Target Value Delivery

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LCI Course:
Target Value Delivery
8 CEU

Sign the sign-in sheet for credit

Learning Objectives

Define the meaning of Target Value Delivery and understand the intent of the approach.

Define relevant terminology required for implementing TVD and understand the interconnectedness of the four phases, including the actions and outputs of each phase.

Identify key Core Components of TVD and how they interrelate to improve the project process and outcomes.

Discover set-based design practices, understand the impact of sound decision-making, and the relationship to TVD.

Rules of Engagement

- This is a safe zone
- Everyone has equal status
- Speak up and share your ideas
- Actively listen to others
- One conversation at a time

- Use E.L.M.O.
- Silence phones
- Be focused and engaged
- Stay on time
- Have fun!

Project Elements

Lean teams organize in a structure that leads to improved coordination, outcomes and shared leadership.

ORGANIZATION

COMMERCIAL TERMS

LEAN IS CONTRACT NEUTRAL

OPERATING SYSTEM

Lean can be implemented regardless of commercial terms: Design-Bid-Build, Design-Build or Integrated Project Delivery. The degree of implementation varies with the terms.
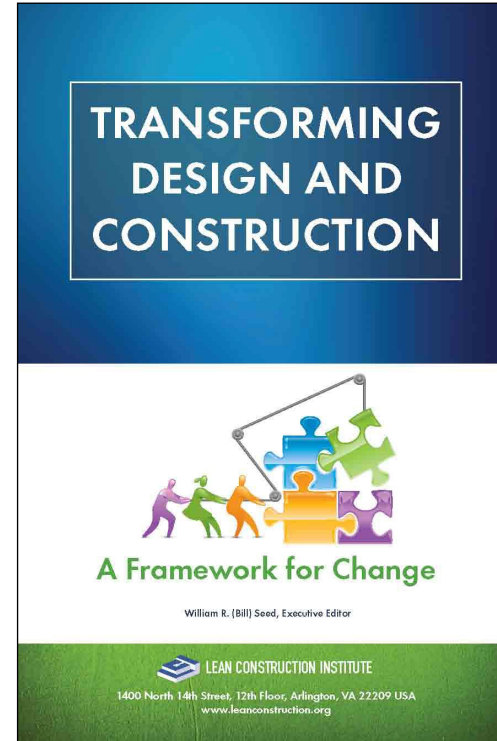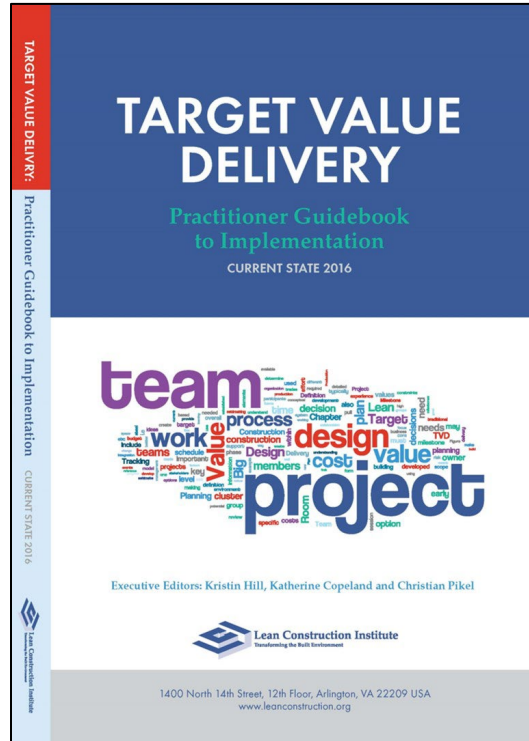
A Lean Operating System is a organized implementation of Lean Principles and Tools combined to allow a team to operate in unison to create flow.

Six Tenets of Lean Construction

1 Respect for people

2 Optimize the Whole

3 Generate Value

4 Eliminate Waste

5 Focus on Flow

6 Continuous Improvement

References

Lean Journey to Mastery

How will you reach the next level on your journey?

Mastery

Competency

Understanding

Awareness

Unaware

Continuous Learning Cycle(s)
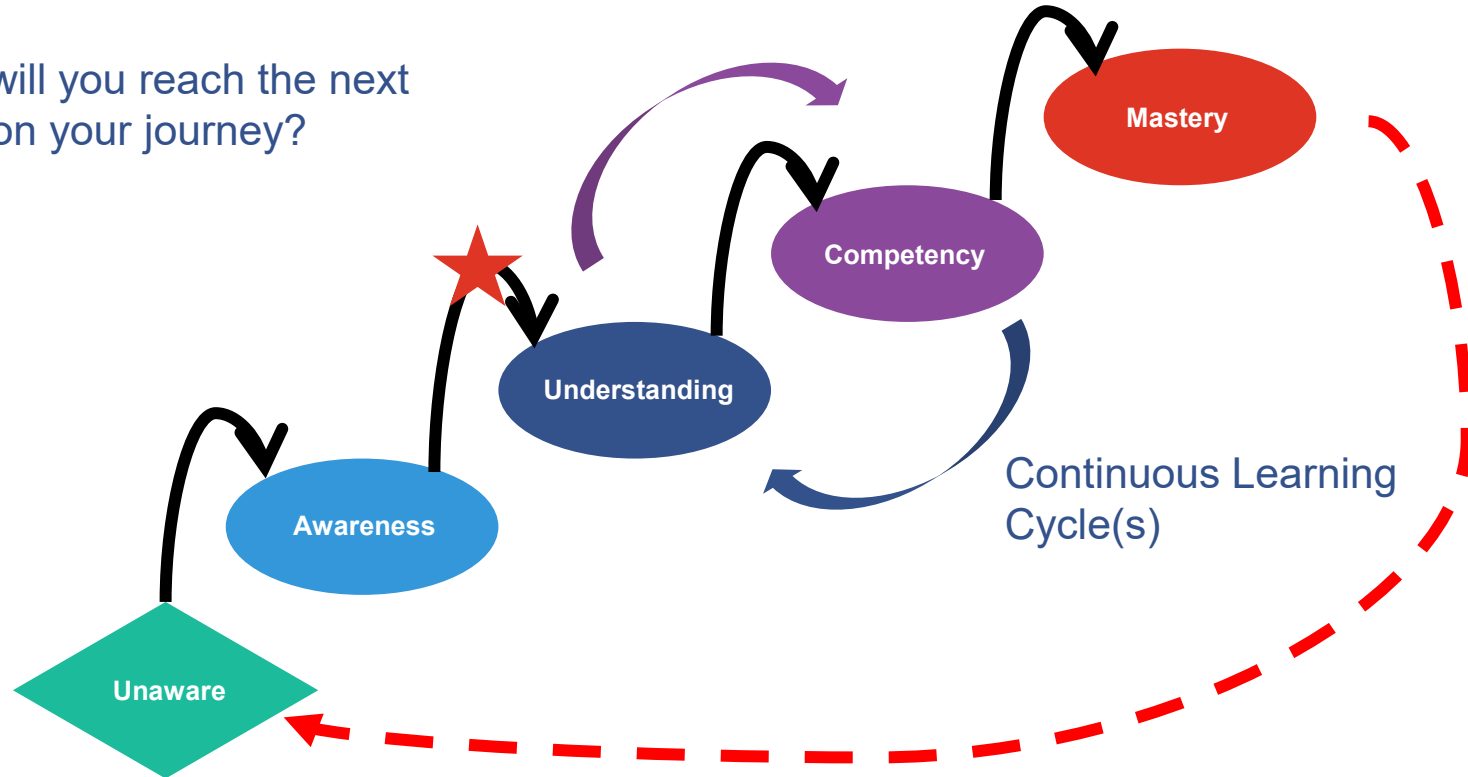
Target Value Delivery

8:00 AM – Introductions

8:30 AM – Target Value Delivery Presentation/Simulation

9:45 AM – Break 15 minutes

12:00 PM – Lunch

Target Value Delivery

1:00 PM – Continue

3:00 PM – Break 15 minutes

4:45 PM – Wrap up and Plus/Delta

5:00 PM – Adjourn

Let's break into project teams:

You'll get a chance to introduce yourselves in a few minutes.

10 MINUTES
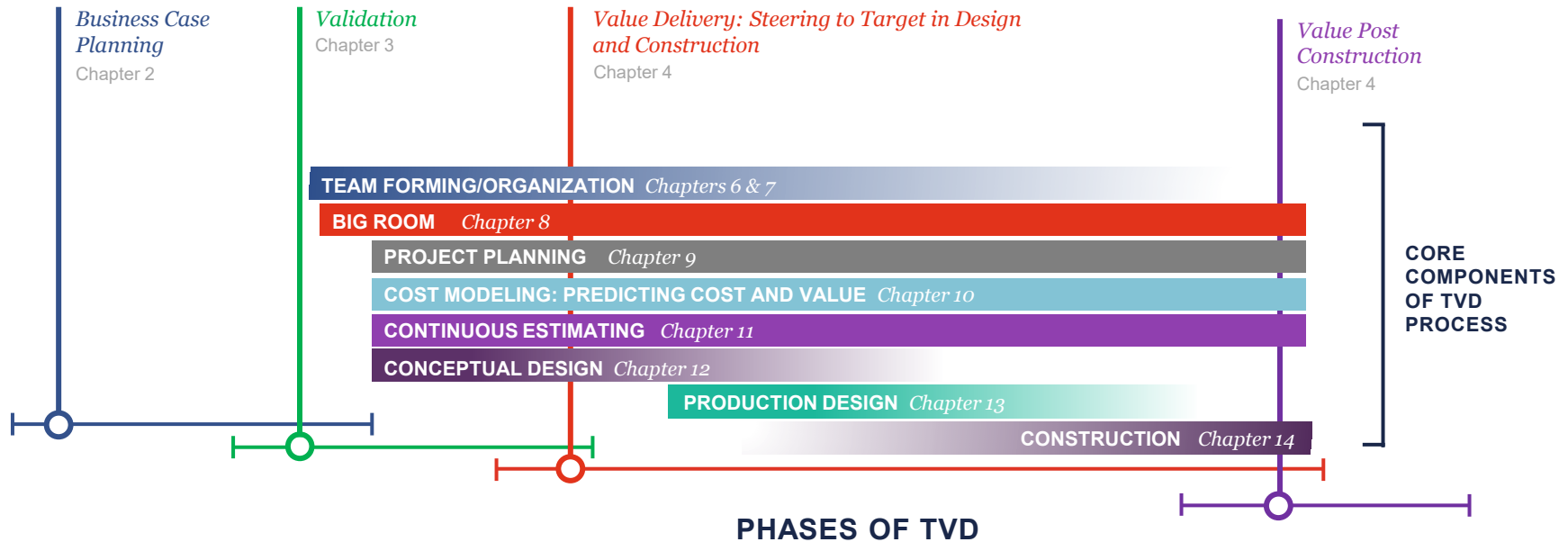
Target Value Delivery (TVD)

A disciplined management practice to be used <u>throughout</u> the project to ensure:

- The facility meets the operational and performance *needs and values* of the users.

- The project is delivered within the *allowable budget*, *schedule*, and *intended scope.*

- That *innovation* is promoted throughout the process to *increase value* and eliminate waste.

Target Value Delivery (TVD)

Target Value Delivery encompasses

Target Value Design

AND

Target Value Production (Construction).

