



Project „Flexible Assembly Processes for the Car of the Third Millennium (MyCar)“

Problem Description (High Level)

Dynamic Job Rotation Tool



CASP

Problem Definition

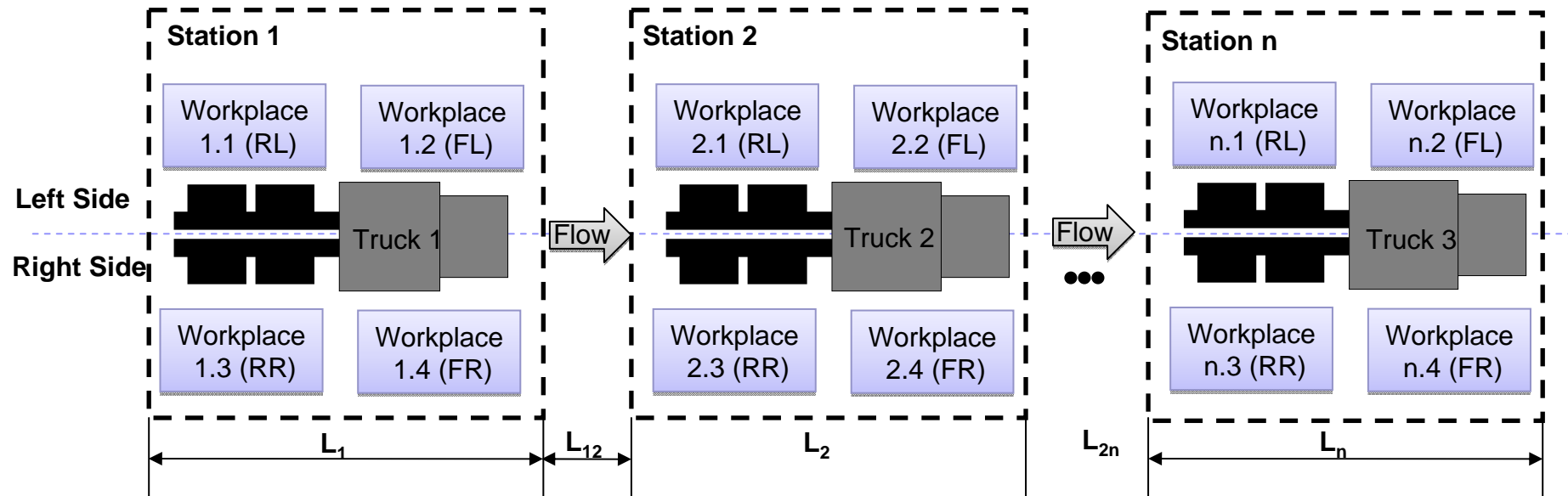
■Automotive Final Assembly – Current state

- Human Based Assembly Lines - Extensive use of workforce
- Physical and mental demands on behalf of operators
 - Fatigue accumulation
 - Monotonous work



Problem Definition

■ Automotive Final Assembly – Current state



Operators usually remain in one workplace throughout the shift

- monotonous feeling – reduced product quality
- may not be used where most competent, no multi skilled workforce
- injuries due to high repetitiveness of tasks

Tasks in one workplace may induce more physical strain than others

- fatigue on operator, possible bottlenecks on the line




Vehicles

- Large product variety dictates task diversity in each cycle

Problem Definition

Human Based Assembly Line Reconfiguration

Given the following data:

| Product Specifications And Assembly Sequence | Required Assembly Process Specifications | Available Operators & Operator Characteristics | User defined performance indicators |
|--|---|--|--|
|  |  |  Skills-Cost-Experience | <ul style="list-style-type: none"> •Workload Distribution •Repetitiveness of tasks •Accumulated Fatigue •Travelling Distance •Other user defined... |



