

Labor & Resource Management

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POWERED BY **POSSIBILITIES.**

SSI SCHÄFER



MODEX 2020

GEORGIA WORLD CONGRESS CENTER
ATLANTA | MARCH 9-12
MODEXSHOW.COM

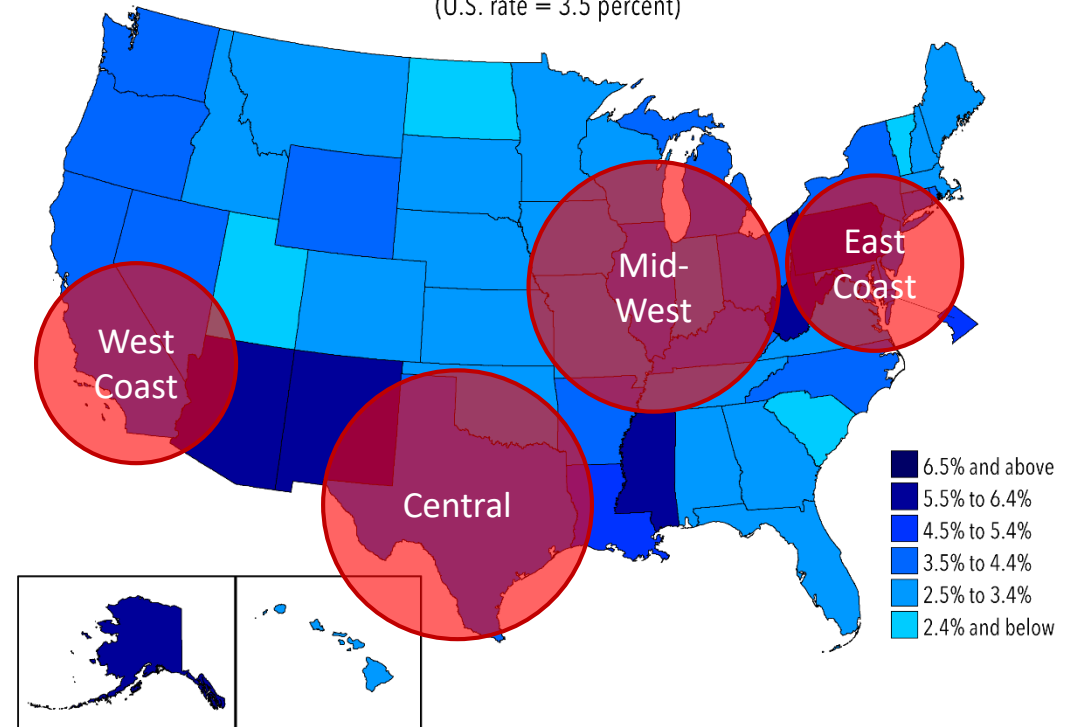
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LMS | Resource Management Explanation

Problem:

- Unpredictable
 - High associate turnover
 - 20-30% daily call out/no show rate in some warehouse operations
- Competitive
 - Low unemployment in ideal regions
 - DC/FCs are commonly clustered

Unemployment rates by state,
seasonally adjusted, December 2019
(U.S. rate = 3.5 percent)



Customer expects orders faster and more accurate than ever before

LMS | Resource Management Explanation

Potential Solutions:

- Automation: Barrier to entry
- Location: Not an option for everyone
- Labor Management System (LMS):
 - Short lead time: A few months to get running
 - ROI: Common to see return within 6 months
 - Effective: Not uncommon to find 20%+ productivity increase

When to Implement a LMS?

• Existing building

- Well defined processes and stability in WMS
- Accurate and detailed operational data exists

