

# DAY 2

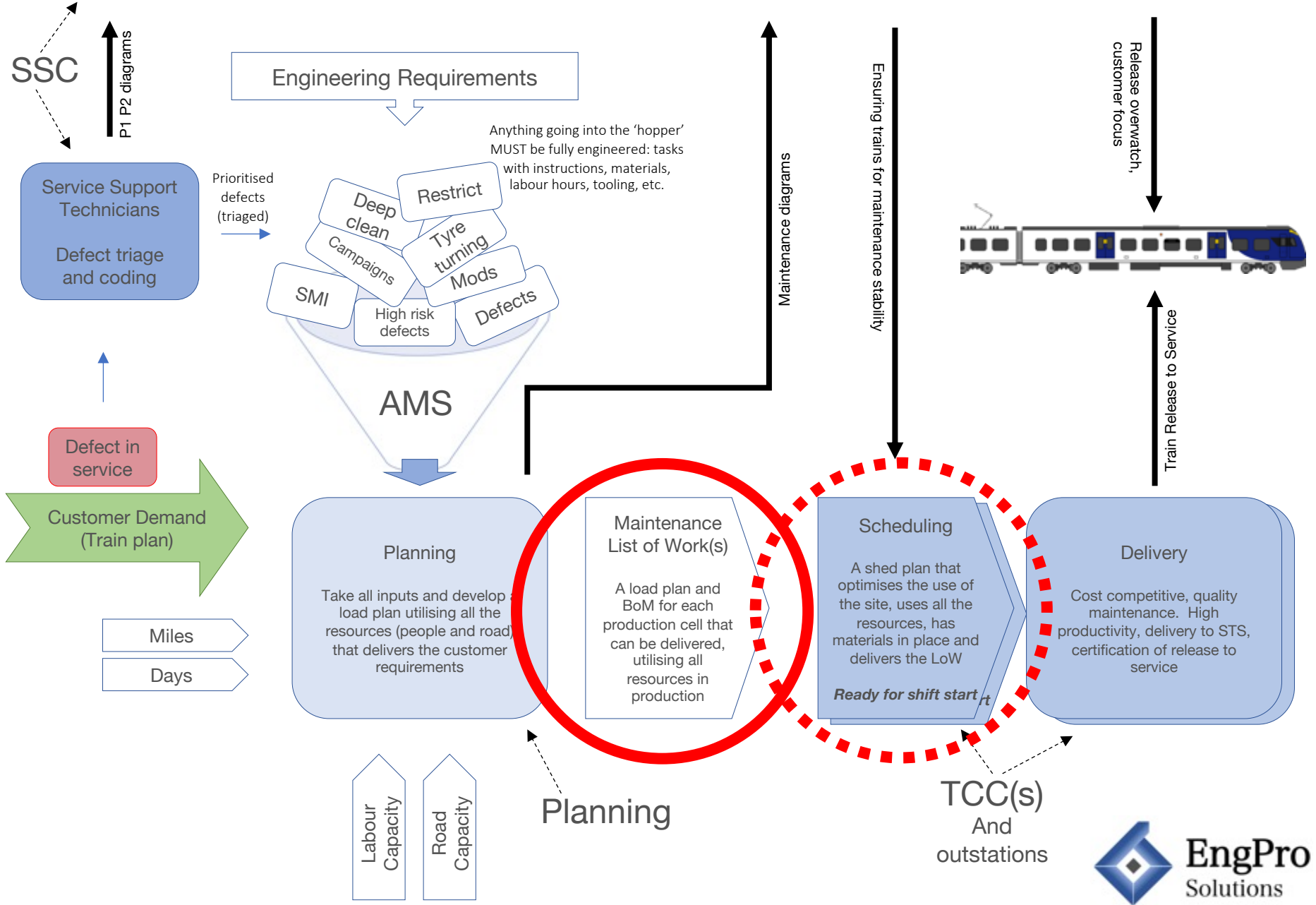
# Workshop objectives



- The Plan-led concept, control of maintenance and planning horizons
- Load v capacity management
- Input planning, list of work generation
- Scheduling the work
- Daily meeting schedule
- Defect management
- Productivity and production control
- Planning accountabilities



**Control Room (Service Support Cell)**  
 Providing **Service Support** for in service customer trains. Providing fleet control of inbound maintenance trains. Providing release 'overwatch'



# Scheduling

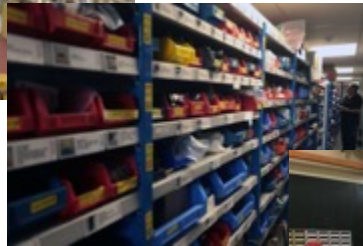
The more complex 'routings' will need scheduling:



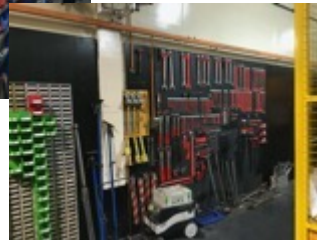
Is the right labour, skill and volume ready?



Are the facilities ready? What is the best tasks to undertake first?



Materials available and lineside issued?

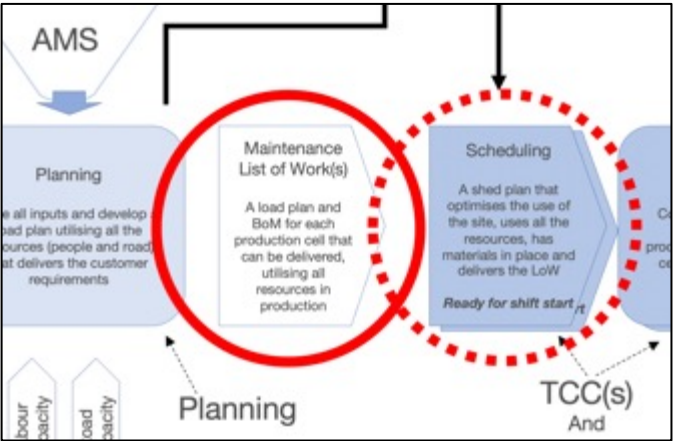


Tooling ready, calibrated

# Professional Scheduling



Scheduling is not an ‘on-the-day’ activity alone – it MUST consider upstream work



