

# EVALUATION ROADMAP : HOW TO CHOOSE THE RIGHT SMART BUILDING SOLUTION



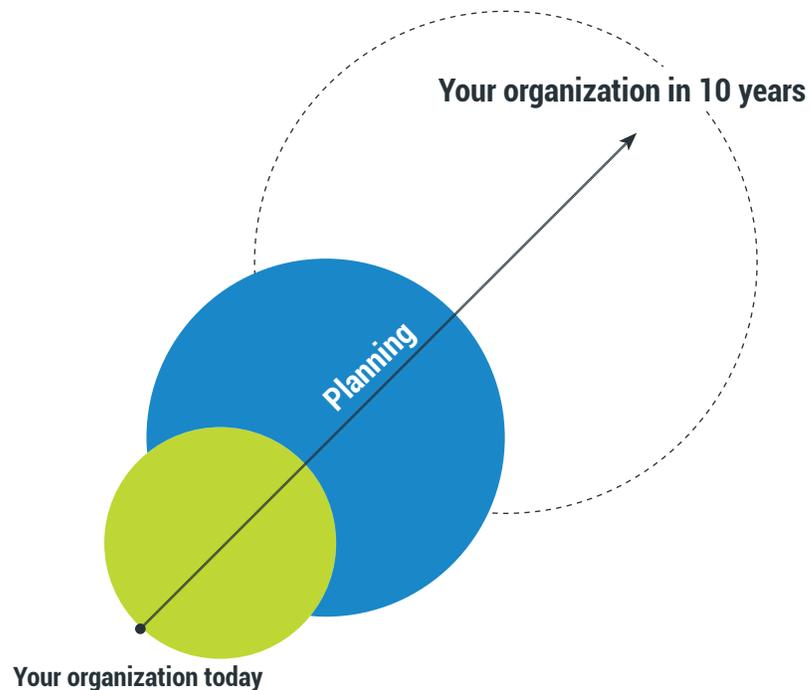


**“A ‘smart building’ isn’t just a structure with a jumble of sensors and dashboards. Savvy enterprise leaders know that communication is a fundamental component of higher intelligence. A truly effective smart building program combines all the user’s relevant data sets to provide key insights and deliver immediate ROI.”**

— [Deb Noller](#), CEO, Switch Automation

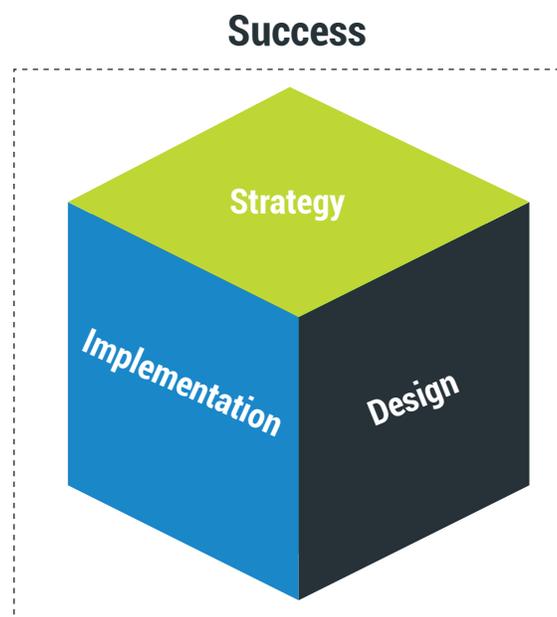
You've decided to pursue a more [efficient operations practice](#) across your real estate portfolio. Perhaps you want to boost productivity or lower operational costs. Maybe you want to attract top-tier tenants and investors. You might be looking for a better way to ensure regulatory compliance, or to gain a competitive advantage by improving your brand reputation. Whatever the motivation, you know a smart building program will pave the way to increased ROI and now you're ready to start planning.

It's critical to begin this journey with the end in mind. Picture your organization in the future. What will it look like? What business objectives do you have for the next year, two years, five years or decade?