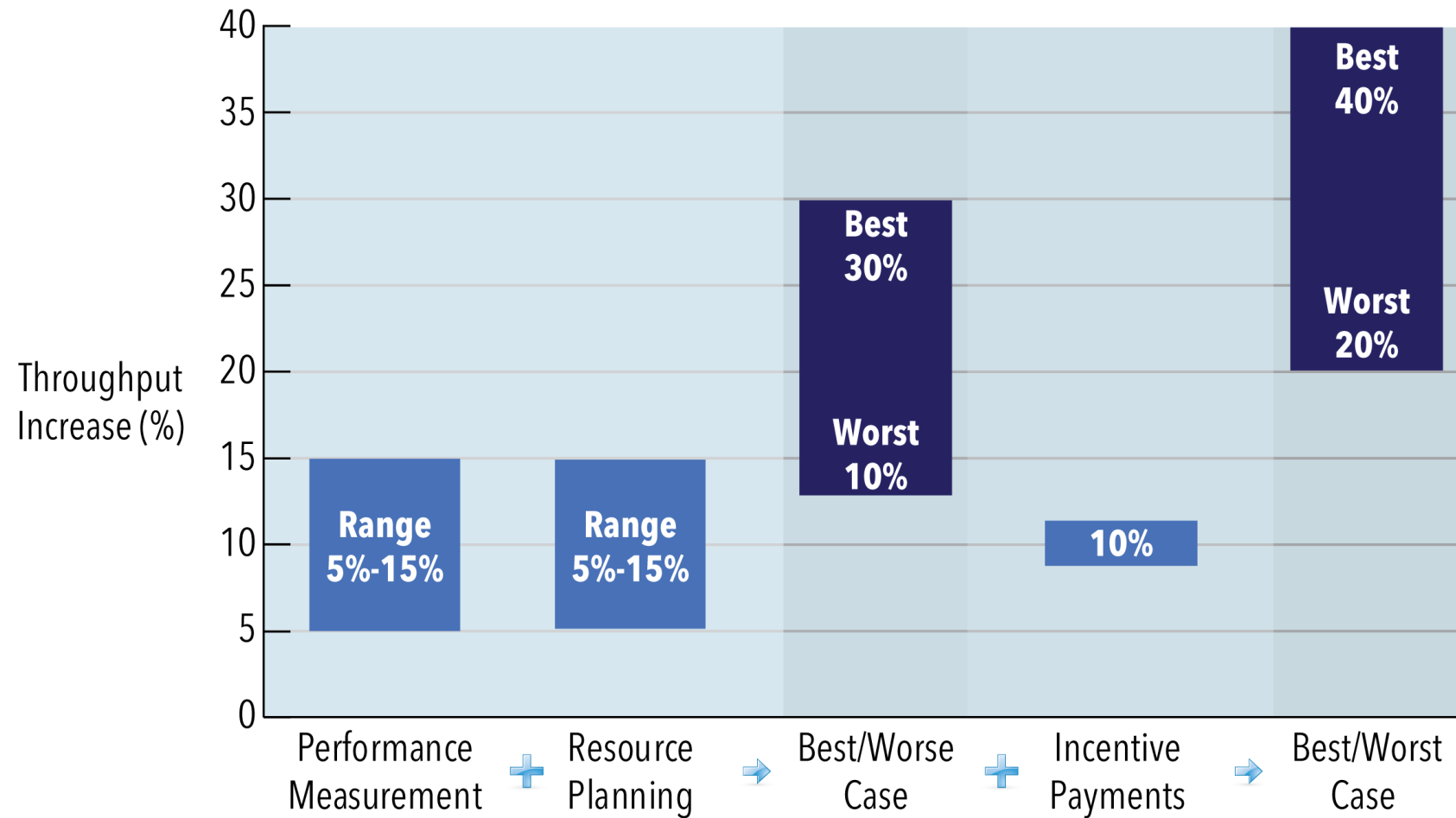


• New building

- Avoid planning to bring LMS live at the same time as the site
- Workflow is subject to change



LMS Divided into three parts



Data based on anecdotal experience with customers who have implemented LMS

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Performance Measurement

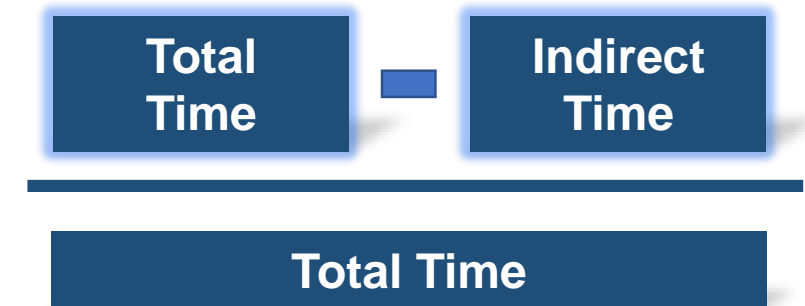
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What is performance measurement?

Utilization Score

- Managers target a utilization % to make sure that paid hours to their employees are being used productively
- Direct vs. Indirect Time
- Calculation of time spent on task over total time spent



What is performance measurement?

Performance Score

- Used by managers to assess worker productivity - should be shared with the workers through reports and live scores
- Calculation of time it took to do actual work vs. the goal time set to do that work

Goal Time

Actual Time

Setting Realistic Goals

- **Utilization**

- 100% not possible
- Improvement lies on operations managers

UTILIZATION 85%+



- **User Performance**

- Flexible
- Clear to associate

PERFORMANCE $\geq 100\%$



Static Standards vs. Engineered Standards

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Static Standards

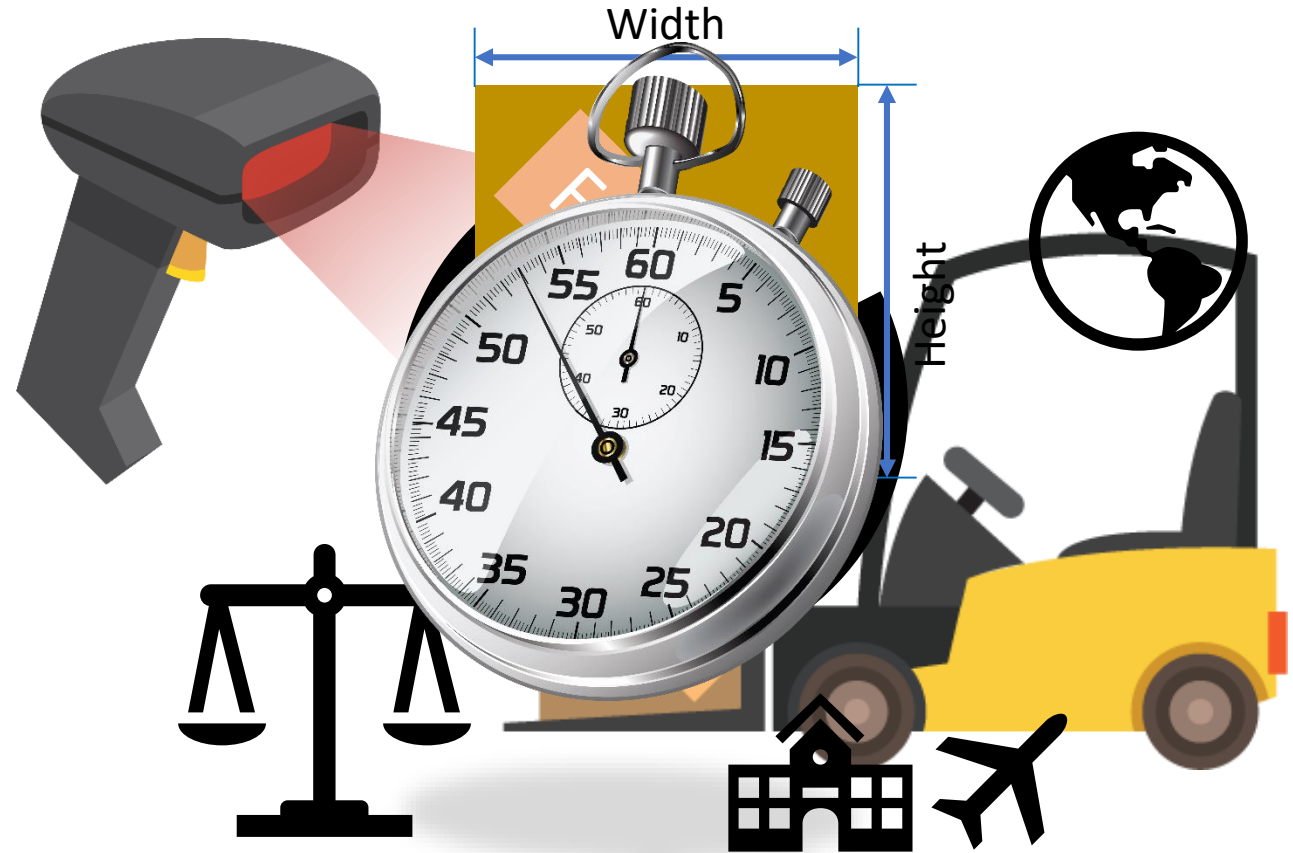
- Completion of 1 process cycle to measure performance
- Simple to implement
- Does not account for exceptions
- Does not account for task variability

