

## A 7-step guide to Implementing your IoT-based Intelligent Building Strategy

You probably realize that the winning approach for implementing an Internet of Things (IoT) enabled building management strategy in facility operations involves setting key goals and objectives, running a successful pilot, and then expanding that program across the entire estate/portfolio in a phased manner. The key to a successful implementation depends on identifying the primary key tasks, deliverables, and process steps, which include developing a baseline for current building performance, organizing and commissioning adequate requisite resources, and ensuring your team is aligned with the desired outcomes.

This checklist will help you organize and set you up for a smooth IoT implementation. It is a 7-step guide that covers the critical elements you need to be successful. Cover all these aspects and you're on your way towards transforming the management of your store's energy, maintenance, and equipment operations.

### IoT-based Intelligent Building Strategy Checklist

#### Assess

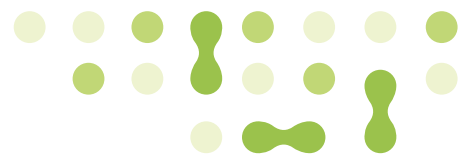
Establish a baseline against which project performance outcomes and success criteria will be measured

1. Identify and define optimal business performance standards
2. Gather current utility expenditures for Electricity, Water
  - a. Identify current IoT metering capabilities/devices
  - b. Benchmark current energy expenses by location/geography (by climate zones)
3. Benchmark current maintenance spend by location/geography (by climate zones)
  - a. Stack rank repair and maintenance frequency & expenditures high to low
4. Perform full equipment inventory of all existing IoT devices: define the function, assess reliability/performance, confirm device output accuracy, assess the working environment
5. Map and inventory current Information Technology (IT) Infrastructure:
  - a. Connectivity options/gateway devices/IT security requirements
6. Identify facility attributes:
  - a. Building parameters- area (sf.), geographic location, type (i.e. end-cap/free-standing), equipment assets, leased/owned
7. Identify key project stakeholders and map their current information and reporting requirements and defined organizational hierarchy for report dissemination
8. Gather and document all distributed network site maps (for controls, IT architecture)
9. Define and document established maintenance procurement parameters for both repair vs. replace criteria and Not to Exceed (NTE) guidelines
10. Identify all current building controls/setpoint parameters/scope of control including thermostats, sensors, HVAC systems, lighting systems (interior/exterior), vertical-specific equipment (i.e. retail equipment)
11. Assess Computerized Maintenance Management or work order ticket system interface requirements and reporting/database requirements

#### Define

Establish expected project pre-requisites, resources, and desired outcomes

1. Identify key project stakeholders: roles/responsibilities, approval hierarchy, team alignments, communication protocol (updates, reports, QA)
2. Define success criteria:
  - a. Financial (i.e. energy, maintenance, labor/material savings)
    - Example: Reduce electric usage (kWh) by a certain percentage
  - b. Operational (i.e. performance improvements, the total cost of ownership)
    - Example: increase in mean time between equipment failure
  - c. Social (Green House Gas/GHG Emissions, Environmental Health & Safety EHS)
    - Example: Measure and publish GHG Emissions reduction
  - d. Culture (i.e. equipment performance data used to schedule preventive maintenance visits)



Example: Increased occupant comfort and indoor air quality compliance

3. Define regulatory requirements , building comfort setpoints, occupancy schedules, equipment operation schedules
4. Define current Preventive Maintenance (PM) scope/schedules

## **Analyze**

Utilize baseline data gathered to identify/document strengths, weaknesses, opportunities, and threats (SWOT) analysis:

1. Assimilate data collected for assessment:
  - a. Goal: contextualize, prioritize, analyze data
2. Produce cluster analysis:
  - a. Group data into clusters of similar and dissimilar building performance and establish benchmarks to identify best and worst-performing properties/areas
3. Perform outlier analysis:
  - a. Identify locations and clusters that are better or worse than baseline benchmarks
4. Perform Energy Utilization Index (EUI) benchmarking:
  - a. Identify baseline building energy utilization intensity by SF, building types, energy sources, and asset density

## **Specify**

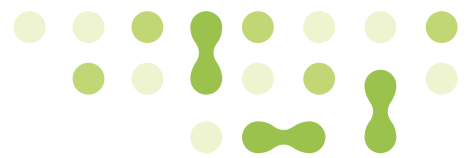
Develop key criteria, end-user requirements, and bill of materials for project deliverables

1. Identify all information technology requirements
  - a. Connectivity, security, storage, memory, CPU, bandwidth, system maintenance
2. Identify requirements for end-user graphic user interface (GUI) configuration
  - a. Customize dashboards, user reporting, information access hierarchy
3. Identify communications protocol/application programming interface requirements
  - a. Customize equipment interfaces to ensure controls and programming continuity with all IoT devices in scope, and identify communication protocol gaps due to open/closed system interfaces
4. Document Building Management System (BMS) scope of work requirements:
  - a. Facilitate effective BMS programming by performing a full system-wide inventory of all building controls and occupancy/geographic zone requirements, schedules, setpoints
  - b. Produce bill of materials for building management system components, software, and programming
5. Document IoT building peripherals requirements
  - a. Produce bill of materials for all IoT sensors, meters, Indoor Air Quality (IAQ), and Outdoor Air Sensors needed
6. Establish store/system control logic/programming parameters/ setpoints /business rules for both autonomous and interventional actions

