



Continuous Improvement:

Your Engine for Business Growth

New Tools and Thinking that Deliver the Future

On Time | Edge™

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Introduction

Excel does not equal excellence in monitoring performance.

Most manufacturers need tools that are better than spreadsheets, which most companies still use, even today, despite the increasing complexities in the current manufacturing environment.

Visibility Does Not Equate to Velocity in Workflow and Delivery

In many instances, the manufacturing companies we speak to are looking for better visibility into their production plans and schedules, and most often, the solutions they are considering are predominantly software-oriented. The benefits of production planning and scheduling software are tremendous. From our industry research, most manufacturing companies have made considerable investments in the following systems:

- Enterprise Resource Planning (ERP)
- Material Requirements Planning (MRP)
- Manufacturing Execution Systems (MES)
- Demand Planning and Forecasting (DPF)

Implementing Advanced Planning and Scheduling (APS) systems offers the greatest opportunity for manufacturers to continuously improve. In many instances, implementing an APS system can be a key catalyst of success relative to sales and delivery commitments to target customers.

Merely purchasing APS software without being ready to adapt to the changes in operations and the thinking it requires is just paving over the cow path — you get the same unsatisfactory results...faster.

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*According to a report by the McKinsey Global Institute, U.S. Manufacturers could boost their overall value by 20% — **up to \$530 billion** — by 2025. However, McKinsey Global Institute cautions that the industry as a whole (including SMMS) must take advantage of newly available technologies and processes to achieve those numbers.*

National Institute of Standards and Technology, U.S. Dept. of Commerce

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**Implementing an APS system
can be a key catalyst of success relative
to sales and delivery commitments.**

Software & Continuous Improvement

Benefits of Production Planning & Scheduling Software

Gain Long-Term Visibility Now

The traditional approach to planning and scheduling has primarily meant uploading ERP data into a spreadsheet or an Access database. Spreadsheets have several limitations. They are not secure, not easily shared, and they rely solely on the tribal knowledge of the individuals who created them.

Worse, spreadsheets don't offer the ability to understand the ripple effects of a change in the production schedule. This lack of long-term visibility only increases when you try to look at a change across thousands of pending production orders

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Maintaining competitiveness amidst these domestic and global challenges is a big issue for many firms. Companies need to invest in technology, deploy data analytics, and embrace emerging tools. Those that do this will be able to compete while others get left behind.

Darrell M. West
Brookings Founding Director - Center for Technology Innovation

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See what's coming down the pipeline.

Anticipate Disruptions Despite Complexity

Today, we still find many manufacturers using systems without the necessary tools to handle disruptions. They struggle in a manufacturing environment with numerous layers of complexity. Therefore, it is important to implement a production planning and scheduling solution that can manage a schedule in the face of ongoing disruption.

Common Disruptions in Manufacturing

- People don't show up for work/customers change their mind/material is bad
- Parts are out of spec
- Weather is brutal
- Vendors fail to deliver
- Machines break down

These things happen all the time, and they are a wake-up call to manufacturers trapped in old methods. Systems must handle the disruptions, which are an everyday reality for every manufacturer.

The Opportunity for Market Dominance

Companies looking for a competitive advantage are fortunate that **less than 20% of manufacturers actually use anything better than a spreadsheet** to handle the tremendously difficult challenge of scheduling in the face of constraints.

Advanced planning and scheduling software has been available since the mid-nineties. At that time, they were merely fast MRP systems. Manufacturers today can benefit from advanced planning and scheduling software, providing a depth of simulation that is truly transformational.

When disruptions occur, having access to an APS engine allows you to begin winning business because you can now quote accurate new order delivery and change order status instantly.

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The key to using technology successfully will be in a company's ability to distinguish between what is new and what is useful.

