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COMMISSIONING SPECIALIST
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PRE-DESIGN-PHASE COMMISSIONING PROCESS
ONLINE PROFESSIONAL COURSES LED BY THE WORLD'S TOP SPECIALISTS
ONLINE TRAINING BY KRISHNAJI PAWAR
LEED AP(BD+C),GSAS CGP,GCP,ISO 14001
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MODULE 6

Pre-Design Phase & Commissioning Meetings

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Learning Objectives

- Introduction
- Benefits of Early CxA Participation
- Selecting the Commissioning Authority
- The Advertisement
- Owner’s Project Requirements (OPR)
- Commissioning Plan
- Communications Plan
- Project Budget
- Commissioning Authority Agreement
- Selection of the Design Professional & Agreement
- Pre-Design Phase Overview
- Commissioning Meetings
- Which building systems are to be commissioned?

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INTRODUCTION

- Most new construction projects have historically been less formal during the predesign phase, even though this stage is now recognized as pivotal to the entire quality assurance process.
- The predesign stage of a construction project is often overlooked in favor of more glamorous parts of the process.
- While some have processes in place for this, it's likely that these aren't as refined as they could be with a quality assurance program tailored specifically to building commissioning.
- Owners will understand the significance of creating a predesign process once they see the value in creating a comprehensive building and commissioning quality assurance program.
- It is also crucial to acknowledge the commissioning authority's added value by involving them early in the predesign or design phases of the project, rather than waiting until construction is underway.

Pre-Design Phase Overview

- **Engage in project commissioning.**
- **Develop Cx scope**
- **A commissioning provider is hired.**
- **The CxA reviews or facilitates OPR.**
- **Set the pre-design Cx outline.**

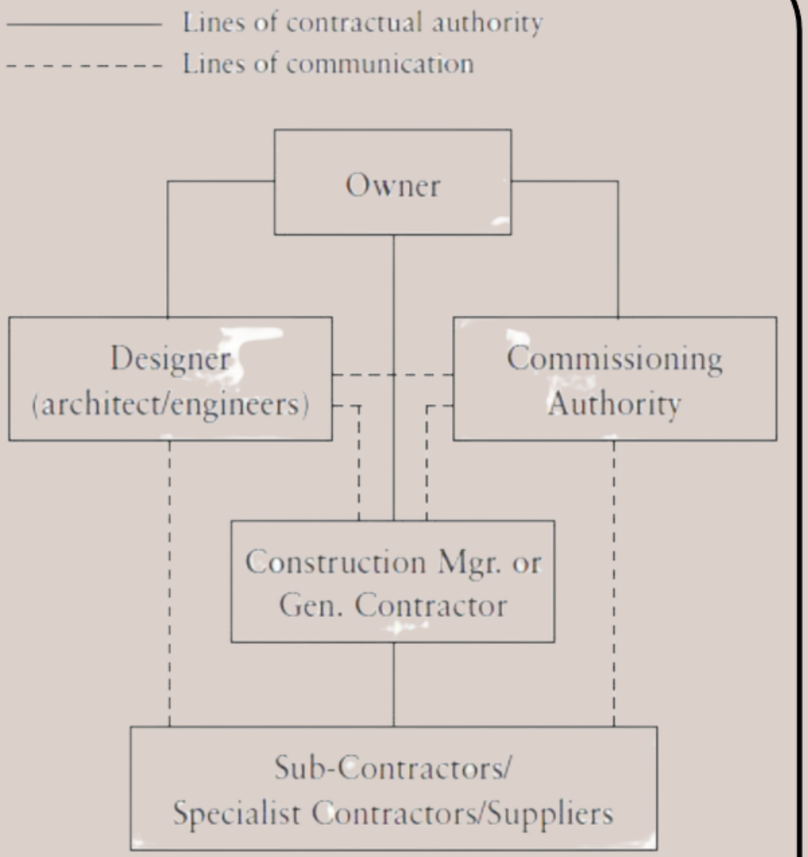
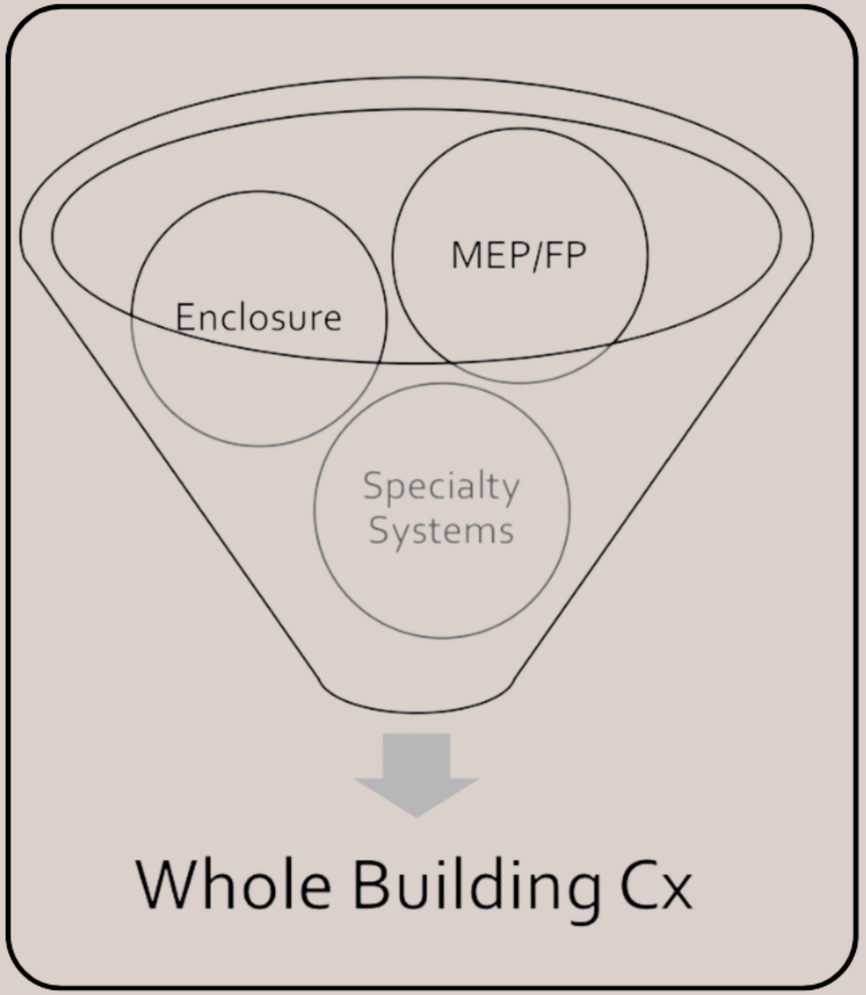


