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

Methodology Description (High Level)

Consulting & services towards a variant-oriented planning methodology + software

DAIMLER

cenit

Methodology Description (High Level)

… How can the final assembly planning be improved based on methodical changes?

Available results

Two **results** which can improve **final assembly planning** are available:

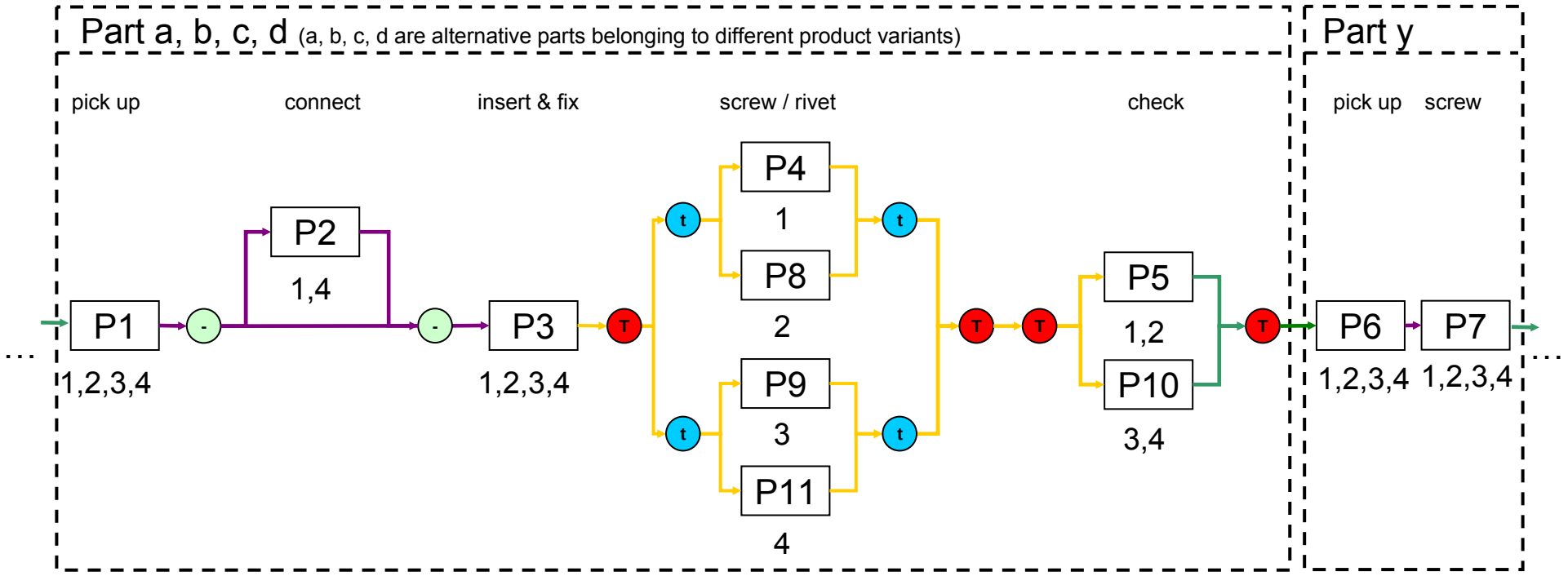
1. Methodology for a transparent, product variant-oriented process/resource planning based on graphs

2. Methodology for a fast assessment of intended integration scenarios

(result 2 is based on result 1)

Result 1

Process graphs – MyCar set-up:



The rules which are needed to create such special process graphs have been defined.

