



Transform APS Software Into a Competitive Advantage

Implement Multiple Plant Interoperability

On Time | Edge™

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Leverage Smart Guidance with APS for Competitive Advantage

Create a Sustainable Culture of Continuous Improvement for Your Manufacturing Business

Continuous Improvement in a Multiplant Environment Demands Two Related and Essential Tools: Advanced Planning and Scheduling Software (APS) and Thoughtware EdgeSM.

The Major Benefits of Advanced Planning and Scheduling Software (APS)

- Increased **visibility** for all members of manufacturing processes — especially for companies with **multiple** plant production systems (multiplant, interplant)
- Plans and schedules that are do-able and revised easily and quickly
- Decision support in real-time
- Valuable insights for increased on-time delivery
- Support for a culture of continuous improvement, greater profit, increased productivity

The Power of Thoughtware EdgeSM: Smart Guidance When and How You Need It

On Time Edge consultants help you create, implement, and sustain a culture of continuous improvement with Thoughtware EdgeSM, a distillation of our expert knowledge and collective experience in-depth and across multiple industries. Our team of experts identify bottlenecks and time and resource-wasters and prevent inertia from derailing constant improvement in shop floor and financial performance. We harmonize the essential contributions of lean methods, 6-Sigma, and Theory of Constraints (TOC).

We integrate APS software into your business with data insights and support for all your team members. Our thoughtware, in tandem with your APS and ERP, can TRIPLE your profits and cut your waste in half.

What's more, you make your promised due dates to customers consequently achieving an on-time edge that:

- Differentiates your company from your competitors
- Entices new customers
- Fosters customer loyalty
- Creates space and resources for new product development
- Uncovers time and resources to respond to market opportunities

How Do They Work Together?

OTE uses APS software to its full potential through manufacturing optimization that provides on-time delivery (OTD), increased operational efficiency, and higher profits.

Thoughtware EdgeSM helps you best utilize APS, optimizing your production processes through:

- **Building a Sustainable “Culture of Continuous Improvement”**
- **Theory of Constraints (TOC)**
Meet Your Goal: Make More Money
- **Throughput Accounting**
Real-Time Decision Support
- **Constraint Management**
Minimize Bottlenecks
- **Online Simulation**
Make Possibilities Visible
- **Advanced Forecasting**
Stop Guessing
- **“What-if?” Scenarios**
See Outcomes Before You Execute
- **Drum-Buffer-Rope**
Improve Productive Workflow
- **Quality Control**
Reduce Scrap and Rework



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Bottlenecks govern both throughput and inventory.

Eliyahu M. Goldratt

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10x ROI

Implementing APS reduces customer loss (due to broken delivery promises), increases current customer loyalty, and improves operational and financial performance across your entire business. Investing in Thoughtware EdgeSM consulting and implementing APS software will maximize the potential benefits of this tool, **returning your investment tenfold.**

OTE has the data, insights, and case studies to prove this ROI.

OTE brings systems and people up to speed easily and rapidly. There may be hesitations and fears as we address constraints and restructure your processes to reduce bottlenecks. Some members of your team may have to change their schedules and processes. However, we make it a point to assure each member that not only will this change make them more successful, it will make their job easier. And enjoy lower stress levels to boot!

Implementing APS software will not change your operation's methods or techniques nor require new training or personnel; instead, it restructures your current business processes. We work with what you already have in the kitchen. We reorganize your methods for the optimized use of your personnel, machinery, and technical processes.

Instead of reinventing the wheels on your business, we update and tune-up your business's engine. In effect, the wheels you have turn more quickly and move in four-wheel-drive mode so you can adjust to bumps in the road, unforeseen terrain changes, and unanticipated changes in direction, upstream or downstream. The supply chain industry calls these events "variability"; we call them a pain--and we suspect you do too, in more colorful language.

When learning about your business, we listen to all participants in your production processes, from the shop floor to the C-suite — whether you have one plant or a dozen across the globe. Our goal is to connect your disparate processes to help you achieve true interoperability.