The transition from a disparate portfolio operation to a fully integrated smart building program won't happen overnight. But, with careful planning, you will set your company on a path to success and secure early wins to capture the confidence and support of the broader organization. Without a well-designed strategy, you run the risk of trialing a myriad of technology solutions, resulting in wasted resources and a serious case of buyer's remorse. Absent a detailed roadmap, you might wind up driving in circles, miss important pit stops or compromise your operational engine. Strategy is the map, design is the route and implementation provides the vital milestones you'll need to ensure success.

Choosing the right scalable smart building solution is a challenge, but our Switch team of Engineers, Systems Integrators and Software Developers is here to help. We have a wealth of experience working with clients that span a variety of industries. In this piece, we collaborated with smart buildings mastermind and author of "[Smarter Buildings. Better Experiences.](#)" Bruce Duyshart, to apply the Intelligent Property Design Framework. Follow this roadmap to select the best solution for your organization.



# STRATEGY

Review the terrain. In this stage, you'll conceptualize the project by identifying scope, stakeholders, facilitators, resources, business impacts, challenges, competitors, goals and expectations.

**“The strategy stage of the process is by far the most important stage and yet, it is usually left out of many projects.”**

- Bruce Duyshart, Smarter Buildings. Better Experiences.

# Review

Audit the sites where you'll implement the program, focusing on constraints and opportunities. Have a facilities manager or a team member who is familiar with the portfolio conduct a light engineering review. This helps uncover large energy sinks, identify which sites have large chiller plants vs. packaged RTUs and which locations have the most zones, aka highest potential for tenant discomfort. Review all documentation sources thoroughly.

**e.g. approval requirements, sustainability rating mandates, KPIs and building performance schemes.**

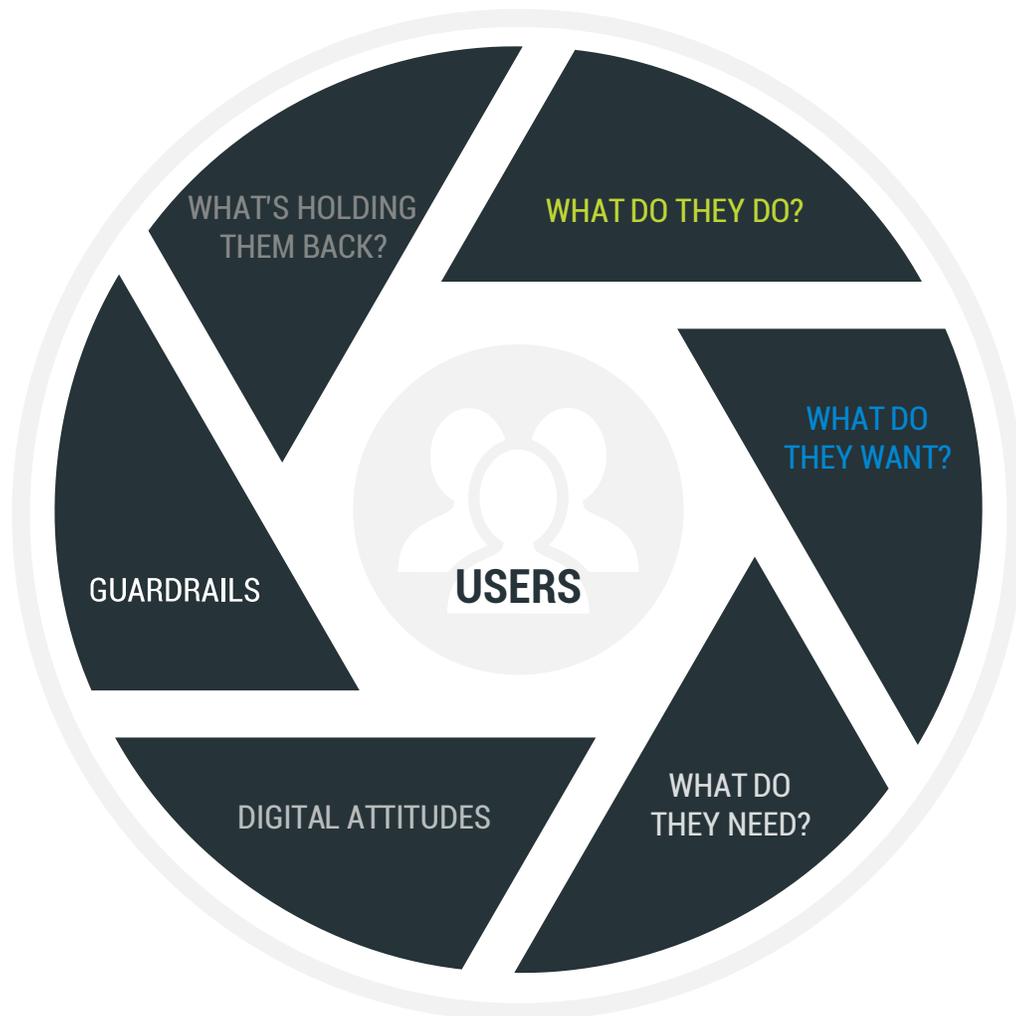
Compare building performance to previous baselines and examine industry benchmarks to ascertain how your buildings should meet or exceed them. Aggregate any information and metrics that will define success for the program. Highlight any sites that are in a planned maintenance or upgrade program, as you may be able to align your capital investments.

