

# Preactor User Group 2009

World Class APS Solutions, Locally Delivered



# Distributed Scheduling

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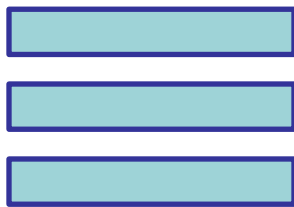


## Distributed Scheduling

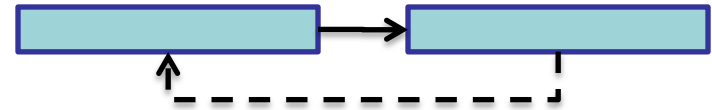
- An environment in which scheduling decisions are subdivided and made by different people using different configurations or data.
- Why?
  - Too much work or complexity for one person
  - Specific knowledge of processes or customers
  - Organizational or geographic issues



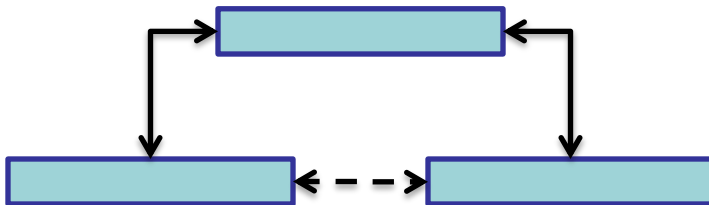
# What kind of Distributed Scheduling?



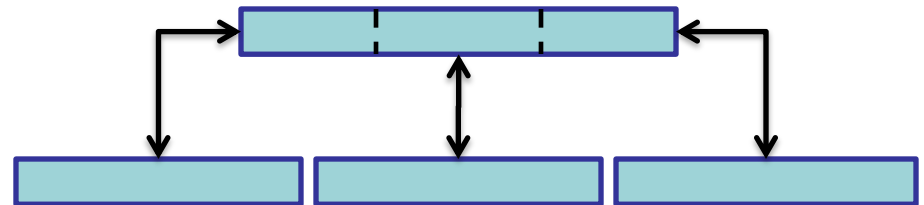
Parallel



Sequential



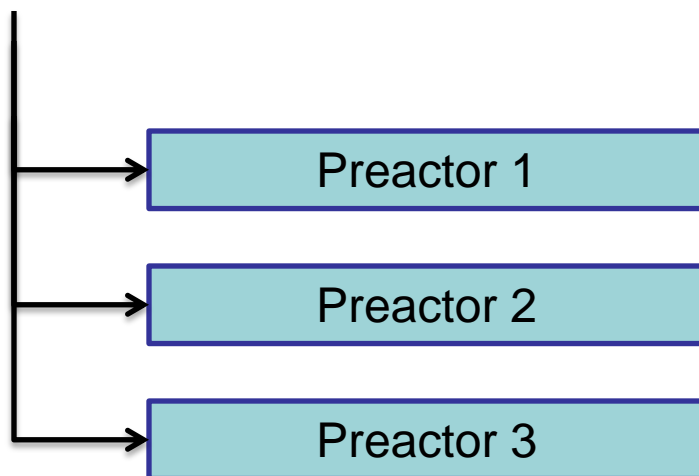
Hierarchical



Modular



# Parallel scheduling





## Parallel scheduling:

Decide how capacity and workload are divided

- Each system should have sole control for both the capacity and the related workload
- Routings are fully within one system
- Individual orders may be passed between systems – but this should be communicated

