



2019
MONTERREY

1^{er} Congreso Anual
11 - 12 - 13 de Noviembre

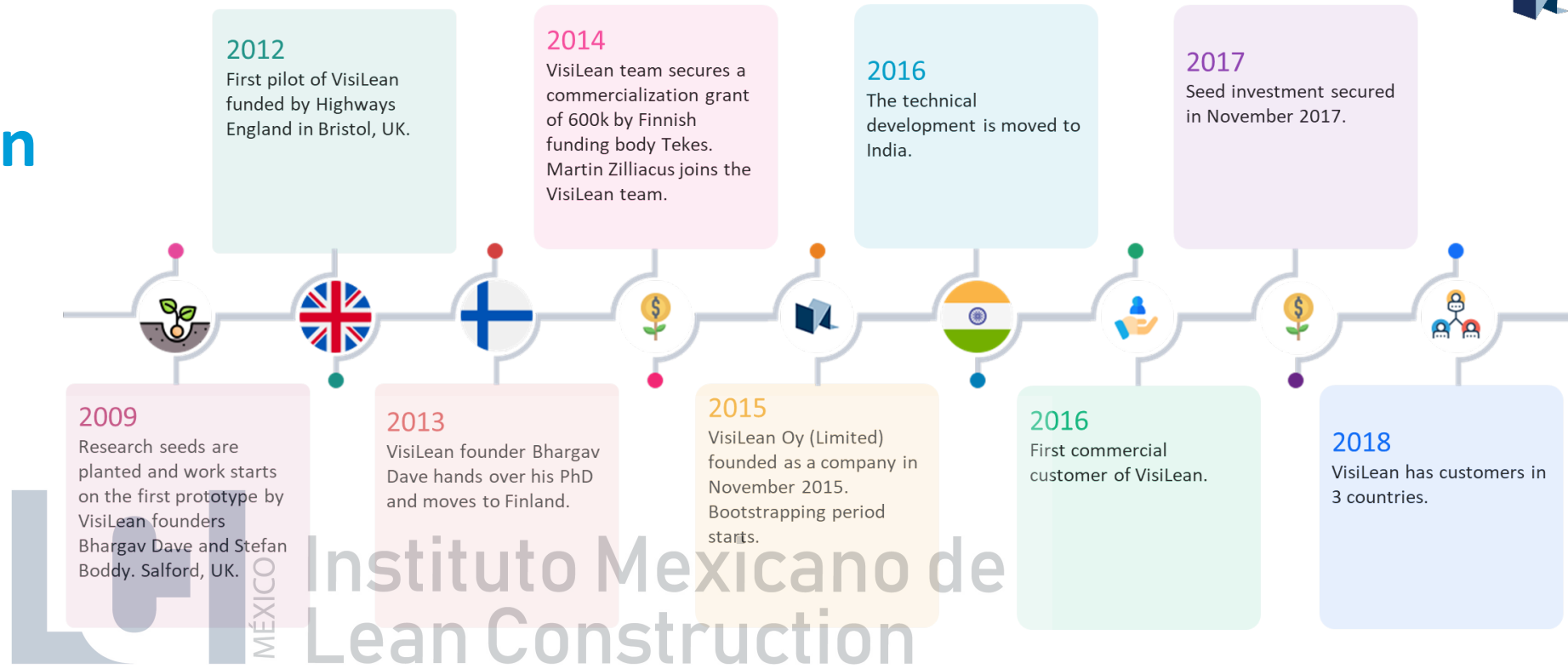


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Lean Construction

VisiLean / Mace



About VisiLean



CORE TEAM



Dr. Bhargav Dave, (CEO)

Experienced Lean and BIM practitioner and researcher in the construction industry



Martin Zilliacus, (COO)

New business professional and innovator with strong R&D background in ICT



Stefan Boddy (CTO)

Software expert and researcher with 15+ years in construction industry

ADVISORS



Prof. Lauri Koskela

Internationally recognised authority on lean construction



Prof. Rafael Sacks

International expert on Lean and BIM

PROJECT BACKGROUND

Project: Data centre (3 storey)

Site area: 95 (Ha), greenfield project

(290 acres)



The data centre buildings include roof top mechanical equipment and measure up to 8.6m to the roof eaves, with a parapet wall up to 9.1m and a roof mounted plant screen wall around roof mechanical equipment up to 15.9m. The site infrastructure includes access roads, car parking, internal roads, entrance security hut, landscaping and a 220kV substation.