We assist you in moving your multiple-plant business from the multiplant stage, to the interplant stage where all of your various production processes are connected domestically and internationally and keyed to actual demand and on-time delivery. Interoperability allows collaboration at all levels typically not achieved without a common operational mindset and language combined with high-performing software.

Trade in your old software (and that creaky '90s sedan). Implement fully-featured APS software to increase your profitability and ROI, which will drive up the value of your business. By eliminating waste, unnecessary change-overs, course corrections, and complaints from disappointed customers, and instead, by producing to demand, we increase your free cash flow. You produce materials and products that your customers want when they want them. Happy customers can easily become an annuity.

OTE allows you to leverage APS to achieve interoperability and gives your company the disruptive competitive advantage of a Formula One engine.

Just press the "Go!" pedal.

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APS is the ONLY way a manufacturer can keep its delivery promises close to 100% of the time, on time, at operating profits exceeding the weighted average cost of capital.

Scott McMartin, VP, On Time Edge

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Thoughtware-Focused Implementation of APS Promotes Exponential Growth

Sales departments are usually not to blame for your business's lack of growth. The likely problems are the costs of unused inventory, logjams of parts and excess product, and unaddressed production constraints. APS reduces your waste and improves production efficiency, eliminating bottlenecks and expediting processes for all phases of your operation. Your manufacturing capacity will be adjusted to demand, increasing customer retention and profit margins.

Expert application of thoughtware and implementation of APS ensures 98% on-time delivery, preventing customer loss, and securing new, loyal clients through stellar reliability. Your materials will be available when needed, consistently updating and recalibrating scheduling for upstream and downstream process adjustments. Advanced forecasting of processes and issues, what-if scenarios to best prepare for the unforeseen, and seeing alternative options are powerful tools for your production planners. They get the visibility to make the most informed decisions when changing schedules and processes.

APS will help your production planners save an immense amount of time. To resolve scheduling issues that might now take them hours, if not a full work day to fix, APS software can recalibrate and utilize data to provide alternatives and options for your planner in less than ten minutes. Lead times will be reduced, and this saved time can be allocated to other priorities. Even better, decisions can be made in real-time when they matter most, not delayed as a problem worsens.

Your customer service team will also be much more successful as APS software will allow them to answer customers' questions with more information and ensure meeting due-date commitments. With better

visibility, support team members can better serve customers' needs, providing complete explanations and alternative actions. This better visibility can reduce the negative effects of variability. What's more, the combination of our proprietary thoughtware and APS software increases the velocity of the company toward profitable operation and expanding growth.

Two Tools for Unpredictable Customer Demand

APS allows your business to adjust to unpredictability and make changes in scheduling to best meet changing market and customer needs. Your employees are qualified to use this new software because it is as accessible as the spreadsheets they are currently using. They can be brought up to speed quickly to use new software. We specialize in the understanding and adoption of new technology, and we will bring your team up to speed without the need for extensive training and retraining. With the time you save using this new technology, you can develop new products and services to meet changing market demands, to manage lead times, stay competitive in your industry.

But APS can't stand alone; it's like a GPS without a destination. It's an incredible tool, but it won't take you anywhere if you don't know how to use it or ask it to help you achieve a goal. We will help you find your optimal destination with Thoughtware EdgeSM, and then use APS to help you drive your business where you want to go. Thoughtware support could assist you in maximizing the software's ability to accelerate your business in the optimal direction.

How APS Moves Multiple Plants From Multiplant to Interplant With Interoperability

Many businesses unnecessarily fear it will be excessively difficult and require a lot of time, expense, and personnel training to integrate modern APS software with their current ERP software. OTE makes APS integration seamless. APS works with your data already within your ERP to provide customized optimization and can be fully connected to your system in a few days — not a few months. Integrating APS with ERP makes your multiple plants, even the tangentially connected ones, interoperable. With interoperability, we help you move from a disconnected multiple-plant system to ONE “interplant.”

