ESPRESSO TUTORIALS

Uwe Goehring

Capacity Planning with SAP®

- How to leverage SAP Capacity Management
- Capacity planning best practices
- Options for capacity scheduling in SAP ERP
- Automatic resource and material scheduling with SAP APO

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2 The Process of Capacity Management

Capacity management and its functions for planning, sequencing, leveling and scheduling orders, represent an important step in the chain of events for the lean, agile and efficient provision of a detailed production program. Without capacity planning, we fail to consider reality in our efforts to produce as close as possible to customer demand.

Unfortunately, during most SAP implementations, capacity management is put at the bottom of the list of priorities and, due to budget and time constraints, most often falls through the cracks. Well-meaning attempts to make it work later down the track are often unsuccessful due to the overwhelming mountain of issues that need to be dealt with after go-live.

In this chapter, I want to highlight the significance of capacity management and dive deeper into the individual areas and steps that need to be taken to translate a planned demand and a customer demand into a leveled and noiseless production program.

When managing capacity, we usually go through the following phases: planning for capacity, sequencing orders, leveling orders within the available offering and finally scheduling and fixing the orders into the frozen zone. The capacity situation can be evaluated before, during and after the planning phase. Possible overloads are detected and resolved with specific activities which should be clearly defined and documented. It is of utmost importance that the capacity manager knows which horizon is being evaluated so that appropriate measures can be taken.

It is therefore necessary to detail planning horizons and to identify what needs to be done in each one. Figure 2.1 shows this detail and provides a view of long, medium and short-term planning horizons. It also depicts a frozen zone and backorder horizon where expediting and rescheduling take place.

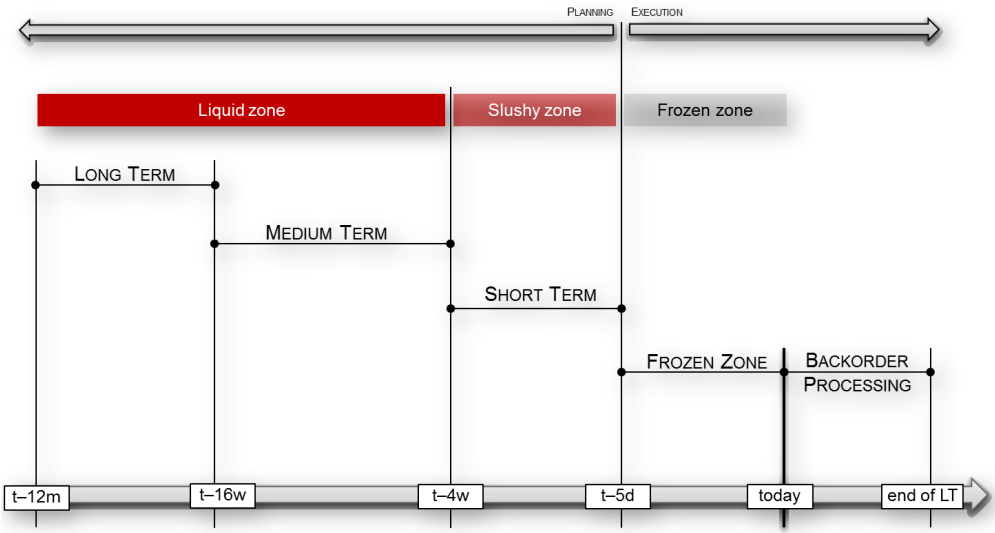

Figure 2.1: Planning horizons

As shown in the figure and detailed in Chapter 1, planning ends where the frozen zone begins and we can arrive at two general rules which streamline the process of capacity management:

Rule of Planning #1: *'There is a point in time at which planning activities end'.*

Rule of Planning #2: *'Plan your resources in the medium and long term, and manage demand. Plan your resources and sequence in the short term, and schedule and manage supply'.*

Keeping these rules in mind throughout the remainder of this book, we can now look at the specific activities performed in capacity planning, sequencing, leveling, scheduling and evaluation.

2.1 Capacity planning

In capacity planning, the user can employ an instrument to plan limited resources at various planning levels. Planning levels refer to various planning horizons within our planning framework. For the long-term planning horizon, we can use rough-cut capacity planning to address

aggregated resource requirements and ensure adherence to planned delivery dates on estimated and forecasted dates. For the medium term we can use simulative capacity planning so that a suitable demand program that lies within the available capacity profile can be activated. And finally, we plan detailed capacity in the short term with specific capacity offering profiles on individual work centers and planned orders generated by MRP.

Figure 2.2 shows the various planning tasks taking place in specific planning horizons.