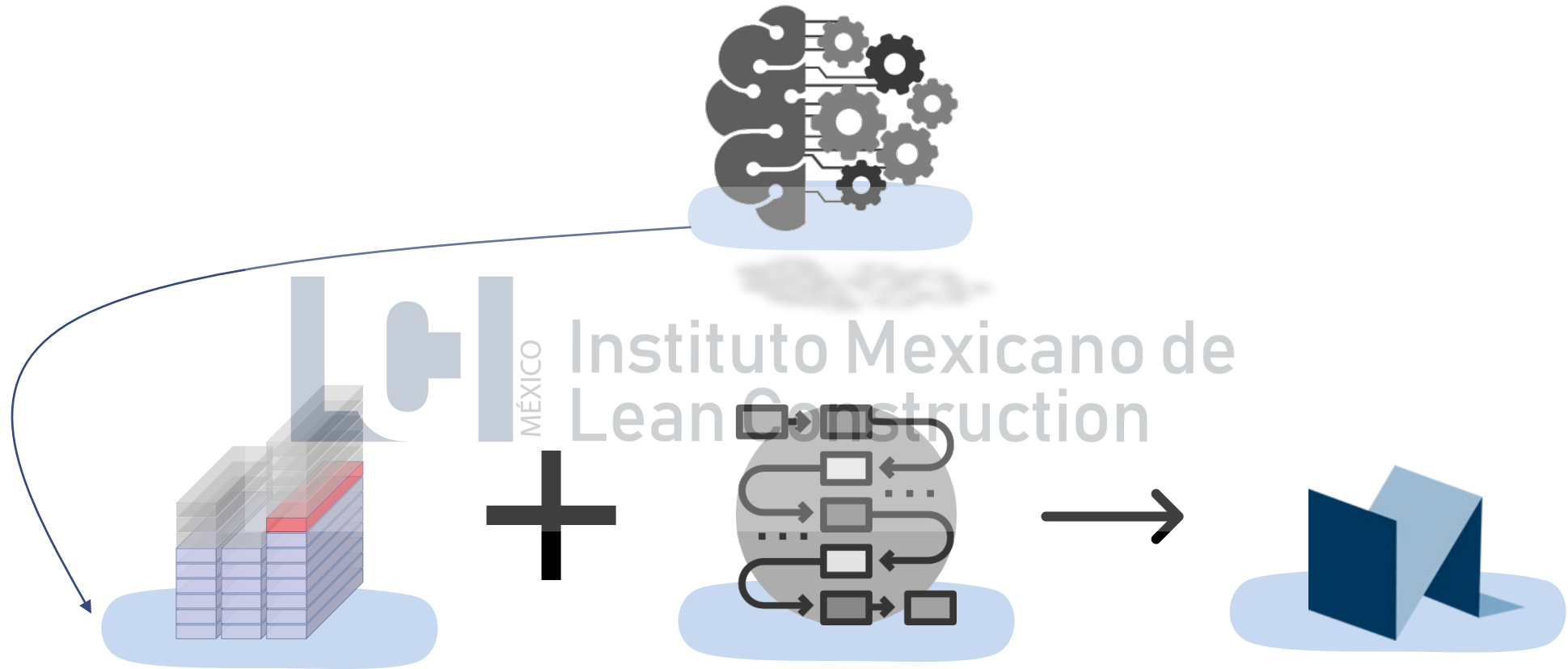
Challenges

- Planning projects flexibly and adapting to changes during projects
- Communication between teams.
- Tracking activities daily and being informed on issues immediately
- Identifying problems before they seriously affect projects
- Measuring project performance

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METHODOLOGY : LEAN AND BIM INTEGRATION

