Case Study

Construction/ETO

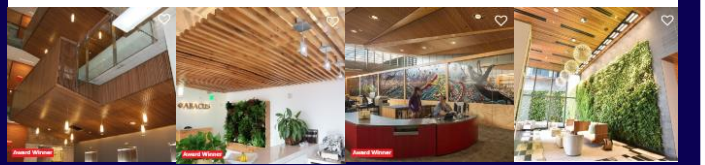
Demand Driven World™ AMSTERDAM 2019

Survive, Adapt and Thrive in the VUCA World

OCTOBER 10 & 11

9Wood is the only company in the U.S. that exclusively fabricates custom wood ceilings. Their award winning projects can be seen in many of the most iconic and luxury venues throughout North America. Learn how this engineer to order company has embraced a full Demand Driven Operating Model (DDOM) to completely change the game and win big in this difficult project environment. Craig Jolly, Operations Manager, will present.

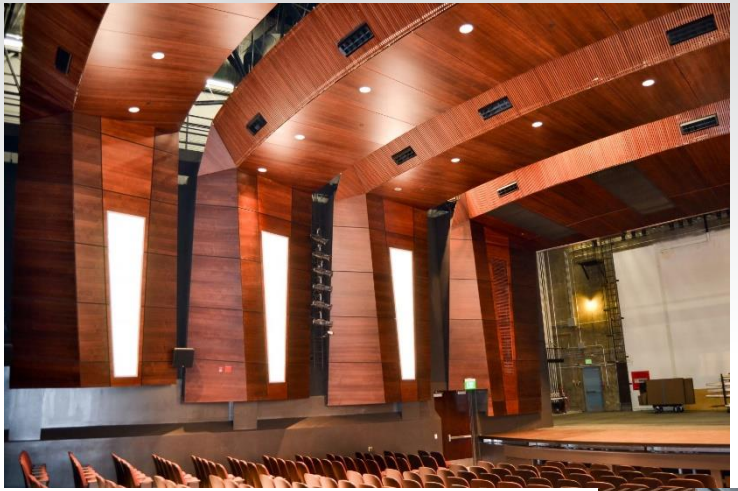
9WOOD

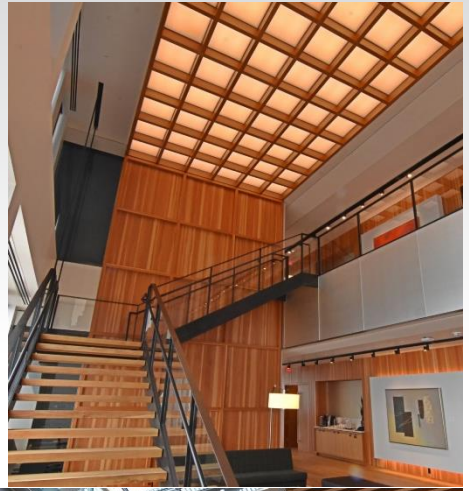


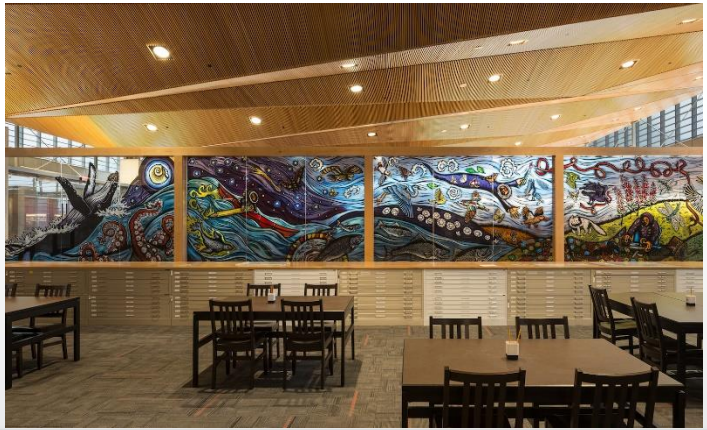
Evolution of a Flow-Based Operating Model

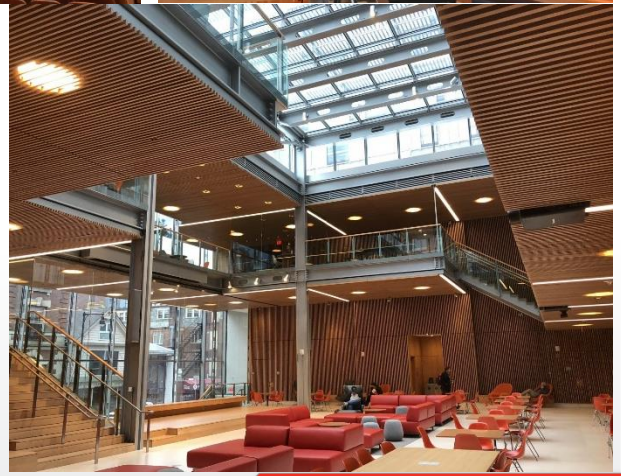
Craig Jolly
Production Operations Manager

