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Adopting Lean for Your Project: Using the LCI Lean Deployment Planning Guide

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QR Code for Lean Guide Download website

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LCI Course:
LCI Adopting Lean for Your Project: Using the LCI Lean Deployment Planning Guide
5 CEU

Sign the sign-in sheet for credit

AIA Approved Continuing Education

Course Description

The hand-on workshop will integrate learning with practical application working sessions for identifying and planning lean methods. Learning will commence with an explanation of the Lean Development Planning Guide and resources that support the steps of the planning process for a project including: initiate, select, plan and integrate. Participants will gain an understanding of each resource included in the guide and how it may be implemented during the planning process. A case study where the Lean Deployment Guide was used by the project team to develop method-specific A3s for implementation will be shared. During the facilitated working sessions, participants will experience developing a Lean deployment plan for a simulation project, using the guide resources to select project methods, create a method-specific A3 plan and begin to integrate methods into the project dashboard for tracking and management.

Learning Objectives

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Participants will be able to define essential steps for developing a project-specific Lean deployment planning process.

Participants will be able to identify and use the resources in the guide that support each of the steps of the process.

Participants will gain insights from a case study project team with successful outputs.

Participants will use the guide resources to create a method-specific A3 plan for a simulated project.

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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!

Lean Journey to Mastery

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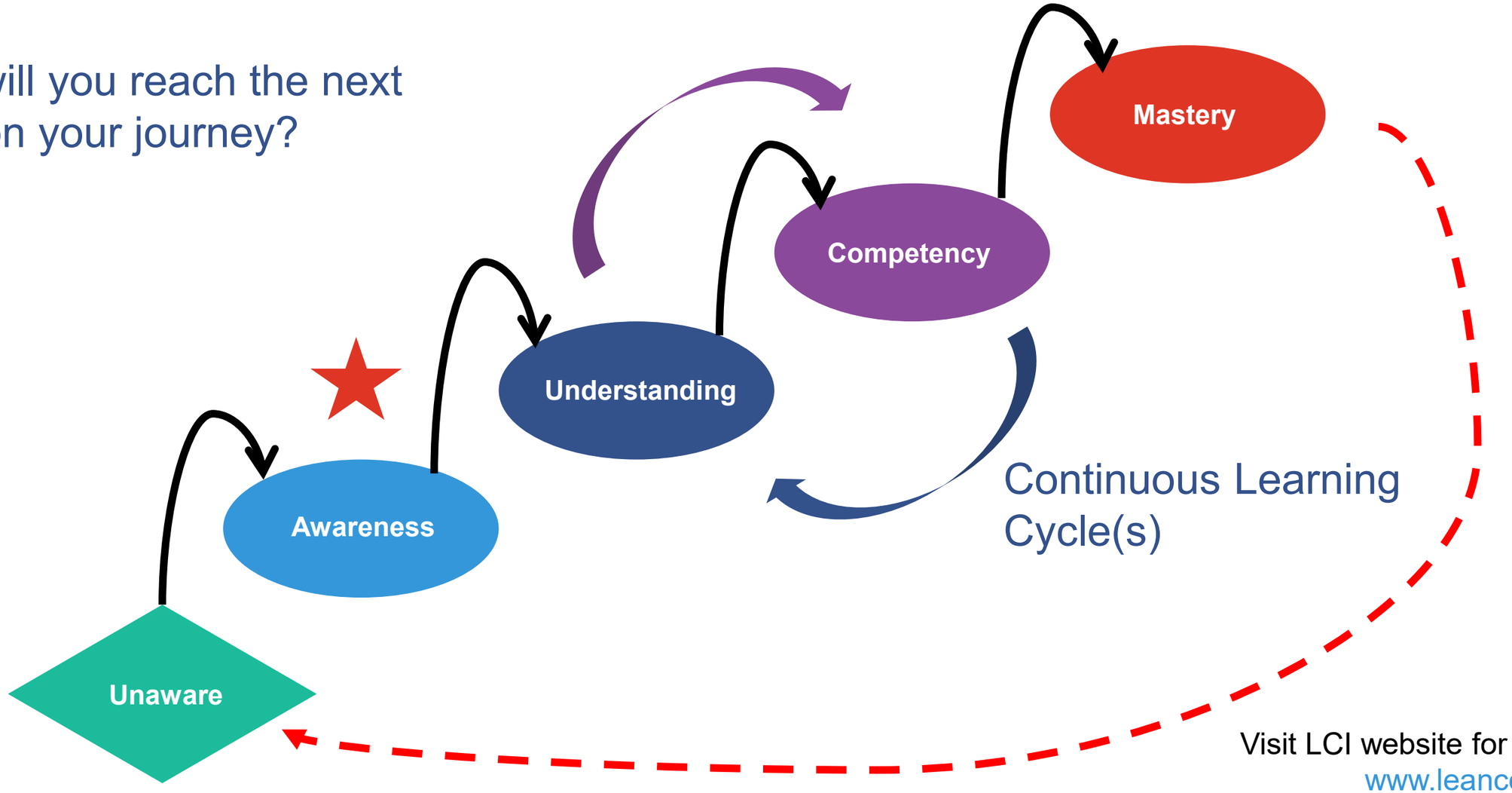
How will you reach the next level on your journey?



Visit LCI website for more learning:
www.leanconstruction.org

Six Tenets of Lean

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1. Respect for people
2. Optimize the Whole
3. Generate Value
4. Eliminate Waste
5. Focus on Flow
6. Continuous Improvement

Lean Deployment Planning Guide

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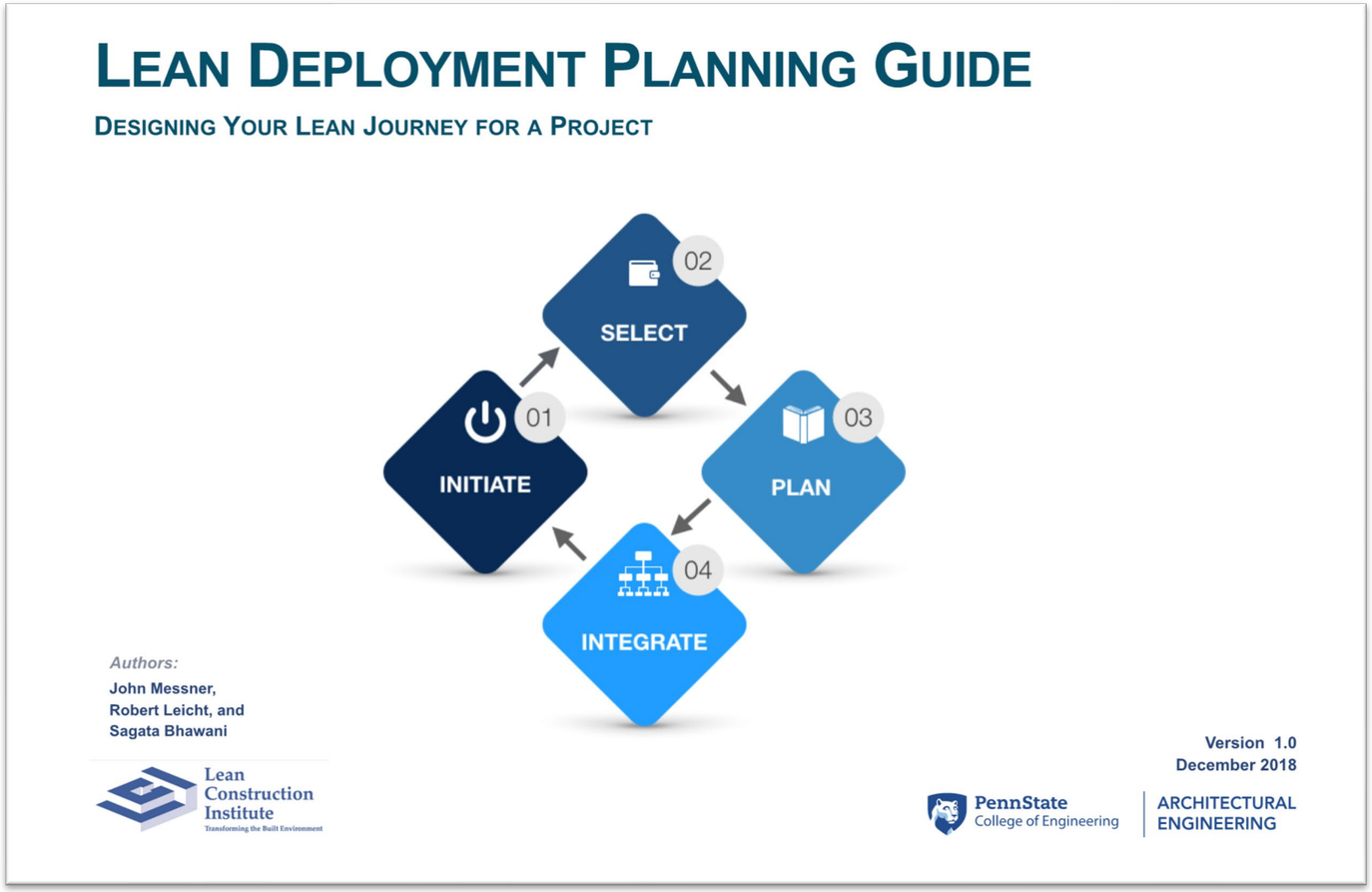

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Why develop a Deployment Plan?

- Project teams need a ‘place to start’
- Provides a basis for project’s lean operating system
- Helps owners know what / how to ask for lean implementation on their projects
- Provides structured process for identifying & planning lean implementation - define ‘why’, then ‘how’
- Allows for standardizing a project baseline
- Training and coaching can be better targeted to support a project’s specific lean deployment plan

Lean Deployment Planning Guide Overview

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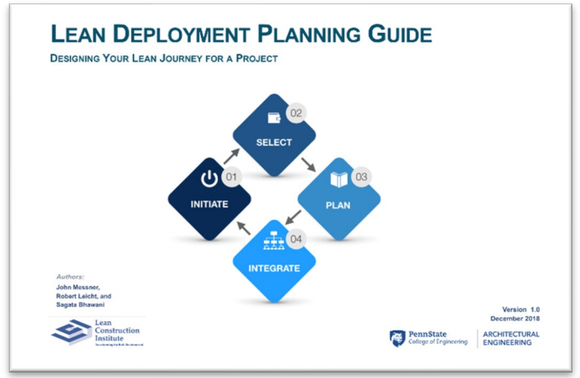
Lean Deployment Planning Steps



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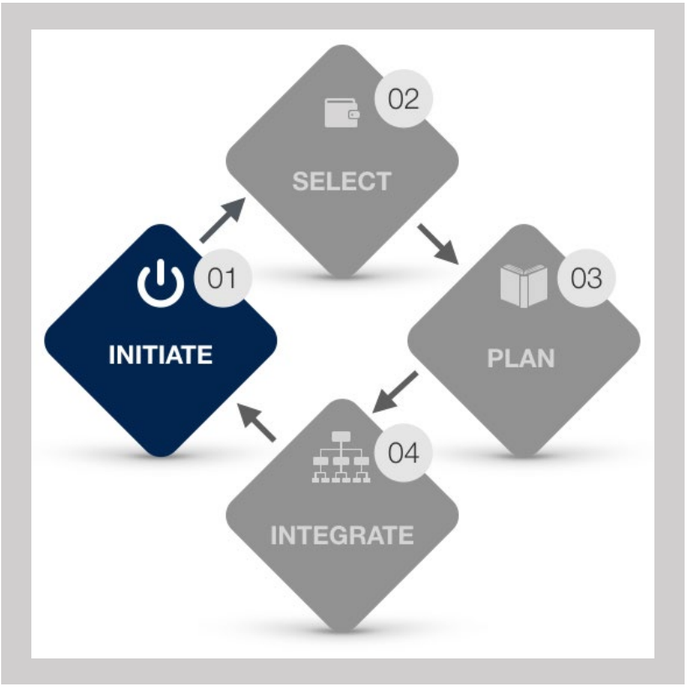
Step 1: Initiate the Lean Deployment Planning Process

- Identify lean coach and champions
- Conduct lean training
- Schedule a lean deployment kick-off session
- Develop meeting agenda and presentation
- Conduct kick-off session



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Step 2: Select Lean Methods

Review lean methods

Evaluate methods

Select methods

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Defining the Lean Methods

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Organization Methods - Definitions

Team Organization

Onboarding
Activities conducted strategically to quickly get everyone on the same page regardless of when they join the project team. Example: orientations, trainings, team building exercises, etc.

Work Clusters
Multifunctional work groups created within the project team to pursue complex decision-making and problem-solving by putting in use the different experience and skills of every member.

Problem-solving

A3 thinking (PDCA)
Documentation approach for problem-solving and reporting on project-related critical decisions using the Plan - Do - Check - Adjust. (PDCA) method for continuous improvement.

Decision-making

Choosing by Advantages
A multi-criteria decision-making method developed by for determining the best decision by quantifying the advantages of each option.

Continuous Improvement

Quality Circles
A participatory management technique that engages workers directly in identifying and solving problems that span different steps in the design or production process.

Additional Techniques used in Lean Implementation:

5 WHY Analysis
Problem solving technique to determine root cause by diving deeper into the "why" five times.

PICK Chart
An ease/impact chart that segregates ideas into possible, implement, challenge, and kill categories.

Spaghetti Diagramming
A map that shows current layout of operations and path taken by people, product, or the service as it moves through the process.

Ohno Circles
Figuratively refers to a portion of the workplace identified to be observed and analyzed for an uninterrupted period of time to look for inefficiencies.

Gemba Walk
Means "Going to the work" or walking the job site where the actual work is done to identify waste elimination opportunities.

Organization Method

Onboarding

Onboarding provides a way for team members to reach common levels of learning as new team members are added to a project. Onboarding allows for the new team members to be immersed in the project organization, understand the unique processes and expectations of this project, to be trained, and to gain access to project specific resources. Onboarding ensures that the team's cultural, behavioral, and procedural environments are not disrupted.

Construction is a project-based industry where adoption of lean can be challenging because each project brings together team members with a vast array of experience, abilities, and knowledge, each with a different level of awareness or experience with lean principles. Onboarding presents an opportunity to align these experiences and knowledge at the beginning of each person's experience with this project.

Benefits:
- Helps create high-performing teams
- Reduces potential process breakdowns
- Helps develop leadership skills

Success / Progress Metrics:
- All project leaders have led a session
- % of team members that attended
- Plus/Deltas from onboarding sessions
- Post-session 'quiz' results

Suggested Resources:
- Lean Simulations
- Project Lean Deployment Plan
- Training space
- Book: Don't Conform, Transform - chapter on Onboarding

Potential Education needs:
- Who will lead onboarding sessions?
- What project's onboarding do they need further training to teach?
- Who needs training to facilitate lean simulations?

Task Breakdown Planning Questions:
- Which specific methods do you want to share with all new project team members?
- Which lean simulations should be used?
- Which project leaders will be conducting the onboarding session?
- How frequently, or at which events, will onboarding sessions be offered?
- How will onboarding sessions be evaluated and by who?
- What documents and training materials will be used and who will assemble them?
- What lean principles should be taught at onboarding?

Communication Planning:
- How will team members be informed of onboarding timelines?
- How will project culture and training from onboarding be reinforced visually throughout the project?

Continuous Improvement:
- How will the onboarding process be updated throughout the project?
- How will the effectiveness of sessions be evaluated?
- Who will review the content or audit the sessions for quality and effectiveness?

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Step 3: Plan Each Lean Method

- **Identify the method goal**
- **Identify champion(s) and key participants**
- **Outline the tasks and responsibilities**
- **Define the measures, communication strategy(ies), and continuous improvement opportunities**

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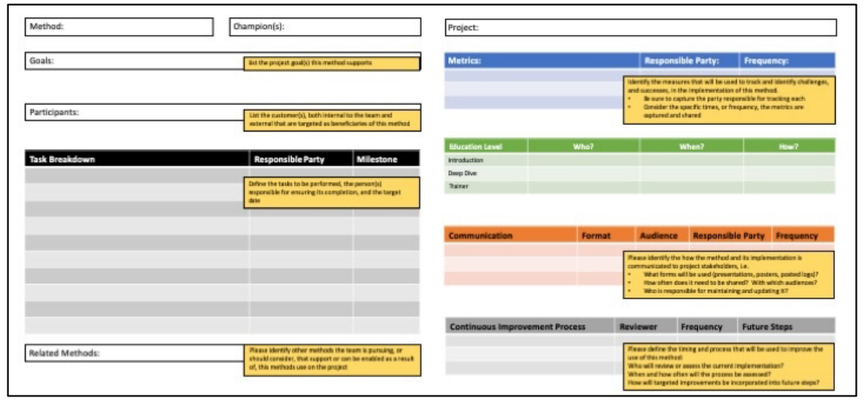
Method Planning A3 Template



Example - Onboarding

Method: Onboarding

Champion(s): Andy

Project/Organization: Project A

Goal(s): Create quality onboarding so everyone understands.

Participants(s): All personnel, Owner included.

Task Breakdown:

- Integrate the organization processes with the management processes
- Leadership team defines information for all members. Example: Not IFOA but interdependence of parties
- Define Lean/IPD briefing for safety orientation
- Define communication or visual management strategies
- Train the trainers
- Design assessment/health checks
- Run/track metrics and audits
- Conduct Monthly "Reconnect" or "Lean Learning"

Related Methods and Strategies:

Weekly Work Planning

Big Room Planning

Visual Management

Meeting Agendas

Metric(s):

- Observed actions
- Reward system
- Health check
- Quiz (2 minute drills)

Education Plan:

Level	Who?	When?	How?

- Who will train/give onboarding?
- How frequently will onboarding sessions be offered?
- What are the milestones for updating the training?s

Communication Plan:

- Define slides for orientation
- Develop posters for big room
- Rewards at luncheon
- Rewards system board

Continuous Improvement

- When do we conduct audits
- How we frequently do we conduct audits/check-ins
- Who will conduct these audits/check-ins?
- How will we rotate responsibilities?

