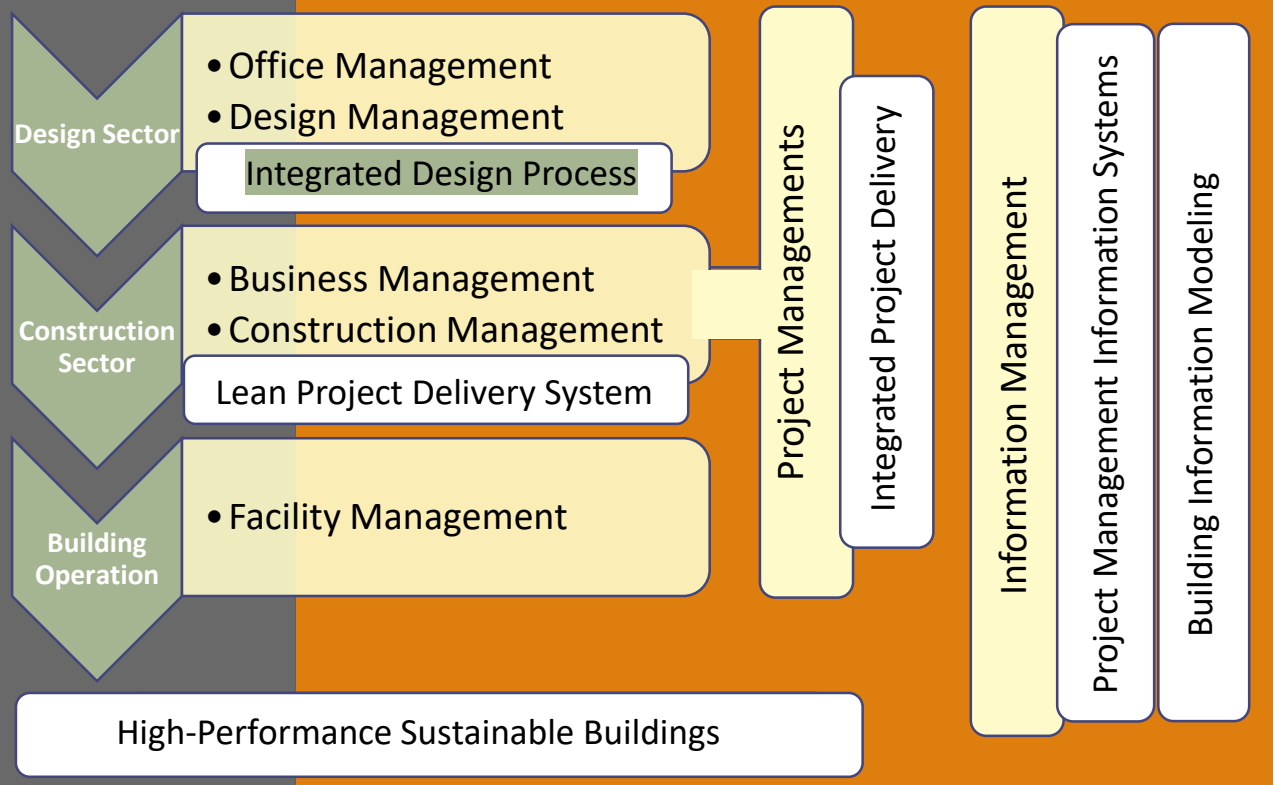
Advanced Design & Construction Management Techniques- Design Charrette

جلسه دهم- اردیبهشت ماه 1398- مدیریت پروژه

By: Hoda Homayouni Ph.D.

Introduction



- Design charrette introduction
  - Who to invite
  - How to facilitate discussions
  - Codes of conducts
  - Logistics

Introduction

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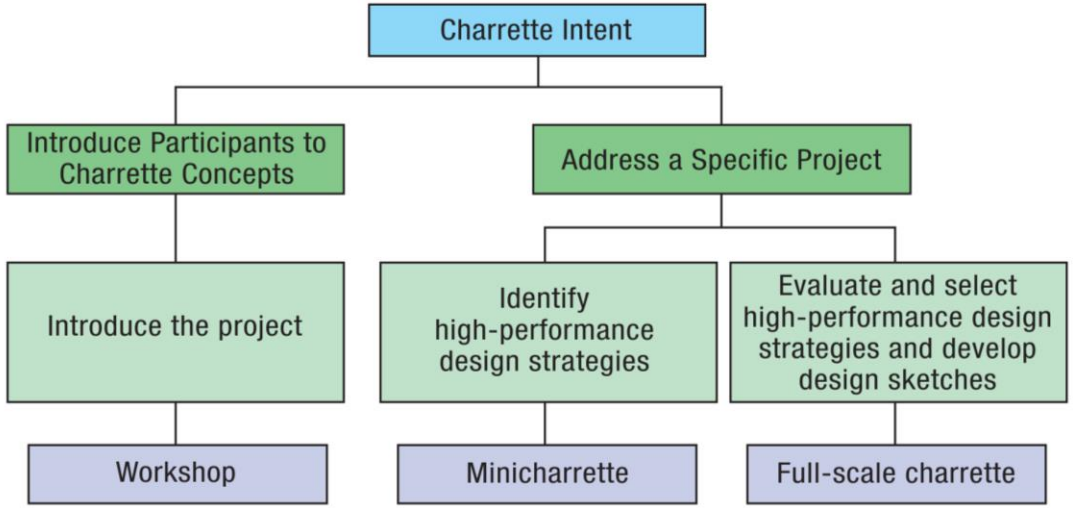
  - Who to invite
  - How to facilitate discussions
  - Codes of conducts
  - Logistics
- The Goal Setting Workshop
  - Tasks and activities
  - Principles and measurements
  - Cost Analysis
  - Schedule and next steps