## **Procure**

Utilize preferred purchasing process (i.e. SOW/RFI/RFP/Pilot) to identify, evaluate, select, and implement IoT strategy as developed to meet and exceed defined outcomes and performance expectations:

1. Identify/source potential solutions providers that deliver baseline project requirements
2. Invite/engage potential solution providers through Request for Information (RFI)
3. Select the best- in- class providers to participate in the program
  - a. Develop and deploy RFQ/RFP (Bid)
  - b. Ensure scope of work for pilot involves sufficient number and diverse quality of locations to enable the accurate assessment and effective statistical analysis
  - c. Consider utilizing an IoT-savvy consultant to develop and/or manage the process
4. Adjust program requirements and project SOW based on vendor responses
5. Document the final scope of work and project contract
6. Award Work/Sign Contract



## **Prepare**

Identify executive sponsor and project ownership; plan, align and properly resource execution and implementation requirements. Ensure organizational ownership, accountability, and visibility to all phases and resources. Ensure system-wide organizational buy-in pre-rollout, identify obstacles to the change management process early on, and develop solutions and resolution processes to avoid program derailment.

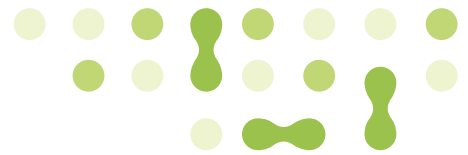
1. Establish crystal clear executive sponsorship and leadership roles and responsibilities
2. Assign project management leadership role and establish his/her organizational authority both up and downstream; align authority and responsibility with an executive sponsor
3. Conduct project development and discovery meetings with chosen vendors
  - a. Conduct initial kickoff meeting to provide project goals, objectives, success criteria, implement an effective exchange of information, and launch project team building
  - b. Establish project governance, process, and procedures
  - c. Establish project execution framework, slipping task report, and/or stakeholder objection issue resolution procedures
  - d. Identify key project owner(s) and allocate adequate resources to ensure successful implementation. The project owner must have full accountability, resources, tools, and executive sponsorship.
  - e. Build a detailed project plan and implement project management tools/protocol:
    - i. Document key deliverables, milestones, work breakdown structure (WBS), checkpoints, schedules, contingency plans for overcoming obstacles
4. Establish project communications process- stakeholders, reports, frequency, meetings
5. Establish project measurement and verification process utilizing baseline analytics
6. Define the change management process
  - a. Establish the project owner as champion and leader of the organizational change
  - b. Communicate and celebrate achievements for all milestones, deliverables
7. Validate all hardware configurations and pre-commission all IoT devices pre-release
8. Define/map device authentication, authorization, and access control architecture

## **Deploy**

Ensure rigorous and zero-defect approach is utilized throughout the deployment

1. Conduct weekly project management/vendor calls and status reports (utilize Red/Yellow/Green format to identify on time or slipping tasks, risks, and threats)
2. Install new hardware: controls, sensors, and peripherals
3. Configure/ Validate IoT device interface and full connectivity
4. Properly commission all IoT devices, the retro commission again 2-4 weeks after install
5. Configure/validate end-user interface functionality, conduct end-user training, and QA
6. Configure/test/validate CMMS interface
7. Celebrate and communicate successful project implementation

From executive leadership to business managers to IT teams, different stakeholders may have completely different ideas about what objectives an IoT implementation must accomplish, and what strategy would get them closest to achieving that objective. Setting the right expectations upfront and having a crystal-clear plan, project rationale, and executive sponsorship, along with well-defined criteria for selecting a particular vendor, technology or approach is vital for a successful implementation. Recognize that while project management is often more art than science, the more scientific the process that's utilized to manage the strategic implementation, the higher the statistical probability of successful outcomes.



EcoEnergy Insights Named  
“Overall IoT Company of The Year” for 2021

● ● Write to us at [info.ecoenergy@carrier.com](mailto:info.ecoenergy@carrier.com) to know more.

## About EcoEnergy Insights

EcoEnergy Insights is a global leader in providing AI and IoT solutions for building and equipment operations. Their CORTIX platform collects data from multiple sources, analyzes it, acts on defined deviations autonomously and offers predictive actionable insights. The platform, combined with expert human analytics, has been delivering award-winning outcomes in comfort, maintenance and energy efficiency across multiple industries such as retail, hospitality and banking. EcoEnergy Insights is a part of Carrier, the leading global provider of healthy, safe, sustainable and intelligent building and cold chain solutions.

For more information on EcoEnergy Insights and the CORTIX platform, visit [www.ecoenergyinsights.com](http://www.ecoenergyinsights.com) and [www.cortix.ai](http://www.cortix.ai).



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