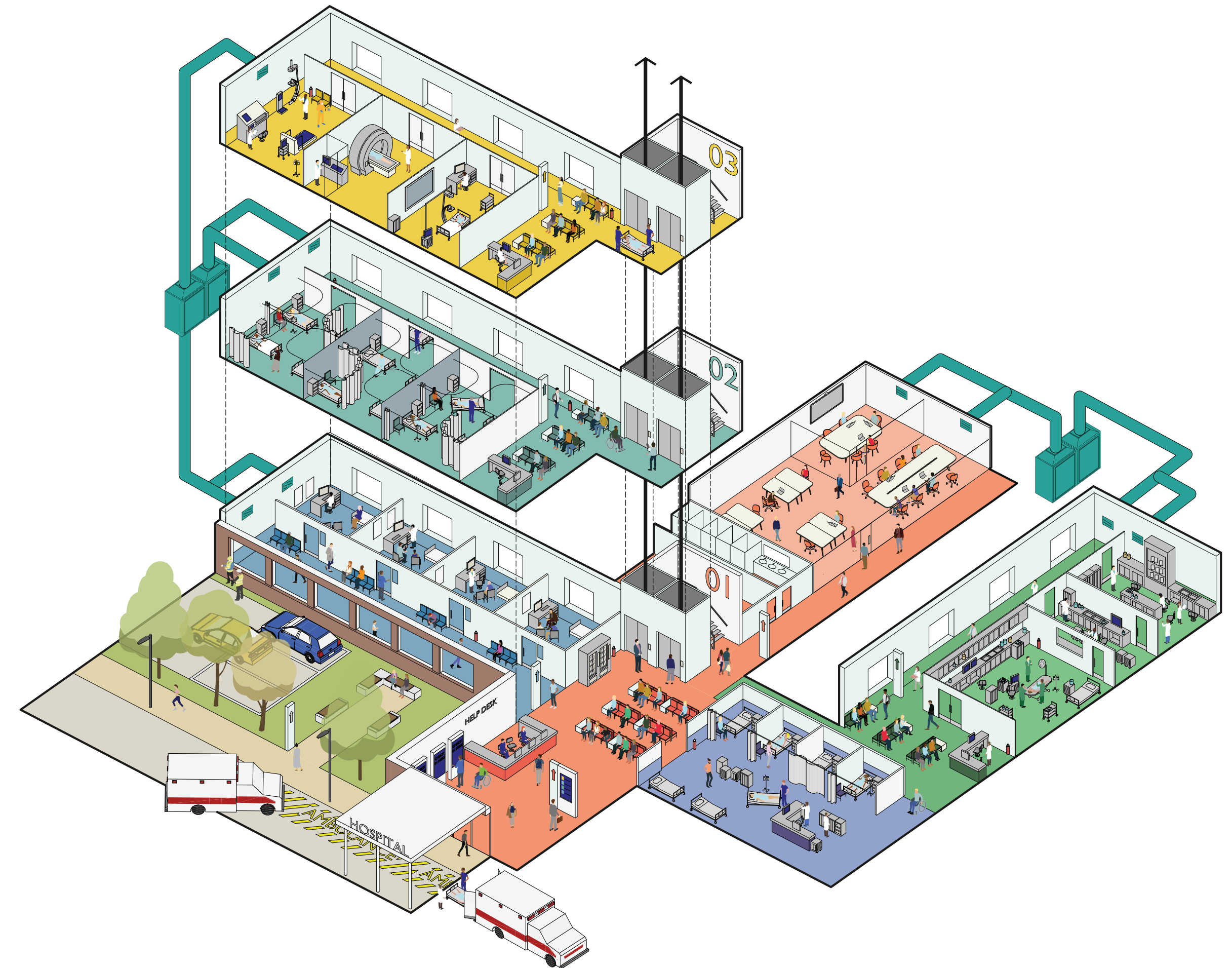
Susan Clarke
Senior Manager,
Building Operations Strategy
Autodesk