Custom Suspended Wood Ceilings





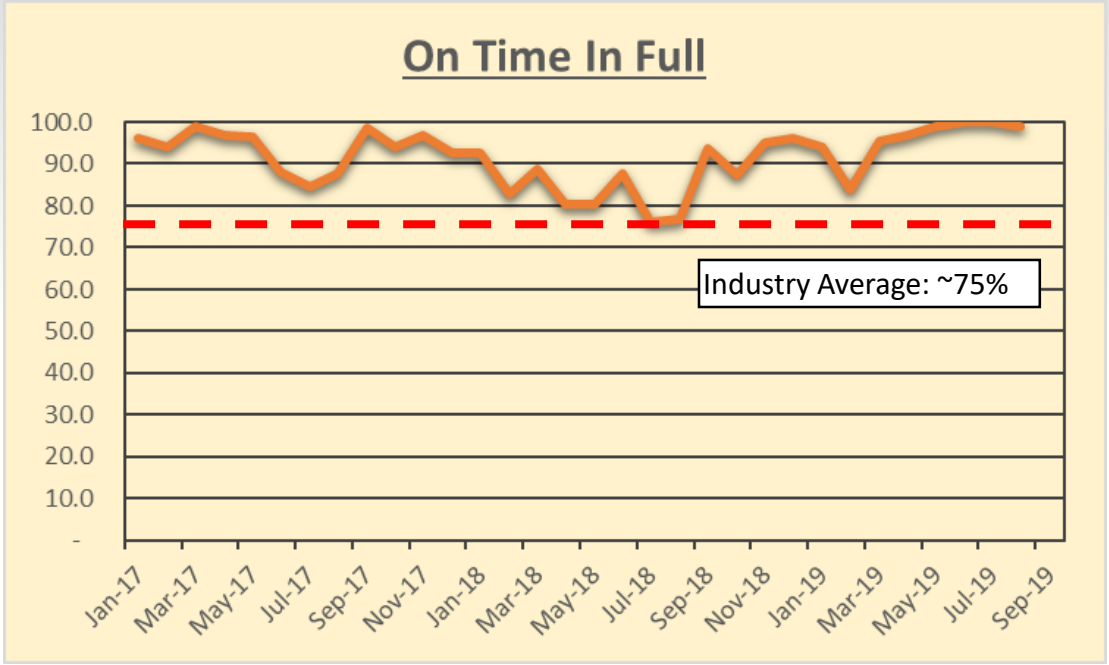




[Specialty] Construction:

- Unique customer requirements
  - Species, size, shape, spacing, color, etc.
- Long lead times
- Schedule uncertainty
- Low on-time performance

Our Difference:

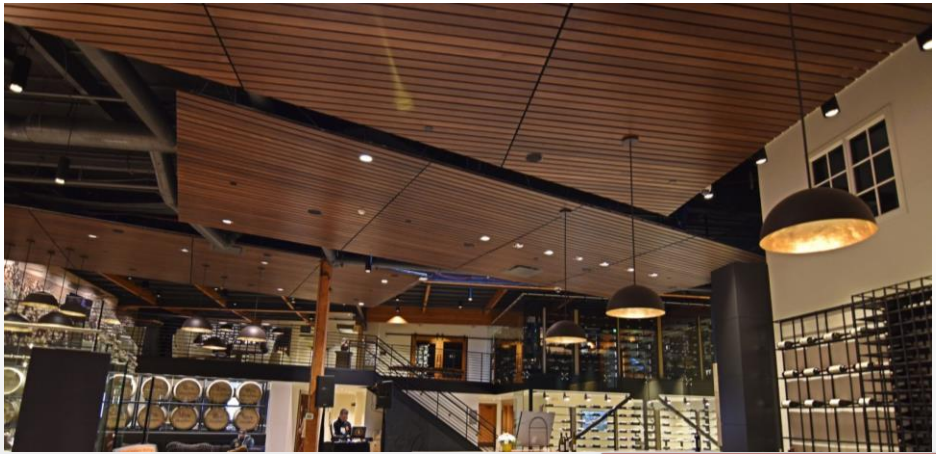


Demand Driven:

Engineer-To-Order: 15%

Design-To-Order: 85%

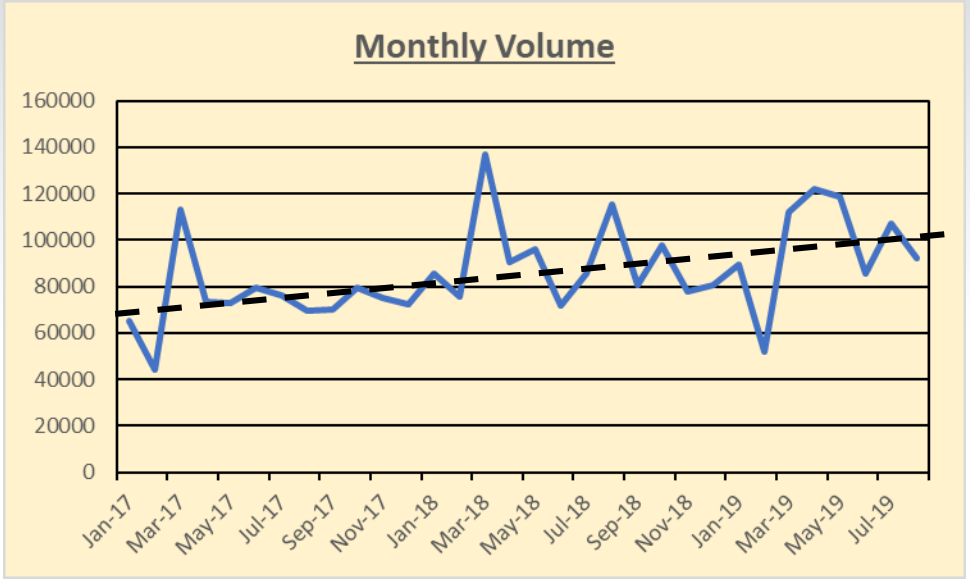
Make-To-Stock: 0%



Challenges:

