

# **THE TOYOTA KATA METHODOLOGY FOR MANAGING THE MATURITY LEVEL OF LAST PLANNER® SYSTEM**

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# AGENDA

- INTRODUCTION
- MATURITY ASSESSMENT
- TOYOTA KATA METHODOLOGY
- DEVELOPMENT OF THE PROPOSAL
- CASE STUDY
- RESULTS
- CONCLUSIONS

# INTRODUCTION

- Daniel (2017) and Lagos (2017) show that LPS implementations are short-term and partial.
- For Ballard and Tommelein (2016), the LPS is a system of interconnected parts and omitting one of the parts destroys the ability of the system to perform its functions.
- Implementation frameworks have been proposed, which highlight the importance of the company-project relationship, participation of the teams in the system, measurement of implementation, monitoring of improvements.

# MATURITY ASSESSMENT

The methodology for proper implementation should include tools to measure the level of implementation of LPS

- Degree of implementation (GEPUC)
- Diagnostics of practice and implementation of the LPS (Daniel, 2017)
- **LCI Lean IPD Health and Maturity Assessment Approach**

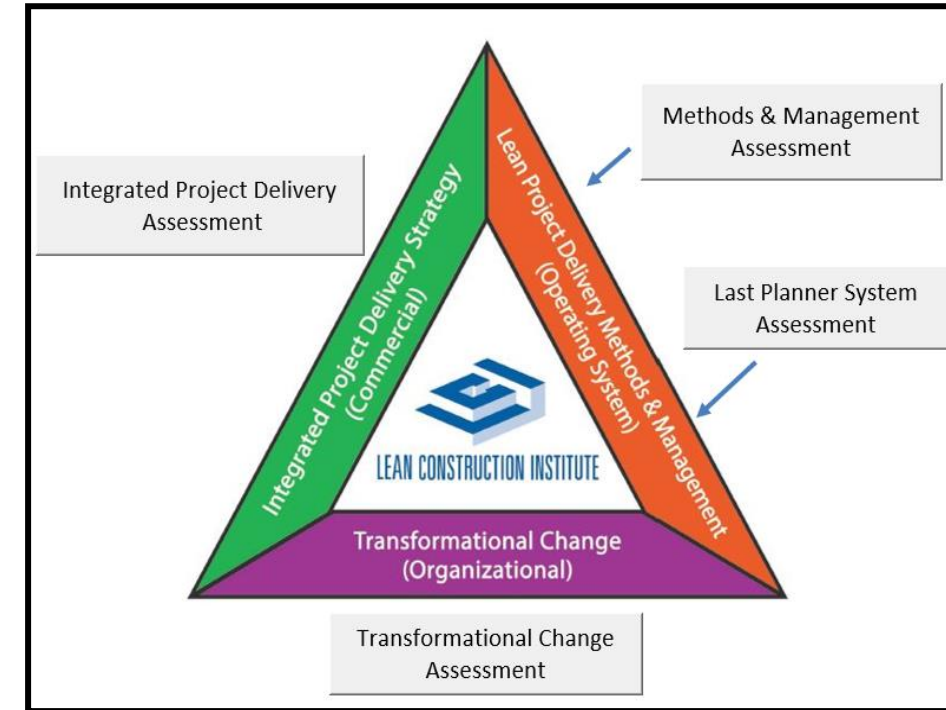


Figure 1. Report of the 4 maturity diagnoses of the “LCI Lean IPD Health and Maturity Assessment Approach”

# TOYOTA KATA METHODOLOGY

Also, a methodology is necessary that incorporates and trains the project team to manage an effective implementation in constant evaluation and improvement.

