



Ongoing Commissioning OCx Best Practices

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3.PLANNING PHASE OOCX

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Learning Objectives

- Introduction to Planning Phase
- Engage a Commissioning Provider
- OCx Goals and Objectives
- Conduct a Preliminary Cost Benefit Analysis
- Identify and Form a Multi-Disciplinary Team
- Perform Condition Assessment / Measurement Baseline
- Conduct a Gap Analysis of Existing Technology Infrastructure

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The planning phase of an OCx plan (ideally within the NCCx or EBCx process unless OCx is developed as a stand-alone process) should confirm and clearly document the owner's project goals and objectives; evaluate OCx's applicability to the project; scope, design, and plan for the applicable technology tool(s) to support the project; and document the plan.



Introduction

The planning phase includes these activities:

- Engaging a CxP
- Defining and documenting the owner's OCX goals and objectives
- Conducting a preliminary cost-benefit analysis
- Identifying and Forming a Multi-Disciplinary Team
- Performing Performing assessment and documenting the preliminary master list of findings
- Review the Current Facility Requirements (CFR)
- Conducting a Gap Analysis for Existing Technology Infrastructure
- Determining Technology Use and Design
- Developing and formalising the OCx Plan, including
- Project Management Plan; o Change Management Plan





Engage a Commissioning Provider / Authority

- Employ RFQ/P Qualifications-Based Selection (QBS) to find a third-party commissioning provider to lead the project. The QBS process is a U.S.–mandated professional services evaluation, scoring, and selection best practise.
- The commissioning authority is the leader of the commissioning team and is responsible for planning, organizing, and facilitating the commissioning process on behalf of the owner.
- Selecting the commissioning provider represents one of the most important commissioning decisions that a building owner makes. The provider should be certified by a nationally recognized organization and have the requisite qualifications for the project that is being commissioned.



Selecting a CxA Provider

- Knowledge of the vertical market segment, building type, safety, security, and occupancy. Commercial offices, healthcare, K12, data centres, and laboratories are vertical markets where the CxP's experience is essential. Higher education is frequently regarded a single market area, although the project requires facility type expertise.
- Commissioning the building's assemblies, systems, and equipment.
- Long-term cost-benefit or life cycle evaluations, preventative maintenance, monitoring, and emergency planning for systems and assemblies.
- Experience implementing the OCx project's facility improvement measures (FIMs).
- Expertise managing technology solution implementation for the OCx project (mindfulness for master planning, asset tracking and planning, e.g.)
- Experience managing the challenges and dangers of commissioning existing facilities, including routine operations, maintenance schedules, and emergency procedures, over the long term.



Define and Document OCx Goals and Objectives

Establish a rough order of magnitude of costs and benefits.

- The CxP estimates OCx costs and benefits and sets expectations to help the owner and other stakeholders set goals and objectives.

Develop and document clear goals and objectives.

- Quantifiable, practical, and concrete OCx goals should be set immediately.
- As planning continues, certain goals and approaches may alter. Objectives should not compromise the CFR or OPR. Goals would not violate comfort or dependability to save energy, support aggressive occupancy patterns, or necessitate complicated equipment programming.
- Knowing the owner's objective and expected outcomes helps determine the required effort and investment to support the programme. Involving the owner to set project goals guides the project.



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Goals and objectives like:



1. Identifying potential comfort issues prior to their affecting the occupants. Deciding which tools are more valuable for a facility's operations
2. Adjusting the frequency of specific monitoring and performance verification activities (appropriate to the facility and budget).
3. Monitoring data to inform preventive and predictive maintenance schedules
4. Delivering preliminary automated root-cause analysis of control or equipment problems to advise maintenance action.
5. Allow the owner, facility management, and Operations and Maintenance (O&M) personnel to make decisions using facility performance data and reports.
6. Instruction of O&M personnel to optimise system performance
7. Maintaining performance through energy management and tracking of power bills
8. Changing occupant and tenant behaviour through transparency and real-time feedback instruments that detect inefficient building utilisation and the benefits of increased facility use.



The CxP's Role in Technology Selection

CxPs must convince the owner's team that the OCx procedure improves buildings. Technology may increase building performance indirectly, but many owners will use it for other reasons. Dashboards, automated energy management and electricity bill reporting and analysis, and big data and analytics advancements are examples. The CxP should identify the technological tools and stakeholders needed to support the owner's goals and objectives and ensure they support the OCx project.

