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CERTIFIED COMMISSIONING MANAGER CCM TRAINING PROGRAM

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ONLINE TRAINING BY KRISHNAJI PAWAR

LEED AP(BD+C),GSAS CGP,GCP,ISO 14001

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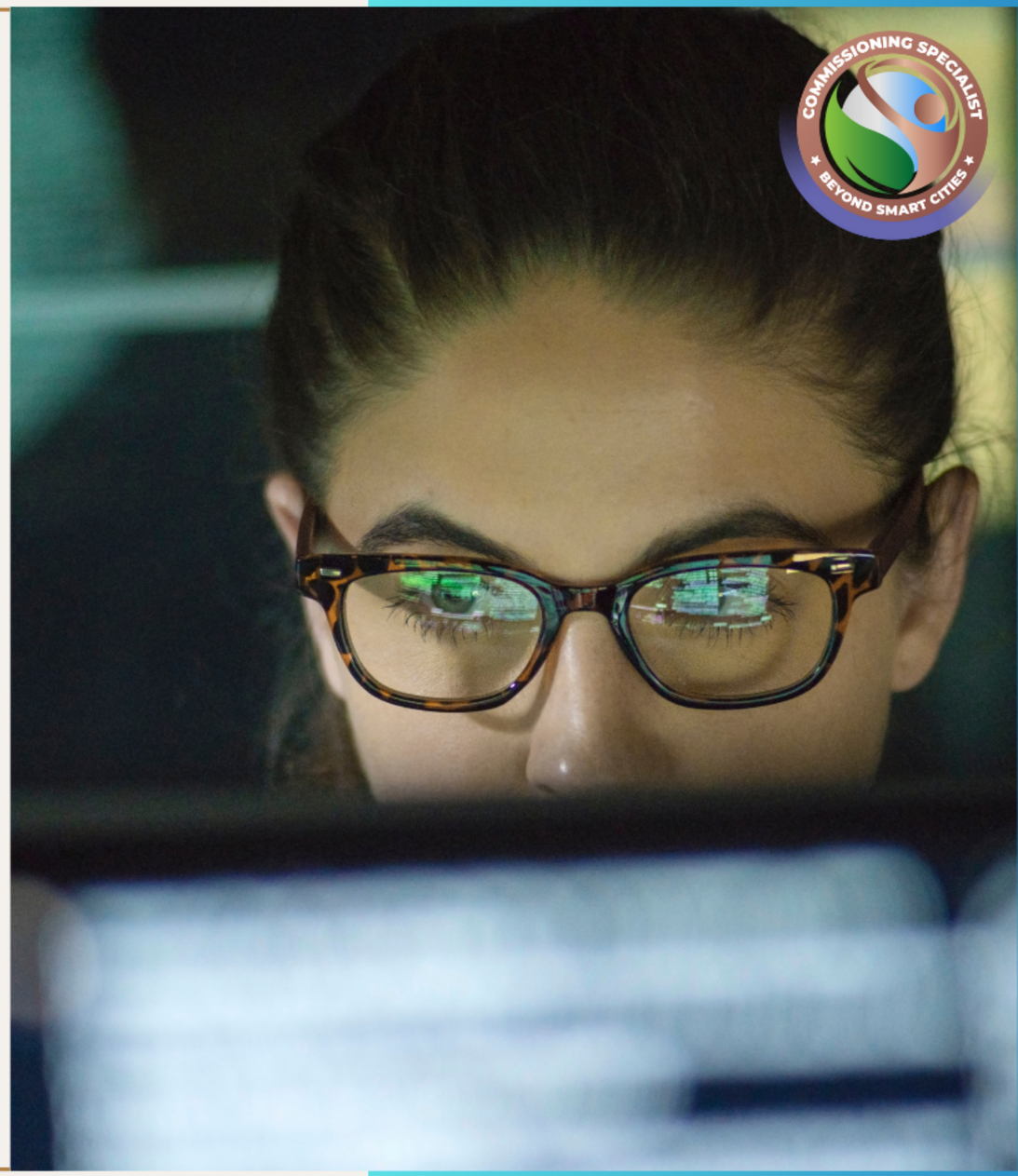
MODULE 15

Conducting Ongoing CxA

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CERTIFIED COMMISSIONING MANAGER CCM TRAINING PROGRAM OVERVIEW

Develop a continuous commissioning process that includes planning, point monitoring, system testing, performance verification, corrective action response, ongoing measurement, and documentation to proactively address operating problems in systems undergoing commissioning. This plan should define roles, measurement requirements, performance evaluation, corrective action plans, and recommissioning plans.