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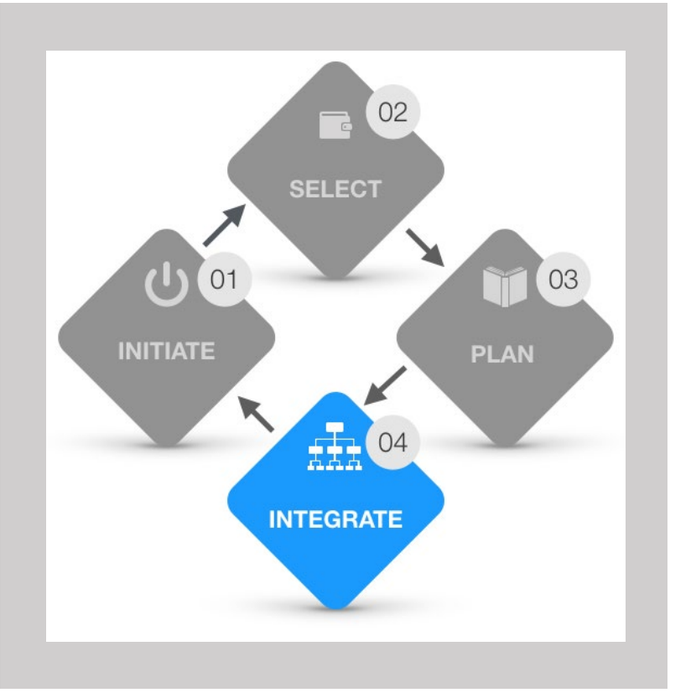
Step 4: Integrate Methods to Project Plan

Record project conditions of satisfaction and associated methods

Consolidate project measures for tracking alignment to implementation plan

Consolidate all training to be completed on the project

Consolidate all communication strategy(ies), and continuous improvement opportunities



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Project Summary Dashboard

Project: ABC Recreational Complex Renovation

Lean Champion(s): Jane Doe

Project Conditions of Satisfaction
Rapid issue-detection and resolution
Continuous and reliable workflow
High performing project team
Effective , efficient, and timely team communications
High performing building design

Organization Methods	Operating System Methods
Onboarding	Last Planner System
Work Clusters	Target Value Design
Gemba Walk	Big Room Planning
A3 Thinking/Reports	Visual Management

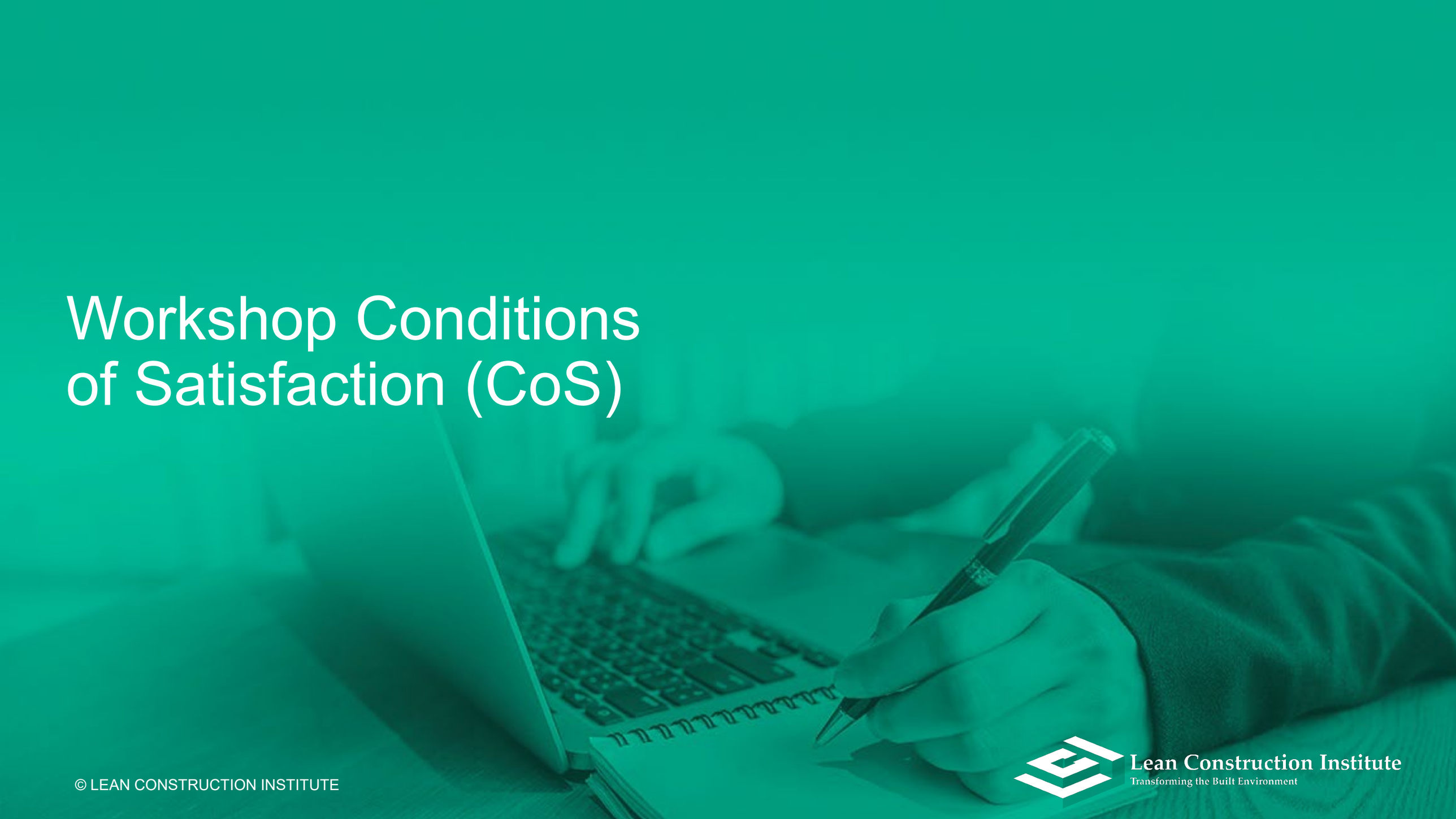
Lean Implementation Metrics:	Status
All lean methods champions identified within 30 days of lean implementation planning kick-off	
Lean plan completed within 90 days of kick-off	

Education and Training Metrics	Status
New person onboarding completed within 30 days of hire	
All lean champions trained within 30 days of kick-off	
All lean trainings completed within 90 days of kick-off	

Communication Metrics	Status
Project issues identified did not cause project delay	
Identified project issues resolved within 15 days	
Zero change orders post issue of detailed design docs.	

Continuous Improvement Metrics	Status
Plus-deltas recorded from all collaborative sessions	
Deltas addressed in future sessions	
Pluses repeated in future sessions	

Workshop Conditions of Satisfaction (CoS)



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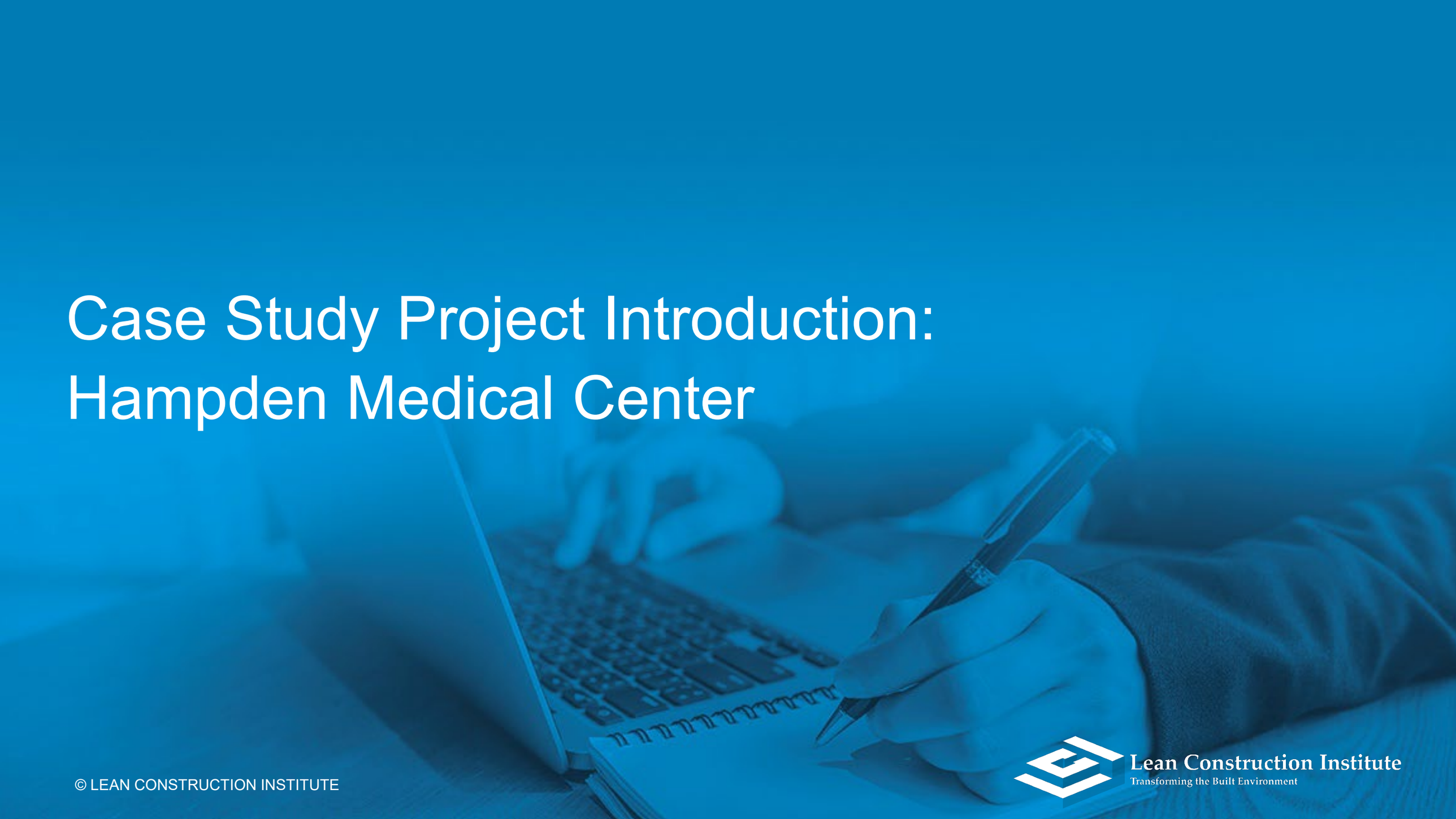
Workshop CoS – 10 mins

- Breakout group directions:
  - Introductions
    - Introduce yourself
    - Ice-breaker questions:
      What is something fun you did (or want to do) while in **San Diego**?
    - Identify group spokesperson / person to submit group response
  - As a group, brainstorm what you would like to get out of this workshop
  - Create stickies to capture your group's CoS & post
  - We will come together and share highlights with the whole group

Case Study Project Introduction: Hampden Medical Center



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Strategic Goals: Penn State Health

- First greenfield hospital expansion for the system
- Bring world class care closer to patients in more effective setting – hospital within 30min (10-20-30)
- Speed to market

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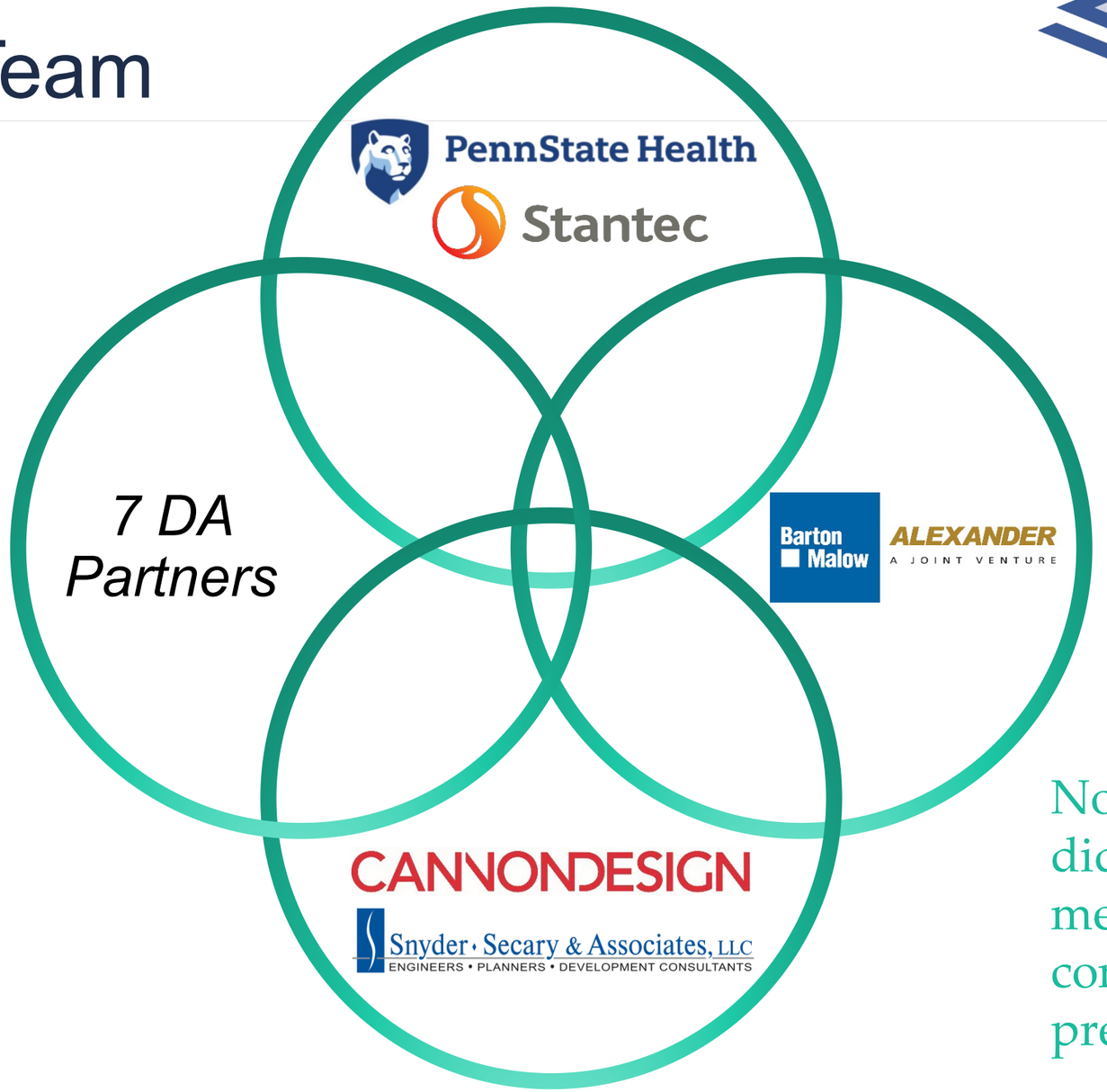
Collaborative Team



Not an IPD project, but we did have a contractual methodology and issued a contract for our DA partner preconstruction services

Collaboration

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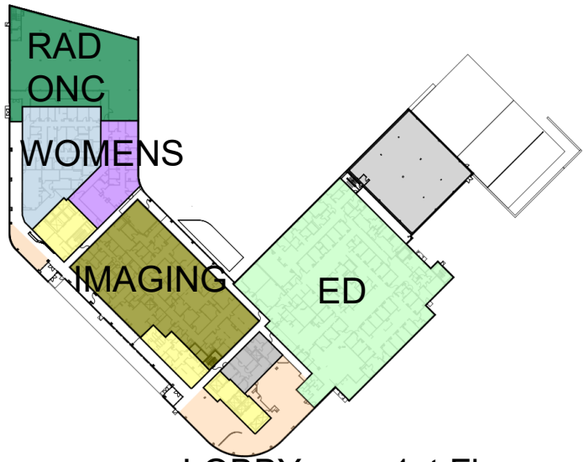
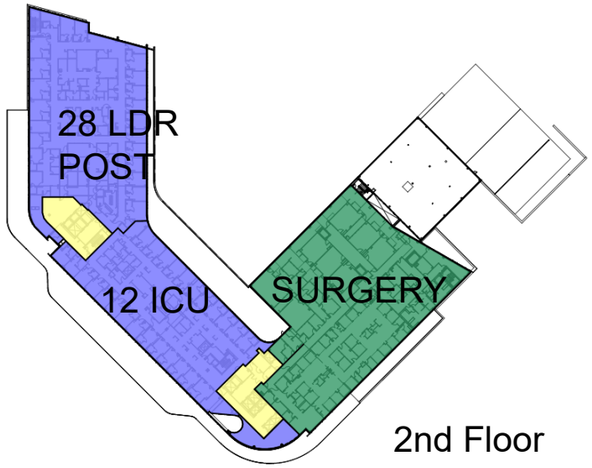
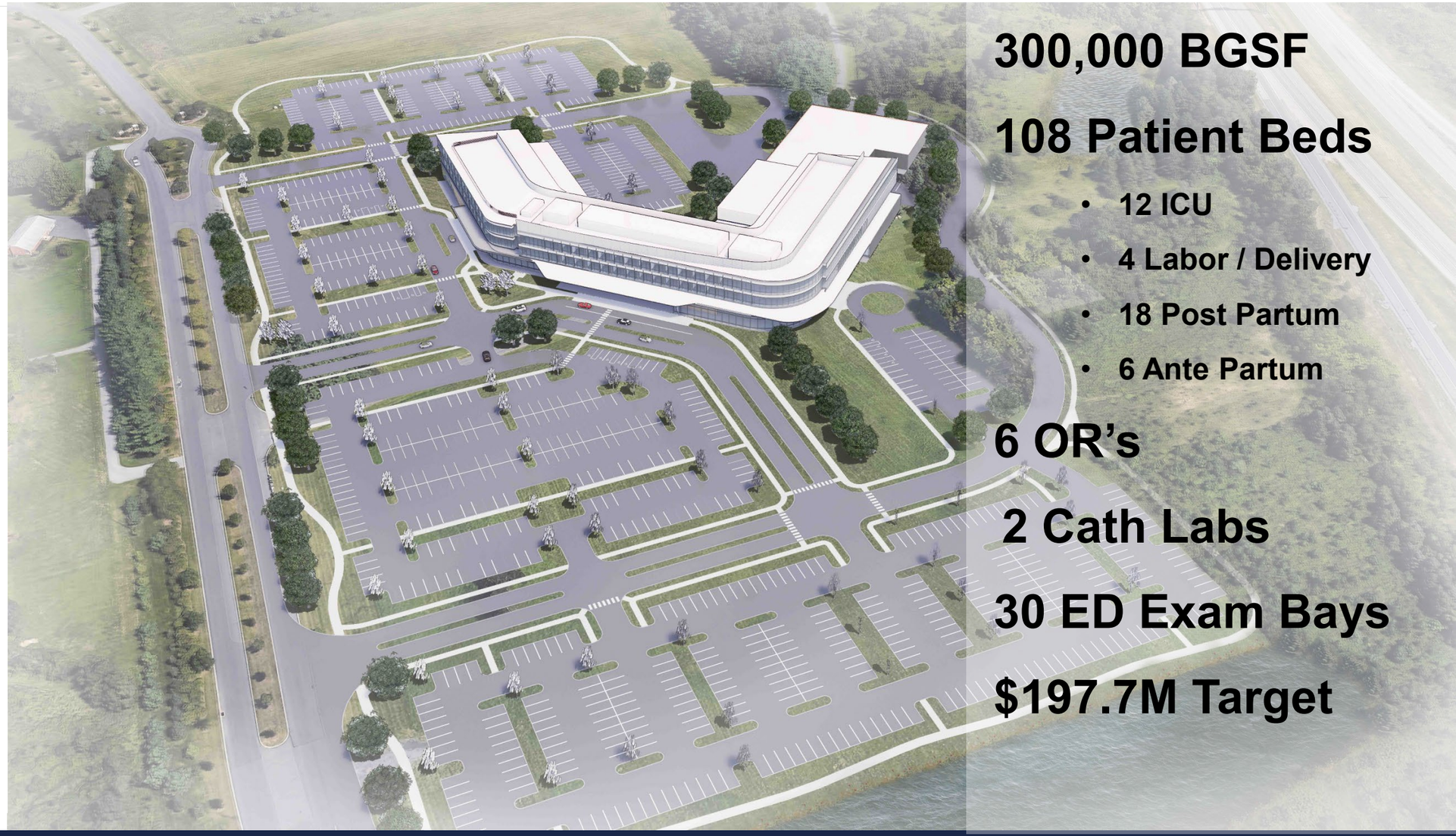
Design Summary







300,000 BGSF

108 Patient Beds

- 12 ICU
- 4 Labor / Delivery
- 18 Post Partum
- 6 Ante Partum

6 OR's

2 Cath Labs

30 ED Exam Bays

$197.7M Target

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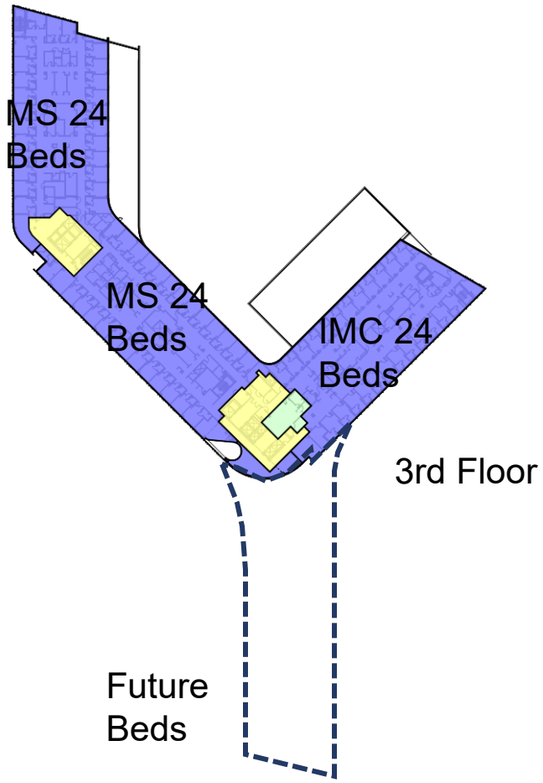
Design Summary



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- **6 Ante Partum**

6 OR's

2 Cath Labs

30 ED Exam Bays

$197.7M Target

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Penn State Health – Hampden Medical Center

- Over 500 Workers OnSite + Prefabrication Efforts
- Almost 1M Labor Hours
- 26 mo. Construction Phase; did not change thru pandemic