Target Value Delivery

Target Value Design

+

Target Value Production
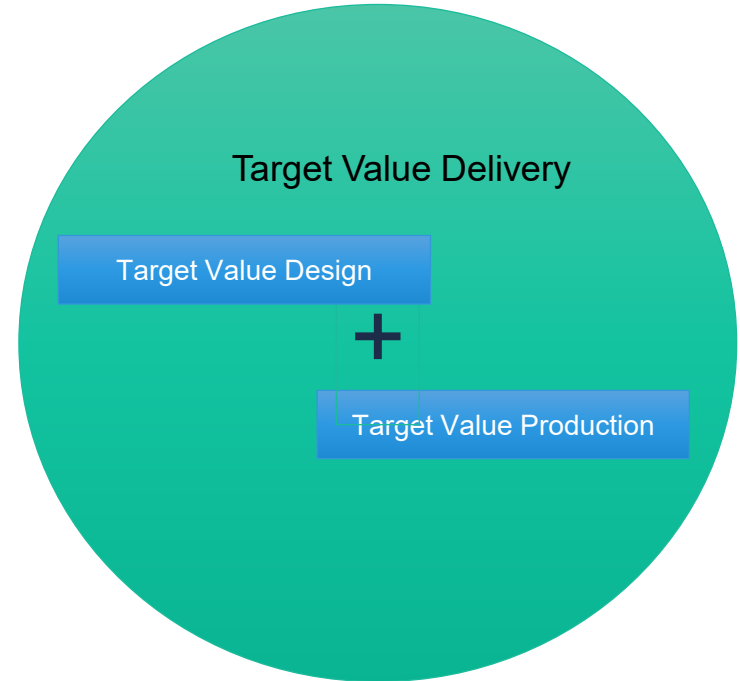
Application

Target Value Delivery is to be applied holistically to obtain maximum value.

Regardless of the project delivery framework, the owner, designers, builders, and key trades must be fully engaged from the onset.

It generates a creative tension between driving up quality YET driving cost down.
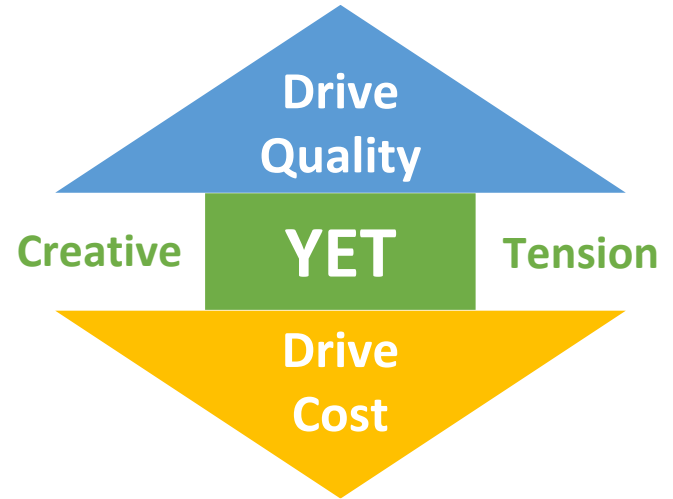
Traditional vs. Target Value Delivery

Cost is an *output* of design
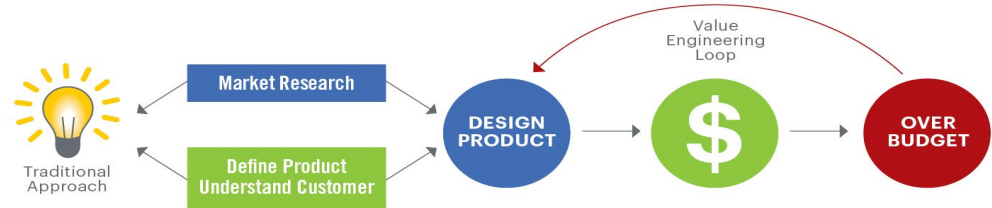
The goal of TVD is to minimize the waste produced by the design, estimate and redesign cycle(s) of the traditional value engineering approach.

Cost is an *input* of design

Courtesy of HKS Architects

TVD Phases Overview

Lean Construction Institute
Immersive Education Program

This graphic depicts the relationship between the TVD Phases and the Targets.

Targets may include cost, time and quality as defined by the Value Definition.

Target Value Delivery Phases

Business Case Planning	→	Set Targets
Go/No Go		
Validation	→	Confirm Targets
Go/No Go		
Value Delivery Design & Construction	→	Design to Targets / Build to Targets
Value Post Construction	→	Assess the Outcome
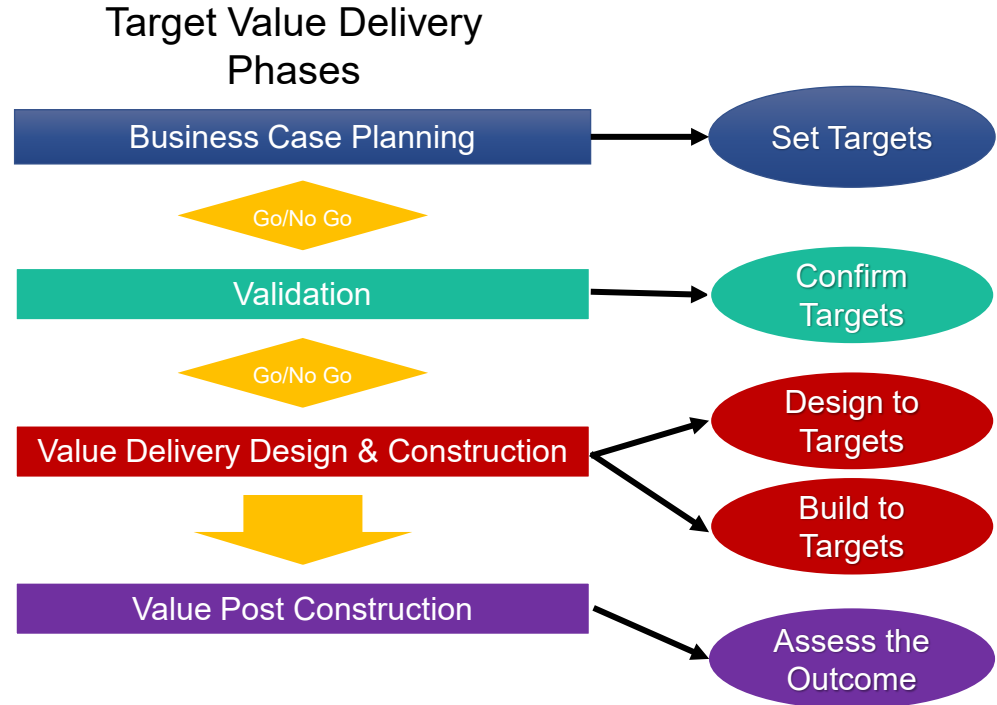
Resource

Target Value Delivery Workshop Activities

- Create a team and identify roles

- Create Owner Value Definition & Team CoS

- Study Benchmark and create Cost Model

- Validate Business Case

- Create Big Ideas and test against project CoS

- Turn big ideas into program and working estimate

- Evaluate sets and present on design concept and cost

Team Forming/Organization
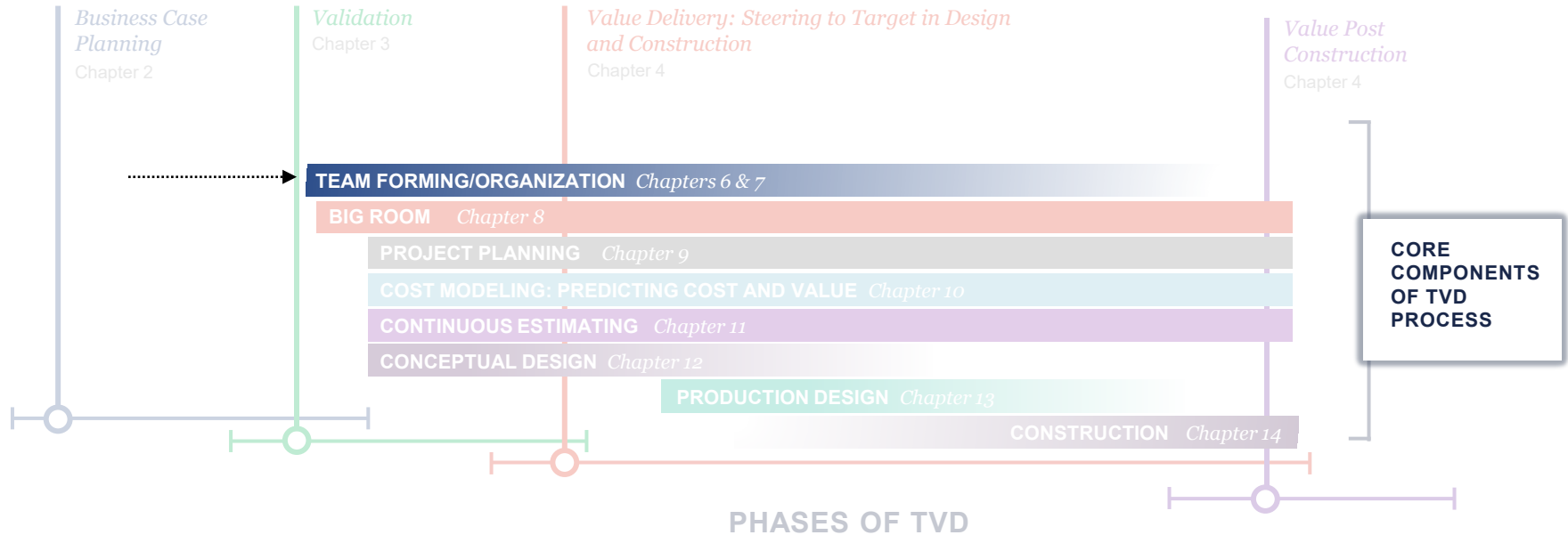
Lean Construction Institute
Immersive Education Program

Business Case Planning
Chapter 2

Validation
Chapter 3

Value Delivery: Steering to Target in Design and Construction
Chapter 4

Value Post Construction
Chapter 4

TEAM FORMING/ORGANIZATION *Chapters 6 & 7*

BIG ROOM *Chapter 8*

PROJECT PLANNING *Chapter 9*

COST MODELING: PREDICTING COST AND VALUE *Chapter 10*

CONTINUOUS ESTIMATING *Chapter 11*

CONCEPTUAL DESIGN *Chapter 12*

PRODUCTION DESIGN *Chapter 13*

CONSTRUCTION *Chapter 14*

CORE COMPONENTS OF TVD PROCESS

PHASES OF TVD

Image courtesy of InsideOut Consulting & Southland Industries
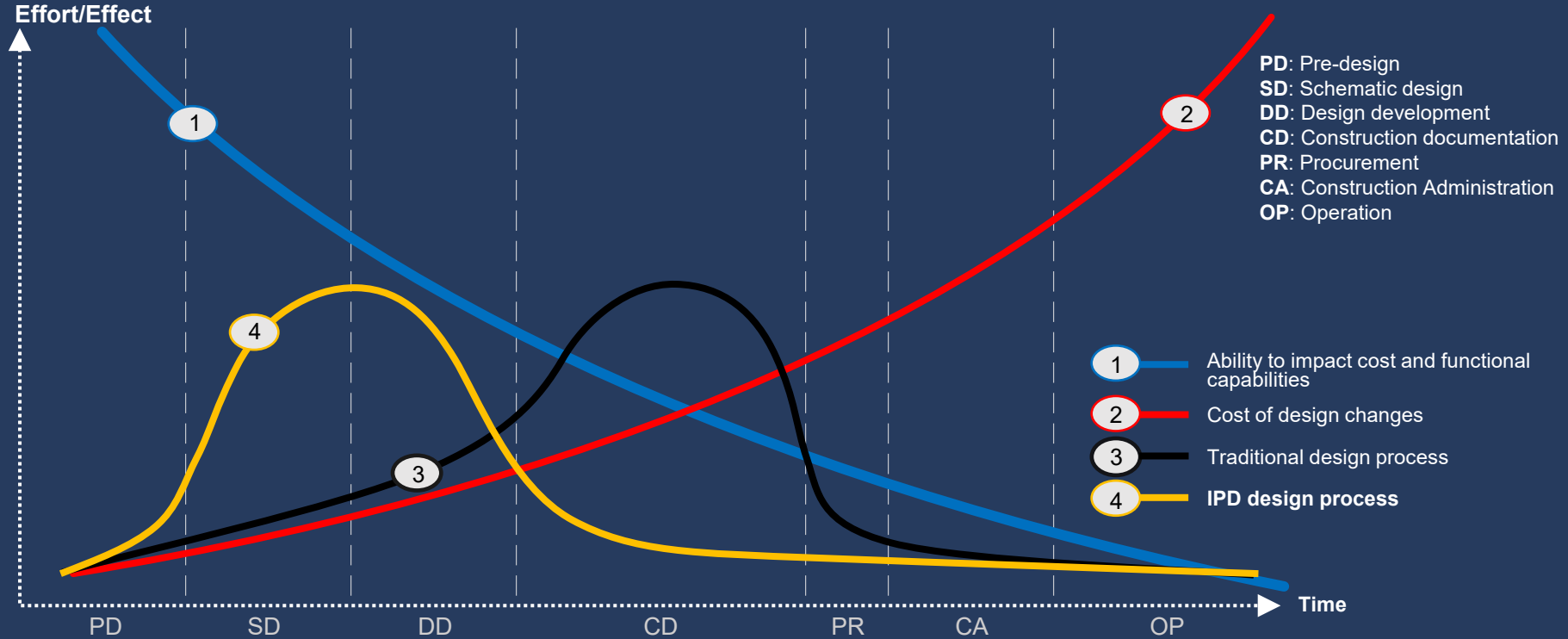
Characteristics of High Performing Teams

1 A high performing team is built on a strong foundation of trust among all members.

2 There is a culture of respect that enables members to effectively deliver against CoS.

3 High performing teams break down barriers through innovation and continuous improvement

4 They break down traditional silos to maximize skills and optimize performance.

Introduction & Team Formation

Teams to Introduce themselves:
- Name
- Where you are from
- What roles you typically play in the industry
- Decide roles you will play this morning
    - Distribute Role Name Tags

10 MINUTES

Roles for the Exercise

- Owner developer
- End user advocate
- Architect
- Contractor – Budget and schedule champion
- Mechanical design builder
- Landscape design builder
- Exterior skin design builder
- Interior design builder

Team Forming Exercise

How would you go about building your team?