IFS Blog

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Limitations of Purchasing Advanced Planning and Scheduling Software Without Having a Strategic Framework for Implementation

Don't Just "Pave the Cow Path" with Software

The latest technology is necessary, but it's never sufficient in itself. While increased visibility is the near-term benefit, manufacturers can reap more benefits by taking full advantage of APS technologies.

For example, companies that bought advanced planning and scheduling systems got better visibility, but they still needed to improve the overall operating performance of their companies. Why? They didn't leverage those technologies to gain a true, broad-based strategic advantage in business performance, including increasing capacity for more sales, new product development, and return on investment.

As consultants and coaches, we aim to bring high-added-value thinking and opportunities to complement the new technology. If you are looking to take your performance tools beyond "paving the cow path," you'll want strategic guidance to implement planning software and performance improvement across multiple dimensions. Once software has been properly implemented, you can look for new avenues to improve profitability and higher levels of customer satisfaction.

APS software coupled with continuous improvement techniques provide a complete solution.

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 problems?
- Why are we having trouble quoting realistic due dates?
- Which obstacle 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 effective than we are?

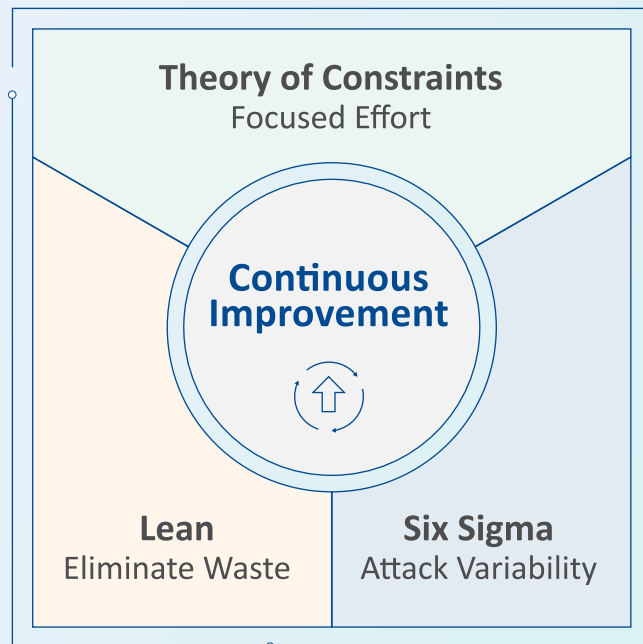
For example, if you don't understand the constrained resource in the flow of processing materials to meet the needs of your customers, then you're constantly going to be pushing material into production that can't be processed in time. You only want to produce product at the constraint that you've sold to customers.

After you identify the constraint, you want to ensure that you're leveraging that constraint to the greatest use possible.

The next question is: will you need more than just software to bring your business to the next level? The answer is simple: software alone is never enough.

Continuous Improvement Framework

Our **Enhanced Delivery Growth Engine** framework uses essential principles from Lean, Six Sigma, and Theory of Constraints to elevate manufacturing companies' productivity and profitability.



Models and Their Benefits

The EDGE Framework for Improving Manufacturing Operations

Lean

Those familiar with the manufacturing industry for the last 20 or 30 years know about continuous improvement, mainly through Lean. Given the success of Toyota with lean manufacturing (a.k.a. TPS [Toyota Production System]) back in the 70s, other companies adopted lean thinking, from chip makers to financial services.

Lean has been popular because it helps companies to do two things;

- First, it looks at the fulfillment process from the perspective of value delivered to the customer, often referred to as a “value stream.”
- Second, it focuses companies on eliminating waste. Lean identifies the multiple types of waste that are currently plaguing an organization. If anything doesn't add value to the customer, it's disposed of.

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Without change there is no innovation, creativity, or incentive for improvement. Those who initiate change will have a better opportunity to manage the change that is inevitable.