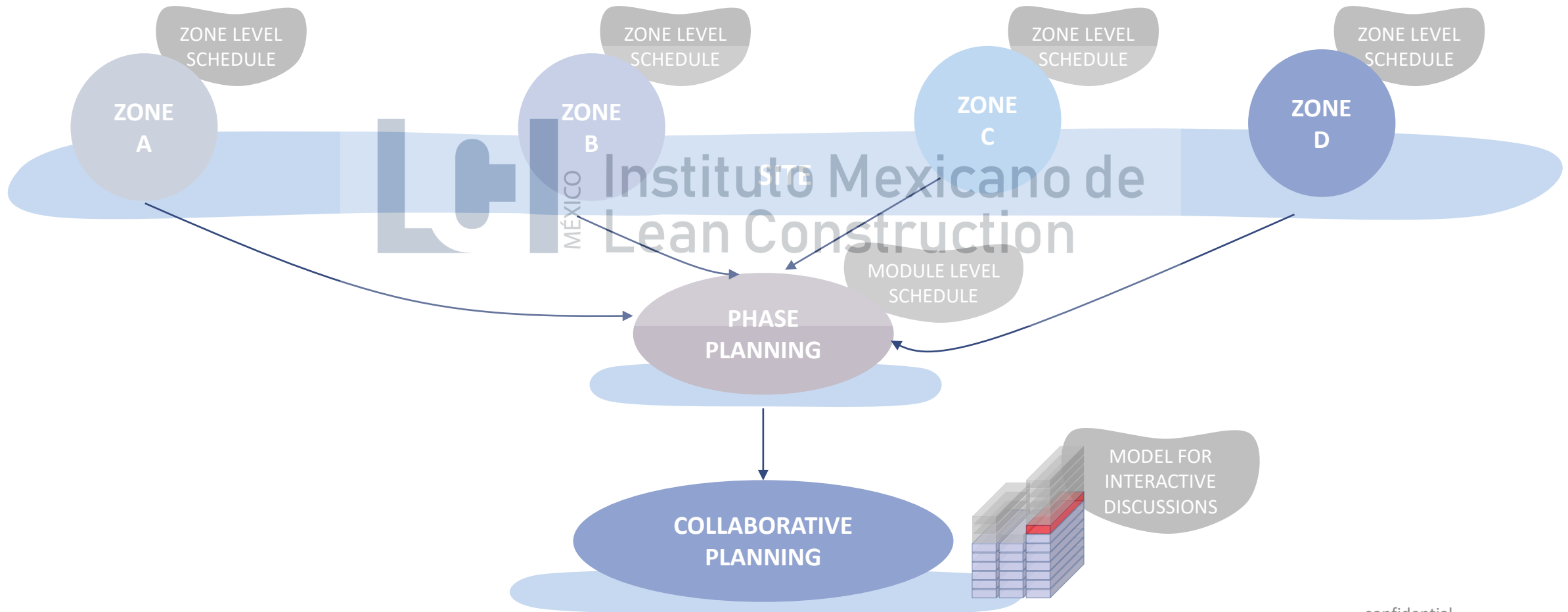


BIM overcomes the hurdles to efficiently handle the product