- Volume: +/- 30% month-to-month
- 2018: +23%
- 2019: +7%
- Low automation

Reliability (with lowest system expense)



Strategic Decoupling:

Options:

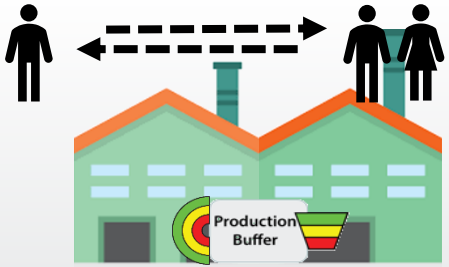
- ~~a)~~ Build Inventory
- ~~b)~~ Extend lead times
- c) Be faster

Customer tolerance: 8-10 weeks

- Materials: 5-6 weeks
- Production: 3-4 weeks

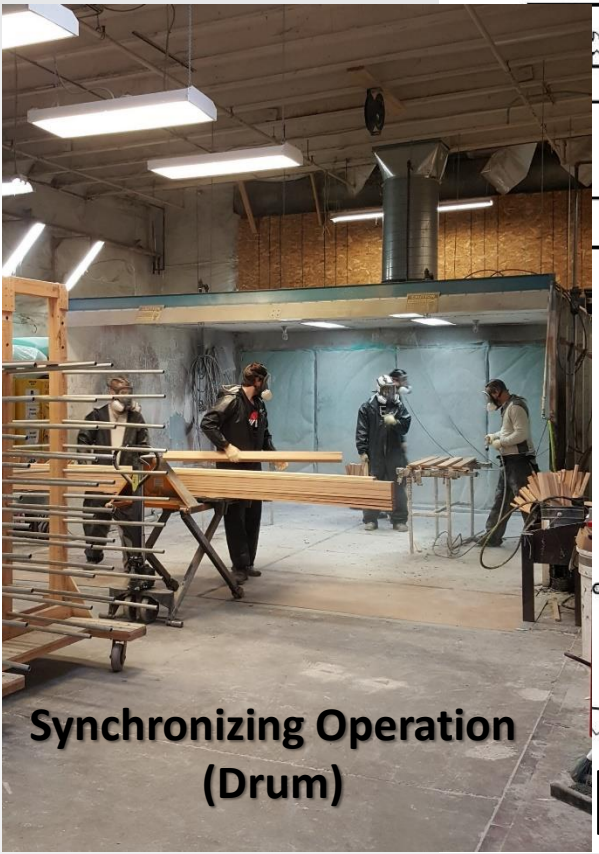
Benefits:

- X Compress LT
- ✓ Shorten planning horizon
- ✓ Dampen variability



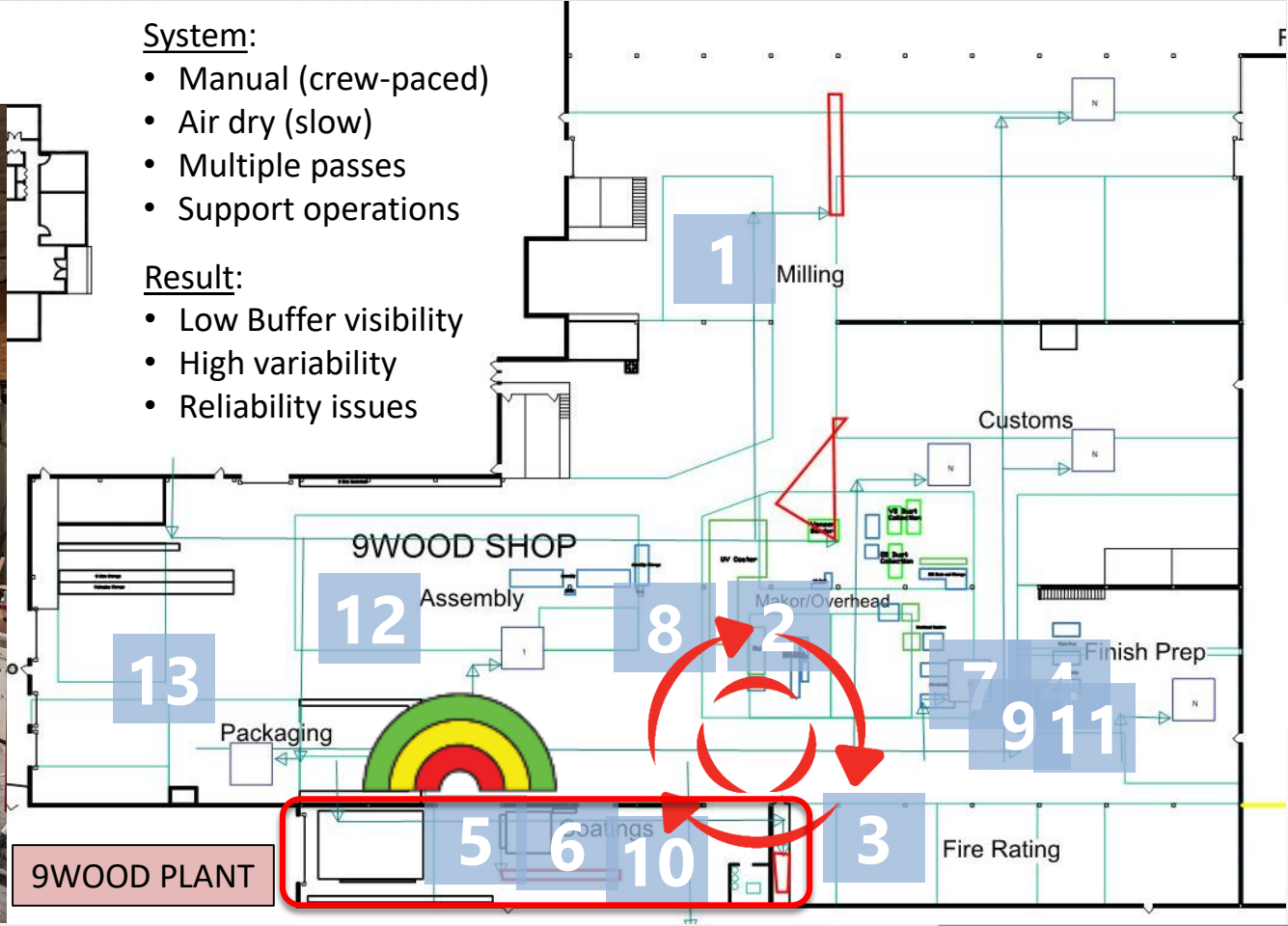
Opportunity: 1-2 weeks

Pre-2018 Flow:

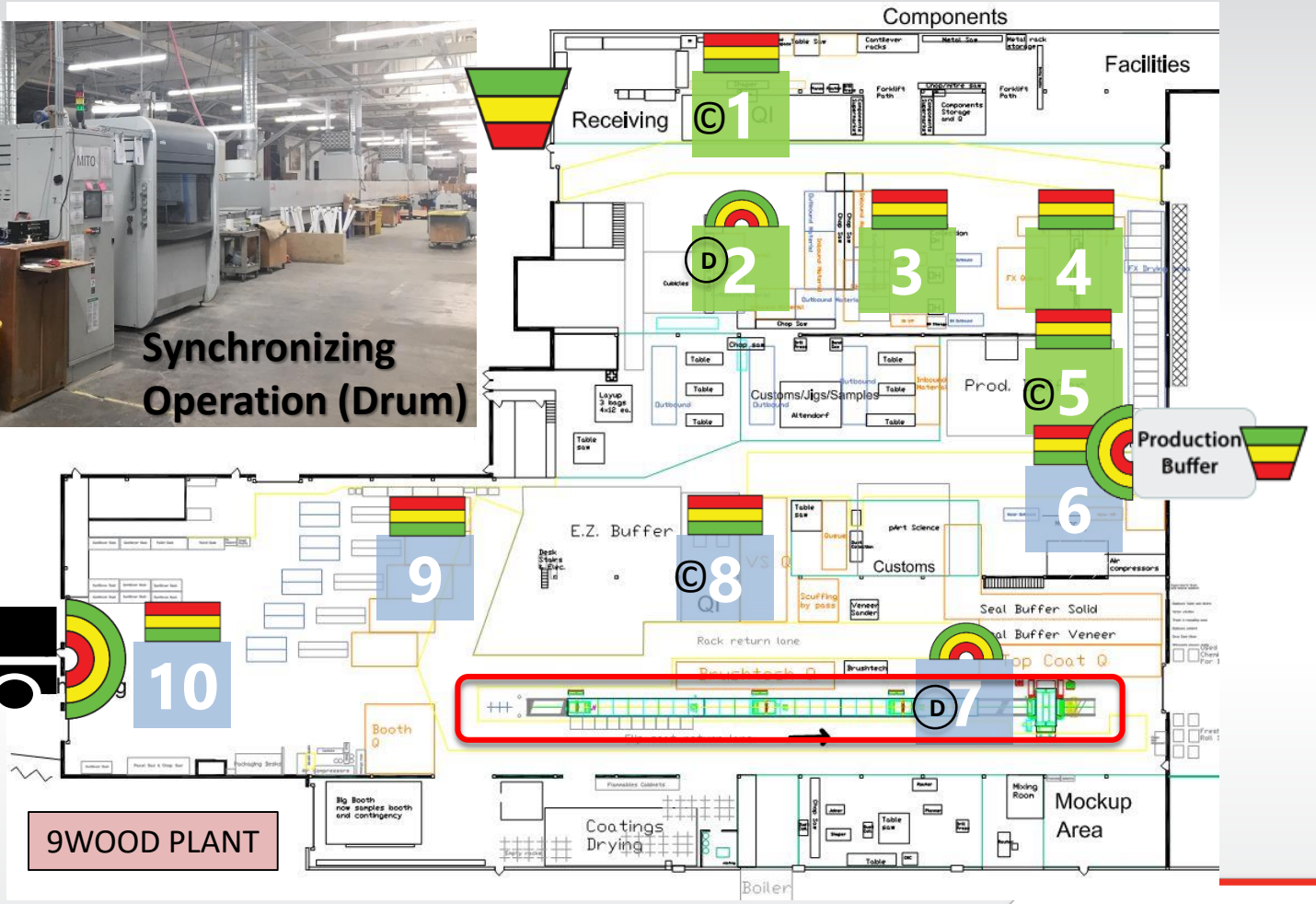


System:
- Manual (crew-paced)
- Air dry (slow)
- Multiple passes
- Support operations