Learning Objectives

- Introduction
- Relationship of OCx to Existing Building CxA (EBCx)
- Definition of Ongoing Commissioning (OCx)
- Scope and Purpose of OCx
- Phases of OCx
- Ongoing commissioning process

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INTRODUCTION

- Ongoing Commissioning (OCx) is a method for monitoring, analyzing, and improving the performance of building systems over time.
- As a continuation of the commissioning process typically implemented after NCCx or EBCx, OCx verifies that a facility continues to meet CFR (OPR for new construction) (OPR for new construction). As the CFR and system technologies evolve, OCx also makes it easier to enhance the efficiency and environmental performance of buildings and systems.
- Ongoing Commissioning (OCx) is a method for monitoring, analyzing, and improving the performance of building systems over time.

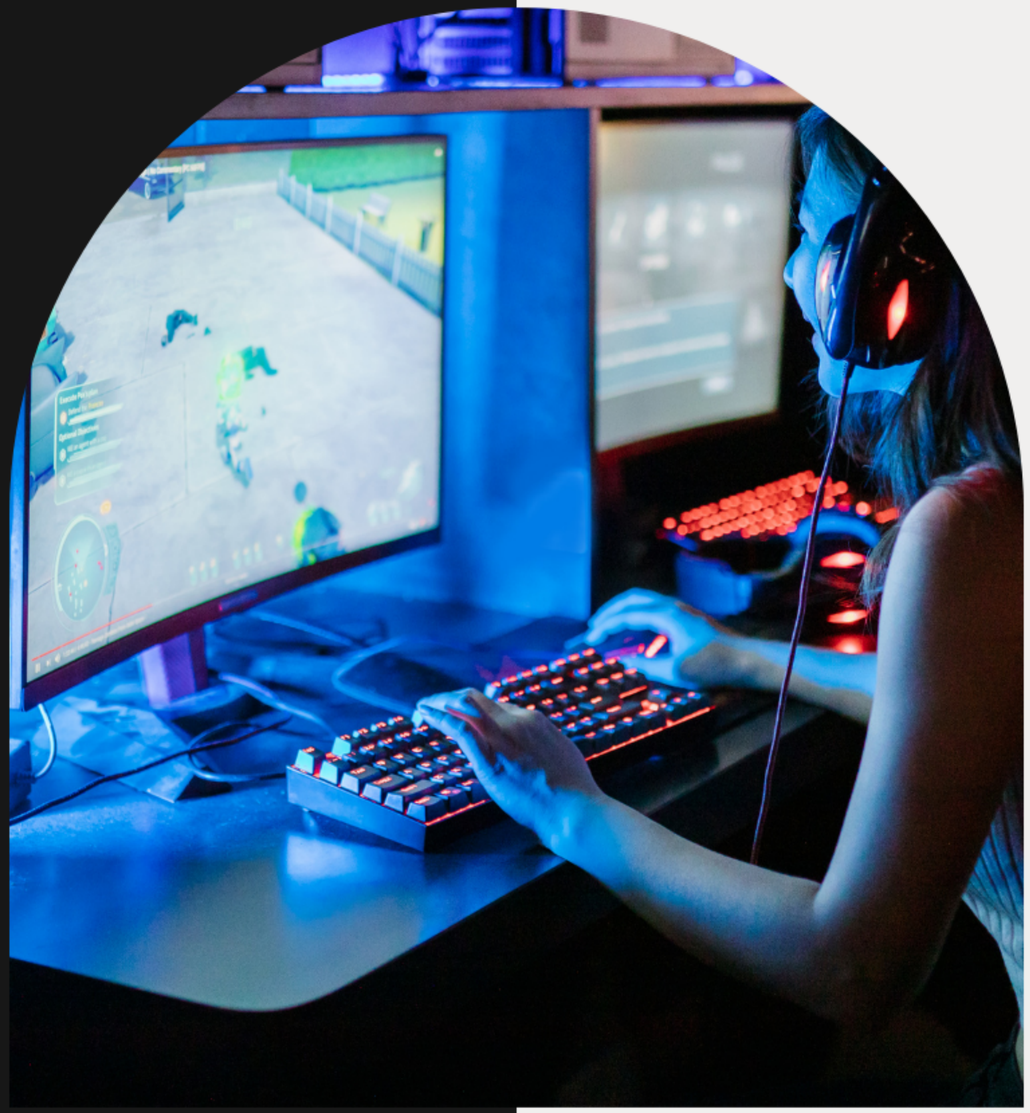
RELATIONSHIP OF OCX TO EXISTING BUILDING COMMISSIONING (EBCX)