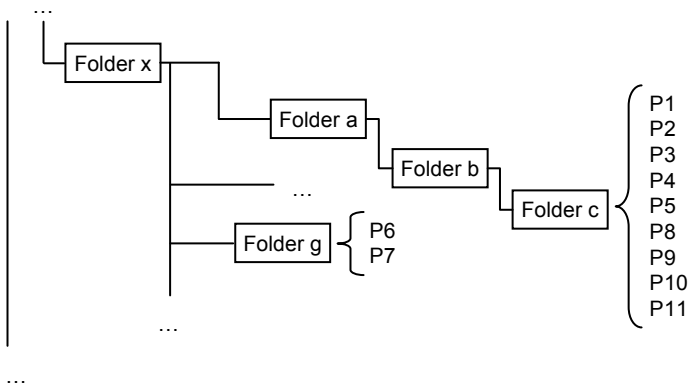
(Resource graphs have been defined too)

Result 1

Benefits of the graphs

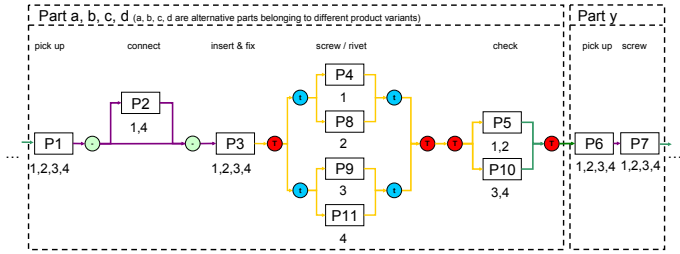
• Increased planning transparency
(Differences between product variants are immediately obvious in the graphs => improved support for process/resource planners and decision makers; based on the variant elements, a visual identification of critical areas is possible too)

Classic tree structure



No or only low transparency regarding separate product variants and the existing process/resource variance

New approach based on graphs

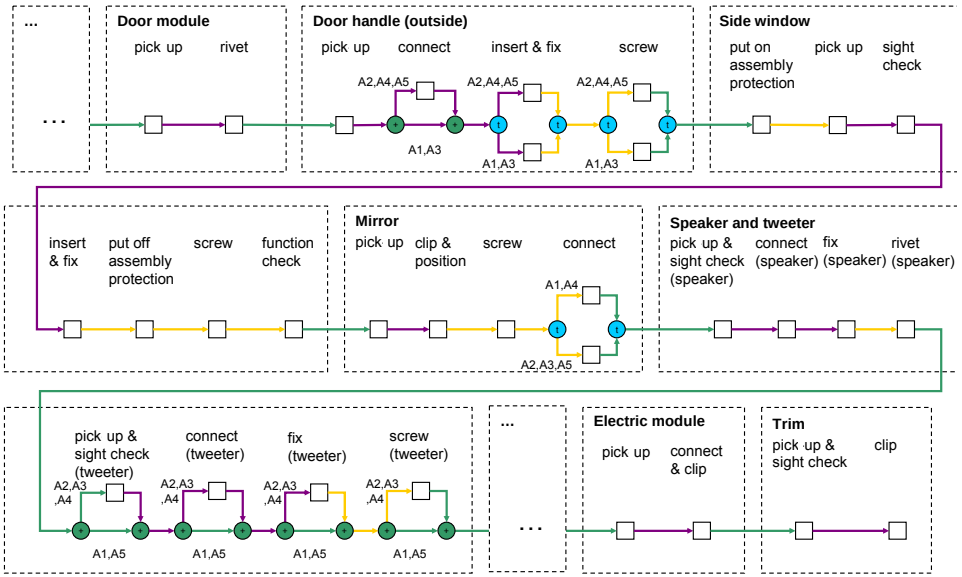


High transparency regarding separate product variants and the existing process/resource variance in the graph

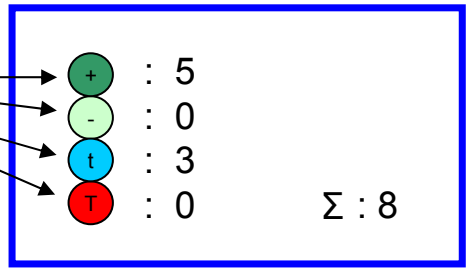
Result 1

• Objective statements about the existing process/resource variance are possible (The total number of variant elements can be evaluated in the graph and conclusions are possible)

Example:



Pairs of variant elements



- No technique variants (T) ☺
- Only 3 alternative processes (t) which vary in time (small time deviations) ☺
- 5 additional processes (+), which are not relevant for the first variant (first variant = most important variant)