Schedulers also consider upcoming work, regular liaison with production planning

# Constraints



5 mins

Exercise: In groups

Define what a constraint is and list some examples in 'your' company

# Constraint management in action



London



It is 403 miles from London to Edinburgh

The Ferrari 458 top speed is 202 mph

Edinburgh



1. How fast can you make the trip?
2. What CONSTRAINTS will prevent you from doing that?

# Theory of Constraints



- A management process is only as strong as it's weakest link - Eliyahu M. Goldratt: "The Goal"
- Measuring and optimising a system by its:
  - Through put
  - Operational Expense
  - Inventory





# Five focusing steps

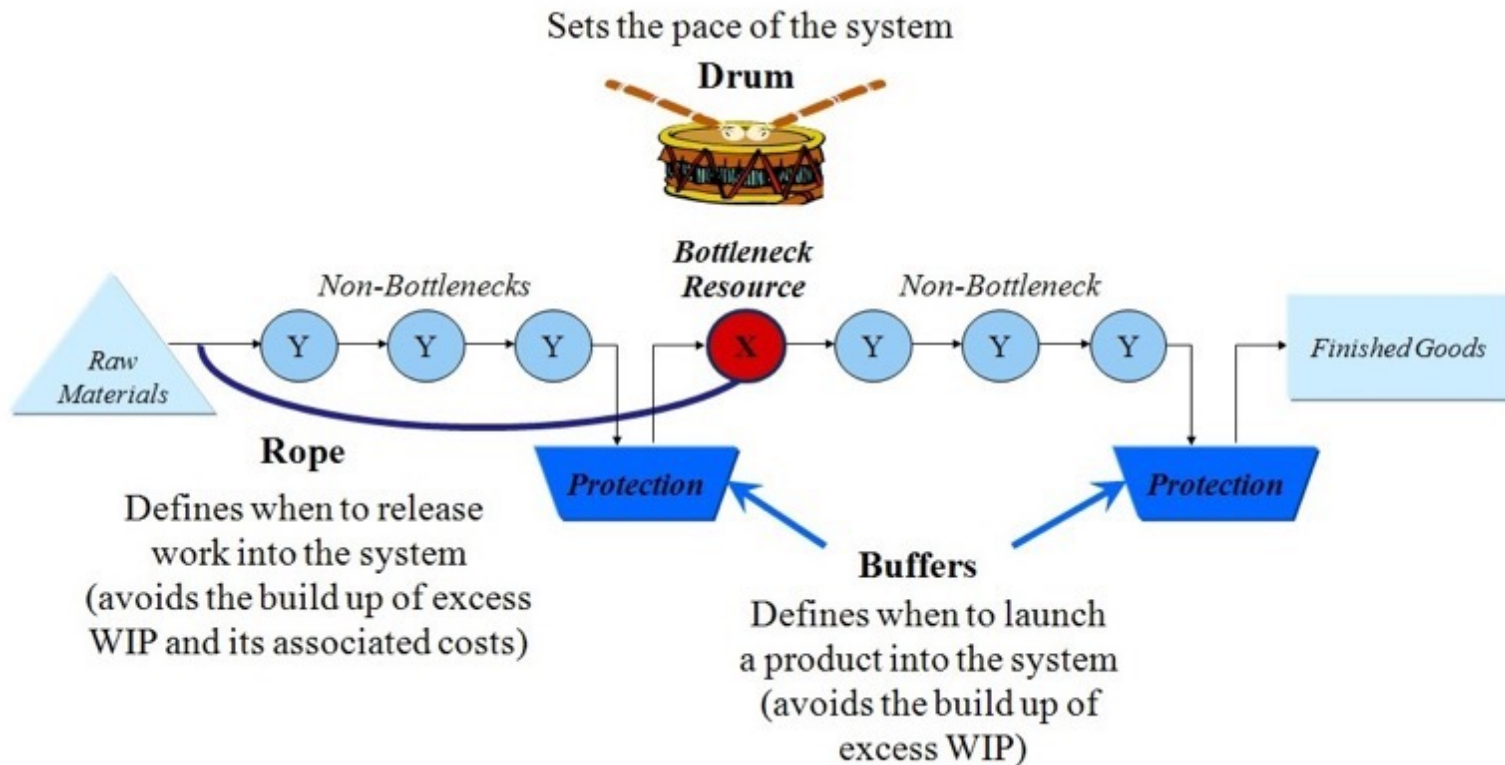


- Only by increasing flow through the constraint can overall throughput be increased:
  - Identify
  - Exploit
  - Subordinate
  - Elevate
  - Repeat if constraint removed

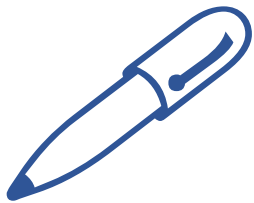


A critical constraint, especially in autumn, is the wheel lathe

# Drum, buffer, rope



# Company Constraints



5 mins

- In groups
- Review and refine the list of constraints you identified earlier. Pick one and discuss real methods that enable you to manage them better



