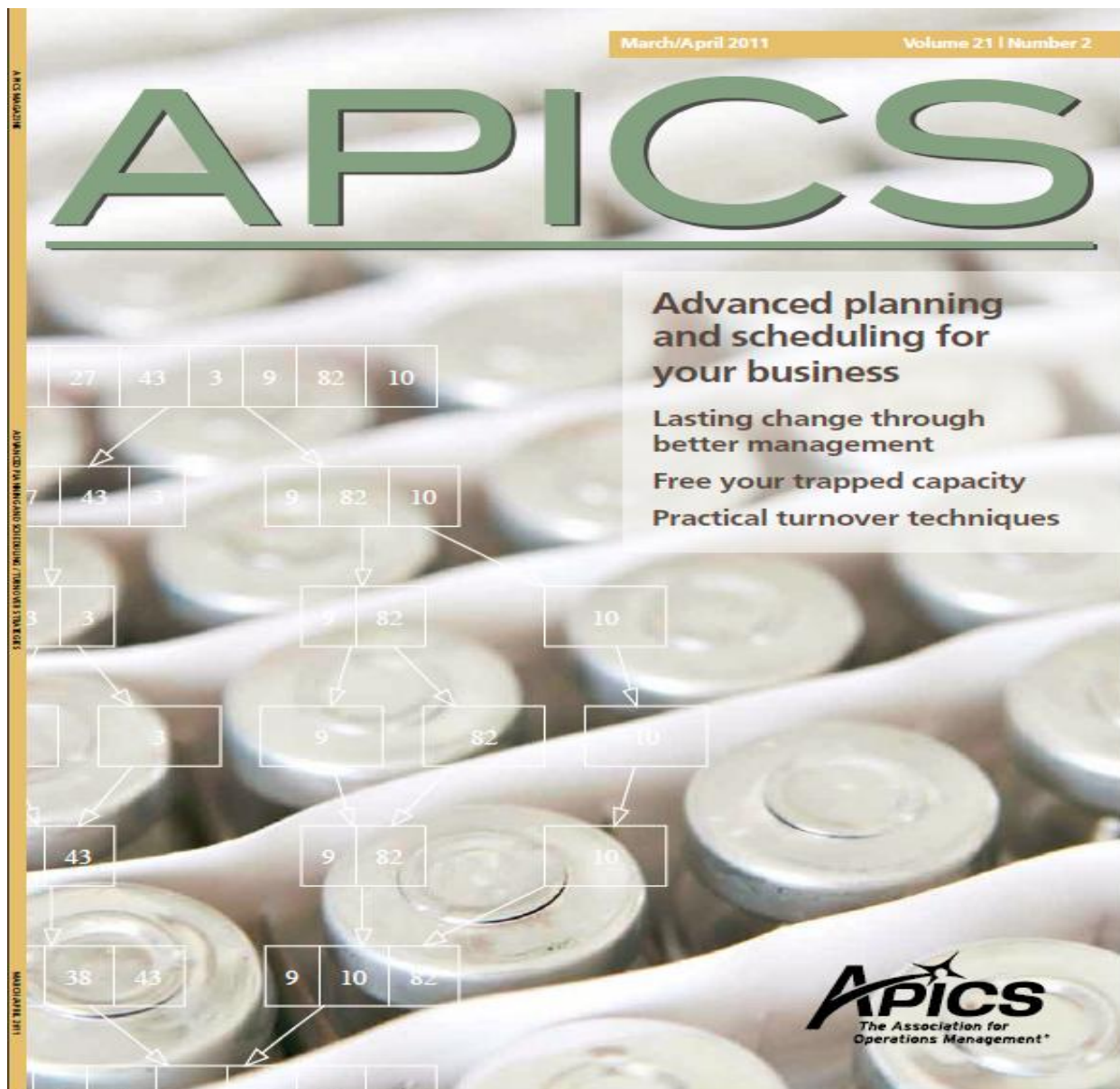


Secrets to Supply Chain Success

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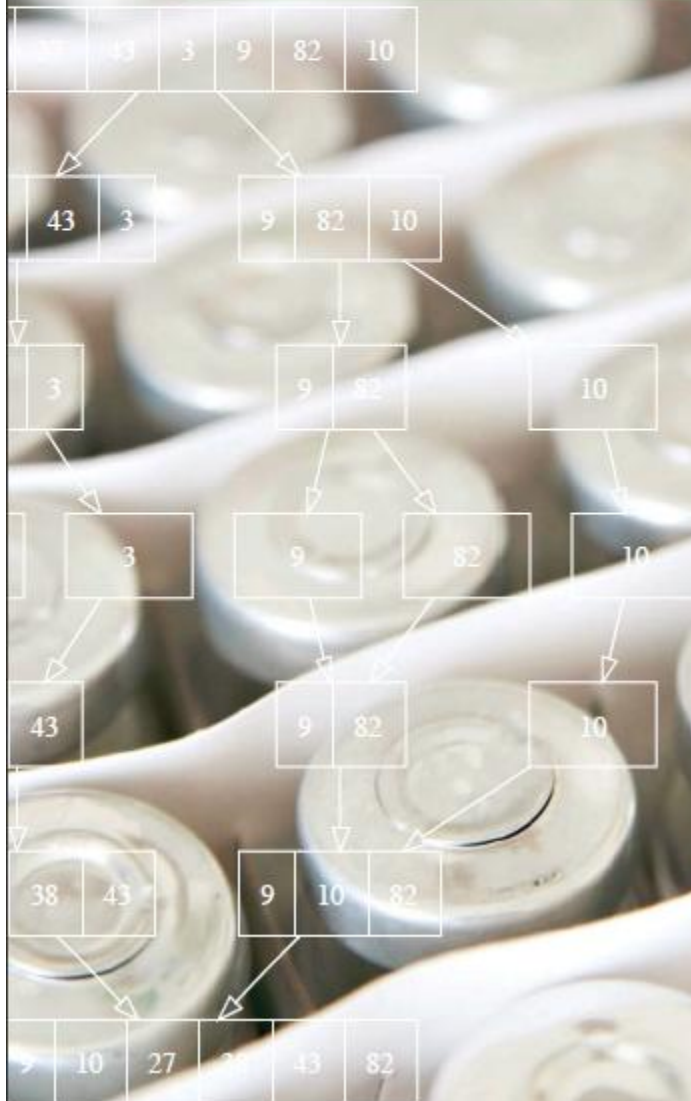
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Hints to APS Supply Chain Success

Real-world lessons learned for successful system implementation

By Ketul Patel, CPIM, CSCP



An advanced planning and scheduling (APS) system is a tool; but APS implementation is an organization-wide journey that starts from the top with clear vision, goals, strategy, planning, and long-term commitment. All global players—both internal and external—must be involved, including key vendors, customers, strategic logistics partners, and software and services implementation partners.

World class supply chain management relies on the right APS process. APS involves the analysis and planning of manufacturing and logistics activities in the short, mid, and long terms. According to the *APICS Dictionary*, "APS describes any program that uses advanced mathematical algorithms or logic to perform optimization or simulation on finite capacity scheduling, sourcing, capital planning, resource planning, forecasting, demand management, and others."

Specifically, there are five main components of APS tools, which are

- demand planning
- production planning
- production scheduling
- distribution planning
- transportation planning.

The *APICS Dictionary* also states, "These techniques simultaneously consider a range of constraints and business rules to provide real-time planning and scheduling, decision support, available-to-promise capabilities, and capable-to-promise capabilities."

There are many examples of successful APS system implementations; but, for each success story, there are many more initiatives simply limping along and creating negative return on investment. The following information is based on research from APS system implementations for some of my company's major clients in the pharmaceutical, consumer product, and health care industries. Best practices will be summarized across five broad areas. Following these guidelines can help you facilitate successful implementation of APS solutions and interpret meaningful data, enabling effective decision making. The five topics are