Result:
- Low Buffer visibility
- High variability
- Reliability issues



Current Flow:



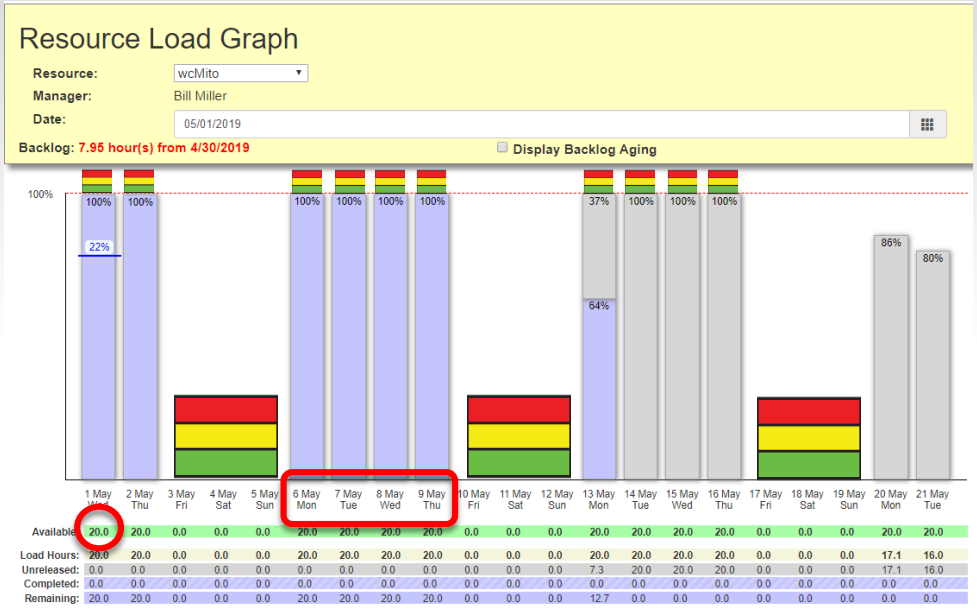
Capacity Buffers:

Schedule

- 2 shifts / day (20 hrs total)
- 4 days / week

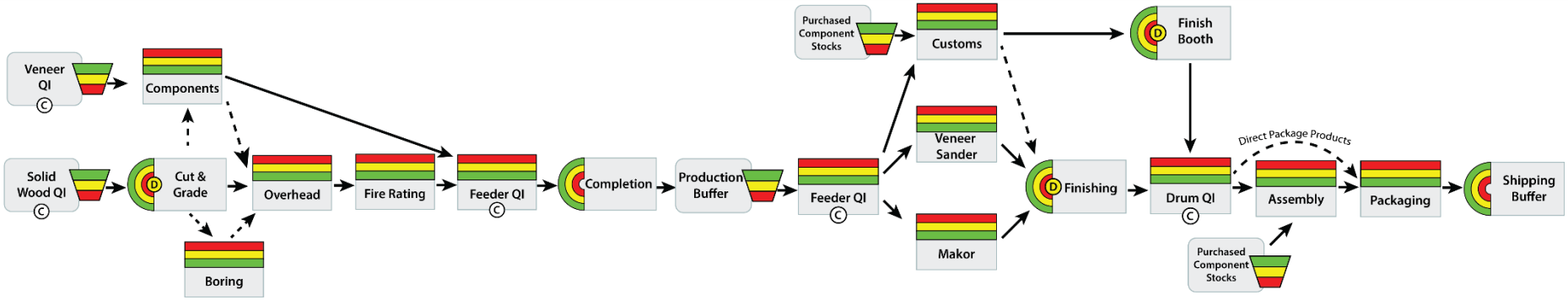
Skills

- Production workers



	S/C	Feeder Zone						Customs Zone						Drum Zone						End Zone			
Day Shift	wcQIReceiving	wcBoring	wcCnG	wcComponents	wcFeederQI	wcFXLumberguard	wcOverhead	wcCoating	wcCustoms	wcSamples	wcSamplesBooth	wcBrushtech	wcDrumQI	wcMakor	wcMito	wcMitoTech	wcVeneerSander	wcAssembly	wcBigBuilding	wcKanban	wcPackaging
Aggregate Skill Index	8.0	13.0	20.2	6.7	11.8	7.7	15.6	2.0	15.3	29.1	2.7	33.0	6.5	25.8	16.3	4.0	25.2	30.3	4.0	0.0	13.0
Average Skill Index	4.0	2.6	2.2	1.3	2.0	2.6	2.0	2.0	1.5	2.6	0.5	3.3	1.3	3.2	2.3	4.0	1.9	1.2	4.0	0.0	1.2
Number Trained	2	3	5	2	4	2	5	1	3	8	1	10	2	7	2	1	6	9	1	0	4
Under/Over	0	1	-1	0	-1	-2	0	-1	-3	3	-1	7	-1	4	-5	0	3	2	0	-1	-1
Number Trained Needed	2	2	6	2	5	4	5	2	6	5	2	3	3	3	7	1	3	7	1	1	5
Number Trainers	2	3	2	2	3	2	2	0	3	5	0	1	2	1	2	1	1	4	1	0	1
Number in Training	0	2	4	3	2	1	3	0	7	3	4	0	3	1	5	0	7	16	0	0	7
Average Skill Index (zone)		2.1						1.7				2.7						1.6			