# Research

Identify key stakeholders who will use or engage with the product (energy managers, designers, operators, investors, developers, facility managers, regulatory authorities, tenants and others). Examine how end-users will apply the technology, how you want the market to perceive the program and what competitors are doing in the space. Ask questions early and often because this information will become your competitive advantage. Manage and communicate expectations of what can and can't be accomplished by the solution to all parties involved. Incorporate their feedback into your plans from the outset to ensure optimal user engagement.

# Ideate

Familiarize yourself with users' daily routines and how they will engage with the solution. Define tangible and intangible benefits. Acknowledge and understand the technology requirements and value propositions of your key stakeholders. Create a master plan that articulates the strategic technology vision, use cases and expected outcomes. All stakeholders should agree on a plan for the best path forward. Be clear on the vision and keep it simple when selling the idea to your team.





**“During the evaluation process, we focus on asking the right questions to ensure the strategy we recommend is perfectly tailored to meet each client where they are. Listening intently to what's being said AND what isn't helps us anticipate unrealized needs.”**

– Dennis Krieger, Director of Engineering, Switch Automation

# DESIGN

Plot the course. In this stage, you'll create the roadmap that connects vision to reality.

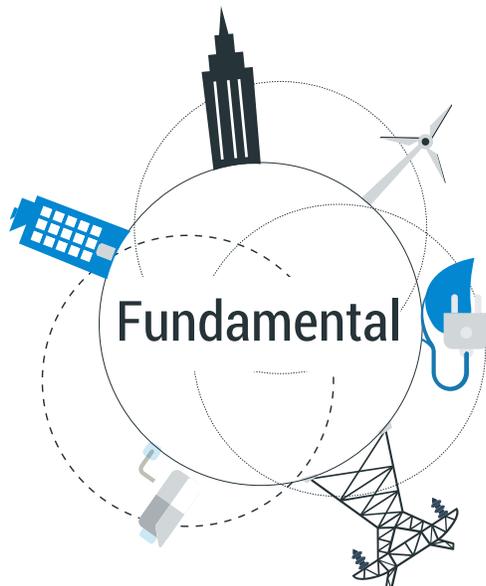
**“The design stage of the Intelligent Property Design process is where the concept design and detailed design are brought together.”**

— Bruce Duyshart, Smarter Buildings. Better Experiences.

# Define

At this stage, you must meet four key deliverables: technology development brief, systems integration matrix, project budget and schematic documentation. These deliverables demonstrate rationale and expedite project buy-in.

