

23RD ANNUAL



23RD LCI CONGRESS
OCTOBER 19-22

Leveraging Multi-trade Manufactured Construction for Optimal Results in the Field

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LEARN BY DOING FROM THOSE WHO DO

Thursday, Oct. 21

Health precautions to keep everyone as safe as possible at Congress:

- Wear masks at all times in indoor events.
- Complete your daily health screening on your phone and bring it with you when you enter the center each day.
- Practice social distancing to the extent possible. Seating at plenary sessions is structured to help with this.
- If you feel ill at any time, please leave the conference and return to your room/consult a physician as necessary.
- Ultimately, our collective health and safety at Congress is up to all of us. Thanks for your support!



Conventional build didn't cut it. How do we improve?

- **Why**

Boldt turned to pre-manufactured, multi-trade assemblies for their modular building program

- **How**

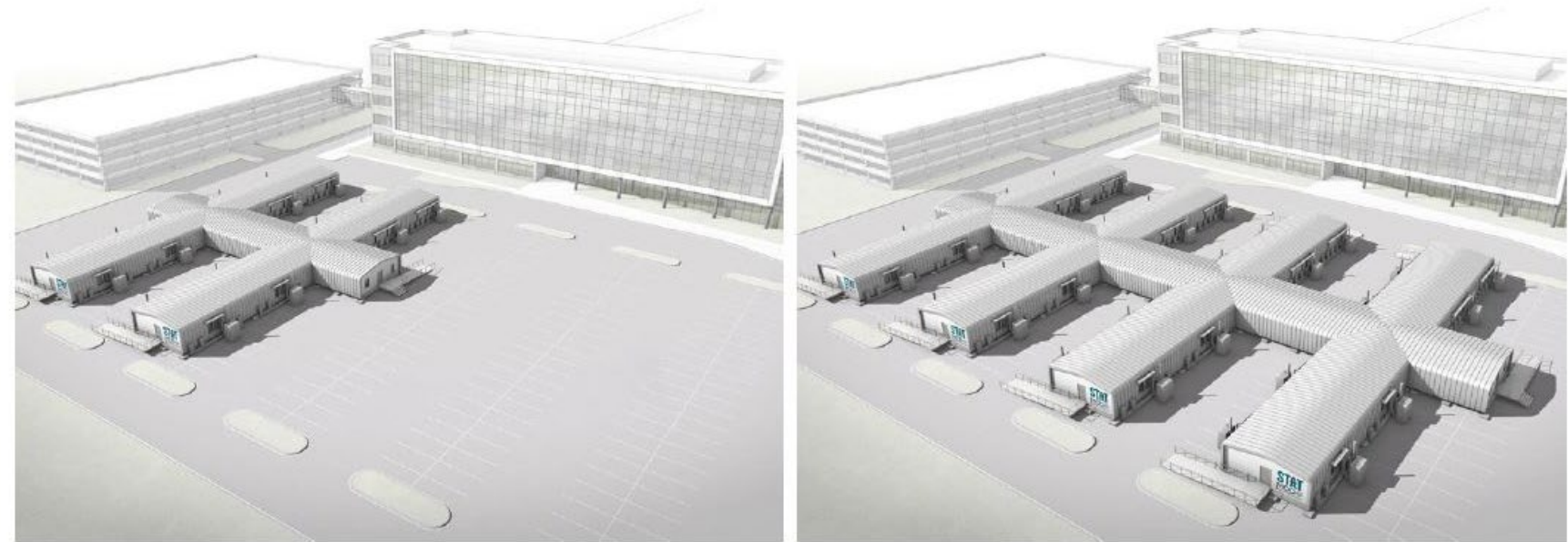
Evolving design integration to maximize industrialized construction

- **What**

A LEAN manufacturer that can produce custom multi-trade assemblies with industry-leading production times

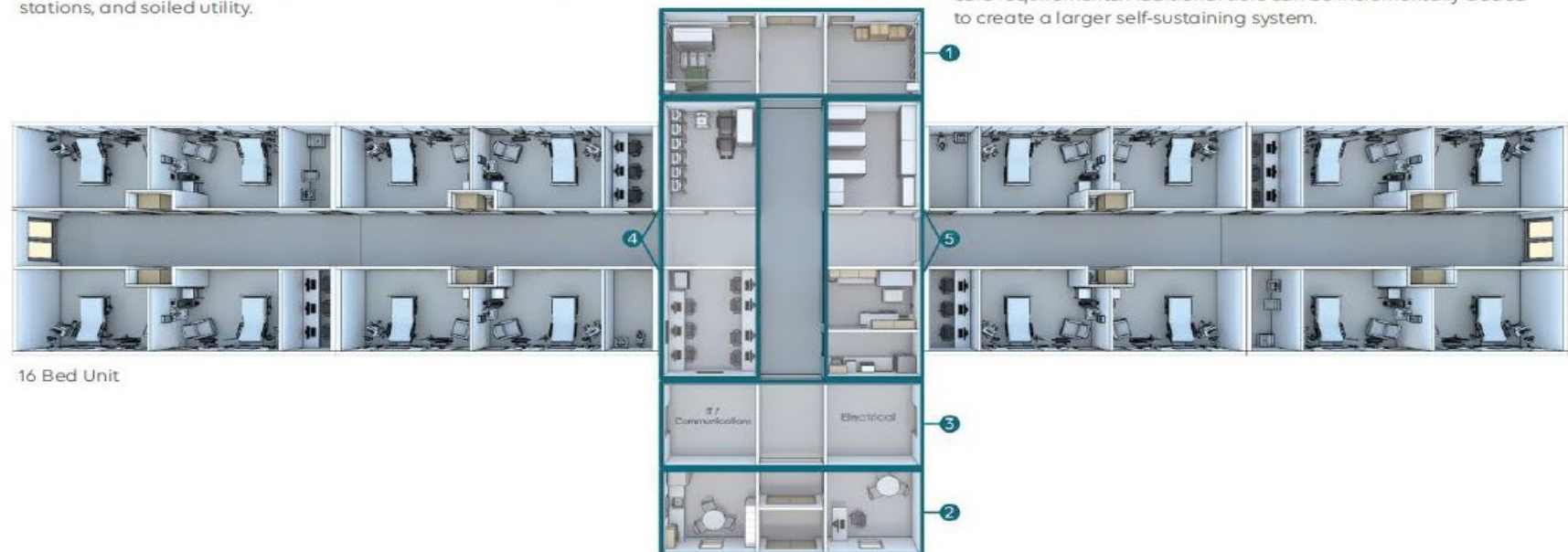
STAAT Mod (Strategic, Temporary, Acuity- Adaptable Treatment)

- Prefabricated inpatient units
- Easily flexes to provide traditional inpatient capacity (or critical care)
- Critical care: ICU, A&E, Step Down, Med Surg, Observation
- Hospital quality standards
- Fully code compliant
- Easily repeatable
- Long-term facility strategy



stations, and soiled utility.