Many multiplant manufacturing businesses face the same struggles, primarily delays, disruptions, and communication difficulties. When something goes wrong on the floor, a machine isn’t working, an operator is out, or the necessary material isn’t delivered on time, your production planner faces an enormous task — reorganizing an entire production schedule with minimal visibility and insufficient anticipation of possible difficulties. After an extensive amount of time — often an entire workday — their valuable efforts still result in extensive delays and don’t address problems throughout the entire process, impeding the efficiency of your larger production system. Unfortunately, many planners and schedulers lack the tools to make the best decisions and give them the necessary visibility.

APS makes different problems visible, allowing your planners to see various issues across all of your production processes, both upstream and downstream to make the best decisions to support your schedule. These decisions can be made with the help of APS software in minutes instead of hours.

Inside a Superplant™

Superplant™ is a cohesive, nimble, and value-creating system of plants optimized by operations planning and scheduling solutions.



Superplants bring any number of users and manufacturing locations together to:

- **Visualize** solutions to manage capacity and material bottlenecks
- **Synchronize** the flow, protected against uncertainty and variability
- **Optimize** alternatives to deliver on time with high-profit margins

Superplant™ Team

Executives

- High Return on Assets
- Boost Production Output
- Cut Operating Expenses
- Empower Teams for Success

Central Planners

- Cross-plant Visibility
- “What-if” Scenarios
- Optimize Plant Loading

Schedulers

- Capacity & Inventory Visibility
- Create Schedules Faster
- Overcome Bottlenecks

Sales & Service

- Keep Delivery Promises
- Shorter Lead-times
- Stay Informed



APS makes different problems visible, allowing your planners to see various issues across all of your production processes, both upstream and downstream to make the best decisions to support your schedule. These decisions can be made with the help of APS software in minutes instead of hours.

APS software promotes collaboration across all departments and plants contributing to a supply chain. Thoughtful implementation of APS software allows for collaborative multiplant scheduling that reviews and weighs issues across plants, allowing your planner to make your production system a synchronized inter-plant. Or, how about a synchro-plant?

Your production planners' work is just as important as ever, and their work is made easier and more effective with the help of APS — a win for everyone involved. We help you best utilize the software so planners can use it to optimize your business. Your planners are driving a tuned-up hot rod after we give them the tools to upgrade your business's engine.

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While pricing is extremely important, savvy manufacturers will continue to distance themselves from price wars by leveraging new technology that simplifies supply chain management, which in turn delivers many competitive benefits. These benefits include being able to operate your business more efficiently, more visibility and control over inventory, reduction of operational costs, and improved customer satisfaction and retention.

Hitachi Solutions Blog

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How Does APS Work With Your ERP?

Many companies purchase ERP systems because their production plans and schedules are inefficient. They often purchase ERP software that specifically offers “capacity planning” modules. Despite this investment, ERP software alone will not address capacity problems in their manufacturing processes because ERP is primarily a record storing system, not a problem-solving system. Because ERP systems are databases — not analytical tools, they lack analysis and insights.

Companies want and need a tool that can analyze data and provide planners with a better understanding of the implications of various issues or changes disrupting original production plans. By both definition and design, all ERP systems, from SAP to ORACLE and Microsoft to Acumatica do not analyze. They all work the same way — as storage. They are not forecasting software.

APS, on the other hand, is a forecaster. Your current ERP tells you what the weather is in your business right now — like a thermometer. But what happens when the weather changes and a rainstorm comes? APS software’s forecasting tools take into account the possible storms and how they move and affect your business in REAL TIME.

Paper maps are a thing of the past. GPS is the tool people use to get from place to place in the present. Your ERP is the paper map printout, and APS is the constantly updating, global guide to help you calibrate and recalculate your route towards a destination of on-time delivery. Your spreadsheets are the paper maps. The pressures of Industry 4.0 require modernization to APS as your GPS. When things go off route and not according to plan, APS will help you solve problems and reroute to your destination.