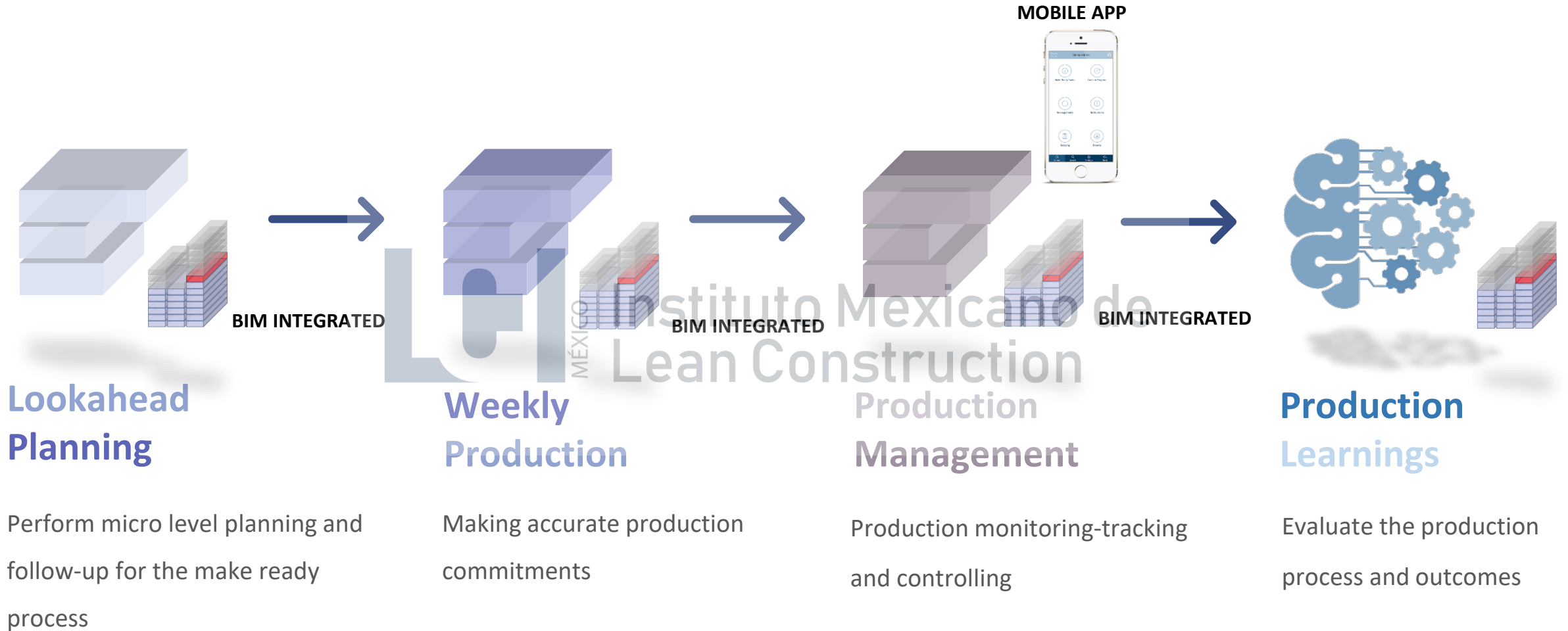
Lean addresses the problems inherent to construction processes