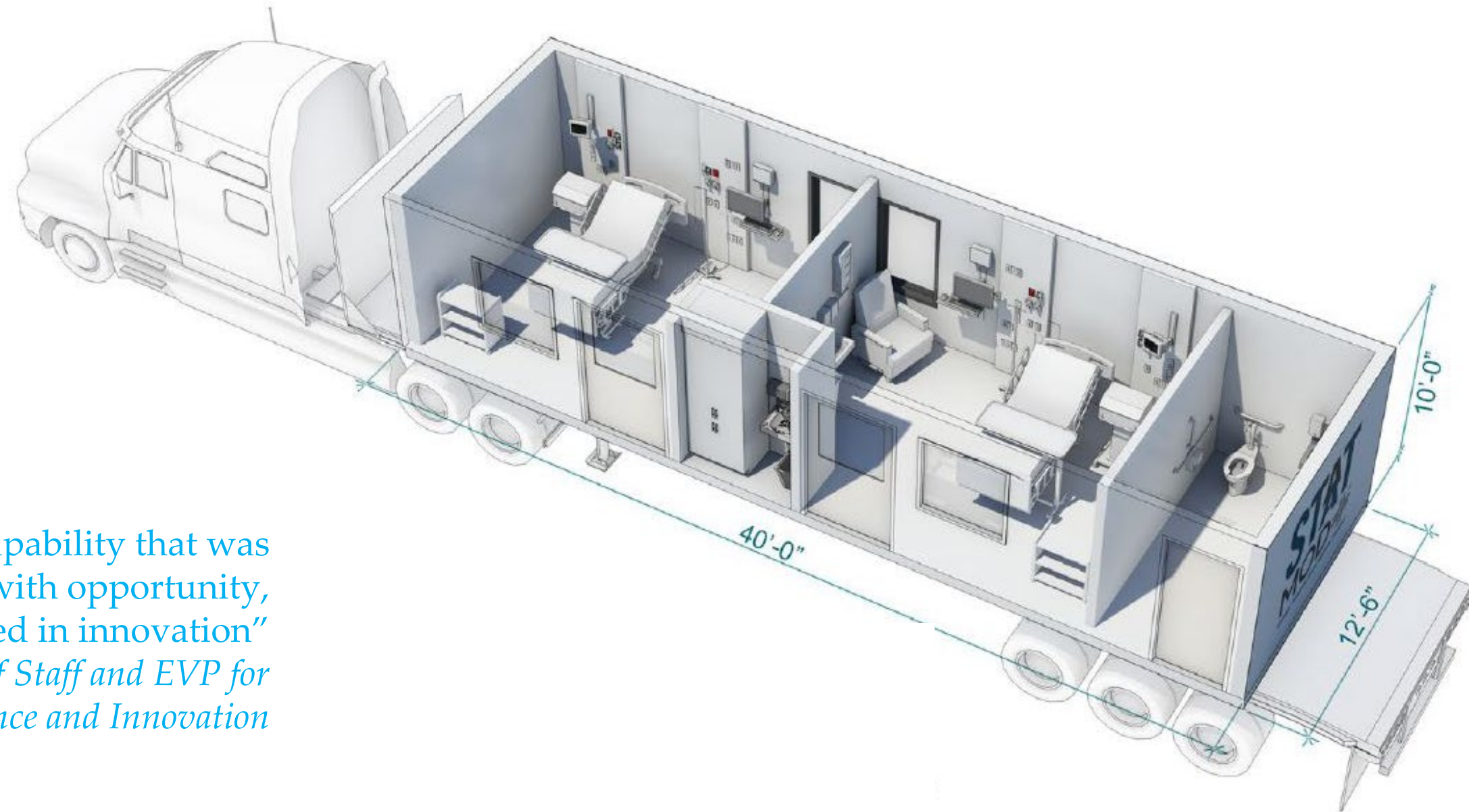
core requirements. Additional units can be incrementally added to create a larger self-sustaining system.



STAAT Mod

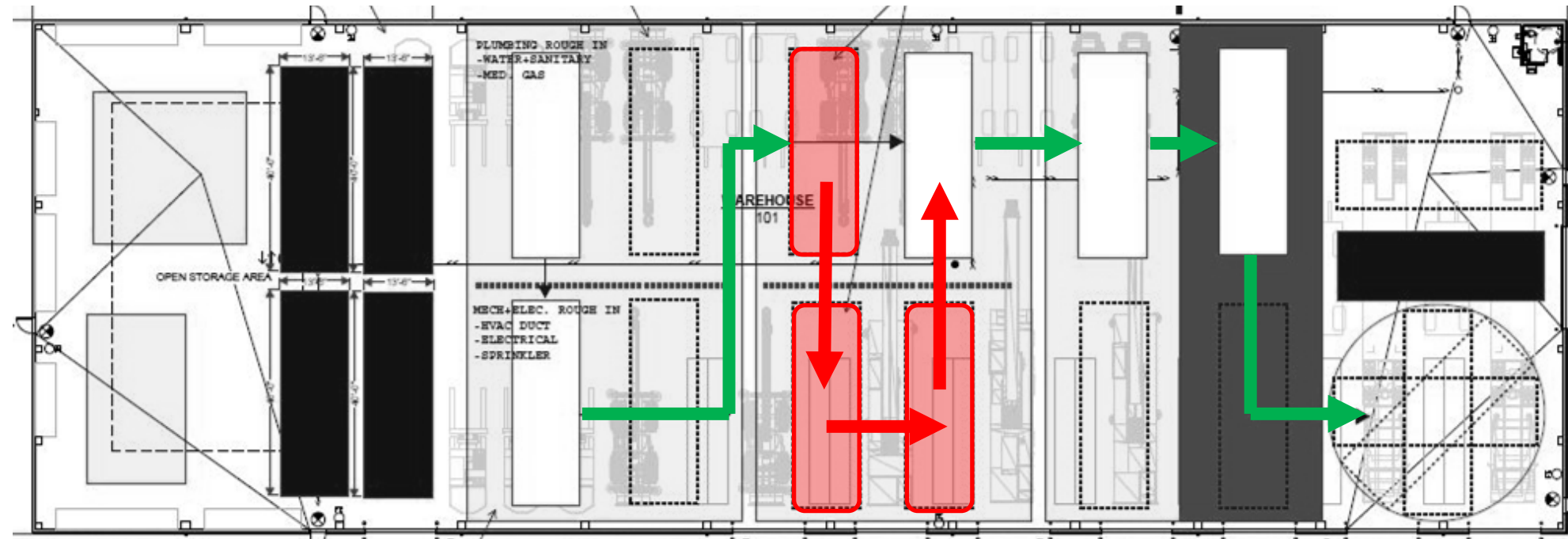
- Quick- ship
- Produced in controlled environment
- Improved quality & safety
- Assembled offsite, connected onsite

“This is an instance when a capability that was developed over time, met with opportunity, and resulted in innovation”
–Will Lichtig, Chief of Staff and EVP for Performance and Innovation