- Kaizen events
- Plan-Do-Check-Act (PDCA)
- Rapid Cycles
- A3 Thinking
- **Toyota Kata (TK).**

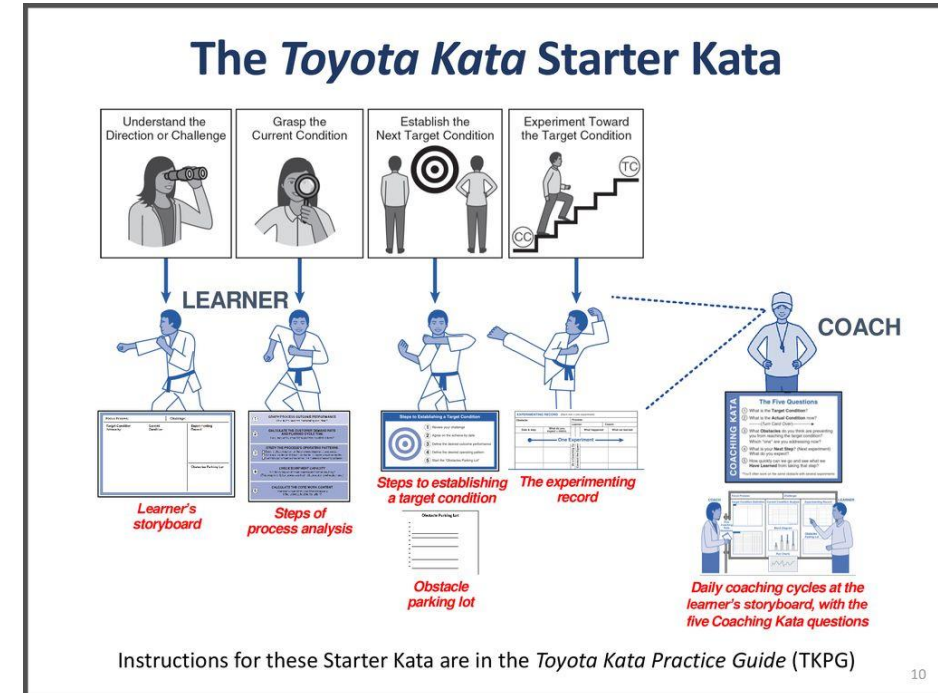


Figure 2. General diagram of the Toyota Kata methodology.