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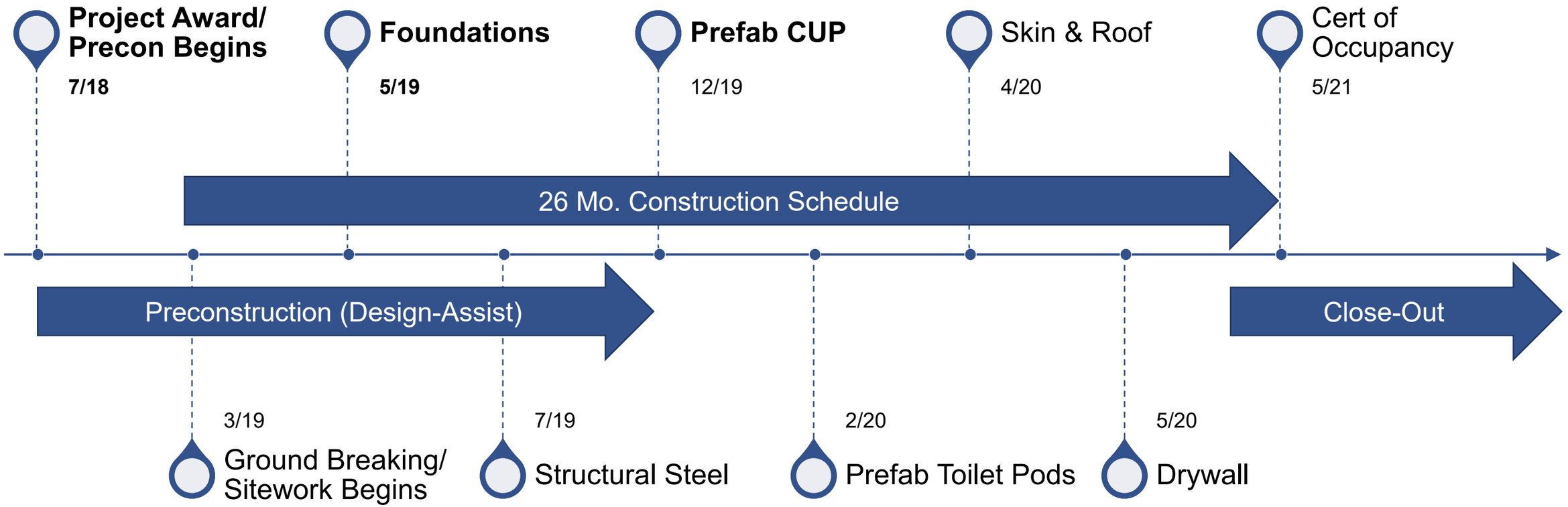
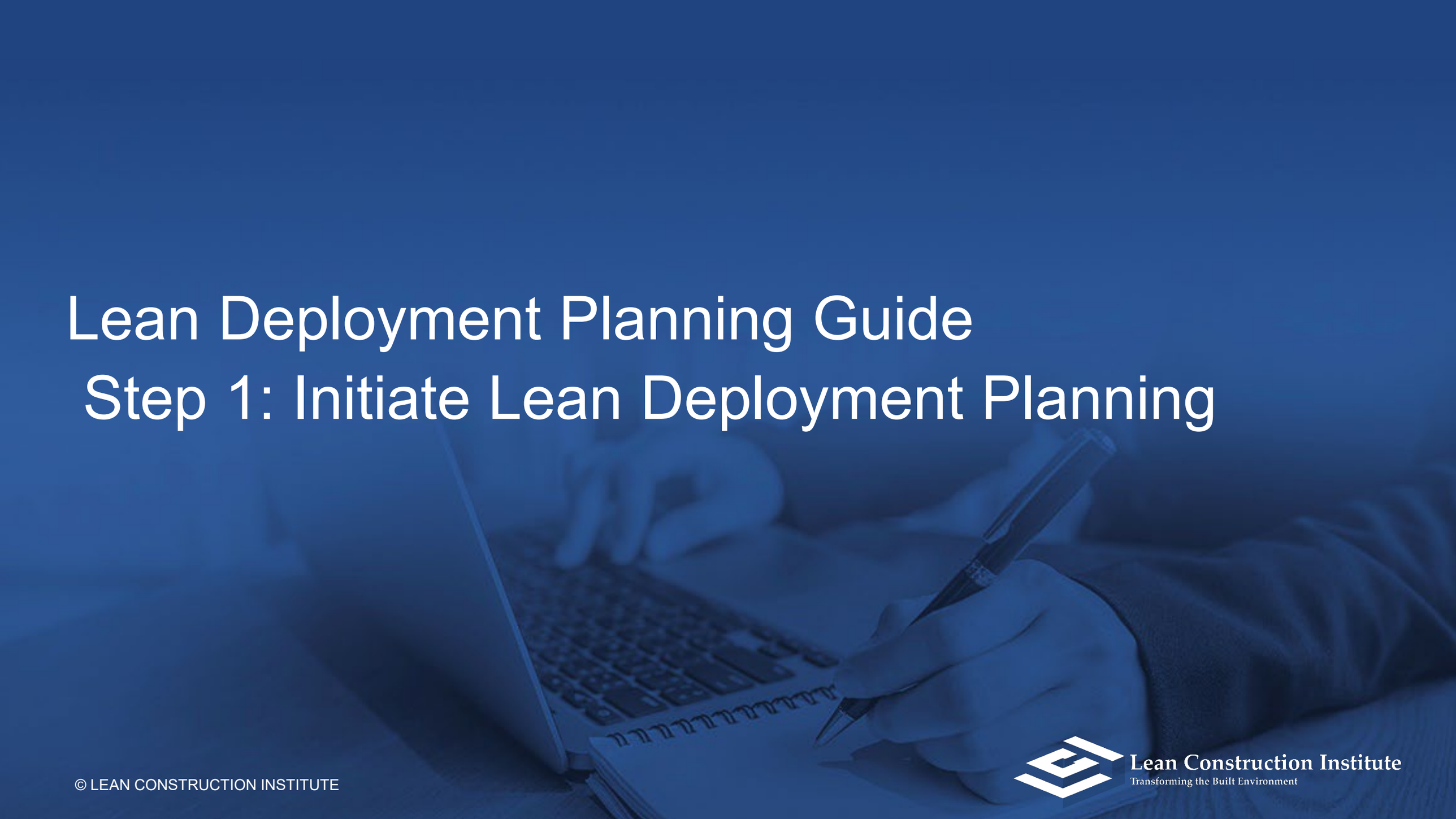
Penn State Health – Hampden Medical Center



Lean Deployment Planning Guide
Step 1: Initiate Lean Deployment Planning



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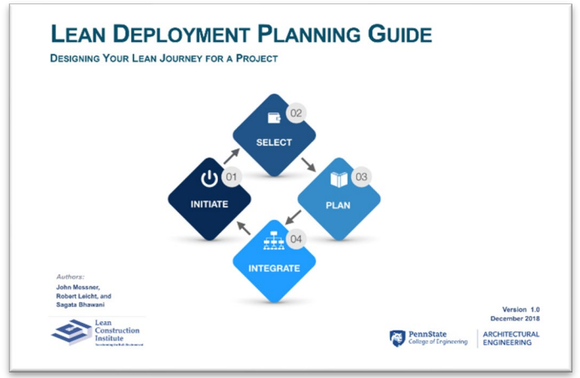
Lean Deployment Planning Steps



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Sample Content

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Executive Summary

The core principles of Lean construction are respect for people and continuous improvement by focusing on process and flow, thus eliminating waste and creating value in facility delivery. Encompassing all principles, the overarching goal for implementing Lean construction is to focus on continuous improvement as we deliver construction projects. This can be done by implementing Lean holistically on a project by focusing on the commercial structure (i.e. the business), the organizational structure (i.e. the culture), and ultimately, the operating system (i.e. the project). (LCI, 2010).

Figure 1: LCI Triangle: A Framework for Change (LCI, 2010)

A Lean Deployment Plan for a project can help with Lean implementation by allowing project teams to plan the Lean principles and practices throughout the stages of a project by embedding them into the project management processes, ultimately delivering better value for clients while simultaneously improving overall safety, cost, schedule, and quality. The Lean Deployment Plan is to be developed following the formation of the project team and, the development and validation of the project business plan. Therefore, the plan is ideally meant to be developed by the project team collaboratively with commitment to the resources and competencies needed for lean implementation.

This guide is designed to walk the project team through the steps of the planning procedure systematically as you create your project specific Lean Deployment Plan, while encouraging discussion of lean principles on the project. Each step in the procedure is defined and described in detail in the following sections of this guide. Along with this description, there are also template resources provided to help the project team work through the planning procedure, and document their project specific Lean Deployment Plan.

Figure 2: Lean Deployment Planning Procedure Steps

As shown in Figure 2, the planning procedure is composed of four steps. Adoption of Lean principles into a capital project is challenging because each project brings together team members with a vast array of experience, abilities, and knowledge, and different levels of awareness and experience with Lean principles and methods. This variability of awareness and knowledge leads to inconsistency in Lean implementation on projects, thus resulting in waste in the form of duplication of efforts and lack of standard processes and procedures. The purpose of this planning procedure is to support consistent and systematic implementation of Lean principles and methods within the project's management processes. To do so, the project team needs to develop a common understanding of which Lean methods will be used, how the Lean methods will be deployed and communicated, and how they can be measured and improved to support the project's specific goals. The development of this common understanding can be supported by collaboratively identifying the strategies and methods that serve the project specific value proposition and then customize them using this structured planning procedure.

As the project team works through the planning procedure, the templates provided within the guide are designed to help facilitate and document a complete plan for lean implementation. Therefore, it is beneficial for the team to collaboratively work on this plan, recording all the critical decisions that led to the project specific Lean goals, the methods that will be used to support these goals, the plan for implementing each method, the metrics that will be used to track implementation, the education and training strategy, the communication plan, and finally the continuous improvement plan.

Planning Procedure Overview

The Lean deployment planning procedure is designed to help project teams interested, or required by the project client or owner organizations, to implement lean strategies and methods on their projects. Implementation of Lean is supported in this Guide by embedding Lean methods into the project's planning process to deliver better value for clients, simultaneously improving the overall performance of safety, cost, schedule, and quality on the chosen project.

This procedure can also be used by the project planning group, a Lean coach or consultant, or an owner's representative to promote and manage consistent implementation of Lean at a project level. By working through the planning procedure using the resource templates provided, the project team will be able to develop a complete project specific Lean Deployment Plan.

The planning procedure comprises four steps and each of these steps have been defined based on research conducted in conjunction with the Lean Construction Institute to address consistent implementation of Lean at a project level. By identifying current practices in Lean method planning and implementation of Lean across projects, these steps were developed to capture the best practices and to minimize the existing challenges to support Lean adoption while improving the consistency of Lean implementation.

Step 1 - Define Project Goals

Defining clear goals collaboratively for implementing Lean on a project is the first, most important step before being able to execute the subsequent steps of this procedure. The specific goal(s) is critical to the selection of methods and planning for the process that needs to be implemented to support project goals. The goal(s) represent the value proposition of the project with respect to the client, and as such the process that follows should also be derived to deliver and support that value with minimal waste.

Step 2 - Select Methods and Define the Process

The goal-setting and implementation planning are ultimately targeted at delivering the client's conditions for satisfaction with maximum value and minimal waste. To support this effort, methods are required that enable the project team to deliver the project using Lean processes. The method selection step leads the project team to review methods that can help identify value and eliminate waste throughout the delivery process. Due to each project being unique, different strategies and approaches may be required during the project lifecycle. Following the selection, the team works together to develop the specific implementation plan for each of the selected methods. The templates in the guide are intended to help project teams identify and develop the targeted methods. The planning needed helps to translate their project goals into an actionable plan that can be measured and continuously improved throughout the project. The implementation plan can be integrated into the project's management processes to support overall project delivery.

Step 3 - Measure Progress

Once the implementation plan has been laid out for the project, the project team can work to integrate and further develop the metrics, educational plan and communication needed, to tell the story of Lean implementation at the project level. The goal of the step is to the information and plans into resources and a stream of information to identify challenges or potential breakdowns early and ensure that the implementation, overall, is successful.

Step 4 - Learn and Continuously Improve

It is critical that the project team continue to reflect, learn, reassess, and update the plan to the most current information. Routine events need to be embedded into the project processes with time and resource commitments to enable the team to learn and improve. This step reinforces the need to learn in a collaborative environment and to encourage peer motivation and team progress as a whole.

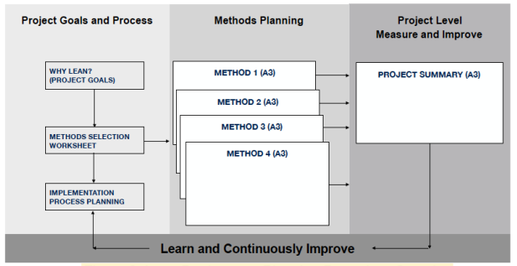

Figure 3: Lean Deployment Planning Procedure Overview

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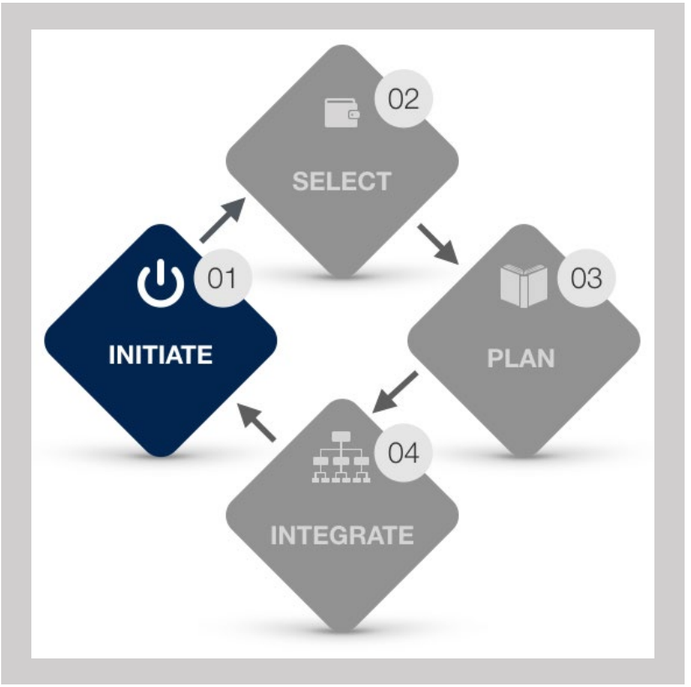
Step 1: Initiate the Lean Deployment Planning Process

- Identify lean coach and champions
- Conduct lean training
- Schedule a lean deployment kick-off session
- Develop meeting agenda and presentation
- Conduct kick-off session



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Step 1: Initiate – Coaches & Training

- Identify a Lean Champion on your Team
- Bring in a Lean Coach (internal or consultant)
- Connect your Lean Champion to continue to consult with your Coach
- Identify the Team's (owner, design & builders) knowledge / experience with Lean – Where are you starting from?
- Need an Owner that's willing to let you try
- Start the Project with setting your Conditions of Satisfaction and use those to guide which Lean Methods you select.

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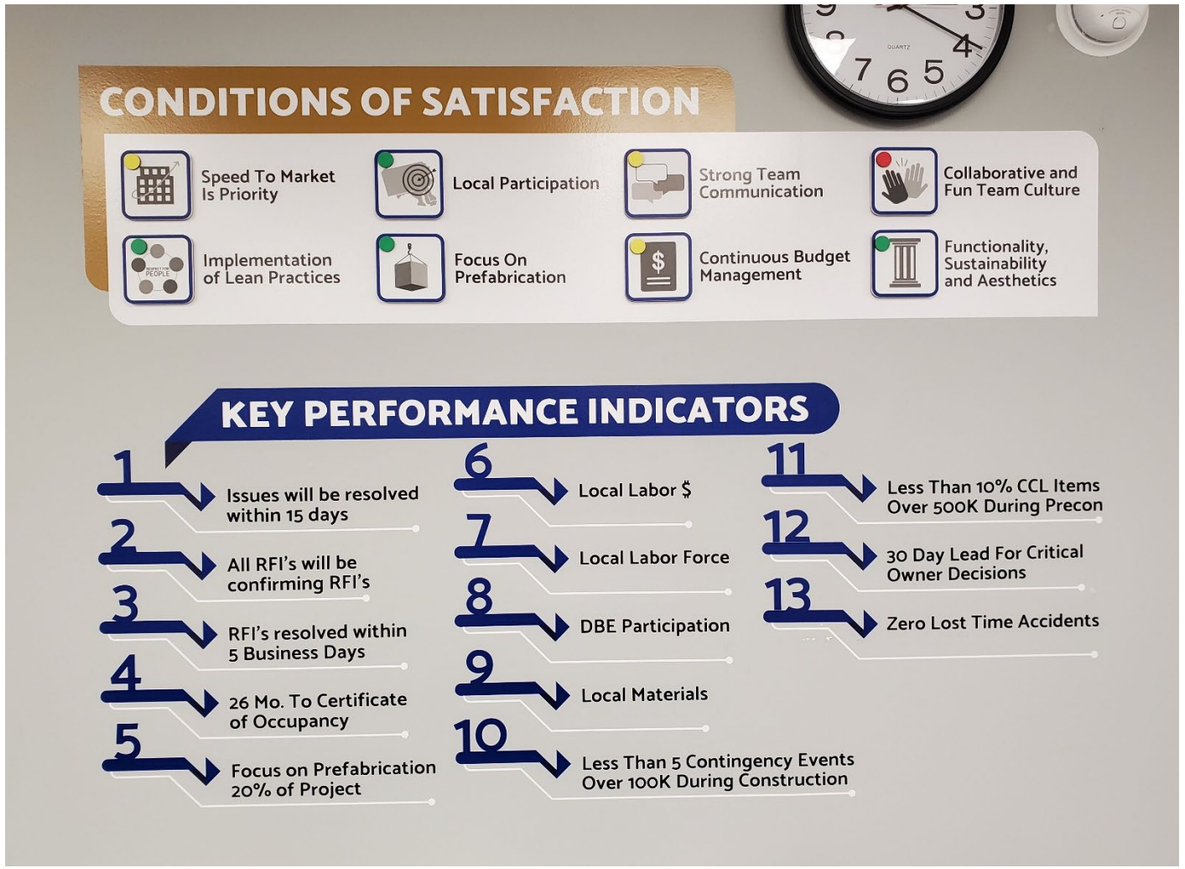
Step 1: Initiate –Kickoff Session Planning

- Start the Project with setting your Conditions of Satisfaction
- Best to facilitate a meeting with the entire team (owner, designers & builders) to identify the methods you want to try
- Let CoS guide which Lean Methods you select
- Develop a core group to work with Project Champion to build momentum



Conditions of Satisfaction

The project priorities that guide decision-making throughout the development and implementation of the project.