Figure 4.1 Organizational Structure for Comprehensive HVAC Commissioning—Plan and Spec

Establish commissioning:

- **Allocate budget funds.**
- **Decide: Third party or not?**
- **Systems:HVAC,Elec,etc.**



Develop scope:

- **Bring together scope and budget**
- **Based on requirements (past experience, end-user requirements, maintenance priorities)**
- **If the owner does not clearly define scope, ExperiencedCxA should.**

4.2.2 Commissioning Process Activities and Deliverables

	Activity	Deliverable
a.	Initiate Commissioning Process	Roles and Responsibilities
b.	Decide Project Requirements	Owner's Project Requirements
c.	Develop Commissioning Plan	Commissioning Process Plan
d.	Design Approach to Requirements	Basis of Design
e	Set Contractor Cx Requirements	Commissioning Specifications
f.	Review Design to Requirements	Design Review Report
g.	Review Submittals	Submittal Review Report
h.	Observe and Test	Construction Checklists & Reports
i	Resolve Issues	Issues and Resolution Log
j.	Assemble Systems Manual	Systems Manual
k.	Conduct Training	Training Plans and Records
l.	Post Occupancy Operation	End of Warranty Cx Report
m.	Assemble Commissioning Report	Commissioning Report

Reference: ASHRAE Standard 202



SELECT A COMMISSIONING PROVIDER (CXA):