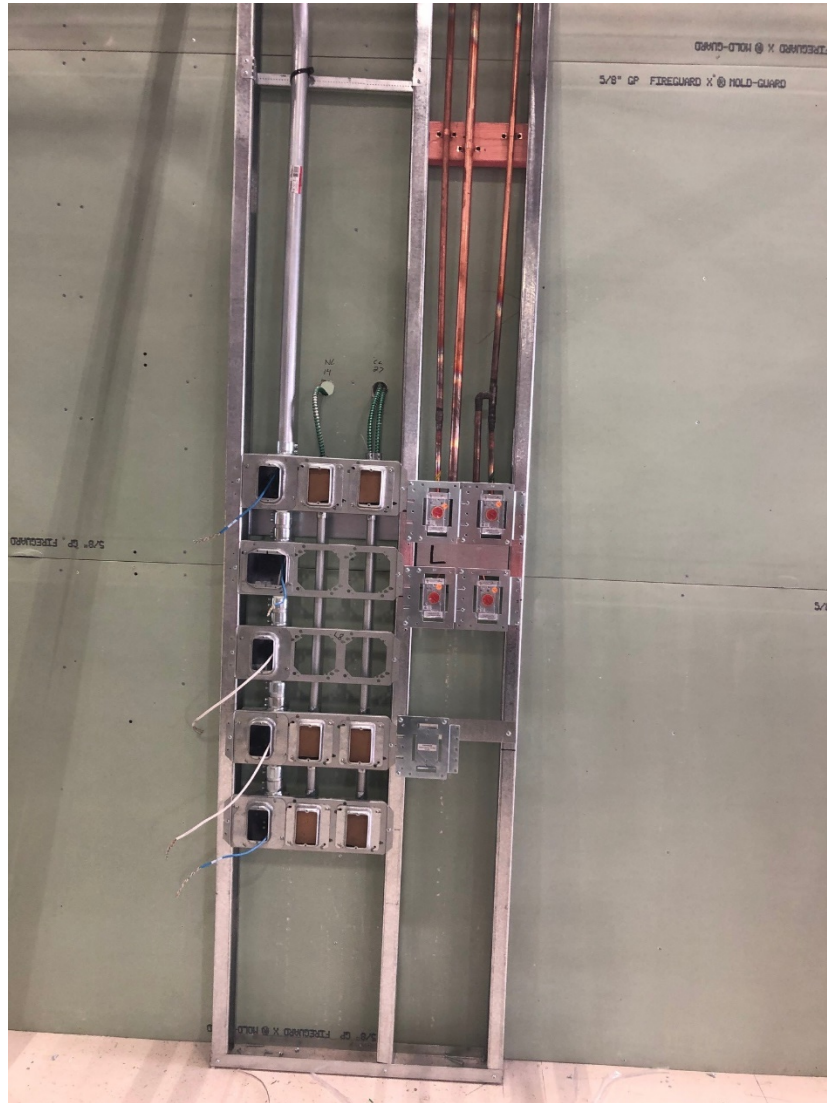
Assembly Diagram: Before

- Conventional interior materials: drywall, mud & paint
- Schedule impact: dry time
- Double handling of mods
- Increased headcount



Drywall, mud and
paint dry time stations

Assembly photos: Before



Linear sub-trade process

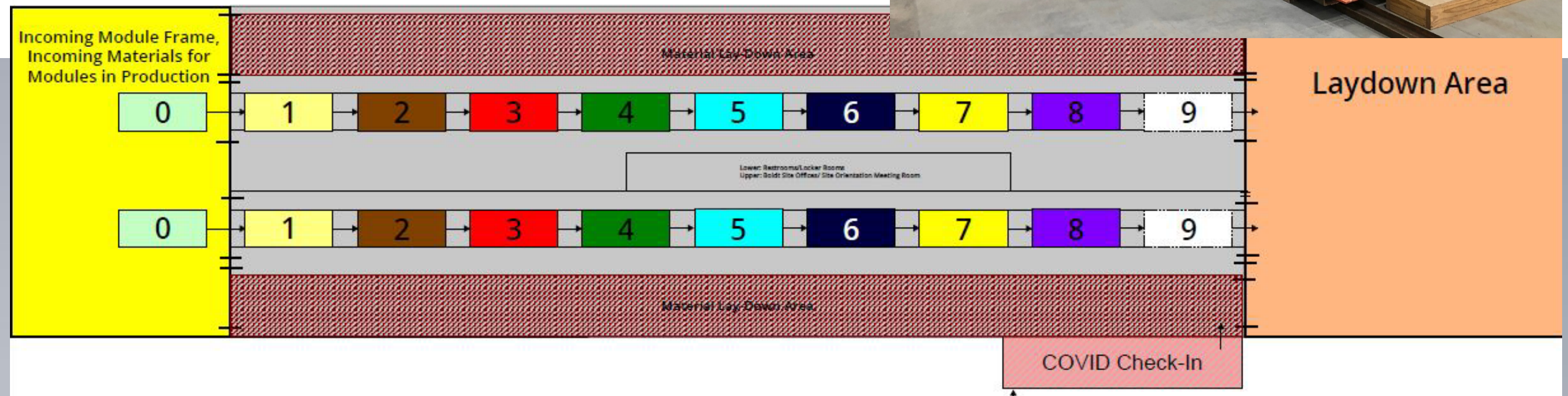


Drywall/ mud/ paint down cycle time



Assembly Diagram: After

- Multi-trade pre-fab assemblies
- Labor Flow Predictability
- Reduced headcount = Reduced time
- Cycle time savings