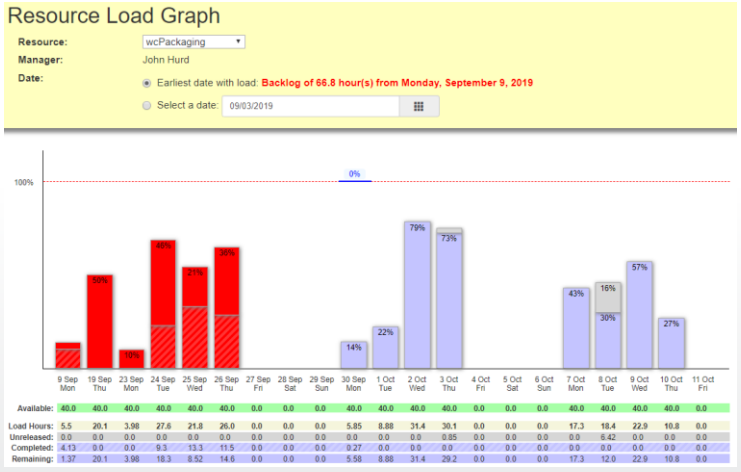
9Wood Operating Model

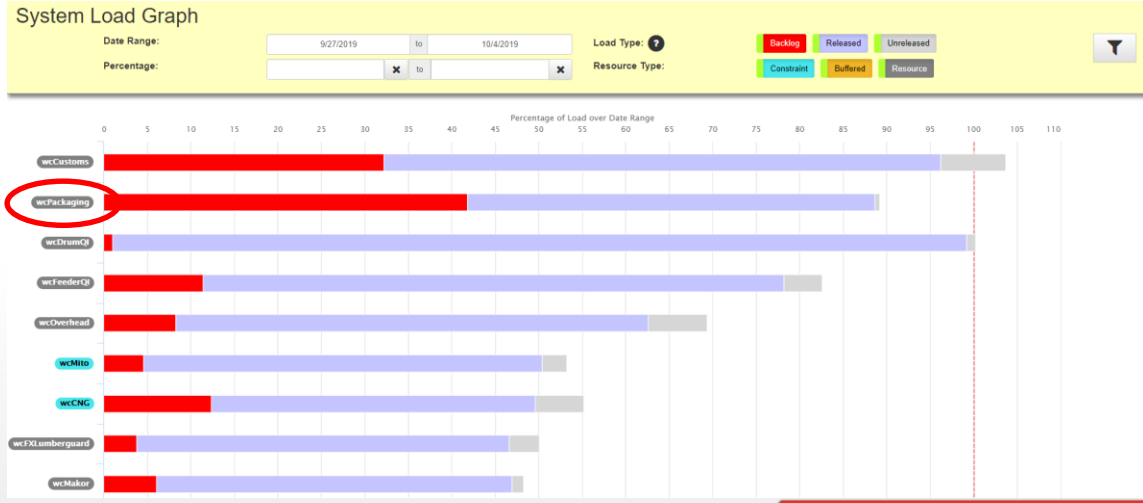


Flow-Based Metrics:

Operational (Daily):

- Schedule execution – Reliability
  1) On Time to Shipping Buffer
  2) On Time to Drum Buffers
- Identify & prioritize obstacles to Flow
- Relevant information
- Alignment

