
The next generation of Supply Chain Planning Solutions

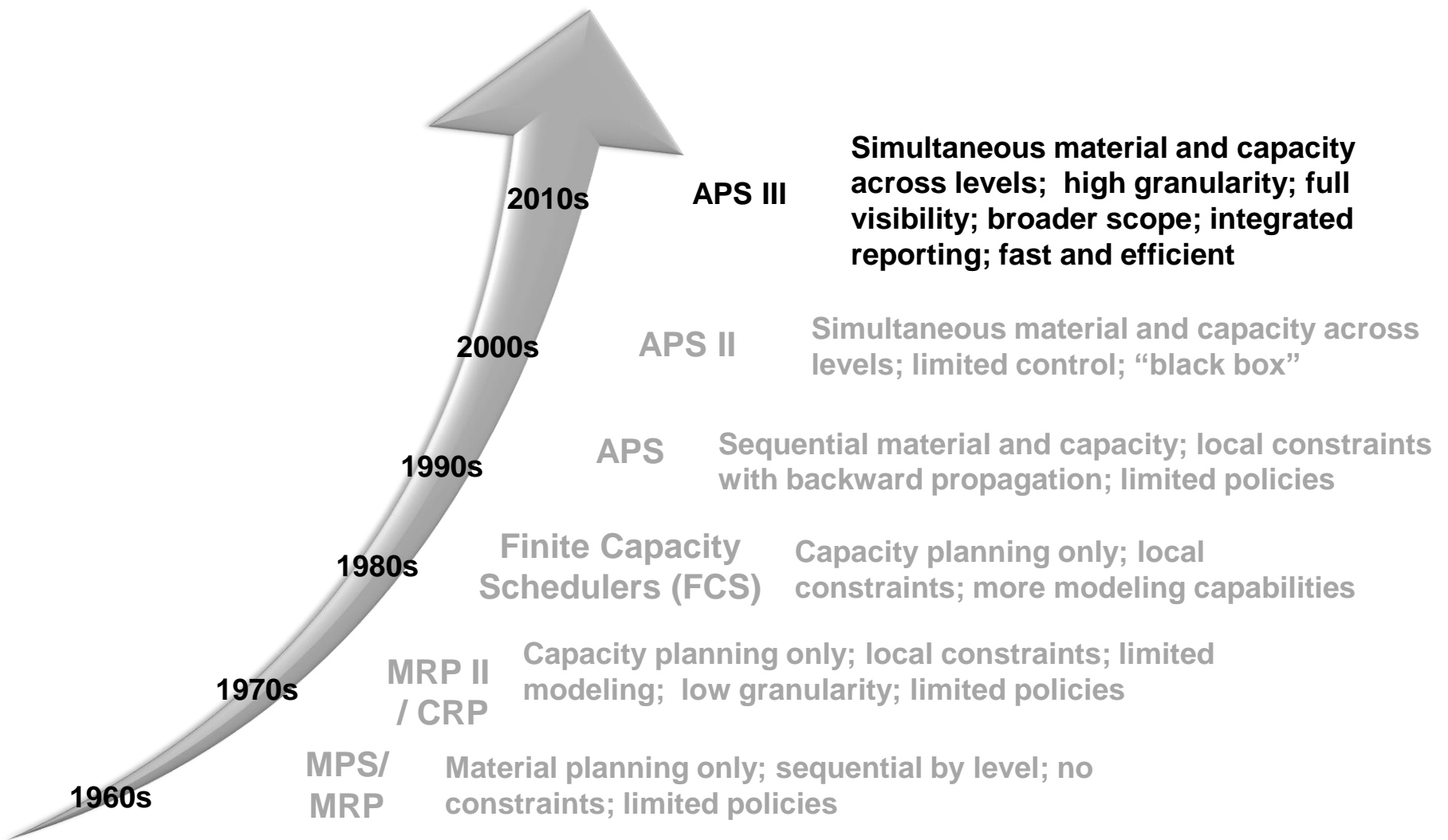
An Art and a Science

Kristian Aspelin

Sept 4, 2014

insync

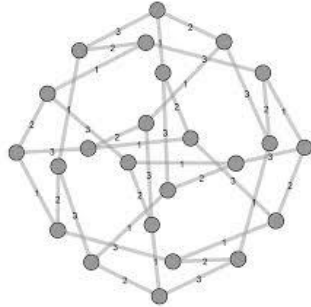
Evolution of Advanced Planning Systems



The 4 Pillars of a Planning System

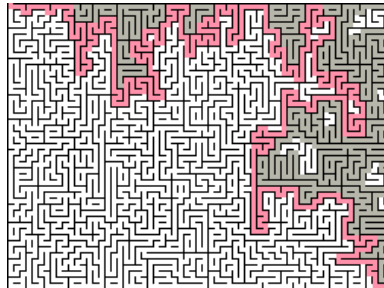
1 Modeling Capabilities

Can the system model the supply chain and constraints correctly?