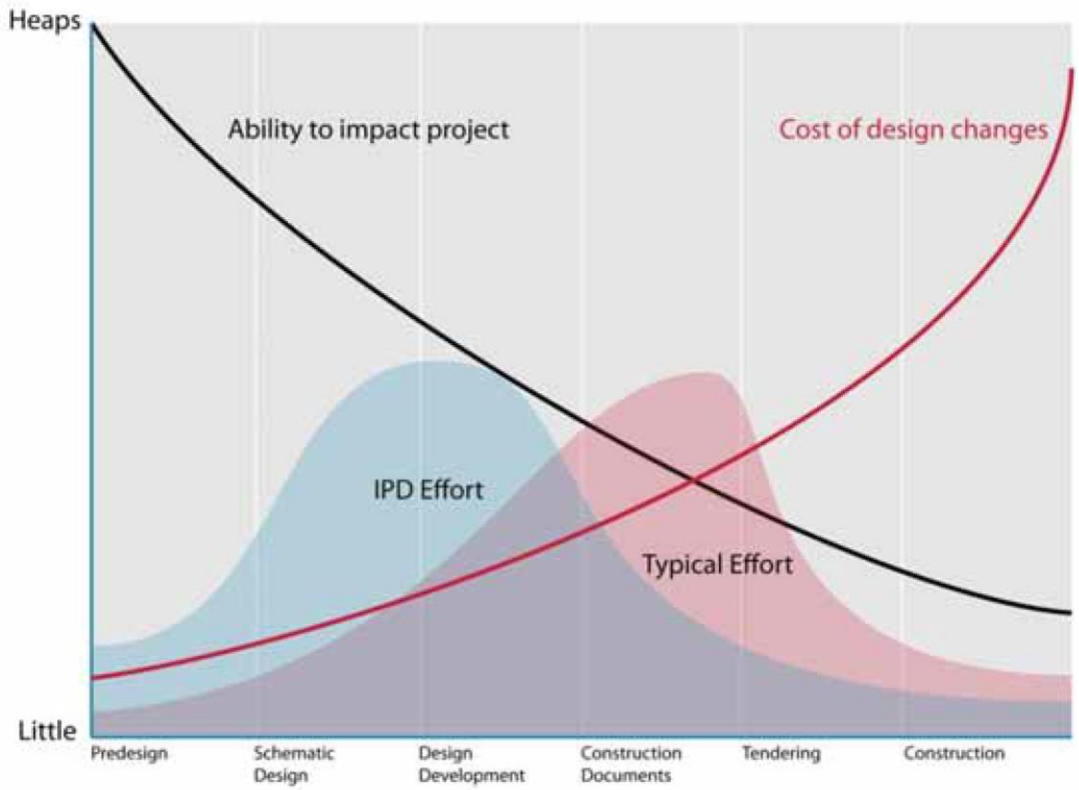
Design Charrettes

Ecole des Beaux-Arts - Paris, France



Introducing Participants to the fundamentals of IPD and Systems Thinking

- Structured
- Inclusive
- Non-traditional Expertise
- Collaborative
- Holistic or Systemic thinking
- Whole building budget setting
- Iterative
- Looking for Synergies
- Continuous learning and improvements
- Outcome oriented



The MacLeamy Curve

Speakers that you can invite:

- Kickoff speaker(s) to energize and excite participants
- Local dignitaries to demonstrate support
- Content Experts for specific topics to be addressed, such as energy and materials.
- Case Study speakers to share previous experience gained from actual projects.

Code of Conducts in IDP charrettes

- Active Listening
- Respect of other Ideas
- Start and end on-time
- Open sharing of ideas and perspectives
- Serve the best interest of the group

Tip/Tools for good Facilitation

Tip / Tool	Description	Purpose
Check-ins	Participants introduce themselves, give personal anecdote, or state goal for meeting	Personalize setting, get on same page, break ice, and set context
Check-outs	Participants comment on their experiences	Chance to express concluding remarks and achieve sense of closure
Ice-breakers	Game or activity	Introductions, ease people into group setting, and stimulate discussion
Team values or Code of Conduct	Establish team's ground rules with input from all participants	Create common understanding, promote a respectful environment, and provide a means to prevent or resolve disputes
Brainstorming	Technique for generating ideas in low-risk environment	Generate new ideas, stimulate creative and lateral thinking, get input from everyone
Parking lot	List to track issues that arise but are off-topic	Keeps discussion focused without forgetting important issues
Mirroring	Facilitator repeats what a participant has said verbatim	Ensures that people are heard, builds trust, can speed up brainstorming
Paraphrasing	Facilitator repeats what a participant has said in his/her own words	Ensures that people feel heard and understood, can clarify meaning

Tip / Tool	Description	Purpose
Multi-modal learning	Use of different styles of learning and participation, including visual, auditory, and written	Reflects participants' different learning styles, maximizing learning and input
Positions versus interests	Facilitator may be able to draw out underlying motives beneath a participant's position (iceberg analogy)	Highlights common ground between positions that appear conflicting or polarized
Go-around	Technique of 'going around the room' or table one-by-one to hear from everyone. Can continue until everyone has passed, indicating that they have nothing more to add	Ensures that everyone has a chance to speak, and prevents domination of discussion; participants can listen effectively knowing that they will have a turn to speak
Negative poll	Ask for a show of hands to determine who disagrees with a statement	Can allow for fast decision-making and consensus-building
Open-ended questions	Broad questions typically beginning with "how", "what", or "why"	Encourages participants to share their perspectives
Probing questions	Questions or statements such as "Can you give an example?" or "Could you elaborate on that?"	Encourages participants to provide more information
Thumb-o-meter[1]	Ask for thumbs up, down, or sideways to indicate levels of agreement	Quick way to get feedback from participants
Hot dots	A method of prioritizing using adhesive dots: participants are given a certain number of dots to place beside a certain number of choices	Used to get a sense of the group's collective priorities without making a final selection or decision

Logistics

- Assemble and Distribute Resource Materials
  - Event specific information:
    - Final agenda
    - List of sponsors and contact information
    - List of participants and contact information
    - List of presenters with bios and contact information
    - List of exhibitors
  - Project Information (+site printouts)
  - Predesign energy analysis results
  - Handouts For Technical presentations
  - Case studies of similar high-performance projects
  - Resources (useful Web sites, articles about local green buildings, ….)
  - Evaluation forms

AGENDA

HUBBUB AT CITYHALL

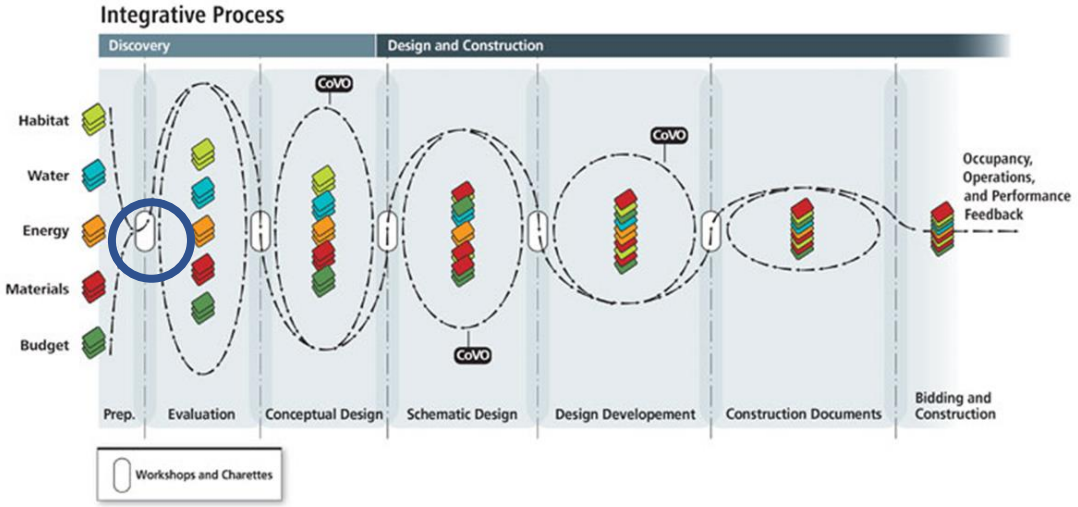
Friday, November 29, 2013

Dialogue				
10:00	(30 min)	Registration	Arrival, name tags, bingo	Town Hall
10:30	(15 min)	Welcome	Lena Soots "What's all the hubbub about"	Town Hall
10:45	(45 min)	Project Presentations + City Staff Responses	Feeding the City: Local Food + Food Recovery Safe City: Health + Inclusion Zero Waste City Active City: Transportation + Walkability Happy City: Design + Placemaking	Town Hall
11:30	(60 min)	Dialogue	Five breakout themes	Various Rooms
Lunch				
12:30	(60 min)	Food Truck Lunch	Bring lunch money! Eat at the Long Table.	Town Hall
Design				
1:30	(90 min)	Design Workshop	What should we be working on? Create a poster for the next big project	Town Hall
3:00	(30 min)	Post + Share Ideas		Town Hall
3:30	(30 min)	Closing	See you at the Hullabaloo!	Town Hall
6:00	(3 hours)	CityStudio Holiday Party	Hullabaloo Party at Lost+Found	Town Hall

Lead by Example

Employ green practices when preparing participant materials:

- Use recycled paper.
- Make double-sided copies of everything except site information and other charrette working materials.
- Use notebooks or folders made of recycled or environmentally preferable materials (e.g., recycled cardboard).
- Avoid using paper when possible:
  - Give Web site addresses and information about how to order materials instead of providing all the materials.
  - Make examples of supplemental materials such as brochures and flyers available at the resource table.
  - Distribute advance materials (such as project information and predesign energy analysis results) electronically by e-mail or Web site.
- Collect name tags for use at the next event.
- Provide recycling bins for paper, cans, bottles, and composting.