William Pollar

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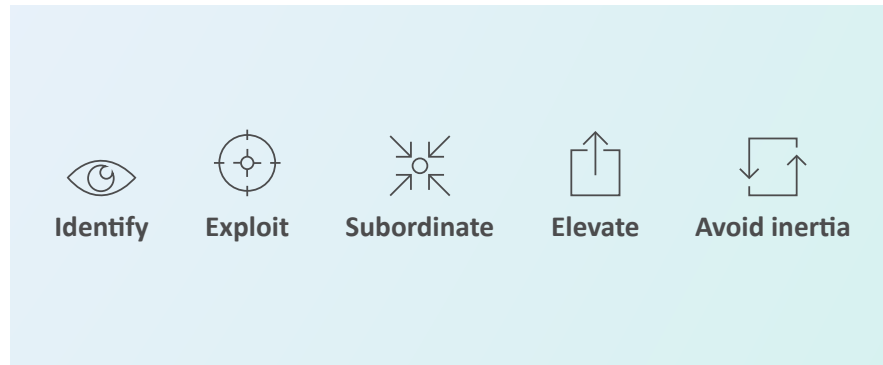
Six Sigma

GE began using Six Sigma in 1995, and thousands of companies and consultants have adopted it. (It has become so widely adopted that its ability to differentiate a company in the marketplace is reduced.)

The fundamental objective of the Six Sigma methodology is the implementation of a measurement-based strategy that focuses on improving processes and reducing defects and variability. Identifying potential defects before they happen and eliminating them is far cheaper than fixing such problems after they occur.

Six Sigma strives to minimize variability to the point where the production process is highly predictable. Decreasing variability can have the greatest impact on the ability to serve customers.

It can also be employed if a current process requires more than just incremental improvement or used to develop new processes or products at Six Sigma-defined quality levels.



Theory of Constraints

The Theory of Constraints (TOC) centers on the concept that in any system, a constraint limits the system's output. In manufacturing environments, constraints can exist that limit production or the fulfillment system. Constraints can exist within the market, the production facility, or the supply network. It's critical to identify and proactively manage the actual constraint. Once you've found the constraint, you can begin to manage it by properly flowing production through it in a manner synchronized to customer demand and strategic inventory targets.

The application of TOC helps organizations increase throughput by employing five focusing steps:

1. Identify the system's constraint
2. Exploit the system's constraint
3. Subordinate everything else to the above decision
4. Elevate the system's constraint
5. Avoid inertia if the constraint has been broken; go back to step 1

Complex manufacturers can find TOC particularly helpful if they face any of the following problems.

- Poor delivery
- Wandering bottlenecks
- Inefficient supply-chain management
- Shortages on the final assembly line
- Decentralized manufacturing and storage locations/Inadequate throughput

Managing the constraint proactively can drive a major growth initiative and potentially achieve market leadership over time.

Manufacturers are constantly challenged to change their offerings from new options on existing products to introducing new products. Manufacturers today recognize that the production process is never going to be constant.

Although many manufacturers can deliver within a highly variable marketplace, predictability is one difference between gaining or losing market share. Delivering on time consistently has become critical to success in a demand-driven marketplace.

Many companies see each of the models for Continuous Improvement as competitive alternatives. On Time Edge doesn't see them that way. We see Lean, Six Sigma, and Theory of Constraints techniques working together for continuous improvement.

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Manufacturers must navigate greater complexity than ever before. They are being challenged to produce a wider range of product models with differing features, price points, and marketing approaches.

McKinsey

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The choice of model would be based on where on the spectrum of production needs your business lands.

- Are you a high-volume repetitive manufacturer where an emphasis on Lean will be valuable?
- Are your needs purely project management? Which is the other side of the spectrum, where project management methodologies will be more critical?
- Perhaps your production type is somewhere in the middle: make to order, assemble to order, or engineer to order. You have a high mix and a relatively low volume and thus face more complicated materials and workflow challenges. A Theory of Constraints methodology will enable you to better address the increased variability immediately while using Six Sigma tools to minimize it.