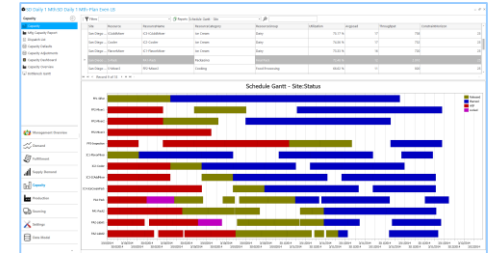
2 Powerful Algorithm

Can the solver Optimize and Create a plan as desired?



3 User Interface

Can users analyze and understand the plan?



4 Integration

Can the system easily connect with needed Data sources?



Modeling

- Model the supply change accurately
 - Constraints, Capacity, Alternates, Attributes, Multiple Outputs
- “Real” Scenario Planning
- Use Model for multiple purposes
 - Production / Master / S&OP / Budget plans
- Be able to Prioritize
- Granularity Options
 - Bucketed Planning

Telescopic Buckets

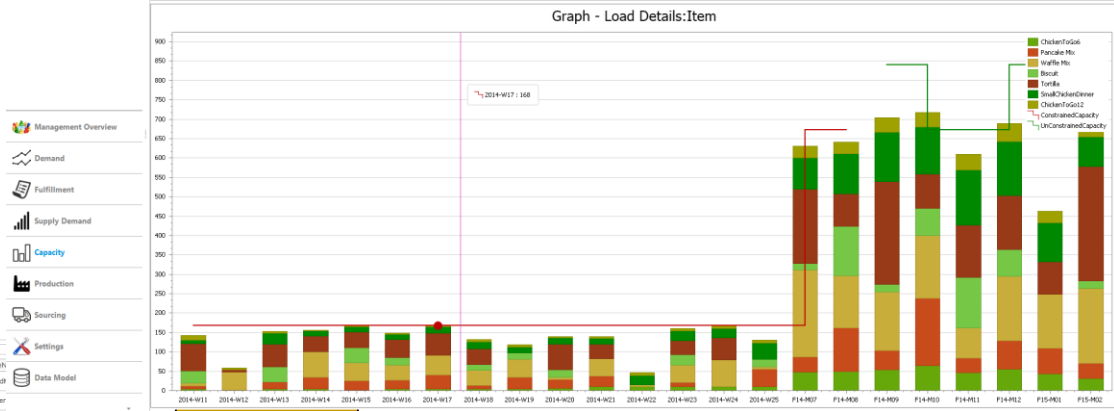
13 Wks 9 Mth:13 Wks 9 Mth-Plan

Capacity

Site	Resource	ResourceName	ResourceCategory	ResourceGroup	Utilization	AvgLoad	Throughput	ConstraintHorizon
San Diego	S-Inspection	IP3-Inspection	Test	Food Processing	100.15 %	330	49,748	999
San Diego	S-Labor	S-Labor	Labor		87.93 %	2,895	144,772	0
San Diego	S-Pack	PA1-Pack	Packaging	Food Pack	86.96 %	280	37,026	180
San Diego	IC-AddMixer	IC3-ICAddMixer	Ice Cream	Dairy	83.84 %	256	5,112	180

X [Site] = 'San Diego Factory'

Record 4 of 18

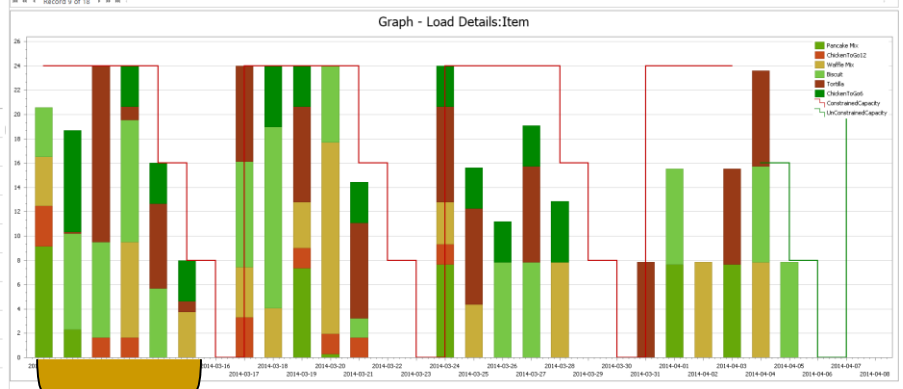


SD Daily 1 Mth:SD Daily 1 Mth-Plan Even LB

Capacity

Site	Resource	ResourceName	ResourceCategory	ResourceGroup	Utilization	AvgLoad	Throughput	ConstraintHorizon
San Diego	IC-AddMixer	IC3-ICAddMixer	Ice Cream	Dairy	73.33 %	16	726	25
San Diego	S-Pack	PA1-Pack	Packaging	Food Process	74.48 %	15	5,018	25
San Diego	S-Mixer2	IP2-Mixer2	Cooking	Food Process	66.62 %	11	920	25