ERP systems are systems of record, housing company finances and production data. APS software uses data stored in the ERP, including

current information, purchase orders, machine capabilities, and personnel skill sets. Your planners can then generate an optimal schedule, with forecasting and what-if scenarios to generate alternative process options. This data is consistently refreshed, and with an “optimize” command built into the software, you can adjust for problems, take new orders, and integrate them into an optimal schedule for the best on-time delivery and the most profit. Some APS solutions offer forty or more factors for planning, adjustment, and scheduling for powerful optimization. By comparison, other solutions can only handle three or four factors. To achieve a tenfold return on your investment with us, we recommend implementing APS software that is also ten times better than the competition. We help you to implement PlanetTogether’s three pillars: integrated, optimal, and visual planning and scheduling.

ERP systems are systems of record, housing company finances and production data. APS software uses data stored in the ERP, including current information, purchase orders, capabilities of machine and personnel skill sets.

What Are You Missing Without an APS in Place?

Capability	ERP	APS
Enterprise Transaction System of Record	✓	
Source of Past Performance Reporting	✓	
Material Requirements Planning (MRP)	✓	✓
Rough-Cut Capacity and Material flow	✓	✓
Available To Promise (ATP)	✓	✓
Constraint-based Modeling of Resource Capacity and Material Flow		✓
Visual and Financial Decision Support Tools		✓
What-If Scenario Simulation and Comparison		✓
Optimized Schedule Generation		✓
Strategic Buffer Management for absorbing variability in processes		✓
Proactive and Focused Planning		✓
Capable To Promise (CTP)		✓

Things ERP Cannot Support but APS Can:

- Simultaneous capacity and material test for due-date quotation, i.e., Capable-To-Promise (CTP)/Real-time support for evaluating the impact on the business objectives of corrective action to production disruptions, i.e., 'What-If Scenario' generation
- Ability to synchronize the flow of material into, through, and out of the system fulfillment constraint, i.e., drum, buffer, rope schedule execution
- Seeing the ripple effect of changes to the production plan; real-time disposition of the plan using Gantt-based drag-and-drop scheduling
- The ability to sequence production work via the use of prioritization rules, i.e., optimize



How Will Thoughtware Maximize APS Benefits For Your Business?

APS software is your engine of value creation, greater market share, and potential market leadership. With APS as your driving force, throughput accounting supports optimized processes like high-octane fuel. In tandem with APS's insights, we utilize TOC principles to maximize the potential benefits of APS software for your business. Throughput accounting uses the Theory of Constraints to improve profitability by producing the amount of product you need to meet customer demand and reducing waste by limiting unnecessary inventory, expediting, and overtime. With TOC, we address your company's bottlenecks and increase visibility and productivity across your departments and plants for improved communication and higher profits. With APS and throughput accounting, your manufacturing company will morph from a '90s sedan to a Formula One race car.

How Will APS Help Your Employees' Work?

The software allows personnel to make highly informed decisions with greater visibility to adjust schedules when problems arise. A disruption in your production plan and schedule can disrupt the plans and schedules of your customers. So, the question becomes, what do you and your employees do when schedules need to be changed?

For any problem that comes your way and threatens the ability to meet your goal, you can utilize APS software to maintain the plan as closely as possible. And most importantly, the software will allow you and your employees to both see and understand the implications of any adjustments. With improved visualization, APS shows how your problem can be solved with different options, various what-if scenarios, and advanced forecasting all within a tabular, color-coded chart that is as easy to read as a spreadsheet.

APS Benefits Every Member of Your Team

It helps planners and schedulers first and foremost, to provide better schedules to keep production moving according to plan. With APS, your customer service team can provide more in-depth information for customer calls. Your personnel at each work center, from the shop floor to your C-suite, will be more informed and better understand processes. For C-level executives, dashboards and diagnostics can leverage the output of APS, conduct real-time process matching to align demand with supply and ensure schedule adherence. APS will improve your margins, overall profits, and business value.

What is the real goal?
Nobody here even asked
anything that basic.

Portraits in Pain: Is This You?

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CEO...“I’ve already invested tons of resources in the best technology, especially information systems--ERP, barcode tracking, supply-chain planning, etc. and have not yielded results. Their data is not helping the real processes of my business perform better, and the money necessary to maintain these unhelpful systems is taking away from our profits. I’ve considered investing in more machines, but that also requires more employees and training. So that’s more money, and still not necessarily more return. Why can’t I do more with what my business already has?”