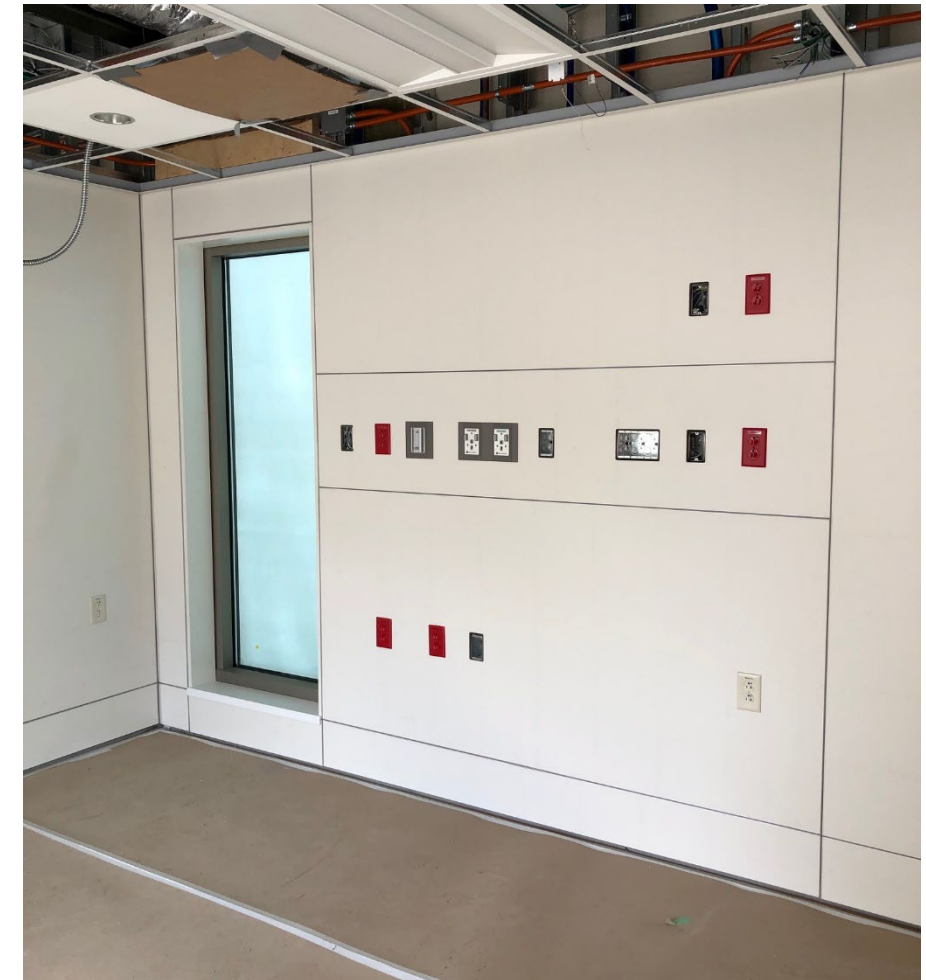
Assembly Photos: After



Multi-trade pre-fab assemblies shipped to fabrication site




Tilt-up construction



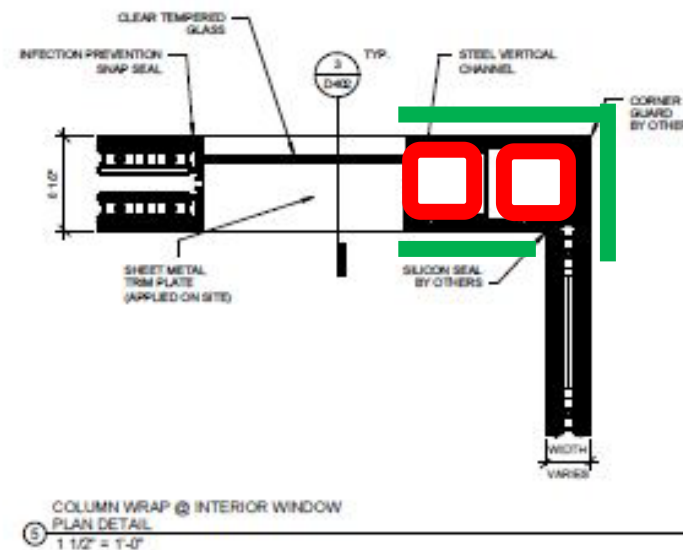
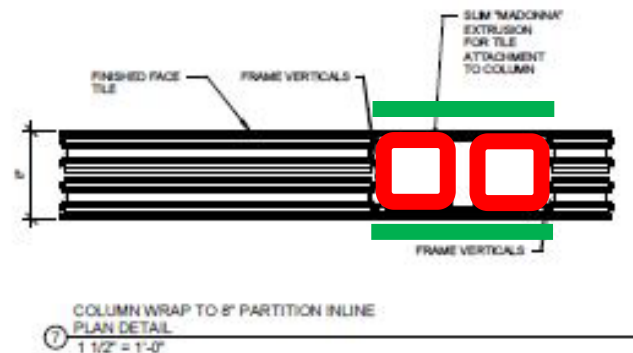
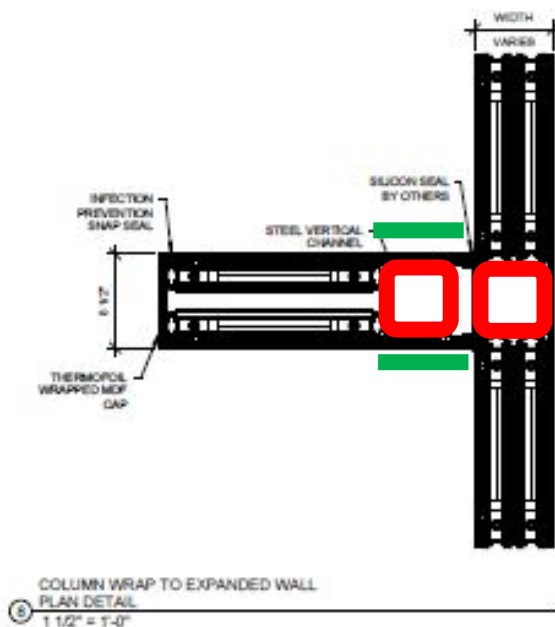
Onsite module connection



Onsite module connection

- Finish panels  installed over steel tube  connections at project site

Pod connection at construction site



Onsite module connection



Design Integration Process



Sub-trade Partner

Conduit between DIRT manufacturing and General Contractor / Installation Team

Scope of Services:



Specialty construction consultants



Project stakeholder / Project execution



Material supplier



Schedule Compression

CONVENTIONAL CONSTRUCTION TYPICAL SCHEDULE



DIRTT CONSTRUCTION TYPICAL SCHEDULE



30% TIME SAVINGS OVERALL



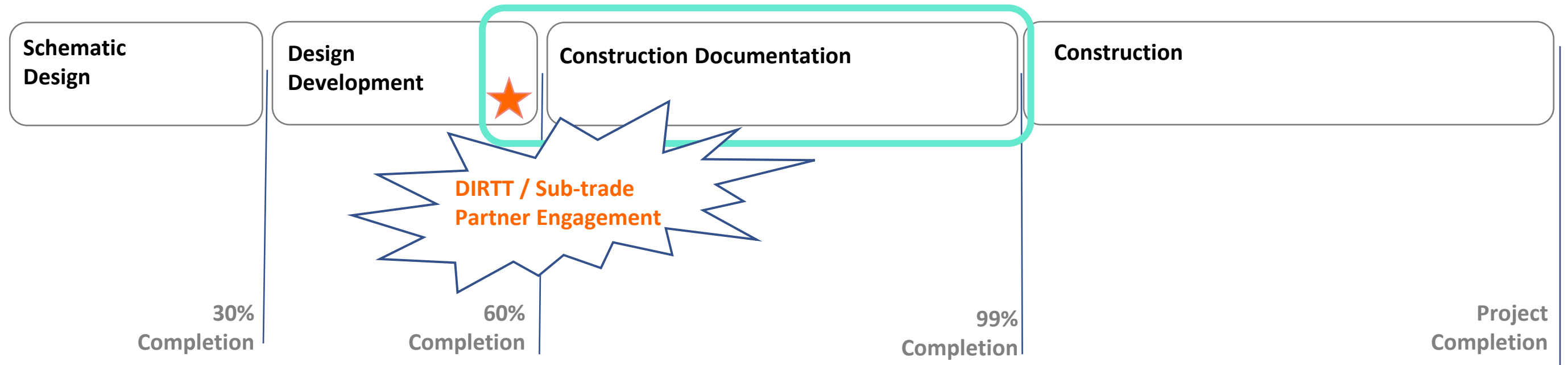
DIRTT CONVENTIONAL



Adopt Process Evolution for DfMA



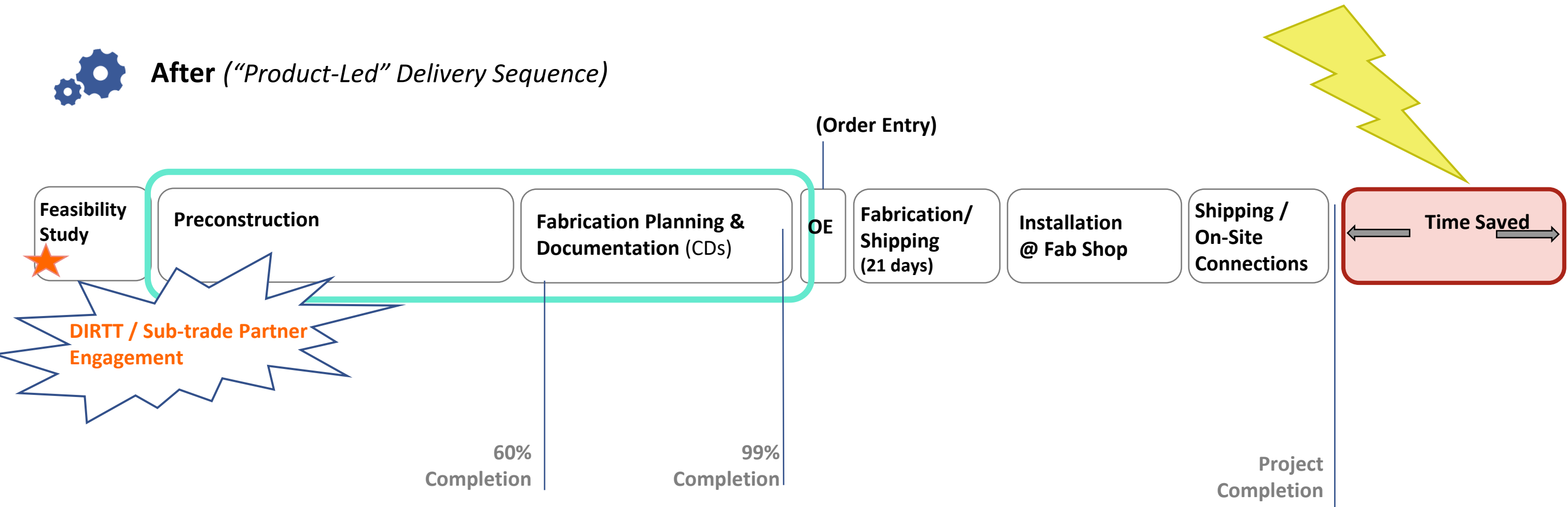
Before (*"Project-Centric" Delivery Sequence*)



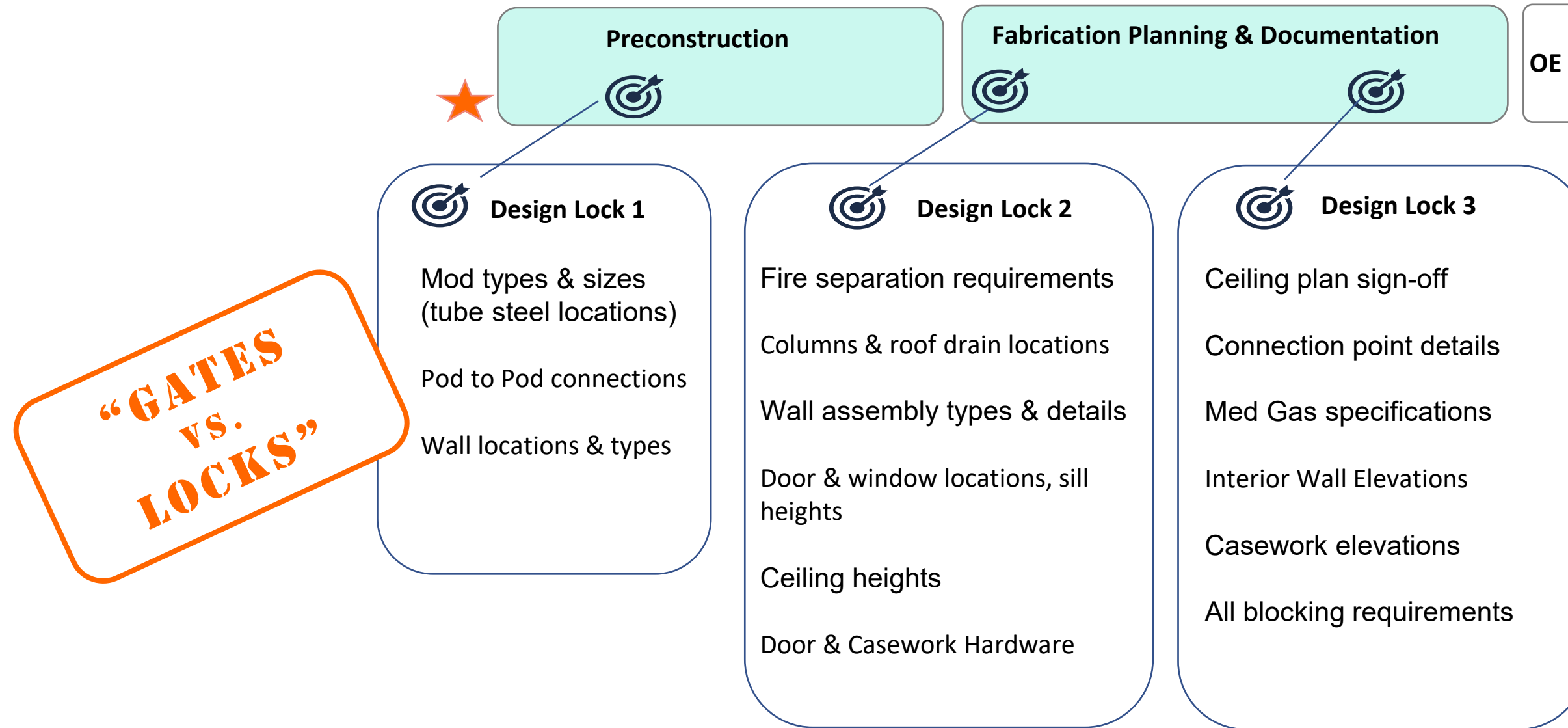
Convergence of Manufacturing & Construction



After (*"Product-Led" Delivery Sequence*)