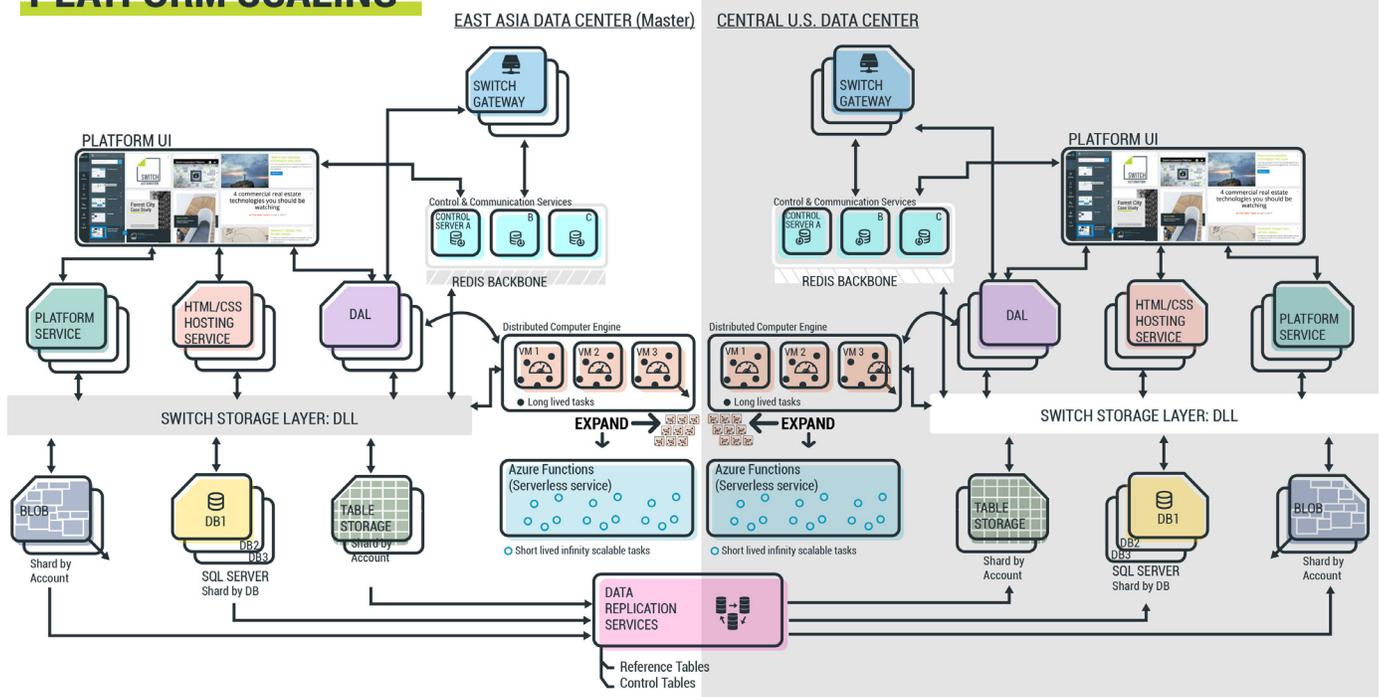
- **Technology development brief** – Describe the technologies that support your development objectives. First, clarify which technologies are foundational and which are specialized. For example; fundamental technologies necessary for competitive advantage may include infrastructure, telecom, security and power supply capabilities. Specialized tools that support specific needs, on the other hand, refer to the building management system (BMS), variable messaging signage, middleware integration systems, etc. Consider open technologies and exclude closed or proprietary systems. This will help ‘future-proof’ the project and prevent a lock-in to limiting contracts with hidden fees. Finally, determine which technologies are highest priority by ranking them against these selection criteria: competitive necessity, cost, scalability and risk.