An alignment of interests

- Everyone is in agreement that this goal is a priority (co-developed)

A goal that is obtainable by all

- Everyone can assist in achieving the goal

A goal that creates focus and drive for a positive end result

- Everyone feels invested and motivated towards achieving the goal

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EXERCISE: Developing Example CoS – 20 mins

- Breakout group directions:
  - Draft 2-3 conditions of satisfaction for the Hampden Medical Center project

An alignment of interests

- Everyone is in agreement that this goal is a priority (co-developed)

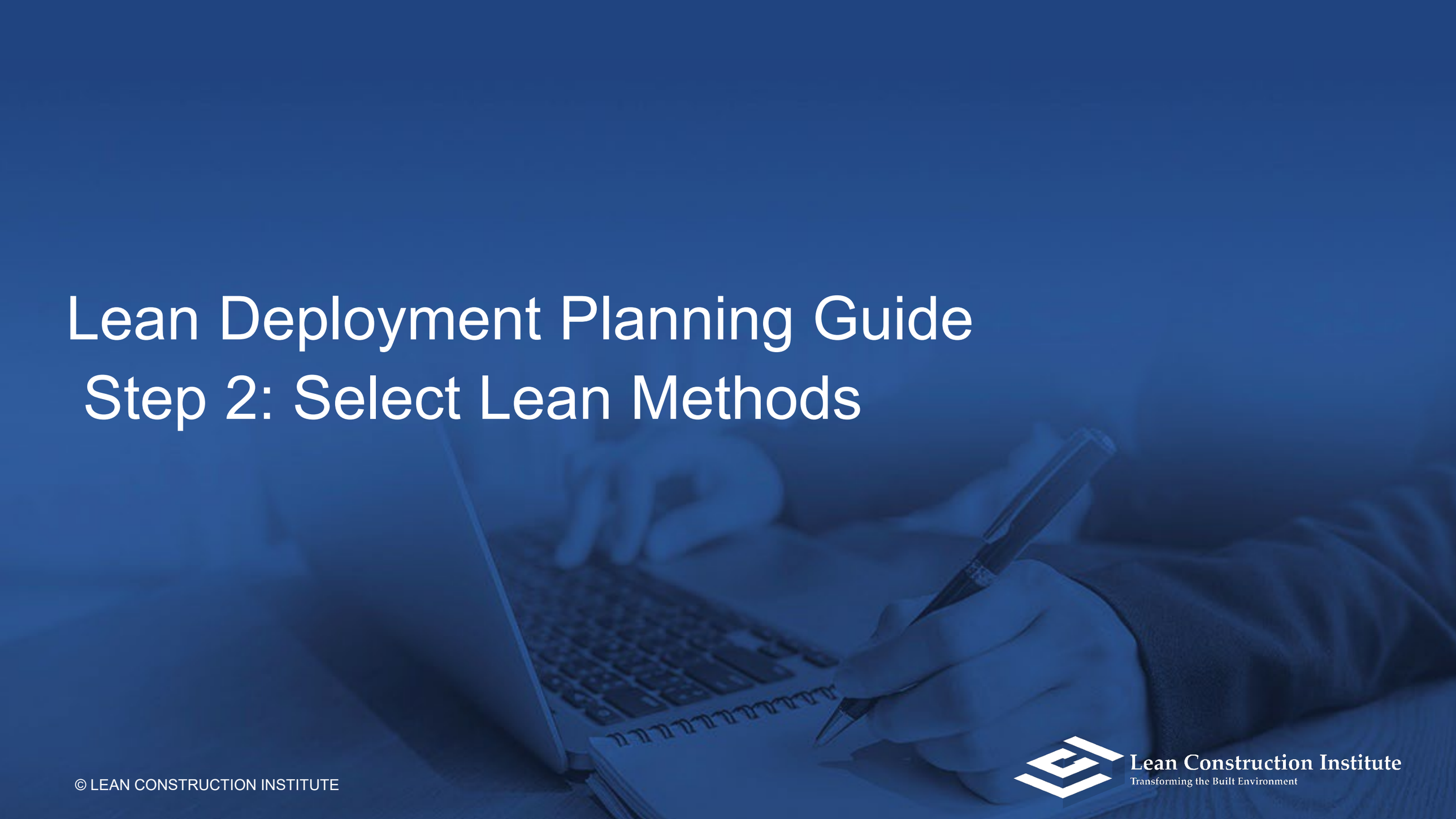
A goal that is obtainable by all

- Everyone can assist in achieving the goal

A goal that creates focus and drive for a positive end result

- Everyone feels invested and motivated towards achieving the goal

Lean Deployment Planning Guide
Step 2: Select Lean Methods



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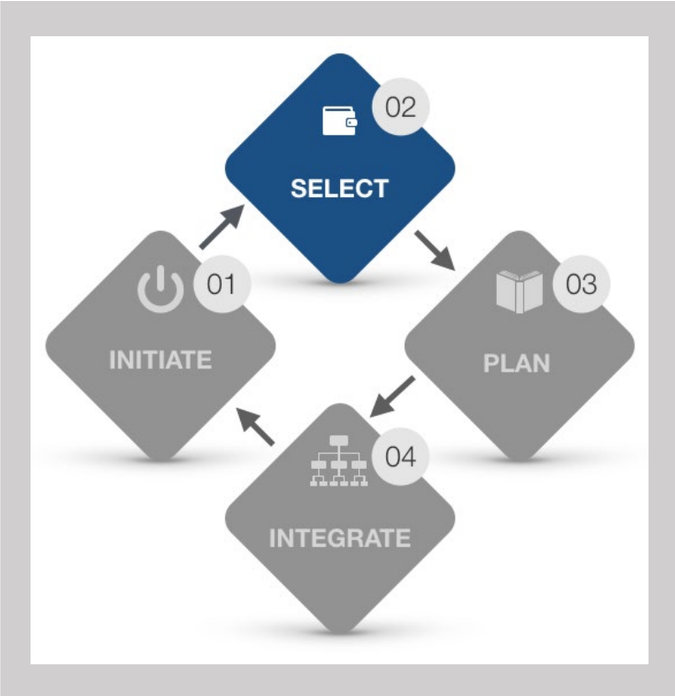
Step 2: Select Lean Methods

Review lean methods

Evaluate methods

Select methods



Download at cic.psu.edu/lean

Defining the Lean Methods

Lean Construction Institute
Immersive Education Program

Operating System Methods - Definitions

Production

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Set-based Design
A method to explore and optimize design alternatives in small sets, based on a set of design criteria, for the project, to find the best solution.

Agile Planning
An approach to planning the development of design by prioritizing a portion of the work scope and making realistic commitments to finish them based on analysis of previous performance.

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5-S
An approach for workplace organization and maintaining visual control. The "S" stands for: Sort, Set, Shine, Standardize, Sustain.

3P
3P stands for Production Preparation Process, which is laid out to physically organize the area where new work is about to begin.

Operating System Method

Set-based Design

Set-based Design (SBD) is a method to explore design alternatives for the project in small sets, to find the best solution. Each set of design alternatives is distinguished by a set design criteria. As the design evolves, the best features from each set are consolidated to generate the option that delivers maximum value to the project. Eventually design options are evaluated based on client preference, target value, feasibility, advantages, and constraints.

Construction projects tend to be complex and require multiple experts to provide input along the design process. It helps to break down the overall project scope into smaller components.

Set-based design helps with the development of such smaller components to streamline the overall design development process.

Benefits:
- Concurrent development of multiple design components and options
- Maintains design options longer, then advances quickly as decisions are made
- Enabler for integrated design

Success / Progress Metrics:
- Effectiveness of design criteria sets
- Support of Conditions of Satisfaction
- Innovativeness of ideas
- Design development deadlines

Suggested Resources:
- Design visualization and review space
- Design experts
- Project Lean Deployment Plan
- Book: Transforming Design and Construction: Set-based Design

Potential Education needs:
- Who will facilitate the SBD process?
- Who is experienced in SBD?
- How will you plan the design handoffs and collaborative development?

Task Breakdown Planning Questions:
- How will you define the design set criteria?
- When will you assemble the design team?
- How will you make decisions when reaching design milestones?
- How will you incorporate the required design expertise?
- When will key charrettes/workshops occur?
- How will you track design development?
- How will you engage the client in the process of design review and selection?
- How will you evaluate options and make final selections? (For example: Visualization, CBA)

Communication Planning:
- How will you communicate the design schedule and progress with project team, including the client?
- How will you communicate design alternatives for final selection?

Continuous Improvement:
- How will you improve the efficiency of the design development process?
- How will you improve the efficiency of design development tools?
- What routines can you use to continue maximizing value for client through design development?

Defining the Lean Methods

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Organization Methods - Definitions

Team Organization

Onboarding
Activities conducted strategically to quickly get everyone on the same page regardless of when they join the project team. Example: orientations, trainings, team building exercises, etc.

Work Clusters
Multifunctional work groups created within the project team to pursue complex decision-making and problem-solving by putting in use the different experience and skills of every member.

Problem-solving

A3 thinking (PDCA)
Documentation approach for problem-solving and reporting on project-related critical decisions using the Plan - Do - Check - Adjust. (PDCA) method for continuous improvement.

Decision-making

Choosing by Advantages
A multi-criteria decision-making method developed by for determining the best decision by quantifying the advantages of each option.

Continuous Improvement

Quality Circles
A participatory management technique that engages workers directly in identifying and solving problems that span different steps in the design or production process.

Additional Techniques used in Lean Implementation:

5 WHY Analysis
Problem solving technique to determine root cause by diving deeper into the "why" five times.

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Figuratively refers to a portion of the workplace identified to be observed and analyzed for an uninterrupted period of time to look for inefficiencies.

Gemba Walk
Means "Going to the work" or walking the job site where the actual work is done to identify waste elimination opportunities.

Organization Method

Onboarding

Onboarding provides a way for team members to reach common levels of learning as new team members are added to a project. Onboarding allows for the new team members to be immersed in the project organization, understand the unique processes and expectations of this project, to be trained, and to gain access to project specific resources. Onboarding ensures that the team's cultural, behavioral, and procedural environments are not disrupted.

Construction is a project-based industry where adoption of lean can be challenging because each project brings together team members with a vast array of experience, abilities, and knowledge, each with a different level of awareness or experience with lean principles. Onboarding presents an opportunity to align these experiences and knowledge at the beginning of each person's experience with this project.

Benefits:
- Helps create high-performing teams
- Reduces potential process breakdowns
- Helps develop leadership skills

Success / Progress Metrics:
- All project leaders have led a session
- % of team members that attended
- Plus/Deltas from onboarding sessions
- Post-session 'quiz' results

Suggested Resources:
- Lean Simulations
- Project Lean Deployment Plan
- Training space
- Book: Don't Conform, Transform - chapter on Onboarding

Potential Education needs:
- Who will lead onboarding sessions?
- What project's onboarding do they need further training to teach?
- Who needs training to facilitate lean simulations?

Task Breakdown Planning Questions:
- Which specific methods do you want to share with all new project team members?
- Which lean simulations should be used?
- Which project leaders will be conducting the onboarding session?
- How frequently, or at which events, will onboarding sessions be offered?
- How will onboarding sessions be evaluated and by who?
- What documents and training materials will be used and who will assemble them?
- What lean principles should be taught at onboarding?

Communication Planning:
- How will team members be informed of onboarding timelines?
- How will project culture and training from onboarding be reinforced visually throughout the project?

Continuous Improvement:
- How will the onboarding process be updated throughout the project?
- How will the effectiveness of sessions be evaluated?
- Who will review the content or audit the sessions for quality and effectiveness?

Methods by Function and Project Phase

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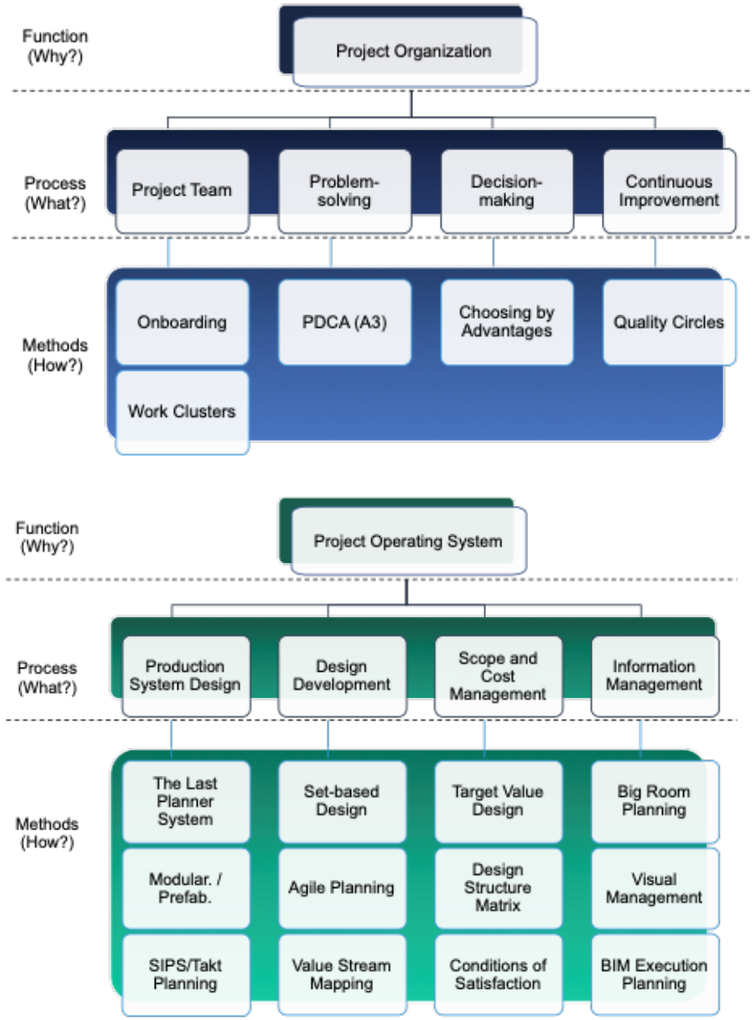
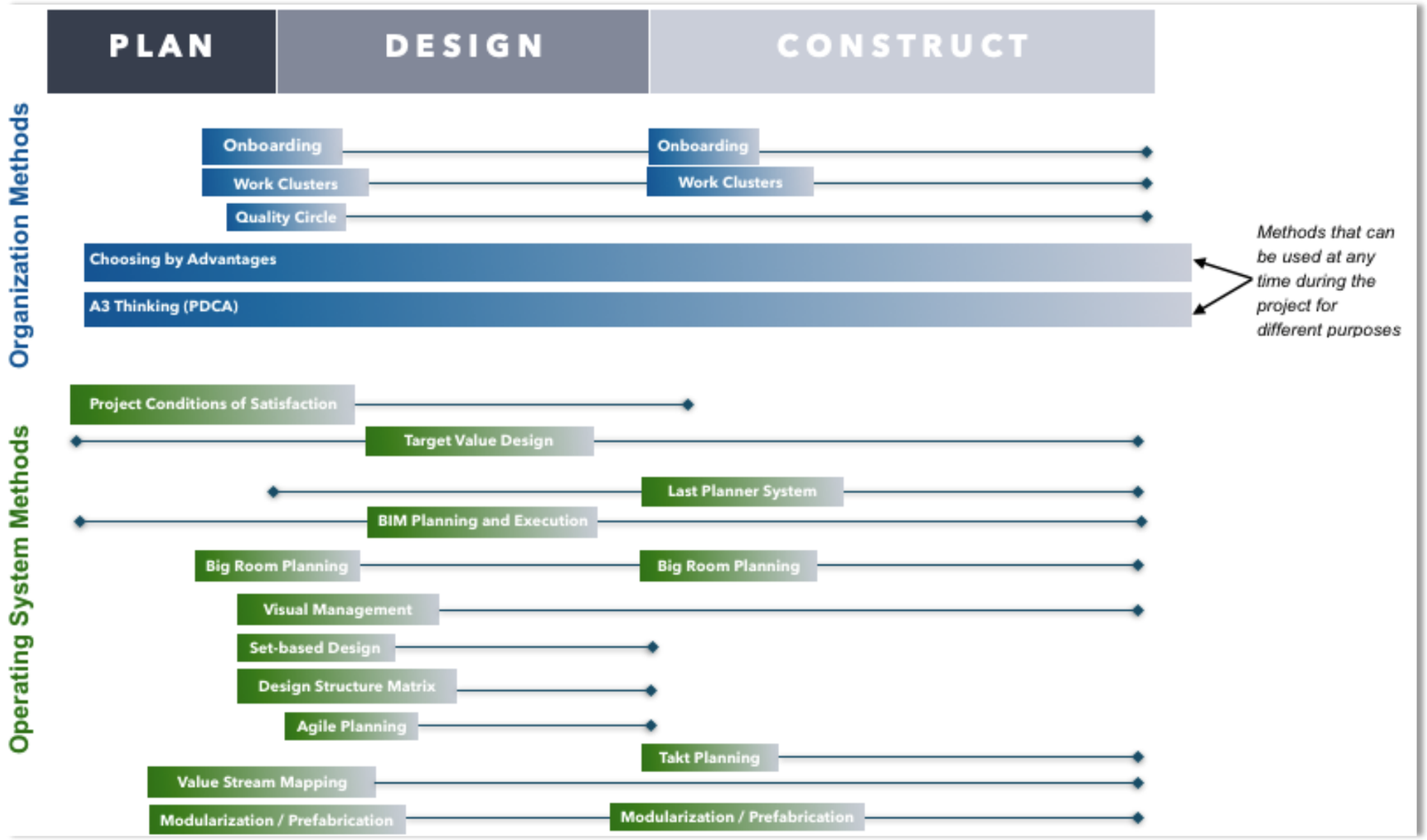
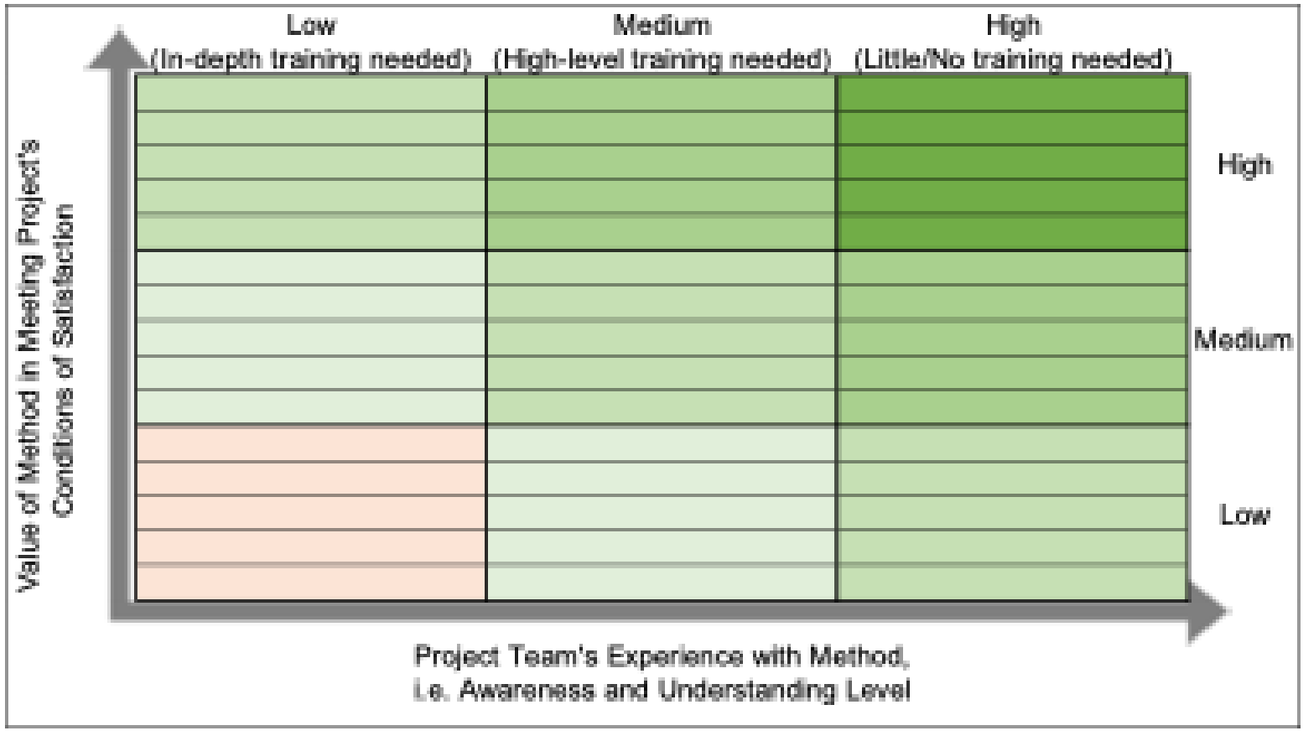




Evaluating Lean Methods

- The purpose of the evaluation step is to prioritize methods that add value to the project
- Consider Value to the project
- Review and share awareness and experience using methods



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Step 2: Select Lean Methods

Review lean methods

Evaluate methods

Select methods

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Method Selection Worksheet

Process (WHAT WE WANT TO DO?)	Methods (HOW WE WANT TO DO IT?)	Customer(s)	Value to Customer(s) High / Med / Low	Responsible Party	Resources or training needed to implement	Notes	Proceed with Method YES / NO / MAYBE
Production System Design	Last Planner System	[Project Team]	High	Construction Team	Lean Coach needs to conduct pull planning workshop for hands-on training	Contact organizational lean coach/hire consultant	YES
		[Client]	Medium				
Scope & Cost Management	Target Value Design	[Project Team]	High	Design Team	Experienced design team, no additional training needed		YES
		[Client]	High				
Design Development	Set-based Design	[Project Team]	Medium	Design Team	Experienced design team, no additional training needed		MAYBE
		[Client]	High				
Information Managemennt	Big Room Planning	[Project Team]	High	Project Management	Lean coach needs to conduct training workshop for hands-on training	Contact organizational lean coach/hire consultant	YES
		[Client]	High				
Information Management	Visual Management	[Project Team]	High	Project Management	Need data analytics and visualization training for individuals responsible for performance reports	Contact trainers for webinars/in-person workshops	YES
		[Client]	High				
Team Organization	Work Clusters	[Project Team]	High	Project Management	Experienced team, no additional training needed		YES
		[Client]	Low				
Team Organization	Onboarding	[Project Team]	High	Project Management	Experienced team, no additional training needed		YES
		[Client]	Medium				

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Exercise - Select your methods (step 1)

Method Selection Worksheet

- Consider the project CoS
- Review the listed methods and discuss their feasibility
- Each of you - write 2-3 methods you would like to use on stickies