- leadership and change management
- organizational readiness
- program governance
- program and project management
- data and technology governance.

Leadership and change management. An effective implementation approach requires the players to know, focus on, and resolve supply chain pain points and tightly integrate the APS tool with other systems. Additionally, a well-negotiated, fixed-cost price structure from

carefully chosen APS system implementation partners is required. Finally, due to the high degree of uncertainty and complexity involved in such an initiative, a time and material pricing structure may be in order.

Organization readiness. More often than not, problems occur because people resist change, not because a process or system isn't working. Leaders must identify and work with those who are impeding progress, then clearly divide the functional responsibilities, delegate them to subject matter experts, and conquer them. The main assumption here is that all key stakeholders will be available to work together and achieve the stated goals, regardless of their particular work locations—thus avoiding silos.

Most successful APS system implementation teams are broken into distinct planning areas, such as demand, supply, distribution, production, detailed scheduling, order fulfillment and allocations, transportation, warehousing, and so forth. Because key consultants and third-party implementation partners will not be around forever, it's important to make sure permanent resources are involved in every function. Engage the right person at the right time with right role or authority. Many successful initiatives establish a global team that supports local deployment teams at each individual site or region.

Program governance. Control the global scope of the initiative and change management vigorously with the optimal end state in mind. APS solution implementations spanning across multiple regions need clear boundaries for localized requirements. Consider a global governance team that controls the scope of the APS model and approves only those requirements that can be reasonably leveraged across the multiple regions.