What characteristics would be important?

What interview questions might you ask?

How do you build trust within the team?

10 MINUTES

Big Room is:

Big Room refers to a project approach of bringing key individuals together to:

- Collaborate, plan, update, solicit resources, invite feedback, demonstrate accountability, and schedule events in order to:

  - Speed communication and decision-making.

  - Reduce siloed thinking or approaches.

  - Compare the project's current state to the published goals or Conditions of Satisfaction.

Big Room is:

Big Room is a commitment to a project, the team and to working together!

Big Room

For most of the day, we will operate as a Big Room:

Represent *Core Team* as a whole

Break into *Work Clusters* to problem Solve

Hold Core Team *Integrating Events*

02 MINUTES

Transition to Business Case Planning Phase

Business Case Planning Phase

Business Case Planning
Chapter 2

Validation
Chapter 3

Value Delivery: Steering to Target in Design and Construction
Chapter 4

Value Post Construction
Chapter 4

TEAM FORMING/ORGANIZATION Chapters 6 & 7

BIG ROOM Chapter 8

PROJECT PLANNING Chapter 9

COST MODELING: PREDICTING COST AND VALUE Chapter 10

CONTINUOUS ESTIMATING Chapter 11

CONCEPTUAL DESIGN Chapter 12

PRODUCTION DESIGN Chapter 14

CONSTRUCTION Chapter 14

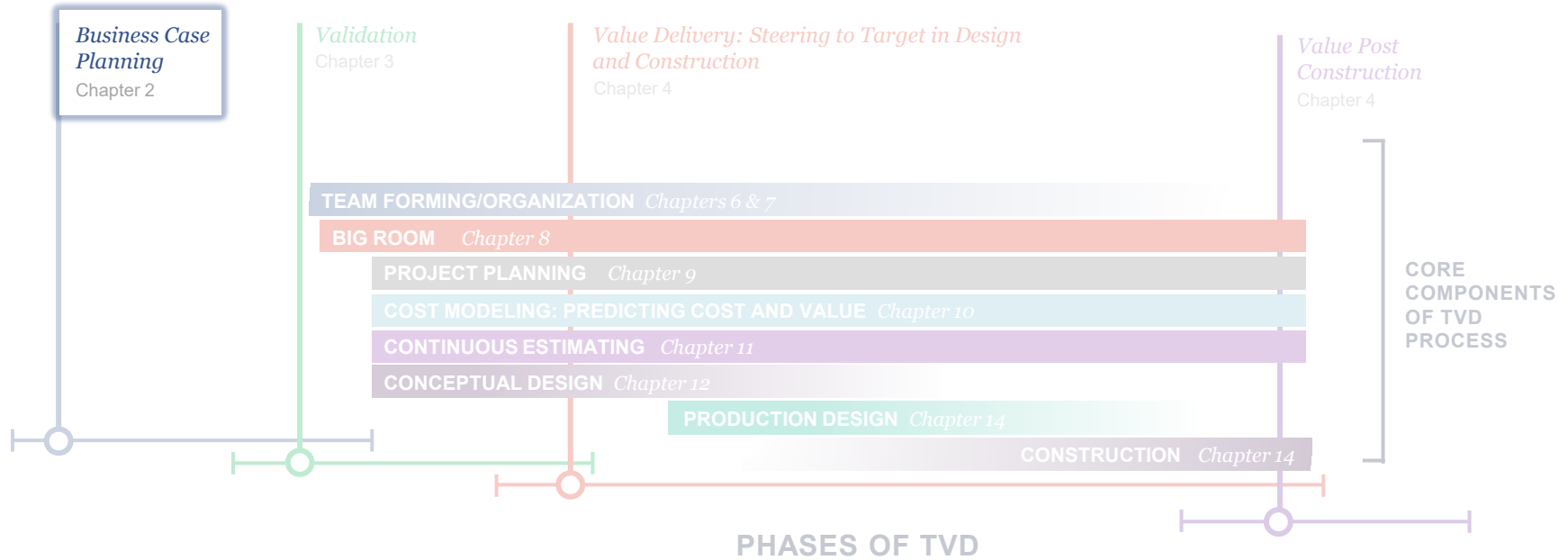CORE COMPONENTS OF TVD PROCESS

PHASES OF TVD

Image courtesy of InsideOut Consulting & Southland Industries

Business Case Phase

- The operational use/benefit proposition described by the owner that initiates the development of the project.

- The owner-provided purpose or "why" that becomes the anchor of the project.

- Sets the **Allowable Cost**.

- Includes **Value Definition Statements** by the owner for the project.

Framing the Business Case

Could we build **X** thing for $**Y** and have it by **Z** date?

- Could we open a replacement hospital in Castro Valley, CA for $300 million by early 2021?

- Could we find a way to increase overall visitor count by X% for a capital expenditure of $1 billion by 2023?

Allowable Cost:

- The absolute maximum project cost based on the *Business Case.*

- Should include all costs associated with delivering the project.

- It becomes the subject of the *Validation Phase.*
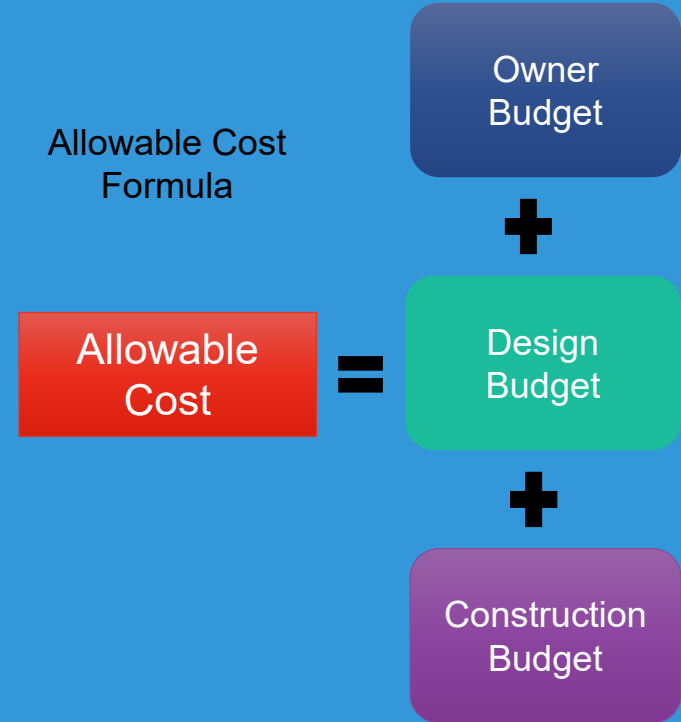
Allowable Cost Formula

Owner Budget

+

Allowable Cost **=** **Design Budget**

+

Construction Budget
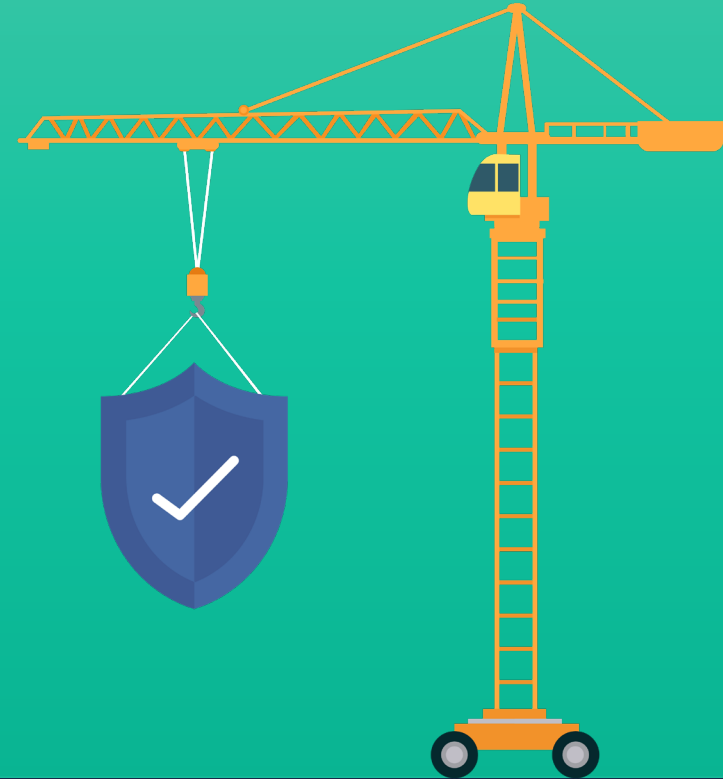
TVD Cost Terminology

Allowable Cost

The amount the owner is willing to spend for the total project.

Business Case Planning Phase

Transition to Validation Phase

Validation Phase

Business Case
Planning
Chapter 2

Validation
Chapter 3

Value Delivery: Steering to Target in Design
and Construction
Chapter 4

Value Post
Construction
Chapter 4

TEAM FORMING/ORGANIZATION Chapters 6 & 7

BIG ROOM Chapter 8

PROJECT PLANNING Chapter 9

COST MODELING: PREDICTING COST AND VALUE Chapter 10

CONTINUOUS ESTIMATING Chapter 11

CONCEPTUAL DESIGN Chapter 12

PRODUCTION DESIGN Chapter 13

CONSTRUCTION Chapter 14

CORE
COMPONENTS
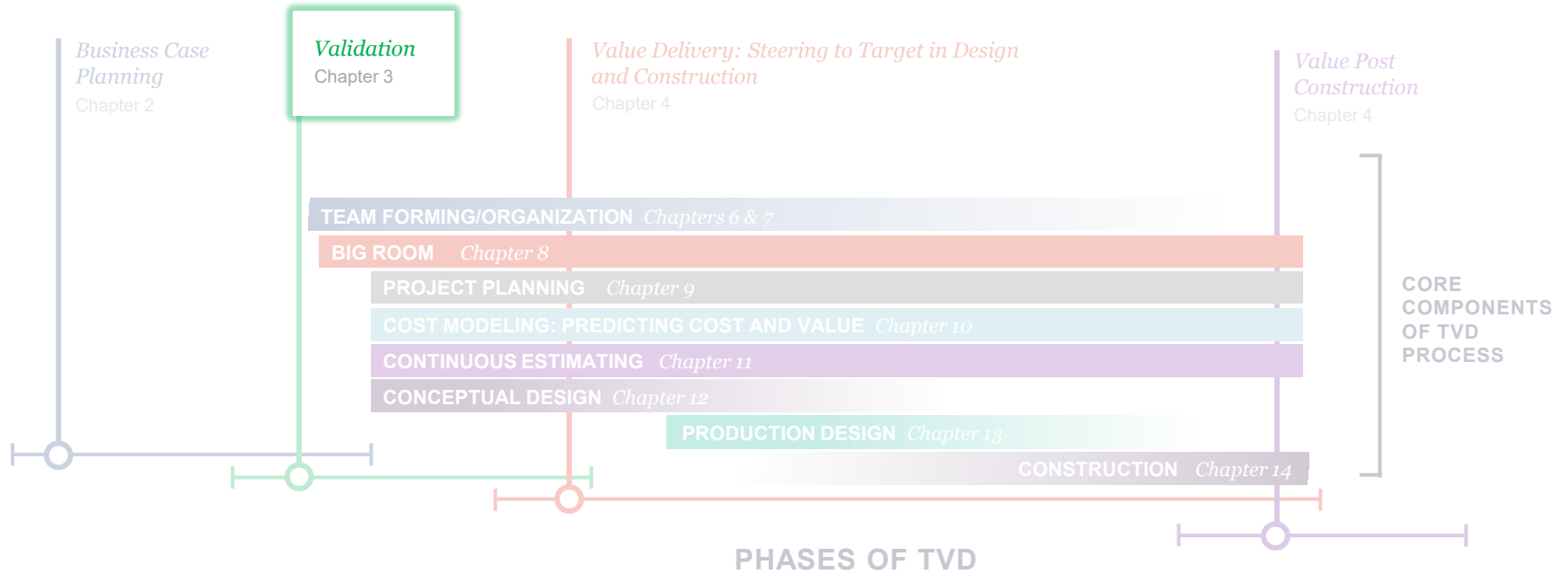OF TVD
PROCESS

PHASES OF TVD

Image courtesy of InsideOut Consulting & Southland Industries

Validation Phase

- The project team determines whether the project is viable based on the outputs of the **Business Case** Phase.