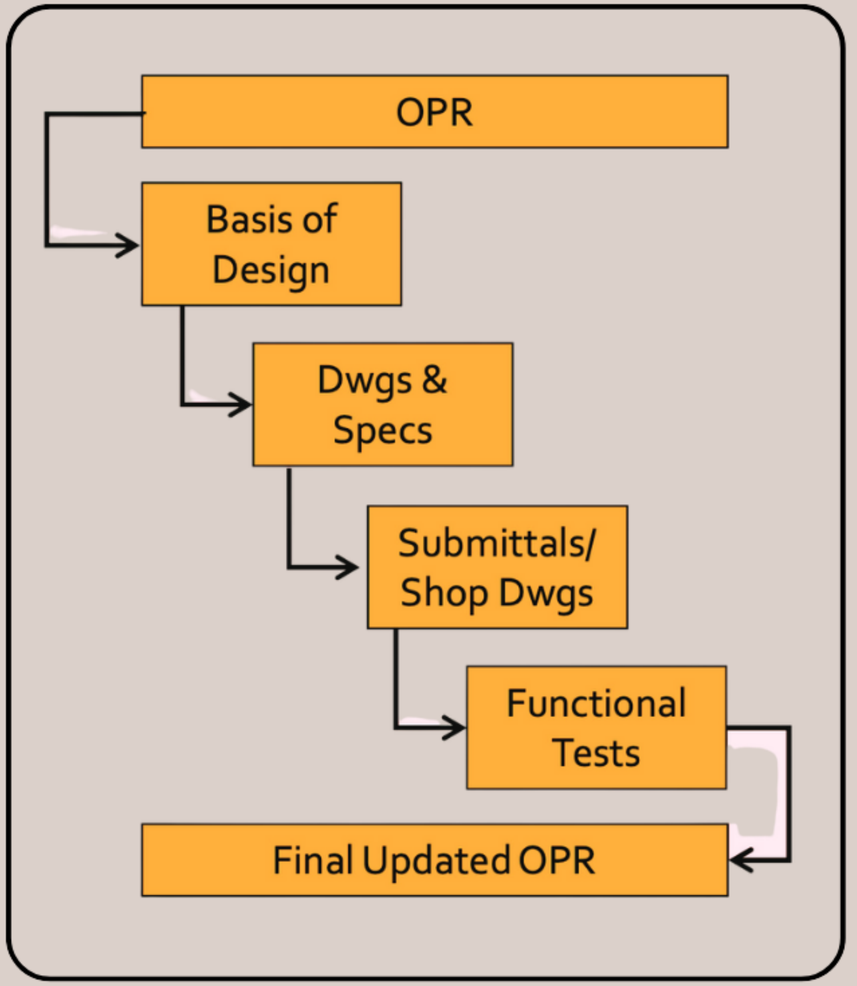
- Request for Qualifications
- Request forProposal
- Fixed cost through design phase, estimate for remaining phases

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CxA and the OPR:

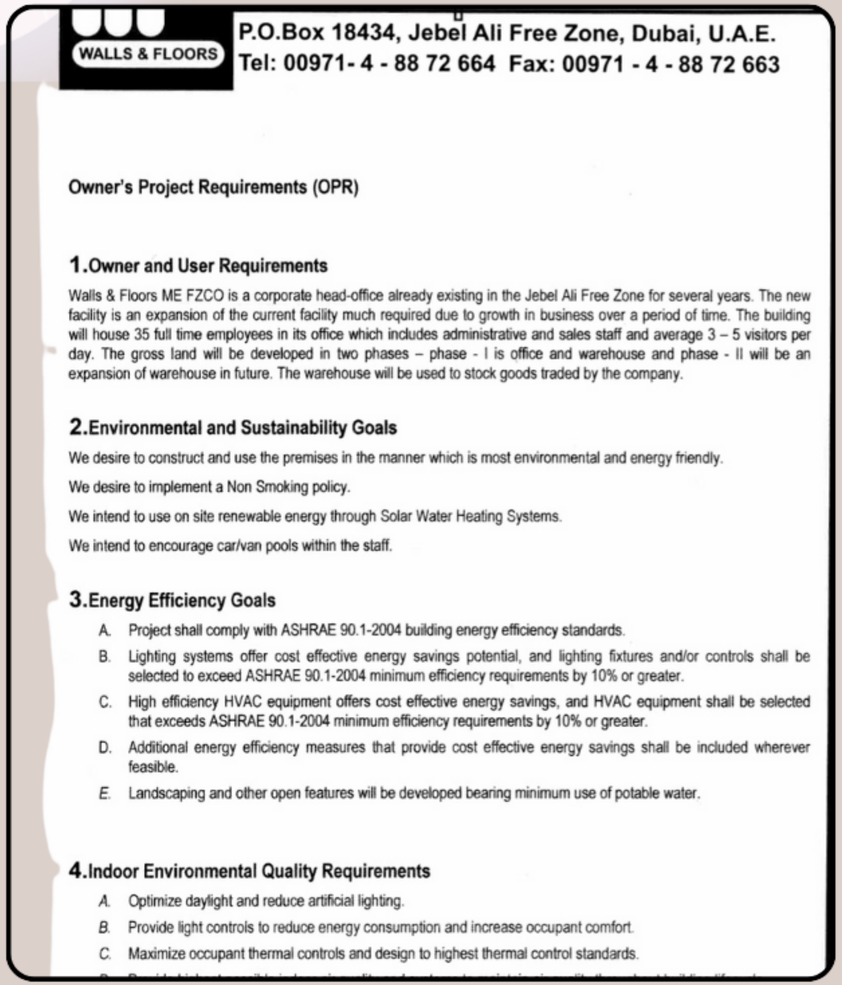
- **The OPR is a critical document.**
- **CxA facilitates OPR development through workshops.**
- **The OPR should be updated throughout the project.**

