Active Evidence Collection: Redefining Survey and Assessment Activities in Smart Buildings

By Dennis Mazaris

How shifting from static surveys to continuous active evidence collection unlocks smarter, more efficient building management.

Best-in-class smart building environments comprise six key components: connectivity, power and energy, life and property safety, health and wellness, cybersecurity, and sustainability. Understanding and maintaining the systems of each of these silos is essential to optimizing building performance, reducing operational expenses, ensuring compliance with evolving standards, and enhancing the overall building occupant experience.[1] While all six components are vital, connectivity serves as the foundation that supports them all.

As smart building devices in each of the silos evolve and the platforms that leverage their data continue to advance so, too, does the connectivity infrastructure that supports them. The data generated by newly implemented smart sensors and devices provide increased insight and cost efficiencies[2], but their effectiveness is wholly reliant on the building's network to deliver that data. It is the building's connectivity infrastructure that ensures seamless communication across networks, supporting the building automation systems (BAS) that stakeholders rely on to optimize their environments.

Given the essential role of connectivity in smart building operations, updating infrastructure and maintaining accurate connectivity documentation is fundamental for effective maintenance, management, and planning. As a result, organizations depend on surveys to gain insight into the condition, functionality, and potential viability of upgrades to their smart building systems.

STATIC SURVEYS - AN OUTDATED APPROACH TO A MODERN PROBLEM

Traditionally, building infrastructure evaluations have relied on static surveys, which provide a snapshot of building systems at a specific moment. These resource-intensive surveys are typically conducted during key technology upgrades, lease transitions, building certifications, or asset acquisition due diligence activities. These establish a foundational understanding of key building components and facilitate strategic transitional planning and alignment with overarching operational goals.

While these assessments are essential, the fast-paced nature of smart building technology means that the infrastructure it relies on is more rapidly evolving. As the growth of the infrastructure outstrips the accuracy of the initially collected data, additional surveys are needed to produce a "here-and-now" inventory audit, with little expectation of any effort to maintain the resulting documentation beyond the immediate need of the current project.

The evidence collected during a static survey quickly becomes outdated, necessitating additional surveys that are rarely maintained beyond the immediate project needs. This ultimately results in even the most forward-thinking ownership and management groups struggling with costly inefficiencies, infrastructure planning challenges, and unanticipated upgrade expenses.

To overcome these challenges, commercial stakeholders can benefit from transitioning beyond static surveys and embracing active evidence collection—a proactive, ongoing process that captures real-time infrastructure data. Unlike static surveys, active evidence collection ensures continuous visibility into a building's physical layer, enabling property stakeholders to manage their assets more effectively, enhance tenant experiences, and future-proof their buildings for evolving technological demands.

DEFINING ACTIVE EVIDENCE COLLECTION

Active evidence collection is a dynamic, ongoing process that continuously manages, monitors, and updates key data by maintaining regular communication with building owners, property management staff, tenants, vendors, and consultants while also actively managing ongoing maintenance and documentation activities. This proactive approach not only supports improvements in smart building technology and eliminates costly survey activities, but also enhances the overall occupant experience by addressing evolving needs and uncovering opportunities for optimization.

Active evidence collection is applied across all six major silos of a smart building to ensure each system is optimized and the documentation gathered is actively managed. While many devices deployed across the different silos have a component of predictive maintenance built into them, they all rely on the connectivity of the device, and each can present unique challenges in physical evidence collection.

THE CHALLENGES OF IMPLEMENTING ACTIVE EVIDENCE COLLECTION

Smart buildings can come with unique challenges for active evidence collection. When organizations attempt to internally manage survey, documentation, and maintenance activities, they often encounter significant challenges that can be difficult—if not impossible—to navigate alone. Limited resources, expert dependencies, inconsistent training, conflicting requirements, and coordination issues all contribute to gaps and inefficiencies that undermine the effectiveness of internal programs.

IT department stakeholders often operate at the portfolio level rather than focusing on individual buildings. Their expertise is typically focused on managing networks and systems in active use, this means they may not prioritize comprehensive infrastructure documentation practices at the site level. The systems they rely on can produce impressive data outputs, including predictive maintenance metrics on many of their sensors and devices, but the stakeholders rely on resources local to the building for knowledge of the actual physical backbone.