The Goal Setting Workshop

Stage A.2

Workshop No. 1: Alignment of Purpose and Goal-Setting

A.2.1 Workshop No. 1: Tasks and Activities

- Introduce participants to the fundamentals of the integrative design process and to systems thinking
- Elicit client's deeper intentions and purpose for the project
- Engage Touchstones exercise to elicit stakeholders' values and aspirations
- Clarify functional and programmatic goals
- Establish initial Principles, Metrics, Benchmarks, and Performance Targets for the four key subsystems:
  - Habitat
  - Water
  - Energy
  - Materials
- Generate potential strategies for achieving identified Performance Targets
- Determine order-of-magnitude cost impacts of proposed strategies
- Provide time for reflection and feedback from client and team members
- Develop an Integrative Process Road Map that identifies responsibilities, deliverables, and dates
- Commissioning: Initiate documentation of the Owner's Project Requirements (OPR)

A.2.2 Principles and Measurement

- Document Touchstones, Principles, Metrics, Benchmarks, and Performance Targets from Workshop No. 1

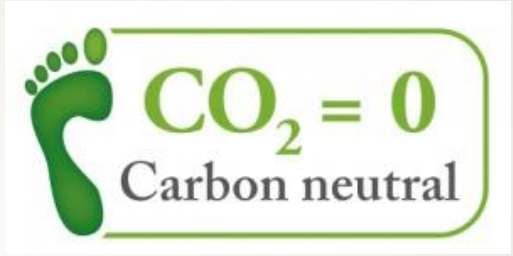
A.2.3 Cost Analysis

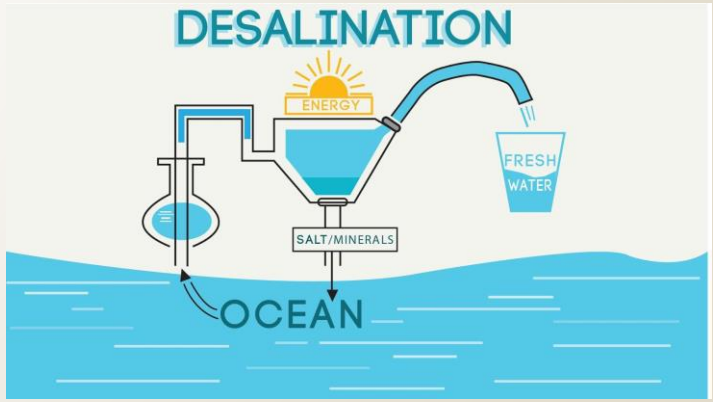
- Document order-of-magnitude cost impacts of proposed strategies to reflect input from Workshop No. 1

A.2.4 Schedule and Next Steps

- Adjust Integrative Process Road Map to reflect input from Workshop No. 1
- Distribute Workshop No. 1 report

Alignment of Purpose and Goal-Setting





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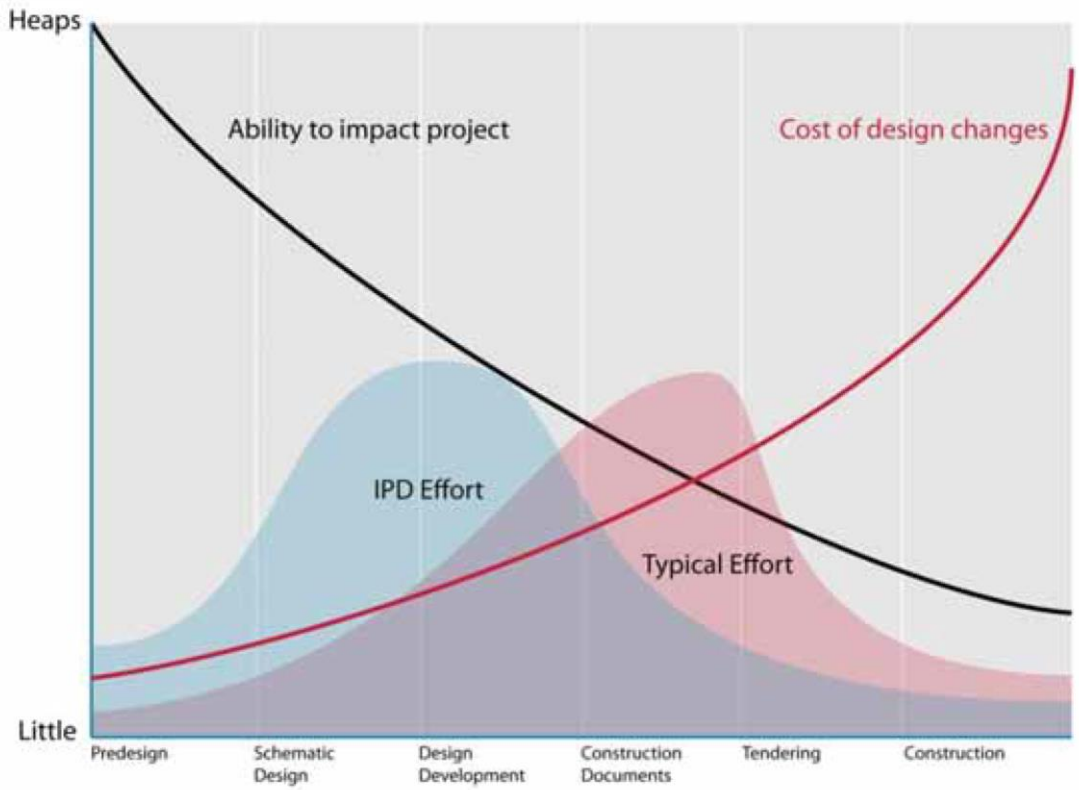


The MacLeamy Curve

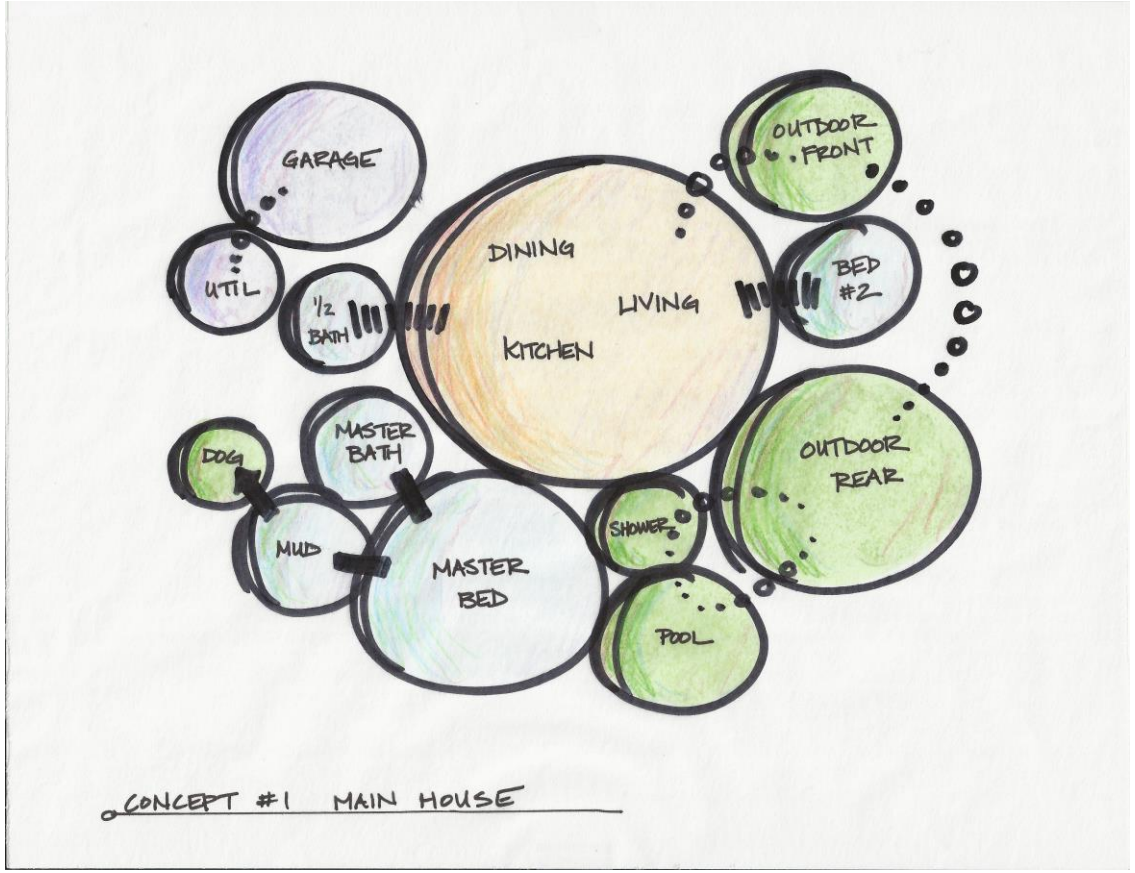
Elicit Clients' deeper intentions and purpose for the project