- Output is team understanding and alignment:

    - Scope definition

    - Value Definition & CoS

    - Expected Cost

    - Target Cost

Expected Cost

Is an expression of the team's best estimate at the conclusion of the *Validation Phase* of what current best practice would produce as a price for the facility reflected in the accompanying basis-of-design documents.

Typically will also be supported by benchmarking or other market data to calibrate the Expected Cost in light of the market context.

Expected Cost

Target Cost

- Is the cost goal that a project team is striving to achieve for its design and delivery efforts.

- Should be either equal to or less than the **Allowable Cost** and **Expected Cost.**

- Should be set at less than best-in-class past performance.

- Creates a sense of necessity to drive innovation and waste reduction into the design and construction process.

Target Cost

TVD Cost Terminology

Allowable Cost

$\geq$

The amount the owner is willing to spend for the total project.

Expected Cost

$\geq$

The best estimate that the team projects the project will cost

Target Cost

The team goal for the total project.

| Business Case Planning Phase | Validation Phase | Validation Phase |

15 MINUTES

The Project

A 45 unit development of "tiny homes" for Housing and Urban Development

Remember process matters more than outcomes of the simulation.

The Project

The following slides outline "The Project"
Business Case & relevant information

15 minutes total

Owner Business Case

OWNER:

Arizona Community Social Services Group

MISSION STATEMENT:

"Strengthen our community by creating living condition stability, economic opportunity and supporting services to those in need."

Owner Business Case

- $4,500,000 Allowable Cost
  - HUD grant and private donations
- 'Tiny Home' low income housing community of 45 units
- Approximately 40'x100' lot sizes
- Unit program diversity 250 – 750SF
- 10 year rent to own model
- Minimize Utility Costs (100 energy units / month)

Allowable Cost Breakdown

|	
Land Purchase	**$1,141,000**
Entitlements, Clearing/Grading & Utilities	$550,000
Project Administration	$225,000
Community Center Project (Property Adjacent, by Others)	**$545,000**
Design & Construction Funding *Building, Landscape/Hardscape & Furnish*	$2,029,000

Rent-To-Own: $1/SF for 10 years, simple payback

- Max allowable cost = 10 year rent – 10% Admin/HOA
- E.g. 550SF X $1 X120 = $66K – 10% = $59,400 ($108/SF)

Project Site

- 4.6 Acre Parcel

- 40'x100' Lot subdivisions

- Main site, utility and roadworks by owner

Project Plot
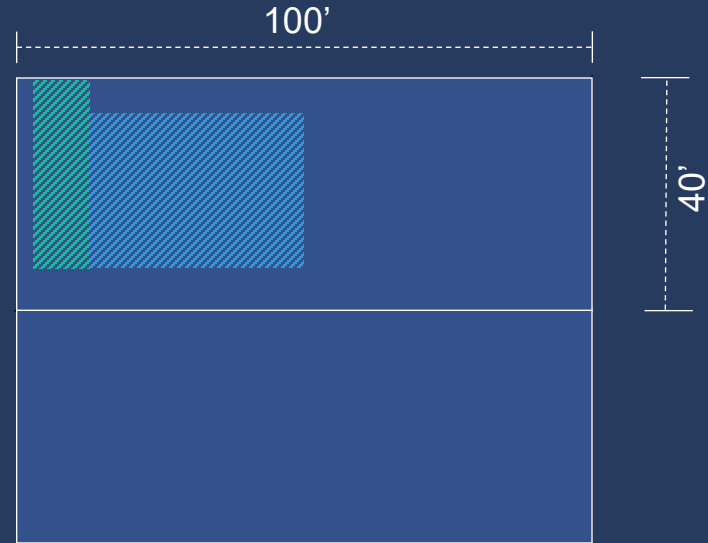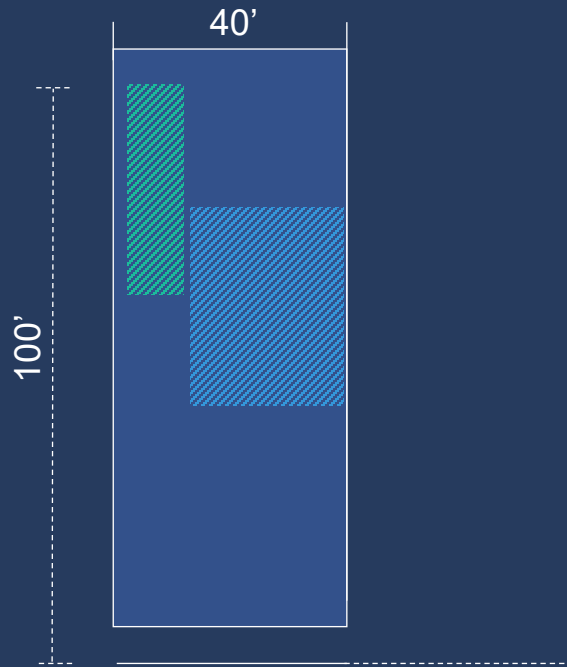
Value Definition Statements

- Define what the customer wants from the process.

- Are composed of high level statements that describe expected outcomes, or "value" that the project will deliver.

- Should not be ranked or weighted.

- Should include all stakeholder input.

Value Definition Statements

To Create:

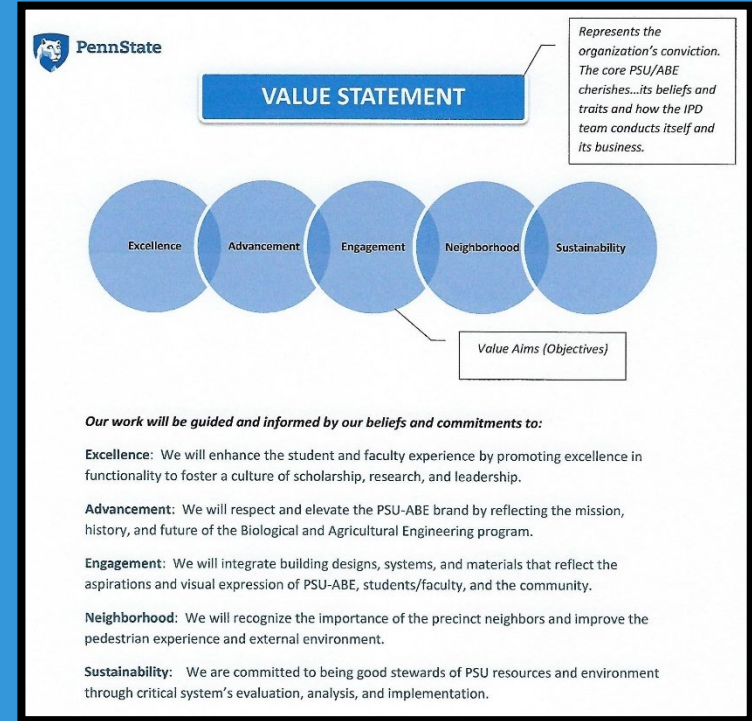# Value Definition Statements

To Create:

- Community & environment fosters respect and restoration of self esteem.
- Sustainable design for reasonable future costs to residents and association.
- Economic stabilizing opportunity for community residents.
- Safe environment for residents.
- Equity building opportunity based on target rent model.
- Stakeholder alignment from from all CSS programs (Housing, Food, Jobs, Health, Publications).
- Create added value opportunities through savings.

Conditions of Satisfaction (CoS):

- Are developed by the team informed by the *Value Definition Statements*.

- Measurable statements that inform a project team about which tests a project must pass to be accepted as a success.

- Inform the decision-making process of the team.

- Are developed by the team including the owner.

CONDITIONS OF SATISFACTION

1 IMPROVE THE PATIENT SATISFACTION SURVEY SCORE BY _5_ %.

2 IMPROVE THE AVERAGE DOOR TO DISCHARGE TIME BY _30_ MINUTES.

3 DECREASE THE NUMBER OF FALLS FOR THE EMERGENCY DEPARTMENT BY _5_ %.

4 UTILIZE THE LAST PLANNER SYSTEM TO TRACK AND MANAGE CONSTRAINTS WITH A 75% OR GREATER PPC.

5 BIM COORDINATION TO BE DONE THROUGH CONSTRUCTION DOCUMENT DEVELOPMENT.

6 EXCELLENCE IN SAFETY: 95% EXCELLENT RATINGS AND ZERO LOST TIME INCIDENTS.

7 EXCELLENCE IN HOUSEKEEPING: 90% EXCELLENT RATING OR HIGHER.

8 INNOVATION BY PREFABRICATION

9 ALL TEAM MEMBERS WILL GO THROUGH ONBOARDING.

Conditions of Satisfaction Exercise:

Develop the CoS for the project

15 MINUTES

Team-Developed CoS:

Quantitative

- Energy efficient design
  - Low monthly utility cost
  - High % of daylighting
  - Innovative water management system

- Meet the *Allowable Cost*

- 25% workforce inclusion (Underemployed / Community Residents – min. 10% each)

- Community engagement:
  - Regularly (weekly) updated progress signage at visible location
  - Social Media Updates (min. 3 per week) to provide transparency to construction process.

- "Town Hall" community feedback events (min. 1 per quarter)
- The community & units should make the end user feel safe in their home.
- Robust, proactive protection of the safety of our workers and community:
  - Weekly team safety walk-throughs
  - Short-falls remediated immediately (no more than 24 hours)
  - System for immediate reporting of safety problems identified by workers and community members
- All team members earn a fair profit

Team-Developed CoS:

Qualitative:

- TVD team actively builds and sustains a culture of respect for all team members

- TVD team creates design that supports a culture of self-respect for customer

- TVD team actively seeks innovation to reduce waste and wasteful activities, streamline processes, and improve the flow of work

Method of Measuring Success:

Monthly measurement of progress against CoS:

- Quantitative – Current results calculated and reported by CM

- Qualitative– Survey completed by all TVD team members

- Continuous Improvement session held to review results, and determine steps to correct short-falls against targets

Owner Business Case

- $4,500,000 Allowable Cost
  - HUD grant and private donations
- 'Tiny Home' low income housing community of 45 units
- Approximately 40'x100' lot sizes
- Unit program diversity 250 – 750SF
- 10 year rent to own model
- Minimize Utility Costs (100 energy units / month)

Types of Estimating

1 Cost Benchmarking

2 Conceptual

3 Production

Project Cost Model

The cost modeling process begins in the ***Business Case Planning Phase*** with conceptual benchmarking estimating to determine the **Allowable Cost**.