## Evaluation Roadmap: Design

- **Systems integration matrix** – Build a matrix of the various systems that support your current business and the potential integrations required between them.
- **Draft project budget** – Outline an estimated allocation of financial resources for the project.
- **Schematic documentation** – Provide a high-level visualization of the proposed technologies and their interactions with one another. Draft concept diagrams, schematics or single line drawings for the various technology systems, source devices and network infrastructure. Remember, the goal here is to clearly illustrate key concepts from the technology brief to help communicate basic project design principles, identify design options and aid cost estimation.

## PLATFORM SCALING



*Note: As you collect data to inform the above, be sure to brief suppliers of the scope well in advance of requests to present their product to the project team. This allows them time to appropriately tailor presentations and proposals to include only relevant information.*

# Document

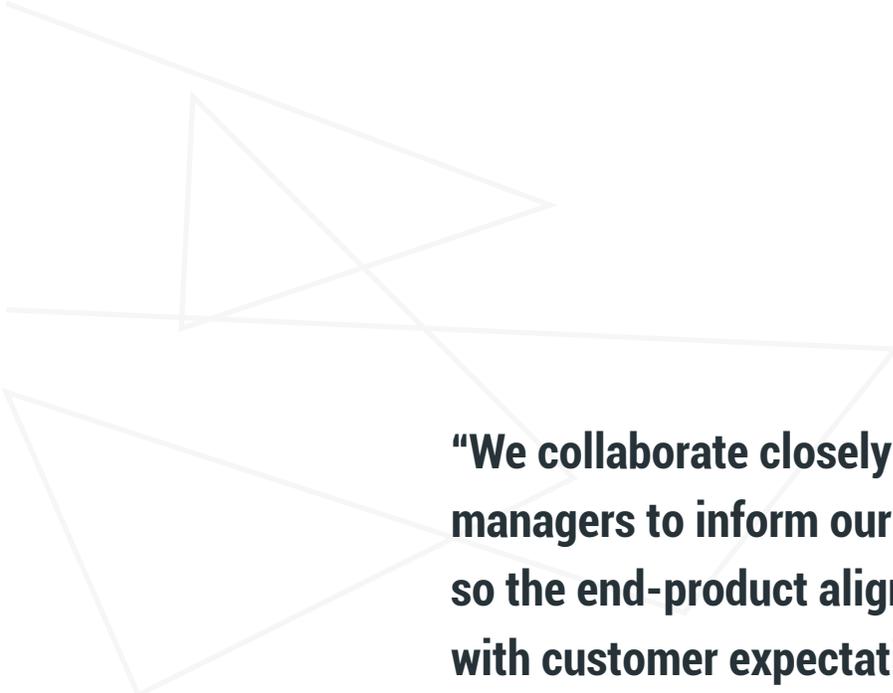
This stage is comprised of six deliverables:

- **Network systems integration design** – Outline all telecommunications and active networks that the various building systems share.
- **Building systems integration design** – Identify all physical, logical and functional areas of integration between building systems. Be specific enough in your design to allow for thorough review by key stakeholders.
- **Naming Standards** – It's important to agree upon organization-wide standards for equipment naming, sensor tagging and all data nomenclature. Putting rigor into this step sets your data up with the necessary structure to deduct meaningful analysis and implement change across the portfolio in a consistent way.

For example, labeling all air handling units as AHU1, AHU2, AHU3 is helpful for maintenance teams. But pairing that with a laymen label, such as 'Employee Break Room' or 'Store Show Floor' brings context to the story that your data will tell.

- **Final specifications** – Prepare specifications for each building system that are suitable for tendering and construction.
- **Project budget** – Finalize the budget for all the project's technology elements. Remember to include long-term costs such as service contracts.
- **Demarcation Schedule** – Clearly establish roles and responsibilities, including time-oriented tasks and their owners.

*Note: Keep stakeholder communication wide-open during the design process to prevent delays, diversions and roadblocks.*

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**“We collaborate closely with program managers to inform our decisions so the end-product aligns perfectly with customer expectations.”**

– [Jared Temanson](#), Director of Customer Success, Switch Automation

# IMPLEMENTATION

Hit the road. In this stage, you'll begin driving the project forward and take planned pit stops to measure progress. Here, you'll gather valuable feedback and alter the course if necessary.