Record 9 of 18

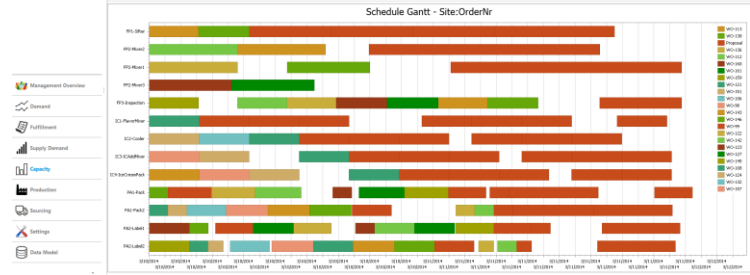


SD Daily 1 Mth:SD Daily 1 Mth-Plan Even LB

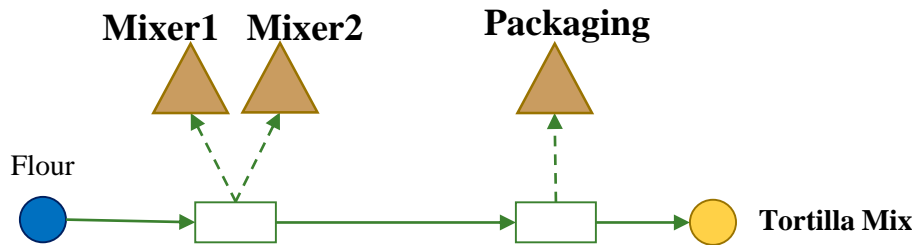
Capacity

Site	Resource	ResourceName	ResourceCategory	ResourceGroup	Utilization	AvgLoad	Throughput	ConstraintHorizon
San Diego	IC-AddMixer	IC3-ICAddMixer	Ice Cream	Dairy	75.17 %	17	736	25
San Diego	Cooler	IC2-Cooler	Ice Cream	Dairy	74.26 %	17	732	25
San Diego	FlavorMixer	IC1-FlavorMixer	Ice Cream	Dairy	70.33 %	16	703	25
San Diego	S-Pack	PA1-Pack	Packaging	Food Pack	70.73 %	23	30,120	25
San Diego	IC-AddMixer	IC3-ICAddMixer	Cooking	Food Processing	66.62 %	11	920	25

Record 1 of 18

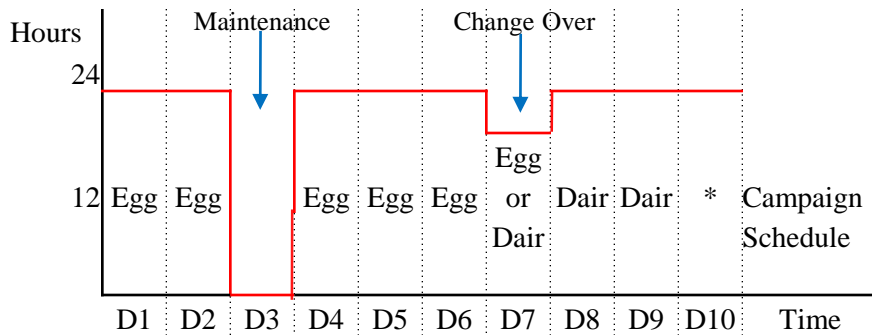


Capacity Examples

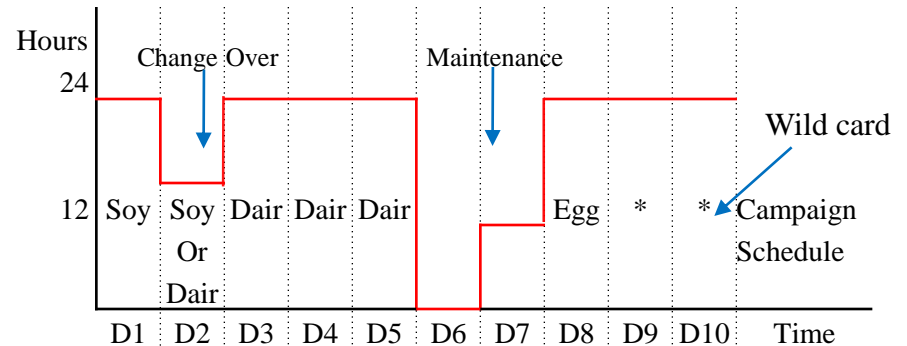


- Alternate Resources:**
1. Can have different Yields
 2. Can have different Efficiency