This informs the development of the initial **Project Cost Model.**

The initial cost model should be developed *before* the design team makes the first quantifiable decision.

Before any design begins, the team must collectively understand the preliminary cost model for the project.

Cost Benchmarking

Level of Accuracy: Best +/- 10% Good +/- 15%

- Starts at *Business Case* Phase

- Refined during *Validation* Phase

- Informs the *Cost Model*

- Establishes project assumptions

- Normalizing project to allow comparison

- Identify risks

- Informs team of what 'can be done'

Owner Provided Benchmark Project

Total SF	225	
Notes	Includes 40 SF Loft	
$/SF	$109	
Total Cost	$24,525	
Foundation & Framing	$3,188	13%
Skin & Roofing	$3,679	15%
Glazing	$1,962	8%
Systems (MEP/E)	$4,415	18%
Interiors (Incl Carpentry & Doors)	$4,905	20%
Finishes, Fixtures Furnish & Equip	$2,943	12%
GC, Design & Permitting	$1,962	8%
Landscape & Hardscape	$1,472	6%
Year Completed	2019	
Inflation to 2022	8%	
Location	Cityville, MI	
Geographic Cost Index Diff to Anytown, AZ	-5%	

Owner Provided Benchmark Project

Select Target Project

Total SF	390	
Notes	Includes 90 SF 2nd Fl	
$/SF	$116	
Total Cost	$45,240	
Foundation & Framing	$6,333.	14%
Skin & Roofing	$8,143	18%
Glazing	$5,428	12%
Systems (MEP/E)	$6,786	15%
Interiors (Incl Carpentry & Doors)	$8,143	18%
Finishes, Fixtures Furnish & Equip	$4,524	10%
GC, Design & Permitting	$2,262	8%
Landscape & Hardscape	$3,619	5%
Year Completed	2019	
Inflation to 2022	8%	
Location	Cityville, MI	
Geographic Cost Index Diff to Anytown, AZ	-5%	

Owner Provided Benchmark Project

Total SF	360	
Notes	Single Floor	
$/SF	$108	
Total Cost	$38,880	
Foundation & Framing	$4,463	11.5%
Skin & Roofing	$6,181	16%
Glazing	$4,060	10%
Systems (MEP/E)	$5,836	15%
Interiors (Incl Carpentry & Doors)	$6,524	17%
Finishes, Fixtures Furnish & Equip	$6,573	17%
GC, Design & Permitting	$2,803	7%
Landscape & Hardscape	$2,440	6%
Year Completed	2019	
Inflation to 202	8%	
Location	Cityville, MI	
Geographic Cost Index Diff to Anytown, AZ	-5%	

Cost Model – Benchmark Analysis

Component	Benchmark Model Cost	%	$/SF	Location/ Inflation	Adjusted Cost for Project SF	Program Normalization	Expected Cost	Target +/Delta
Foundation & Framing								
Skin & Roofing (Inc. Insulation)								
Windows/Glazing								
Plumbing, Heating/Cooling & Energy								
Interiors								
Finishes, Fixtures & Furniture								
Landscape & Hardscape								
GCs, Design Fees & Profit								
Risk								
Total								

Benchmarking Example

Component	Benchmark Model Cost	%	$/SF	Location/ Inflation	Adjusted Cost for Project SF	Program Normalization	Expected Cost	Target +/Delta
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Skin & Roofing (Inc. Insulation)								
Windows/Glazing								
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GC, Design & Permitting	$2,262	8%
Landscape & Hardscape	$3,619	5%
Year Completed	2016	
Inflation to 2019	8%	
Location	Cityville, MI	
Geographic Cost Index Diff to Anytown, AZ	-5%	

Owner Provided Benchmark Project

Review by component system

Total SF	390
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Year Completed	2016
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Location	Cityville, MI
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Windows/Glazing								
Plumbing, Heating/Cooling & Energy	$6,786	15						
Interiors								
Finishes, Fixtures & Furniture								
Landscape & Hardscape								
GCs, Design Fees & Profit								
Risk								
Total								

Owner Provided Benchmark Project

Lean Construction Institute
Immersive Education Program

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Interiors								
Finishes, Fixtures & Furniture								
Landscape & Hardscape								
GCs, Design Fees & Profit								
Risk								
Total								

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Skin & Roofing (Inc. Insulation)								
Windows/Glazing								
Plumbing, Heating/Cooling & Energy	$ 6,786	15	$ 17.40	+$0.52 (+8% - 5%)	$ 9,409			
Interiors								
Finishes, Fixtures & Furniture								
Landscape & Hardscape								
GCs, Design Fees & Profit								
Risk								
Total								

525SF x $19.92

Benchmarking Example

Component	Benchmark Model Cost	%	$/SF	Location/ Inflation	Adjusted Cost for Project SF	Program Normalization	Expected Cost	Target +/Delta
Foundation & Framing								
Skin & Roofing (Inc. Insulation)								
Windows/Glazing								
Plumbing, Heating/Cooling & Energy	$ 6,786	15	$ 17.40	+$0.52 (+8% - 5%)	$ 9,409	$ 656.25	$ 10,065	
Interiors								
Finishes, Fixtures & Furniture								
Landscape & Hardscape								
GCs, Design Fees & Profit								
Risk								
Total								

Add for energy requirement$1.25/SF

Benchmarking Example

Component	Benchmark Model Cost	%	$/SF	Location/ Inflation	Adjusted Cost for Project SF	Program Normalization	Expected Cost	Target +/Delta
Foundation & Framing								
Skin & Roofing (Inc. Insulation)								
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Interiors								
Finishes, Fixtures & Furniture								
Landscape & Hardscape								
GCs, Design Fees & Profit								
Risk								
Total								

Project Validation Simulation

1st Pass to Validate Owners' Business Case

- Project Information, Scope, Concepts

- Benchmark Data – Analyze & Normalize

- Risk & Opportunity Discussion (Path Back)

  Go/No Go Confidence?

3 0   M I N U T E S

Project Validation Integration

Group discussion of business case validation

- High level summary

- Go/No-Go

- Risks?

15 MINUTES

30 MINUTES

Big Ideas!

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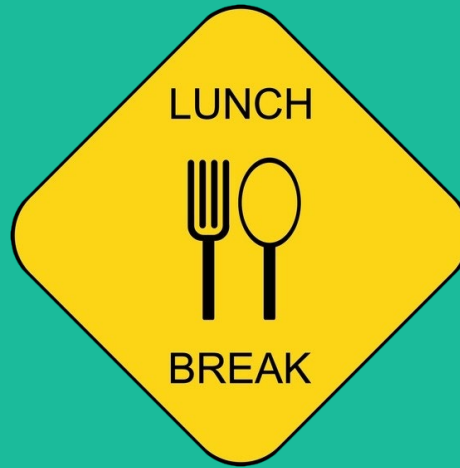
- Brainstorming/Ideation sessions to increase owner value.

- Scale up or down to meet project novelty/complexity.

- Generates lists of program features that can be evaluated against Value Definition Statements.

- Highest value ideas should find their way into program.

Big Ideas Simulation

Work as a Target Value Design Team to develop big ideas and test those big against our project values.

- Brainstorm big outside-the-box ideas.
  - Start in groups of 3-4, 8 min.
  - Reduce ideas at tables, 4 min.
  - Teams report ideas & consolidate room, 8 min.
- Group discussion to compare big ideas to budget & Values.
  - Value matrix prioritization, 10 min.

30 MINUTES

Big Ideas to Concept Design

Work as a Target Value Design Team to review and update concepts based on big ideas/value matrix.

- Program/concept changes.
- Impact to cost model/risk
- Discuss/list TVD system option(s) for next phase
- Prepare to pitch your concepts to room

Cost Model – Benchmark Comparison

Component	%	Base Cost (Current Expected)	Risk	TVD Options (Value Adds)	Path Back (Opportunities)	Validated Expected Cost	%
Foundation & Framing							
Skin & Roofing (& Insulation)							
Windows/Glazing							
Plumbing, Heating/Cooling & Energy							
Interiors							
Finishes, Fixtures & Furniture							
Landscape & Hardscape							
GCs, Design Fees & Profit							
Total							

Work Cluster Organization

Executive/Senior Management:
- Not involved in day-to-day of team
- Resolve conflicts

Core Team:
- Day-to-day leaders of the team

Work Clusters:
- Leader
- System oriented
- Cross discipline
- Stakeholder representation
- Form as need

Work Cluster Leader:
- Coordination between work cluster & core team
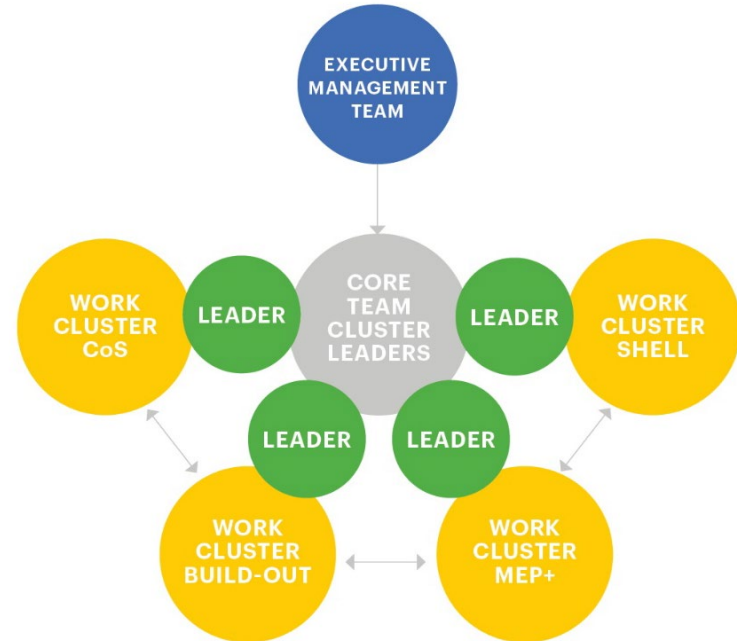
Work Cluster Exercise
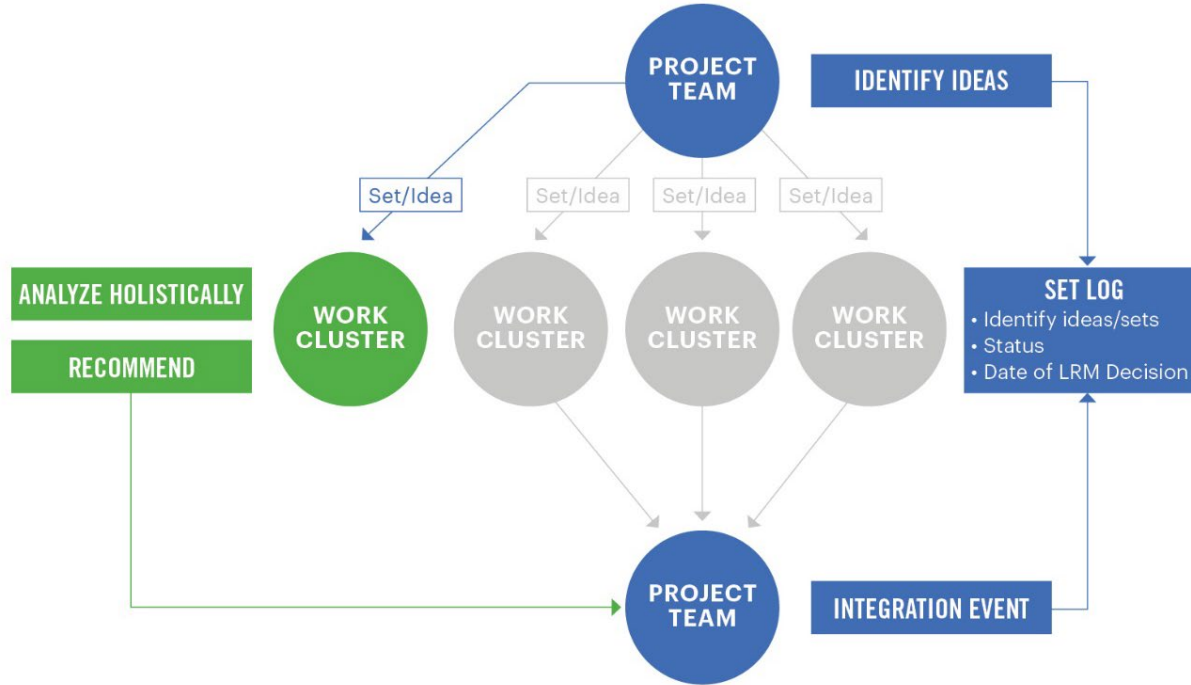
Congratulations! You are now Work Clusters!
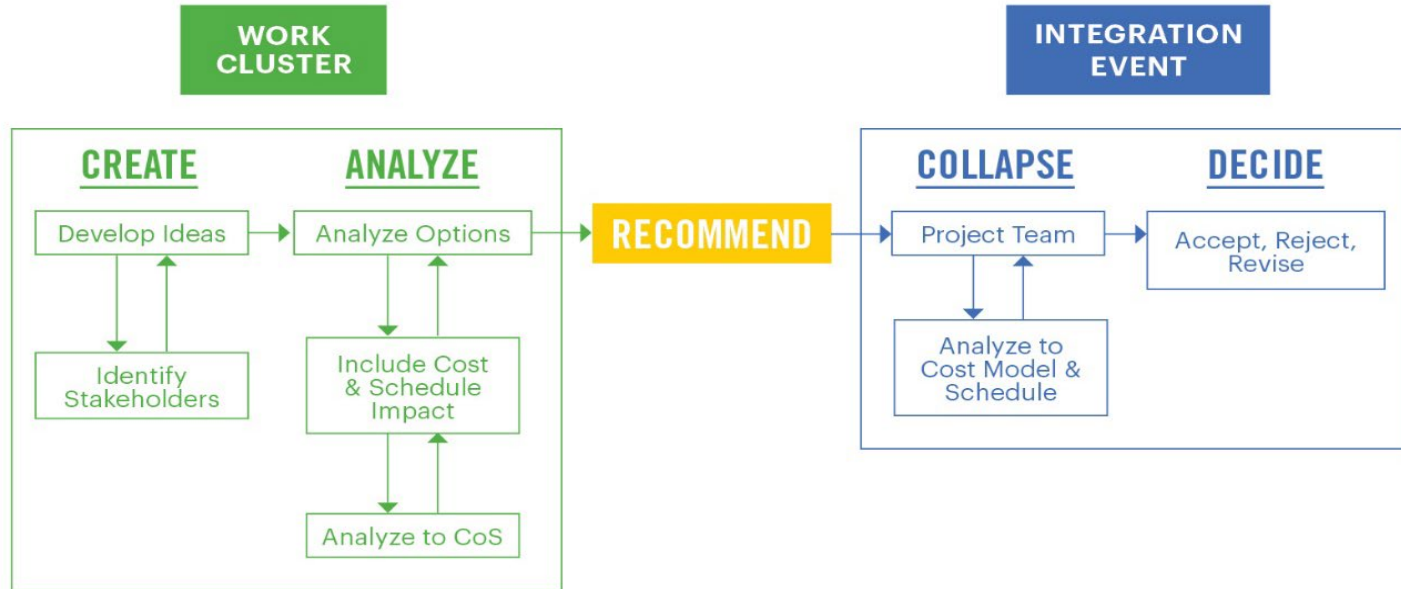
5 MINUTES