😐

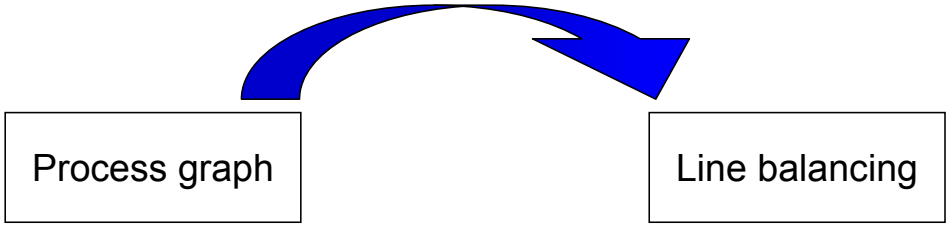
➔ **Low process variety!**

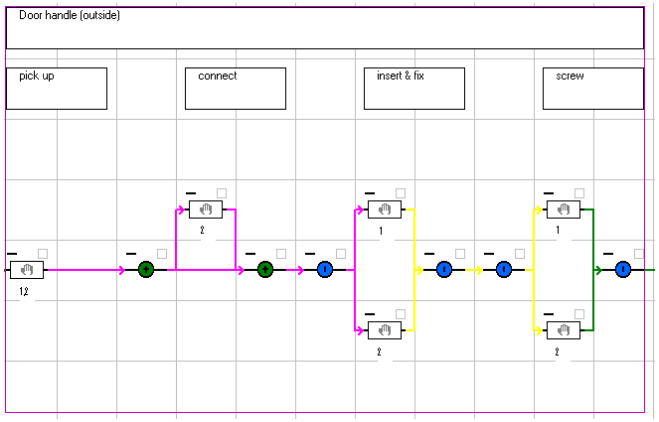
➔ **No production problems expected!**

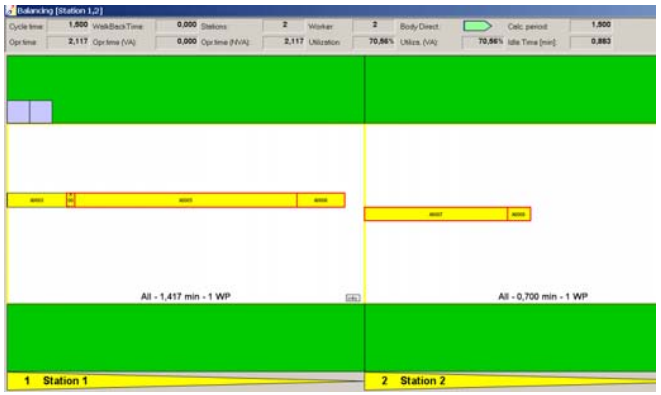
Result 1

• An improved cooperation between process planning and line balancing (Based on the coloured arrows presented in the process graphs, the allocation of processes to stations/workers can be performed more easily)

Example:







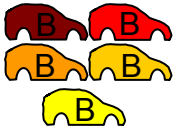
Result 2

Product A → **Factory 1** (Final assembly plant)

☹ Low demand

Free/remaining capacity

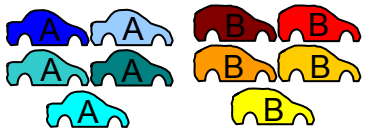
Product B → **Factory 2** (Final assembly plant)