**“What was theory, strategy, planning and design will now be constructed as new or fitted into an existing building.”**

— Bruce Duyshart, Smarter Buildings. Better Experiences.

# Build

Once project implementation is underway the two most important aspects of a successful deployment are to:

- **Think ahead** – Anticipate issues that could arise and help the project team to “de-risk” wherever possible. Familiarize key stakeholders with new technologies as they are introduced and maintain a good relationship between the site and project teams to prevent speedbumps
- **Maintain effective communication** – Stay in close touch with all the key stakeholders. The project team will most likely be sourced from various areas of your organization; sustainability, operations, design, development, project management and marketing teams. Don’t miss opportunities to capitalize on PR and customer success stories. Share progress, wins and program success with your marketing team so they can optimize your brand.

# Test

Check the progress of the implementation process frequently. Utilize a constructive feedback loop for the latest technology iterations to address gaps and issues promptly.

- **Start with a subset of buildings and functionality** – Test and invest. Grow the program along both dimensions.

- **Train and test platform users** so they can easily adapt to the updated technology. Incorporate their feedback into future iterations.
- **Perform targeted testing** on the system itself to troubleshoot any problems with the solution you're installing.



# Support

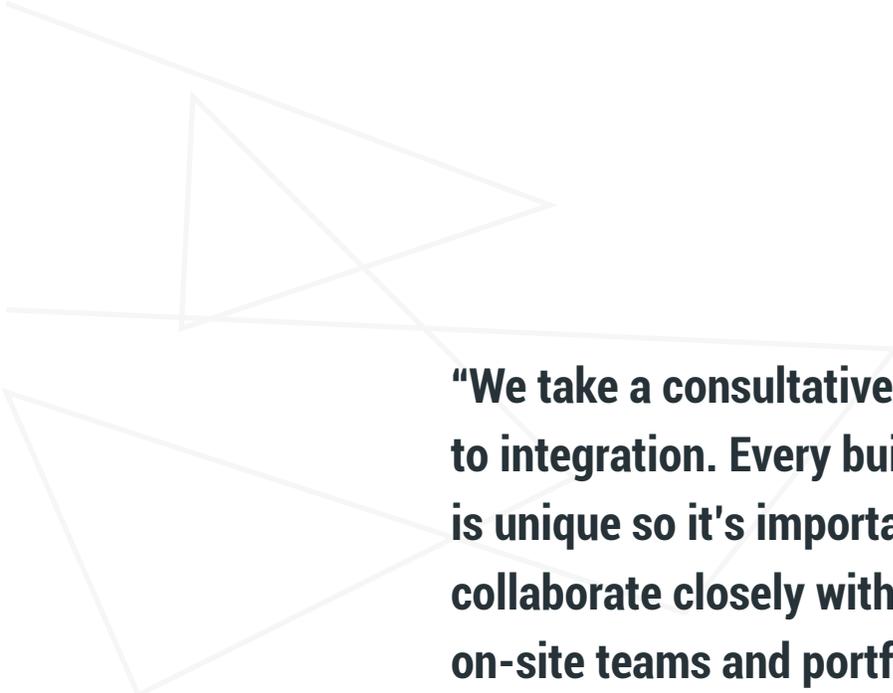
Key considerations for ongoing support include:

- **Support teams** – Choose internal and external teams to provide effective support as necessary.

e.g. facilities managers, building systems engineers, network management and network security managers

- **Systems contracts** – Establish appropriate service contracts.
- **Service levels** – Consider the systems availability required for the buildings and portfolio. Implement service level agreements that define accountability and reflect the critical nature of adequate support.
- **Support tools** – Identify the tools necessary to facilitate support services and access to building information by a wide range of stakeholders.

e.g. remote access tools, operations and maintenance information, computer aided facilities management, building information dashboards and building information modeling

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**“We take a consultative approach to integration. Every building is unique so it's important to collaborate closely with the on-site teams and portfolio managers to clearly chart the course to success.”**

– [Peter Rake](#), Director of Global Integration, Switch Automation

Now that you have a roadmap to select **the right scalable smart building solution**, you're ready to get going. Use the set of questions below to take the guesswork out of planning for a program and evaluating vendors.