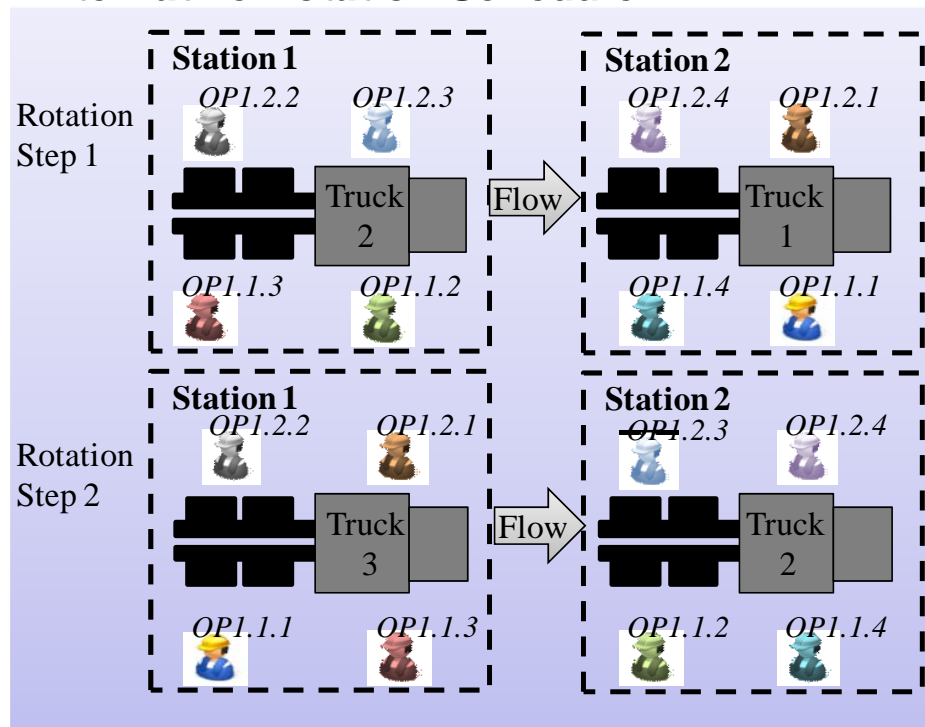
***“Derive feasible sets of assignments between tasks and operators
(**alternative**) to produce the vehicles and satisfy the performance
criteria”***

Problem Definition

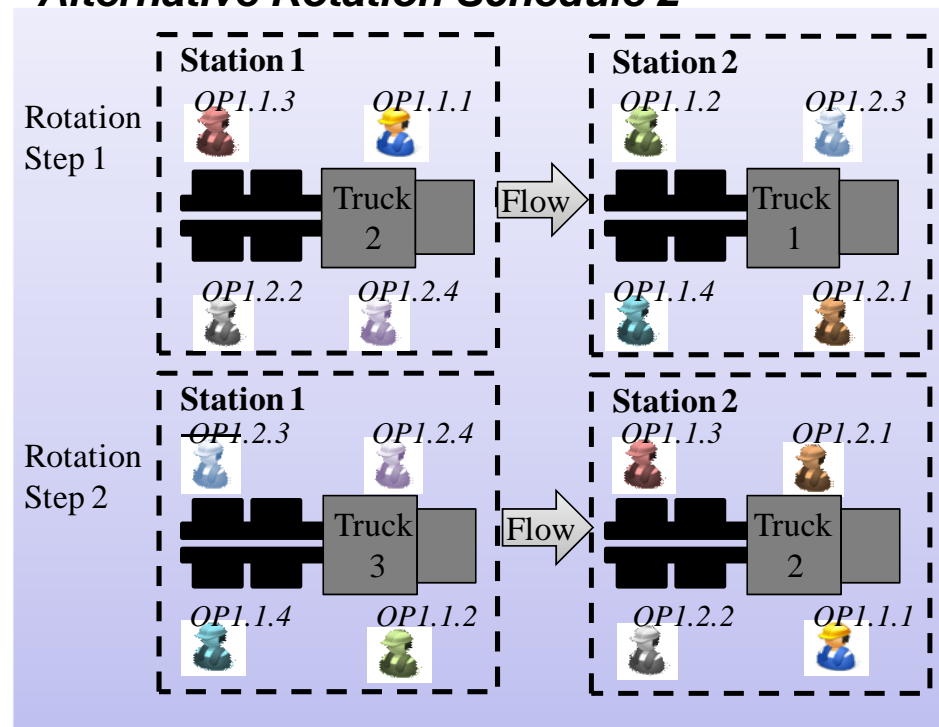
Human Based Assembly Line Reconfiguration Alternatives

“An assignment of tasks to operators for producing a series of vehicles”

Alternative Rotation Schedule 1



Alternative Rotation Schedule 2



*Out of the thousands of feasible schedules which should be selected??
How can it be derived??*