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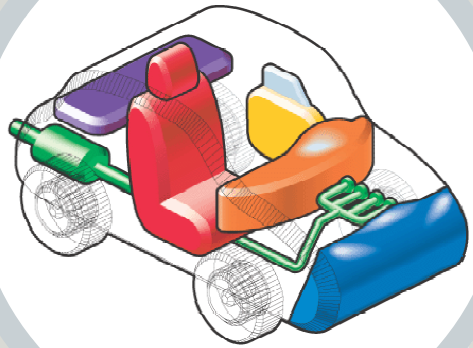
Technical perfection, automotive passion.

Operational Ratio (OPR)

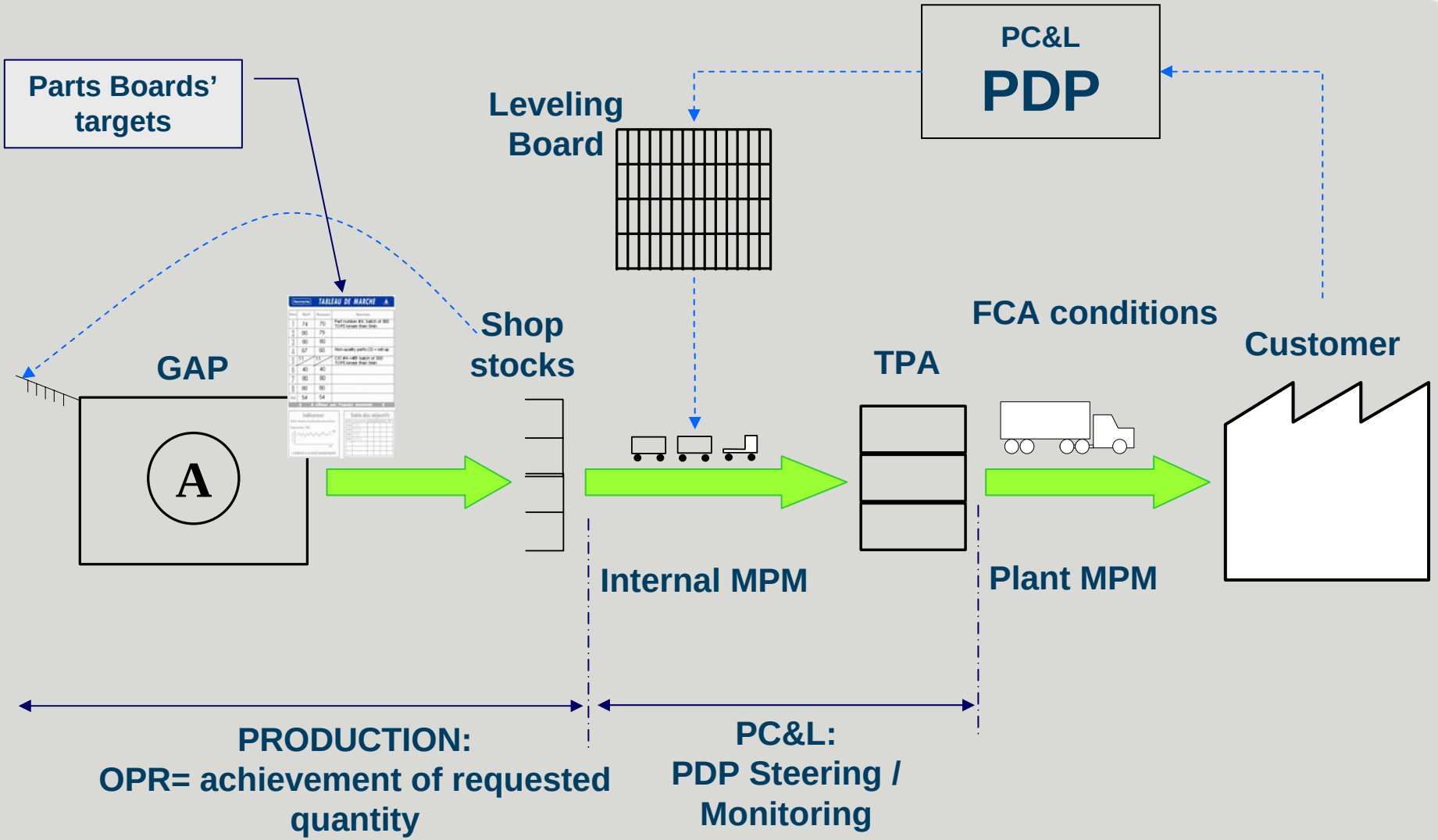


2007

June

Alain Prioul

OPR measures the Gap's adherence to parts boards' targets



PDP's achievement

KEY ASSUMPTION: the daily / by shift quantities in PDP have to be achieved, whatever unplanned losses occur.

