Dynamic and Semi-Dynamic Transportation Planning

Transportation operations are **rarely static**, where all tasks and resources are known well in advance, without changes or issues that occur during execution by the fleet.

Changes in the work content, congestion in roads or in facilities, or changes the availability of transportation resources can and should affect the transportation plan. Transportation plan updates should be done, approved and communicated **quickly**. Updates may re-schedule some tasks, re-shuffle others and allocate resources to new tasks - without requiring excess resources.

We refer to planning that supports changes in work-content or enable mitigating issues that occur after the trucks already hit-the-road as **dynamic planning**.

Changes include new, rescheduled or expedited customer orders, last minute order cancellations or new pick-up or returns from the field. Often additional tasks or execution issues continuously unfold during the day, leading to more than 50% of the work-content being modified or new.

We refer to planning that supports changes in work-content or changes in resources that occur before the trucks hit-the-road as **semi-dynamic planning**.

Changes also include unexpected delays in goods production or processing or last-minute cancellations by drivers. Often goods/cargo are staged for loading or already loaded on some of the trucks. Often up to 30% of the work-content is either modified or new tasks.

Enabling dynamic planning requires updated information:

- Detailed state of task execution
- Detailed state of cargo/loads staged for loading or already loaded on each truck
- Information regarding allowed visit hours and driver work hours
- Map information should be refreshed quickly

Urbana was architected for dynamic planning based-on updated state and vehicle locations. Dynamic planning adjusts schedules to meet task or driver schedule constraints and re-shuffles tasks and resources. It ensures task execution continuity and inter-dependency.

Urbana provides user-selected **planning modes** to determine re-planning scope, how the original plan guides or constrains the updated plan, and to cap planning time.

Additionally, Urbana's built-in BI and Dashboards enable monitoring progress and instantly understand the updated plan's execution schedule and drivers/trucks freed or needed.

If you have refreshing insights on this matter, please share with us: Urbana.Tech