- Grounding the group in the stated values and mission statement of the client's organization.
- Profit, by itself, is rarely the only reason to build a building.

=> Make other project drivers explicit=> They can shape a project's sustainability objectives more effectively than technical efficiency or economic reasons.

Clarify Functional And Programmatic Goals

- Verify and clarify the conventional functional program- space and site functions,
- area quantities,
- Adjacencies,
- Parking requirements, etc.

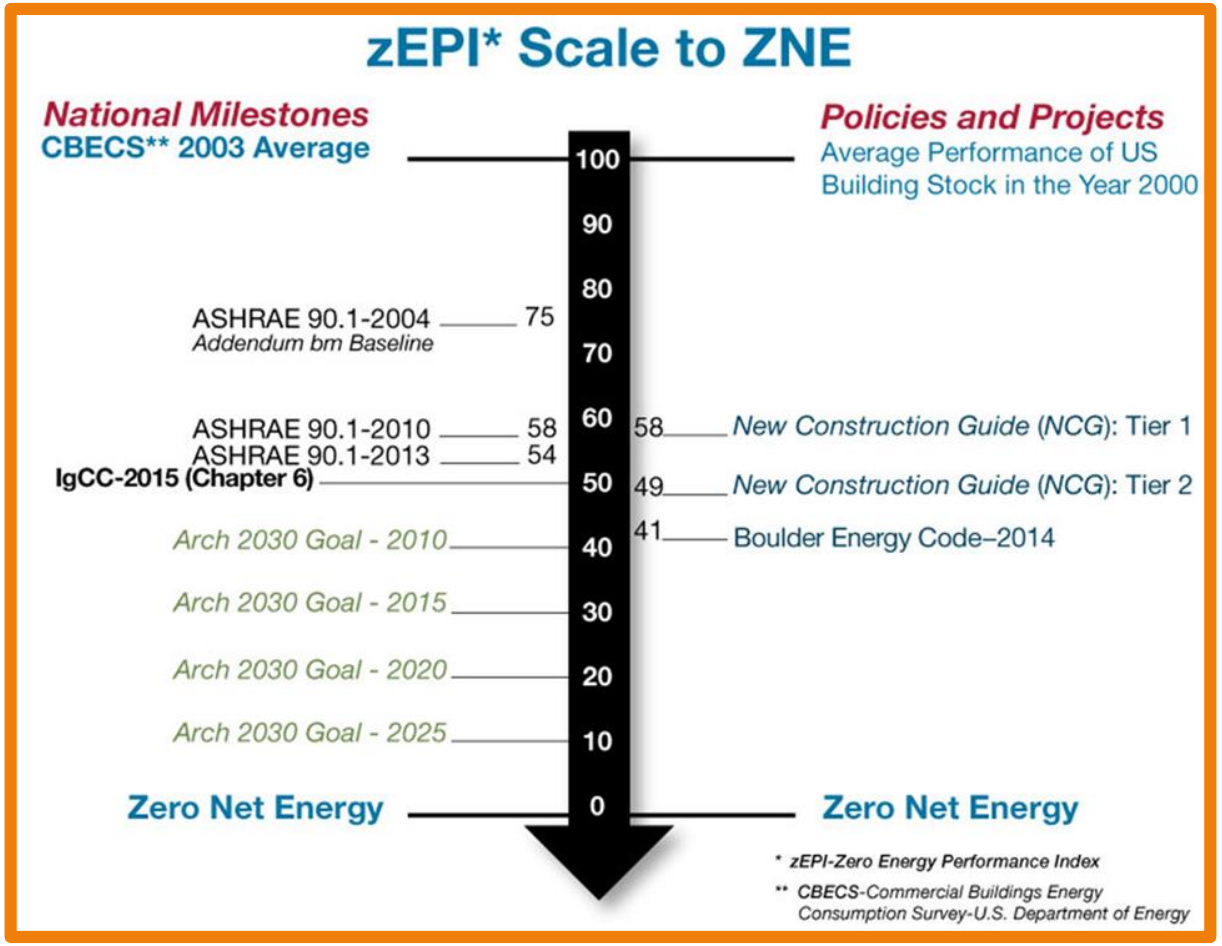


Establish initial Principles, Metrics, Benchmarks, and Performance targets for the four Key Subsystems

- **Principle:** A fundamental truth that is a basis for action
- **Metric:** how we measure
- **Benchmark:** The standard against which we measure performance
- **Performance Target:** A measurable, quantifiable, and verifiable performance goal established by the team.