Strategic alliance

The strategic alliance between Autodesk and Eptura connects BIM, digital twins, and facility management workflows enabling building owners and operators to deliver:

- Better occupant experiences
- Strengthened regulatory compliance
- Improved space utilization
- Heightened sustainability
- Increased asset performance and lifespan
- Lower costs at all stages of the building life cycle



Unified facilities management solution

Digital Twin
Digital twin solution that enables seamless exchange of facility data for more efficient building operations and maintenance



Worktech Platform
Worktech solution that unifies occupant experience, facility teams, and asset data onto a common platform for efficient building operations



Design & Documentation
Design authoring tools for detailed CAD drawings and BIM models, enabling asset tracking, space planning, and maintenance scheduling during operations

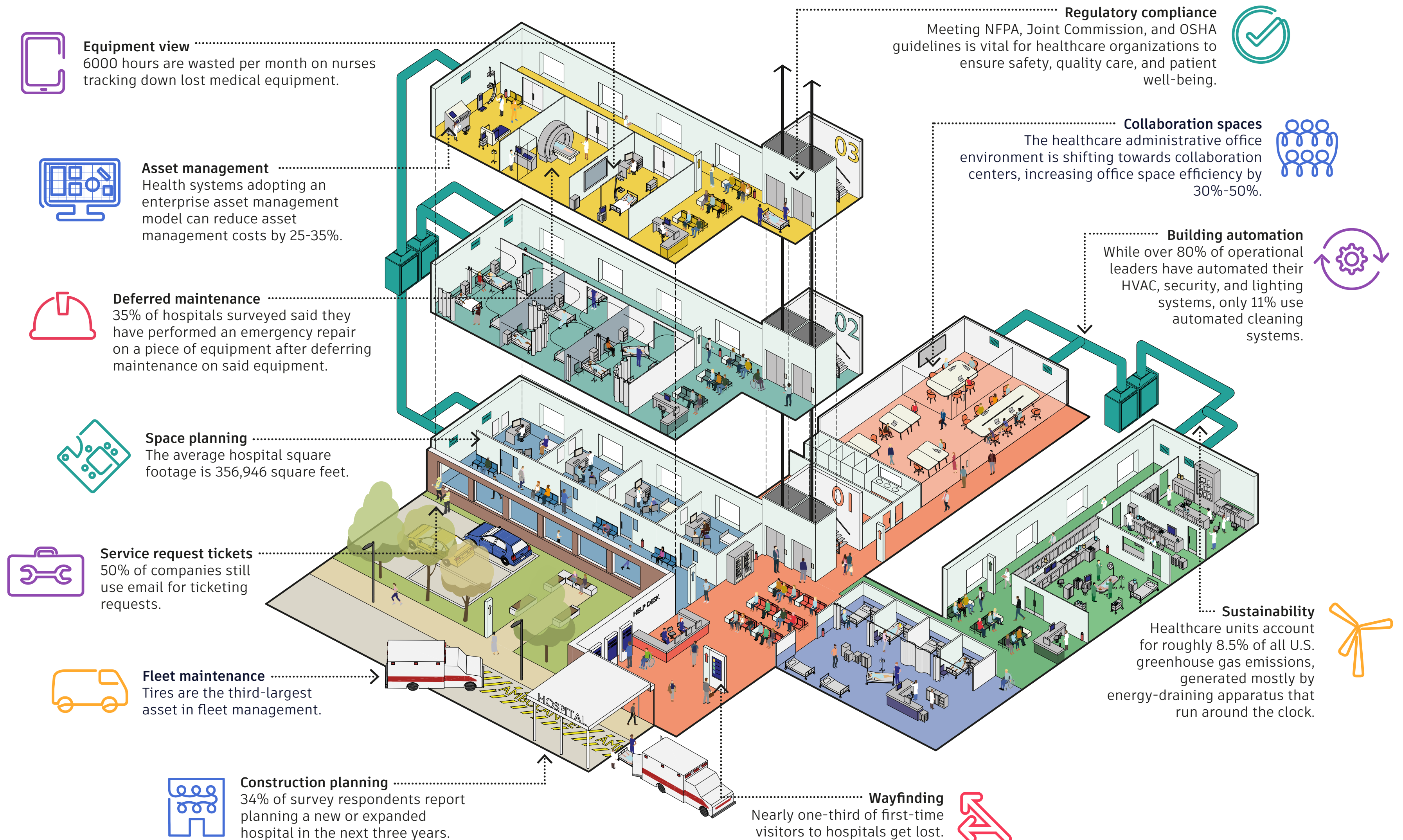


Autodesk Docs
A document management and common data environment for building operations, ensuring easy access to important files and streamlined collaboration among stakeholders

Autodesk Build
Toolset for project management that connects all stakeholders throughout the project lifecycle, ensuring high quality during operations

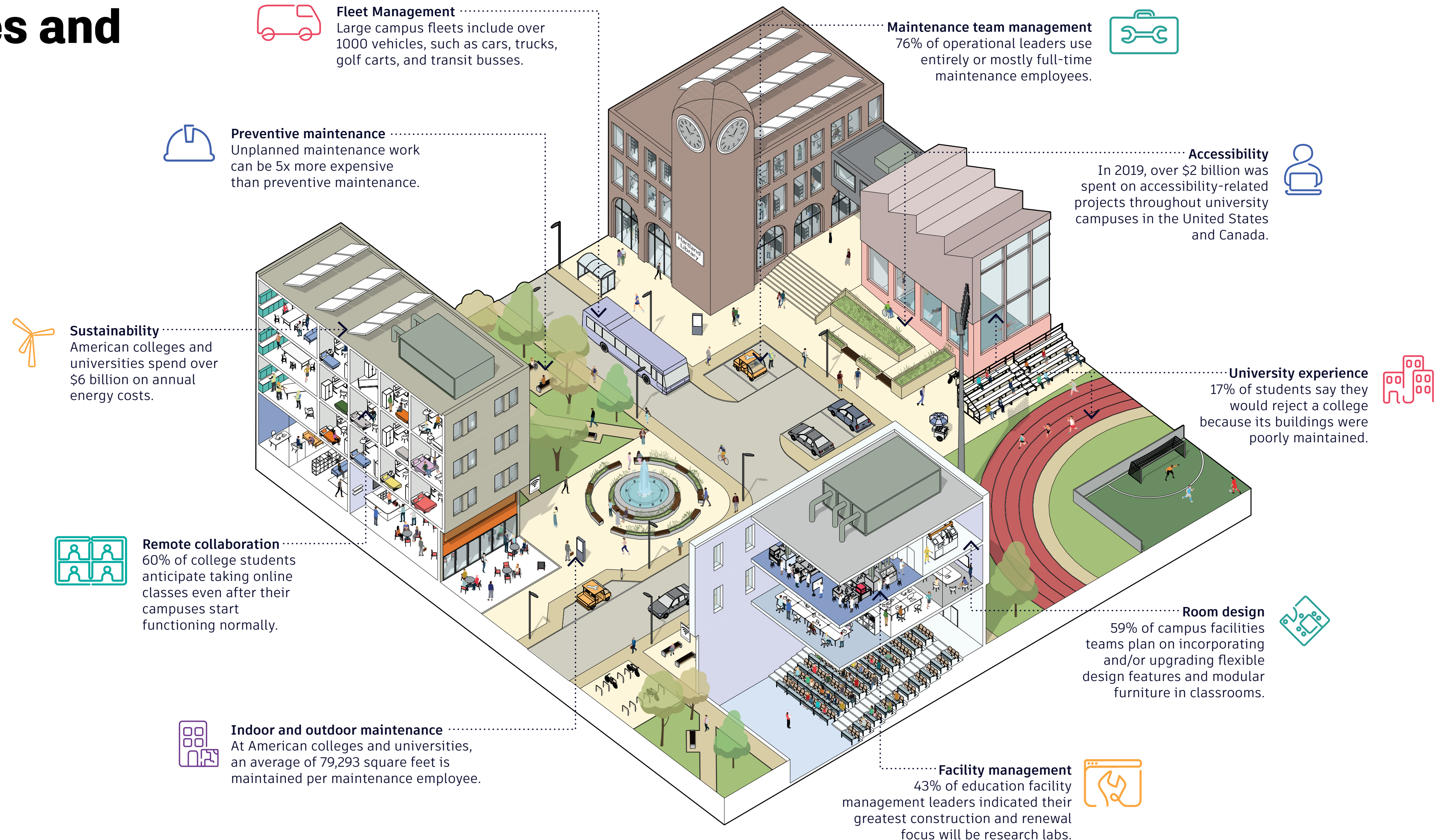
Transforming healthcare facilities and asset operations