☺ High demand

Not enough capacity

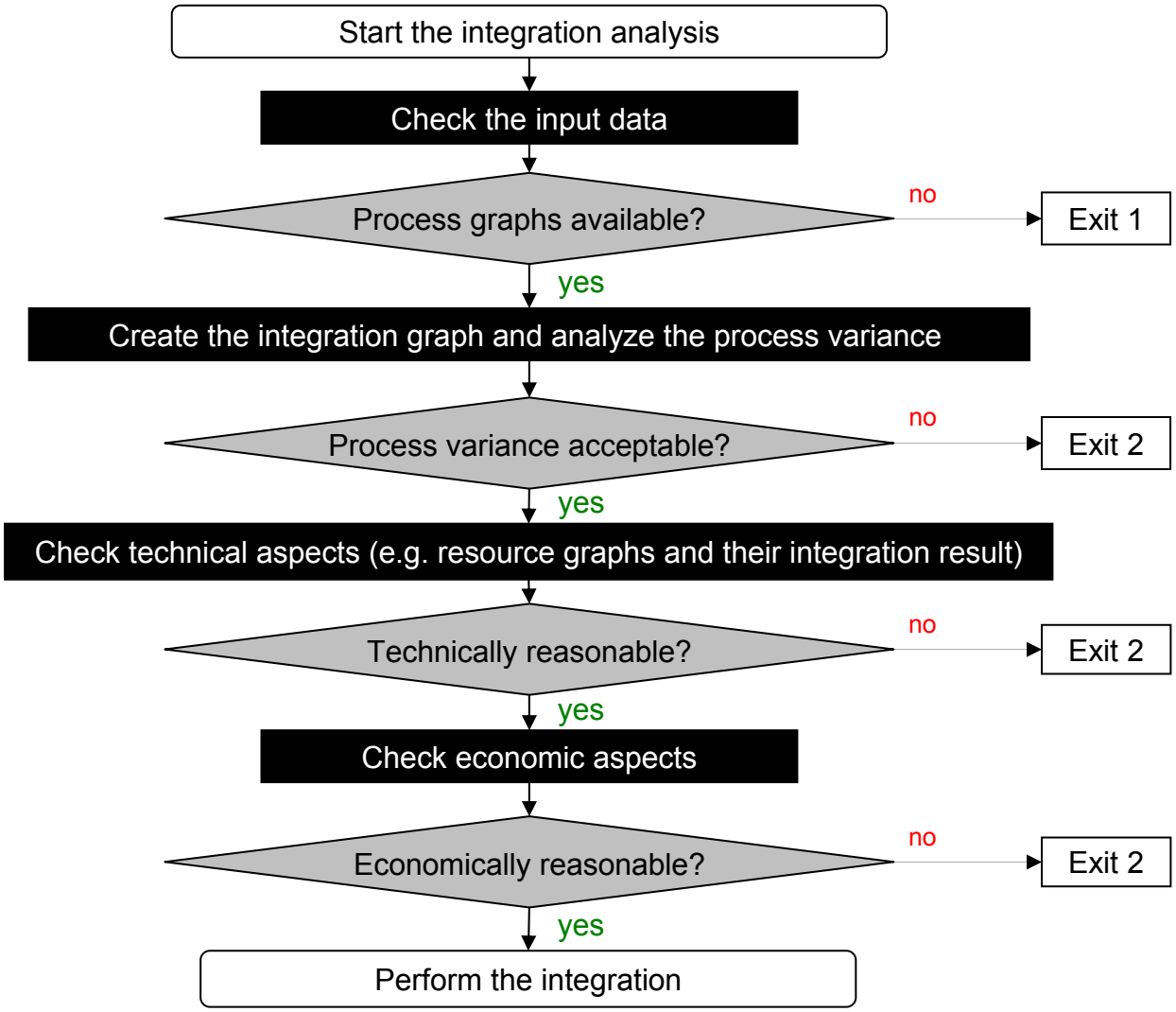
Is it possible and reasonable to assemble product B in factory 1?



?

This question can be answered comparatively fast by using the developed methodology shown on the next slide.