Optimize Outcomes



What is Drawn Gets Made

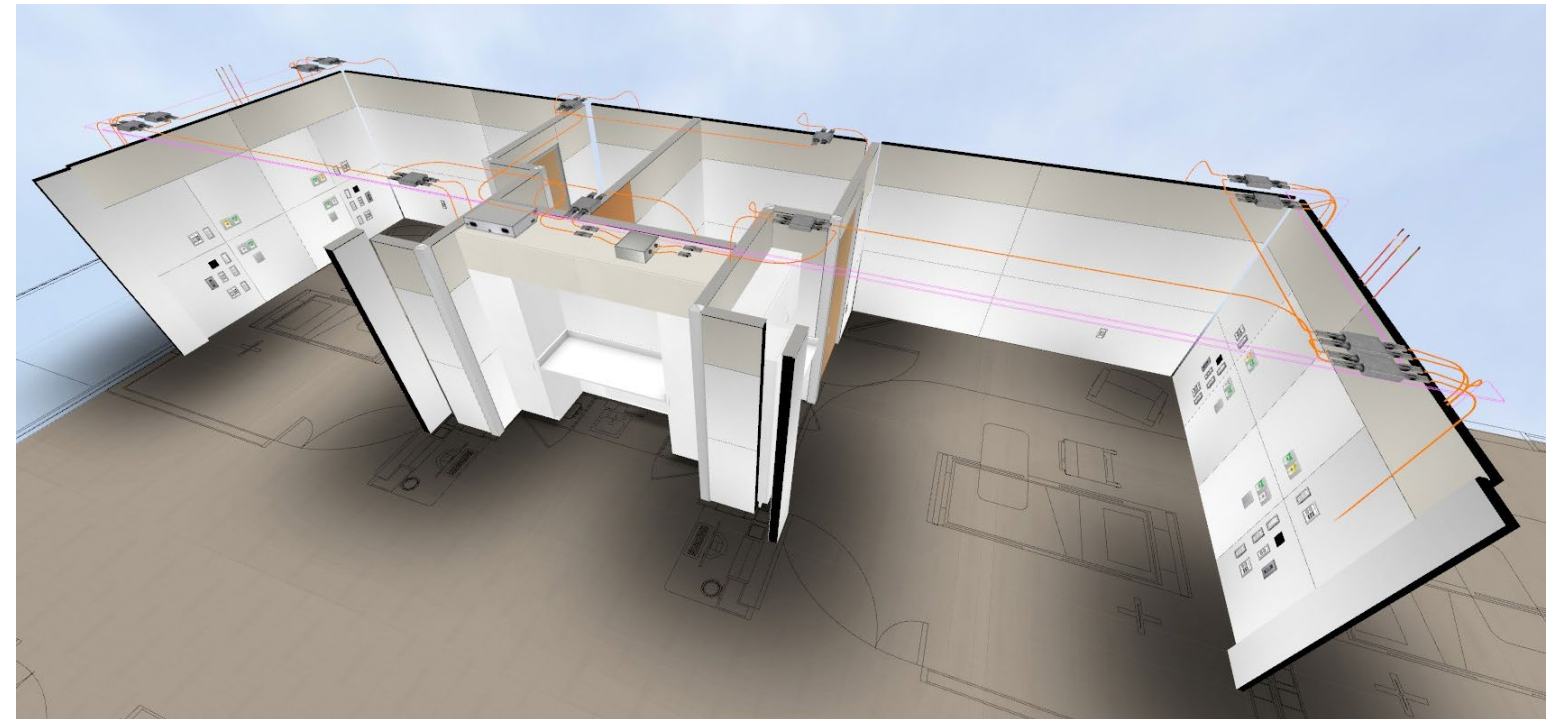
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DIRTT Door Schedule

Tag	Style Name	Size	Handness	Locking	Close Type	Stopper	Door Base Style	Finish Tag	Hardware Description	Center Location APP	Door Track Type
H01	DIRTT_Hinge_Door	Height 7' - 7 1/2" x Width 2' - 4'	RH	Not Locking	None	Berry DIRTT Peg (Wall Location)	Regular	HR_90	30" x 24" C to C Bar Pull 630 Finish (4' - 5 11/16")	N/A	N/A

DIRTT Door Schedule (Continued)

Tag	Style Name	Size	Handness	Locking	Close Type	Stopper	Door Base Style	Finish Tag	Hardware Description	Center Location APP	Door Track Type
H02	DIRTT_Hinge_Door	Height 7' - 7 1/2" x Width 2' - 4'	RH	Not Locking	None	Berry DIRTT Peg (Wall Location)	Regular	HR_90	30" x 24" C to C Bar Pull 630 Finish (4' - 5 11/16")	N/A	N/A



Driving Innovation



Pick a Path Early: Integration (Day 1)



Collectively establish project goals / benchmark dates



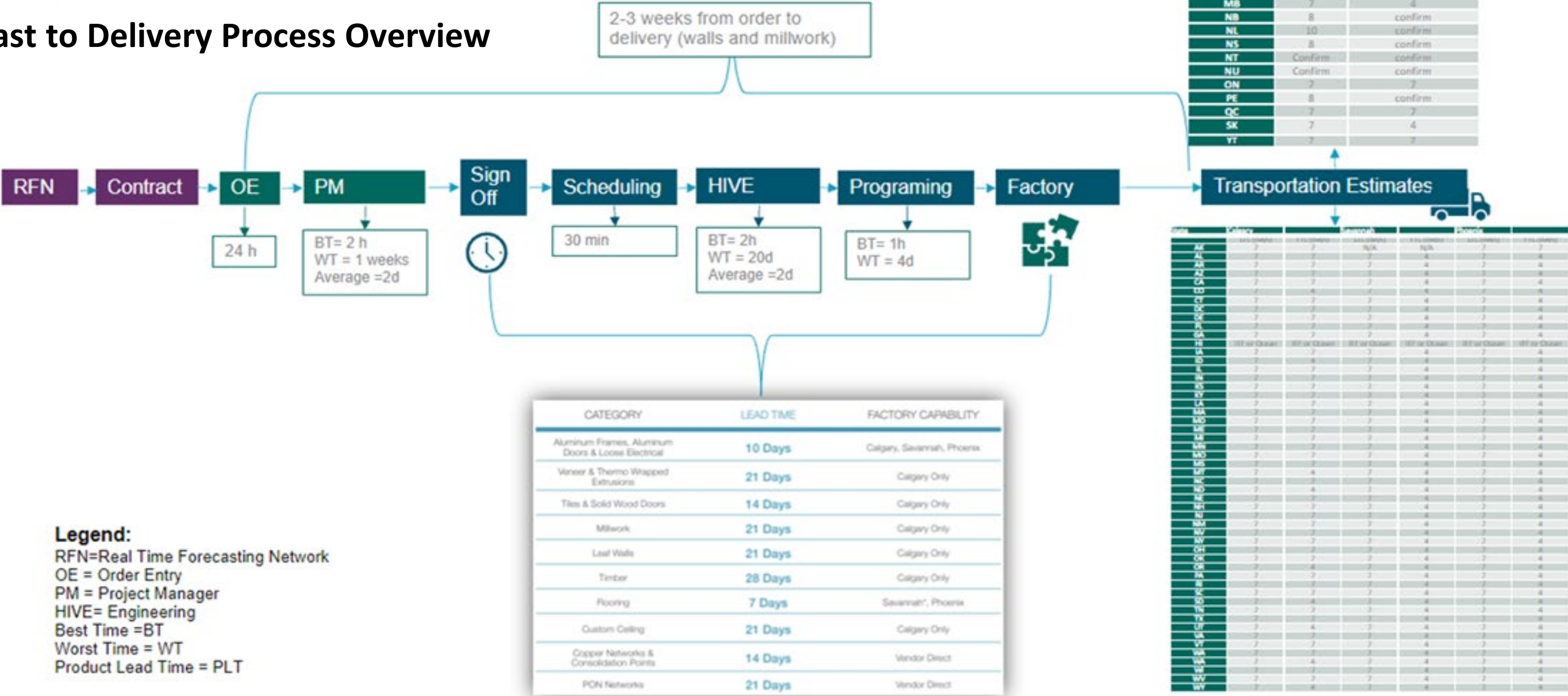
Manufacturing



Maintain 2 weeks from Order to Delivery



Forecast to Delivery Process Overview



DIRTT's Multi-faceted Approach



**“Building Lean” focuses on Lean Manufacturing, Theory of Constraints and 6 Sigma-
All bring a different perspective**

LEAN

FLOW FOCUSED

Eliminate waste and add value

- Identify the value to the customer
- Identify value stream in each process
- Make value flow
- Pull
- Perfection (CI)