VisiLean

PROCESS IMPLEMENTED



PROCESS IMPLEMENTED



**DIGITAL
DISPLAY
ROOM**

Master Plan

3D Model

Associated Drawing



MÉXICO

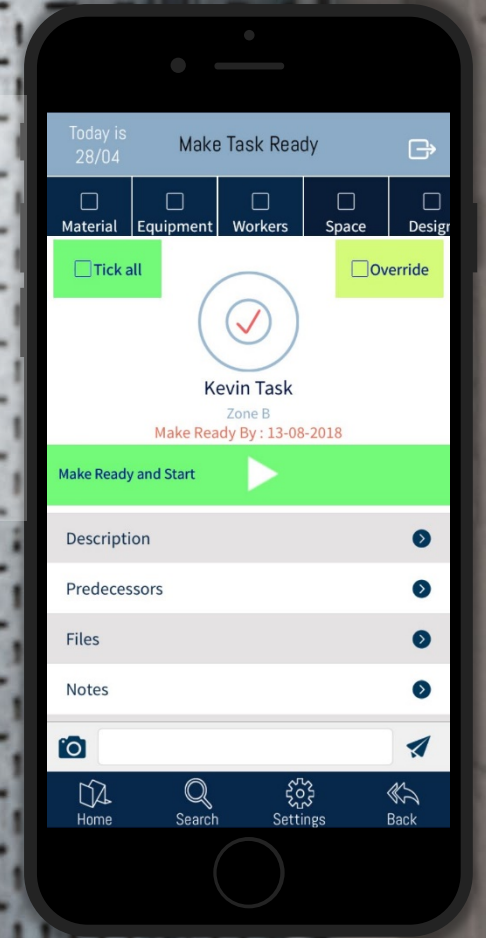
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Lean Process Digitalised

Real-Time Data Capture



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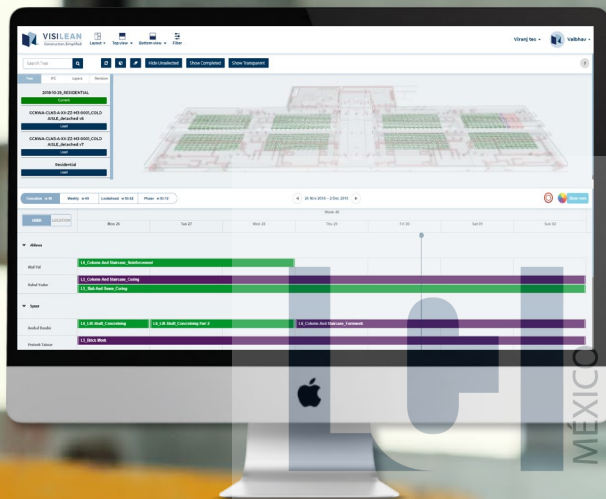
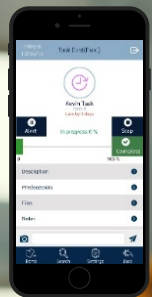
CREATING ELABORATED SCHEDULES

The screenshot displays a software interface for project scheduling. On the left, a 'Tree' view lists multiple 'Cold Aisle Mod.' tasks. The central area shows a '3D view' of a building's structural grid. Below this is a Gantt chart with a task list on the left and a bar chart on the right. The task list includes tasks like 'DH_A22_L1', 'DH_A22_F0', 'DH_A22_L2', 'DH_A20', 'DH_A20_L1', 'DH_A20_F0', and 'DH_A20_L2'. The Gantt chart shows task durations and dependencies. A 'Property Panel' on the right contains fields for 'Name', 'Description', 'Owner', 'Start Date', 'End Date', 'Makeready Date', 'Status', 'Priority', 'Location', and 'External ID'. Red lines connect text annotations to specific elements in the interface.