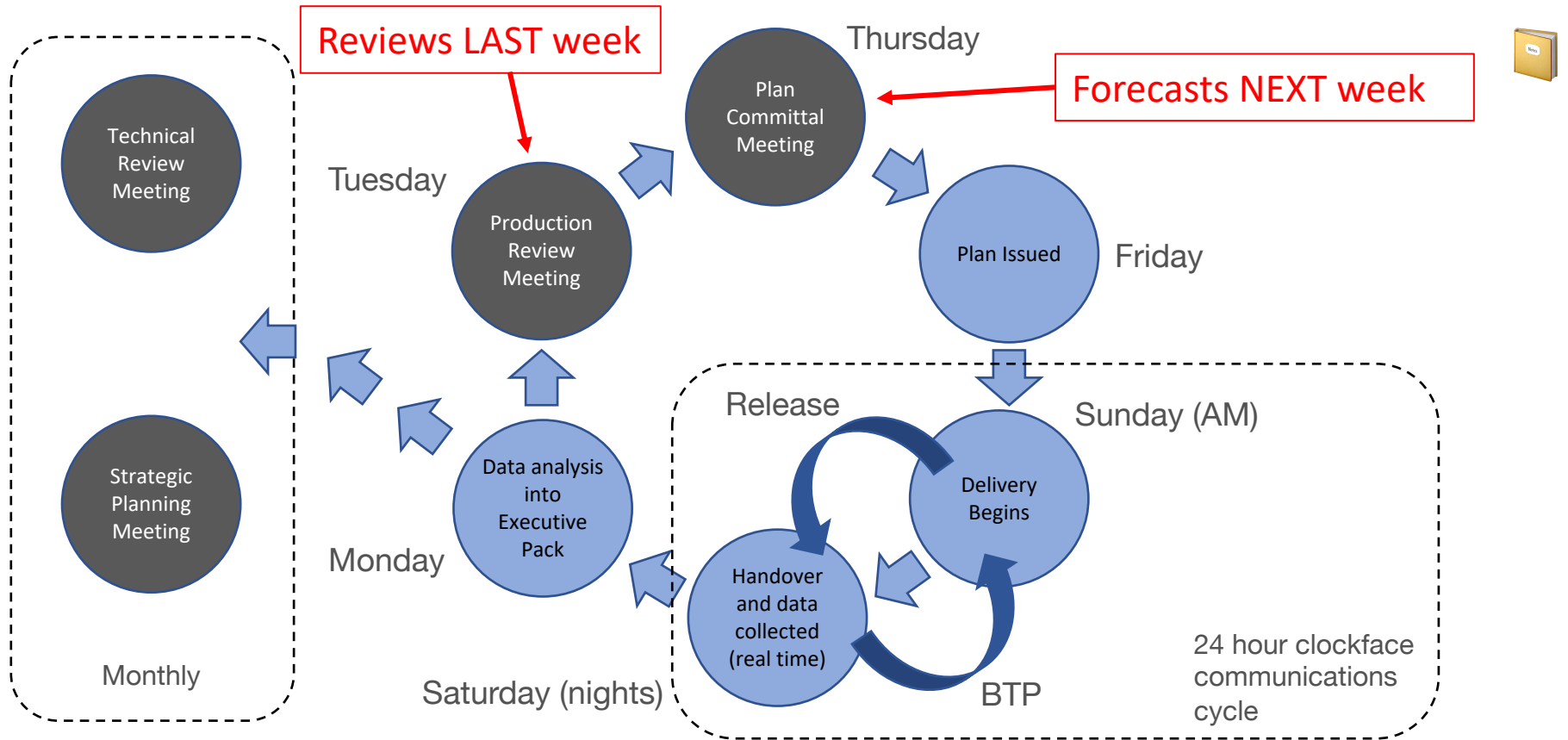
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# Typical weekly cycle