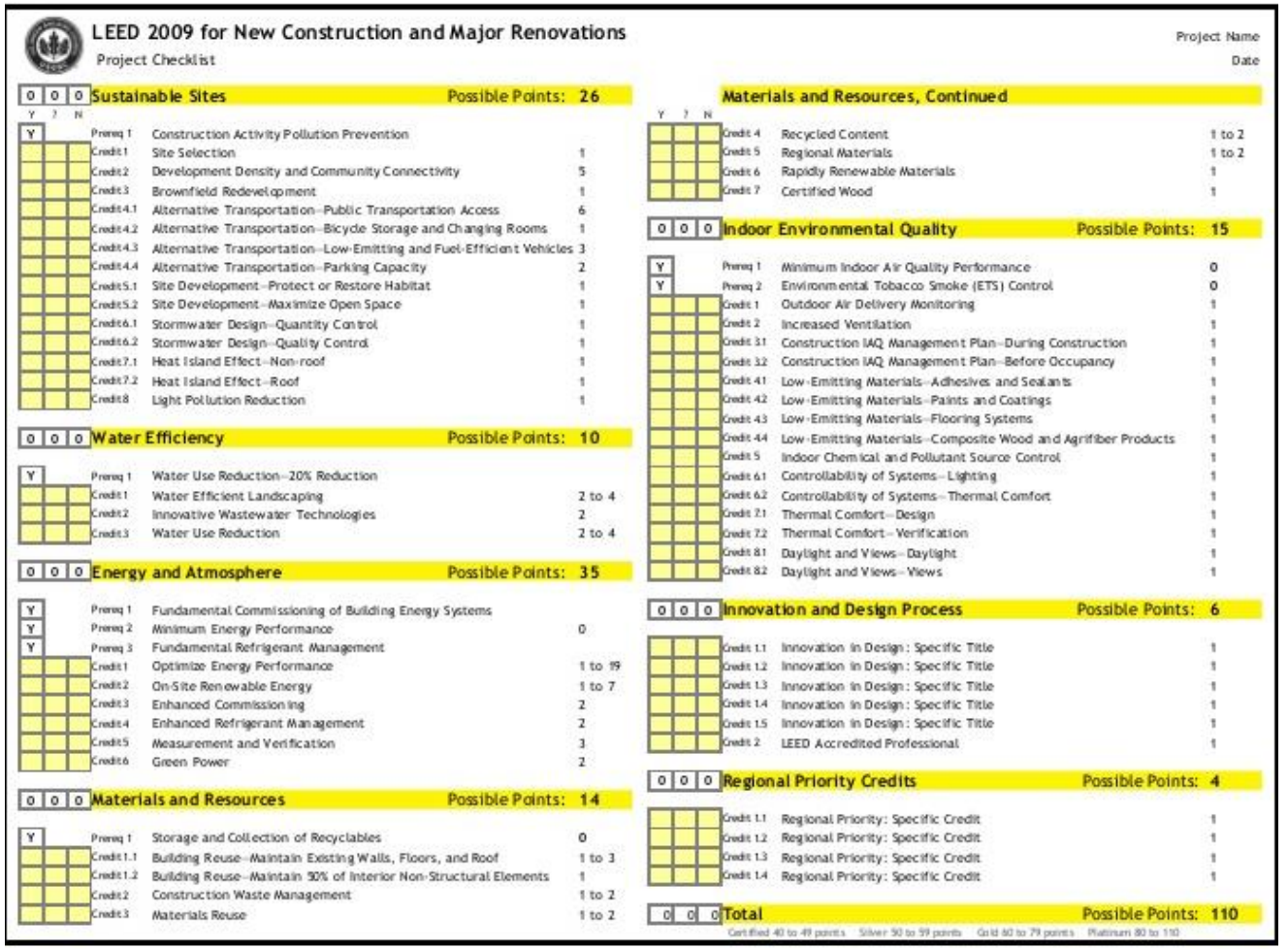
Examples for **Energy**:

- neutralizing carbon foot print
- metric vs. imperial kbtu/sf-year-GJ/m2
- The zero Energy Performance Index
- net-zero, 70% less energy use



Generate Potential Strategies For Achieving identified Performance Targets

- Brainstorming exercise/ not a commitment
- Look for synergies between LEED credits
- Walking the team through the intentions behind the LEED checklist on a credit-by-credit basis.



LEED 2009 for New Construction and Major Renovations

Project Checklist

Project Name

Date

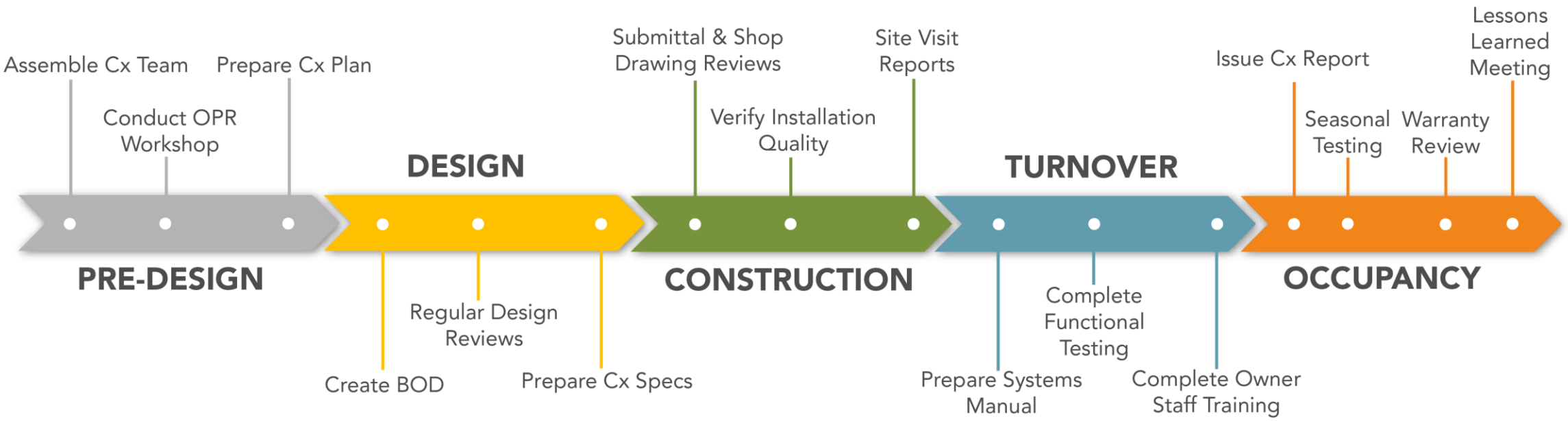
Y	?	N			
0	0	0	**Sustainable Sites**	**Possible Points:**	**26**
Y			Prereq 1	Construction Activity Pollution Prevention	
			Credit 1	Site Selection	1
			Credit 2	Development Density and Community Connectivity	5
			Credit 3	Brownfield Redevelopment	1
			Credit 4.1	Alternative Transportation—Public Transportation Access	6
			Credit 4.2	Alternative Transportation—Bicycle Storage and Changing Rooms	1
			Credit 4.3	Alternative Transportation—Low-Emitting and Fuel-Efficient Vehicles	3
			Credit 4.4	Alternative Transportation—Parking Capacity	2
			Credit 5.1	Site Development—Protect or Restore Habitat	1
			Credit 5.2	Site Development—Maximize Open Space	1
			Credit 6.1	Stormwater Design—Quantity Control	1
			Credit 6.2	Stormwater Design—Quality Control	1
			Credit 7.1	Heat Island Effect—Non-roof	1
			Credit 7.2	Heat Island Effect—Roof	1
			Credit 8	Light Pollution Reduction	1
0	0	0	**Water Efficiency**	**Possible Points:**	**10**
Y			Prereq 1	Water Use Reduction—20% Reduction	
			Credit 1	Water Efficient Landscaping	2 to 4
			Credit 2	Innovative Wastewater Technologies	2
			Credit 3	Water Use Reduction	2 to 4
0	0	0	**Energy and Atmosphere**	**Possible Points:**	**35**
Y			Prereq 1	Fundamental Commissioning of Building Energy Systems	
Y			Prereq 2	Minimum Energy Performance	0
Y			Prereq 3	Fundamental Refrigerant Management	
			Credit 1	Optimize Energy Performance	1 to 19
			Credit 2	On-Site Renewable Energy	1 to 7
			Credit 3	Enhanced Commissioning	2
			Credit 4	Enhanced Refrigerant Management	2
			Credit 5	Measurement and Verification	3
			Credit 6	Green Power	2
0	0	0	**Materials and Resources**	**Possible Points:**	**14**
Y			Prereq 1	Storage and Collection of Recyclables	0
			Credit 1.1	Building Reuse—Maintain Existing Walls, Floors, and Roof	1 to 3
			Credit 1.2	Building Reuse—Maintain 50% of Interior Non-Structural Elements	1
			Credit 2	Construction Waste Management	1 to 2
			Credit 3	Materials Reuse	1 to 2