Work Cluster Organization

SMT - Facilitators

Core Group - All

Finishes Fixtures & Furniture — WC6 (L / A)
SMT
WC1 (L / A) — Landscape & Hardscape
Architecture & Interiors — WC5 (L / A)
Core Group
WC2 (L / A) — Structure & Envelope
Plumbing Heating/Cooling & Energy — WC4 (L / A)
WC3 (L / A) — Cost, GCs and Program
WC7 (L / A) — Prefab
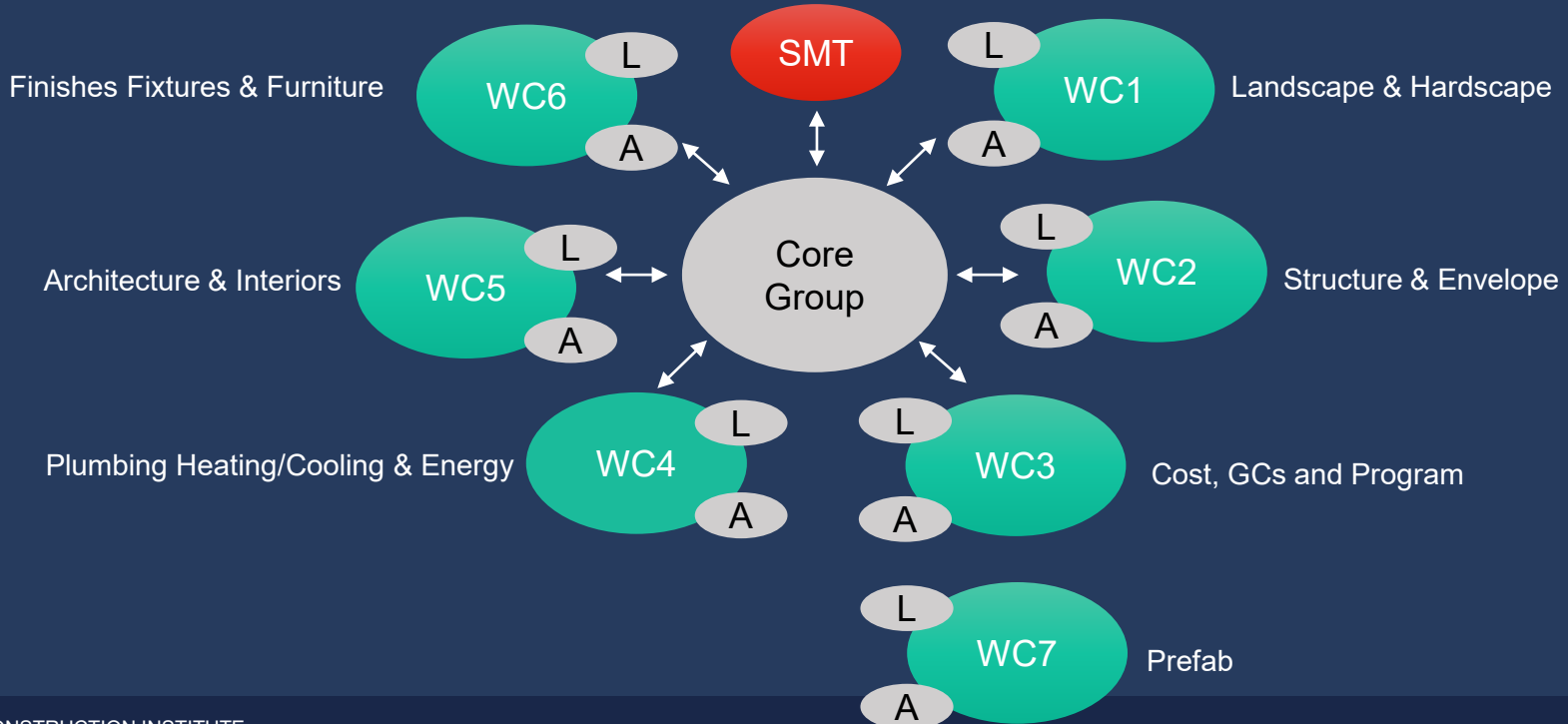
Work Cluster Flow

Decision Flow Model

15 MINUTES

Set-based Design

Method that keeps requirements and options flexible for as long as possible during the development process, in order to find by means of set intersection, the best combination that solves the problem as a whole.

Set-based design supports teams driving innovation while reducing development costs. Agile and Lean intersect at Set-based design.
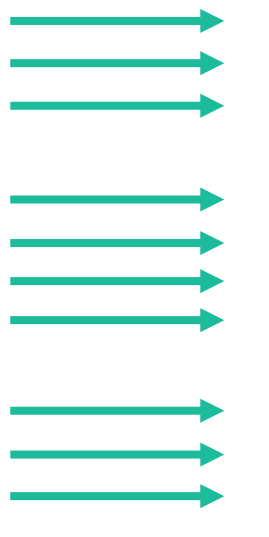
Point-based Design
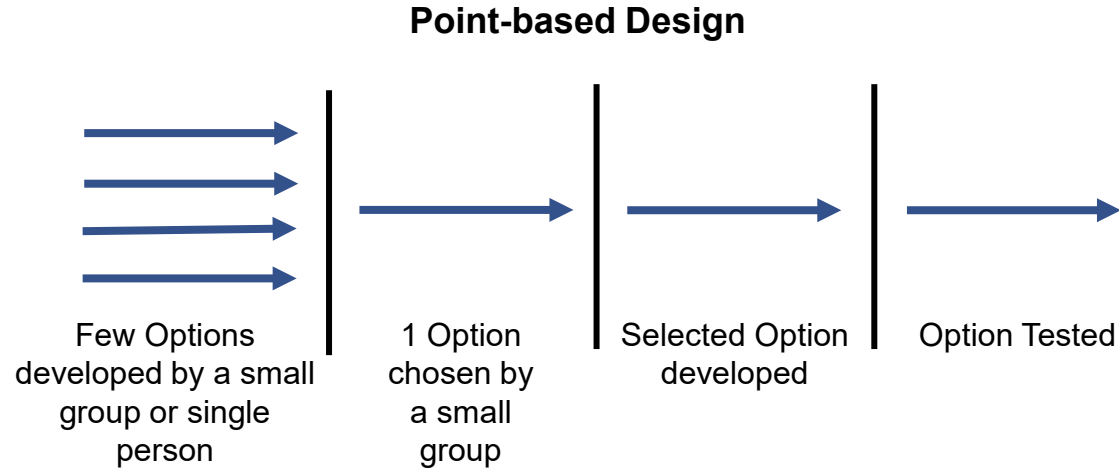
Point-based Design

Few Options developed by a small group or single person

1 Option chosen by a small group

Selected Option developed

Option Tested

Point-based Design

Point-based Design

Iteration cycle

Few Options developed by a small group or single person

1 Option chosen by a small group

Selected Option developed

Option Failed
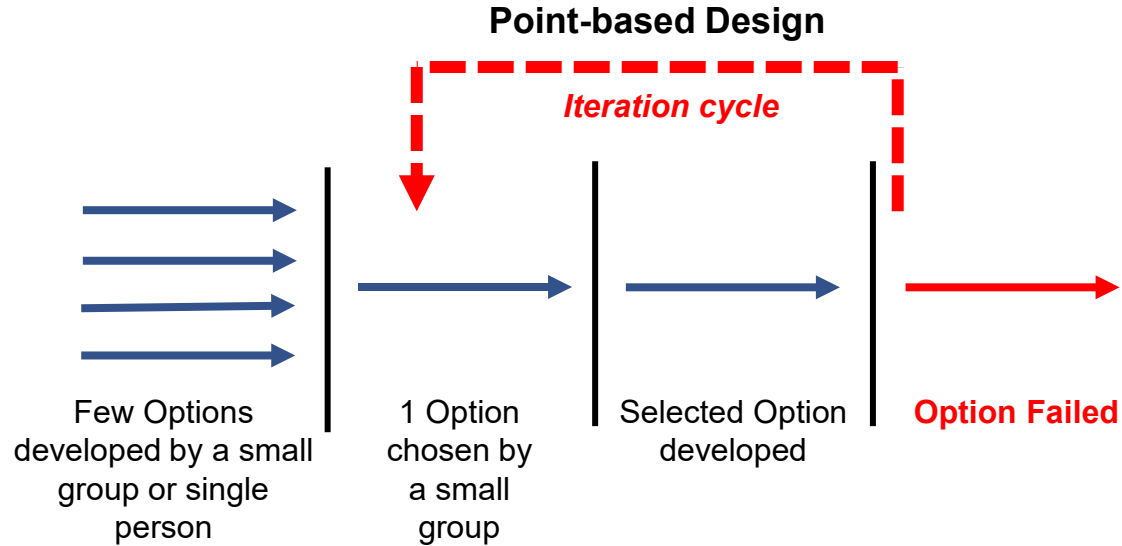
Set-based Design

Many options developed by a
diverse group for subsystems.