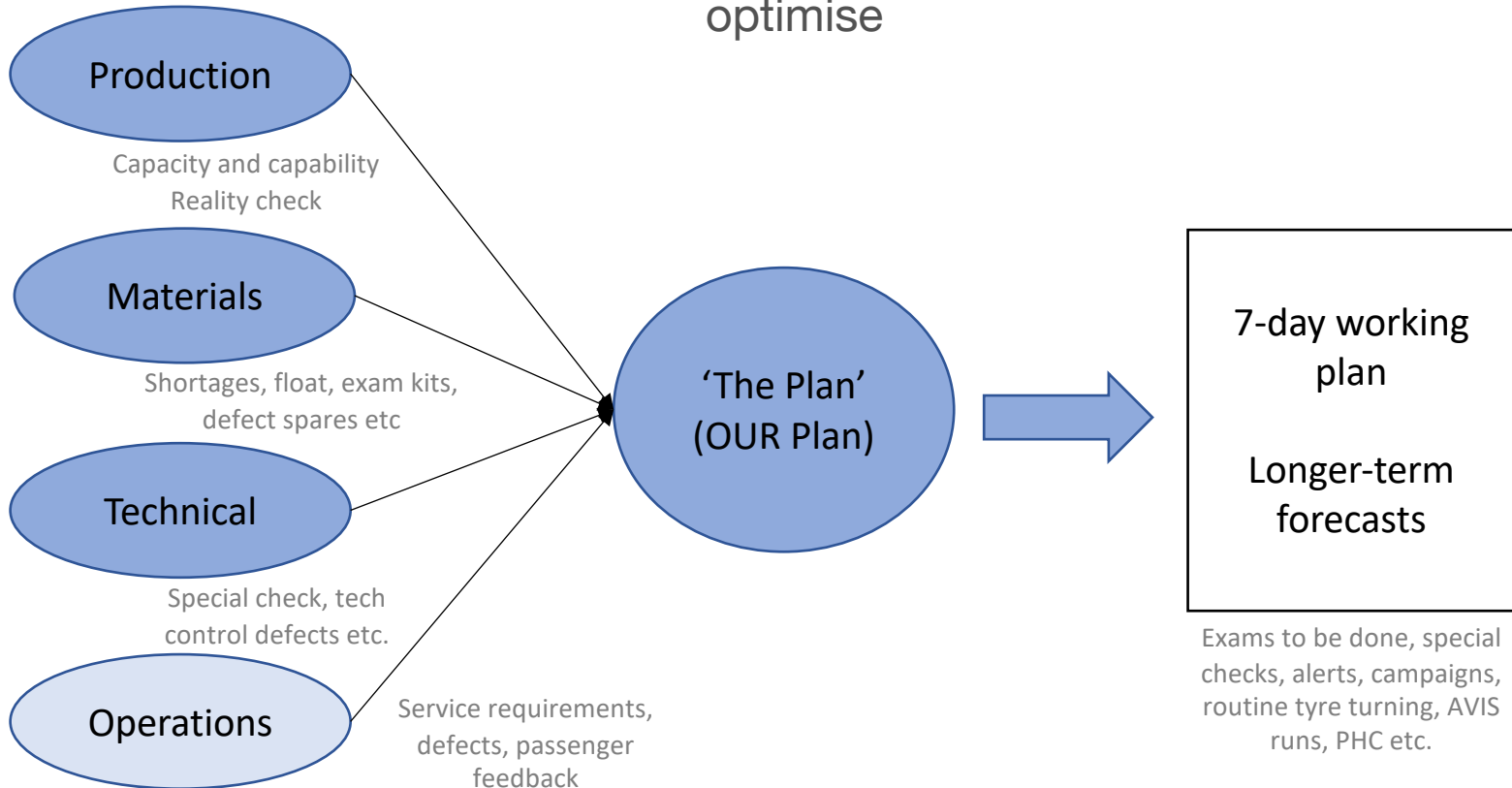
# The plan inputs



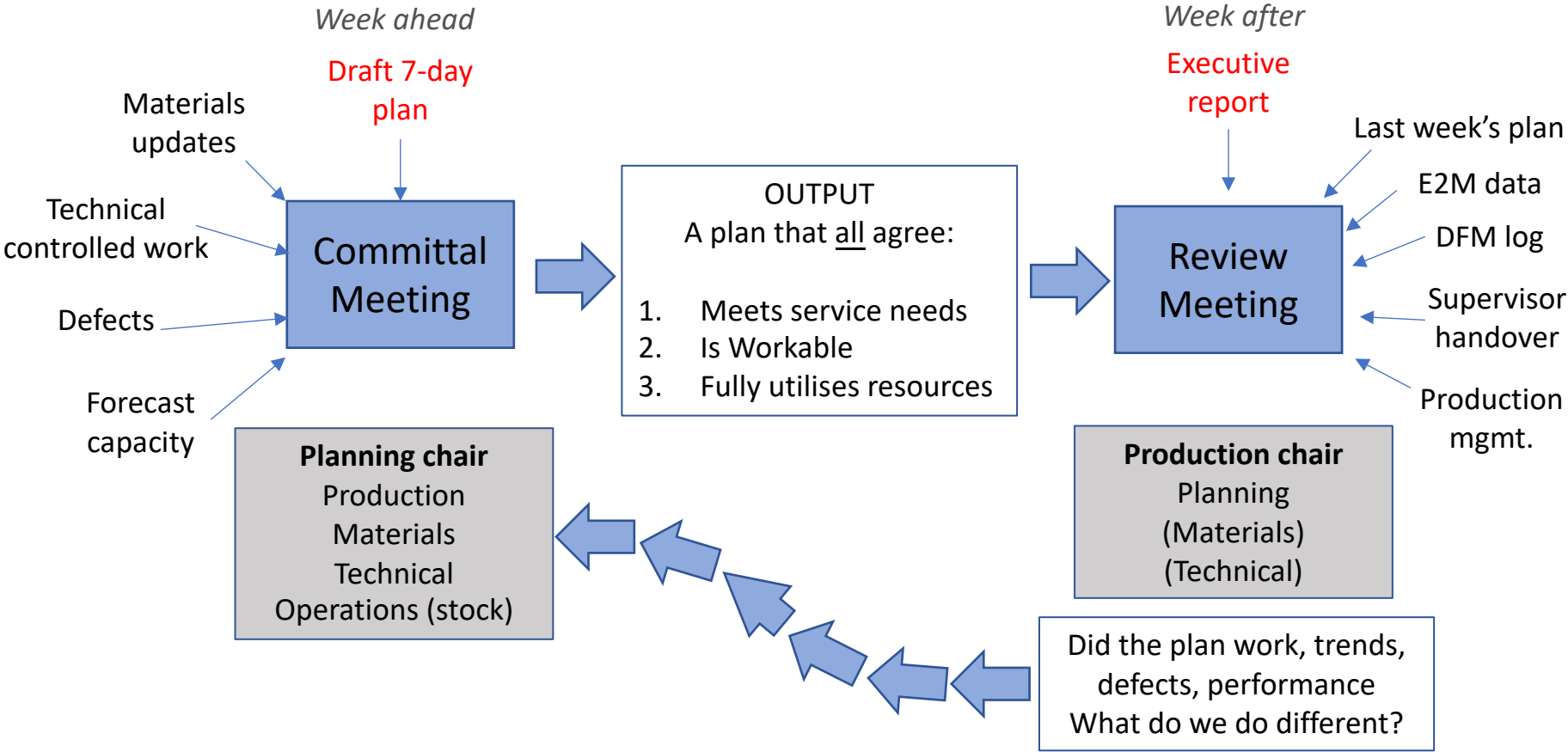
## Everybody inputs

## Planning optimise

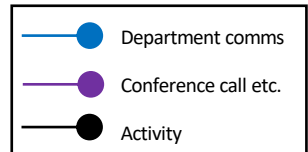
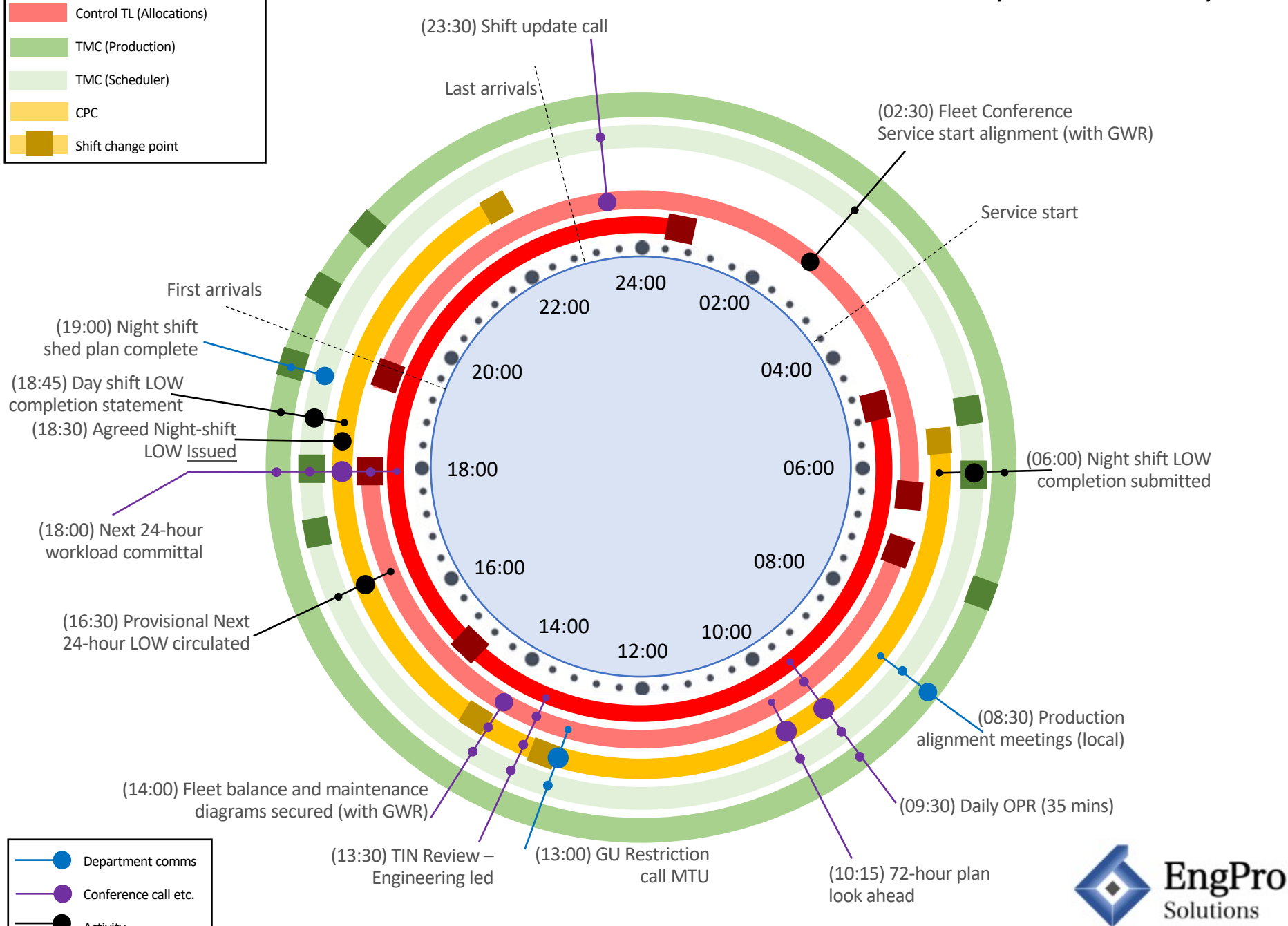
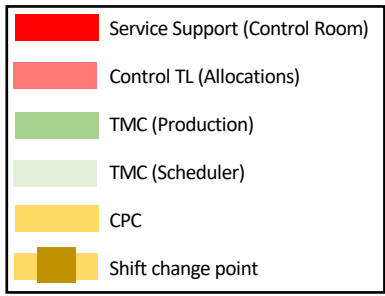
## We all commit



# Committal and Review



# 24-hour communications cycle – weekdays (v7.0)







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# Defects and reliability



- There is a known correlation between fleets carrying high defect and poor reliability
- Some warning signs:
  - High repeat defects
  - No fault found
  - “No time to complete”
  - Cat 4/5 defects not actioned



# Non-routine work is unpredictable – pah!



- McDonalds serve 68 million meals per day
- 1% of the world's population
- We turn up at random times
- We expect food hot and ready for us when we do
- Demand is variable depending upon weather etc.