Y	?	N			
			Materials and Resources, Continued		
			Credit 4	Recycled Content	1 to 2
			Credit 5	Regional Materials	1 to 2
			Credit 6	Rapidly Renewable Materials	1
			Credit 7	Certified Wood	1
0	0	0	**Indoor Environmental Quality**	**Possible Points:**	**15**
Y			Prereq 1	Minimum Indoor Air Quality Performance	0
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	0
			Credit 1	Outdoor Air Delivery Monitoring	1
			Credit 2	Increased Ventilation	1
			Credit 3.1	Construction IAQ Management Plan—During Construction	1
			Credit 3.2	Construction IAQ Management Plan—Before Occupancy	1
			Credit 4.1	Low-Emitting Materials—Adhesives and Sealants	1
			Credit 4.2	Low-Emitting Materials—Paints and Coatings	1
			Credit 4.3	Low-Emitting Materials—Flooring Systems	1
			Credit 4.4	Low-Emitting Materials—Composite Wood and Agrifiber Products	1
			Credit 5	Indoor Chemical and Pollutant Source Control	1
			Credit 6.1	Controllability of Systems—Lighting	1
			Credit 6.2	Controllability of Systems—Thermal Comfort	1
			Credit 7.1	Thermal Comfort—Design	1
			Credit 7.2	Thermal Comfort—Verification	1
			Credit 8.1	Daylight and Views—Daylight	1
			Credit 8.2	Daylight and Views—Views	1
0	0	0	**Innovation and Design Process**	**Possible Points:**	**6**
			Credit 1.1	Innovation in Design: Specific Title	1
			Credit 1.2	Innovation in Design: Specific Title	1
			Credit 1.3	Innovation in Design: Specific Title	1
			Credit 1.4	Innovation in Design: Specific Title	1
			Credit 1.5	Innovation in Design: Specific Title	1
			Credit 2	LEED Accredited Professional	1
0	0	0	**Regional Priority Credits**	**Possible Points:**	**4**
			Credit 1.1	Regional Priority: Specific Credit	1
			Credit 1.2	Regional Priority: Specific Credit	1
			Credit 1.3	Regional Priority: Specific Credit	1
			Credit 1.4	Regional Priority: Specific Credit	1
0	0	0	**Total**	**Possible Points:**	**110**

Certified 40 to 49 points Silver 50 to 59 points Gold 60 to 79 points Platinum 80 to 110

Workshop No. 1. Tasks and Activities

- Determine Order-of-Magnitude cost impact of proposed Strategies
- Provide time for Reflection and Feedback from client and team members
    - Focus groups may help
- Develop an Integrative Process Road map that identifies responsibilities, deliverables, and dates
- Commissioning: Initiate documentation of the Owner's Project Requirements (OPR)
    - OPR questionnaire might be helpful to help guide the owner's thinking about what the building needs to be and how it needs to perform.

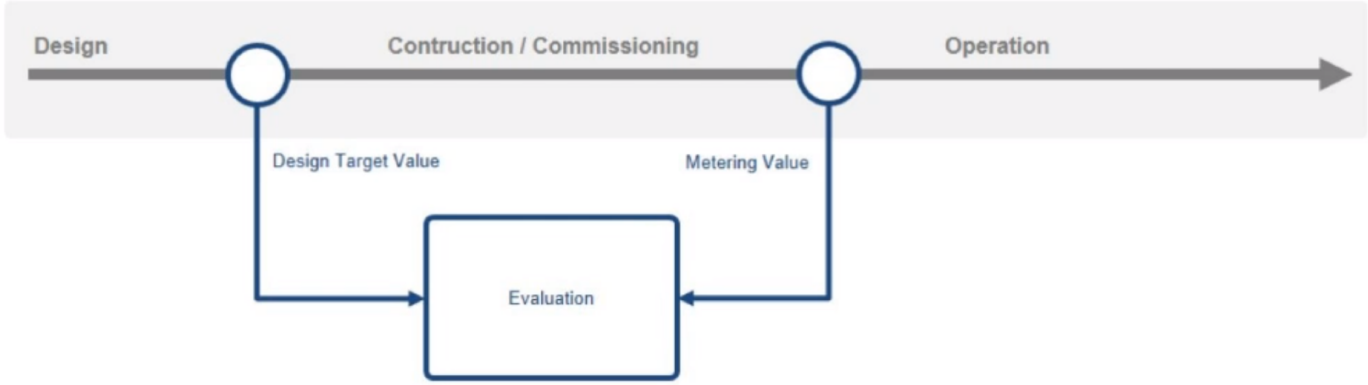


Commissioning

ASHRAE Definition: "A quality-oriented process for achieving, verifying, and documenting that the performance of facilities, systems, and assemblies meets defined objectives and criteria"

Technical Monitoring as a key to building performance

Quality Control Loop to check for fulfillment of requirements.



Commissioning

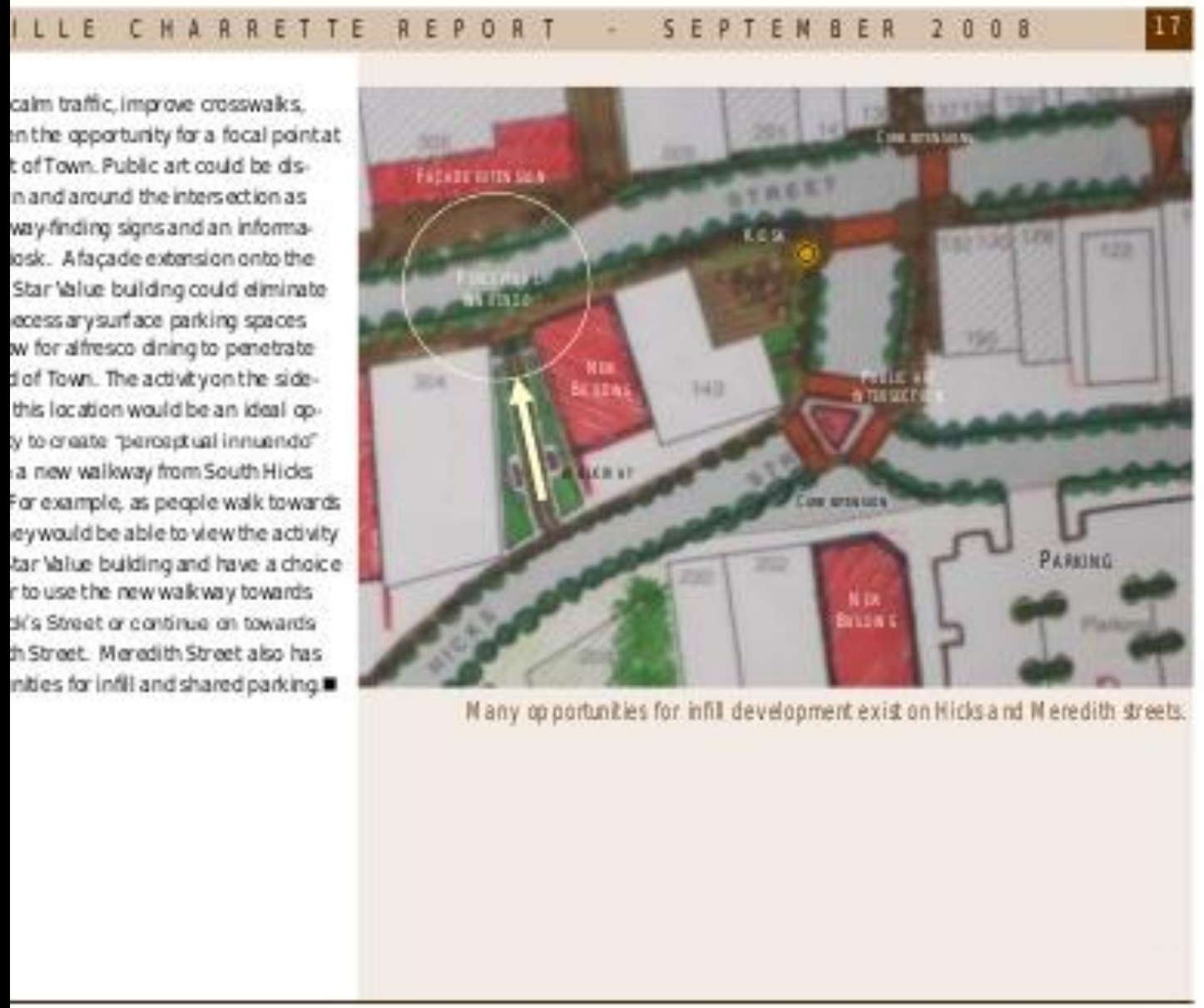
- Commissioning is not construction, & it is not design, but it influences both.
- Commissioning Authority (CxA) has no contractual authority over design or construction!