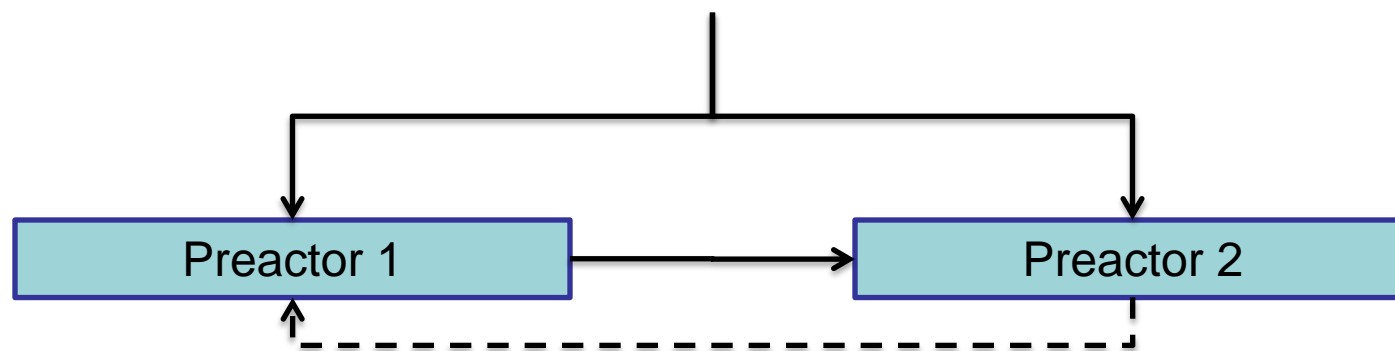


## Parallel scheduling: Is a consolidated view required?

- Schedules can be combined into a consolidated Preactor viewer, or just uploaded to a single ERP/MRP system.
- The viewer should not be able to change the schedules (see Hierarchical or Modular)



# Sequential scheduling





## Sequential scheduling:

### Decide who leads and who follows

- Downstream processes are scheduled first, creating due dates for upstream processes
  - What happens if upstream cannot deliver?
- Upstream processes are scheduled first, Creating availability dates for downstream
  - How are upstream priorities and due dates defined?



## Sequential scheduling: Allow for time lags

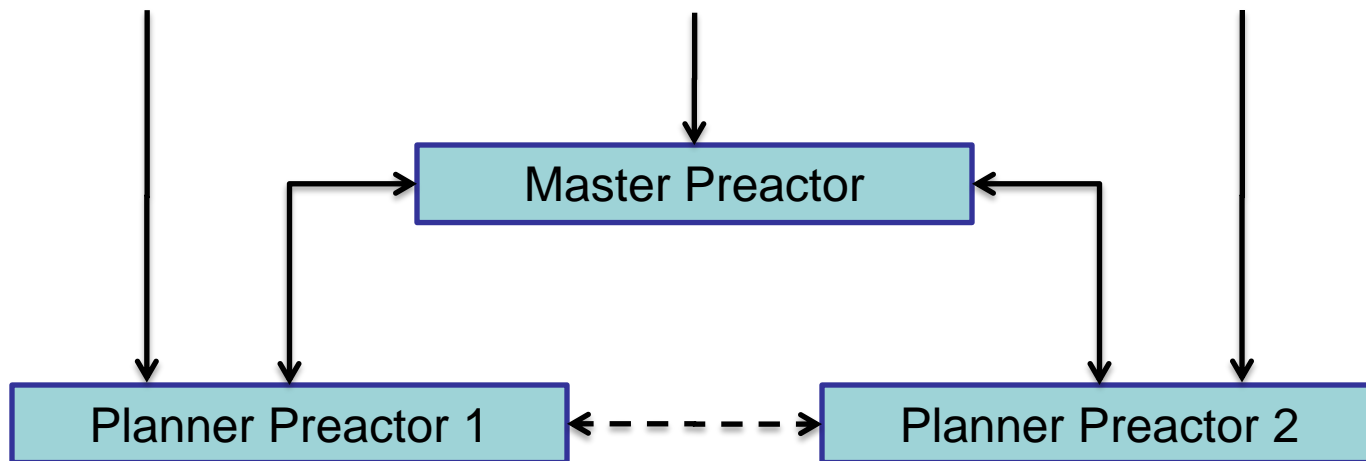
- Scheduling activity really needs to be staggered
- Immediate communication between schedules is a possibility but rarely practical
- Where there are closely-coupled processes it may be necessary for one system to contain the complete picture.