Process (WHAT WE WANT TO DO?)	Methods (HOW WE WANT TO DO IT?)	Customer(s)	Value to Customer(s)	Responsible	Tools, Resources, or Training	Notes	Proceed with Method
			High / Med / Low				
		[Client]					
Information Managemennt	Big Room Planning	[Project Team]					
		[Client]					
Information Management	Visual Management	[Project Team]					
		[Client]					
Decision-making	Choosing by Advantages	[Project Team]					
		[Client]					
Continuous Improvement	Quality Circles	[Project Team]					
		[Client]					

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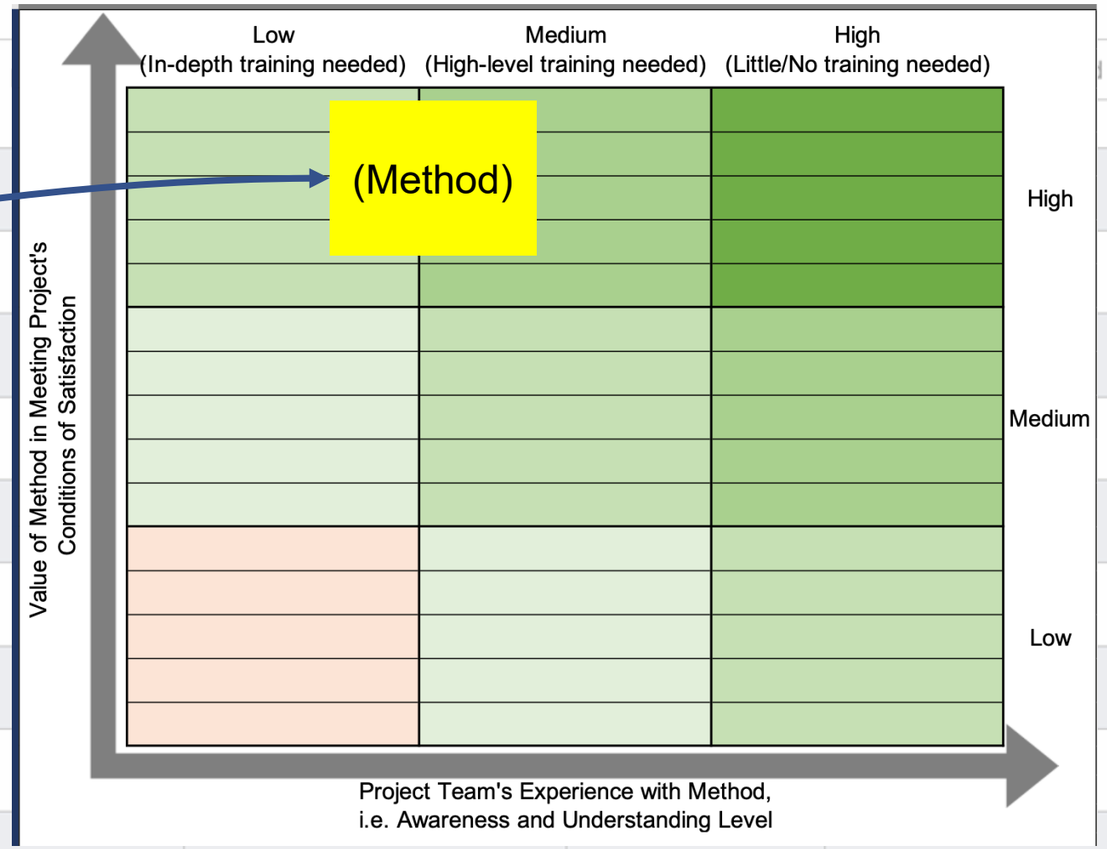
Exercise - Select your methods (step 2) – 20 mins

- Place your stickies on the PICK chart
- Discuss / group / prioritize



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Break

Methods Discussion

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- What methods did you agree to implement?
- Which methods were harder to agree? Why?
- How were you able to address the goals / risks you defined earlier?
- How does your current understanding of the methods influence your decisions?

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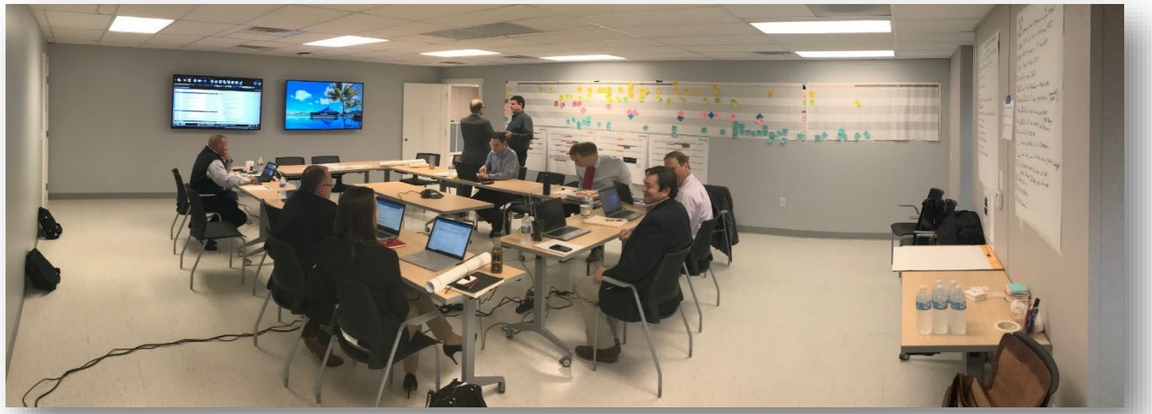
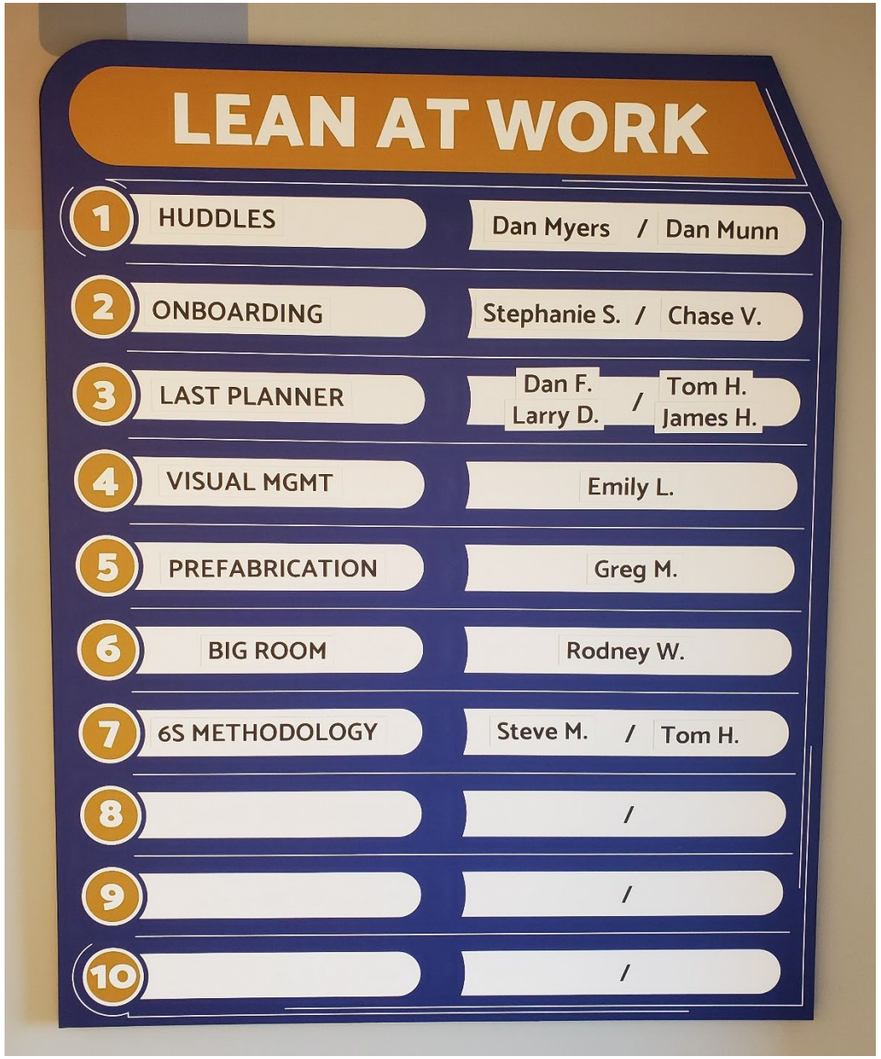
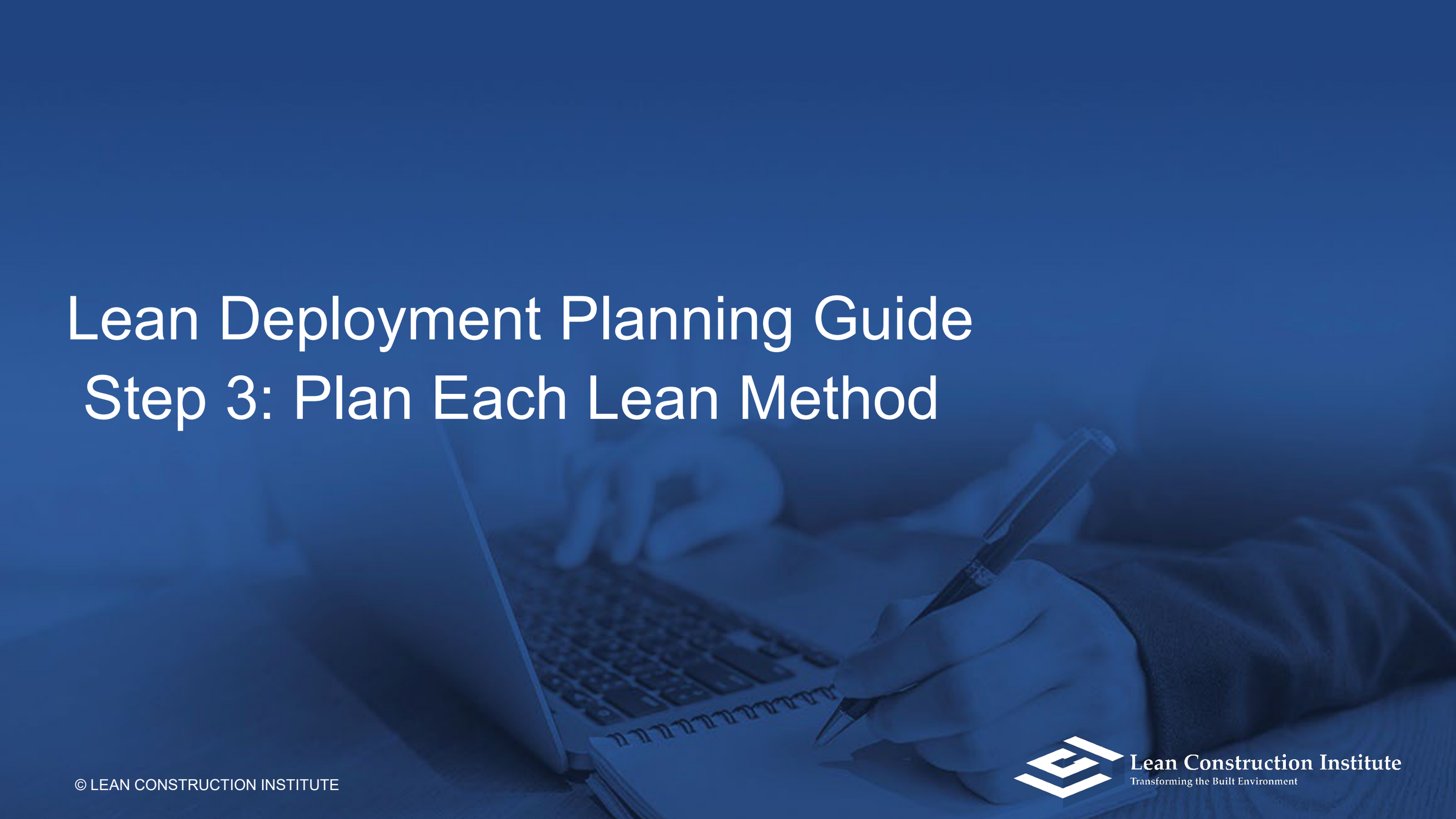
Step 2: Selecting Lean Methods

- Begin to identify champions of each initiative
- Start on Day 1
- Don’t jump into the deep end (don’t try to do it all at once)
- Start with some easy wins
- Continue regular Lean Initiatives session to engage the larger team





Lean Deployment Planning Guide
Step 3: Plan Each Lean Method



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Step 3: Plan Each Lean Method

- **Identify the method goal**
- **Identify champion(s) and key participants**
- **Outline the tasks and responsibilities**
- **Define the measures, communication strategy(ies), and continuous improvement opportunities**

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Method Planning Template

Method:	Champion(s):

Goal:

(please list the project goal this method supports)

Customer(s):

(please list the customers, but internal to the team or external that are targeted as beneficiaries of this method)

Task Breakdown	Responsible Party	Milestone

Related Methods:

(please identify other methods the team is pursuing, or should consider, that support or can be enabled as a result of, this methods use on the project)

10/11/18

Project:

Metrics:

(please identify the measures that will be used to track and identify challenges, and successes, in the implementation of this method.

- Be sure to capture the party responsible for tracking each
- Consider the specific times, or frequency, the metrics are captured and shared

Education Plan:

Level	Who?	When?	How?
Introduction			
Deep Dive			
Trainer			

Communication Plan:

(please identify the how the method and its implementation is communicated to project stakeholders)

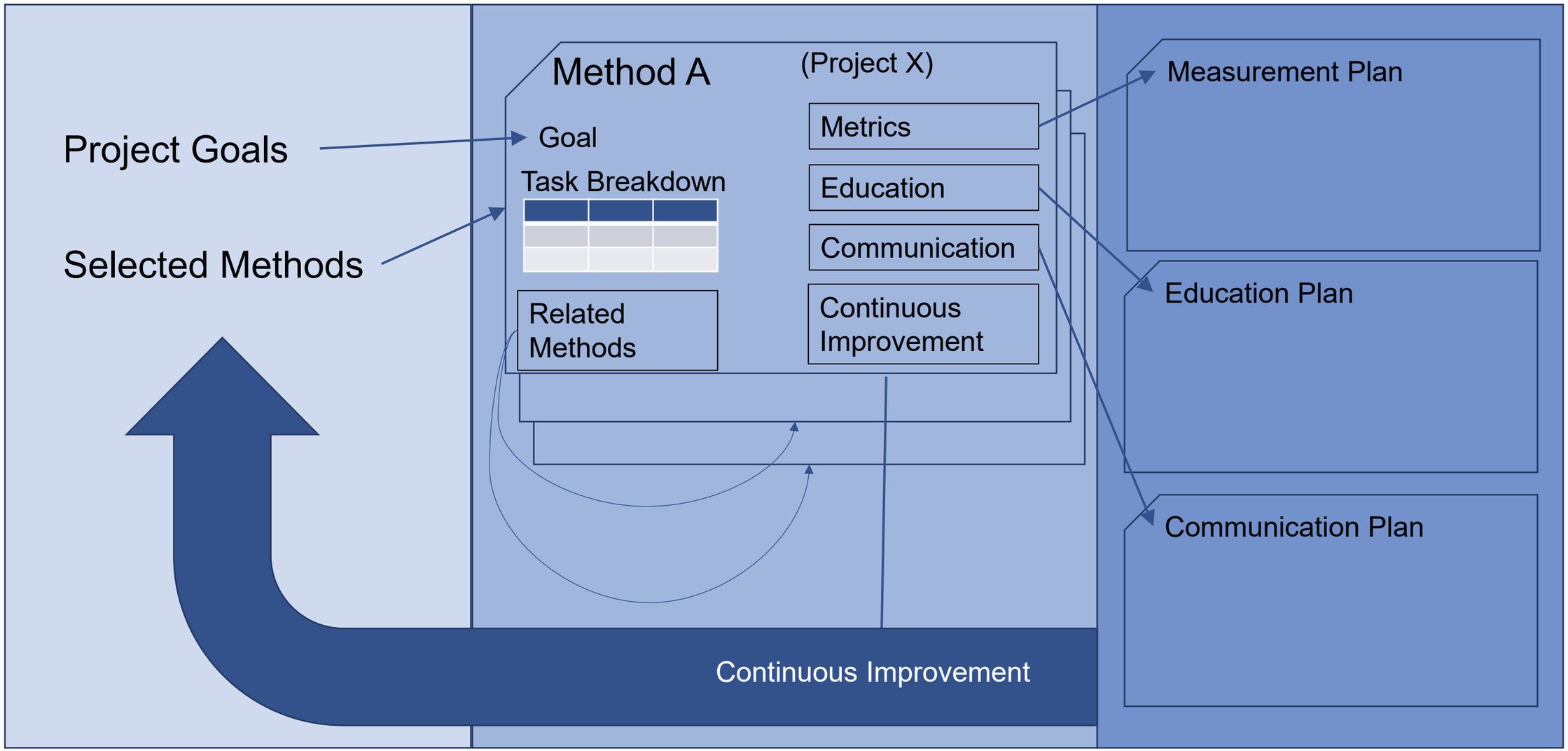
- What forms will be used (presentations, posters, posted logs)
- How often does it need to be shared? With which audiences?
- Who is responsible for maintaining and updating it?

Continuous Improvement:

(please define the timing and process that will be used to improve the use of this method

- Who will review or assess the current implementation?
- When and how often will the process be assessed?
- How will targeted improvements be incorporated into future steps?

Method Planning



Goal, champion, and participants

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(please list the project goal this method supports)

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Task Breakdown	Responsible Party	Milestone

Related Methods:

(please identify other methods the team is pursuing, or should consider, that support or can be enabled as a result of, this methods use on the project)

10/11/18

- **Goal** – which project CoS and team member goal(s) does this method support and enable?
- **Champion** – which team member will be leading the implementation of this method?
  - Should be engaged in the project on a daily basis
  - Role should align with method use, support their responsibility for implementation
- **Customer & Participants:** who should be involved in planning the methods?
  - Participants should be involved in planning and implementing
  - Customers – should be recipients / benefit from the use of the method

Tasks and Related Methods

Method:	Champion(s):

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(please list the project goal this method supports)

Customer(s):

(please list the customers, but internal to the team or external that are targeted as beneficiaries of this method)

Task Breakdown	Responsible Party	Milestone

Related Methods:

(please identify other methods the team is pursuing, or should consider, that support or can be enabled as a result of, this methods use on the project)

10/11/18

- **Tasks** – what are the one time and repetitive tasks that need to be planned to manage the use of the method?
  - Appendix C – method specific questions to support planning
  - Assign timeline and responsible party for implementing each task / step
- **Related Methods** – identify methods that are inter-related with the use of this method
  - Methods Summaries (App C) help identify this
  - Supports consideration of shared metrics, training, and implementation tasks

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Education and Communication Plans

- **Education Plan** – define who needs to be trained for using this method and how deep the training needs to delve
  - Introduction – general awareness or understanding of method
  - Deep Dive – active participants in using method
  - Trainer – those that lead, facilitate, or train others
- **Communication Plan** – define the critical aspects that need to be communicated throughout the project team
  - Where can information be displayed?
  - What can be embedding in onboarding?
  - How can we create routines and processes that enable regular updates and sharing?

Project:

Metrics:

(please identify the measures that will be used to track and identify challenges, and successes, in the implementation of this method.
- Be sure to capture the party responsible for tracking each
- Consider the specific times, or frequency, the metrics are captured and shared

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- How will targeted improvements be incorporated into future steps?

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Metrics and Continuous Improvement

- **Metrics** – the metrics and measures should support tracking and monitoring
  - Should align with project processes
  - Identify best information/metrics first, then refine
- **Continuous Improvement**– define the plan for monitoring, evaluating, and improving the use of the method
  - Should align with metrics being captured
  - Define meetings/timelines for review and evaluation
  - Capture actions and improve!