# DEVELOPMENT OF THE PROPOSAL

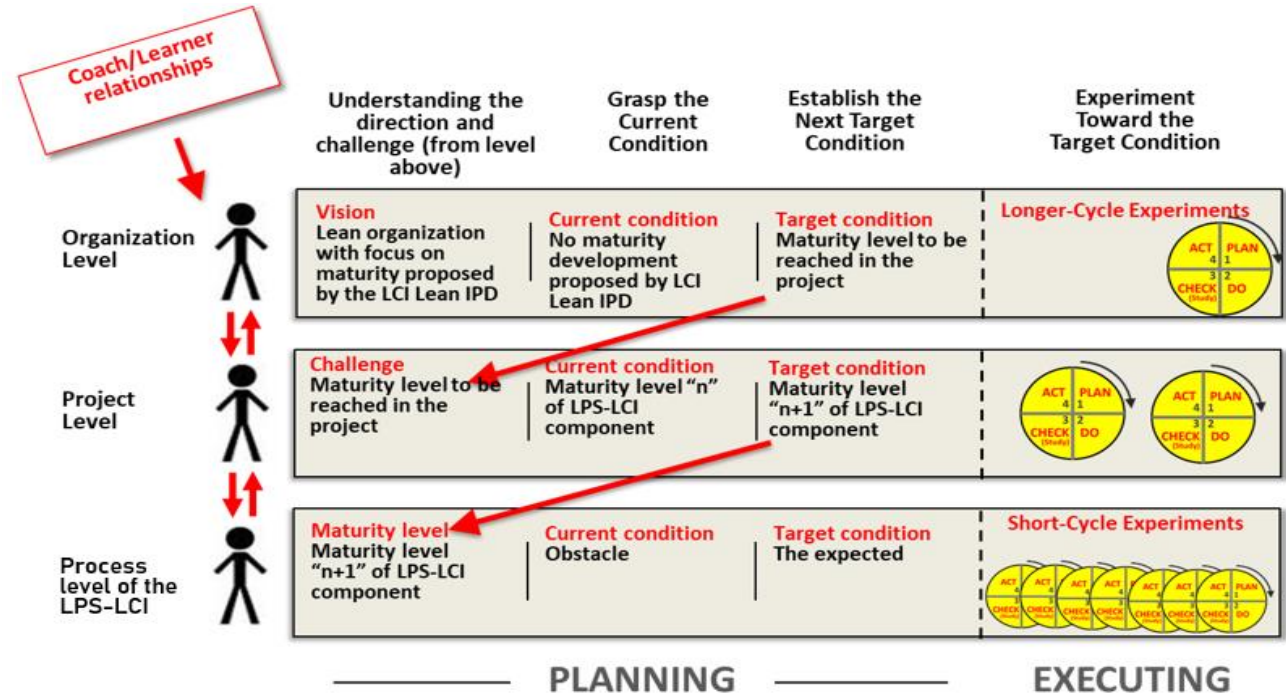
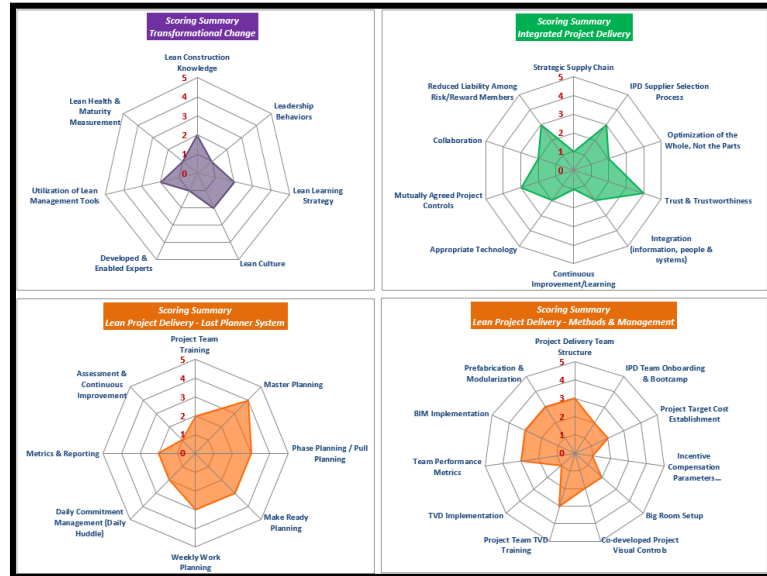
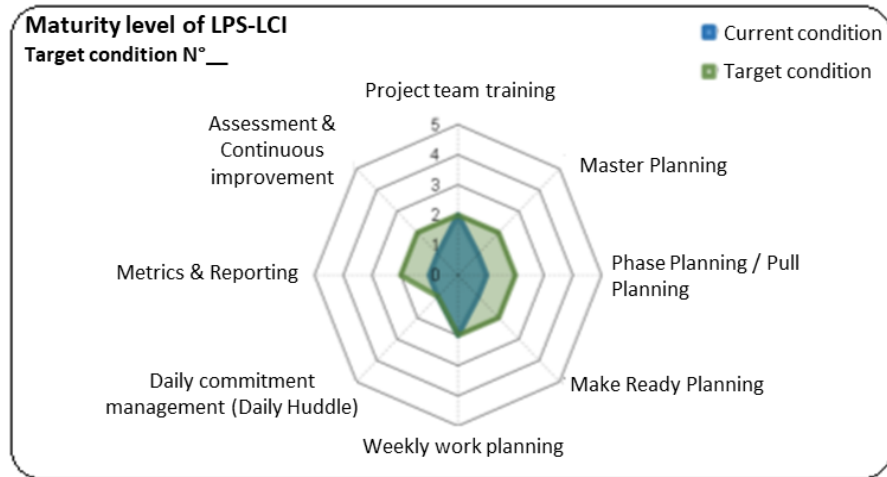


Figure 3. Manage the maturity Lean at all levels of the company

# DEVELOPMENT OF THE PROPOSAL



**Maturity levels:**

Level 0	Level 1	Level 2	Level 3	Level 4	Level 5
<b>Unaware</b>	<b>Aware</b>	<b>Learning</b>	<b>Competent</b>	<b>Teaching</b>	<b>Innovating</b>
No knowledge or understanding of the Lean element	Knowledge of Lean element is demonstrated but not implemented	Most of the element is not implemented or is implemented on an ad-hoc basis	Element is mostly implemented at a competent level	Element is successfully implemented at a robust level of sophistication with key project leaders actively coaching implementation	Element is entirely implemented and the project is contributing Best Known Practices to industry for this element