COO...“Even after the recession, I am worried about supporting growth initiatives. We make new capital investments to increase capacity, but our ROI does not reflect this effort. How am I going to be able to present at least one measurable positive development before the end of this quarter? I need to show we have the capacity to support growth with acceptable profits not just for this quarter but for the next few years. I need support to help make this happen.”

CFO...“Regardless of sales, we aren’t driving up our share price. We were hoping to make new capital investments to support long-term growth, even with acquisitions, but we need to find a way to best use our assets to increase free cash flow. We need to restructure for improved profitability. We may need to put new products up for sale or restructure the sales force if sales goals aren’t reached. CRM will have to be put on hold until improvements are made.”

VP of Ops...“We are finally seeing an increase in market demand, but as a result, we’re struggling with material availability and delivery performance. With our terrible delivery performance, we have lost two long-time customers because of repeatedly missed delivery dates. Two others are threatening us with penalties for late delivery. Our suppliers tell us we must accept longer lead

times and limited availability because their other customers are demanding the same increased supply. Now we not only have to manage long lead times, but if we have to pay for tariffs, we will have to pay more for the same materials.”

VP of Sales...“If we don’t improve our delivery performance, we’ll be the only company in the industry suffering in a bull market. I need to make sure the VP Ops is on board with the new customer growth initiatives. We have a new product line that’s awesome, but if we bring in orders and miss the delivery commitments, our service rep will be even worse. I hope our current clients stay with us through this tough time.”

Master Planner...“I have to ask myself every day what disruptions to the schedule I will have to resolve today. Business is growing, but I have to spend about 60 hours each week generating and managing the production schedule. I don’t have the right tools to support this. The tools don’t have the visibility I need to be effective. If our biggest customer calls again to see how soon their order can be delivered, I have to answer to the CEO and the CEO will not be happy with what I have to say. I may have to extend lead times and then address increased WIP inventory. And that still won’t make things better.”

Customer Service Manager...“I never thought I would dread more sales, but every day, from the minute I start work, there are more and more upset customers wanting to know why we can’t make our delivery commitments and why our lead times are longer than ever. A product that can be made in three hours should be delivered to customers on time after 12 weeks of waiting, especially when we are the ones setting the date. I spend the day fighting fires and jumping through hoops to satisfy 60% of customers. Sales will not be happy about the new lead times.”

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Thoughtware EdgeSM Creates Sustainable Culture of Continuous Improvement

On Time Edge utilizes the Theory of Constraints as the framework for continuous improvement. Continuous improvement requires a company to constantly evaluate its processes to locate problems and bottlenecks in production to alleviate them and also locate areas to improve and further develop current processes.

When many companies buy and install APS software, they think their problem is solved or that it will fix all of their headaches on its own. This once-and-done misperception prevents the company from improving over time. Although APS is installed, it's essentially still in the box if you don't know how to best incorporate its benefits. You'll need thoughtware to use APS to its full potential. OTE offers the expert "manual" to help you best utilize this software and improve your business.