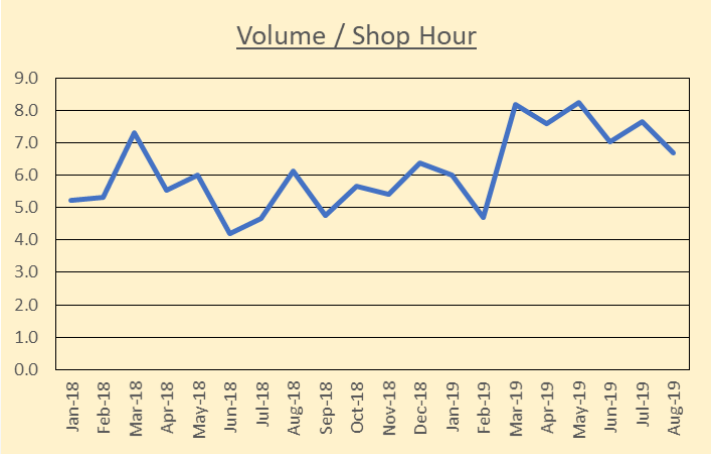


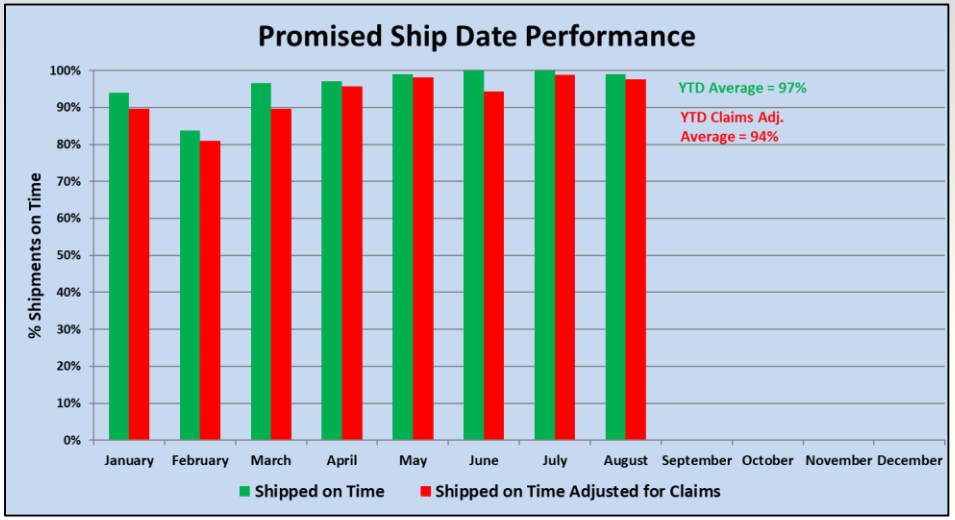


Flow-Based Metrics:

Tactical/Strategic (Monthly/Quarterly):

- On Time Adjusted for Claims
- Flow Rate: Volume/Shop Hour
- Inventory





Supplier Quote:

"We didn't understand what you guys were doing. It didn't make sense to us, but we can see the effect. Your materials move through our system better than other products we sell"

(Strategic) Market Opportunity:

- 2015: Nothing better than 8-10 weeks

  *"**We lose too many projects due to lead time**"*

- Many finished products use common materials

  Stock Buffers

  5-6 weeks → 1 week

- Reserved Capacity

  3-4 weeks → 2 weeks

3-week lead time

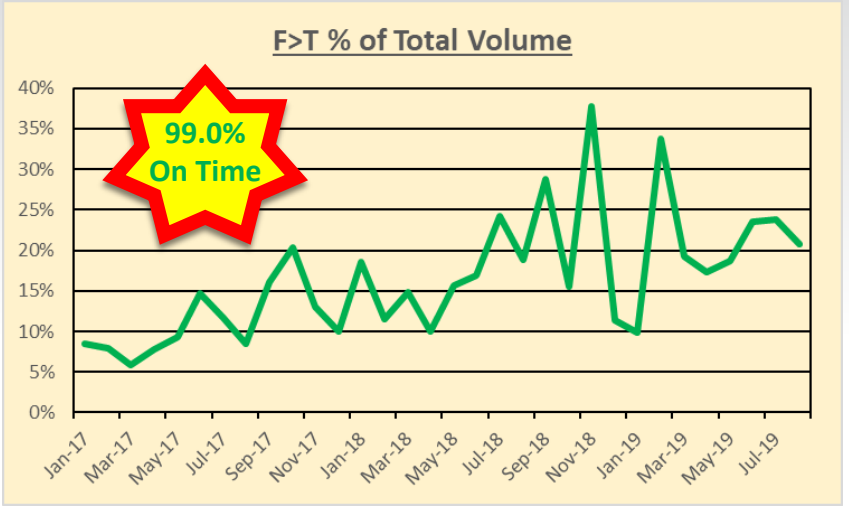
Market Opportunity:

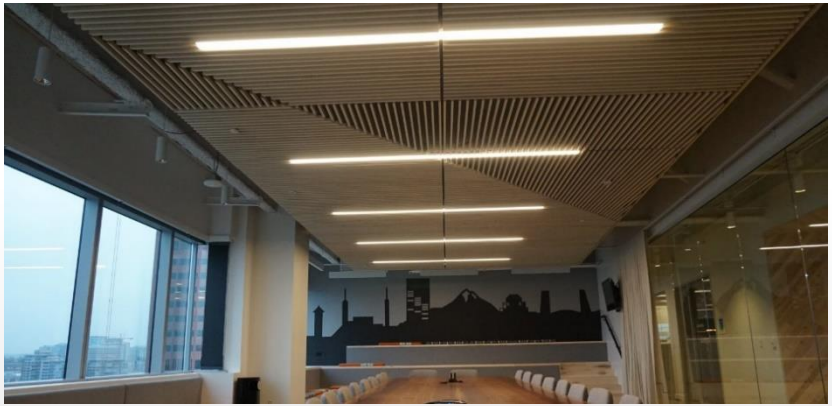
- 2016: FAST TRACK

  Most popular, but ***Simplest*** products

  Custom to the customer, but easy for us
- 2017: Expanded available products (100+ combinations)
- 2018: On Time Shipment Guarantee