There are 2 main ways to make it:

1st way

Faurecia Standard is to compensate losses by overtime at end of shift

2nd way, when overtime is not possible at end of shift

- Production Cycle Time must be faster than Takt Time to absorb the difference:
  Production Cycle Time = Target Cycle Time
- Targets in Parts Board higher than PDP.

Alternative ways

- Work during breaks
- Gap leaders compensation for losses.

Definitions: TT, TCT, OPR

$$TT = \frac{\text{Opening Time – Planned stops}}{\text{Daily requirements}}$$

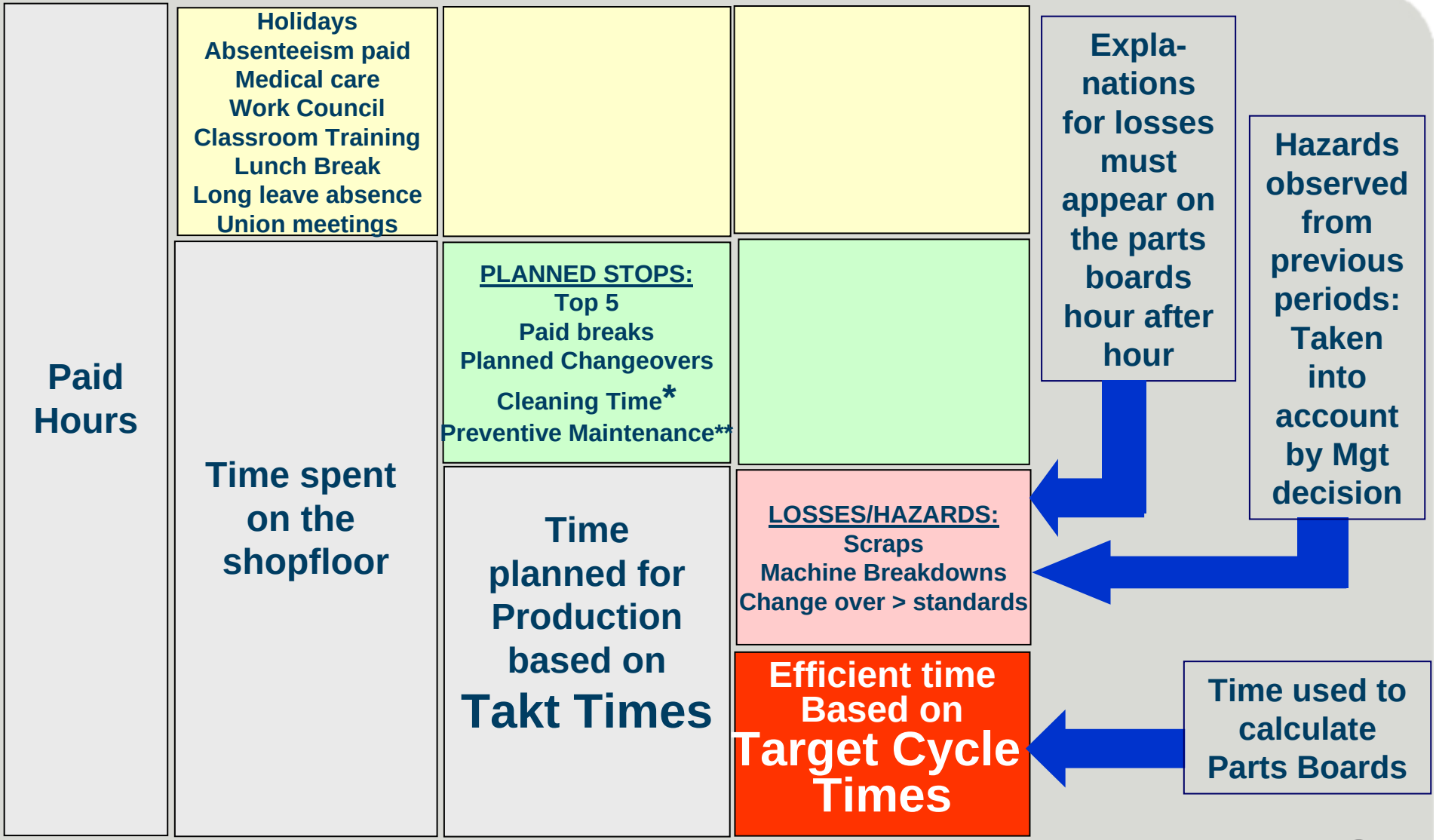
$$TCT = \frac{\text{Opening Time – Planned stops – usual additional losses}}{\text{Daily requirements + scraps}}$$