NOTE: OPR nomenclature replaces the former DID.



Owner’s Project Requirements

- **Program requirements**
- **Codes and regulations**
- **Site and climate**
- **Facility context and function • Performance criteria**
- **Sustainability goals**
- **Cost**
- **Schedule**
- **Client’s needs and capabilities**



WALLS & FLOORS

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Owner's Project Requirements (OPR)

1.Owner and User Requirements

Walls & Floors ME FZCO is a corporate head-office already existing in the Jebel Ali Free Zone for several years. The new facility is an expansion of the current facility much required due to growth in business over a period of time. The building will house 35 full time employees in its office which includes administrative and sales staff and average 3 – 5 visitors per day. The gross land will be developed in two phases – phase - I is office and warehouse and phase - II will be an expansion of warehouse in future. The warehouse will be used to stock goods traded by the company.

2.Environmental and Sustainability Goals

We desire to construct and use the premises in the manner which is most environmental and energy friendly.

We desire to implement a Non Smoking policy.

We intend to use on site renewable energy through Solar Water Heating Systems.

We intend to encourage car/van pools within the staff.

3.Energy Efficiency Goals

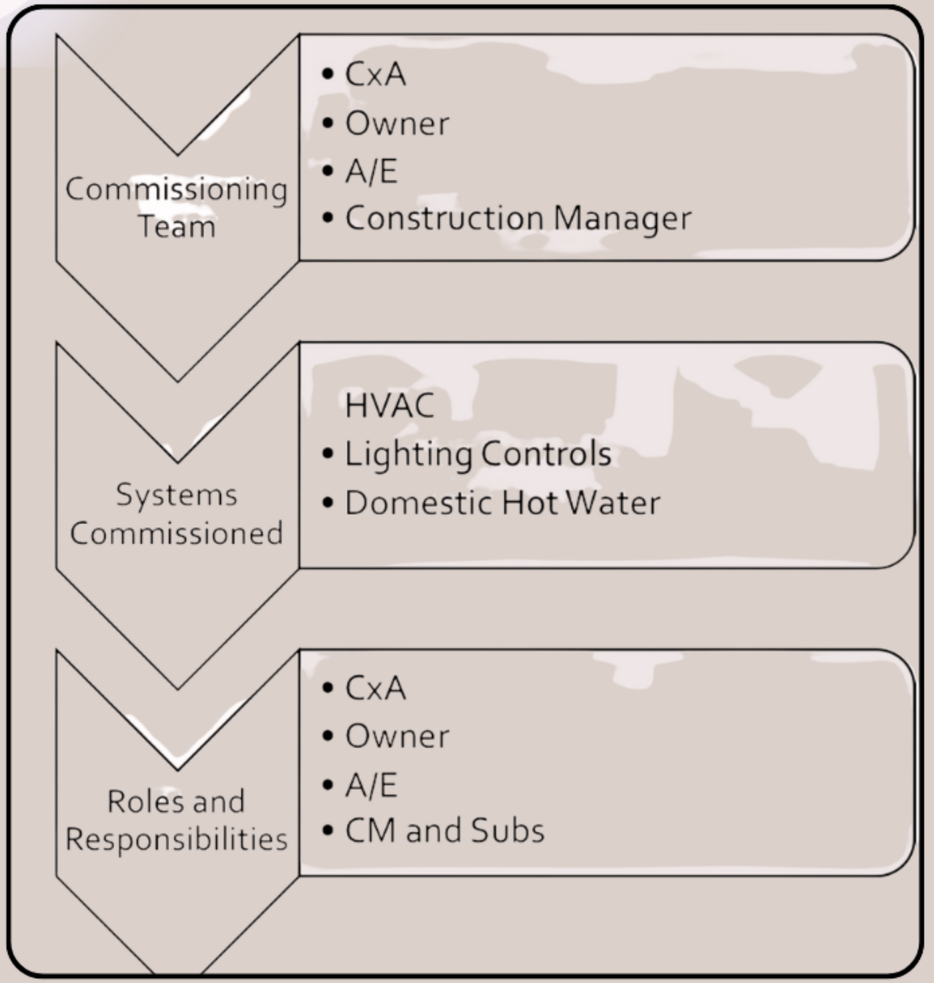
A. Project shall comply with ASHRAE 90.1-2004 building energy efficiency standards.
B. Lighting systems offer cost effective energy savings potential, and lighting fixtures and/or controls shall be selected to exceed ASHRAE 90.1-2004 minimum efficiency requirements by 10% or greater.
C. High efficiency HVAC equipment offers cost effective energy savings, and HVAC equipment shall be selected that exceeds ASHRAE 90.1-2004 minimum efficiency requirements by 10% or greater.
D. Additional energy efficiency measures that provide cost effective energy savings shall be included wherever feasible.
E. Landscaping and other open features will be developed bearing minimum use of potable water.

4.Indoor Environmental Quality Requirements

A. Optimize daylight and reduce artificial lighting.
B. Provide light controls to reduce energy consumption and increase occupant comfort.
C. Maximize occupant thermal controls and design to highest thermal control standards.

Pre-design commissioning outline:

- **Developed by the CxA**
- **Identify Cx budget and/or time requirements**
- **Cx team summary of roles**
- **Systems to be commissioned**
- **Outline evolves in to Commissioning Plan**



COMMISSIONING MEETINGS

The CxP must review with the owner or owner's representative the Owner's Project Requirements (OPR) or Current Facility Requirements (CFR), which may have been developed by the CxP, the owner, or the design team. In addition, the CxP should emphasize the significance of attendance and punctuality at all required Cx Team meetings throughout the duration of the project.

