Whitepaper

Building a better tomorrow: Key trends driving transformation across the built world in 2025

willow

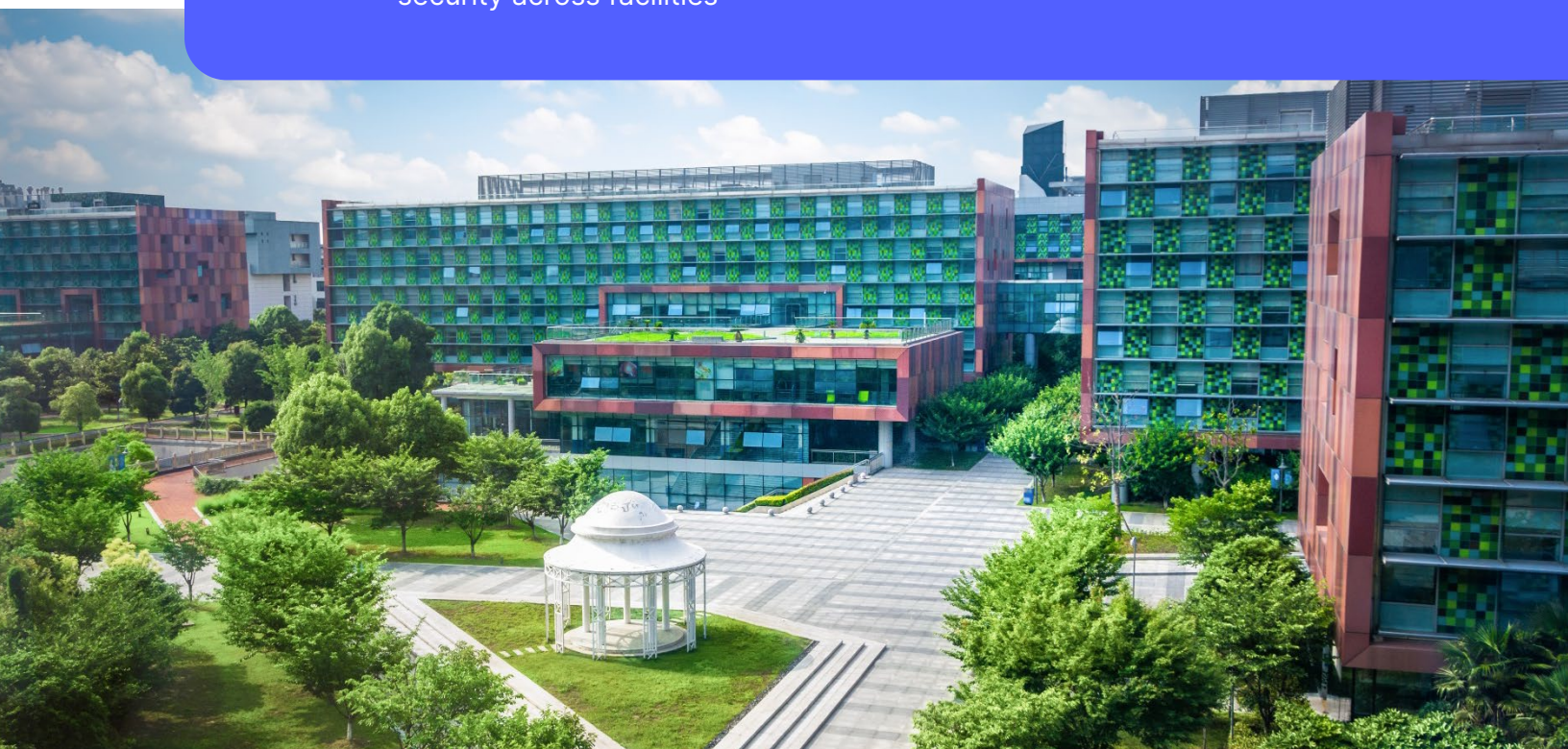
Introduction

The built world is a dynamic and ever-evolving domain, continuously shaped by human needs, technological advancements, and environmental considerations. As the built world grapples with digital transformation and how it applies, organizations – and entire industries – have never been at a bigger inflection point on how to think about the role of these critical assets within the business. Existing buildings can be anywhere from just a few weeks or years up to several-hundred years old, and the choices made today in designing, constructing, and managing these environments have far-reaching consequences with effects lasting well into the future. Sustainability imperatives are urgent. Efficiencies are economically and environmentally critical. And safety has taken on new dimensions, with threats from both the cyber and physical fronts.

