

: *What decision support is needed for scheduling tasks?*

by Dan Power

Editor, DSSResources.com

In many organizations, managing operations involves scheduling resources to perform tasks. Scheduling is the process of creating a plan to use scarce resources that involves creating a time-based schedule. Scheduling involving deciding what resources to commit to a task and when. For example, in a manufacturing job shop we need to schedule machines, in a hospital we need to schedule surgical operating rooms, and we often need to schedule people for jobs and tasks. In some situations, computerized support can assist in scheduling and in managing scheduling processes. Every scheduler and manager does not need the same decision support. What capabilities are needed?

What scheduling decision makers need decision support? The scheduler, the manager of operations, and people associated with the operation of a specific resource. In general, the scheduler must be able to reserve the resource. Also, ideally the scheduling system notifies people associated with the resource and provides information on the task to be performed. The manager of operations must be able to override and change any schedule and be able to monitor utilization of resources on a daily, weekly, monthly and longer time-frame basis. People associated with a resource need to be able to update availability and receive schedule alerts.

What factors impact the decision support capabilities that are needed? The resources that are scheduled are a major factor, they may be almost identical or have very different capabilities. When capabilities differ scheduling is usually more complex. The task performed using the resource and duration of use impact decision support needs, the more constant and fixed the use and duration the easier the scheduling. If the use of the resource is variable or unpredictable in advance, then scheduling needs to provide for more slack and rescheduling is more common. The more varied the capabilities of the resource, and the more varied the use and the more scarce the resource, the more sophisticated the decision support that is needed.

Fans of the TV show Grey's Anatomy (<http://abc.go.com/shows/greys-anatomy>) have seen many times the white board used for scheduling operating rooms for surgeries at Seattle Grace Hospital. The white board, a simple scheduling tool, demonstrates the problems of scheduling and the need for more sophisticated decision support. What problems occur in scheduling with a whiteboard or other simple approach?

1. Unauthorised people change the schedule.

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2. Scheduled times may be inaccurate and rescheduling is difficult.
3. Emergencies may occur that require changes in the schedule and disrupt activities.
4. People need to physically check the schedule and it may be outdated.
5. No historical record is maintained about the scheduling so utilization analysis is not possible.
6. As the number of resources to be scheduled increases it becomes harder to get an overview of available resources and capabilities. The system relies on the memory of the scheduler.

Organizations use paper and pencil, whiteboards, spreadsheet software, word documents and/or employee scheduling software for this task. Most of these tools provide no decision support. The scheduler makes the decision heuristically and by intuition. Advanced employee scheduling software "provides ways to connect with the staff, ask for their preferences and communicate the schedule to them, via email or SMS." Complex scheduling tasks require sophisticated computerized transaction and decision support capabilities. The software should record tasks/schedules, monitor usage and support the user's scheduling and retrieval needs.

One large vendor, Cerner (<http://www.cerner.com>), provides solutions to health care organizations, including scheduling software. The following are listed as benefits of Cerner Scheduling Management:

1. Facility-wide coordination of scheduled resources increases patient, provider, and staff satisfaction, as waiting time is significantly reduced.
2. Costs are reduced, since coordinated scheduling ensures proper resource utilization.
3. Revenues can be increased, because streamlined scheduling increases operational efficiencies and patient throughput, freeing up more time in the day to schedule additional appointments.
4. The facility-wide view of the patient/member's calendar supports clinicians' efforts to streamline

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patient care.

5. Tight integration of Scheduling Management with underlying Cerner applications ensures optimum use of resources and promotes patient satisfaction with timely, sequenced care.

Overall, improved scheduling decision making can increase utilization, reduce delays and mistakes, help control costs and reduce waste.

References

Schedule (workplace), From Wikipedia, the free encyclopedia at URL
[http://en.wikipedia.org/wiki/Schedule_\(workplace\)](http://en.wikipedia.org/wiki/Schedule_(workplace))

Author: Daniel Power

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