## Smart Building Solution Questionnaire

### STRATEGY

#### Measure of Success

- What do you want to achieve with a smart building solution?
- What does ROI look like for your company?
- What metrics do you want to measure and improve on?

**e.g. reduce energy consumption, increase maintenance efficiency, better manage staffing needs, improve tenant comfort**

- Approximately how many buildings and data points do you want to roll out with this project to demonstrate quick ROI?
- How do you plan to phase the roll-out?
- Do you need to work with an industry expert or consultant to better understand your unique challenges and goals?

**TIP: Check out Bruce Duyshart's [Meld Strategies](#)**

## Use Case

- Who are the stakeholders? What are their day-to-day routines?
- What matters to each stakeholder?

**e.g. streamlined portfolio reporting, real-time analysis, proactive maintenance, equipment lifecycle cost analysis, Total Cost of Ownership (TCO), cross functional communication, developing a baseline of building performance, benchmark analysis**

- How will your users interact with the technology in their day-to-day work?
- How should it help them achieve their unique goals and priorities?
- Are there any new objectives or metrics that the smart building program could introduce for users?
- What training is necessary to engage users with the technology and data?

## Reporting

- How many people and man-hours does your organization use to meet reporting requirements?
- What is the process for refreshing data?

## Energy management

- What type of system do you have in place to manage peak demand and/or power quality charges?

- How do you identify the root causes and drivers of energy consumption and peak demand?
- Have you set baselines, targets and long-term goals?

### Real-time analytics

- How can you gain business intelligence by comparing various data sets (e.g. indoor air quality, people counting, temperature) with energy consumption? Where do these data sets reside today?
- How is utility management, such as water or waste, prioritized?
- Do you use data to measure how well core building systems like HVAC and lighting are operating?

### Tenant Satisfaction and Comfort

- What are your key performance indicators for measuring tenant comfort?

**e.g. HVAC temperature / IEQ levels, parking lot security, reliable elevators, clean bathrooms**

- What priority does your organization assign to tenant comfort vs. lowering operating costs? (*note: there is often a trade-off*)
- How do you prove to your leadership/investors that you're improving on tenant comfort year-over-year?

### Occupancy and Space Utilization

- How important is space occupancy and utilization to your organization?

- Do you currently collect any metrics on this? If so, what and how? Is there value in combining data from disparate systems?

**For example, would it impact your real estate strategy to cross-analyze access control or badging data that measures total occupants, with meeting room booking system data that can indicate room booking hours?**

### Company Landscape

- What systems do you leverage today? What types of data do you have access to today (e.g. BMS, building meters, sub-meters, IEQ sensors, people counters)? What missing pieces are you looking for?
- If you don't currently have access to your data, why do you want to start tracking it now?
- How will you future-proof your portfolio to avoid expensive commitments to proprietary hardware solutions?
- What are your company policies on cyber security? Who needs to sign off on solutions to ensure those cyber security policies are being adhered to?

### Data Storage

- Where is your operations, asset management and utility data kept?

**e.g. in various systems, sub systems, spreadsheets or outsourced to service providers**

- Do you own and/or have access to all your data?

- Do your BMS/BAS/control systems at the buildings permanently store interval data?
- Does your IT group prefer cloud or on-premise software?
- How do your data systems interact? For example, do you have a central data warehouse for operational data or does it reside in different systems and platforms?
- What tools does your organization support or provide for data visualization and analytics?

## Vendor Management

- Is there an opportunity to better manage vendors and service contractors?  
**e.g. automation companies or maintenance technicians?**
- Do you outsource operations/maintenance/services?  
**e.g. CBRE, JLL, C&W, Knight Frank, Spotless, Grosvenor Engineering**
- If you outsource facilities operations to a third party or various regions of your portfolio to the best local vendor, how do you compare vendor performance?
- When contract values change or increase, what leverage do you have to negotiate competitive rates?
- Do you triage and remotely investigate tenant/occupant requests before generating work orders and/or sending technicians to site?