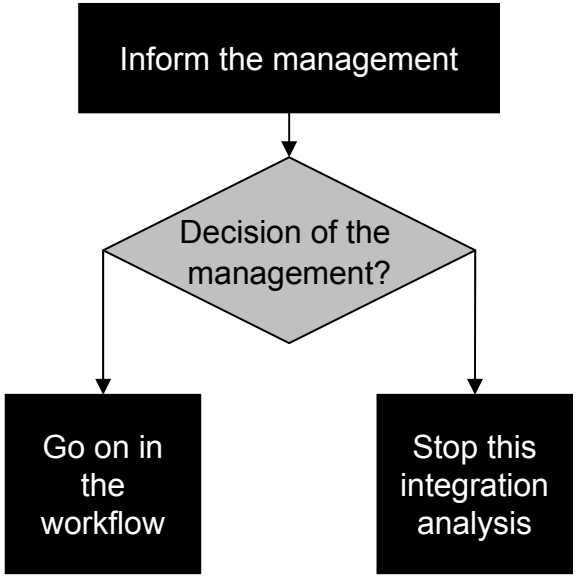
Result 2



Exit 1

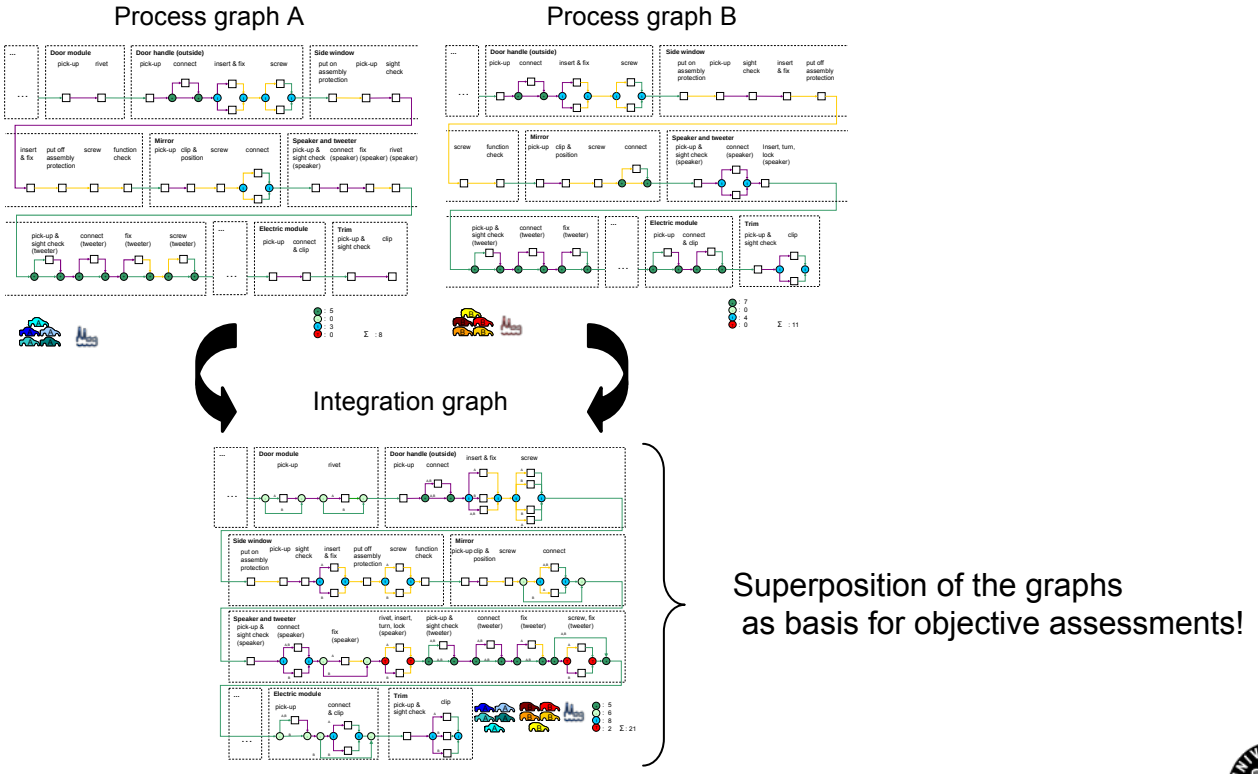
Try to get or create the process graphs and restart the integration analysis

Exit 2



Result 2

- Integration graphs play an important role in this concept
- Integration graphs can be created on the process side (based on process graphs) and on the resource side (based on resource graphs) and the integration result can be assessed (in general, the same methods that were described in connection with result 1 can be used)



Result 2

Benefits of the approach

- Objective, fast assessments of intended integration scenarios are now possible
- High transparency from the point of view of executing planners as well as of decision makers
- As far as we know, there is no comparable method/software available on the market which allows a fast assessment of intended integration scenarios in the field of final assembly planning