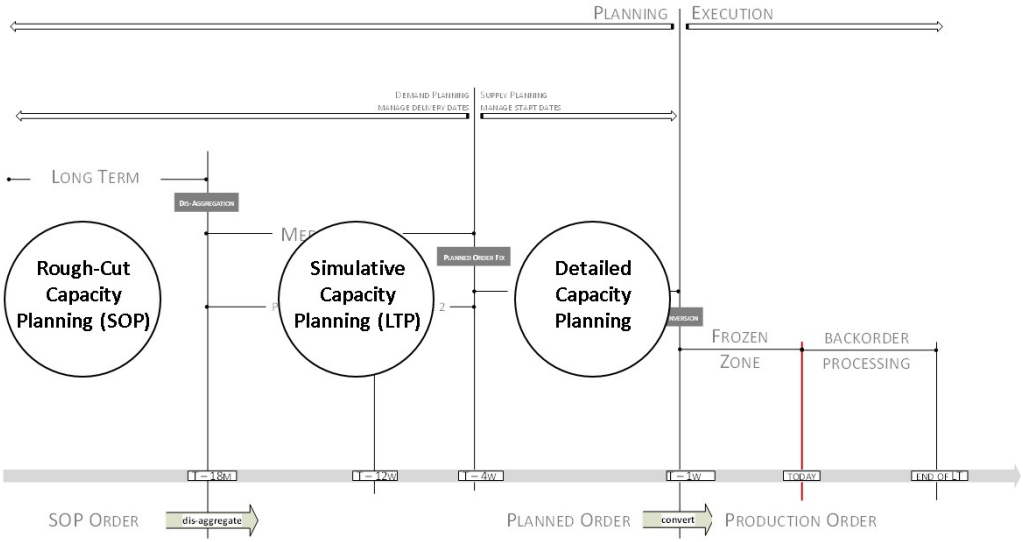

Figure 2.2: Capacity planning

Detail and planning accuracy increases as we move from long-term planning to medium-term to short-term. Moving through the phases we gradually increase accuracy from work center areas to work center groups to the detail of the work center's capacity offering—from months to weeks to days and hours, and from incomplete data to complete resource and availability profiles.

Figure 2.3 illustrates this progression.

Thus, capacity planning is about providing enough available resources to meet demand during the planning progression.

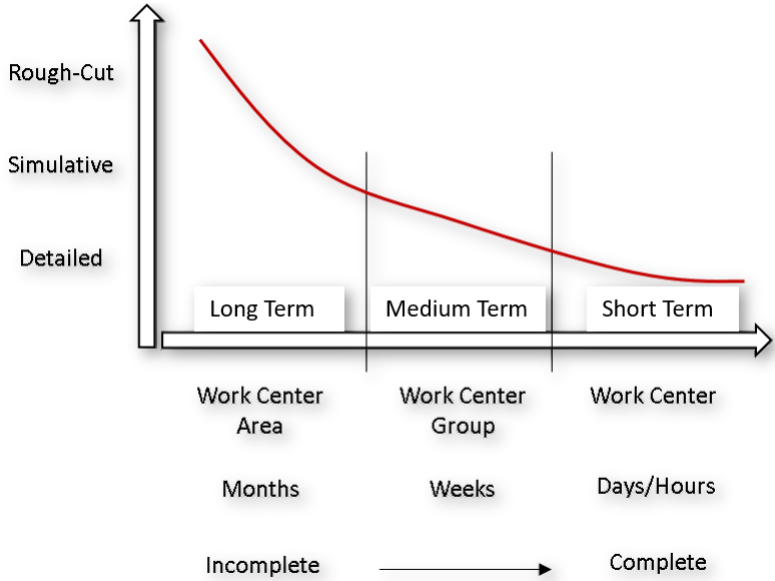

Figure 2.3: Capacity planning levels and detail

2.1.1 Some important planning parameters

In the following sections, I'll discuss the details of some planning parameters which are essential to the planning of a leveled capacity situation. It is important to understand the basic data that supports planning functionality and to operate with a sound setup. This is instrumental for good decision making in long-term, medium-term and short-term planning horizons.

Calculating available capacity

The working hours defined in the work center record are central to planning available capacity. Available working hours are defined for each type of capacity and you can assign as many capacities to a work center as you like. This provides you with the ability to manage various capacity situations. For example, you could make sure that a machine on your shop floor does not exceed its open run time during a standard working week.

Similarly, it is advisable to ensure that workers who are available for 8 hours a day—from Monday to Friday—don't find themselves working late hours and weekends because the order didn't match the availability.

However, labor and machine capacities aren't the only constraints you may have. Warehouse space, oven volume or other space restrictions on a shop floor are just a few examples of the capacities which may have units of measure other than available time. All of them, however, can be set up as a capacity in the work center and can therefore be managed by their constraints.

For each of these capacity categories you can maintain a separate available capacity and assign it to the respective work center.

Furthermore, if a capacity is allocated to several work centers, it is a pooled capacity. For example, the collective available capacity of a human workforce in an area of production can be maintained as a pooled capacity. As such, it must be maintained separately before it is allocated to various work centers.

Once the capacity category is defined, the productive operating time can be calculated, as shown in Figure 2.4.

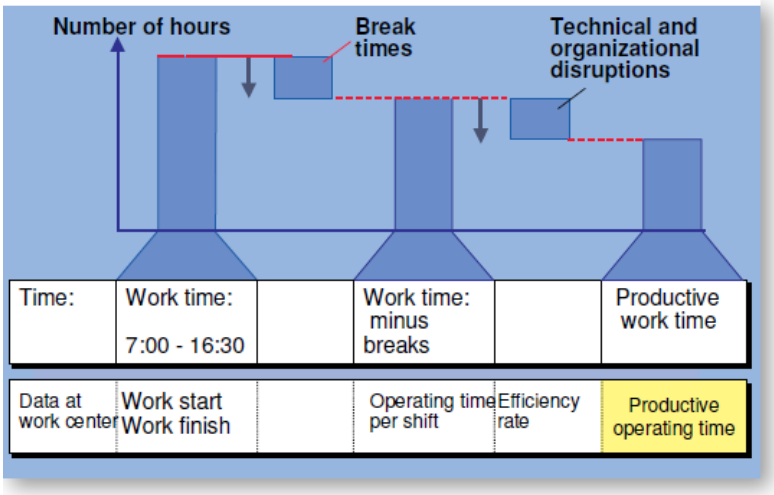

Figure 2.4: Calculation of productive operating time

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