With these pressing needs driving the need for digitization and centralization, organizations are tasked with ensuring that facilities effectively serve their needs while reducing the cost to own, lease, operate, and maintain them to improve the asset value at the same time. As a result, it is imperative for organizations today to reconsider the way their facilities – along with the connective infrastructure that binds and powers them – are built, operated, and maintained.

Key drivers of transformation:

- **Protecting the bottom line and margins –** Increasing operational efficiency and reducing costs
- **Protecting the environment and planet –** Improving sustainability and reducing the GHG footprint
- **Protecting people and assets –** Enhancing both cyber and physical security across facilities



Trends driving transformation across the built world

As organizations look to support these critical outcomes, IT and Facility teams are focusing on emerging trends that will shape the industry in the year ahead.

Trend 1: Moving from reactive to predictive maintenance programs to save millions

From equipment downtime that can cost an organization millions, to inflating operational costs due to unnecessary wear and usage, the repercussions from facility inefficiencies can be enormous. Organizations are increasingly moving away from aging, reactive legacy systems to adopt smart building technologies like IoT and AI that enable predictive maintenance, improve resource allocation, assess energy usage and HVAC systems, and monitor occupancy levels in real-time. Smart building technologies are revolutionizing facility management and improving tenant satisfaction while helping organizations drive operational efficiency and reduce costs. According to Deloitte, AI-driven predictive maintenance can reduce facility downtime by up to 15% and increase labor productivity by 20%,[1] while automated functions like lighting and climate controls can help optimize energy usage.

Trend 2: Navigating an aging workforce that is threatening business continuity

The most valuable asset for facilities is the skillset of the operators because they rely on tools and infrastructure that are increasingly falling behind the times, such as on-premises BMS systems, which present significant obstacles to modern capabilities like AI, remote work, and centralized control. With over 68% of facility operators and technicians above the age of 45 and 21% of employees remaining active beyond retirement age,[2] deep facility knowledge resides within an aging workforce and presents significant business continuity challenges that will come to a head in the next 5-15 years. By incorporating AI and next-generation tools, organizations can preserve and scale the knowledge of their current workforce, while positioning themselves to attract younger, more digitally native and data-driven candidates.

Trend 3: Adopting next-gen solutions to help address growing climate pledges and sustainability mandates

Energy consumption in buildings has been on the rise globally, driven by factors such as population growth, urbanization, and increasing access to energy in developing regions. According to the U.S. Department of Energy, 76% of all electricity use in the United States goes to the built world, as well as 40% of all primary energy use (gas, etc.) and 40% of carbon dioxide (CO2) emissions in the US.[3] The United Nations' Energy Program recently issued its Global Status Report for Buildings and Construction, which clearly states how the buildings sector is not on track to achieve decarbonization by 2050.[4] As the gap between the actual climate performance of the sector and the decarbonization pathway continues to widen, organizations need more than just sustainability reporting. They are seeking solutions to help them drive real progress, meet critical benchmarks, and align with future national energy and environmental goals. Life Cycle Assessment (LCA) is becoming pivotal in measuring the environmental impact of assets and materials throughout the building lifecycle to maximize efficiency, reduce environmental impact, and attain certifications like LEED and BREEAM, which are becoming standard for more sustainable building practices. Yet without a digital twin of the property portfolio, it can be nearly impossible to report on all the necessary assets to demonstrate compliance. Modern digital tools like this enable real-time reporting to see the impact and outcomes of sustainability efforts without having to wait for an annual report.

Trend 4: Using real-time data — like occupancy — to create building responsiveness

Occupancy and utilization metrics are becoming increasingly critical in guiding strategic decisions that help organizations control costs, support sustainability goals, and improve employee morale. Willow data finds that

occupancy-driven optimization has been shown to reduce anywhere from 18-30% of energy consumption. Yet while organizations strive to reduce energy consumption to meet sustainability goals, it's becoming a balancing act to still ensure the comfort and climate within the building isn't sacrificed – if occupants aren't comfortable in the environment, it can lead to significant losses in productivity and ultimately tenant dissatisfaction. Incorporating digital tools (including emerging sensor-based systems) and AI can help organizations take a data-driven approach to ensuring their facilities both maximize occupancy efficiency and remain responsive to the needs and comfort of tenants.