Project:

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Exercise – A3 Decision-making background

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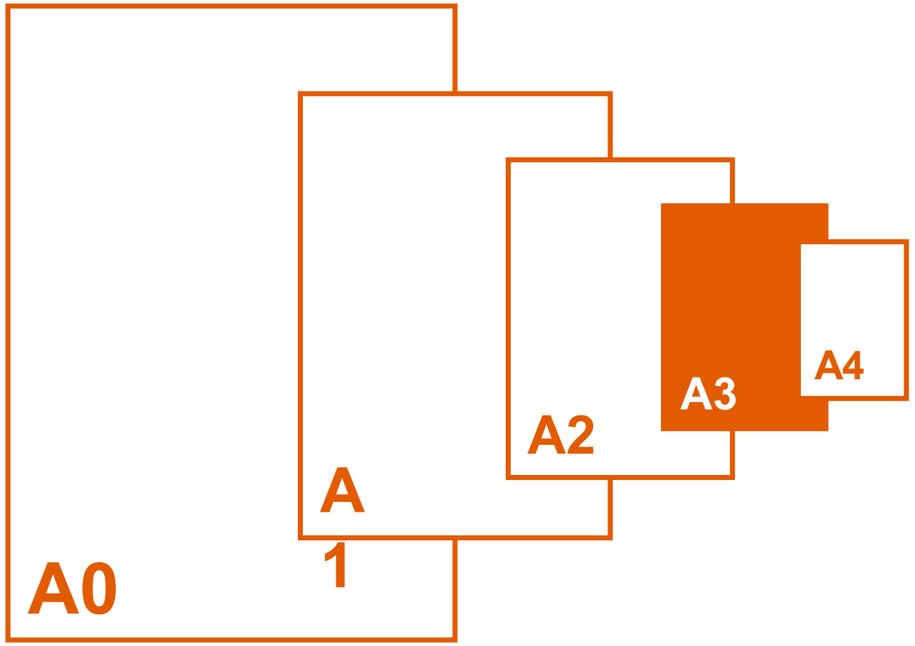
Problem solving in integrated teams

- Project team members need to be able to recognize waste
- Project team members MUST have a way to document & share problems they are encountering
- Problems must be prioritized against the Project Teams Goals / CoS
- Project team members should be able to solve the problem constructively and collaboratively
- Potential solutions in progress or fully-resolved should be communicated!

Enter A3 thinking…

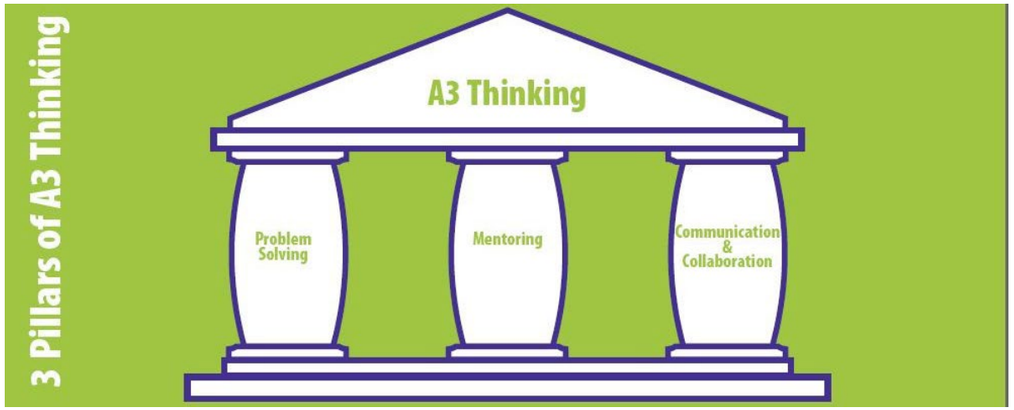
What is an A3?

- a one-page document that communicates problem identification, analysis, corrective action, and results



What is A3 Thinking?

- Decision making approach
- Used to standardize problem-solving
- Deliverable is reported on 11x17 paper broken into sections



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Logic behind A3 process

- Based on the concept that everything important should be seen in a single glance
- Creates practicality by getting many people on the same page using visual tools
- Creates a standard process
  - Allows managers to work together to perform a *root-cause analysis* while still
  - focusing on the interests of a variety of different individuals and departments
  - creating a dialogue where *all parties can share their opinions* to determine the best result for everyone.

Why use an A3?

- **provides a clear and concise method for reporting information**
- **accessible and understood by everyone**
- **proven continuous improvement**
- **develop collaborative problem solvers**
- **create and capture institutional memory for the team or organization**

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The A3 Report

Background	**Future State & Countermeasures**
- Why do we need to work on this? - Context - Importance	- Actions being taken to address the issue (what, who, when) - Quick fixes (Containment actions) - To Be process map
Current State	**Impact**
- Problem statement/definition - As Is process map - Scale of the problem (data)	- Results achieved - Trend graph (before/after)
Objective	**Follow-up**
- Target level of performance - Desired outcome	- Actions still required (what, who, when) - Learning points to share
Root Cause Analysis	
- Fishbone diagram - 5 Whys - Data (Pareto, Scatter diagram)	

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The A3 Report

Background - Why do we need to work on this? - Context - Importance	**Future State & Countermeasures** - Actions being taken to address the issue (what, who, when) - Quick fixes (Containment actions) - To Be process map DO
Current State - Problem statement/definition - As Is process map - Scale of the problem (data)	**Impact** - Results achieved - Trend graph (Before, after) CHECK
Objective PLAN - Target level of performance - Desired outcome	**Follow-up** - Actions still required (what, who, when) - Learning points to share
Root Cause Analysis - Fishbone diagram - 5 Whys - Data (Pareto, Scatter diagram)	ACT

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Two common types of A3s

Focus	Problem-solving A3	Design / Decision A3
Content/focus	Improvements (quality, cost, safety, logistics, safety, productivity, etc)	Policies, decisions, or new projects with significant investment/implementation
Person conducting	Novice/ journey-level	Experienced / manager-level
Analysis	Root-cause emphasis (fix problem / remove waste)	Improvement-based (new method / innovation)
PDCA Cycle	Document full PDCA cycle and verify results	Heavy ‘plan’ focus, check/act elements embedded in implementation
Example	Long RFI turnaround time	Alternative options for foundation decision or selecting the best trade partner

Based upon Sobek and Smalley - Understanding A3 Thinking

Exercise – A3 Decision-making

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Scenario – during the target value design process, the ‘value’ of the current roofing solution was questioned as it compares to the budgeted value

Task:

- Review your role and information about the roofing options
- As a team – discuss your ‘goal’
- Rate the options as they compare to:
  - System-specific performance requirements
  - Project Conditions of Satisfaction (CoS)
- As a team – select the option you feel is best for the project

Key:

\+ (exceeds expectations)

✓ (meets minimum requirements)

– (does not meet requirements)

Owner Approval

A/E Approval

CM Approval

Champion	Collaborators	Title	A3- ID#
Date	**Budget impact**	**Schedule Impact**	**Comments**

BACKGROUND

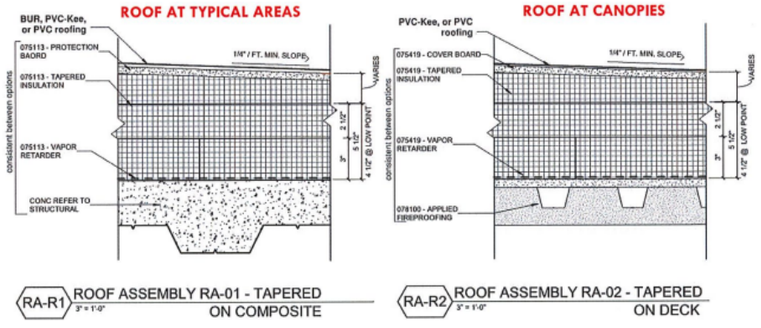
- During TVD Process the 'value' for the cost of the specified roofing solution was questioned against the goals/CoS of the project

Goal or Objective:

- <u>Meet minimum requirements at the lowest responsible cost</u>

ROOFING OPTIONS

- (Currently specified system) - Tremco Multi-Ply Built-Up w/PVC-Kee roof on canopy only
- Tremco Equivalent Multi-Ply (Built-Up) w/PVC-Kee roof
- PVC-Kee Membrane Single-ply (specific for typical roof areas)
- PVC Membrane Single-ply



ANALYSIS

\+ (exceeds expectations) ✓ (meets minimum requirements) – (does not meet requirements)

System specific requirements	Req't	BUR – Tremco	BUR – Tremco equivalent	PVC-Kee Single-ply	PVC Single-ply
Performance	Minimal punctures or multiple layers				
Installation	Meets current schedule				
Service life	20 years				
Sustainability	Meet current energy (envelope) requirements				
CoS Impact					
Local	< 150 miles				
Speed to market	Meet (or improve) schedule				

Budget

Targeted Budget:

$2.7 Million

Option	Budget implications
BUR-Tremco	
BUR – Tremco Equiv	
PVC-Kee – Singly ply	
PVC – Singly Ply	

DECISION MADE WITH DESIRED OUTCOMES

- Option selected: _____ _____
- No significant reduction in quality or performance
- _____
- _____

Exercise – A3 Decision-making

Scenario – during the target value design process, the ‘value’ of the current roofing solution was questioned as it compares to the budgeted value

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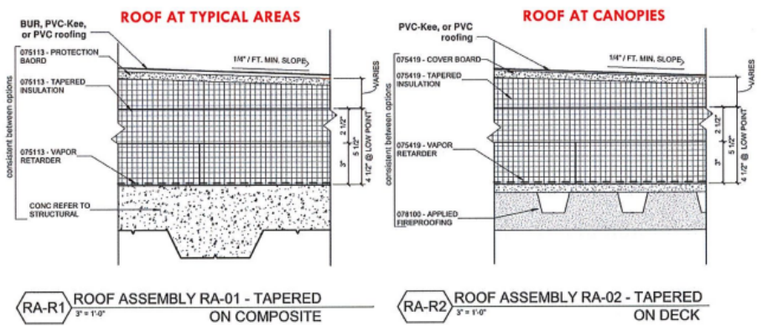

ANALYSIS

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System specific requirements	Req't	BUR – Tremco	BUR – Tremco equivalent	PVC-Kee Single-ply	PVC Single-ply
Performance	Minimal punctures or multiple layers	+	+	✓	✓ / -
Installation	Meets current schedule	✓ / -	✓	✓	✓
Service life	20 years	✓	✓	+	+
Sustainability	Meet current energy (envelope) requirements	✓	✓	+	+
CoS Impact					
Local	< 150 miles	+	+	-	✓
Speed to market	Meet (or improve) schedule	✓ / -	✓	-	✓

Budget

Targeted Budget:

$2.7 Million

Option	Budget implications
BUR-Tremco	$3.8 M
BUR – Tremco Equiv	$4.5 M
PVC-Kee – Singly ply	$5.1 M
PVC – Singly Ply	$2.5M

DECISION MADE WITH DESIRED OUTCOMES

- Option selected: **PVC Single-ply**
- No significant reduction in quality or performance
- reliability of meeting schedule
-

Actual A3 - the story / reflection

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PennState Health PMT APPROAL | CANNONDESIGN PMT APPROVAL | Barton Malow ALEXANDER A JOINT VENTURE PMT APPROVAL

CHAMPION	COLLABORATORS	TITLE	A3—Topic
Dan Myers	James Hannigan, Brian Avery	**Roof Type Selection**	008
DATE	**IMPACT TO BUDGET**	**IMPACT TO SCHEDULE**	**SIGNATURE APPROVAL**
2019-09-26	$200k Savings to $1M Overage	Negligible	

Hampden Medical Center

BACKGROUND & GOAL

- In hopes of reaching budget goals, the team has investigated additional roof system options which do not significantly decrease quality or performance in relation to the specified Tremco Multi-ply (Built-up) system

ROOFING OPTIONS

- Tremco Multi-ply (Built-up) w/ PVC-Kee roof on canopy only (Currently specified system)
- Tremco Equivalent Multi-ply (Built-up) w/ PVC-Kee roof on canopy only
- PVC-Kee Membrane Single-ply on all roof area
- PVC Membrane Single-ply on all roof area (Firestone, GAF, Manville, Sarnafil)

PARAMETERS

- No options were consider with a warranty less than 20 years
- All options must meet FM Global standards
- All cost data obtained from actual bid submission that have been extensively verified

PRO-CON ANALYSIS

Tremco Multi-ply (Built-up—BUR)

PROS
1. Multiple layers provide durability/redundancy
2. Proven history with PSH

CONS
1. 20 year warranty
2. Significantly exceeds current budget goals
2. Lack of movement accommodation requires expansion joints, blocking

PVC-Kee Membrane Single-ply

PROS
1. 30 year warranty (more than BUR)
2. Membrane accommodates some movement, reducing need for expansion joints and blocking
3. 80 mil of protection
4. Addition of Kee polymer provides additional durability over PVC only

CONS
1. Single layer provides less durability/redundancy than BUR
2. Significantly exceeds current budget goals

Tremco Equivalent Multi-ply (Built-up—BUR)

PROS
1. Multiple layers provide durability/redundancy

CONS
1. 20 year warranty
2. Significantly exceeds current budget goals
3. Requires additional blocking
4 Lack of movement accommodation requires expansion joints, blocking

PVC Membrane Single-ply (Firestone, GAF, Manville, Sarnafil)

PROS
1. 30 year warranty
2. Membrane accommodates some movement, reducing need for expansion joints and blocking
3. 80 mil of protection
4. Significantly less expensive than Multi-ply (Built-up) and PVC-Kee

CONS
1. Single layer provides less durability/redundancy than BUR
2. More sensitive to compatibility with interfacing materials (Asphalt, Polystyrene, etc)

Intent of this document is to memorialize decisions made on the project

DECISION MADE WITH DESIRED OUTCOMES

- No significant reduction in quality or performance
- Provide project savings
- Scope and schedule certainty based on local materials and manpower.

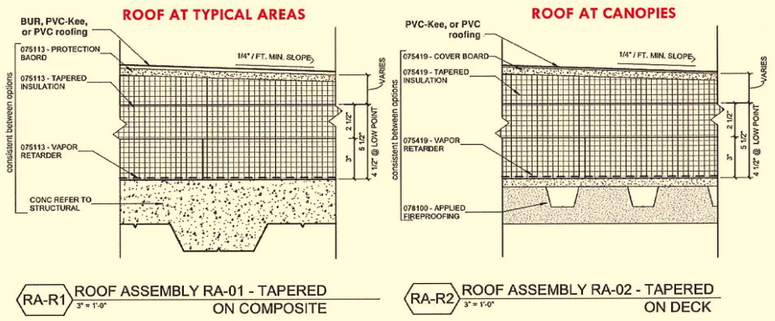
BUDGET IMPACT

- Current Roofing Budget: **$2,715,880**
- Tremco Multi-ply (Built-up) Roof System as specified: Lowest Responsible Bid **$3,768,936**
- Tremco Equivalent Multi-ply (Built-up) Roof System: Lowest Responsible Bid **$4,509,100**
- PVC-Kee Membrane Single-ply Roof System: Lowest Responsible Bid **$5,137,100**
- PVC Membrane Single-ply Roof System: Lowest Responsible Bid **$2,521,936**

RECOMMENDATION

- **USE PVC MEMBRANE SINGLE-PLY ROOF SYSTEM**

ADDITIONAL INFORMATION



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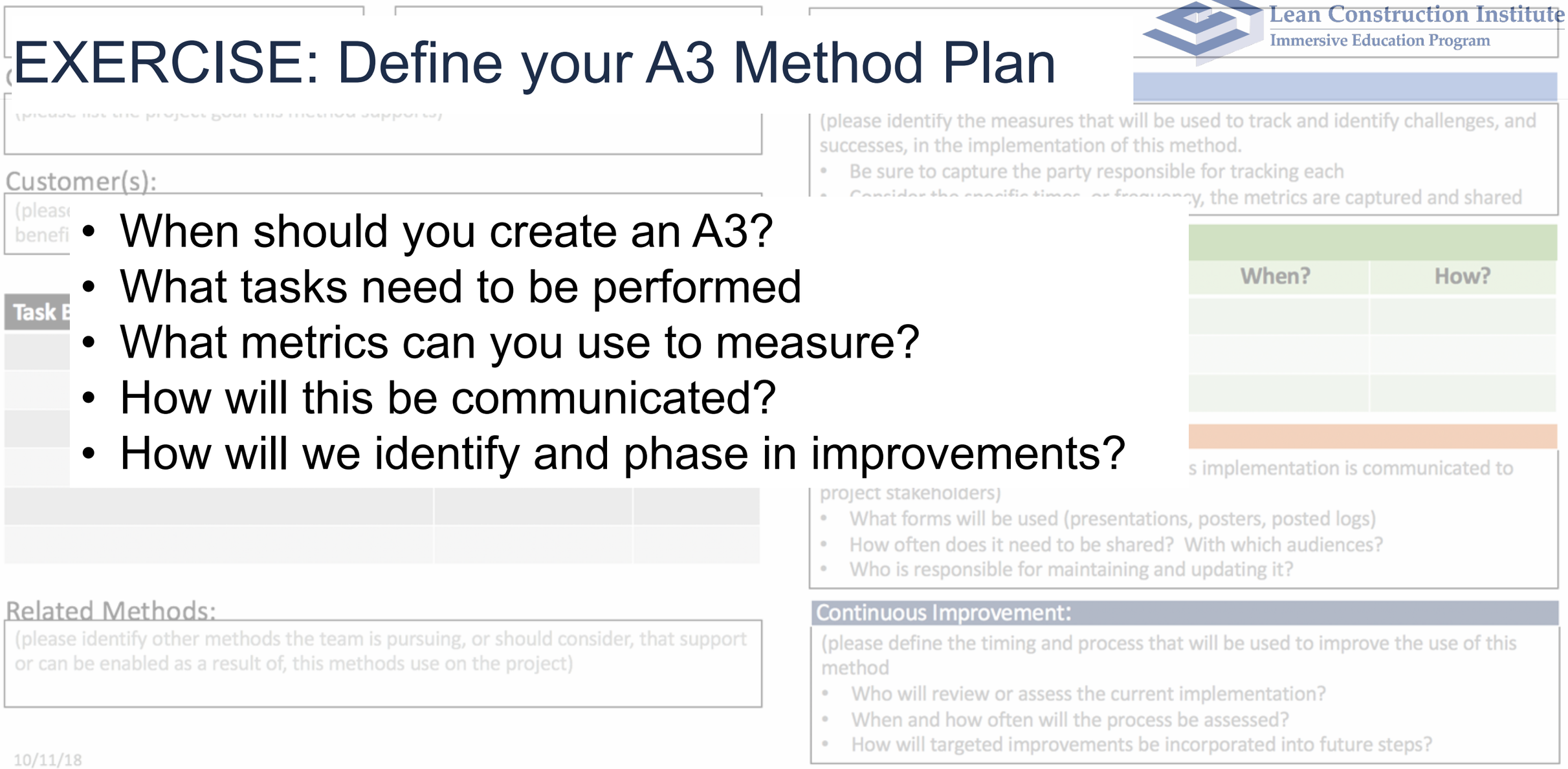
EXERCISE: Define your A3 Method Plan

- When should you create an A3?
- What tasks need to be performed
- What metrics can you use to measure?
- How will this be communicated?
- How will we identify and phase in improvements?