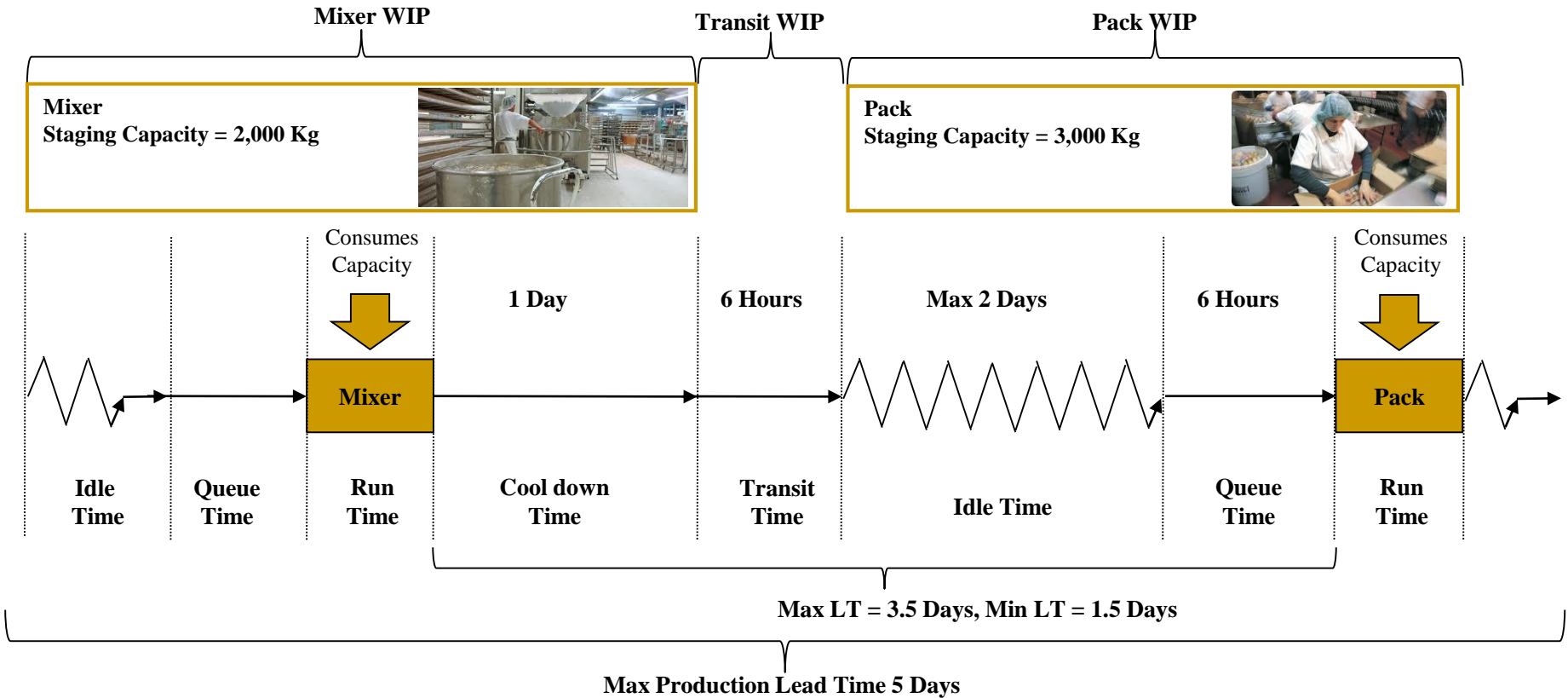
Capacity – Mixer 1



Mixer 2



Routing Example



Algorithm

- Create a plan as **Desired**
- Across Levels and Simultaneous Material and Capacity resolution
 - Know all the Constraints before making a decision
- Be able to control what constraints that are “hard” vs “soft”
- Be able to understand the algorithm
 - Avoid “Black Box” syndrome