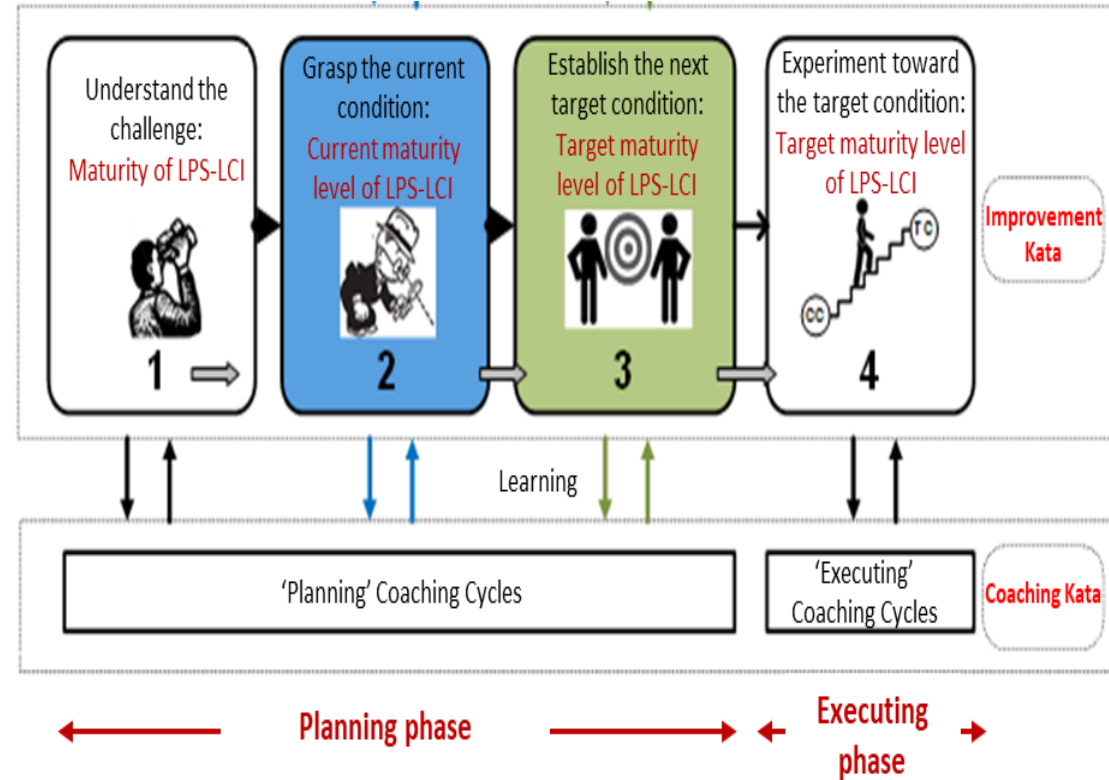


Figure 4. Manage the maturity level of LPS in the project



## CASE STUDY

Object: Coliseum Construction  
Contract type: Construction  
Duration: 12 months  
Budget: \$ 4 million  
Study time: 17 weeks  
Phases: Structures