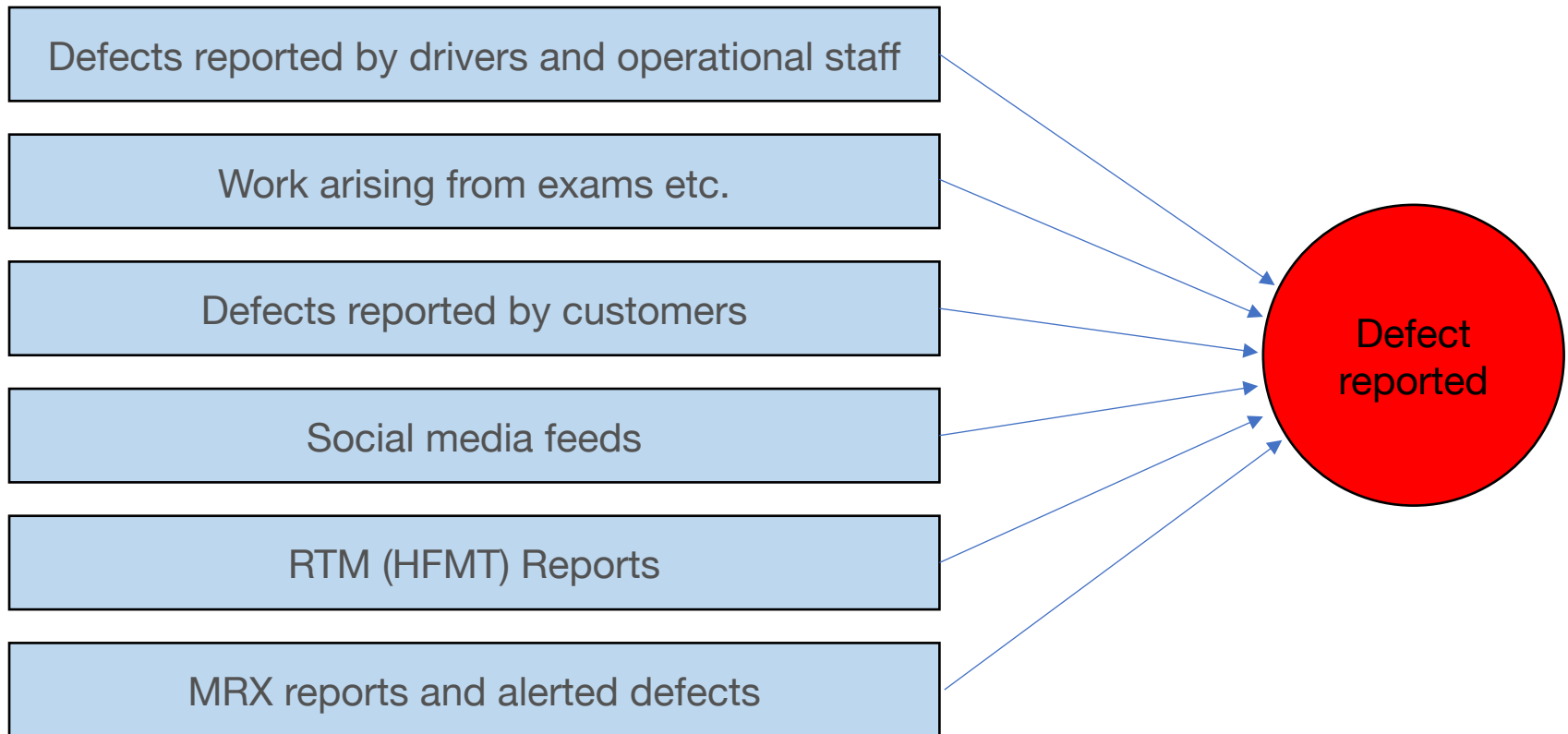
# Non-routine work



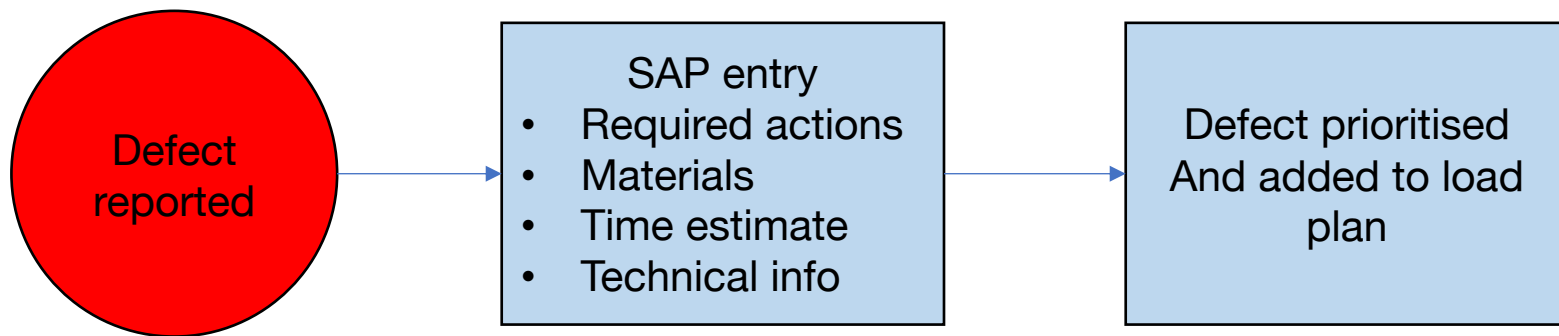
5 mins

- In groups
- What is non-routine work, list various inputs of it
- What penalties are levied for non-rectification of defects?
- How do you make allowance for non-routine work in an input?

# Non-routine work



# In every case



Standardise entry – use fault guides and look up charts etc.

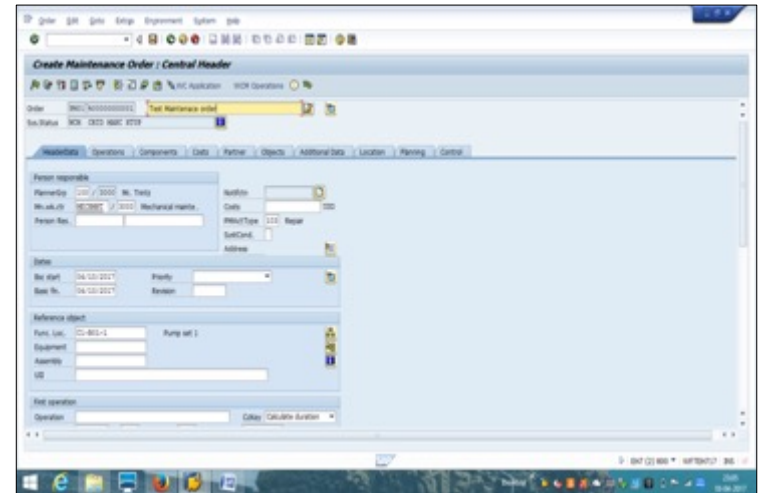




# Defect database



- 80% of your defects will be of the same type(s)
- Build a database that is like a job card in waiting
- Defects are then raised with materials, hours, resources etc.
- Makes it quicker to raise
- (removes an excuse)



# Defect management



- As planners you have control of the ‘workbank’ on SAP, and as such you need to steer the production teams to deliver the plan – to improve reliability and customer perception

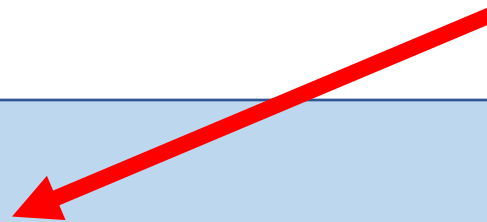
# Defect prioritisation



1. Out of service
2. This evening
3. Next 24 hours

80% of your defect management effort will go here

4. Next minor exam
5. Next major exam
6. Overhaul/depth



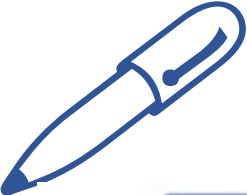
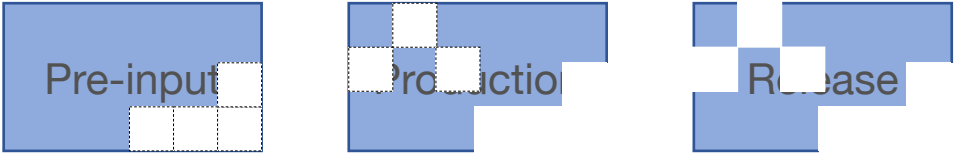
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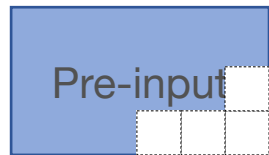
# Process – measurement and control



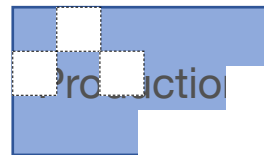
- In groups – what ‘process’ measures (KPI) could we introduce to assess performance of the process (towards delivering a quality release)?