Element linking
With the microlevel schedule

Makeready details feeding
Makeready date, location, priority, important documents, qualities, plan constraints, notes etc.

Schedule elaboration
With the last-planners during phase planning



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Last Planner System

- 1) Live updates on the dashboard
- 2) Proactive Decision-making

WORK PROGRESS TRACKING USING COLOR CODES

Execution tracking

Reviewing progress/status in the schedule and model simultaneously.

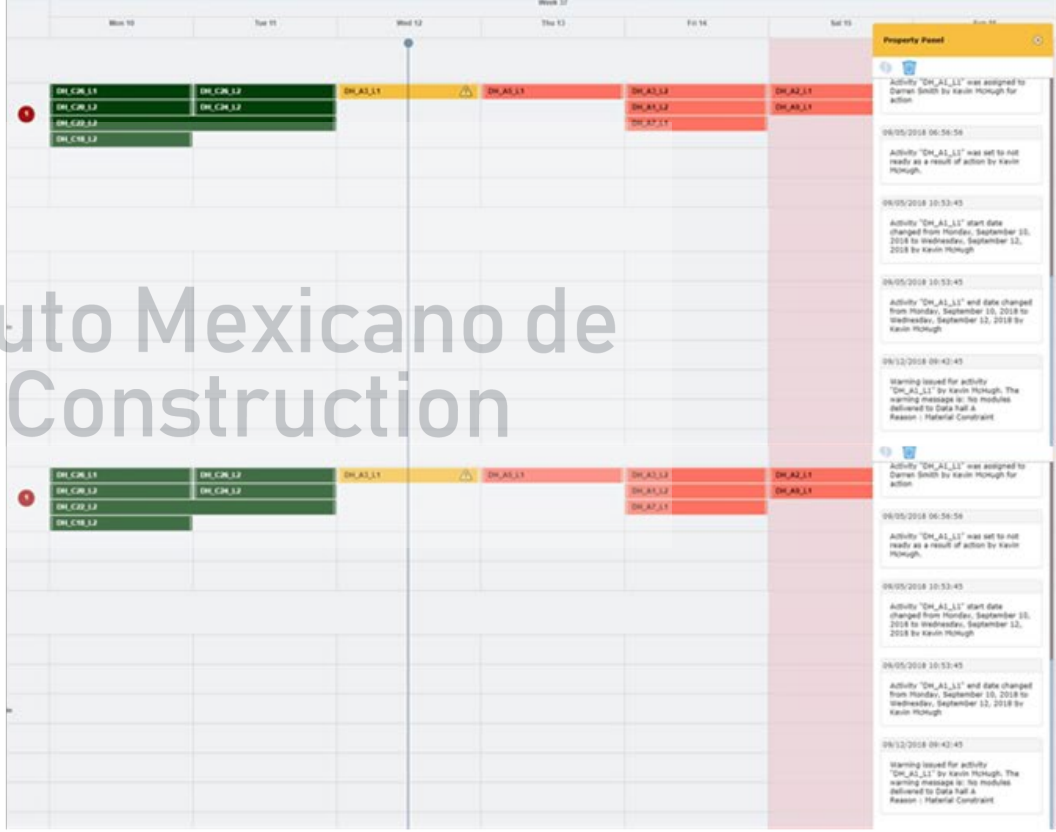
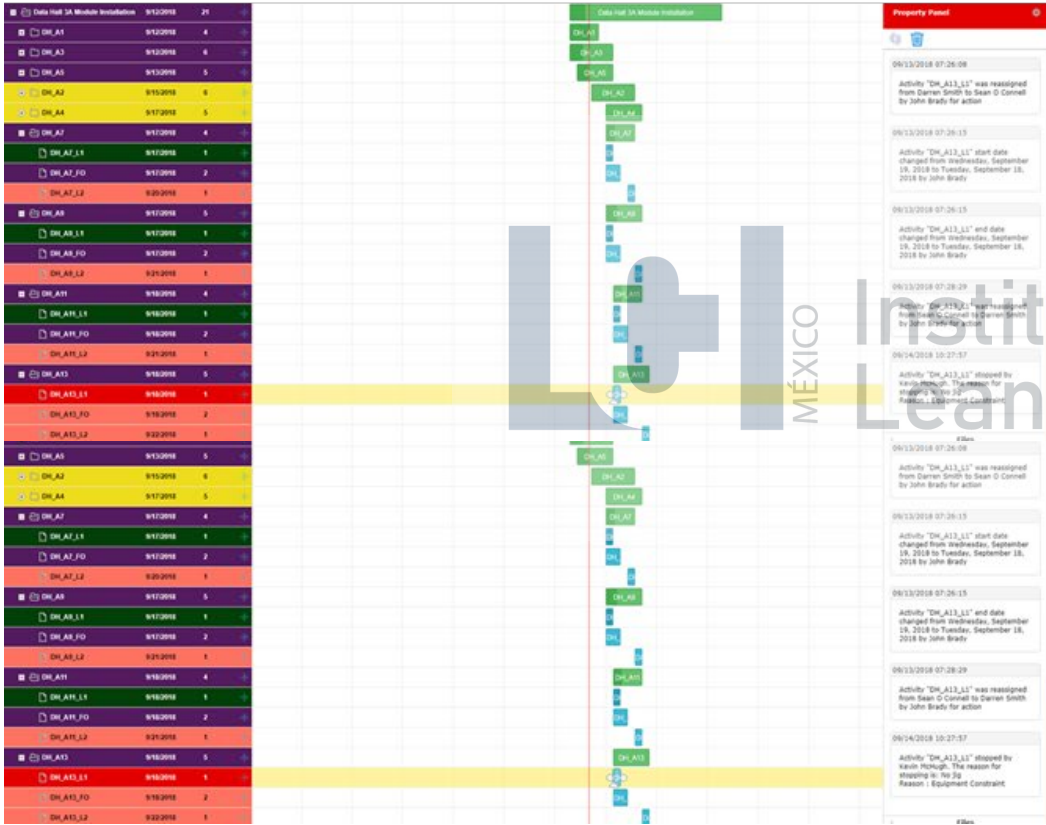
Property Panel