In healthcare, transforming asset operations can streamline facility maintenance, address equipment inefficiencies, and identify lifecycle optimizations. Compliance, sustainability, and efficient space planning can reduce the costs, the carbon footprint, and operationalize the facility to maximize patient care.



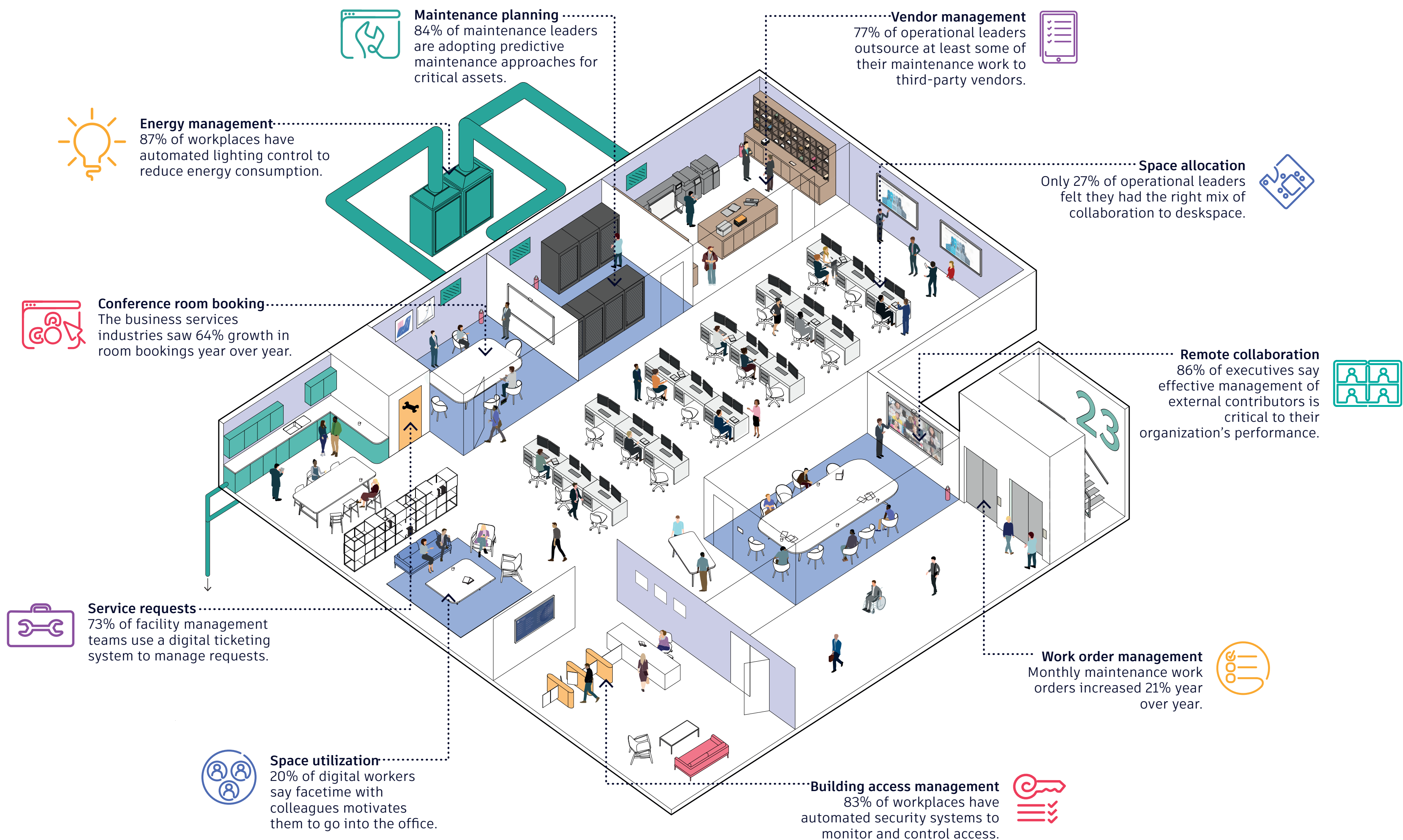
Transforming higher education facilities and asset operations