On Time Edge is model-agnostic when it comes to continuous improvement. As consultants and advisors, we help our customers determine the proportion of each continuous improvement toolset you should be using. To us, Continuous Improvement is defined by sustaining the advantage you achieve in the first place with any or all of these models and the appropriate technology.

Our expertise with all continuous improvement models allows us to advise our clients how best to leverage technology to automate and create a more proactive and productive environment. We bring the most value to manufacturers at the intersection of continuous improvement thinking and technology.

Our goal is to help companies continually challenge themselves. By adopting the continuous improvement mindset, businesses can always be looking for new market opportunities or how to capitalize on the systems that overcome variability and respond to an on-demand marketplace.

Shifting Focus from Cost Cutting to Profit Growth, i.e., Value Creation

If most companies evaluated their current customers based on their contribution to profitability, they would find that 20% or fewer of customers contribute 80% of their revenue and profit. Here's a real-world example.

A company On Time Edge previously worked with had about 1200 customers in total.

Of the 1200 customers we found 115 of them generated 90% of their overall profitability and revenue.

This number caused the team to take a deep, hard look at all the numbers around their customers. One question gnawed at the team: "Why is it that 10% of our customers were willing to pay essentially a premium over what the other customers were paying?"

In one sense, 10% of customers were allowing the company to do business with the other 90% who were taking up valuable constraint time, limiting their ability to serve their higher-value target customers better.

Doing that analysis would give companies some insight into what it is that those 10% to 20% of their customers are seeing that they're willing to pay, in essence, a premium for.

The Lesson: to gain a better understanding of these "best" customers, review your customer, product, and price mix. Once you figure out what your best customers value in you — (Just ask! Conduct a qualitative survey or audit.) — your company can deliver more value to those companies on an increasing basis.

The analysis of current customers provides essential insights into which customers are really making the biggest contribution to overall profitability and viability long term. And provides marketing and sales the information they need to target more customers similar to them.

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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, [with] more visibility and control over inventory, reduction of operational costs, and improved customer satisfaction and retention.

Hitachi Solutions Blog

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Raising Operating Performance. Not “Once and Done”

Beware Inertia

Engaging continuous improvement models can provide any manufacturer with efficient investment payback and increased growth. The inability to sustain continuous improvement models has plagued many companies. The reasons for this are unclear; it may be the lack of an internal champion, the attitude that “I can scratch that task off my to-do list,” or the false assumption that all operational problems are solved.

Even successful operational strategies built around the Theory of Constraints get lost “in the forest.” This is where the value of an outside viewpoint becomes so valuable. On Time Edge brings a fresh perspective to your challenging issues. Here’s how:

Our value is that we are going to be your conscience when so many “priorities” demand attention.

- We will help you to continually set realistic, achievable improvement targets in a reasonable time frame.
- After reaching those first target goals, we help assess the next level of goals.

**Continuous improvement processes
require a shift in thinking that starts with the cost
accounting systems.**

A Shift in Thinking: from Cost Management to Growth Management

Continuous improvement processes require a shift in thinking that starts with the cost accounting systems that most ERP software and all financial management accounting systems are built around.

Cost accounting continues to force leaders and managers to look at cost reduction. While valuable, cost management is limited because typically cutting your way to prosperity is an oxymoron. If you want to grow profitability, you have to manage costs, but they need to be managed through the lens of growth.

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A customer’s brand sentiment comes from their entire experience across the purchase lifecycle and lifespan of the product, so manufacturers must ensure excellence at every touchpoint.

Microsoft

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Theory of Constraints as a Growth-Oriented Strategy

This shift in mindset is a powerful reframing for most companies. Once you shift from cost management to growth management, the questions you ask start to change. Now the focus becomes:

- How do we grow our customer base?
- How do we grow our profitability?

Theory of Constraints, consistently applied, offers an inherent ability to keep people thinking about:

- What's next?
- Where do we go from here?
- What new market should we make the next capital investment?
- How do we keep improving?