- Are you interested in centralizing operations?

**e.g. minimizing the number of software packages you must install and coordinating operations from a Building Operations Center (BOC)**

## DESIGN

### Meters

- Has your organization invested in sub-metering? Is that data currently available to all the key stakeholders?
- Does your organization require electricity, water and gas metering?
- Would your organization value having metering data in real-time?
- What data properties do your meters monitor?  
**e.g. power, current, etc.**
- Is consistent utility metering and sub-metering an important baseline level of infrastructure for your portfolio? Or do you prefer deeper integration of an existing automation system?

### Control

- Does your equipment have digital controls (“DDC”)?
- Have you standardized protocols for any equipment selections?  
**e.g. Modbus, BacNetIP etc.**
- Have you standardized a naming convention for BMS/BAS/controls installations?

- Has your organization discussed implementing a unified user interface to minimize the number of systems that require log ins or standardizing the user interface for all control systems?
- Have you implemented any Fault Detection & Diagnostics (“FDD”) on systems and equipment at any of your properties?

### Communication

- Which protocols do your systems and devices use to communicate (e.g. BACnet / IP, Modbus TCP, etc.)? Are they interoperable (e.g. open or published or closed protocols for communication) or proprietary (e.g. Siemens P2 or Johnson Metasys)?
- Are you considering standardizing your suppliers or protocols?

### Security

- What are your network/security requirements?
- Is your building network separate from your corporate network (physically or logically)? Or are they sharing the same infrastructure?
- Who manages external internet connections for remote access?

**Note: This is typically provided by automation vendors without knowledge from corporate IT groups.**

- How is your budget structured and what is the timing for annual budget submission?
- Do CAPEX and OPEX fall under the same business unit and management team?

- Will you need to gain agreement from each site to participate in the program?
- How will charge-backs to the individual properties work?
- Is there a central program budget that can be used for pilot phases?
- What are your budgetary constraints? Do you have an approved budget or must you submit based on an approved analysis?

## **IMPLEMENTATION**

### **Roles and Responsibilities**

- Who are the people involved in your building operations? Who are your BMS and service contractors? What role do they play today? Who has access to what data?
- How do you measure the performance of people involved in building operations? What KPIs are in place to hold vendors accountable?
- Who, specifically, will use the technology? How will they receive training? How will you measure user engagement?
- What are the key achievement milestones? What is the timeline to hit these milestones?

### **Architecture**

- What is the BMS/BAS, lighting control, metering network architecture?
- What are the decided points of network and device integration?
- Where are the physical locations for gateway installation? What are the IP network settings for devices?

# Deliverables

## Strategy Deliverables

1. List of key stakeholders and associated use cases
2. Strategy
3. Technology Plan
4. Cybersecurity approach

## Design Deliverables

### Define

1. Technology development brief
2. Systems integration matrix
3. Draft project budget
4. Schematic documentation

### Document

1. Network systems integrator design
2. Building systems integration design
3. Final specifications
4. Project budget
5. Demarcation Schedule

## Implementation Deliverables

1. Marketing and communications plan
2. List of appropriate support team, contracts and tools

## Evaluation Roadmap: Conclusion

It can be a complex process to select the right smart building solution. At Switch, we're committed to helping companies make the best choice so they can experience immediate savings and increased ROI. **Strategy, design and implementation are critical phases to a successful evaluation and will save you time, money and frustration.** Whether you want to improve your brand image, attract top talent, close investment funding, reduce operational expenses, ensure regulatory compliance, or get an edge on the competition, **the right smart building solution will help you achieve your goals.**

Want to learn more?

**TALK TO AN EXPERT**



Evaluation Roadmap: How To Choose The Right **Smart Building Solution**