# Process – measurement and control



- Plan stability
- Trains to depot on time
- Exam compliance
- Defect management
- Pre-loaded spares for Exams
- Defect spares
- Load and capacity



- Productivity
- Release to STS
- Delivery time
- Perished hours
- List of work completion
- Progress to plan
- Restriction and concession management
- Defect closure rate



- Contract KPI closure rates
- Key correctives completed v incomplete
- Quality control checks
- Service start – right time

$$P_d = \frac{\text{Output hours}}{\text{Input (attended) hours}} \times 100\%$$



5 mins

- In groups:
- Given this, where do you collect data from?
- ...and what are some of the challenges

# Measuring efficiency Your productivity?

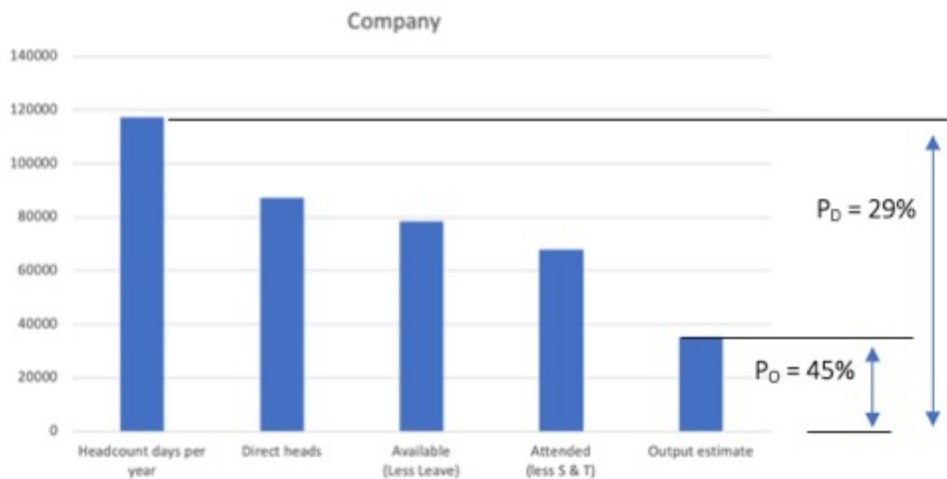


Figure 1: Deployed Productivity Analysis

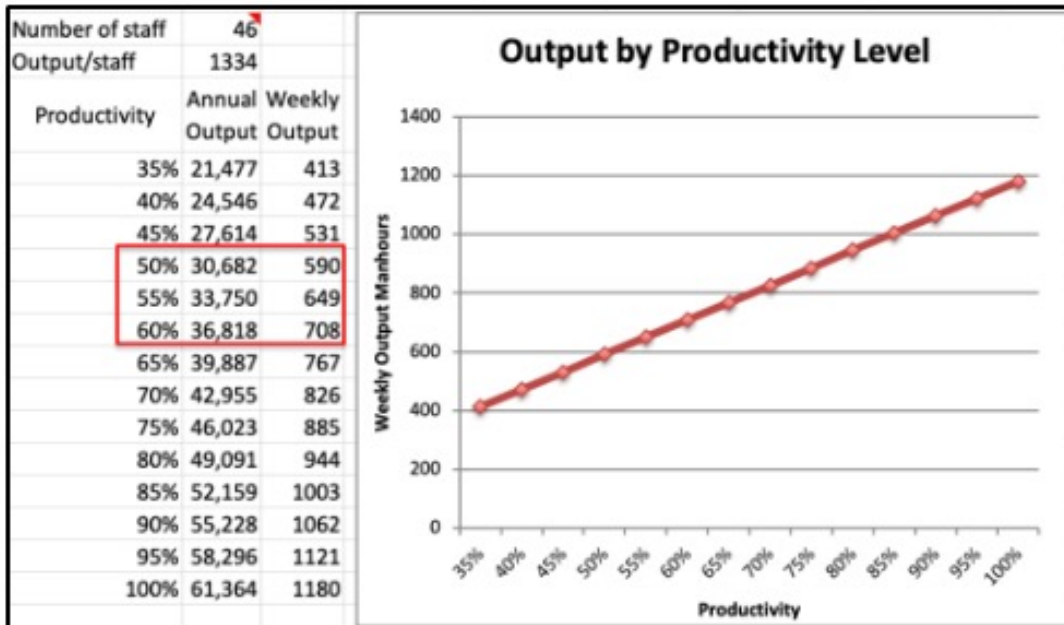
What are our thoughts on this figure?

What impact does it have if we increase the  $P_O$  to 60%

How can we do that? – In our control, outside our control



# In practice that means...



- ❖ By increasing productivity by 10%
- ❖ Increase output hours by 118 per week.
- ❖ In context that is 4.6 FTE heads

# Trend analysis



- Understand your highest failure items on each check
- Understand how long it takes to fix
- Material usage rates
- Highest KPI failures
- Use the data analysts to help you interpret the data
- (bookings)

# Utilisation



- A measure of Planning. How well are we planning the work?
- The load that is planned to be undertaken against the available capacity, expressed as a percentage.
- What should our target be?