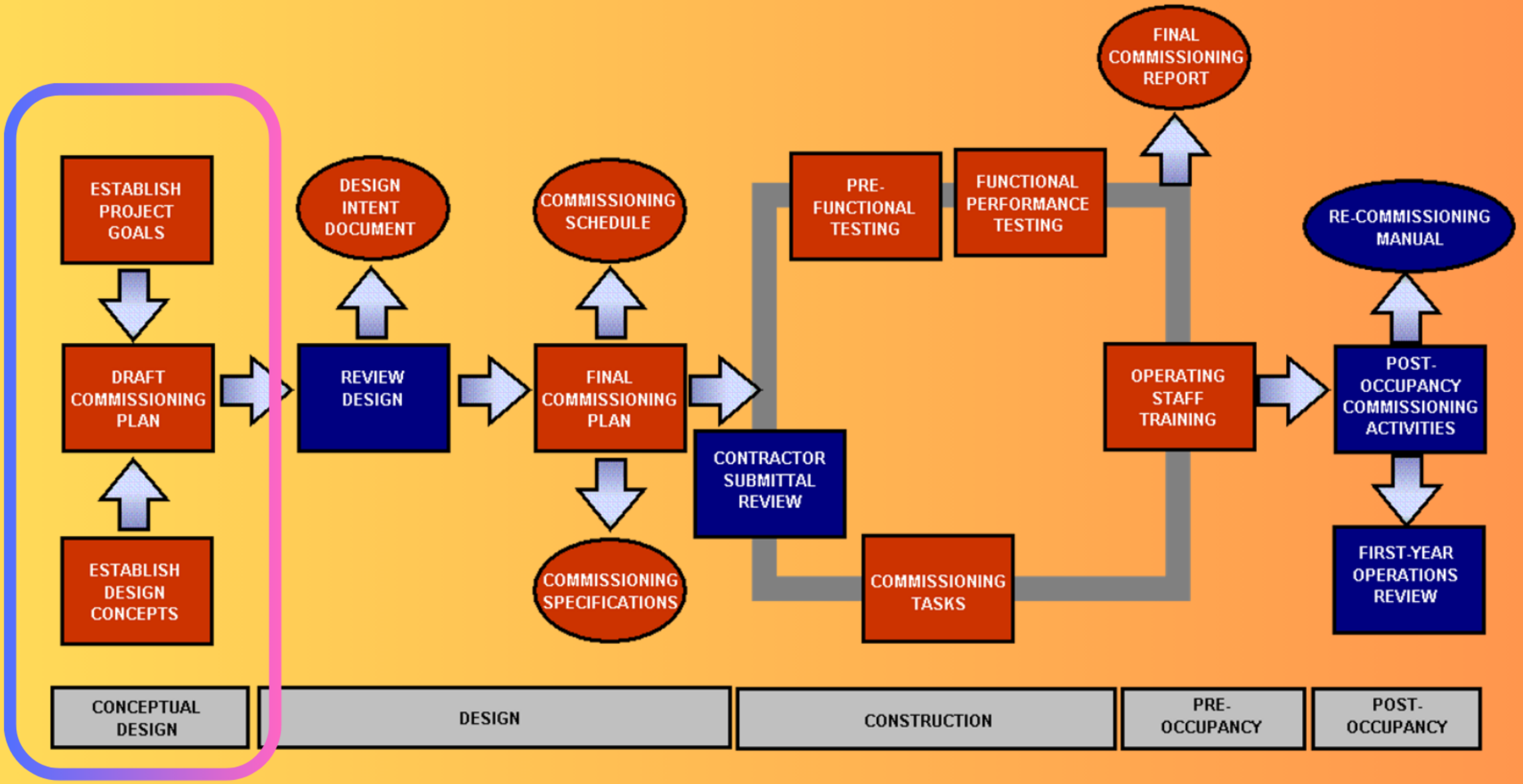
Cx Team meetings during the Project Initiation Phase may cover the following topics:

- Partnering with the owner or owner’s representative and the design team
- Project site walk-through.
- Owner’s Project Requirements (OPR) or Current Facility Requirements (CFR) workshop
- Design concept workshop.
- Commissioning scope of service identification.
- Organizational construction requirements.
- Jurisdictional codes and concerns



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COMMISSIONING AND THE BUILDING DEVELOPMENT PROCESS



WHICH BUILDING SYSTEMS ARE TO BE COMMISSIONED?

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The owner selects building systems based on the facility's purpose, sustainability goals, and jurisdictional codes. They specify these in the Request for Qualifications and Request for Proposal. Electrical systems include lighting controls, normal and emergency power systems, daylighting controls, distribution, renewable energy, UPS, lightning protection, and grounding and bonding.



- Heating, Ventilation, and Air-Conditioning (HVAC) Systems
- Exterior Enclosure Systems:
- Plumbing Systems
- Life Safety Systems
- Low-Voltage Systems
- Vertical Transportation Systems
- Miscellaneous Facility-Specific Systems



COMMISSIONING AS DEFINED HERE FOCUSES ON ACTIVE SYSTEMS THAT AFFECT SUSTAINABILITY



• “Active” system

–Any system that needs to change its operation in response to changing conditions in the building’s environment (indoor or outdoor) is an active system.

•“Affect Sustainability”:

–Degrades the expected environmental performance of the building, in terms of:

•Energy

•Water

•Air

•Visual / Thermal Comfort

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EXAMPLES OF ACTIVE SYSTEMS IN GREEN BUILDINGS:

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- Lighting Controls
- Sun Controls / Shading
- Demand Controlled HVAC / Ventilation
- Ventilation Systems and Control
- Gray Water
- Storm Water Control
- Photovoltaics / Cogeneration / Fuel Cells
- Direct Digital Controls (DDC)
- Chiller and Boiler Plants



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