This lack of detailed site-specific knowledge can make active evidence collection efforts challenging, requiring additional coordination between local building IT resources, property management teams, and the vendors contracted to install and maintain the sensors and devices their smart building systems require. The absence of standardized training, conflicting requirements, and challenges in access coordination all contribute to the inherent weaknesses in most efforts to manage effective active evidence collection programs.

Compounding this challenge is that the majority of third-party property management companies are on fixed-term contracts and focus on operational concerns, meaning that continuity in documentation practices is rarely a priority. Over time, a change

in management personnel can lead to a shift in processes (or outright abandonment of them) which quickly translates into missing or incomplete records, making it extremely difficult to adhere to any infrastructure documentation process or methodology history.

Property teams often struggle with structuring and maintaining building technology records in a way that aligns with best practices, and many are not fully aware of the long-term benefits of infrastructure lifecycle management. This makes centralized documentation systems for tracking infrastructure-related data across smart building silos a rarity.

Historical records, vendor data, sensor and device platform data, and third-party reports may hold key information, but without a structured approach to document management, extracting useful analyses can be time-consuming, and ultimately unreliable.

CENTRALIZED CONTROL - A ROADMAP TO SUCCESSFUL ACTIVE EVIDENCE COLLECTION

Active evidence collection activities should be divided into four structured phases to ensure comprehensive data collection and maintenance. Additionally, the following phases can be applied to all installation, maintenance, and documentation activities across the six silos of smart buildings. Each phase of the methodology is crafted to generate the dataset required for the next phase, with each phase building upon the previous one:

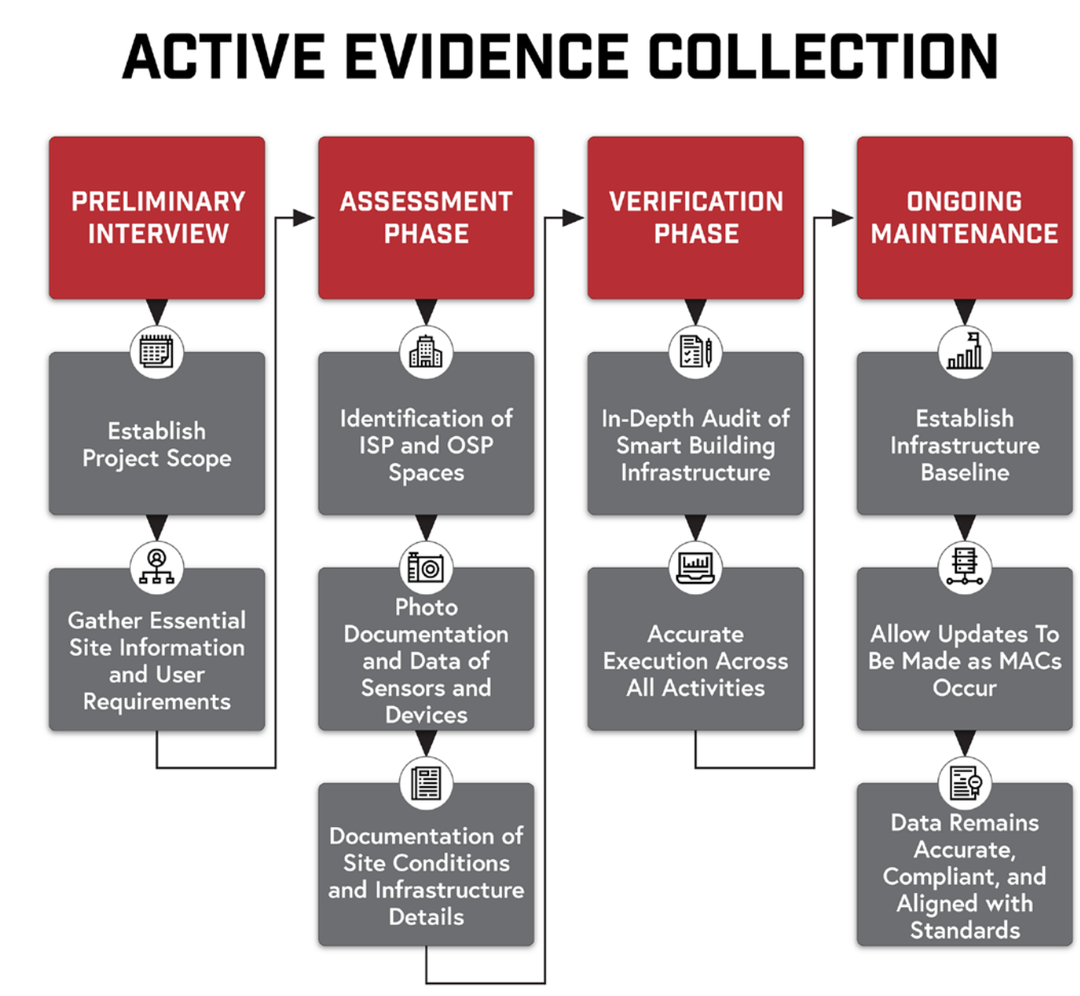

FIGURE 1. Process and Methodology of Successful Active Evidence Collection Activities. Source: Concert Technologies.

1. **Preliminary interview**: Establishes project scope by gathering essential site information and user requirements. These requirements may range from extensive building certification criteria to simple technology deployments. By establishing the needs of the site at an early stage, the assessment allows the end user to develop a clear, concise requirements document with very little or no ambiguity, giving contractors precise parameters and a better understanding of the project's scope.

2. **Assessment phase**: Focuses on initial data collection, including the identification of inside plant (ISP) and outside plant (OSP), telecommunications spaces, photo documentation, and basic observational data of smart building sensors and devices. This foundational information supports efficient planning and execution of the following verification phase. The assessment also documents site conditions, access points, equipment and device locations, and infrastructure details through CAD drawings, photographs, and observational data.

3. **Verification phase**: Involves an in-depth audit of spaces, equipment, and pathways, including cable labeling, conduit mapping, and backbone cable tracing of any infrastructure that the smart building systems are reliant upon. A structured protocol ensures accurate execution across all activities, from OSP surveys to template-driven data collection. Unlike the assessment phase, the verification phase is designed for contractor execution, requiring skilled personnel with expertise in ISP and OSP surveys.

4. **Ongoing maintenance**: Data from the verification phase establishes the infrastructure baseline, serving as a continuously updated reference point. This approach allows updates to be made as moves, adds, and changes occur, eliminating the need for repeated full-site surveys. Active maintenance management ensures building data remains accurate, compliant, and aligned with evolving standards, reducing costs and maintaining operational efficiency.

To ensure the success and scalability of active evidence collection, it is essential to adopt an operational model that provides a structured, efficient, and reliable framework for documentation delivery and maintenance. A fully dedicated project management team should manage, monitor, and update key data through regular communication with building owners, property management staff, tenants, vendors, and consultants. Additionally, the team should actively manage ongoing maintenance and documentation activities in a shared, cloud-based platform, allowing for centralized documentation. By entrusting infrastructure oversight to a dedicated management team, organizations can alleviate the burden on their internal resources, freeing personnel from conflicting responsibilities while optimizing departmental budgets.

This structured approach is particularly beneficial for large-scale, multi-tenant smart buildings with extensive ISP and OSP infrastructure. Continuously documenting modifications preserves data integrity and provides a reliable centralized source for real-time infrastructure insights. This centralized approach enhances operational efficiency, reduces response times to outages, and simplifies strategic planning for future expansions and upgrades.

TECH-READY SMART BUILDINGS - FINANCIAL AND STRATEGIC ADVANTAGES FOR COMMERCIAL BUILDING OWNERS

From a financial perspective, active evidence collection allows building owners to optimize budget allocation. Instead of making reactive, ad-hoc investments based on outdated survey results, companies can strategically plan upgrades and replacements based on real-time asset performance data. This ensures that infrastructure investments align with long-term business objectives and tenant needs.

Moreover, in the context of property acquisitions and lease management, active evidence collection provides critical insights that facilitate seamless transitions. Buyers can assess infrastructure quality, anticipate upgrade needs, and avoid unexpected costs. Property managers can leverage accurate infrastructure documentation to enhance the marketability of their assets, demonstrating operational readiness and reducing leasing friction.

Additionally, the proactive nature of active evidence collection can lead to substantial cost savings by identifying potential failures before they result in expensive repairs. Predictive maintenance strategies informed by real-time data can extend equipment lifespans, reduce downtime, and minimize emergency expenditures. These cost-saving advantages directly impact a property's bottom line, making it an attractive approach for forward-thinking real estate owners.

By recognizing and addressing these challenges, commercial real estate stakeholders can establish best practices for active evidence collection, ensuring that smart building infrastructure remains efficient, well-documented, and aligned with long-term business objectives.

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