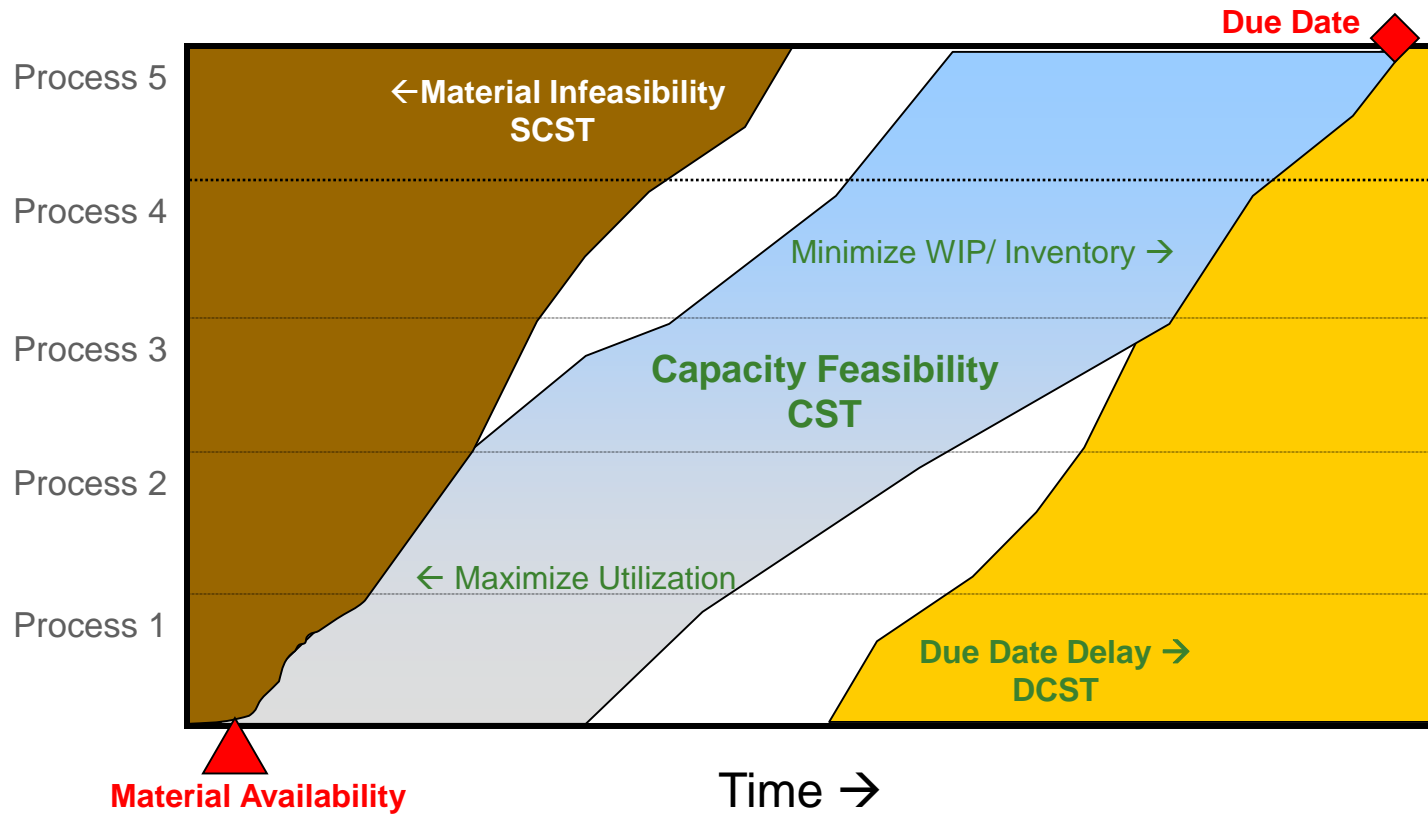
What is a good Plan?

- Optimized?
- Be able to configure the system so that the results are like the “human” planner would make them
- Empower Planners
 - Able to influence the plan/algorithm to get the desired results