Activity	Element
Task Properties	
Name	DH_A2_1,1
Description	
Owner	Damen Smith
Start Date	(planned) 09/17/2018
End Date	(planned) 09/17/2018
Makeready Date	
Status	Not Ready
Priority	Low
Location	...Zone A

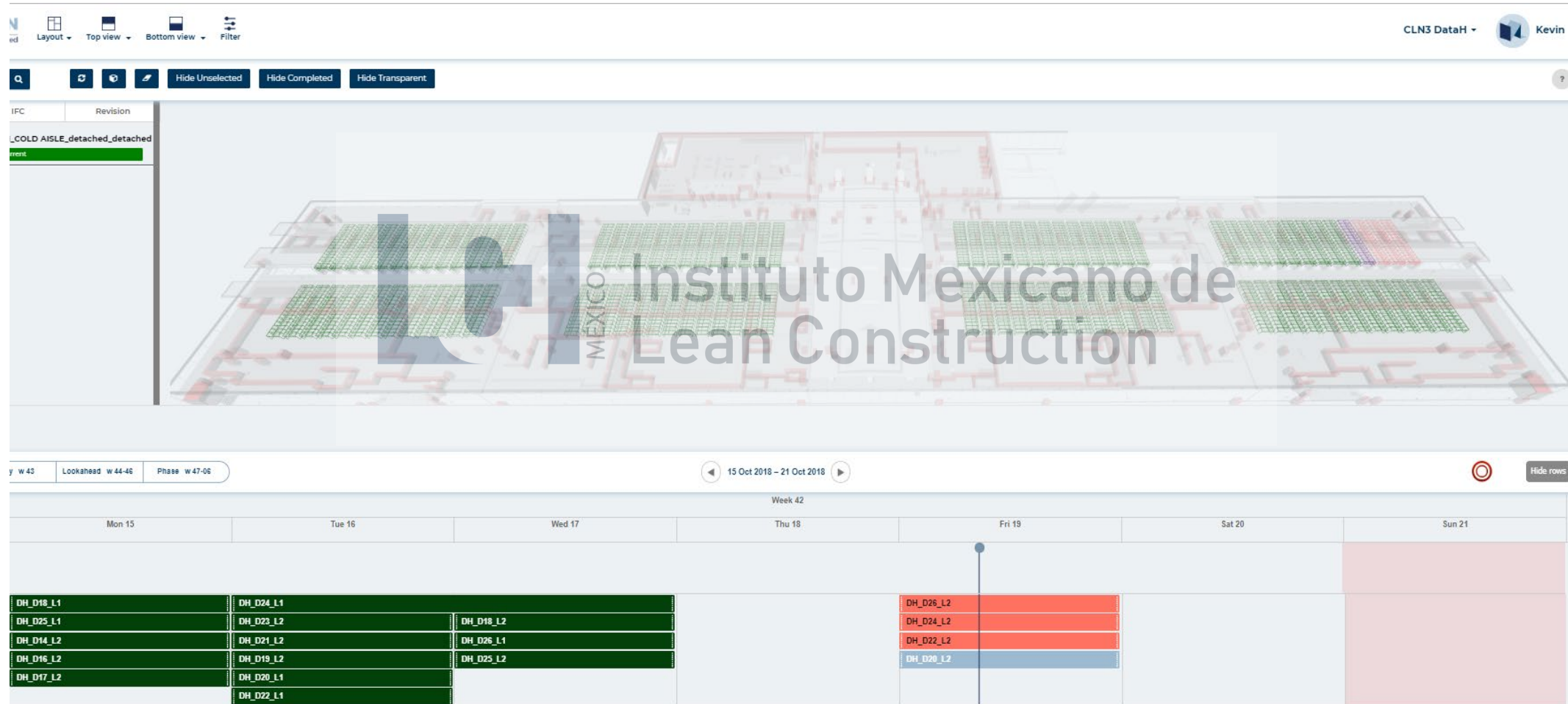
Gantt Chart Data:

Task	Start	End	Status
DH_C18_1,2	Mon 10	Tue 11	Completed (Green)
DH_C22_1,2	Mon 10	Tue 11	Completed (Green)
DH_C20_1,2	Mon 10	Tue 11	Completed (Green)
DH_A3_1,1	Wed 12	Thu 13	In Progress (Yellow)
DH_A5_1,1	Thu 13	Fri 14	Not Ready (Red)
DH_A7_1,1	Fri 14	Sat 15	Not Ready (Red)
DH_A1_1,2	Fri 14	Sat 15	Not Ready (Red)
DH_A3_1,2	Fri 14	Sat 15	Not Ready (Red)
DH_A2_1,1	Sat 15	Sat 15	Not Ready (Red)
DH_A2_1,1	Sat 15	Sat 15	Not Ready (Red)