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Conduct a Preliminary Cost Benefit Analysis

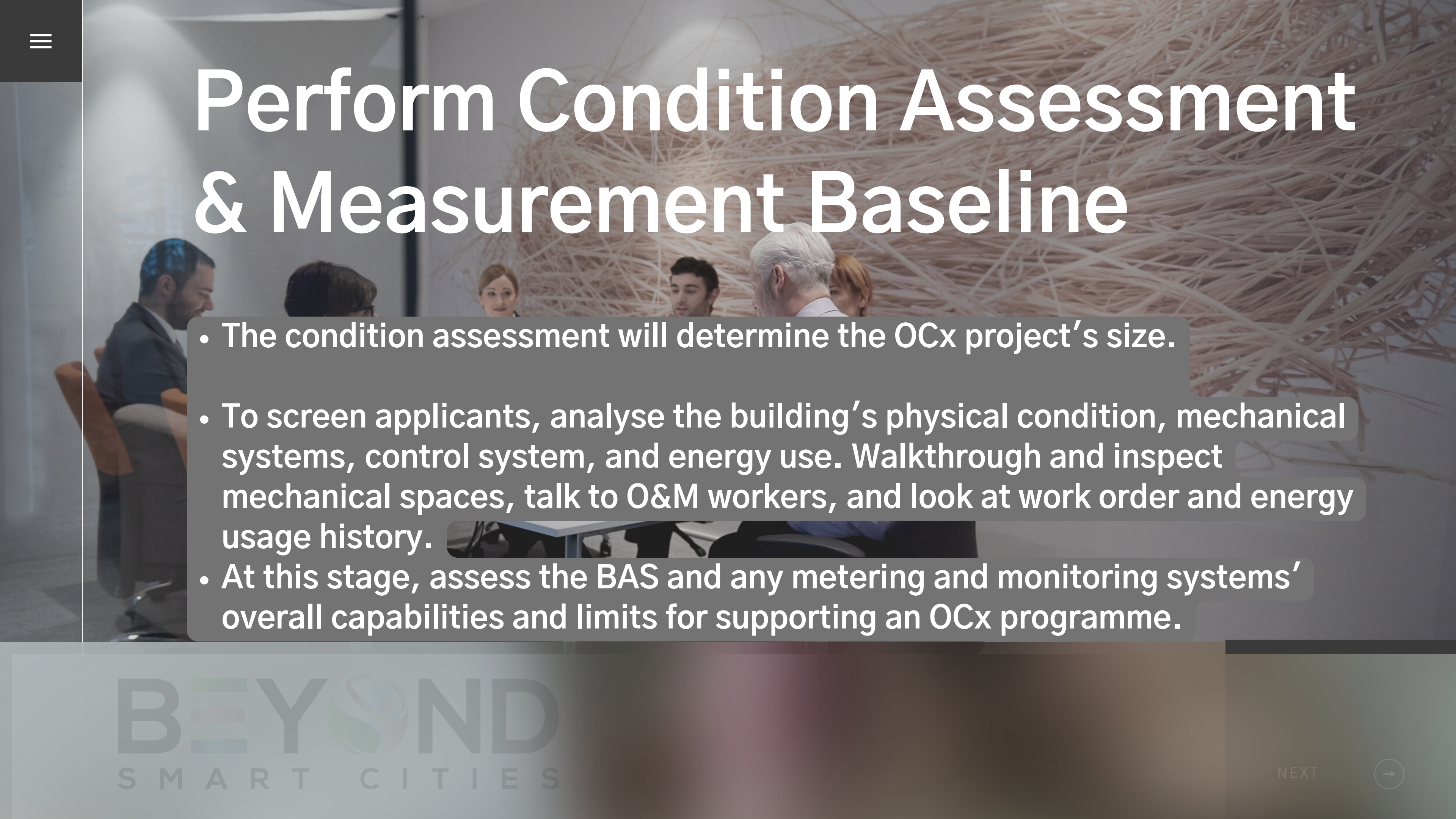
A preliminary cost benefit analysis should cover Planning, Implementation, and Maintaining Phase costs of third-party equipment, consulting, and labour and may incorporate in-house resources. As OCx goals and objectives are set, a more extensive cost-benefit analysis guides the Planning Phase. Unless the infrastructure improvements were needed anyhow, the cost benefit includes upfront costs for all OCx programme enhancements. Benefits include energy and demand performance and indirect expenses (comfort, air quality, improved control, maintenance, reliability, equipment life, etc.).