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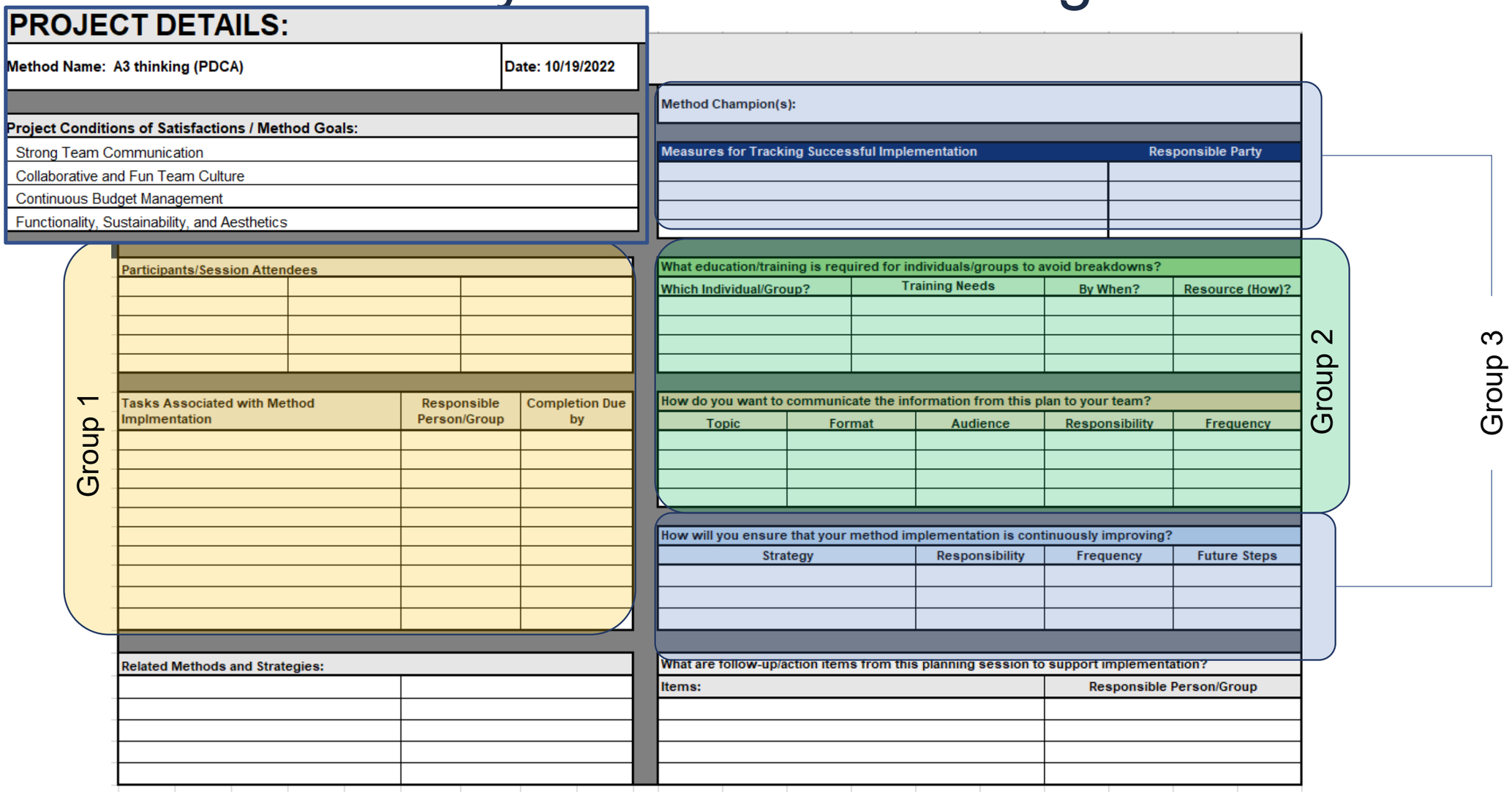
EXERCISE: Define your A3 Decision Mgmt Plan



PROJECT DETAILS:

Method Name: A3 thinking (PDCA)	Date: 10/19/2022

Project Conditions of Satisfactions / Method Goals:

- Strong Team Communication
- Collaborative and Fun Team Culture
- Continuous Budget Management
- Functionality, Sustainability, and Aesthetics

Method Champion(s):

Measures for Tracking Successful Implementation	Responsible Party

Participants/Session Attendees

What education/training is required for individuals/groups to avoid breakdowns?

Which Individual/Group?	Training Needs	By When?	Resource (How)?

How do you want to communicate the information from this plan to your team?

Topic	Format	Audience	Responsibility	Frequency

How will you ensure that your method implementation is continuously improving?

Strategy	Responsibility	Frequency	Future Steps

Tasks Associated with Method Implmentation	Responsible Person/Group	Completion Due by

Related Methods and Strategies:

What are follow-up/action items from this planning session to support implementation?

Items:	Responsible Person/Group

Group 1

Group 2

Group 3

EXERCISE: Define your A3 Plan

- When should you create an A3?
- What tasks need to be performed?
- What metrics can you use to measure?
- How will this be communicated?
- How will we identify and phase in improvemer

Customer(s):

Related Methods:

(please identify other methods the team is pursuing, or should consider, that support or can be enabled as a result of, this methods use on the project)

10/11/18

Organization Method

A3 Thinking (PDCA)

A3 thinking is a documentation approach for problem-solving and reporting on project-related critical decisions using the PDCA as a method of continuous improvement.

PDCA stands for Plan - Do - Check - Adjust. It is a method of continuous improvement that focus on a cyclic process of planning, execution, monitoring, and learning.

Construction project teams are dynamic because members come from different backgrounds and possess different skill-sets. Therefore, decision-making can be complex when everyone wants to contribute.

A3 thinking provides a common collaborative platform to channel the differences into creating high quality decisions based upon systematic thinking focused on the project value and continuous improvement.

Benefits:
- Helps create high-performing teams
- Improve collaboration and problem-solving skills
- Helps create high quality project updates for decision-makers

Success / Progress Metrics:
- Key decisions that were made using A3
- Team's confidence level from those decisions
- Consistency in A3 report format structure

Suggested Resources:
- A3 owner/champion/expert
- Project Lean Deployment Plan
- Reporting platform/medium
- Book: Transforming Design and Construction - chapter on A3 Thinking

Potential Education needs:
- Who will lead A3 thinking sessions?
- Who needs to be included to participate in the process?
- Who will own and who will use the A3s?
- Who will develop the A3 report structure?

Task Breakdown Planning Questions:
- What do you want to use the A3 thinking process for and how frequently?
- How will you determine who needs to be included to participate in the process?
- How will you define the problem to solve? For example: divide a larger problem into smaller components and have multiple A3 owners to each component.
- How will you encourage brainstorming during the A3 thinking sessions?
- How will you define the criteria for a go-no go decision?

Communication Planning:
- How will you define the A3 thinking process and share it?
- How will you develop the A3 report format structure?
- How will you share the A3s with the team?

Continuous Improvement:
- How will you update the A3 reports to capture new information?
- How will you assess the effectiveness of the A3 report structure?
- How will you assess the A3 thinking process performance?
- How will you assess A3 champion performance?

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Discussion

- When will you use an A3?
  - Who will lead or facilitate / participate?
- What Metrics will you use to monitor?
  - How will you manager and improve?
- How will you share A3s with the team?
  - Who needs training?

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PROJECT DETAILS:

Method Name: A3 thinking (PDCA)	Date: 10/19/2022

Method Champion: Emily
Facilitators: Tom (owner PM), Rich (Asst Super), Sue (Arch)

Project Conditions of Satisfactions / Method Goals:
Strong Team Communication
Collaborative and Fun Team Culture
Continuous Budget Management
Functionality, Sustainability, and Aesthetics

Measures for Tracking Successful Implementation	Responsible Party
How long to create and reach decision (duration / speed to decision)	Champion
Team engagement (avg number of participants creating A3s)	Facilitators
Number of A3s created	Facilitators
Number of people trained in A3 thinking	Champion

Participants/Session Attendees		
Decision-makers	(PM, Proj Arch, Owner Rep)	
Cluster representatives for topic		
Experts on problem / system		
Trade partner(s) for system		

What education/training is required for individuals/groups to avoid breakdowns?

Which Individual/Group?	Training Needs	By When?	Resource (How)?
Cluster groups	participant (Deep Dive)	immediate	outside class / trainer
Decision makers / leaders	Introductory	early / immediate	champion to provide
Facilitators & Champion	Trainer	immediate	outside class / trainer
All project team members	Introductory	rolling	part of onboarding

Tasks Associated with Method Implmentation	Responsible Person/Group	Completion Due by
Generate A3 template	Champion	next cluster mtg
Define process for organizing / identifying 'right' attend	Champion + leadership	next cluster mtg
Facilitator identified (list of 3) to support A3 creation	leadership	2 weeks before training
- facilitator should be from outside topic/cluster		
Review / finalize decision criteria for A3 template	Champion	by scheduled training
Communicate process / decision-making to full team	Leadership	cluster mtg after training
Capture maintain decisions / knowledge from past A3s	Champion + facilitators	ongoing (monthly)

How do you want to communicate the information from this plan to your team?

Topic	Format	Audience	Responsibility	Frequency
Introduction / Awareness	Onboarding	all team members	shared (see onboarding)	weekly / bi-weekly
Log of Exisitng A3s	Post to 'Colo' wall	Project team	Champion / facilitators	as completed
Email distribution	snapshot of new A3	Project team	Facilitators	as completed
Dashboard	Share at daily huddle	project leaders	facilitators	daily / as appropriate

How will you ensure that your method implementation is continuously improving?

Strategy	Responsibility	Frequency	Future Steps
Versioning of A3 template w/ improvements	Champion	monthly to start	cross-project review
Track requests for training / facilitator needs	Champion	monthly, then as needed	
A3 quality reviews - use of visuals, push back by de	Champion / Facilitators	monthly to start	external audit/review

Related Methods and Strategies:	
Conditions of Satisfaction	
Work Clusters	
Choosing by Advantages (decision-making)	
Problem identification techniques ->	Gemba walks, Ohno Circles, Spaghetti diagrams

What are follow-up/action items from this planning session to support implementation?

Items:	Responsible Person/Group
Find a trainer!!	Project Manager / Champion
Reach out for example templates form project team members	Facilitators / company representatives
Where to store working A3 files and Post completed A3s?	Facilitator

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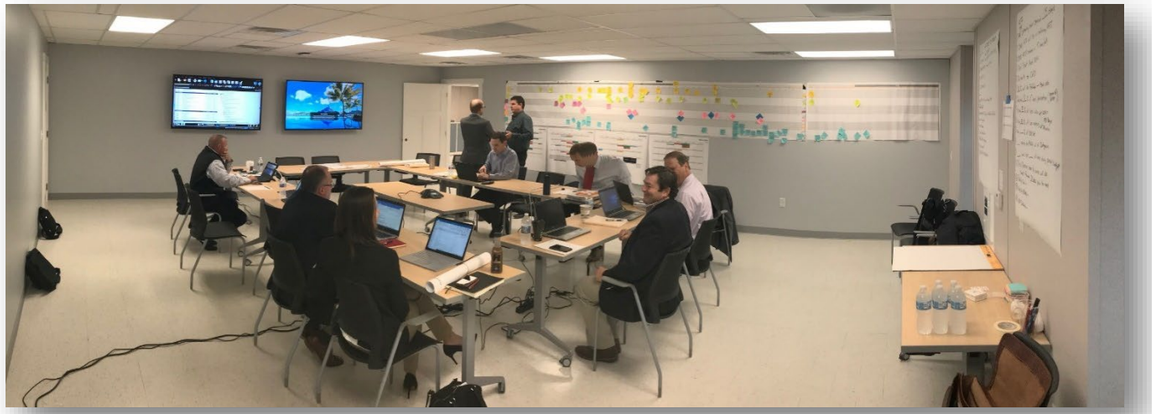
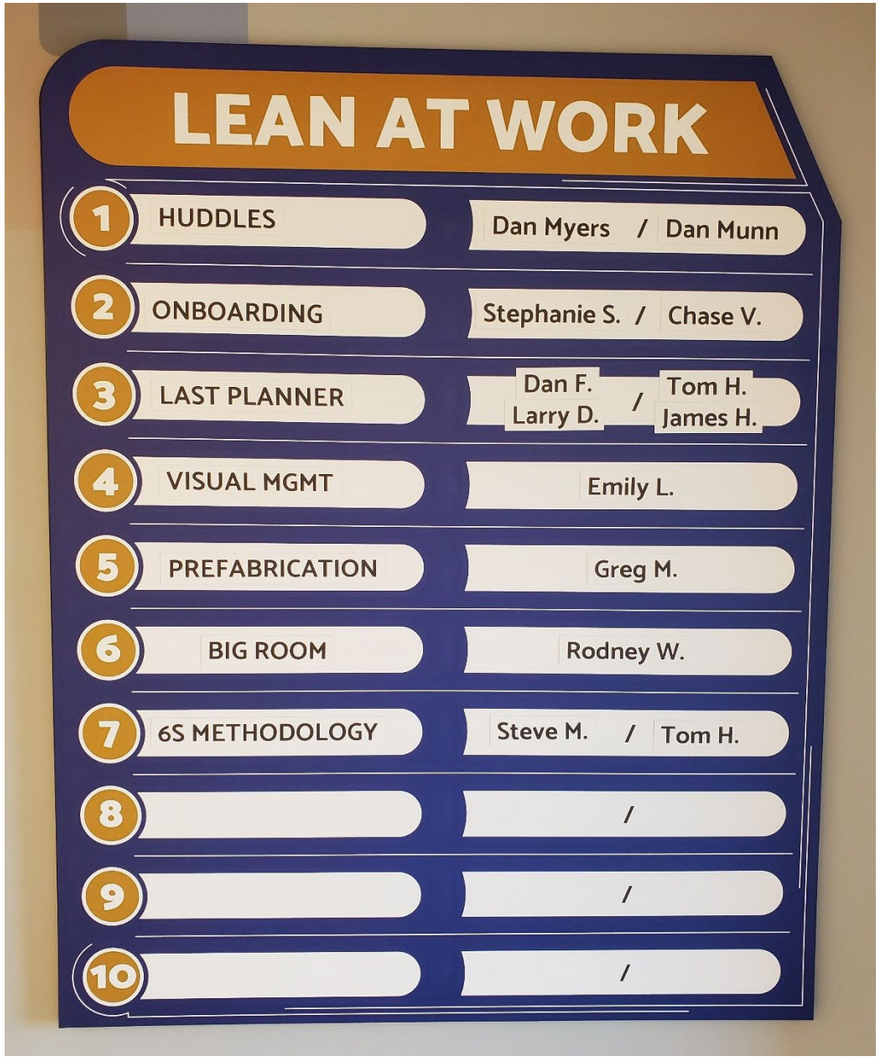
Step 3: Plan Each Lean Method

- Easier to develop for methods that you have some experience using
- Focus on method(s) that are starting early (small bites)
- Post, share, and engage others to read & improve the plan!
- The plan is a living document – remember to ‘Check and Act/Adjust’





Lean Deployment Planning Guide
Step 4: Integrate Methods into Project Plan

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Transforming the Built Environment

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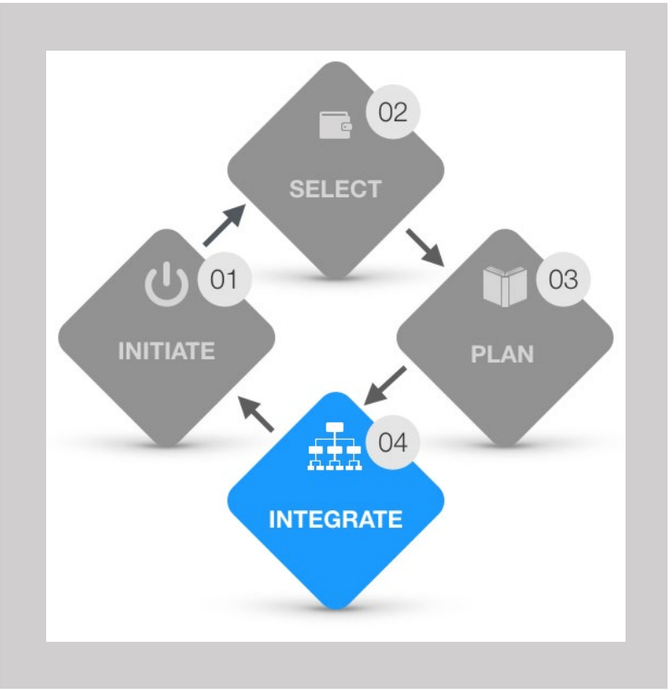
Step 4: Integrate Methods to Project Plan

Record project conditions of satisfaction and associated methods

Consolidate project measures for tracking alignment to implementation plan

Consolidate all training to be completed on the project

Consolidate all communication strategy(ies), and continuous improvement opportunities



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Project Summary Dashboard

Project: ABC Recreational Complex Renovation

Lean Champion(s): Jane Doe

Project Conditions of Satisfaction
Rapid issue-detection and resolution
Continuous and reliable workflow
High performing project team
Effective , efficient, and timely team communications
High performing building design

Organization Methods	Operating System Methods
Onboarding	Last Planner System
Work Clusters	Target Value Design
Gemba Walk	Big Room Planning
A3 Thinking/Reports	Visual Management

Lean Implementation Metrics:	Status
All lean methods champions identified within 30 days of lean implementation planning kick-off	
Lean plan completed within 90 days of kick-off	

Education and Training Metrics	Status
New person onboarding completed within 30 days of hire	
All lean champions trained within 30 days of kick-off	
All lean trainings completed within 90 days of kick-off	

Communication Metrics	Status
Project issues identified did not cause project delay	
Identified project issues resolved within 15 days	
Zero change orders post issue of detailed design docs.	

Continuous Improvement Metrics	Status
Plus-deltas recorded from all collaborative sessions	
Deltas addressed in future sessions	
Pluses repeated in future sessions	

PennState Health Hampden Medical Center

Barton Malow | ALEXANDER A JOINT VENTURE

7/16/2020	#19	Monthly	195
Report	Dashboard	Dashboard Frequency	Current # Active Team Members

SAFETY REPORT: 1 INCIDENTS SINCE LAST REPORT | 32 DAYS WITHOUT INCIDENT

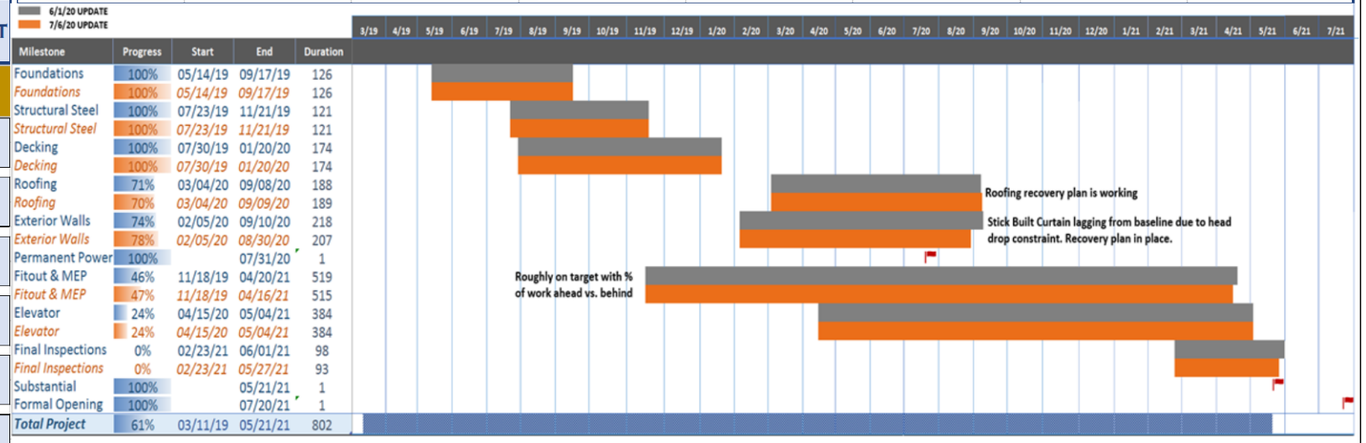
MAJOR MILESTONES

9/1/2020	SITE: Hardscaping Start Around Building	43 DAYS	9/23/2020	ENCLOSURE: Roofing Complete	65 DAYS
7/17/2020	SITE: Final Plan Recordings	-3 DAYS	8/10/2020	ENCLOSURE: Exterior Walls Complete	21 DAYS
10/1/2020	SITE: Start Landscaping	73 DAYS	8/29/2020	ELECTRICAL/ IT: Permanent Power	40 DAYS
10/25/2020	SITE: Phase 1 HOP Completion	97 DAYS	8/12/2020	INTERIORS: Start Installation of Ceiling Grid	23 DAYS
11/1/2020	SITE: Start Phase 2 - Good Hope Rd.	224 DAYS	8/21/2020	INTERIORS: Start Installation of Millwork	32 DAYS
3/1/2021	SITE: Installation of Traffic Signals	224 DAYS	8/15/2020	PREFAB: CUP Start Up	26 DAYS
			8/15/2020	CANNON: Area A Fitout	26 DAYS

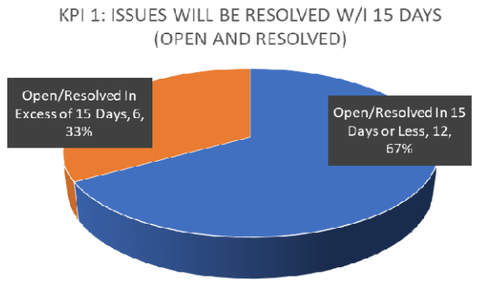
SITE: HURDLES/ DESIGN DISCUSSIONS
Remaining Utility Coordination
Oxygen Tank Coordination
Fuel Oil Coordination
Meter Pit Sumps
Landscaping in the fall 2020 / spring 2021
Backfill near CUP
STRUCTURE/ENCLOSURE:
Overhead Boom Support Structure
Final Roof Equip. Weight Checks
Interior/Overhead Support Steel
MEP Penetration Coordination
Misc. Final Detailing
Enclosure Testing
Roofing / Exterior Cold Formed in Progress
Dry-In Constraint Removal
PREFAB:
Interior AHU Piping
Rooftop ductwork