- New Construction Commissioning (NCCx) and Existing Building Commissioning (EBCx) are linked to OCx Best Practices for building performance.
- OCx may even be a recommended practise for service commissioning.
- OCx Best Practices are deployed alongside NCCx and EBCx Best Practices after the customary one-year commissioning period for those commissioning services.
- This guarantees that commissioning stakeholders adopt the extra comprehensive Best Practices, described below, when the commissioning term is long enough to merit the additional attention and standards of an OCx-specific approach.

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- EBCx and OCx are linked. OCx and EBCx increasingly use technologies to monitor and evaluate system performance. This article clarifies how to define OCx, including commencing it during EBCx or after NCCx.
- After EBCx, OCx starts once the CFRs are developed and the systems are tested and adjusted to support them. Start preparing for an OCx procedure throughout the EBCx process to verify the facility meets CFR criteria.

RELATIONSHIP OF OCX TO EXISTING BUILDING COMMISSIONING (EBCX)+

- EBCx Best Practices usually guide active commissioning of an existing building for less than a year. Performance tracking is used in EBCx's Hand-Off Phase or NCCx's first year of occupancy. Formal OCx is used for sustained performance.

- As Best Practices are followed, remember that OCx is a professional service that uses a variety of tools, technologies, and methods to improve and sustain building performance. OCx is not a facility-specific technology.