Identify and Establish a Team Comprised of Experts from Several Disciplines

Role	Planning Phase	Implementation Phase	Sustaining Phase
Commissioning Provider (CxP)	- Develop and provide Diagnostic Plan - Organize Commissioning and set expectations - Perform Commissioning assessment - Overall Commissioning Phase	- Develop and provide Diagnostic Plan - Design and support technology implementation - Perform Data and analytics review for Master List of Findings	- Transition OCx to standard operations - Perform Periodic review and update of CFR and OCx Plans
Systems Integrator (SI)¹	- Review OCx Plan and OCx goals and objectives - Perform technology gap analysis - Identify technology requirements	Design and manage technology implementation	Manage technology solution upgrades and updates as required by periodic CFR and OCx plan changes
Owner (OCx Champion)	- Support overall OCx process with priority within the organization - Communicate OCx goals and objectives - Review OCx results and acceptance - Communicate and review CFR for the OCx Plan	- Support timely response to resource requirements - Review and approve Master List of Findings - Review and approve corrective actions - Review and approve sustained facility performance	- Maintain CFR - Engage CxP periodically for ongoing updates to OCx Plan - Review OCx results and approve corrective actions for ongoing sustained facility performance
Owner's IT Representative¹	- Review and approve security and network requirements for technology implementation - Review and approve technology considerations	- Design and validate technology implementation - Support networking and communication requirements in line with Owner security and IT network requirements	Maintain network, communication, and security requirements for technology solution

Facility and BAS Manager	- Communicate CFR/review CFR for updates - Support technology gap analysis for identification and utilization of existing BAS capabilities	Support/manage BAS system requirements for data collection and management per the OCx Plan	Act as Overall lead for ongoing Sustaining Phase
Building Operators & Engineers	- Inform the condition-assessment effort - Identify key opportunities for OCx	- Review and verify Master List of Findings - Support corrective actions - Incorporate OCx process into Preventive Maintenance Plan	Implement OCx process into stable operations
Technology Provider(s)¹	Provide OCx team with system capabilities and requirements for OCx Plan consideration	Implement technology solution at the direction of the CxP and Systems Integrator	Provide ongoing license and solution requirements as applicable to ongoing data management and analytics requirements
Technology Maintenance Staff¹		Support execution of technology system for data management and analytics	Maintain technology system firmware and upgrade requirements



Perform Condition Assessment & Measurement Baseline

- The condition assessment will determine the OCx project's size.
- To screen applicants, analyse the building's physical condition, mechanical systems, control system, and energy use. Walkthrough and inspect mechanical spaces, talk to O&M workers, and look at work order and energy usage history.
- At this stage, assess the BAS and any metering and monitoring systems' overall capabilities and limits for supporting an OCx programme.



Review and Update the Current Facility Requirements (CFRs)



The CxP will check the CFRs during the facility condition assessment to ensure they are documented for the building, up-to-date, and/or identify a major deviation from the CFRs. The CFRs establish how building systems support the building's purpose. The CxP will work with the OCx team to create and revise CFRs if necessary.

The CxP considers revising the project approach to current building commissioning before starting OCx if there are substantial gaps in facility utilisation compared to the CFRs, major challenges with systems meeting CFRs, or other performance considerations for OCx success.

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Conduct a gap analysis of existing technology infrastructure.



- Set high-level data requirements and availability for gap analysis in planning.
- A gap analysis shows where BAS, utilities, and other monitoring systems cannot or are not collecting OCx data streams.
- The CxP, with the Systems Integrator's assistance, evaluates the existing system(s) and data sources and produces the OCx project data requirements based on the projected OCx activities and monitoring needed to satisfy the owner's goals and objectives.
- The technology and infrastructure gap study will help develop and determine the additional technologies needed for the OCx project.
- Additional BAS or monitoring system points, archiving and retrieval, analytics software and interfaces, remote access, etc.





Develop and Formalize OCx Plan

Create a phase-by-phase OCx plan. OCx includes project and change management plans. These are evolving OCx papers. Consider stakeholder involvement and how the owner and CxP work together to achieve OCx goals over time.

- The OCx Plan is a written record of the project's methods and approach. It includes:
- Owner Goals and Objectives
- OCX Team Roles and Responsibilities
- Condition Assessment Results: Scope of Project and Prioritisation
- Gap Analysis of Existing Technology Infrastructure Results
- Technology Use and Design
- Project Management Plan
- Change Management Plan
- Implementation process
- Sustaining Process



Planning Phase Deliverables

- Project Management Plan
- Change Management Plan

- Successful OCx projects require building tenants. Establishing expectations for their position throughout the Planning Phase will enhance their potential and incentive to participate. Feedback to the OCx process will clarify space consumption and hours of operation, the need for behaviour modification to maximise performance and comfort, disturbance to their work environment during implementation, and adjustments to expect post-implementation.





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