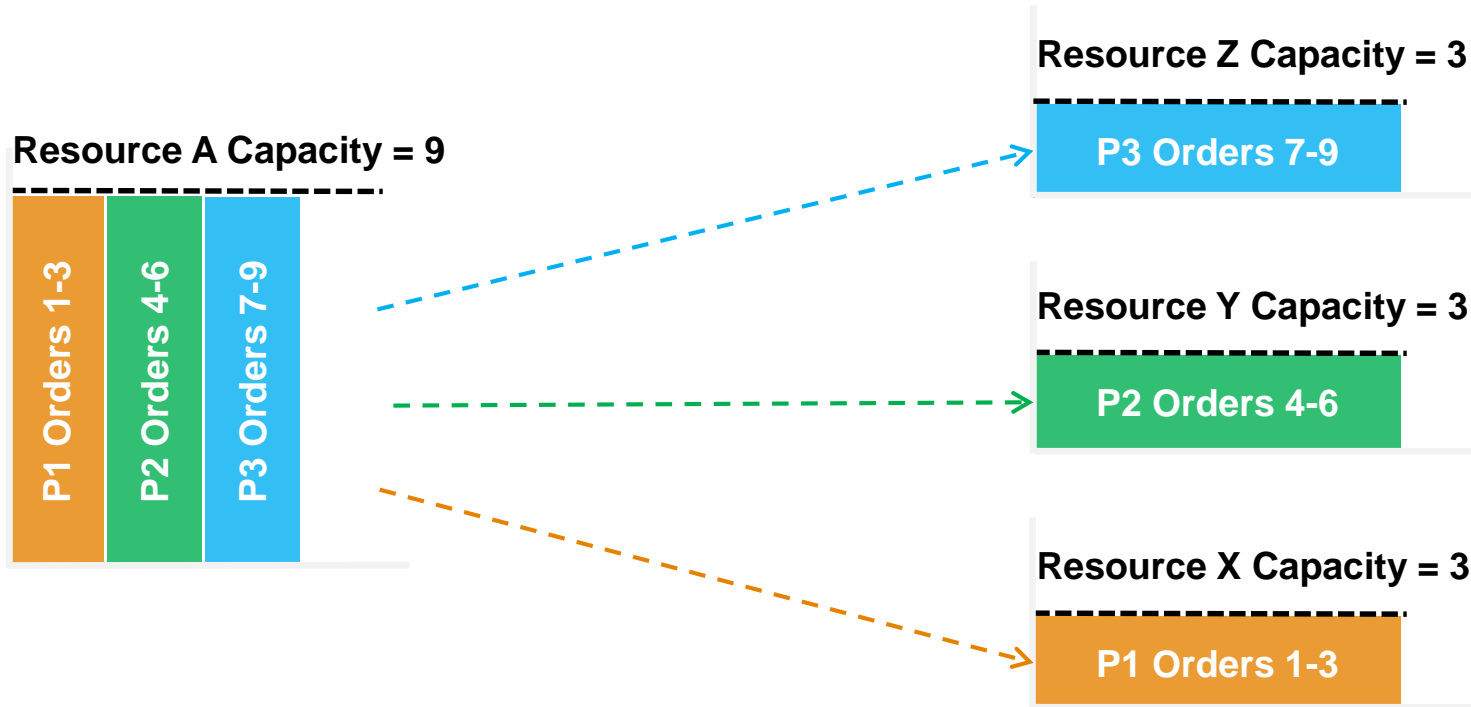
“Our planners use to be the last in the office to leave, after implementing iPlanner, they were the first to leave, at the same time we improved our ability to execute to our plan from 78% to 94%”