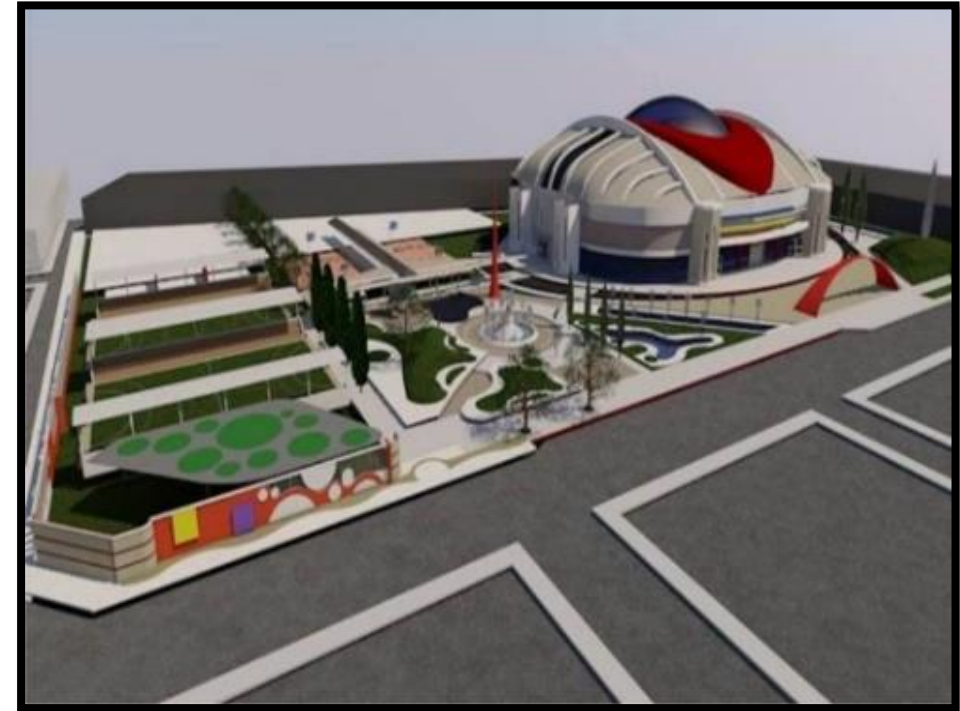


Figure 5. Rendered model of stadium



# Manage the lean maturity in the company

Step 1: Understand the vision.

- Lean culture based in the “LCI Lean IPD health and maturity assessment” considering: IPD, Methods and Management, Transformational Change, and LPS.

Step 2: Grasp the current condition.

- A meeting was held with the leader of the organization and project leader

Step 3: Establish the next target condition.

- Implementation of LPS since it is a methodology that is the gateway to the Lean culture

Step 4: Experiment toward the target condition.

- They were identified together with the project leaders

# Manage the maturity level of LPS in the project

Step 1: Understand the vision.

- Decision to implement the LPS up to a level 3 (competent).

Step 2: Grasp the current condition.

- Evidence was collected on the maturity status of LPS and at the "Maturity Assessment".

Step 3: Establish the next target condition.

- The team decides which component of the system to improve.

Step 4: Experiment toward the target condition.

- Detect obstacles and execute improvement actions.

# Manage the maturity level of LPS in the project

LPS components \ Condition	Current condition 0	Target condition 1	Target condition 2	Target condition 3
Project Team Training	Level 0: Unaware	Level 2: Learning	Level 3: Competent	
Master Planning	Level 1: Aware		Level 2: Learning	
Phase Planning / Pull Planning	Level 0: Unaware		Level 2: Learning	Level 3: Competent
Make Ready Planning	Level 1: Aware		Level 2: Learning	Level 3: Competent
Weekly Work Planning	Level 0: Unaware	Level 1: Aware	Level 2: Learning	Level 3: Competent
Daily Commitment Management (Daily Huddle)	Level 0: Unaware		Level 1: Aware	Level 2: Learning
Metrics & Reporting	Level 0: Unaware	Level 1: Aware	Level 2: Learning	Level 3: Competent
Assessment & Continuous Improvement	Level 0: Unaware	Level 1: Aware		Level 2: Learning