Engineered Standards

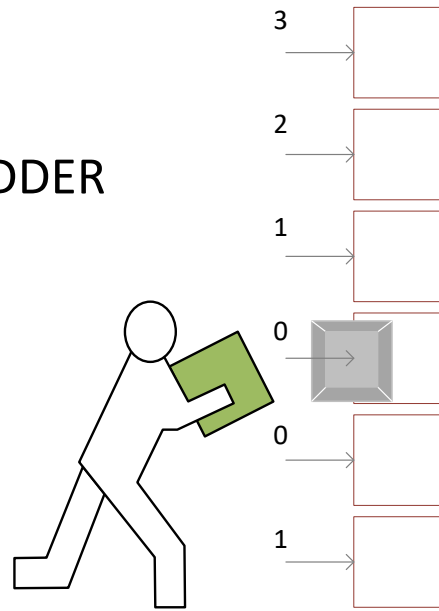
- Designed for fairness and accountability
- All Systemic interaction tracked as “Events” or “Triggers”
 - WMS/WCS System
 - Time Tracking Software
- Account for multiple factors:
 - Product Category
 - Volume and Weight
 - Experience of associate
 - Distance Traveled

Engineered Standards Process

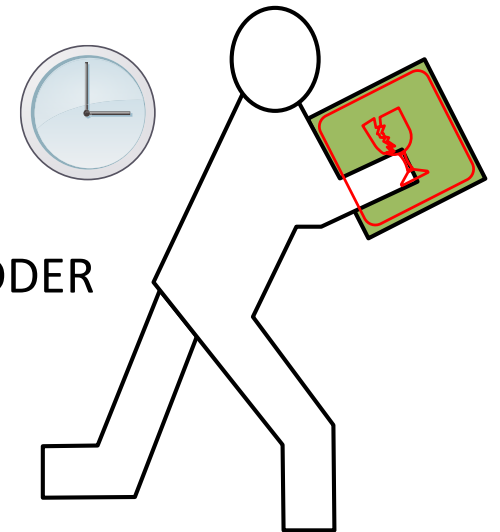
- Identify Events
- Specify Adders
- Time Study Process
- Continuous Improvement



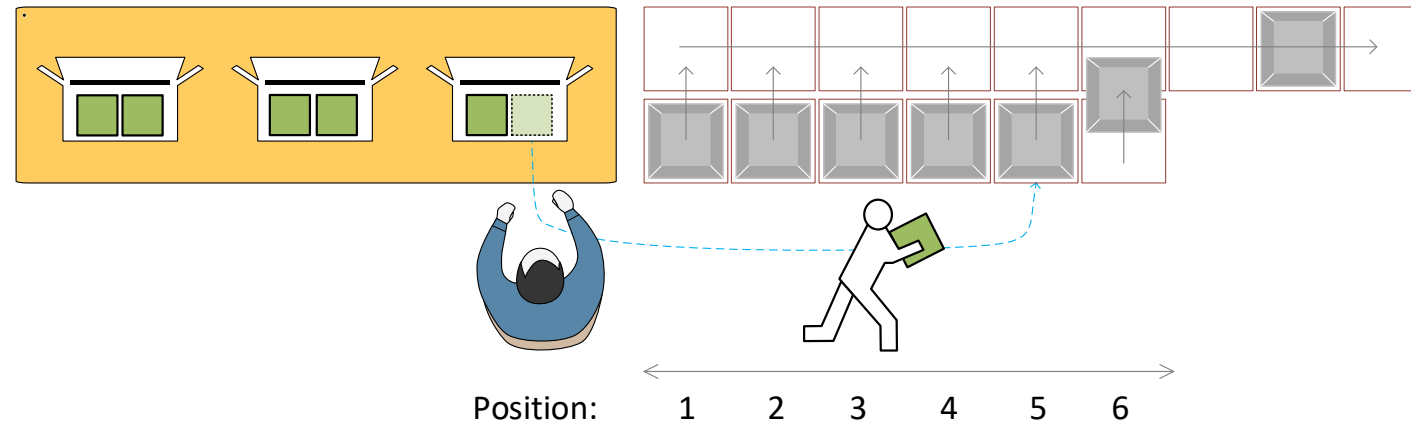
BEND/REACH TIME ADDER



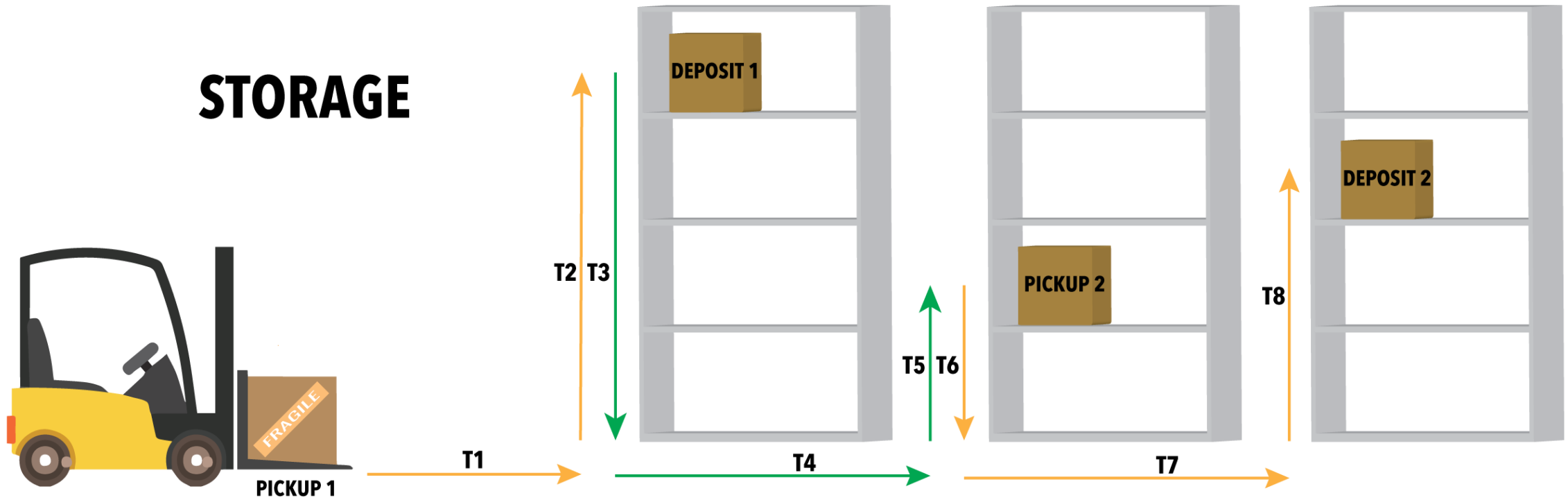
FRAGILE TIME ADDER (GOODS CATEGORY)