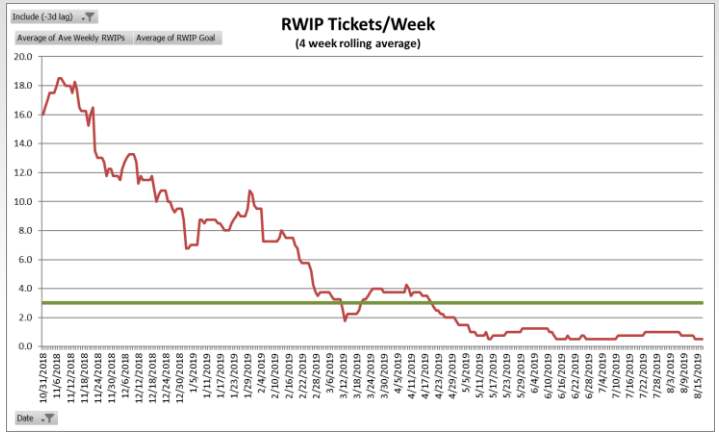
5% refund per business day late

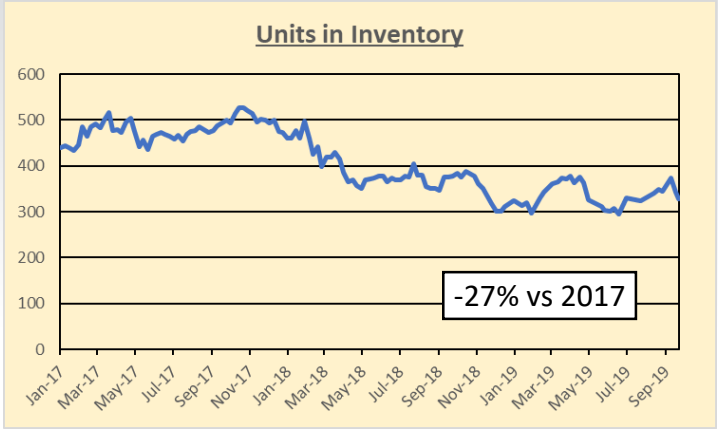


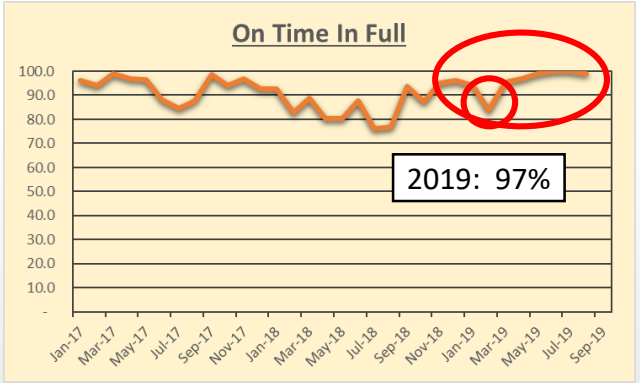


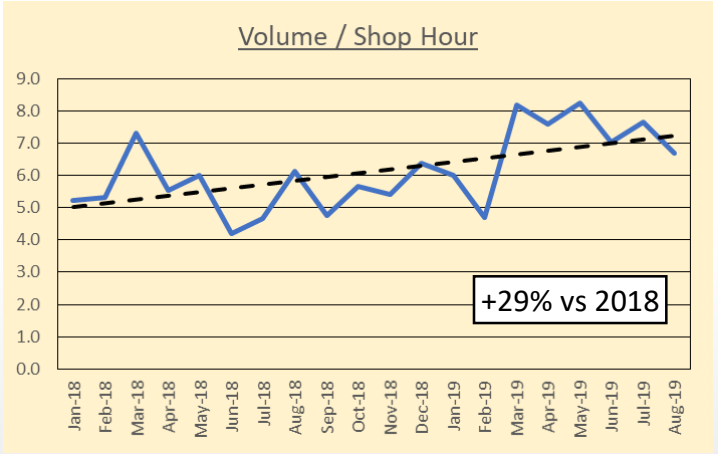
Results:

- Visibility ↑
- Variability ↓
- Flow ↑
  - ✓ Quality
  - ✓ Inventory
  - ✓ Capacity (20-30% excess)
  - ✓ Cost (-25% headcount)
- Reliability ↑
- Resilience







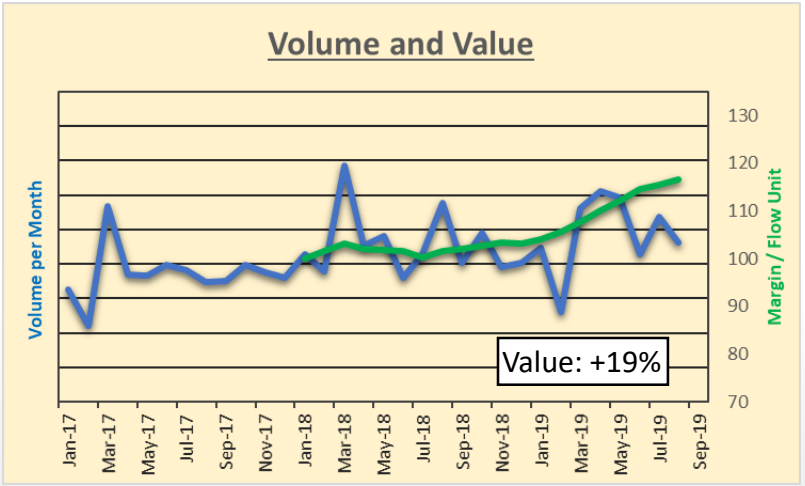


What's Next:

- Implement DDMRP Software (Phase I - 11/1)
  - Production Buffer → Stock Buffer
  - 3 week lead time → 1 week
- Automate Upstream Drum (-3% headcount)

Shift Focus

- Price & Sell based on Flow:
  - Contribution/Shop Hour (Flow Rate)
  - Operational capability
-



Thank You

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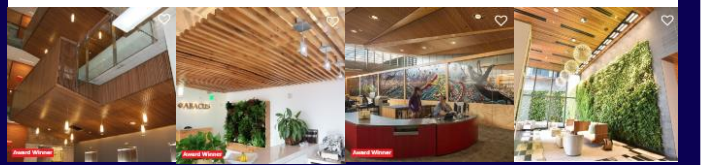
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