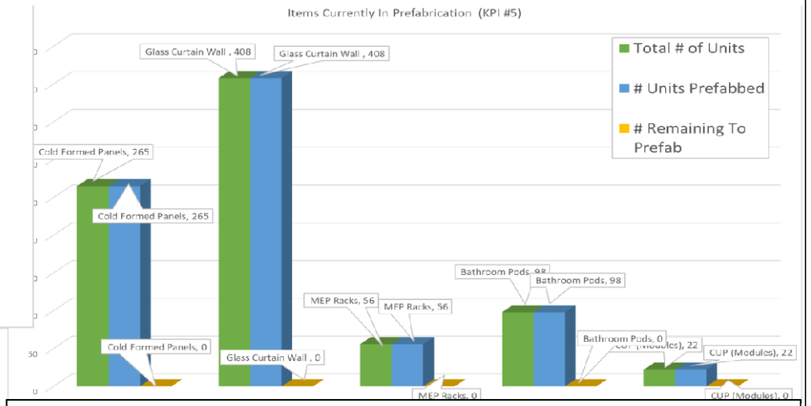
MEP/FP/CUP:
Large Chandelier Design
Post Fire Smoke Evacuation System
INTERIORS:
Porcelain Tile
Keying Schedule
Finalizing Door Hardware (electrical/security)
Floor Plan Changes
OR Ceiling
Pest Control
Glass Railing @ Tear Drop

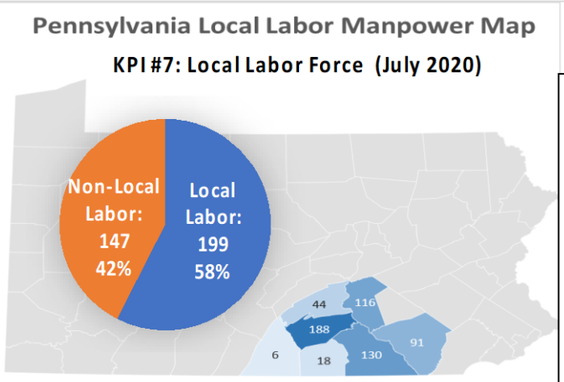
CONDITIONS OF SATISFACTION

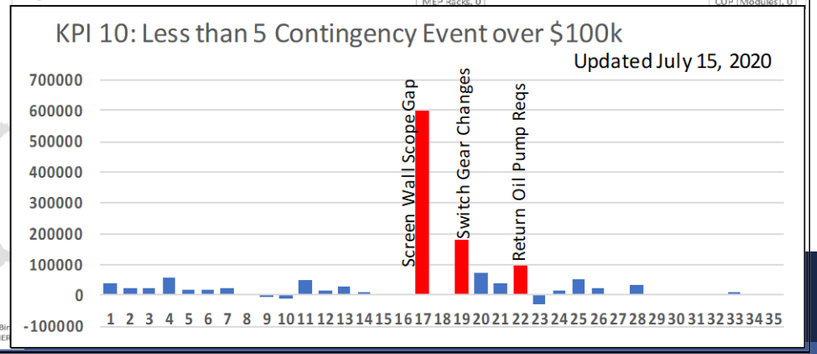


Milestone	Progress	Start	End	Duration
Foundations	100%	05/14/19	09/17/19	126
Foundations	100%	05/14/19	09/17/19	126
Structural Steel	100%	07/23/19	11/21/19	121
Structural Steel	100%	07/23/19	11/21/19	121
Decking	100%	07/30/19	01/20/20	174
Decking	100%	07/30/19	01/20/20	174
Roofing	71%	03/04/20	09/08/20	188
Roofing	70%	03/04/20	09/09/20	189
Exterior Walls	74%	02/05/20	09/10/20	218
Exterior Walls	78%	02/05/20	08/30/20	207
Permanent Power	100%		07/31/20	1
Fitout & MEP	46%	11/18/19	04/20/21	519
Fitout & MEP	47%	11/18/19	04/16/21	515
Elevator	24%	04/15/20	05/04/21	384
Elevator	24%	04/15/20	05/04/21	384
Final Inspections	0%	02/23/21	06/01/21	98
Final Inspections	0%	02/23/21	05/27/21	93
Substantial	100%		05/21/21	1
Formal Opening	100%		07/20/21	1
Total Project	61%	03/11/19	05/21/21	802









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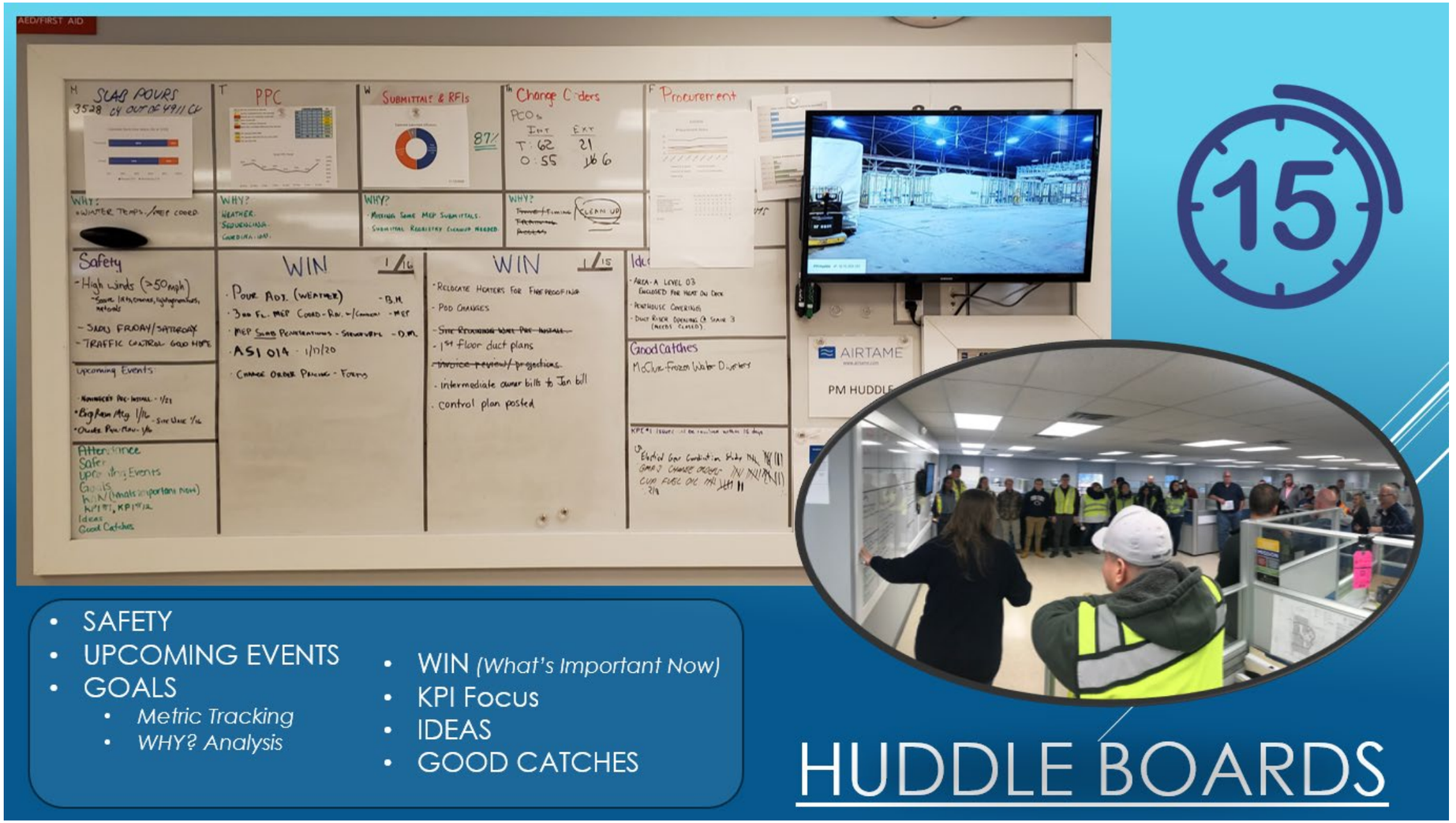
Daily Huddles

- Standard agenda
- Anyone can run
- Safety
- Metrics (each day)
- Why?
- WIN
- Ideas
- Kudos



Method Name:	Daily Huddles	Champion(s) Name:	Date:	6/4/2019
		Larry D./ Greg M./ Em		

Goal(s):

- Speed to Market — RollUp Information from Huddle into the Last Planner System
- Strong Team Communication — Trackable Metrics
- ***Accountability, Creates Culture of Team Collaboration***
- To Resolve Issues Quickly, Bring to attention — Standard Agenda
- Celebrate Win, Good Catches

Customer(s):

Superintendents/ Project Management (BMA) and Subcontractor Management

Metric(s):

Metric(s):	Responsible Party
Effective Communication (not sure how to track?) Team Health 5 Whys	Jeff Work Sessions
Have past constraints been resolved, or are they still outstanding? Log/trackin	Jeff Work Sessions
Attendance Tracking early Issues and resolution thru huddles Tracking issues that creat	Jeff Work Sessions
Short goals, not bogging team down with out of reach goal timeframes/ Onboarding Succ	Jeff Work Sessions

Education Plan:

Level	Who?	When?	How?
Facilitator		asap	LCI webinars, LCI Books, BM LC Facilitator/Trainer (Jeff Creighton)
Tracker (Monitor of Daily Huddle Issues)	Participants of Huddle		

TASK BREAKDOWN	Responsible Party	Milestone
Create the standard agenda	Superintendents (PM's)	
Define the metrics on the huddle board	Any project team member	
Create the Huddle Board	Larry D/ Em	
Identify the location for the Huddle Board	Larry D/ Em	
Identify a process for how constraints will be resolved	Any project team member	
Establish a cadence for how often the huddle meets	Larry D/ Em/ Greg M	

Communication Plan:

- White board, huddle board
- Report/notes developed at the end of each huddle and saved on Box
- Picture of huddle board saved on Box

Related Methods and Strategies:

- Last Planner System
- Work Cluster Groups
- Visual Management
- Onboarding
- Gemba Walks/ 6S Observations

Continuous Improvement:

- Plus/Deltas (Good Catches)
- Evaluation of the processes that have been developed for the Huddle Board – are they working? Do they need revised?
- Team feedback
- 5 Why Analysis

Daily Huddles

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Play video

Resources

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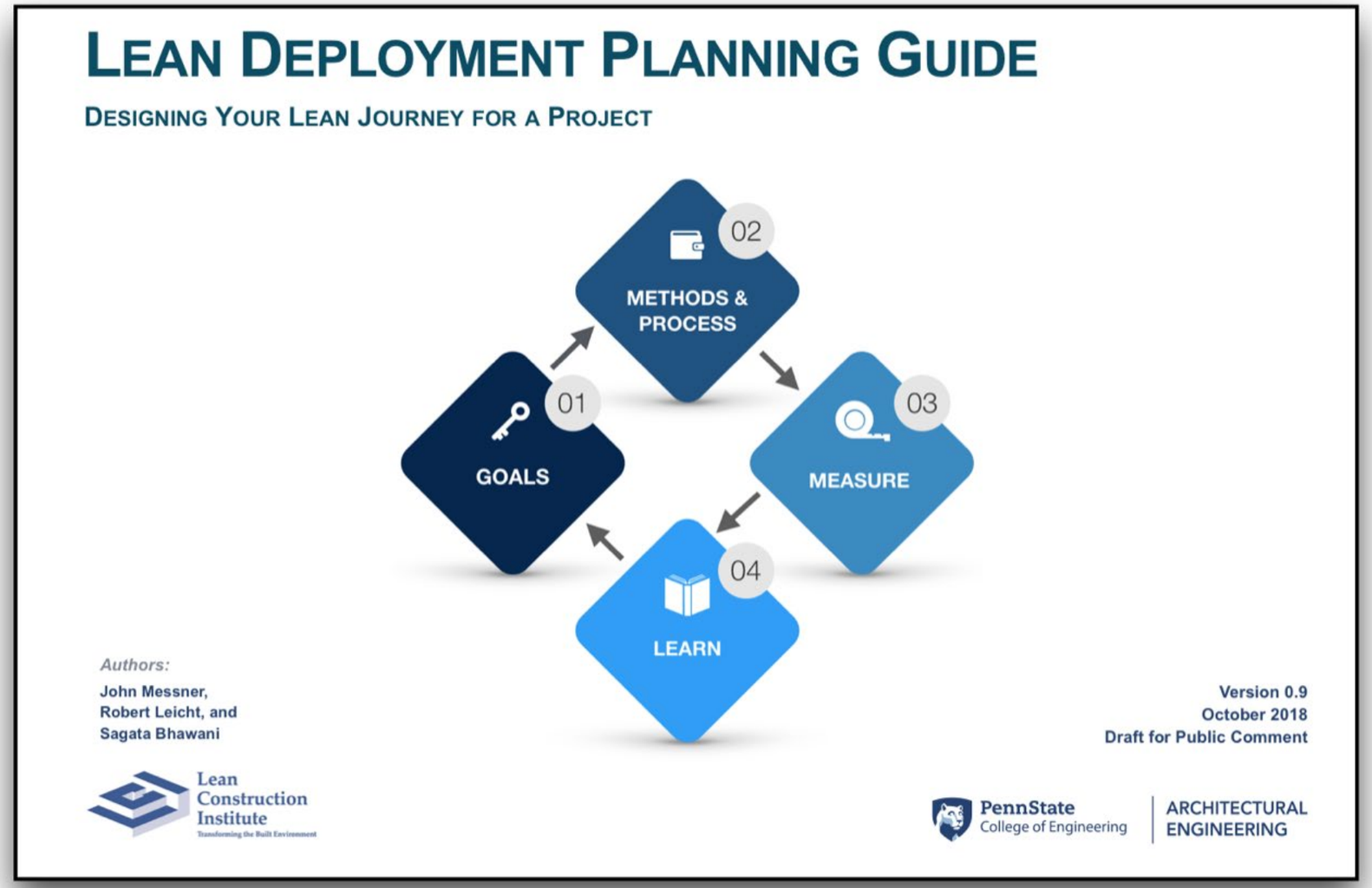

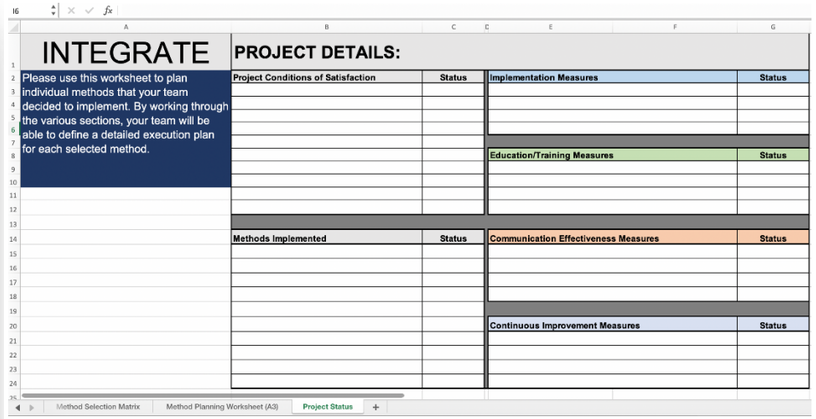

Download at cic.psu.edu/lean

Summary and Lessons from Hampden Medical Center Project

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Transforming the Built Environment

Current Progress: Hampden Project

Building handed over to Owner
May 2021

First Patient – October 1, 2021

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Happy Client! Lancaster Project

Project Started One Year After Hampden

Set To Open Summer 2022

$240M Greenfield Hospital

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How can I apply this to my project?

- Start with Lean Deployment Guide Day 1
- Identify Lean Champion Early; Champions by Method
- Support by Owner and Leadership
- Be deliberate with onboarding process and have continuous training
- Don’t take on too much – do what’s right for your project
- Continually promote a Lean culture
- Go slow to go fast and take time to plan

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Insights

- Start with ‘Why’, followed by ‘How’, and then ‘What’
- Be proactive versus reactive
- What matters should be measured and what is measured should matter
- Focus on continuous improvement
- Delivery method can significantly impact implementation
- Training and coaching are core parts of the planning and implementation
- Challenging to institutionalize within an organization

Questions?

Conduct Plus/Delta

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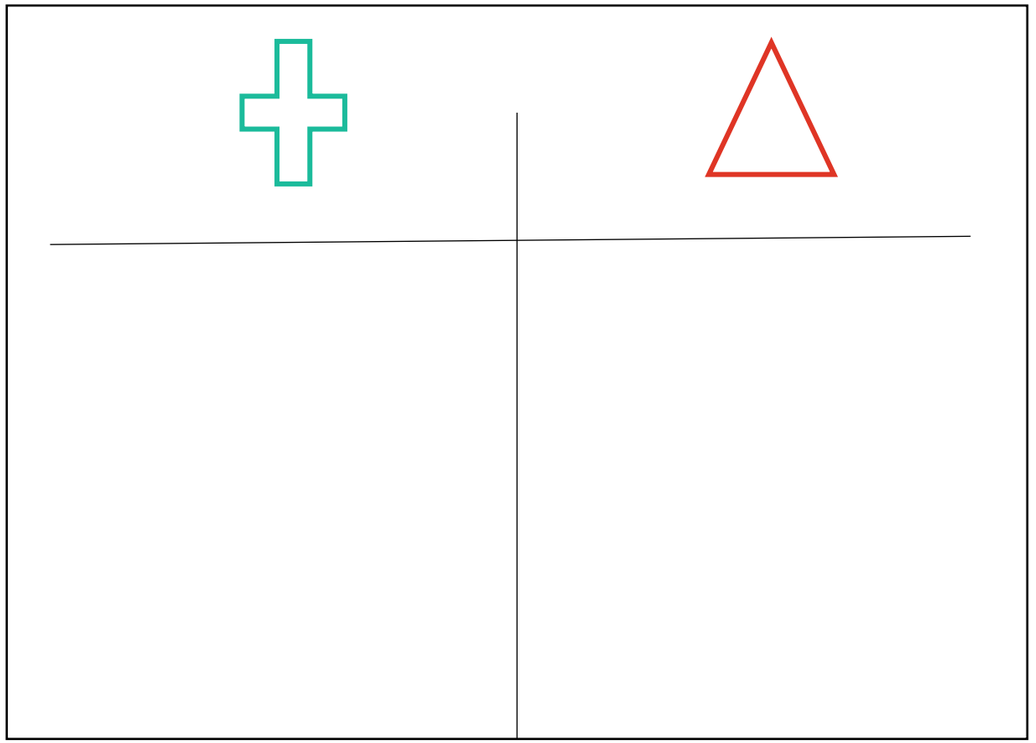
Conduct a Plus/Delta
Capture on a flip pad or white board:

Plus: What produced value during the session?

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



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Contact us!

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- Emily – emily.lowe@butz.com
- Sagata – jim101@psu.edu

QR Code for Lean Guide Download website

eLearning Courses

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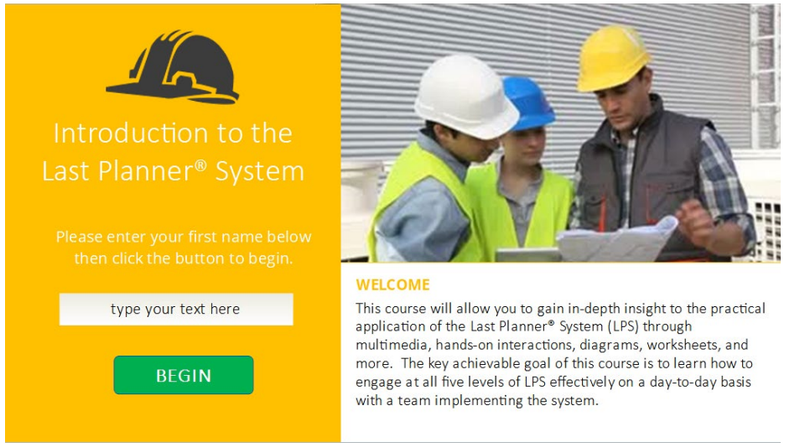
Available now:

- Introduction to the Last Planner System®
- Introduction to Lean Project Delivery
- Lean in the Design Phase
- Effective Big Room
- Target Value Delivery



This concludes The American Institute of Architects Continuing Education Systems Course

Lean Construction Institute info@leanconstruction.org