POSITION TIME ADDER



STORAGE



Total expected time of 1st DEPOSIT = PICKUP 1 from IG area + T1 + T2 + DEPOSIT 1

Total expected time of 2nd DEPOSIT = T3 + T4 + T5 + PICKUP 2 + T6 + T7 + T8 + DEPOSIT 2

$$T1 = \frac{S1}{\text{Driving Speed Load}}$$

$$T2 = \frac{S2}{\text{Lifting Speed Load}}$$

$$T3 = \frac{S3}{\text{Lowering Speed Unloaded}}$$

$$T4 = \frac{S4}{\text{Driving Speed Unloaded}}$$

$$T5 = \frac{S5}{\text{Lifting Speed Unloaded}}$$

$$T6 = \frac{S6}{\text{Lowering Speed Loaded}}$$

$$T7 = \frac{S7}{\text{Driving Speed Loaded}}$$

$$T8 = \frac{S8}{\text{Lifting Speed Loaded}}$$

Standards Comparison

Static

Easy to implement

Simple

Lacks Reliability

Ineffective

Engineered

Requires WMS/WCS with tracked systemic interaction

Clear & Thorough

Fair

Detailed

Standards Comparison

Example

Static Standard = 1 pick/min

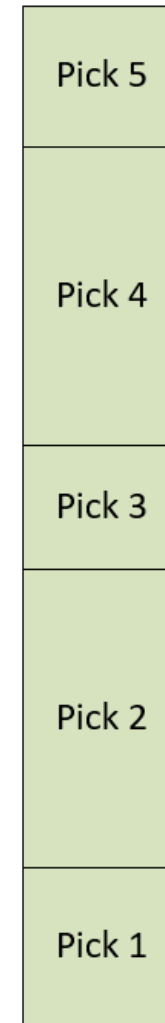
Time Spent = 7 minutes total

Static Performance = $(\text{Goal (t)} / \text{Actual (t)}) * 100$
 $= (5 / 7) * 100 = \mathbf{71\%}$

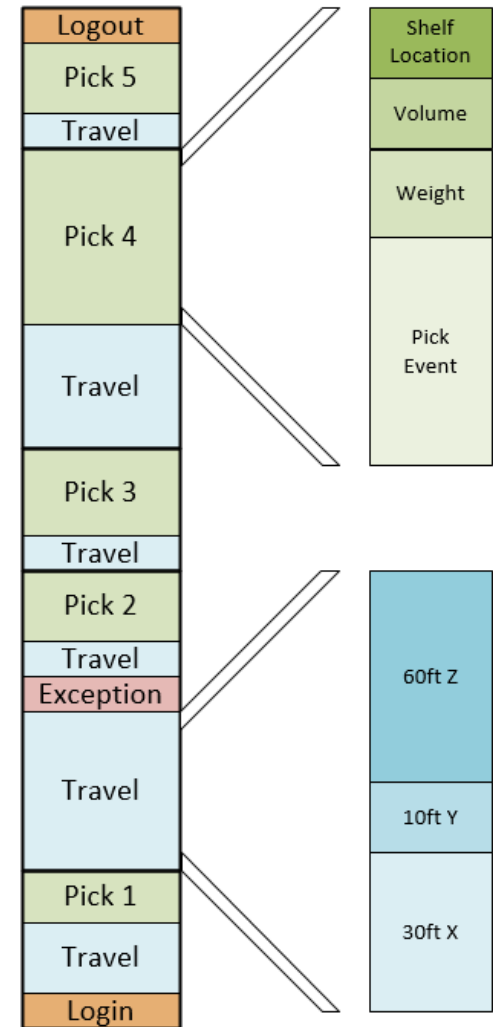
Eng. Performance = $(\text{Goal (t)} / \text{Actual (t)}) * 100$
 $= (X / 7) * 100 = \mathbf{???}$

Total Time = 7 minutes

Static



Engineered



Standards Comparison

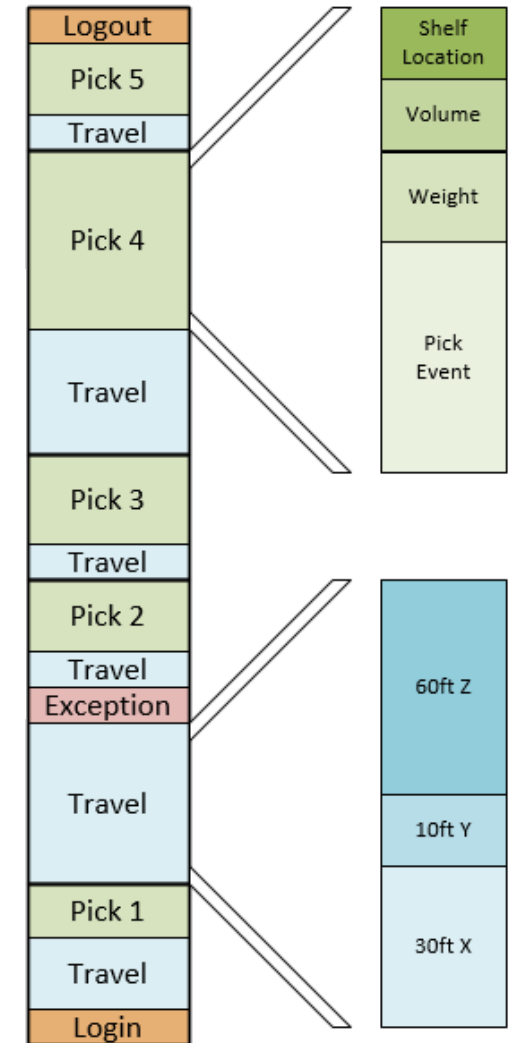
Engineered

Event	Goal (s)	Weight	Volume	Shelf Location	Distance	Total Goal (s)	Actual (s)
Login	10	N/A	N/A	N/A	N/A	10	10
Pick 1	15	2	3	3	25	48	46
Exception	30	N/A	N/A	N/A	N/A	30	25
Pick 2	15	4	3	3	80	105	120
Pick 3	15	3	2	2	15	37	40
Pick 4	15	6	5	7	75	108	128
Pick 5	15	3	2	5	15	40	41
Logout	10	N/A	N/A	N/A	N/A	10	10