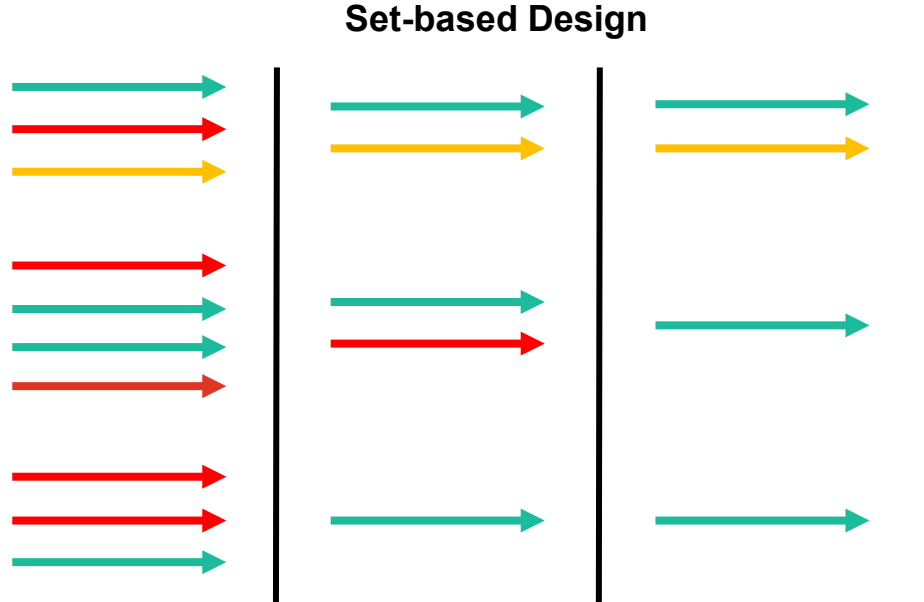**Set-based Design**

Courtesy of HMC Architects

Set-based Design

Many options developed by a
diverse group for subsystems.

Evaluate against risks and in
consideration of the project as a
whole.

Weaker options are eliminated.

Set-based Design

Courtesy of HMC Architects

Set-based Design

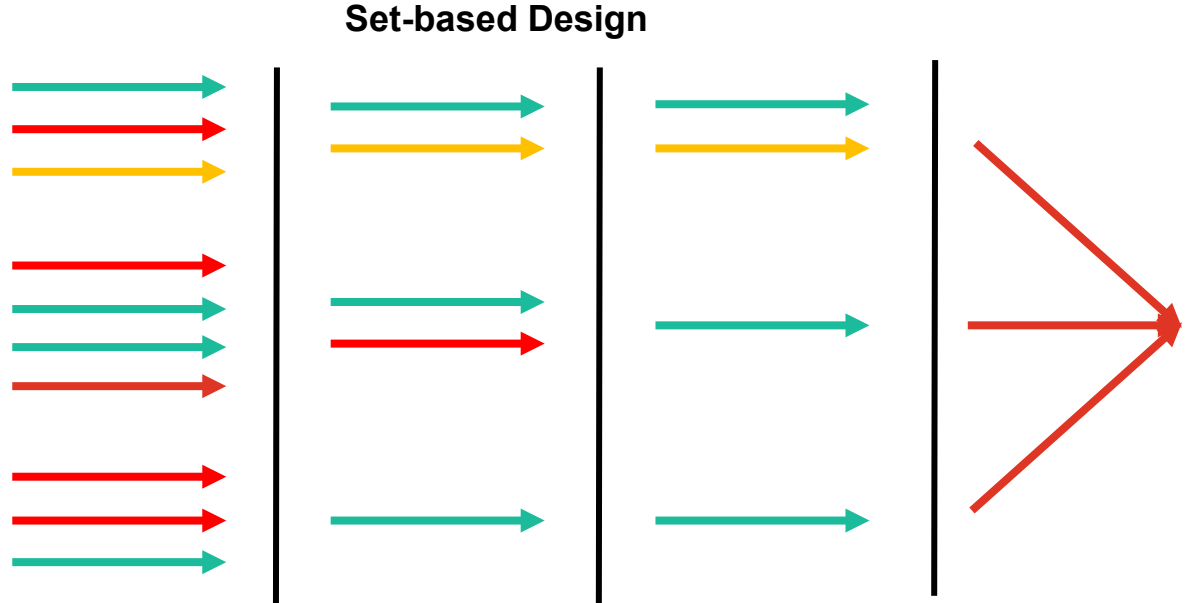Many options developed by a diverse group for subsystems.

Evaluate against risks and in consideration of the project as a whole.

Weaker options are eliminated.

Options are continually evaluated and narrowed.

Set-based Design

Courtesy of HMC Architects

Set-based Design

Many options developed by a diverse group for subsystems.

Evaluate against risks and in consideration of the project as a whole.

Weaker options are eliminated.

Options are continually evaluated and narrowed.

Final options selected.

No iterative cycles!

Set-based Design
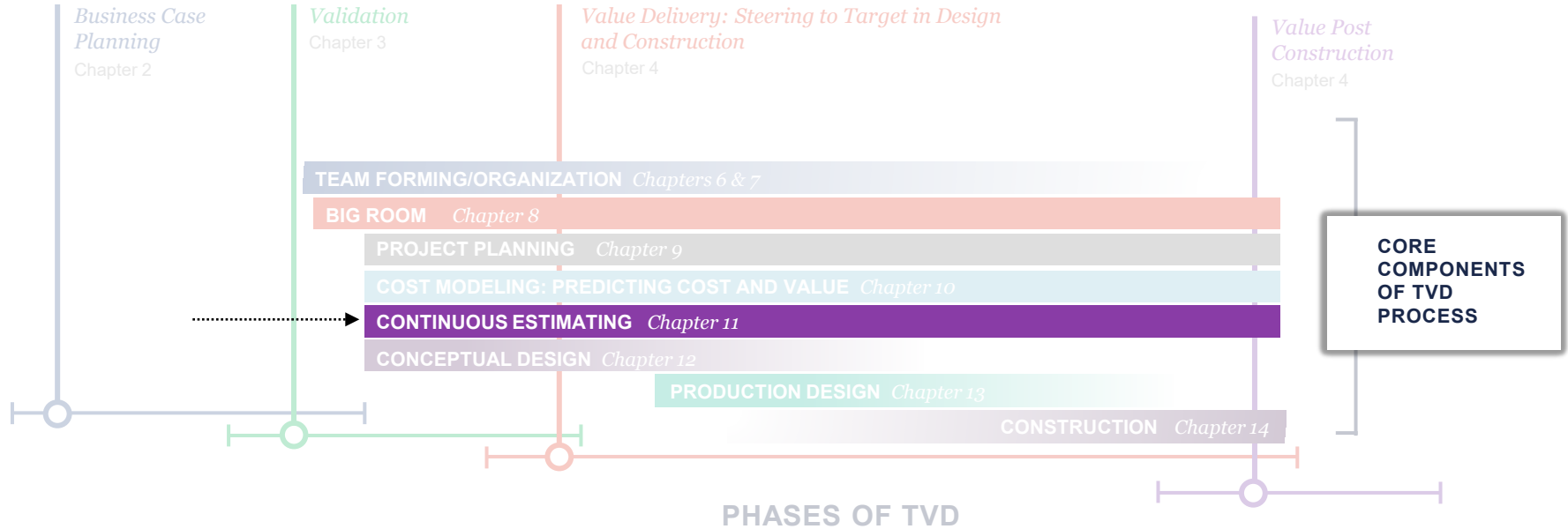
Courtesy of HMC Architects

Continuous Estimating

Lean Construction Institute
Immersive Education Program

Business Case Planning
Chapter 2

Validation
Chapter 3

Value Delivery: Steering to Target in Design and Construction
Chapter 4

Value Post Construction
Chapter 4

TEAM FORMING/ORGANIZATION *Chapters 6 & 7*

BIG ROOM *Chapter 8*

PROJECT PLANNING *Chapter 9*

COST MODELING: PREDICTING COST AND VALUE *Chapter 10*

CONTINUOUS ESTIMATING *Chapter 11*

CONCEPTUAL DESIGN *Chapter 12*

PRODUCTION DESIGN *Chapter 13*

CONSTRUCTION *Chapter 14*

CORE COMPONENTS OF TVD PROCESS

PHASES OF TVD

Image courtesy of InsideOut Consulting & Southland Industries

Types of Estimating

(1) Cost Benchmarking

(2) Conceptual

(3) Production

TVD Continuous Estimating Model

SD **DD** **CD** **Pricing** **Construction**

TRADITIONAL PRICING / VALUE ENGINEERING MODEL

TVD DESIGN MODEL

Conceptual Estimating

Conceptual Estimating is the process projecting likely costs of components supporting program needs, *without* detailed documentation.

Good conceptual estimating is as much art as science and requires strategic outlook; broad understanding of multiple scopes and disciplines; and good operational and constructability knowledge.

Conceptual Estimating

Level of Accuracy: Best +/- 5% Good +/- 10%

- Goal is to provide cost information <u>before</u> the team moves forward with decisions based on conversation, sketches, and conceptual information.

- Convert CoS & Business Case (Program) into a budget – what we desire.

- Gain just enough detail to inform team decisions.

- Implemented with **Set-based Design** approaches.

Budget Tracker Summary

Component	Current Cost Model	Allowable	Target	Delta +/-
Landscape & Hardscape				
Skin & Roofing (& Insulation)				
Windows				
Plumbing, Heating/Cooling & Energy				
Interiors				
Finishes, Fixtures & Furniture				
Risk				
Total				

Types of Estimating

(1) Cost Benchmarking

(2) Conceptual

(3) Production

Production Estimating

Level of Accuracy: Best +/- 1% Good +/- 3%

- Most traditional form of estimating.

- Driven by what <u>has been</u> documented in the design phase and confirms estimates developed during earlier conceptual stages.

Conceptual Design

Business Case Planning
Chapter 2

Validation
Chapter 3

Value Delivery: Steering to Target in Design and Construction
Chapter 4

Value Post Construction
Chapter 4

TEAM FORMING/ORGANIZATION Chapters 6 & 7

BIG ROOM   Chapter 8

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CONCEPTUAL DESIGN Chapter 12

PRODUCTION DESIGN Chapter 13

CONSTRUCTION   Chapter 14

CORE COMPONENTS OF TVD PROCESS

PHASES OF TVD

Image courtesy of InsideOut Consulting & Southland Industries

Conceptual Design

(1) Criteria development

(2) Organize information

(3) Set-based design

(4) Integration

UHS Temecula Valley Hospital Team

15 MINUTES

Program Development & Concept Estimating

Work as Target Value Design Work Clusters to develop design solution sets to accomplish program and big ideas:

- Develop 2-3 design options per cluster
- Analyze for cost, value, program and risks
- Evaluate against factors (CBA/A3?)
- Prepare to present your team concepts at the Integration event

15 MINUTES

Integration Event

From CPR Program

Integration Event

Report by Team

Challenge Question

Are there any changes to the original *Business Case* that would create a more compelling value proposition?