⇒Cx must rely on other skill sets to accomplish the work of ensuring design compliance & systems performance during construction besides technical expertise:

  - Communication
  - Collaboration
  - Mediation
  - Remaining objective
  - Remaining calm!

Principles and Measurements

- Document Touchstones, Principles, Metrics, Benchmarks, and Performance Targets from Workshop No. 1
  - Principle based report
  - Include an expanded and annotated LEED checklist (for LEED projects)



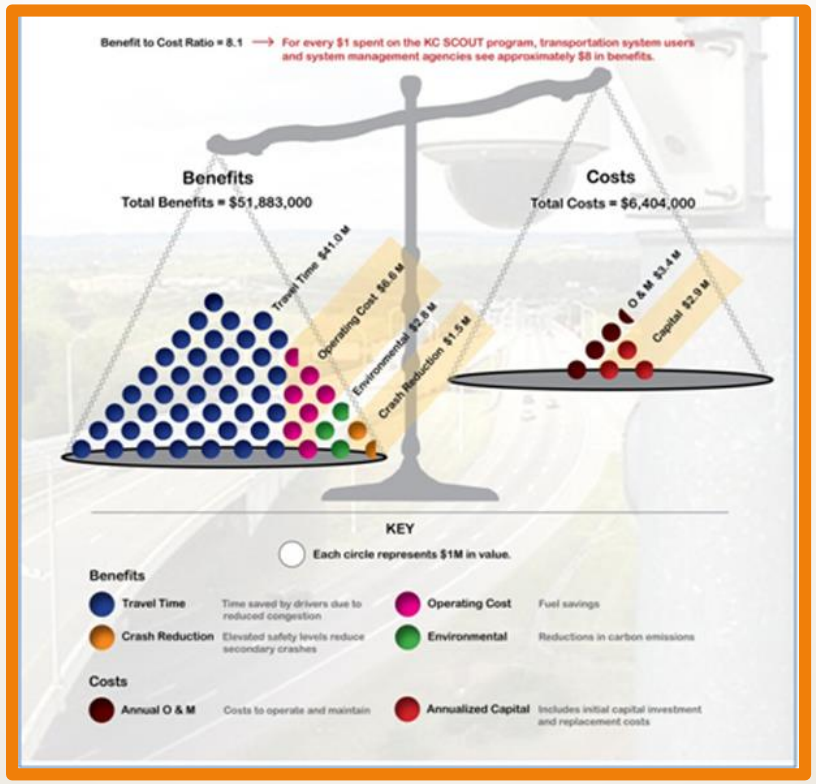
ILLE CHARRETTE REPORT - SEPTEMBER 2008 17

calm traffic, improve crosswalks.
n the opportunity for a focal point at
t of Town. Public art could be dis-
n and around the intersection as
way-finding signs and an informa-
iosk. A façade extension onto the
Star Value building could eliminate
ecessary surface parking spaces
w for alfresco dining to penetrate
d of Town. The activity on the side-
this location would be an ideal op-
y to create "perceptual innuendo"
a new walkway from South Hicks
For example, as people walk towards
eywould be able to view the activity
tar Value building and have a choice
r to use the new walkway towards
ki's Street or continue on towards
h Street. Meredith Street also has
nities for infill and shared parking.■

Many opportunities for infill development exist on Hicks and Meredith streets.

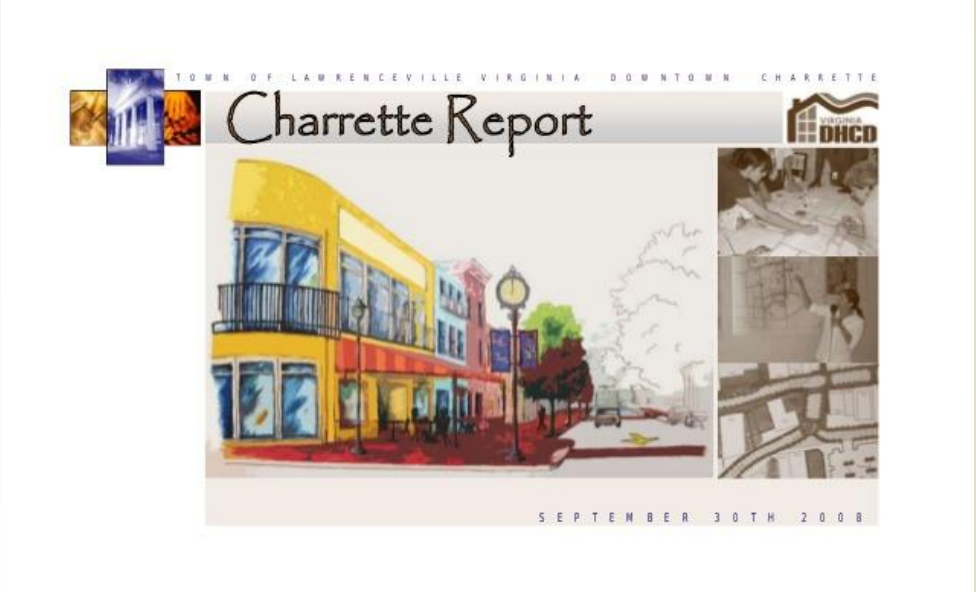
Cost Analysis

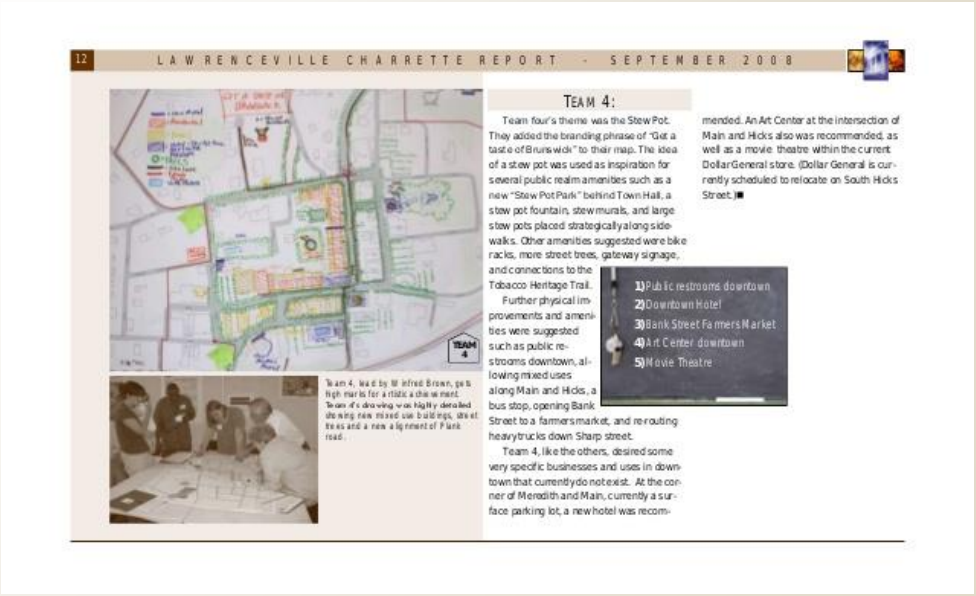
- Document Order of Magnitude cost impacts of the proposed strategies to reflect input from workshop No. 1.