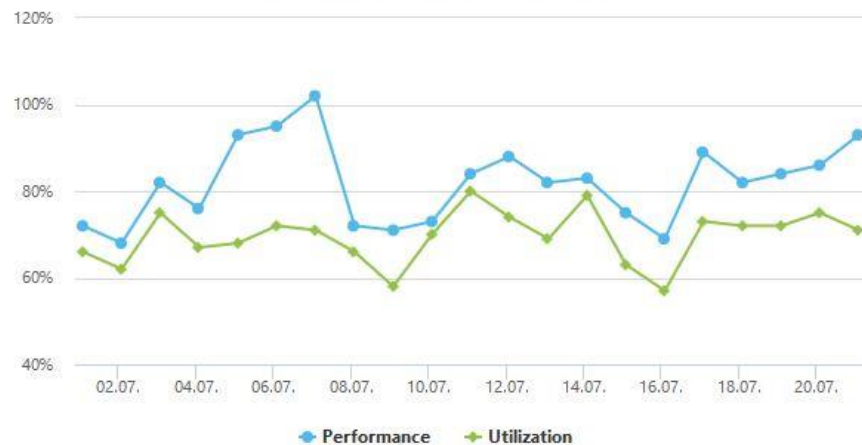
Performance
100%
104%
120%
88%
93%
84%
98%
100%