It's crucial to choose the pilot site wisely, avoiding the learning curve for supplementary rollouts, both local and global. During the initial phases, limit customization and enhancement of standard APS to 20 percent. Early wins in this journey are very important.

Leverage standard, available frameworks and best practices in order to better manage and understand all deliverables, such as APS configurations, functional specifications, technical developments, testing, and training.

Emphasize effective and clear communication strategy, along with centralized documentation of all the key deliverables. Chances are good that your APS will be unable to fulfill all reporting requirements. The best practice here is intelligently simplifying reporting needs to focus on the "day in the life of a planner." However, standalone, spreadsheet-based reporting should be avoided,

```
"m+n":
1 JZ (2,5)
;[ 2 ]=m:
If [ 2
]=0 then
instruction
5 else
continue

2 DEC (2)
;Decrement
count in
register
#2: [ 2 ]
-1 → 2

3 INC (1)
;[ 1 ] =n
or sum:
Increment
count in
register
#1: [ 1 ]
+1 → 1

4 JZ (0,1)
; IF [ 0
=0 then
jump to
instruction
1 else
continue.

5 HALT
```

```
def compensated
  _variance
  (data):
    n = 0
    sum1 = 0
    for x in
      data:
        n = n + 1
        sum1 = sum1
          + x
        mean =
          sum1/n
        sum2 = 0
        sumc = 0
        for x in
          data:
```

APS tools are very powerful and thus can be a bit overwhelming.

```
sum2 =
sum2 + (x -
  mean)**2
sumc = sumc
+ (x - mean)
variance
= (sum2 -
  sumc**2/n)/
  (n - 1)
return
variance
```

as it can cause multiple and conflicting versions of the truth and disconnected planning. In many real-life scenarios, APS is connected to external data warehousing systems for complex reporting.

Finally, for performance measurements, define financial key performance indicators (KPIs) and connect them to supply chain KPIs. Track initial, targeted, and actual time-phased values both during and after implementation. Returns cannot be realized quickly; rather, they build over time.

Program and project management. It is important to take advantage of standard project implementation methodologies. These include project definition, solution design, solution details, execution and deployment, and successful completion. These are numerous opportunities to adopt different project management styles, depending on whether the APS implementation is brand-new or is the result of mergers.

Take the time to define a clear, concise, and understandable plan for the immediate, mid-term, and long-range time frames. For a large-scale or global initiative, make sure plans for dependent projects are well aligned. Don't ignore your enterprise resources planning system and

independently start implementing APS. You will do so at your own peril.

There is an old adage about not putting the cart before the horse. I've seen companies do just that by hiring resources without first achieving a concrete, clear, feasible plan.

Remember that having issues is not your biggest problem—hiding them is. Make sure logs of risks, actions, issues, and dependencies are tracked and analyzed on a daily basis.

At this very moment, organizations are spending up to 17 percent of their total APS budgets on training. Integrate the testing and training cycles with good stimulation tools, learning accelerators, and easily updatable platforms. Multiple rounds of vigorous unit and integration testing with a suitable quality-quantity evaluation of productive data and proper recording of the test results will significantly improve results.

APS tools are very powerful and thus can be a bit overwhelming. Make sure end users and planners know them very well and are adapting to the changes. Planning for a multiyear, global APS implementation journey can be frustrating

and challenging. Addressing the interim stages is more art than science, and there is no best practice here. Based on personal experience, I believe more pain now equals less pain later.

Lastly, what works for most of my clients is to start an APS solution upgrade only after the full completion of the current APS system implementation. In other words, in order to avoid overwhelming bugs and new patches with the most recent version, the original tool first must be functioning effectively.

Data and technology governance. It's all about the data. Successful data conversion, harmonization, and migration require clearly defined data scope and ownership, high-quality functional and technical data specifications, and sound enterprise data integration tools with a powerful staging environment. Data cleansing is a must. Many organizations have up to 50 different material numbers in their legacy APS systems for the same physical product. Make sure your enterprise data structure (plants, vendors, and financial) is defined early in the phase.

Often, each business entity or region will measure products in different units. Thus, it's important to streamline and clarify by defining a single unit of measure across the globe and using alternate units only for regional requirements. Similarly, aligning the planning calendar data also will help reduce confusion. The ideal scenario is to have your new, upgraded APS landscape in parallel to the existing one. This enables easy transition. A sound middleware platform that can interface the new APS with your existing information technology landscape is essential.

Finally, remember to define supply chain roles and responsibilities early on in order to help map them into APS system authorizations.

The real win

Going live on time and on budget is not the same as being successful. APS implementation will not change the business unless actively directed by effective change leadership. Implementations should focus on and result in holistic benefits.

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