$$OPR = \frac{\text{Actual Output}}{\text{Parts Boards requirements}}$$

Within normal operating hours
(without overtime)

FAURECIA Objective: TCT = TT

Target Cycle Time (TCT)



*: should not exist

**: should be outside of working hours

OPR

- The ability of the Production line to reach the goal has to be measured by shift.
- Ideally, the OPR should be between 95% and 98%. This is a target, and we will start from where we are.
- If OPR is regularly above 98%, targets and resources must be reconsidered.
- If target is never achieved, meaning not feasible, we also need to reconsider targets or/and resources.

OPR and parts boards' targets

	OVERTIME POSSIBLE	OVERTIME NOT POSSIBLE
TARGETS IN PARTS BOARDS	TARGETS = PDP	TARGETS > PDP
TIME	TT	TCT
LOSSES	COMPENSATED BY OVERTIME	COMPENSATED BY HIGHER TARGETS & RESOURCES
OPR	ACTUAL (before overtime) TARGETS (= PDP)	ACTUAL (before overtime) TARGETS (> PDP)

OPR, PPH, TRS

- OPR measures ability to reach planned quantities in the time scheduled, and does not measure productivity.PC&L is in charge of the follow up.

- Manpower productivity is measured by PPH.

- TRS measures equipment usage on a 24 hours basis.

Example of Parts Board with overtime possible (TT = 60s)

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	Target = PDP	Targets' calculation	Actual (nb of parts)	Explanations
Hour 1	TOP 5 55	= (55 x 60)/60	53	2 scraps
Hour 2	60	= (60 x 60)/60	56	4 minutes machine breakdown
Hour 3	BREAK 10 Minutes 50	= (50x60)/60	50	
Hour 4	60	= (60x60)/60	58	2 scraps
Hour 5	MAINTENANCE 50	= (50x60)/60	50	
Hour 6	60	= (60x60)/60	60	
Hour 7	BREAK 10 minutes 50	= (50x60)/60	50	
Hour 8	CLEANING 10 minutes 50	= (50x60)/60	42	8 minutes machine breakdown
TOTAL	435		419	
OPR	= 96.3% = 419/435			
Overtime	16 minutes		16	

We do not deliver customer demand (or PDP).
So we must produce 16 parts more with OT right way at end of this shift !

Example of Parts Board without overtime

(TT = 60s, TCT = 58s: 16 minutes in 8 hours or 2 s every 60s)

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	Target > PDP	Targets' calculation	Actual (nb of parts)	Explanations
Hour 1	TOP 5 57	= (55 x 60)/58	55	2 scraps
Hour 2	62	= (60 x 60)/58	58	4 minutes machine breakdown
Hour 3	BREAK 10 Minutes 52	= (50x60)/58	52	
Hour 4	62	= (60x60)/58	60	2 scraps
Hour 5	MAINTENANCE 52	= (50x60)/58	52	
Hour 6	62	= (60x60)/58	62	
Hour 7	BREAK 10 minutes 52	= (50x60)/58	52	
Hour 8	CLEANING 10 minutes 52	= (50x60)/58	44	8 minutes machine breakdown
TOTAL	451		435	
OPR	= 96.4% = 435/451			

We do not achieve Parts board targets but we deliver the customer demand (or PDP). OT not needed !
But we have to improve in order to get OPR > 98% stabilized.