Revolutionizing asset operations within higher education involves centralizing all building and facility data onto a platform to manage capital projects, ensuring efficient maintenance, optimizing fleet vehicles, and prioritizing accessibility projects that create a positive university experience with a focus on future facility design.



Transforming corporate office facilities and asset operations

In an office environment, asset operations can be optimized with space utilization analysis, improved collaboration spaces, automated energy management, predictive maintenance, and robust security. Modernizing the workplace experience with new spaces, technology, and automation or insights is crucial to reduce the carbon footprint.



Outcomes



Improve cost efficiencies

Use data to boost productivity, improve capital planning, track energy projects, benchmark assets, and predict costs.

- ▶ Improve operational efficiencies
- ▶ Improve cost predictability
- ▶ Enhance insights through data



Increase occupant comfort and safety

Use a digital twin and real-time monitoring to gain on-going feedback of facility conditions and space usage experiences.

- ▶ Enhance occupancy comfort
- ▶ Improve security
- ▶ Reduce impact of closures (planned/unplanned)



Optimize sustainability performance

Improve visibility into facility carbon usage, refine energy reduction projects, and benchmark your asset portfolio more effectively.

- ▶ Improve energy efficiency
- ▶ Reduce carbon footprint
- ▶ Reduce environmental impacts

As you embark on your building operations digital transformation journey, the starting point is enhancing your data quality and governance.

Consider these questions:

- 1 Who will use the data and how will it make them more efficient?**
Reinforcing the bond between facility management and IT will be key for data-driven facility management.
- 2 What data is essential and how can it be captured efficiently?**
Leveraging digital twins will unlock invaluable insights on asset management and performance optimization data. BMS analytics, energy monitoring systems, and advanced sensors will play a key role in capturing data efficiently.
- 3 How will the data be maintained?**
To ensure the integrity of the data, effective data management and governance practices will be required alongside automation.



The data contained in this eBook is based on research by International Facilities Management Association (IFMA) and the Autodesk Research Community (ARC).

In a collaborative effort with IFMA and the ARC, Autodesk engaged with facilities managers to learn valuable insights about the current practices and upcoming trends in the industry. This partnership reinforced our understanding of embracing a holistic approach to facilities management throughout its lifecycle.

[Read the full report >](#)



Learn more about:

- The 3 key questions >
- The strategic alliance between Autodesk and Eptura >
- Tandem and digital twins >

Contact us to get started on your journey to smarter, and more efficient facility management. Let’s shape the future of your building operations together.

Contact us >



