

Improving Production Capacity and Asset Utilization of Biologics Drug Product Lines Through Simulation

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Problem Statement

Scheduling a DP production plan is challenging.

One has to consider:

- Equipment and working time
- Varying process durations
- Maintenance and testing periods
- Unplanned events, e.g., technical problems

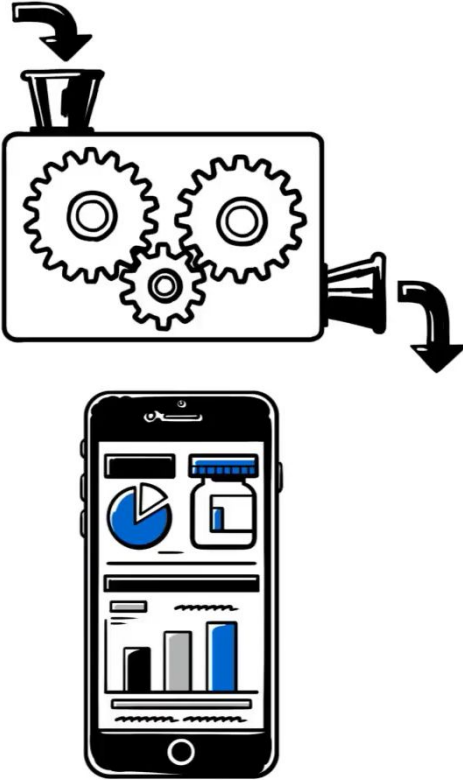


Solution

We developed a data-driven simulation app that:

- Calculates optimal product sequences
- Increases asset utilization during unscheduled times
- Recommends production plans
- Suggests maintenance and test intervals
- Adjusts plans during unplanned events
- Provides risk assessments

We implemented this and have been scaling this solution to multiple DP sites/lines at Roche

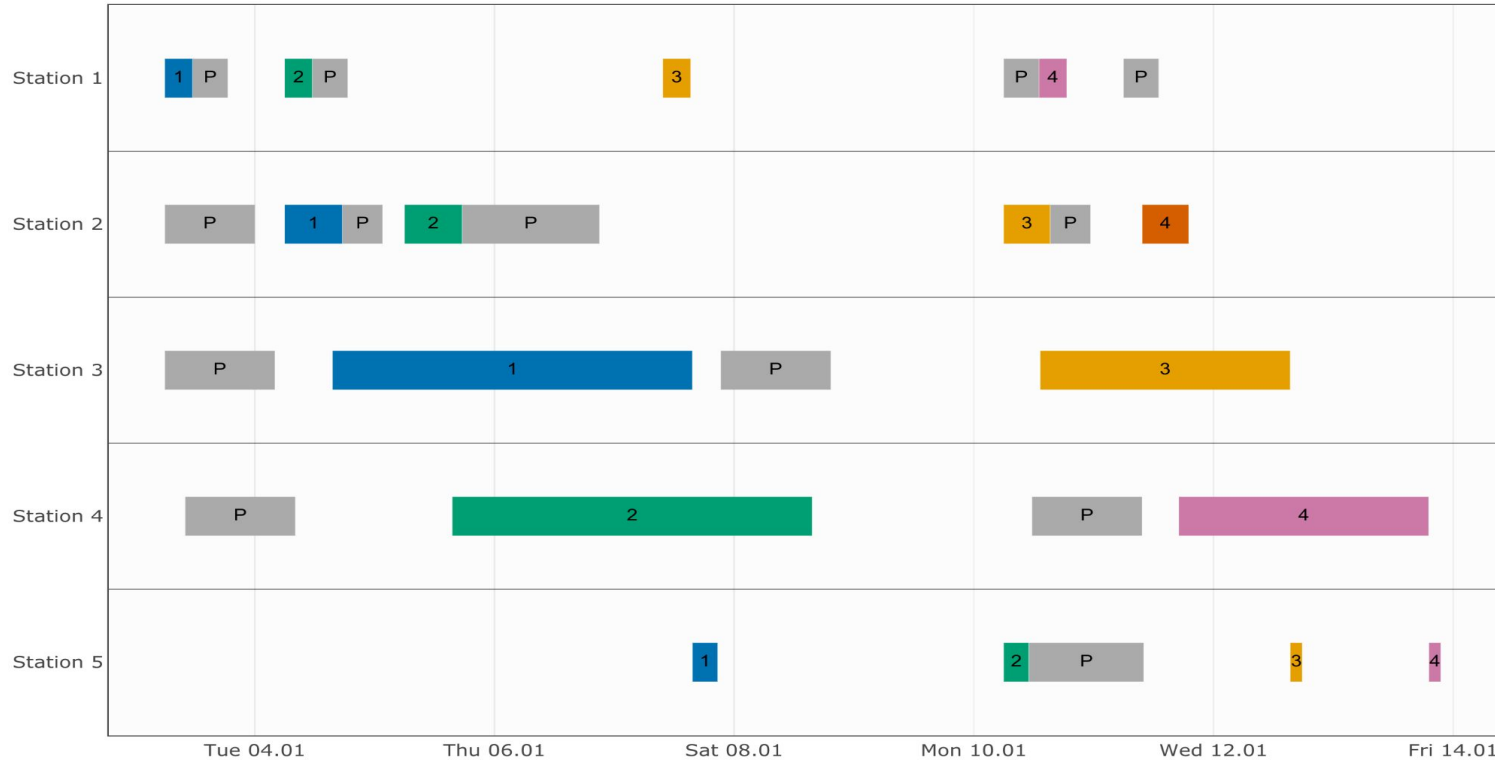


Output Example (1 of 2)

Production Order	Duration	OEE	Number of Product Changes	Probability to Finish in Time
A-A-B-B	8.5	0.80	1	78%
B-B-A-A	9.3	0.82	1	95%
A-B-A-B	9.3	0.73	3	73%
B-A-A-B	9.3	0.75	2	89%
A-B-B-A	12.5	0.89	2	72%
B-A-B-A	12.5	0.87	3	69%

Output Example (2 of 2)

Process Gantt-Chart



Doing now what patients need next