SPEED

6 SIGMA

PROBLEM FOCUSED

Reduce variation and improve quality

- Define
- Measure
- Analyze
- Improve
- Control

ACCURACY

TOC

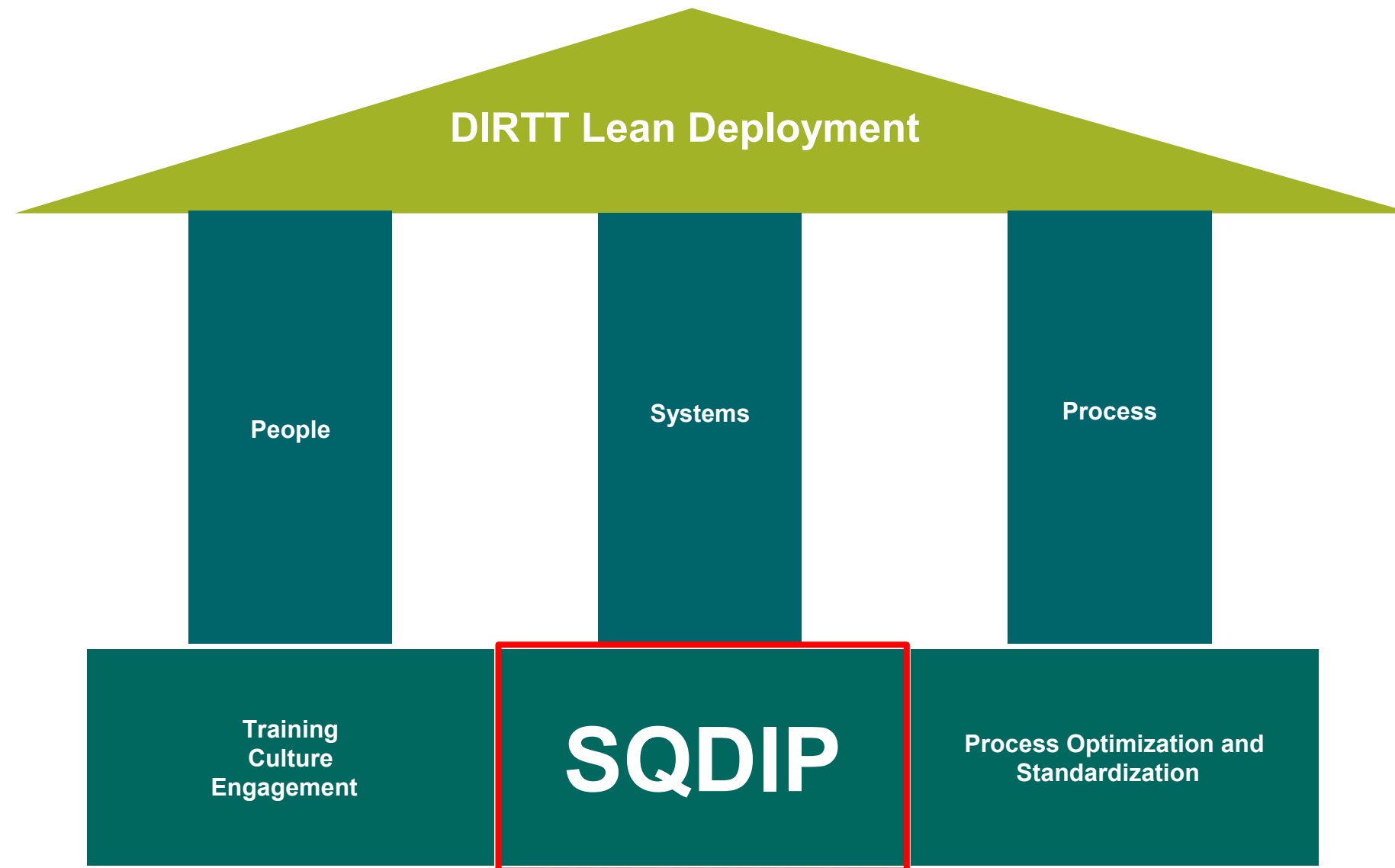
CONSTRAINTS FOCUSED

Manage constraints

- Identify constraints
- Exploit constraint
- Subordinate processes
- Elevate constraint
- Repeat cycle

THROUGHPUT

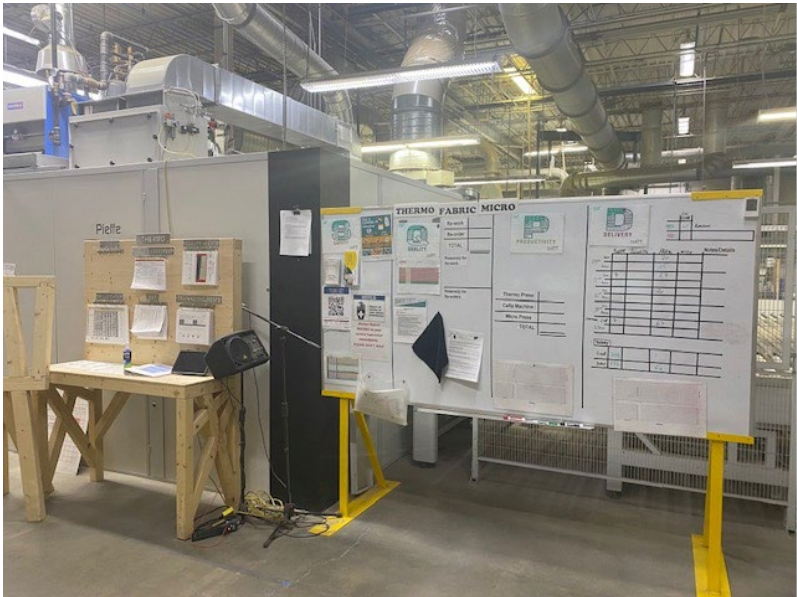
Continuous Improvement at DIRTT- the Foundation



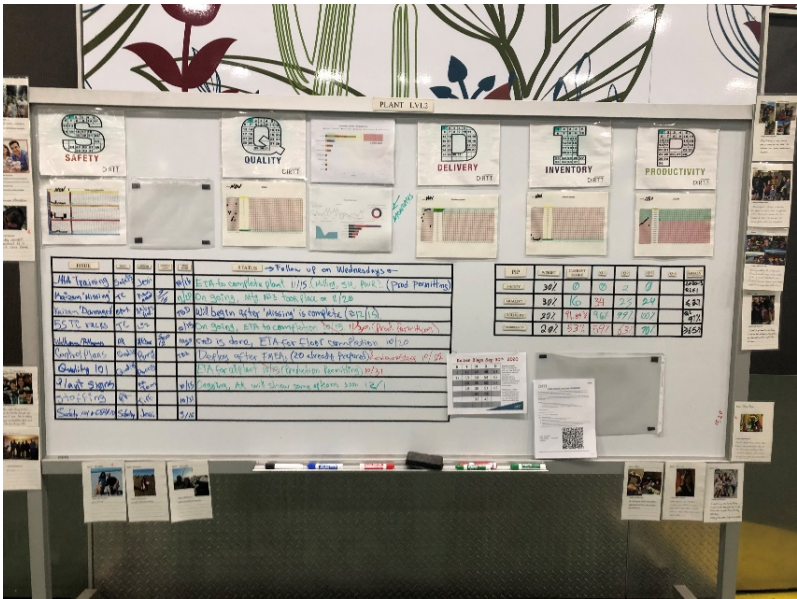
DIRTT " Engine" of continuous improvement