Integration Event

Work Cluster Lead Reports:

- 5 min per team
- Design options
- Big ideas evaluated
- Cost estimate vs target
- Risk/Path back
- Design recommendation → Core team decision

45 MINUTES

Integration Event

Transition to Value Delivery Phase
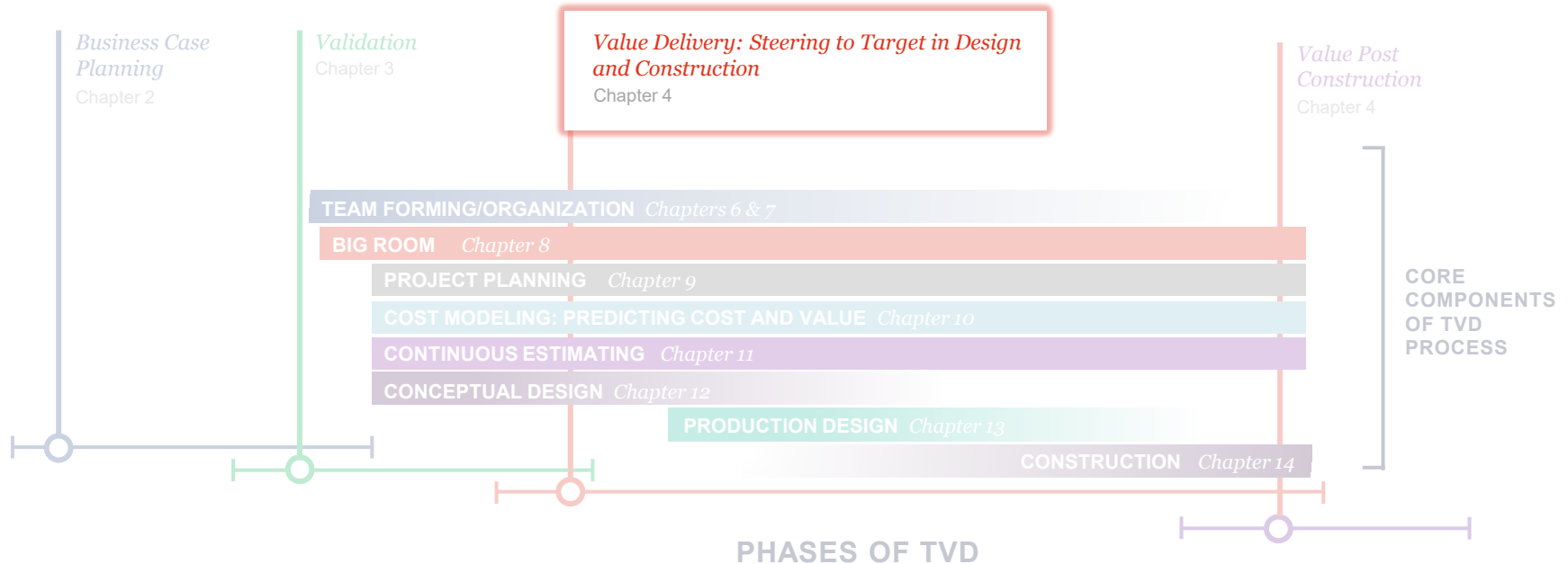
Value Delivery: Steering to the Target

Image courtesy of InsideOut Consulting & Southland Industries

Value Delivery Phase

- Work progresses in small batches toward intermediate milestones/decision points.

- The design is continually evaluated to the *Target Cost & CoS.*

- Teams explore innovative ways to achieve goals and add more value.

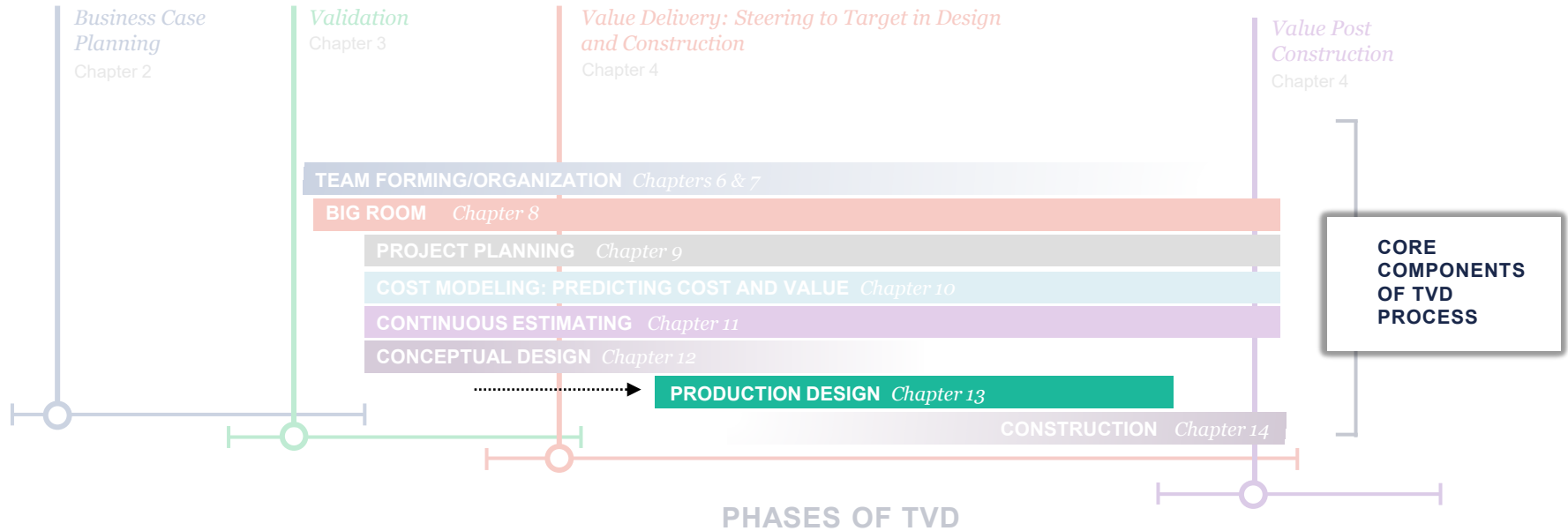- An output of the phase is the *Actual Cost.*

Production Design

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CORE COMPONENTS OF TVD PROCESS

PHASES OF TVD

Image courtesy of InsideOut Consulting & Southland Industries

Production Design

The transition to **Production Design** occurs at the moment in which final design concepts are accepted by the project team, including owners and users, and have been validated as aligning with the CoS and cost model.

The team now has a high confidence that the design can be achieved at or below **Allowable Cost**.

Allowable Cost

Actual Cost

$\geq$

The amount the owner is willing to spend for the total project.

The final cost at the end of the project.

Confidence that the **actual cost** will be at or below **allowable cost**

Production Design

Similar to conceptual design, the framework for production design typically takes the form of offline work clusters and regularly scheduled integration events in the Big Room.

At this point the teams should pay attention to which entity is producing the work. If a specialty trade is on board, should the detailing and/or modeling pass to them.

Work Cluster
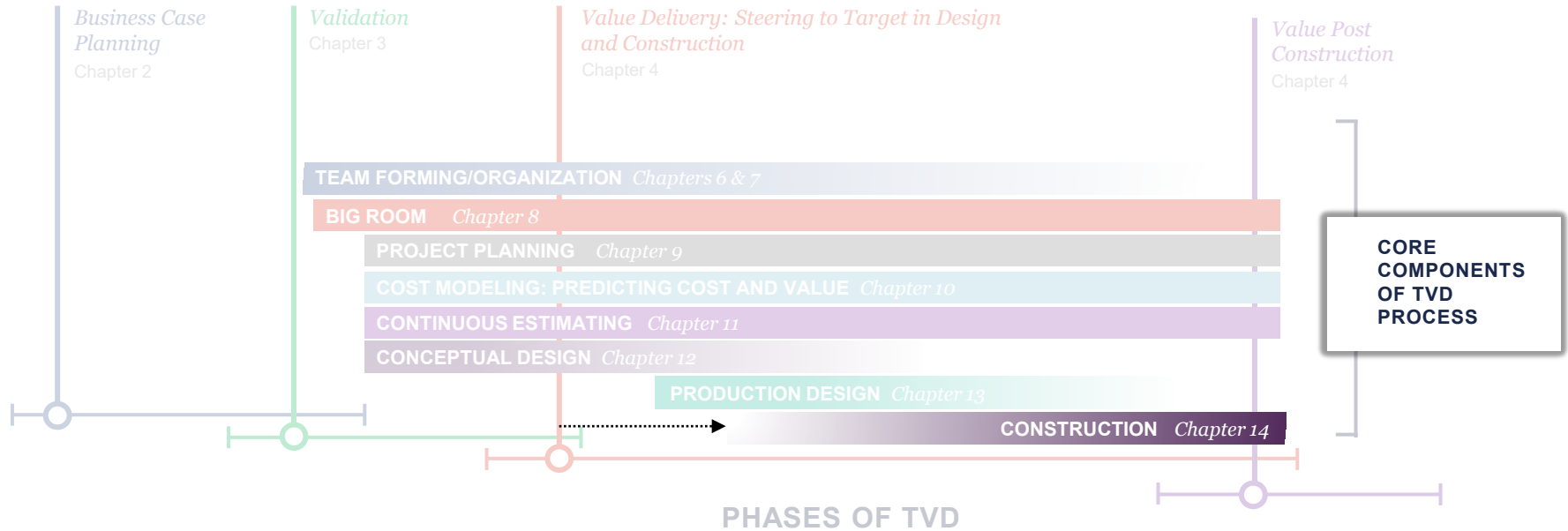
Advance design and detailing

Communicate

Integration Event

Collaborate design decisions

Construction

Business Case Planning
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CORE COMPONENTS OF TVD PROCESS

PHASES OF TVD

Image courtesy of InsideOut Consulting & Southland Industries

Module 4: Core Components
Lesson 4: Construction

CONSTRUCTION

As **Production Design** starts to release work to the field the focus of the Target Value Delivery (TVD) process transitions to supporting the Last Planners® in execution of the work and measuring actual execution against targets.

In the **Construction Phase,** TVD is supported by and Lean practices and approaches including:

- Prefabrication
- Team tracking of labor productivity
- Last Planner® System
- Continuing to implement a Big Room approach
- Eliminating waste in the construction process
- Reimagining the role of the designer during construction
- 5S Implementation

TVD Cost Terminology

Lean Construction Institute
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Allowable Cost		Expected Cost		Target Cost		Actual Cost
The amount the owner is willing to spend for the total project.	≥	The best estimate that the team projects the project will cost	≥	The team goal for the total project.	≥	The final cost at the end of the project.
Business Case Planning Phase		**Validation Phase**		**Validation Phase**		**Value Delivery Phase**

Transition to Value Post Construction

Value Post Construction

Business Case Planning
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CONSTRUCTION *Chapter 14*

CORE COMPONENTS OF TVD PROCESS

PHASES OF TVD

Image courtesy of InsideOut Consulting & Southland Industries

Value Post Construction

- For the owner, value is realized only after the facility is constructed and serving its intended purpose.

- The business case and values are reviewed for actual outcomes.

Measuring Outcomes

Business outcomes

- Final cost of design & construction
- Final schedule
- Operational performance of finished building
- Quality & use

Project process outcomes

- Project quality, safety & appropriate integration of stakeholder input
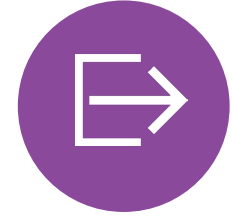
Value outcomes

- Revisit the value-based decisions team made throughout process

Discussion Question

What new actions or ideas that you learned today can you take back to your project?

Lean Journey to Mastery

Lean Construction Institute
Immersive Education Program

How will you reach the next level on your journey?

Mastery

Competency

Understanding

Awareness

Unaware

Target Value Delivery: Classroom & eLearning (release 2019)
Lean in the Design Phase: Classroom & eLearning
Mindset of an Effective Big Room: Classroom & eLearning (release May 2019)
Last Planner® System in Design: Classroom & eLearning (release 2019)
Conducting Gemba Walks: Classroom

Introduction to Lean Project Delivery: Classroom, eLearning & Webinar
Introduction to Last Planner® System: Classroom & eLearning
Lean in the Design Phase: Classroom & eLearning
Introduction to Lean in Design-Build: Classroom
The Business Case for Learn: Classroom

More on Learning

Books:

Events:
- Local Community of Practice
- Congress (October)
- Design Forum (May)

Start learning now:
www.LeanConstruction.org

eLearning Courses

Available now:

- Introduction to the Last Planner System®

- Introduction to Lean Project Delivery

- Lean in the Design Phase

- Effective Big Room

- Target Value Delivery

Questions?

Learning Objectives Review

Define the meaning of Target Value Delivery and understand the intent of the approach.

Define relevant terminology required for implementing TVD and understand the interconnectedness of the four phases, including the actions and outputs of each phase.

Identify key Core Components of TVD and how they interrelate to improve the project process and outcomes.

Discover set-based design practices, understand the impact of sound decision-making, and the relationship to TVD.

Conduct Plus/Delta

Plus: What produced *value* during the session?

Delta: What could we *change to improve* the process or outcome?

Plus/Delta

Key Takeaways