Engr. Performance = 92%

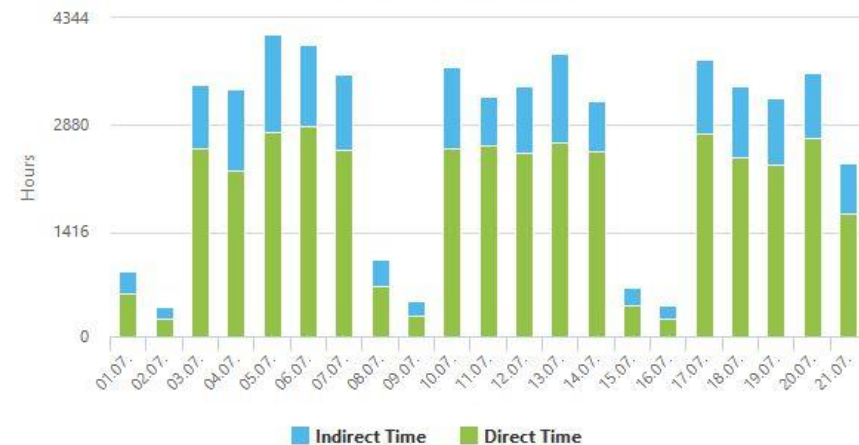
Static Performance = 71%



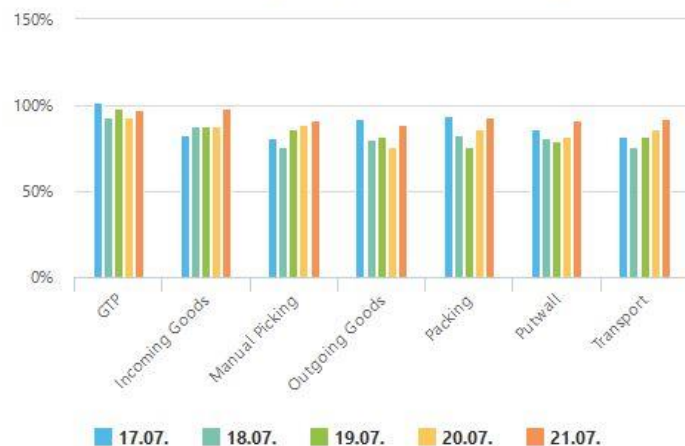
Performance & Utilization MTD



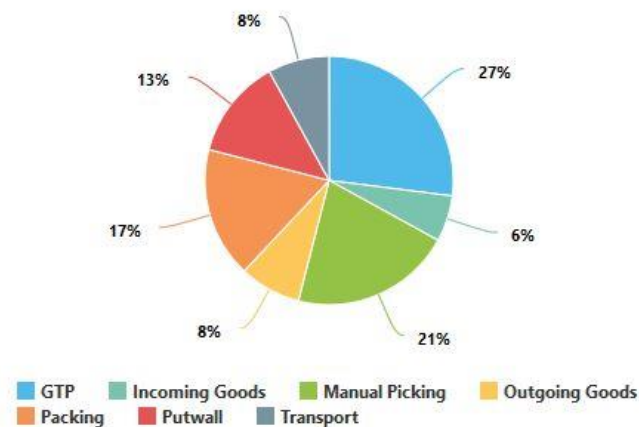
Direct/Indirect Times MTD



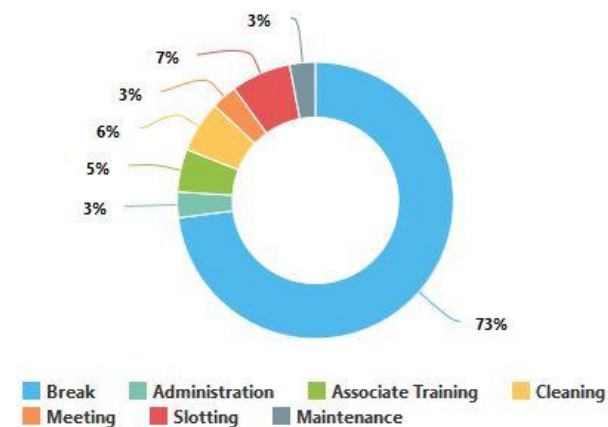
Performance by Department - Last 5 Days



Direct Hours by Department - Last 5 Days



Indirect Hours by Type - Last 5 Days



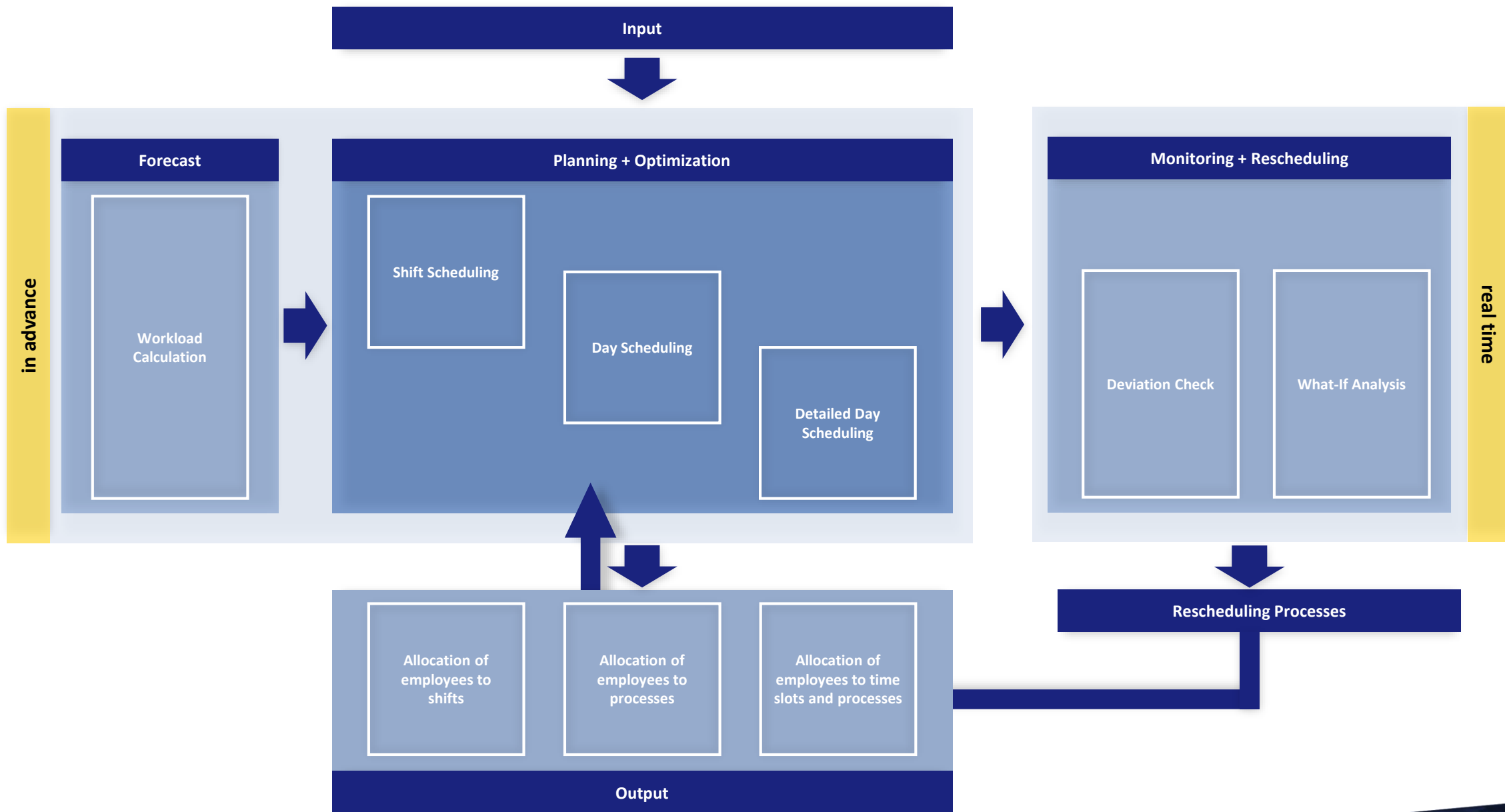
Resource Management and Planning

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Goals