Seungmin Lee, Dongbu Steel

Algorithm Concepts

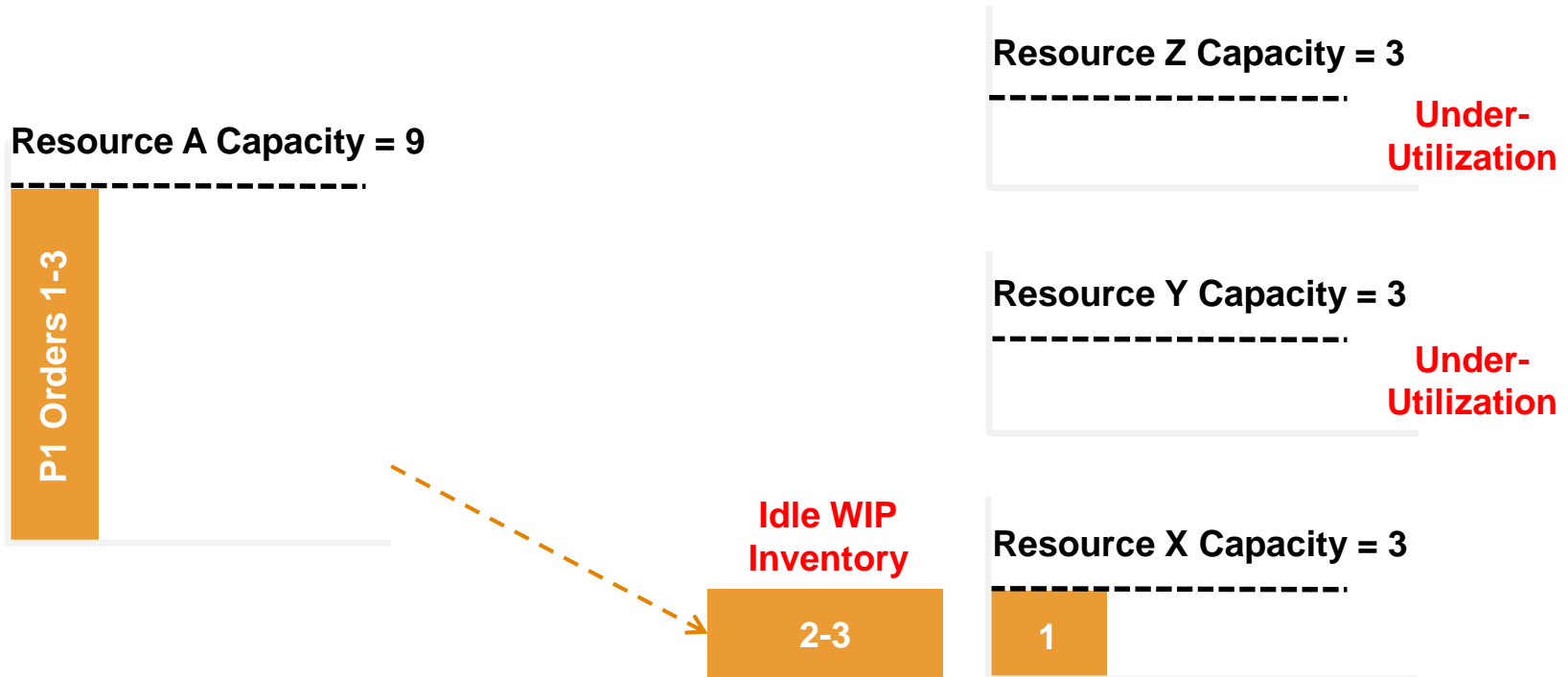


Sequential, Level by Level Planning Sample



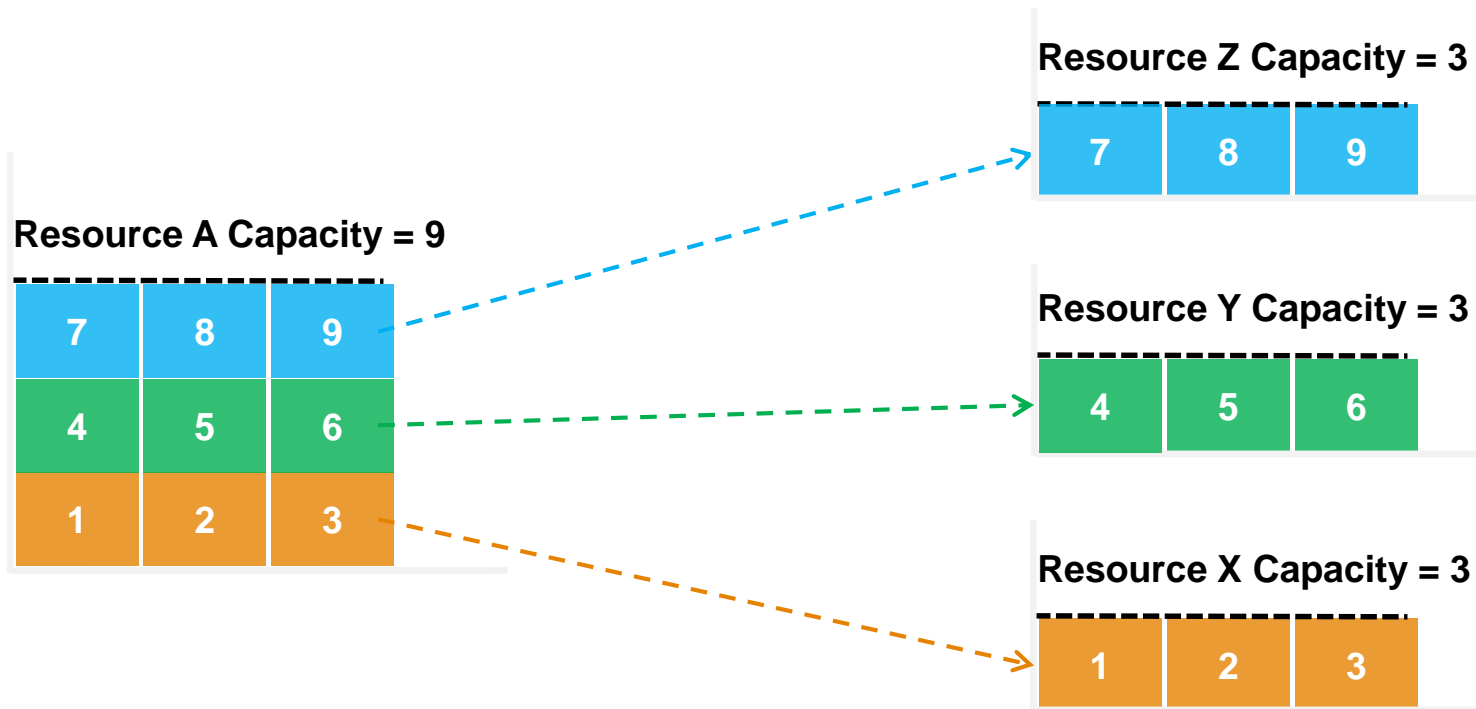
- Balanced supply chain with Resource A capacity of 9 per period feeding resources X,Y, and Z, each with capacity of 3 per period

Greedy, Level by Level Execution



- PROBLEM: After 1/3 of period, Resource A has finished all P1 orders for Resource X, but Resource X can only complete 1 order, so 2 orders worth of intra-operation inventory sit idle
- PROBLEM: After 1/3 of period, Resource Y and Resource Z capacity remains idle

