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COMMISSIONING SPECIALIST
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COMMISSIONING AUTHORITY

CXA OVERVIEW

ONLINE TRAINING BY KRISHNAJI PAWAR

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MODULE 4

Building Commissioning Process Overview

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CXA OVERVIEW

The process ensures that all commissioned systems and assemblies are planned, designed, installed, tested, operated, and maintained in line with the owner's project specifications through documentation and verification.

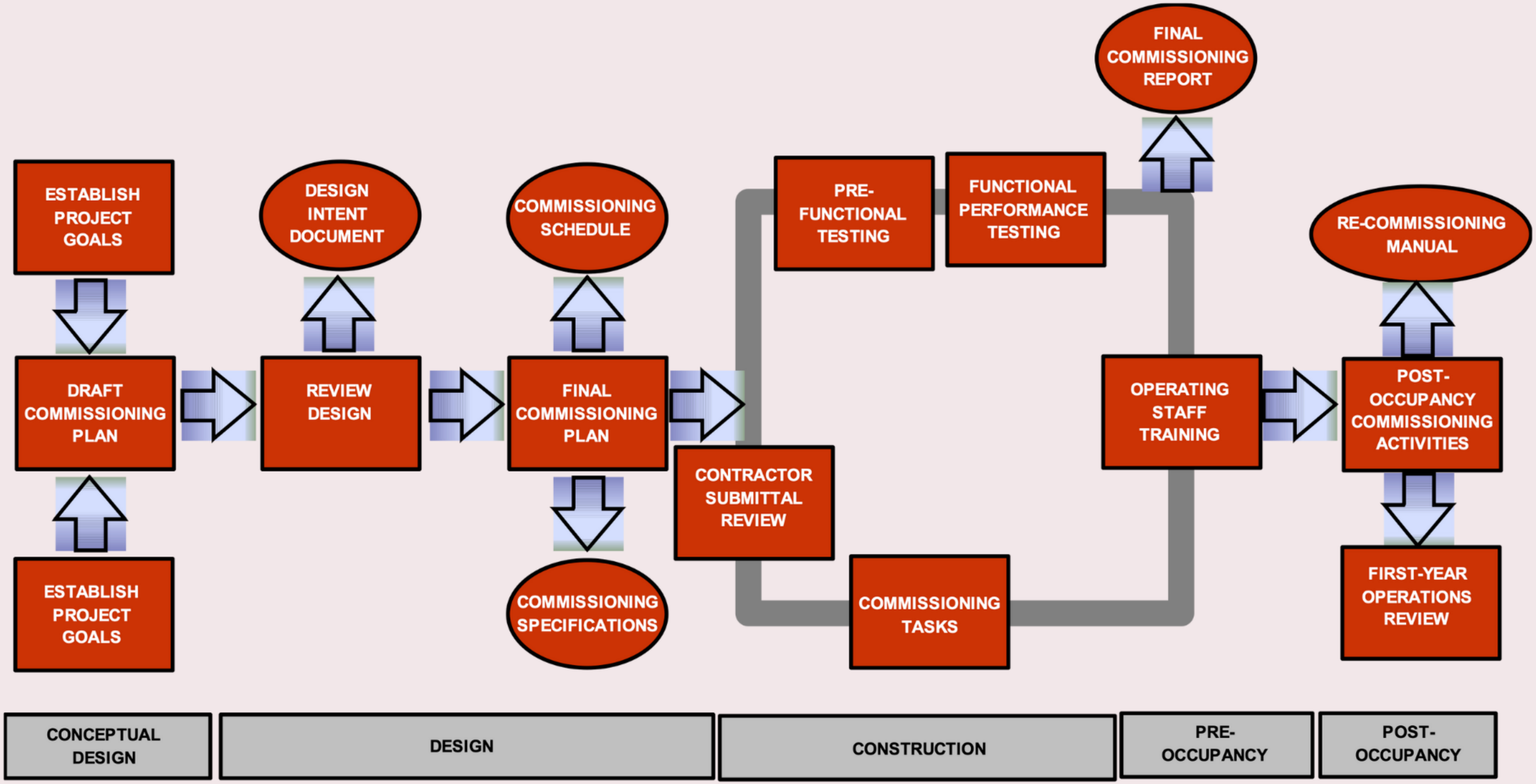
Learning Objectives

- Course Overview and Introduction
- Definition and History of Building Commissioning
- Why is building commissioning needed?
- Building Commissioning Process Overview
- Professional Certification in Commissioning
- Cost and benefits of building commissioning
- Summary and Resources
- CxA Sample Exam Question

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INTRODUCTION

- The commissioning process is the integrated application of a set of engineering techniques and procedures to check, inspect, and test every operational component of the project—from individual functions such as instruments and equipment, up to more complex entities such as subsystems and systems.
- Commissioning Process: a quality focused process for enhancing the delivery of a project.
- The commissioning process is a team effort