Occupancy-driven optimization can reduce energy consumption by up to **30%**

Trend 5: Addressing conflating security complexities due to convergence of physical and digital systems

Facilities are faced with a wide range of mounting security threats today – from physical breaches to cyberattacks, and environmental hazards. The rise of IoT devices and interconnected systems, as well as the collection of personal data (e.g., cameras, presence sensors, etc.), have expanded the attack surface for cyberthreats, making cybersecurity a critical facet of a comprehensive facility security strategy. It is critical for facility teams to maintain hyper-awareness of how their physical data is being managed digitally. To aid with this, organizations are adopting proactive risk management strategies to identify and mitigate potential threats before they materialize, which includes predictive analytics, continuous monitoring, and regular security assessments. AI-powered systems excel at identifying and responding to threats in real-time and can analyze video feeds continuously, detect unusual activities, and send immediate alerts to security personnel, while AI-driven biometric and facial recognition access controls not only enhance tenant convenience but can further strengthen physical security measures.

Trend 6: Adopting digital twins and AI to support critical business goals

Providing a real-time, virtual replica of physical assets, a digital twin can help organizations meet many of the critical needs across efficiency, sustainability, and security, enabling continuous monitoring and analysis of everything going on within the facility. Powered by AI and automation capabilities, this allows facility managers to quickly identify and address issues, optimize space utilization, and improve energy efficiency. Predictive maintenance capabilities reduce downtime and extend the lifespan of equipment, while data integration from multiple sources supports informed decision-making. Digital twins also facilitate better collaboration among stakeholders, help to ensure regulatory compliance, and enhance the overall user experience. By leveraging these benefits, facilities are achieving greater sustainability and operational excellence.

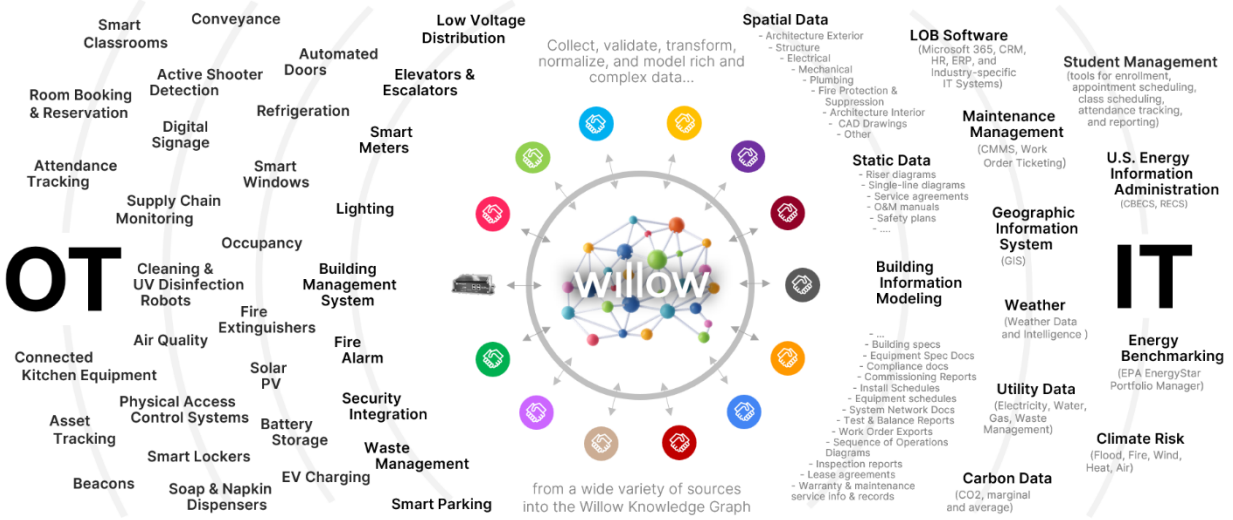
Building intelligence into structures and infrastructures