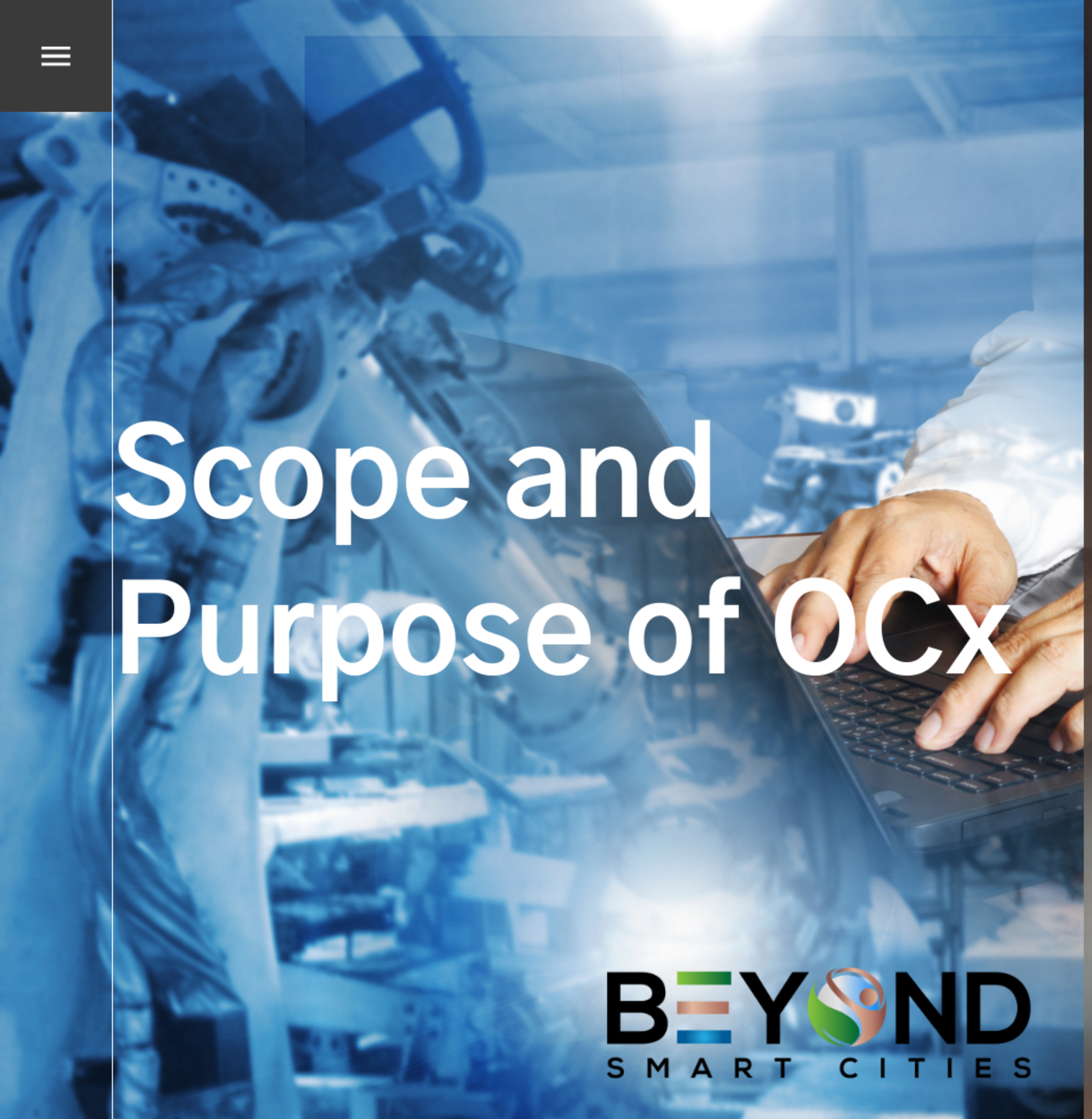


Definition of Ongoing Commissioning (OCx)

Ongoing Commissioning is the means and process of investigation, evaluation, monitoring, and implementation of improvement measures related to facility performance on a continuous basis to maintain the built infrastructure to the performance standards of the Current Facility Requirements

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Scope and Purpose of OCx

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The Occupancy and Operations Phase of NCCx or the Hand-Off Phase of EBCx often plans for/scopes/sets up existing buildings, systems, and assemblies. OCx can be deployed directly without commissioning if the existing building(s), systems, and assemblies meet or exceed CFR performance criteria.

FDD can identify faults and update/upgrade buildings to meet the Owners' CFR before applying the sustaining OCx process. OCx can focus on specific systems and assemblies, like energy-using equipment, or on building performance (e.g., comfort and temperature management, building enclosure, critical environment availability, industrial processes, and/or life safety system performance).

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The purpose of OCx is to maintain and continuously improve building performance for

1. Evolving CFRs due to change in facility use, system changes, and/or building renovations.
2. Energy use reduction/containment while maintaining environmental condition requirements.
3. Proactively identifying degradation in system performance for correction prior to occupant impact.
4. Proactively identifying degradation in system performance for correction prior to operational (maintenance) or efficiency impact.
5. Providing measurement and verification of energy savings and performance validation following facility and system updates.

OCx addresses these performance goals by following a specifically designed, complete, and methodical process. One step of that process introduces a corollary to the functional/system testing plan of the new construction and existing building commissioning processes—the Diagnostic Plan. The Diagnostic Plan is an outline version, or representation, of the regular commissioning activities that will be performed to satisfy the monitoring and evaluation goals required to meet the scope of the project.

Phases of OCx

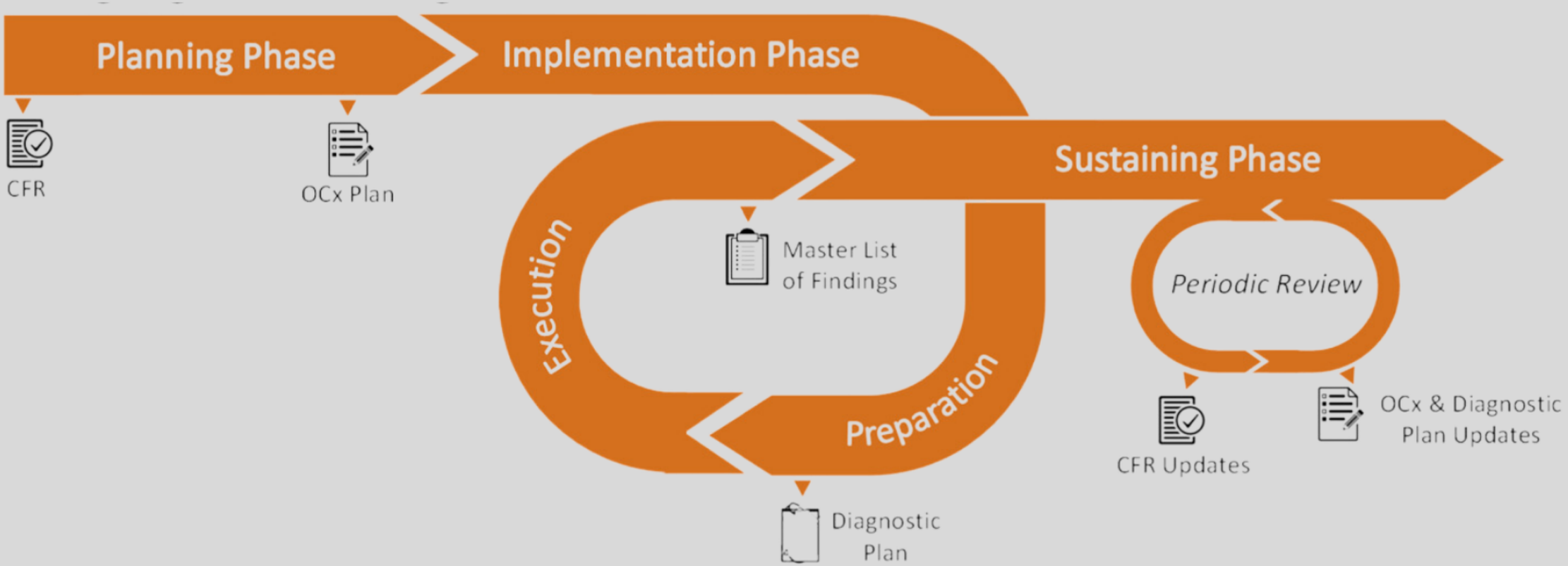
1.Planning. Formation, communication, and facility assessment. Documenting Owner's aims and objectives (confirming performance criteria and/or indicators) to guide the OCx scope of work; updating CFRs; and reviewing existing technology to determine (additional) metering and software requirements to facilitate the process. The OCx Plan guides facilities performance optimisation and sustainability.