ESTABLISH PROJECT GOALS
DRAFT COMMISSIONING PLAN
ESTABLISH PROJECT GOALS
DESIGN INTENT DOCUMENT
REVIEW DESIGN
COMMISSIONING SCHEDULE
FINAL COMMISSIONING PLAN
COMMISSIONING SPECIFICATIONS
CONTRACTOR SUBMITTAL REVIEW
PRE-FUNCTIONAL TESTING
COMMISSIONING TASKS
FUNCTIONAL PERFORMANCE TESTING
FINAL COMMISSIONING REPORT
OPERATING STAFF TRAINING
RE-COMMISSIONING MANUAL
POST-OCCUPANCY COMMISSIONING ACTIVITIES
FIRST-YEAR OPERATIONS REVIEW
CONCEPTUAL DESIGN
DESIGN
CONSTRUCTION
PRE-OCCUPANCY
POST-OCCUPANCY

WHY COMMISSION BUILDING SYSTEMS?

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- The complexity of building systems has increased as a result of several developments.
- Stricter energy conservation regulations.
- The need for safer work environments necessitates advancements in office equipment and indoor air quality.
- Advanced phonic, image, video, and data communications technologies, as well as rapidly transforming research and teaching methodologies.



COMMON BENEFITS OF COMPREHENSIVE BUILDING SYSTEMS OR WHOLE BUILDING COMMISSIONING

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- Improved project designs
- Fewer change orders and additional claims
- Minimal negative impact from design changes
- Fewer Deficiencies at Substantial Completion:
- Well-managed start-up procedures
- Fewer project delays
- Shorter building turnover period
- Less Post-Occupancy Corrective Work
- Complete and useful building documentation
- More knowledgeable Operations and Maintenance (O&M) staff
- Enhanced Operations and Maintenance (O&M) Program
- Value-added construction quality
- More resilient building systems
- Better Indoor Environmental Quality (IEQ)
- Sustainable high-performance infrastructure
- Lower energy expenses:
- Fewer greenhouse gas emissions
- Compliance with Jurisdictional Requirements:





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THE PROGRAM FOR OPTIMAL QUALITY ASSURANCE



- Starts with predesign, intensifies during design, peaks during construction, and ends with ongoing monitoring and trend-logging.
- Ensures highest quality and operational dependability of a facility.
- Helps develop and document facility project requirements.
- Assists design professionals in documenting design basis, selecting optimal design solutions, and preparing construction documents.
- Assists prime contractors, subcontractors, and vendors in choosing and installing components and systems.
- Validates facility performance through commissioning tests.
- Trains and provides documentation to ensure system sustainability.



ADVANTAGES FOR THE OWNER



- Proper functioning of all building systems.
- Pre-occupancy fixation of design and construction flaws.
- Determination of system's operating efficiency before project completion.
- Reduced resource consumption and annual minimum utility costs.
- Extensive new system operation documentation for Operations staff.
- Improved sustainability and maintenance of facility.
- Better documentation for later occupancy changes.
- Documentation of design origins for design consultants.

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ADVANTAGES FOR DESIGN PROFESSIONALS





- Commissioning refines design principles, incorporating operating engineer experience.
- Refines construction specifications, making system reliability easier.
- Reduction of design errors through commissioning-focused reviews and rigorous testing.
- Cost-effectiveness of fixing unnecessary design or construction issues.
- Improvement in qualifications and reputation as design professionals gain experience through commissioning.

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ADDED VALUE FOR THE CONTRACTOR



- Initial testing starts mid-construction, requiring more scheduling and coordination.
- Reduces trade conflicts, improving efficiency.
- Promotes quality control, speeding up construction issues.
- Eliminates post-construction adjustments, saving time on unnecessary design or construction issues.
- Improves contractors' qualifications and reputation.

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WHEN DOES COMMISSIONING START?

- Commissioning should commence during facility predesign (programming).
- Delays in hiring commissioning authority can hinder the process.
- Addressing functional issues during predesign is crucial for meeting commissioning goals and owner needs.
- Advanced projects cannot be commissioned during design or construction.
- Commissioning can begin during later stages, requiring contract revisions.
- Early hiring of a qualified commissioning authority is recommended due to unfamiliarity with commissioning requirements.

WHICH PROJECTS SHOULD BE COMMISSIONED?

- All new facilities should be commissioned, based on health, safety, and liability risk.
- Facilities providing essential services, including hospitals, research labs, and potentially hazardous activities, should be fully commissioned.
- Resource allocation should minimize community and investment risk.
- The decision to commission depends on how much of the project, not which tactic should be commissioned.



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