Schedule and Next Steps

- Adjust Integrative Process Road Map to reflect input from Workshop No. 1.
- Distribute Workshop No. 1 report. The report should contain the following:
  - Meeting agenda
  - Lists of attendees
  - Photos of activities
  - Results from the Touchstones exercise
  - Initial OPR document or date when OPR will be written and by whom
  - Initial Principles, Metrics ,Benchmarks, and Performance Targets (including LEED Scorecard as described above)
  - Cost analysis, including any initial cost-bundling template input
  - Integrative Process Road Map Spreadsheet of Schedule and tasks
  - Bulleted list of next steps





Questions to Consider for writing the Reflections:

WHAT IS COMMISSIONING? ITS BENEFITS, DRAWBACKS, AND CONDITIONS?

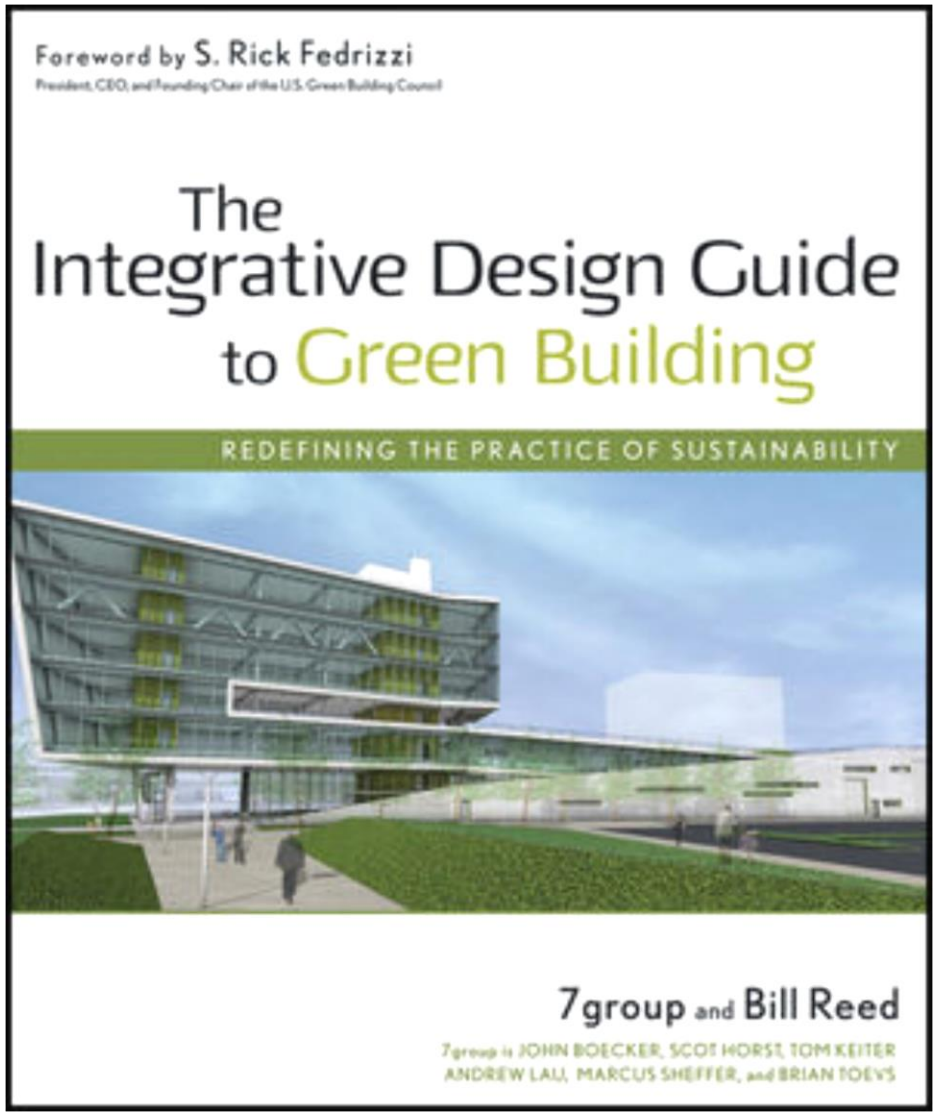
HOW IS COMMISSIONING CONDUCTED IN OUR COUNTRY? WHAT CHALLENGES DO WE FACE IN CONDUCTING FULL SCALE COMMISSIONING IN OUR COUNTRY?

Establish initial Principles, Metrics, Benchmarks, and Performance targets for any of the four Key Subsystems in your studio project.

Preparation Reading for Next Class:

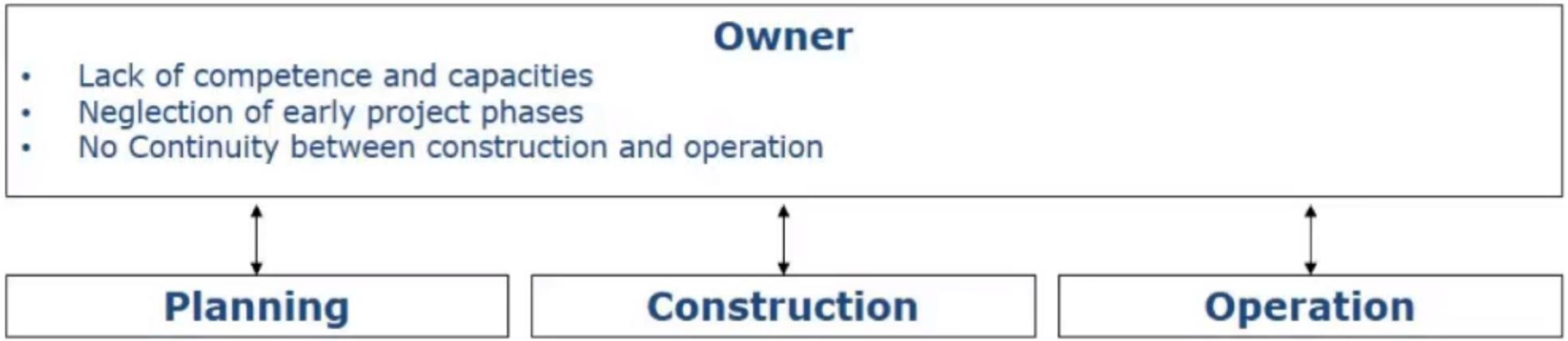
Subject:

Design phase in IDP process.



Additional Slides

Challenges for buildings‘ performance



- Lack of precise requirements definition
- No efficient control function of planning implementation
- High dependency on personnel

- No testing of building automation functions
- Lack of documentation concerning the implemented building control
- High dependency on personnel

- Premature handing over of incomplete building
- Lack of proper tools to analyze building automation functions
- No time/capacity for frequent in-depth operational analyses
- No service level agreements in place for operation of building equipment with external providers

Commissioning in Traditional design process

How is Cx implemented?

-Through three phases: Design, construction, & acceptance.

Where is the acceptance phase in the traditional process?!

-Nowhere! It currently is fixing the problems through the warranty period to some nebulous point beyond!

-For building conditioning systems “testing, adjusting, & balancing” occur at an isolated static conditions (prior to occupancy).

-It may correct system deficiencies, but it does not provide any feedback for improving the overall design process, nor does it test systems performance.