It's an Issue of Choice: Model, Software, Options

TOC can streamline processes and throughput. APS software can help determine the throughput impact of any particular decision. Yet, the world tends toward disorder, so disruptions happen. How do you handle the latest disruption, whatever it may be?

Usually, a fast decision is required: should you outsource, or should you run overtime? Or, miss the delivery date — a non-option?

On Time Edge helps customers look proactively at any disruption on a production line. We help customers see disruptions as opportunities. Together, we evaluate how to get an order done by the customer's requested date and identify the four or five options that will allow us to get it done.

Understanding the impact of decisions is critical in today's more competitive manufacturing environment. You must get it right for your company's and the customer's sake.

So, we see a shift from cost-cutting to revenue growth and net operating profit growth as a fundamental shift in the mindset our clients must adopt.

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The changes that we'd put in place have become a part of our culture right down to the shop floor. It's [TOC] more than tools and processes. It's a different way of approaching challenges. This has been key for us and I think it could be key for anyone in [our] kind of business.

Joe Perrault, CFO, McElroy Manufacturing

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The Continuous Improvement Edge (CIE)

Increasing Return on Invested Capital

Manufacturing entities have been the engine of value creation and growth for the American economy. To remain robust, the majority of our clients are looking to improve their return on invested capital (ROC).

To increase that return, we enable our clients to take a harder look at their product mix and capacity to ensure that they can meet the needs of their target-market customers as well as a broad range of stakeholders' financial and social returns. Doing so allows our clients to focus on creating Economic Value Add (EVA) in the form of net operating profit after tax greater than the weighted average cost of capital.

If you don't have the tools and next-level thinking that On Time Edge brings to the table, your company will be at a competitive disadvantage over the long term both in terms of revenue and profitability.

We help our clients take a much longer-term strategic view of their business, not just quarter to quarter. Working together, we can look ahead several quarters. This forward visibility allows us to change how the business is being managed, enabling a shift from a cost-cutting mindset to a revenue and profit growth mindset. A value-creating mindset is fundamental to the success of our clients and puts them in a much stronger position relative to the rest of the marketplace.

Economic Value Added

$$\text{EVA} = \text{NOPAT} - (\text{Total Assets} - \text{Current Liabilities}) > \text{WACC}$$

The Heart of What We Do

We live to help manufacturers with complex production environments make and keep their delivery commitments to customers as close to one hundred percent of the time as possible.

Therefore, EDGE stands for **Enhanced Delivery Growth Engine**.

The essence of EDGE is bringing the tools and outside thinking to the opportunity to overcome the challenges that plague virtually all manufacturing companies.

Typical Client Results

25%
More
Throughput

30%
Better Asset
Utilization

50%
Less Inventory
& Opex

60%
Less Order
Cycle-Time

98%
On-Time
Delivery

Your Outsourced Office of Continuous Improvement

As an outside resource, On Time Edge has more than 50 combined years of experience in production planning and scheduling. In addition, we have the expertise to apply Lean, Six Sigma, and Theory of Constraints as the framework for a continuous improvement engine for growth. This is the tremendous value we bring to sustaining your ability to create enhanced economic value.

Given our experience combining these models, APS, and expert thinking, consider us your Outsourced Office of Continuous Improvement. Customers who benefit most from working with us see us as an outsourced Continuous Improvement Department. We place all our clients in the best position to take advantage of the newest and most

effective tools and current thinking that can result in a sustainable competitive advantage.

Moving to this type of proactive management posture allows companies to better manage everything from the flow of material to cash flow, which makes them juggernauts in their marketplace.

Most companies don't know how to successfully implement and sustain continuous improvement projects. If you are delivering with near-perfect reliability on timelines faster than your competition and doing it in a way that leverages your resources to their greatest financial potential, you'll find yourself in a leadership position that leads to increased profitability and overall return on capital.

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.