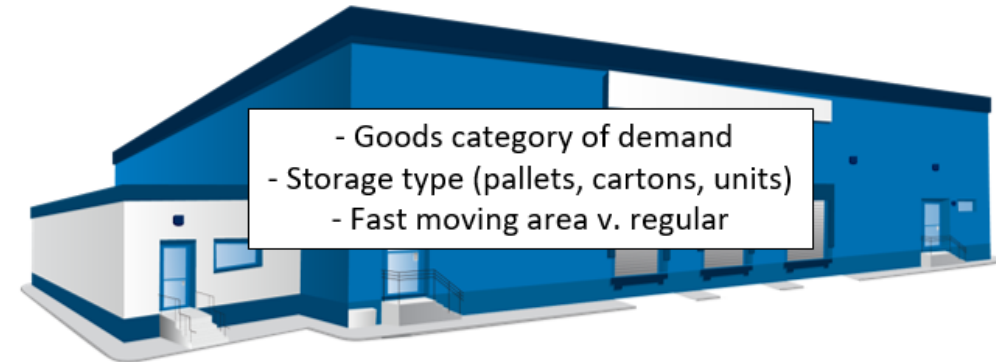
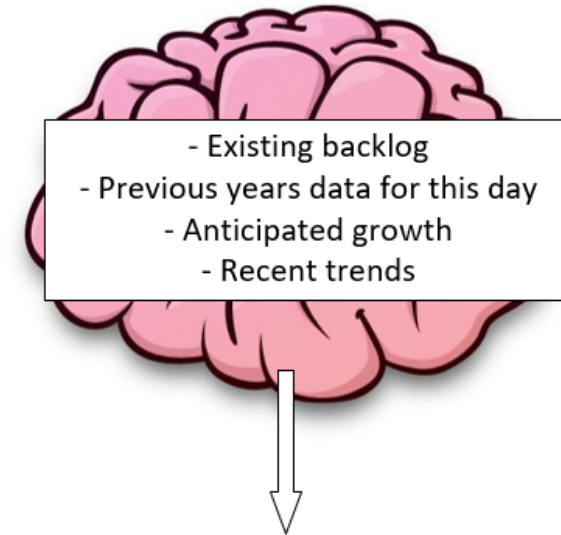
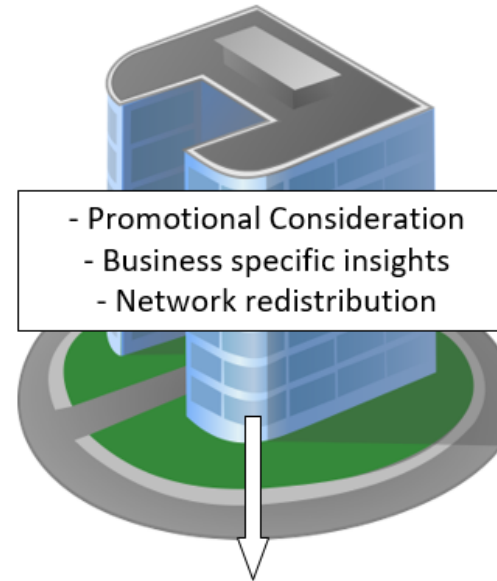
- Right People, Right Place, Right Time
- Leverage available data to make the correct decisions
- Automate the planning process



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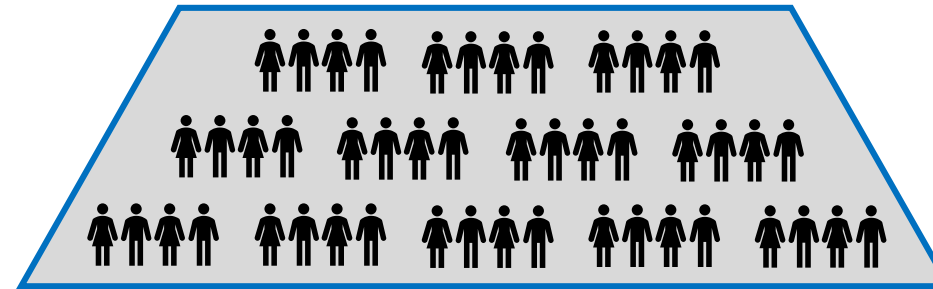
Forecast

- How much throughput do we need to plan for?
- Does the system account for promotions or atypical order profiles?
- Which areas of the warehouse do we expect to be impacted?