Table 1. Maturity level of LPS components defined in each target condition

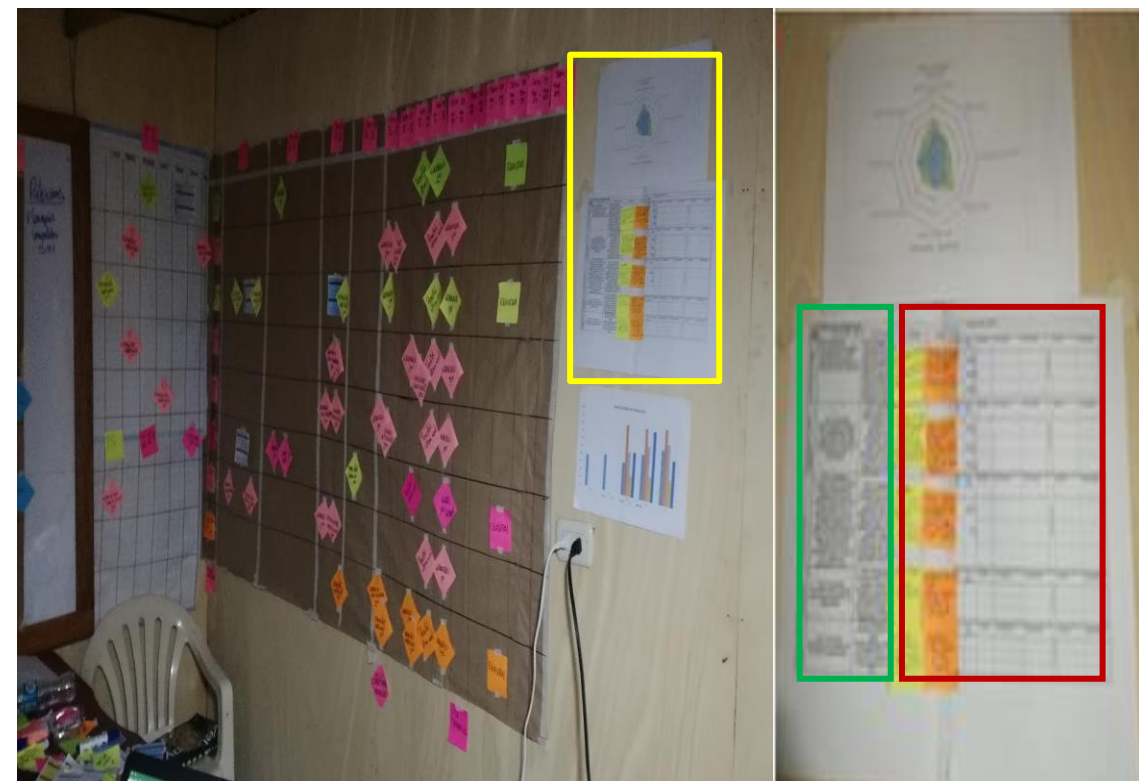


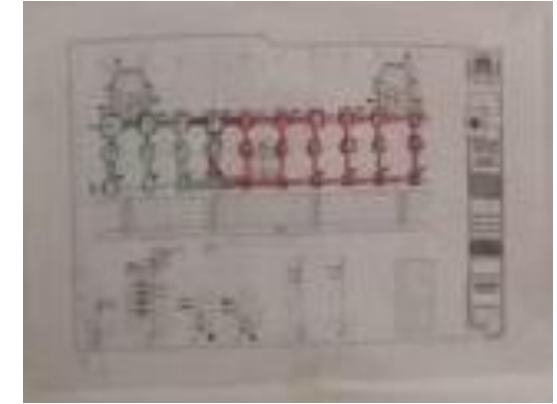
Figure 7. Storyboard in the Big Room

# Manage the maturity level of LPS in the project

Improvement Kata				
Challenge: Maturity of the LPS-LCI - Target condition #1				
Component	Current condition	→	Target condition	
Weekly Work Planning	Level 0 (Unaware): foreman take instruction from superintendent.		Level 1 (Aware): foreman participate, focus mainly on their own scope.	

Coaching Kata								
Target condition #1								
PDCA cycles								
Obstacles	→	Planned action	→	What do you expect?	→	What happened	→	What we learned
Lack of procedures and lack participation.	PDCA cycle 1	Meeting with foremen and production to indicate the form of work and request that they generate a plan for week 43.		Have a base weekly plan.		The staff met on Monday, however the project still does not have a standardized nomenclature, they proceeded to use construction plans.		It is necessary to use a common language (sectorization) to facilitate the measurement of the weekly plan.
	PDCA cycle 2	The team discusses the planning results for week 43. Plan for week 44.		Raise awareness about the element, through the presentation of the PPC results, and begin to provide solutions from the RNC.		On Saturday a meeting was held to show the results of the PPC (33%). A root cause analysis was performed, the main causes being poor planning and lack of prerequisites. Active participation is observed.		The team is aware of the importance of weekly planning. Show a sense of urgency to learn more about LPS.