2. Implementation. OCx process–enabling people and technology. Preparation of stakeholders, documentation, and processes; identification of performance findings in a Master List of Findings for correction; operating team coordination for integration into preventive maintenance planning, system operation, and ongoing system monitoring for OCx transition to operating standards.

3. Sustaining . Ways to transfer OCx monitoring and building performance to building operators and owners. Managing CFR adjustments for OCx process continuity when building use and conditions change.

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Ongoing Commissioning Process



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Ongoing Commissioning Process

OCx has three phases: Planning, Implementation, and Maintaining.
As detailed in Building Commissioning: The Process, OCx core project requirements and related commissioning activities are comparable to those of any commissioning project, whether new construction or old building. They include project requirements, goals, scope, budget, roles, plans, timelines, investigation, analysis, implementation, testing, verification, documentation, and training.

Planning Phase

- Engage Commissioning Provider (CxP)
- Define and Document Owner's OCx Goals and Objectives Conduct Preliminary Cost Benefit Analysis
- Identify and Form Multi-Disciplinary Team
- Perform Condition Assessment,
- documenting preliminary Master List of Findings Review Current Facility Requirements (CFR)
- Conduct Gap Analysis of Existing Technology Infrastructure Determine Technology Use and Design
- Develop Steps for Implementation of Findings
- Develop and Formalize OCx Plan

Implementation Phase

- Preparation Sub-Phase
- Engage OCx Team Selected During Planning
- Create Diagnostic Plan
- Align Data Monitoring with Diagnostic Plan
- Implement Diagnostic Plan
- Create or Update Facility Guide
- Execution Sub-Phase
- Coordinate Preventive Maintenance
- Conduct Technical/Technology Application Training
- Update, Prioritize Master List of Findings
- Establish Communication/Coordination Methods and Procedures Take Corrective Actions
- Track Building Performance
- Update OCx Plan

Sustaining Phase

- Implement Operating and Maintenance Procedures
- Transition to Stable Operations
- Monitor and Report Results

Ongoing Commissioning Benefits And Goals



- Energy cost savings
- O&M savings
- Fewer comfort complaints from building occupants
- Extended equipment life
- Reduced risk of system failure
- Reduce cost of downtime for research, revenues from production, etc.
- Avoided cost of damage due to unplanned shutdown
- Increased safety
- Improved indoor air quality
- Avoided cost of temporary emergency measures and temporary equipment for critical applications

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IN SUMMARY

- An ongoing commissioning process includes daily monitoring of the facility's HVAC systems, site inspections, comparison of the current data with expected results, and continued adjustments to control sequences and set points for optimum HVAC system performance and occupant thermal comfort.
- Moreover, an ongoing commissioning team is able to resolve most issues quickly, before they make a significant impact on the facility's operations.
- The value of the most significant issue discovered through the recommissioning project is not fully realized when the process is initiated.
- A comprehensive approach — and one that is performed by commissioning professionals who have both extensive design and engineering experience — is vital to gain the full value of the process.

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