STOPPED, WARNING TASKS AND QUALITY APPROVALS

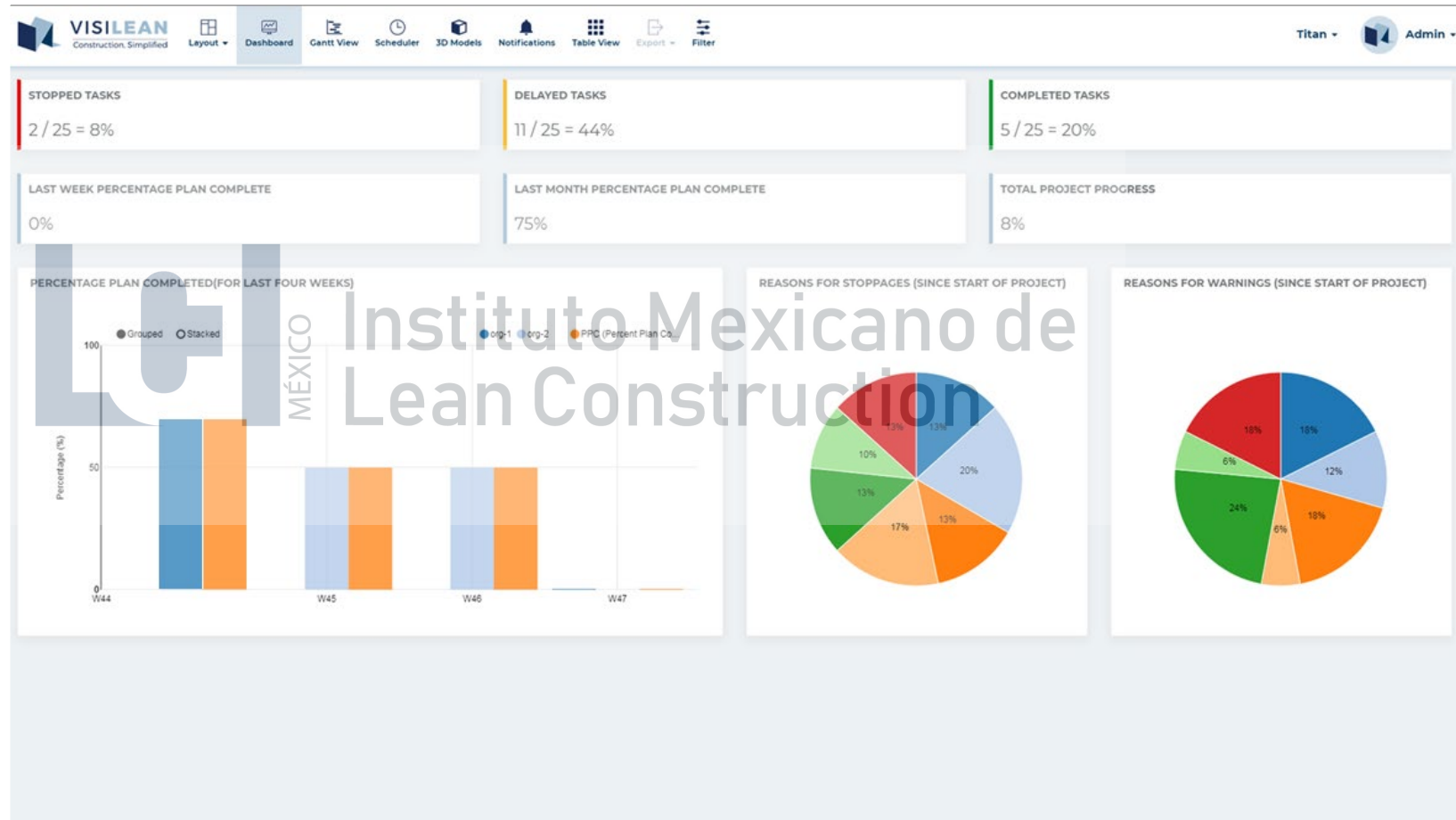


INTEGRATED PRODUCTION PLAN WITH BIM (LEAN 4D)



PPC LIVE DASHBOARD

Dashboard view provides a complete health check-up for your projects. It gives you an overview of stopped, Delayed, Completed tasks and also the last four weeks PPC.



ACHIEVEMENTS

Conclusion based on the field results

- i) 60% reduction in defects,
- ii) 43% improvement in program efficiency,
- iii) 45% reduction in labour spend.
- iv) Additionally, the team was able to reduce transport and congestion on site and improve real-time project transparency.

CLN1 installation time for Data Hall fit out sequence was **21 weeks**

CLN2 installation time for Data Hall fit out sequence was **16 weeks**

CLN3 installation time for Data Hall fit out sequence was **9 weeks**



MAJOR UK PROJECTS



Olympic Stadium

Est. £280m

Overall £700m

BBC Headquarters Refurb

Est. £991m

Overall £1.1bn 6 year delayed



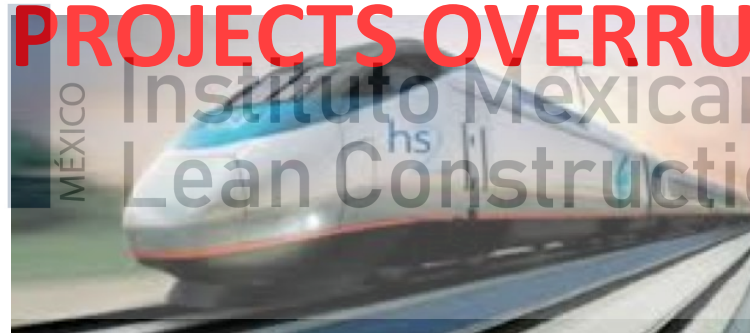
TOP 10 MAJOR PROJECTS OVERRUN BY £17bn



The Shard

Est. £350m

Overall £435m



HS2

Est. £56bn

Overall £80bn+

Wembley Stadium

Est. £757m

Overall £1bn 1 year delayed



SUMMARY

- Save 10-20% of project costs and get improved predictability
- Start measuring and improving project performance
- The construction industry is going digital – can you afford not to?

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Gracias

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