## Sequential scheduling: Circular dependencies

- A resource in one system may be used for both upstream and downstream processes for another system (see Hierarchical)



# Hierarchical scheduling





## Hierarchical scheduling: Decide the level of detail for the Master

- The Master system has a complete view but operations should be defined at a higher level.
- Each of these operations will represent an entire routing at the lower level.
- The Master system will usually use a lead time and infinite capacity resource.

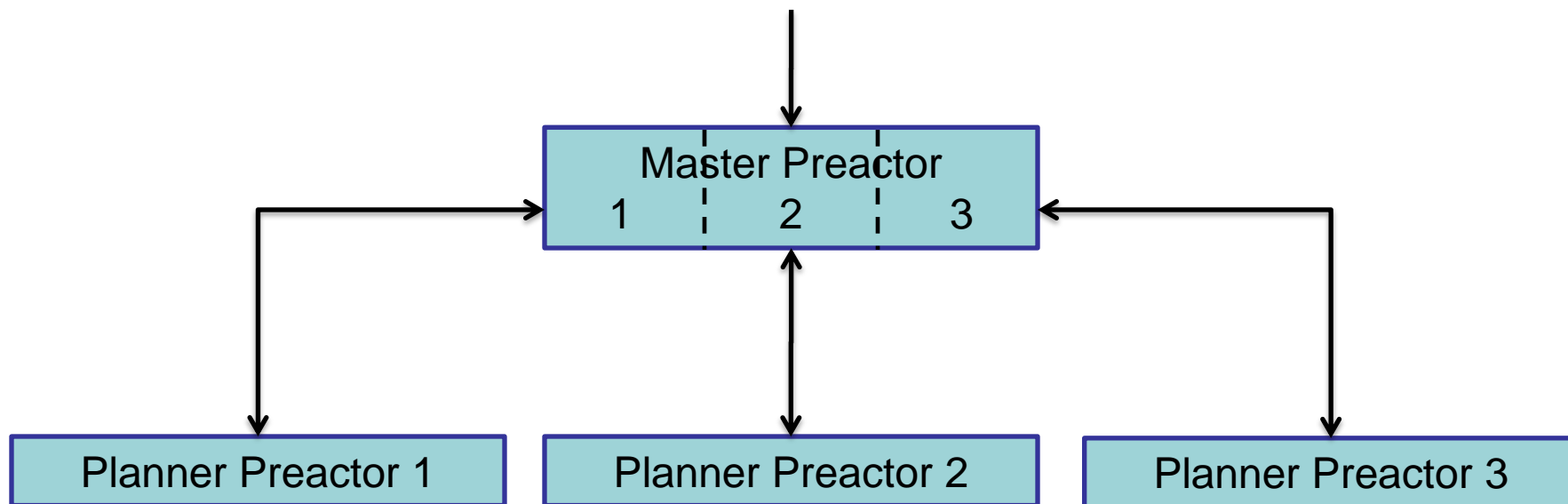



## Hierarchical scheduling: Decide if the Master is the master

- In most cases the Master system should dictate earliest start and latest finish times to the Planner systems.
- If the Planner cannot schedule within the timeframe the Master should either investigate why, or pass the best times on to other areas.
- “Traffic Lights” are used to identify problems.



# Modular scheduling





## Modular scheduling: Decide who defines capacity

- Does the Master or the Planner decide the calendars for the resources?
- Or must calendars changes be passed back and forth with the schedule?



## Modular scheduling: What is the purpose of the Master?

- Managing data
- Arbitrating across schedules
- Communication and visibility



## Summary

- Design of the system often follows existing responsibilities.
- Communication and decision-making timescales are more at issue than “scheduling”.
- Simultaneous multi-user scheduling on the same resources is appealing but rarely practical.
- Distributed access to a centralised scheduling system may be an option.