Willow is the leading AI-driven platform revolutionizing the built world, empowering organizations to reduce the operational costs of buildings, improve sustainability outcomes, and dynamically optimize asset performance at scale. Hosting the world's largest, most complete ontology for the built world and analyzing over 104.8 billion telemetry points, Willow's digital twin platform enables buildings to respond to the people, purpose, and environments they serve, effectively anticipating and adapting in real-time to dynamic operational and environmental conditions. Through the integration of static, spatial, and live data, Willow visualizes and interprets the relationships between equipment and systems to better inform and drive action, providing:

- **Oversight** over all systems, spaces, and activities within and across shared infrastructure in a single platform.
- **Insight** into pressing problems, cause and effect, and broader impact.

- **Foresight** for predictive maintenance, changing weather and grid conditions, and the achievement of long-term targets for cost and energy savings, sustainability, and building performance.

Willow builds knowledge around your data



Willow activates the ability of the built world to operate more securely, sustainably, and efficiently, bringing next-generation solutions to effectively tackle next-generation problems.

Predictive maintenance: Willow unifies data from hundreds of thousands of assets into a powerful knowledge graph, delivering real-time insights, predictive analytics, and automation capabilities. This intelligence unlocks the ability to move from reactive fixes to proactive, data-driven management. "When something breaks, we rely on someone noticing and reporting it. That's not sustainable, especially for an airport of our size and scale," says Chris Poinsatte, CFO of Dallas-Fort Worth International Airport. "With Willow, we can actually predict and know when something is going to break, and we can schedule that maintenance at night when it doesn't impact customers—and then, of course, that saves a lot of money."

Business continuity: Willow captures and digitizes the institutional knowledge of an aging workforce, while Willow Copilot, its AI companion, allows facilities team to quickly query that knowledge base. This expedites issue resolution, increases uptime performance, and mitigates risks associated with staff turnover. Additionally, its AI-driven platform helps attract younger, more digitally native candidates to a shrinking workforce. "What's exciting about what we're experiencing with the Willow digital twin is the ability to activate people quickly, to make them efficient and effective, to share knowledge and to address problems in ways that would've required somebody with 25 years of experience in managing HVAC,"

says Steve Burrell, CIO of Northern Arizona University. “We can give that experience to an individual who may be new on the job within the first week of them being here. That's what AI on top of that digital twin is doing for us, and it eliminates some serious risks for the university and helps us address issues that we encounter on a weekly basis.”

Sustainability: Willow equips organizations with data-driven insights and automation to meet regulatory requirements, fulfill sustainability pledges, and reduce greenhouse gas emissions for a more sustainable future. Willow not only enables more accurate sustainability reporting using real-time grid emission data, but also helps organizations act by operationalizing ways to save energy or reduce the carbon footprint in a data-driven way.

Responsiveness: Willow enables buildings to respond, predict, and adapt to external factors like occupancy, weather, and grid emissions using real-time data. Through occupancy-driven optimizations, for instance, Willow can reduce energy consumption by up to 30% while enhancing the tenant experience.