Item	Lugar	Responsable	Descripción del trabajo	Ejecución del trabajo							Observaciones	Fecha de inicio	Fecha de fin				
				Planificado	Completado	Porcentaje	Estado	Comentarios	Acciones	Responsable							
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

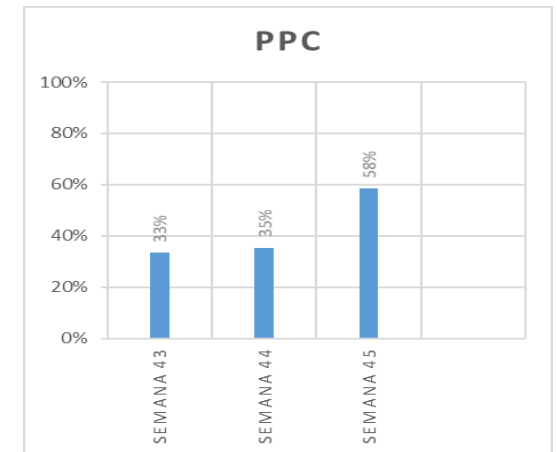


Figure 8. Storyboard for Target condition #1 – Weekly Work Planning – 2 Obstacles - Obstacle #1

# Manage the maturity level of LPS in the project

Improvement Kata								
Challenge: Maturity of the LPS-LCI - Target condition #2								
Component		Current condition	→	Target condition				
Phase Planning / Pull Planning		0 = Unaware: team working to a dictated Gantt or other type project schedule Not Scored		2 = Learning: Common language, defining milestone deliverable, struggle with commitment and negotiation not documenting all handoffs, sessions running long, pull plans not fitting within milestone dates.				
Coaching Kata								
Target condition #2								
PDCA cycles								
Obstacles	→	Planned action	→	What do you expect?	→	What happened	→	What we learned
There are empirical yields, the work sequences are not defined at the operational level, the work has not been divided.	→	Define the deliverables of the structures phase. Define an estimate of returns for the jobs.	→	Structures phase planning	→	Production and the researcher defined the deliverables. Performance based on expert judgment (engineers, foremen) The sequence to be followed in situ was defined.	→	The team has a plan and a way to name the deliverables for each team.

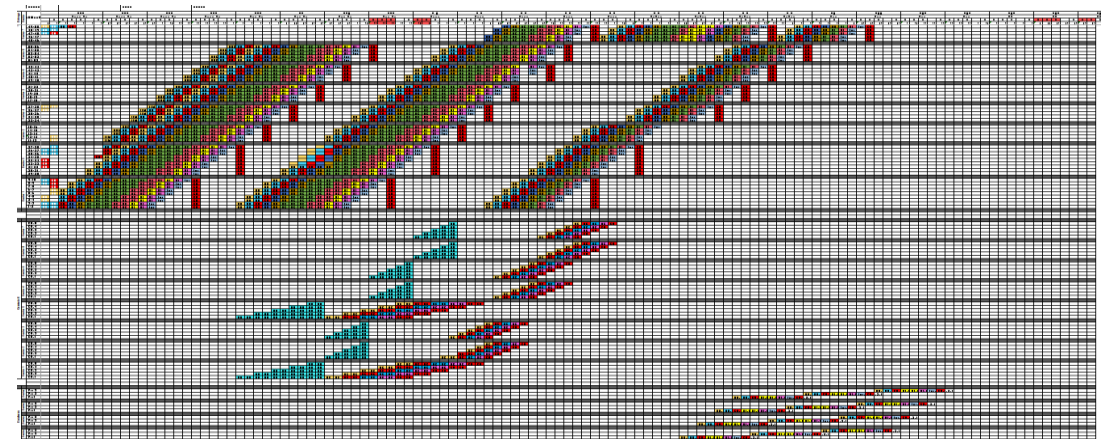


Figure 9. Storyboard for Target condition #2 - Phase Planning / Pull Planning - 5 Obstacles - Obstacle #1

# RESULTS

To reach the final maturity:

- All components of the LPS were implemented.
- 3 target condition were established.
- Detect 44 obstacles.
- Execute 52 improvement actions.

# CONCLUSIONS

Applying the methodology is a good start on the Lean journey and fosters a strong relationship between the company and the project.

The proposed methodology makes it possible to take advantage of the full capacity of the LPS, through the implementation of all its components.

The methodology used allows to manage the people of the project in the execution, in addition to adapting the LPS to the requirements of the project.



**THANK YOU!**

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