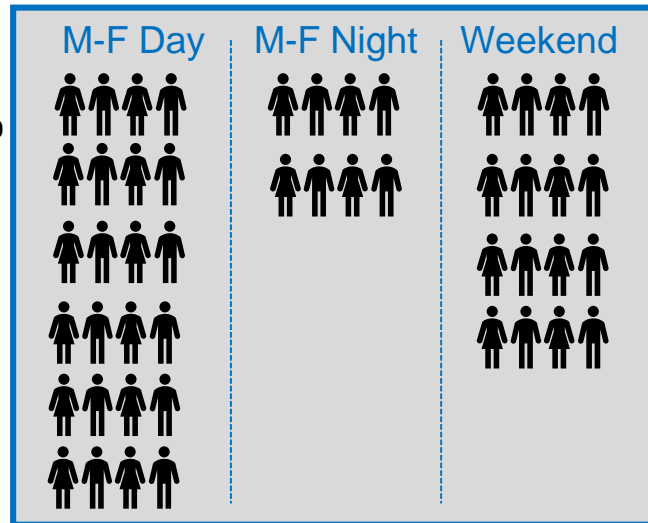


Planning and Optimization

Resource Pool



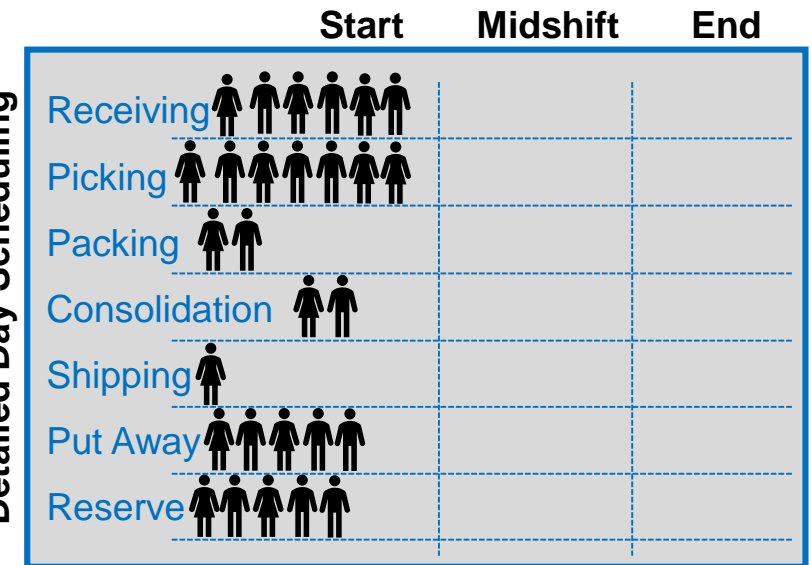
Shift Scheduling



Day Scheduling

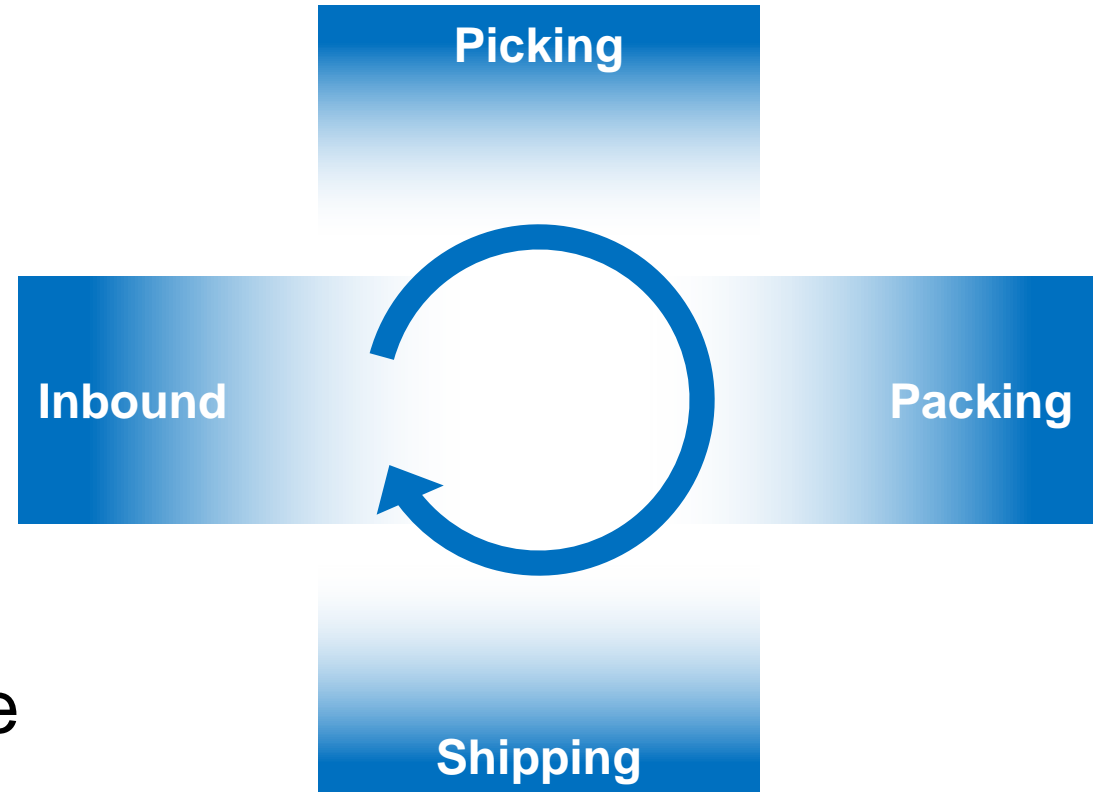


Detailed Day Scheduling



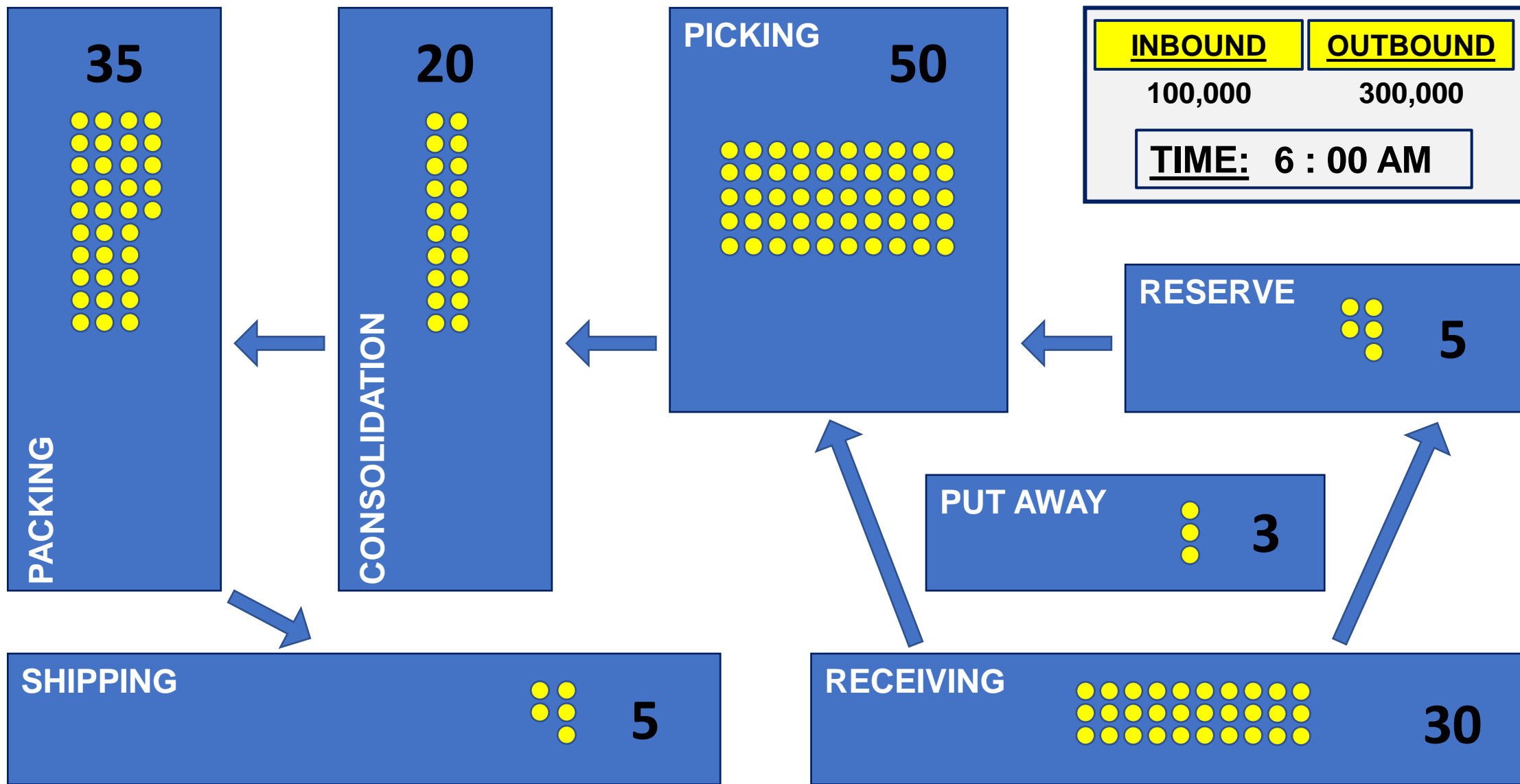
Monitoring and Rescheduling

- Maintain system balance
- SLA prioritized
- Prescriptive resource changes
- Based on historical performance



People and Machines

DATE	NEW ORDER	SKU	QTY
03/09/20	SSI001		1
03/09/20	SSI002		3
03/09/20	SSI003		5
03/09/20	SSI004		8
03/09/20	SSI005		2
03/09/20	SSI006		2
03/09/20	SSI007		14
03/09/20	SSI008		1
03/09/20	SSI009		4
03/09/20	SSI010		4



Incentive Payments

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Benefits

- Money Motivation
- Win-Win
- Employee Retention



Considerations

- Requires quality labor standards in place
- Awards can be managed from LMS with basic interface to ERP and time tracking systems
- Incentives don't always need to be financial

Challenges

Challenge: Paid work gets attention, indirect work does not

Solution: System should track all actions. Mandatory indirect tasks must be fulfilled to trigger incentives

Challenge: Encourages rushing, which improves speed but reduces accuracy

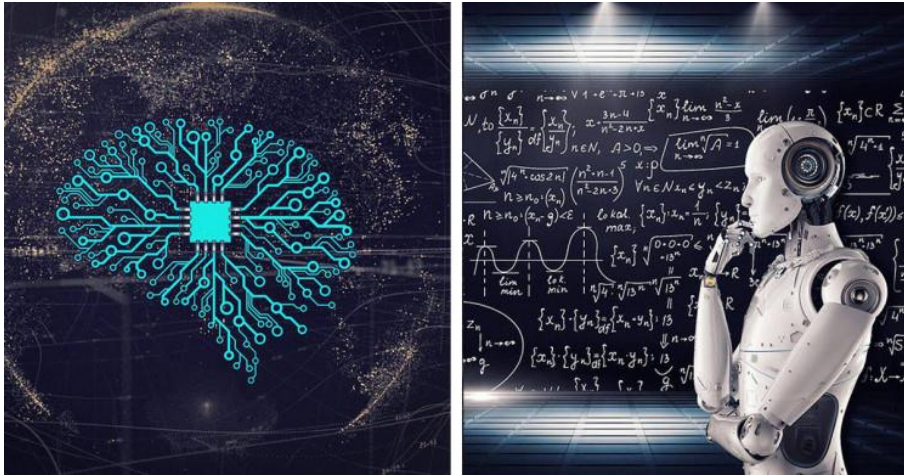
Solution: Tight coupling with WMS/WCS allows for auditing of work, with credit only given to successful actions

Future of LMS

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Future of LMS



Machine Learning and AI



Gamification



Employee Engagement

Conclusion

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Conclusion

- Unpredictable workforce requires new solutions
- LMS provides quick ROI, and immediate results when done correctly
- Managers have more time on the floor, less time spent on excel/researching

Questions?

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