Synchronized Planning Across Multiple Levels



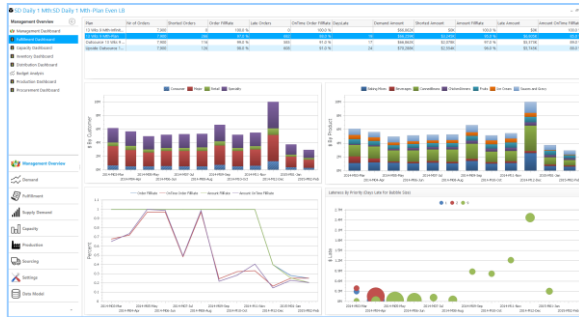
- 1) Algorithm simultaneously considers impact across multiple levels to minimize WIP by only planning orders to align with feasible times for subsequent operations
- 2) After 1/3 of period, orders 1, 4, and 7 are planned in that sequence so that WIP is minimized and capacity utilization is maximized
- 3) Across the full period, this smoothes distribution of orders across Resource X, Y and Z to maintain capacity utilization.

User Interface

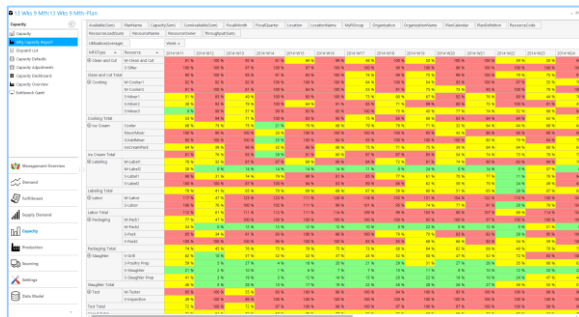
- Intuitive and Ease of use
 - Easy Navigation
 - Understand reasons for delays/Shortages
- Fast Decision Cycle Time
 - Integrated
- Configurable/Extendable
- Accessibility
 - Web, Mobile
- Interactive and Collaborative workflows
- Broader Audience

Broader Audience

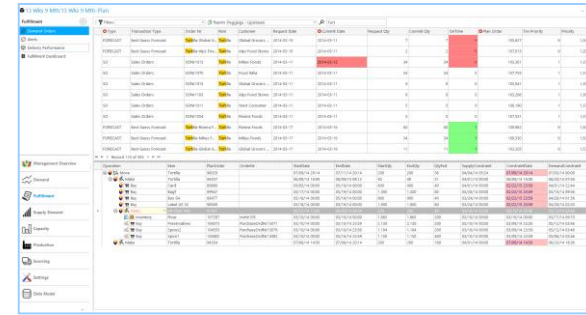
1 Executives Dashboards



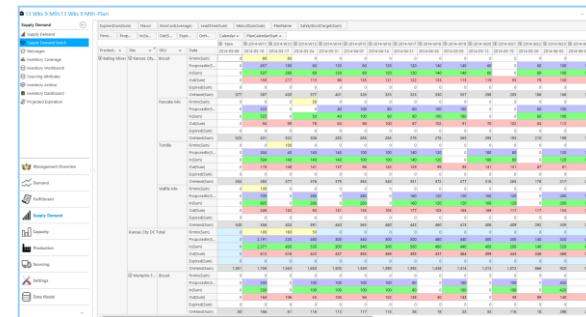
2 Mid Level Management Reports



3 Planners Detailed Analysis



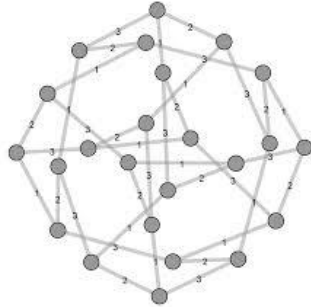
4 Suppliers and Customers Information Sharing



Summary

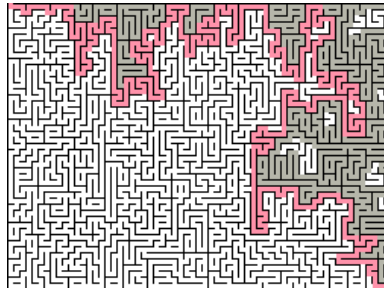
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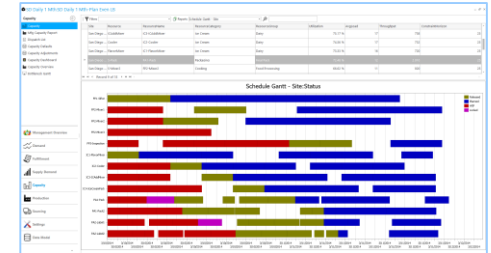
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Q & A

If you can't explain it **simply**, you don't understand it well enough.

– Albert Einstein