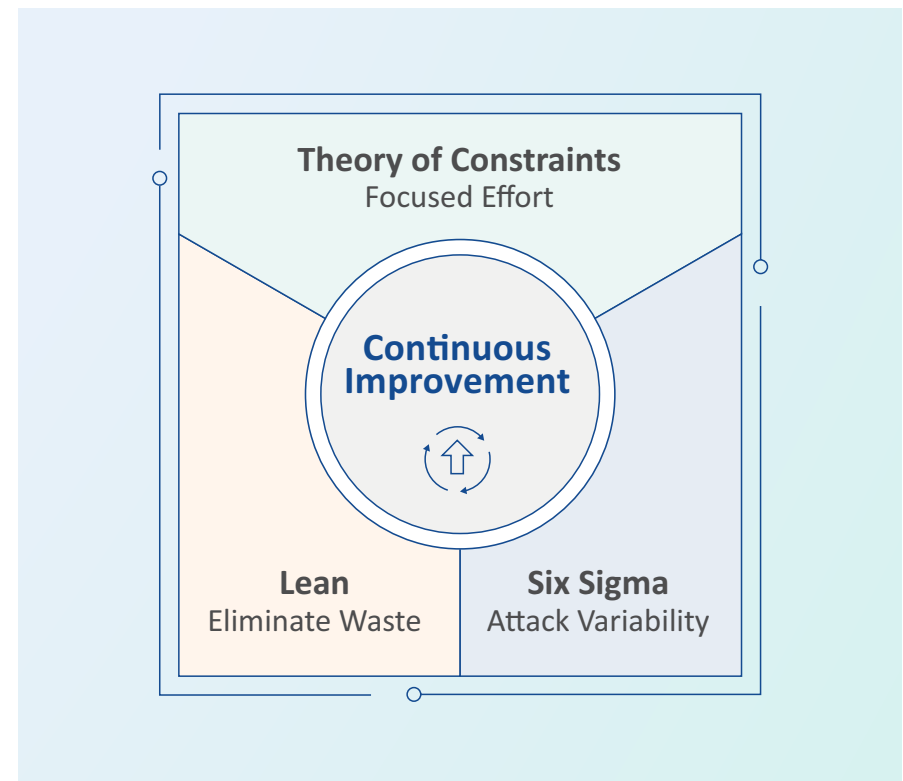
When implementing APS, we focus on three main thoughtware components that create "The Golden Triangle" that work together to improve performance:

- Lean Manufacturing
- Theory of Constraints
- Six Sigma

In the past, manufacturers thought these methods were disparate and could not be combined for the benefit of a business. Instead, using these tools together provides the best opportunities to improve your business outcomes. The proportions of each theory and tool are customized depending on each individual process in your manufacturing production continuum.

The biggest differentiator in thoughtware support of APS is the utilization of TOC and throughput accounting for decision support and profitability

improvement. Throughput accounting reduces unnecessary work in process and nonessential inventory to produce what customers demand for greater profit and less waste. By resolving constraints, with the help of visibility tools, you can maximize throughput. You will be better able to allocate work and deliver more orders on time.



You Are Not Alone. And Time is of the Essence.

Many multiplant manufacturers are in a similar position and asking the same questions. Why start to make improvements when the results don't materialize or don't last? We will help you not only implement better software but also introduce a culture of continuous improvement that is sustainable, not temporary.

We can tap each discipline of the golden triangle as needed to create a culture of continuous improvement, embracing the role of each depending on your role as a manufacturer and position in the production process.

You may have the right people but may not yet have the culture to promote continuous improvement throughout your production cycles. We will help you integrate continuous improvement into every aspect of your business and create a sustainable culture of improvement that lasts. As the driving force, our thoughtware and expertise will be your competitive advantage for value creation.

Collaborative Planning and Scheduling for Inter-Plant Interoperability

APS Software takes all materials and operations in your production chain into account when adjusting for shifts in your production, be it new orders, cancellations, deals, disruptions with machinery or personnel, or any other factor which would require you to restructure your orders to follow through for your customers.

It provides visibility through KPIs to help your production planners better understand the reasoning behind changes to the plan while enabling them to better answer questions and address issues. Understanding the implications of plan changes allows your planners to make the most informed decisions. In the end, APS allows for nearly error-free planning.

APS and the guidance of "thoughtware" from experts are now essential in this competitive environment with rapid changes in market and customer preferences.

Questions for Maximizing Your APS Software

- How do we enhance the use of the APS software?
- How do we find the critical issue, which is the cause and effect of the current performance issues?
- Why are we having trouble quoting realistic due dates?
- Which issue is leading us to consistently miss delivery dates?
- Once we've committed to a specific delivery date, how do we ensure we stick to it? (We always seem to run into some disruption that impacts our ability to be on time.)
- Why are some competitors more profitable than we are?

ABOUT ON TIME EDGE

Accelerate digital transformation with On Time Edge for an agile, accurate supply chain and manufacturing operations excellence. We deploy and integrate supply chain solutions and smart manufacturing systems, so they work the way they're supposed to and your company gets the ROI you expect.