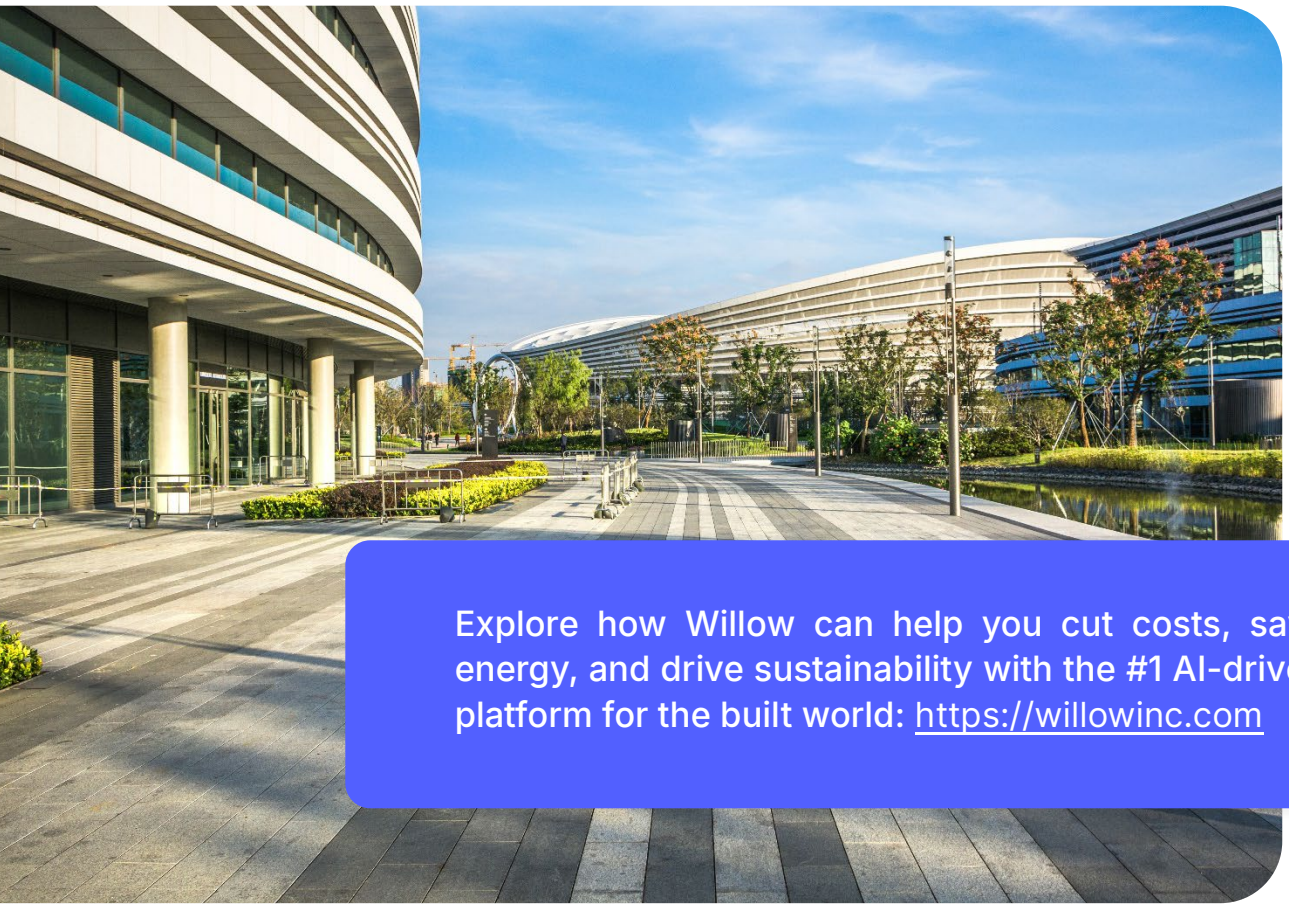
Secure digitization: Integrating real estate into an organization’s data estate requires security at its core. ISO 27001 and SOC 2 Type 2 certified, Willow enables responsible digitization of structures and infrastructures. By preserving and enhancing physical and cyber security across their entire real estate portfolio, organizations can better protect both their people and assets.

Moving from reactive to proactive facility management

- **Problem:** Northern Arizona University struggled to integrate and build APIs into its sprawling buildings and devices across campus, which inhibited the ability to effectively aggregate data to make it actionable.
- **Solution:** As part of its initiative to become a smart, sustainable campus, the university sought out a digital twin that would allow them to not only efficiently aggregate all the data to see what was going on, but that could enable appropriate action and to enact change.
- **Outcome:** Willow’s digital twin and AI provided the university with better visibility and management oversight of its built environment and previous obscurities, illuminating improvement opportunities, substantiating decisioning, reducing accrued debt, and improving deferred maintenance.

See the full case study

Ready for an intelligent way to manage better today and optimize for tomorrow?



Explore how Willow can help you cut costs, save energy, and drive sustainability with the #1 AI-driven platform for the built world: https://willowinc.com

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1 Deloitte, Predictive maintenance and the smart factory, 2017.
2 Economic Modeling Specialists Intl. (EMSI), Real Estate, 2020.
3 U.S. Department of Energy, Increasing Efficiency of Buildings Systems and Technologies, 2015.
4 U.N. Global Alliance for Buildings and Construction, Tracking Progress Global Status Report, 2022.