# Rolling stock management



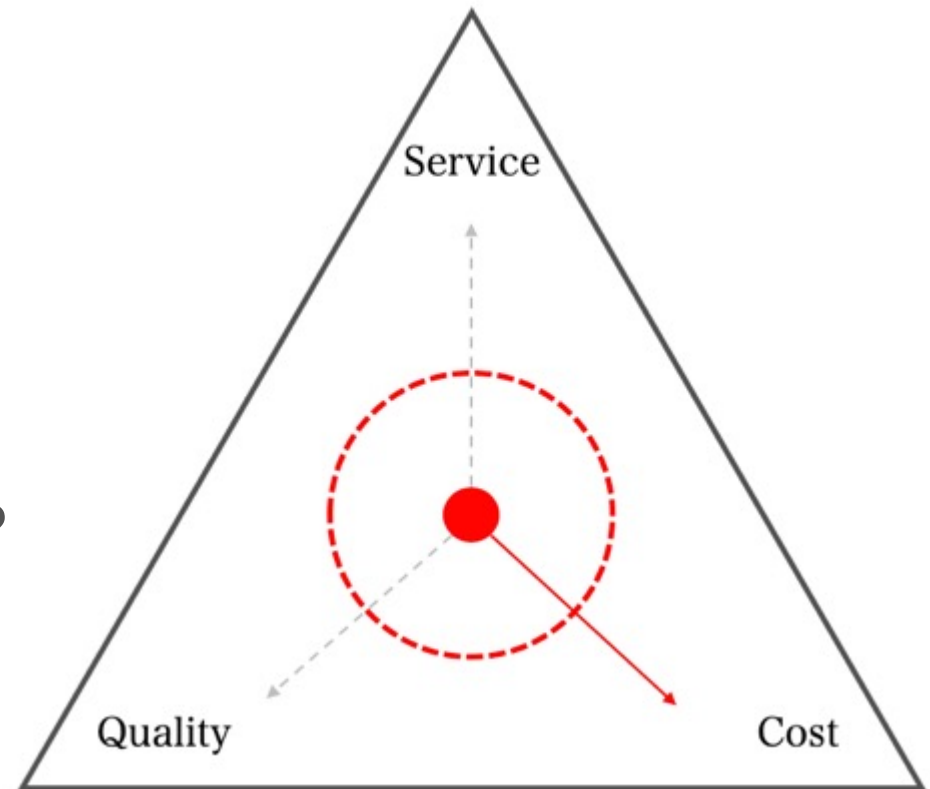
5 mins

- In groups
- Discuss the impact poor stock management has on our plan?
- What methods can you adopt to control this better?

# Exercise

In groups:

Considering the plan-led proposition, what metrics do you think should be in the executive review pack?



# Review Meeting



How did the plan perform?



Examples of metrics that could be employed include:

- Delivery, numbers on time, early or late
- Productivity,  $P_d = \frac{\text{Output hours}}{\text{Input (attended)hours}} \times 100\%$
- Overtime, planned against what was worked.
- Perished task-hours
- Materials performance, preload, unsatisfied demands

What have we learned and how can things be improved?

# Data collection



Shift H/O



AMS



- Timely
- Accurate
- Informative



T&A report

FTS report  
Ops report  
Yard report



# Production Control



5 mins

- In groups
- What is the role of production control?
- Where is the most appropriate reporting line?



# Production control



An extension of the planning cell – working in production:

- Keeping plan on track
- Minor adjustments to plan (agreed)
- Feedback to planning and control
- Helping with disruption
- Work arising
- Concessions
- Restrictions
- Perished hours



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# The planner's role



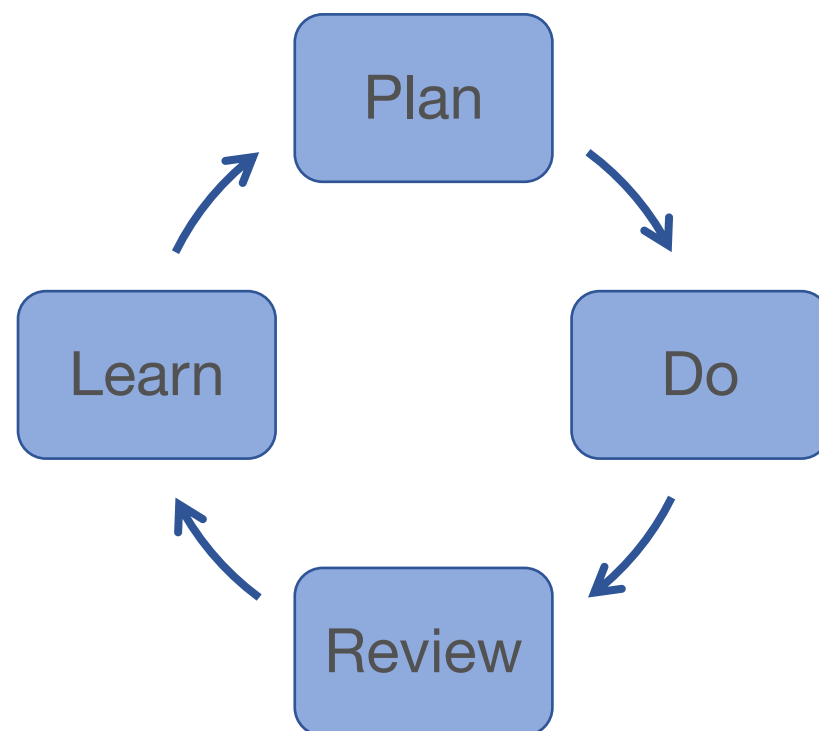
- Leadership
- Taking intelligence from around the business and crafting it into a viable plan
- A plan that uses ALL the available resources
- The more accurate your data inputs are, the more viable your plan is
  
- So that – Hitachi achieve cost competitiveness

# The planning cycle



Three critical elements in rail planning are:

- The planning 'cell'
- The planning cycle
- Drum beat communications



# Learning culture



# Train release process



- Planning should release train to traffic – why?
- Production deliver to STS, not service
- Production complete work orders
- Planning Techo them
- SAP closed before release
- Concessions and restrictions checked before release
- Customer KPI risk evaluation before release

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# CS-05 Planning Foundations

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