S	Q	D	I	P
Safety	Quality	Delivery	Inventory	Productivity
KPIs established for all metrics:				
Total Recordable Incident Frequency (TRIF), near misses	Deficiencies (external and internal), chargebacks	On Time In Full (OTIF), completion versus scheduled ship date	Inventory Accuracy	Equipment uptime (evolving to OEE), labor hours per units produced

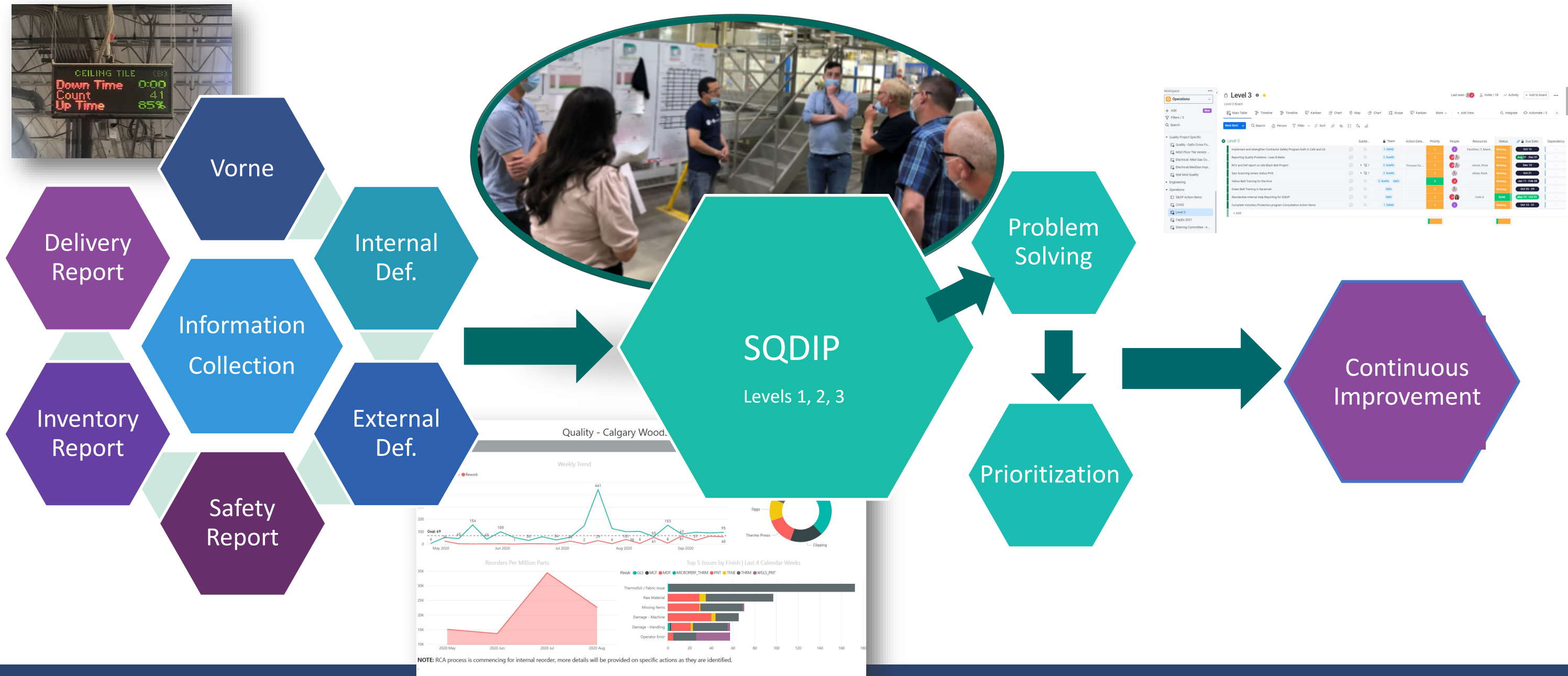
Level 1



Level 2



DIRTT CI System



DIRTT's OPF Project- Solid Walls

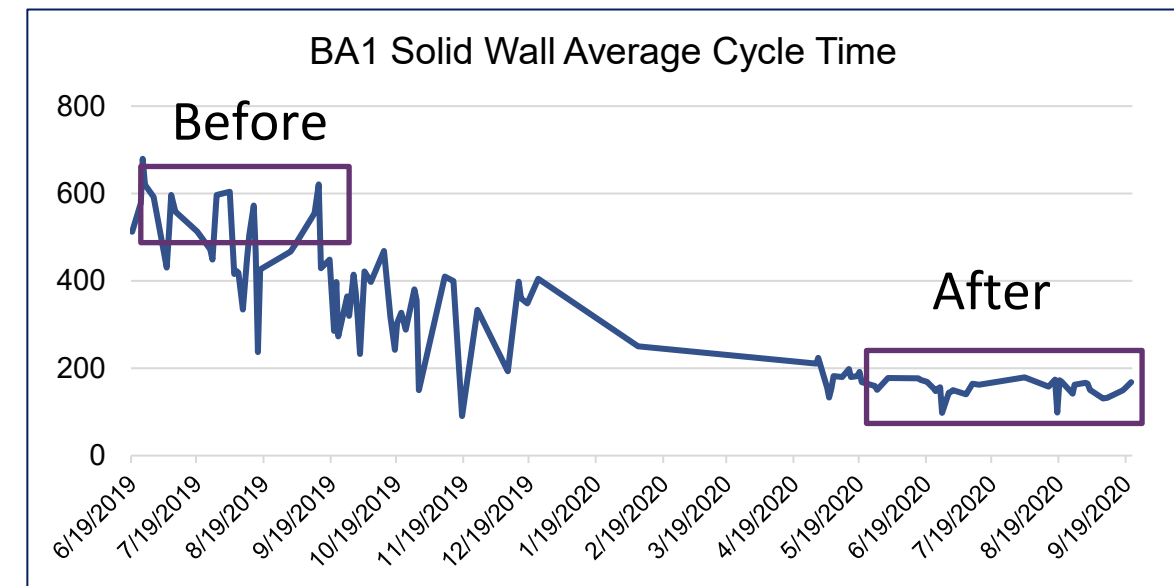


Reductions in Cycle times and deficiencies for solid wall frames and panels



Before
Potential days

After
Minutes



Photos

- 72 CCU rooms
- Project duration: 6 months



Photos







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In the spirit of continuous improvement, we would like to remind you to complete this session's survey! We look forward to receiving your feedback.

Contact Us

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Thank you for attending this presentation. Enjoy the rest of the 23rd Annual LCI Congress!