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# ***Break Old Rules, Get Results***

## ***Embracing the Rules of Execution Management Helping a Wide Range of Organizations Rise to the New Challenges***

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**Whether manufacturing complex products and systems, designing and developing new products, or building infrastructure; whether government organization or private industry; whether large or small; the need for doing more projects faster is being felt by all.**

**Forward-looking organizations are adopting Execution Management to meet the aggressive performance goals that business demands today. Not because of its common sense and sound logic, but its success in such wide ranging organizations, Execution Management is becoming the preferred method for running project-based operations.**

Pressure is building to improve speed and productivity in projects. Projects are increasingly mission-critical, and doing more projects faster is on the executive agenda. For many organizations, the need to elevate project performance is critical for competitive strategy.

In project-based businesses, doing more projects faster is the way to increase revenues, profit margins and rate of return on investments. For new product development organizations, shrinking life cycles require more projects done quicker with the same assets. In maintenance, repair and overhaul, cutting turnaround time and lowering manpower resources lets organizations complete more projects on time at reduced costs. Even in consulting, where “time and material” pricing works against efficiencies, customers are now demanding firm fixed prices.

What is so frustrating is that executives keep spending money on improving projects, yet results are elusive. Despite spending close to \$2 billion per year on project management training and software, and much more on lean and other improvement initiatives, businesses worldwide agree that, at best, only a miniscule number of projects are completed on time, within budgets or in total scope.

If there is already difficulty in delivering current projects, executives wonder how their organizations can rise to the challenge of doing more projects faster, oftentimes with fewer resources. It is clear that more of the same software or training does not work—a fresh approach is needed.

## **A Fresh Approach Is Now Available**

The breakthrough is now available in the form of **Execution Management**, a process of eliminating bottlenecks and time-traps in projects. Based on the theory of constraints/ critical chain and lean concepts, Execution Management is being used with astounding results by scores of organizations.

According to Paul Blankenship, Director-Product Engineering for Hamilton Beach Brands, "Because customers like Wal-Mart commit as late as possible, we needed shorter development cycles."

Hamilton Beach is a developer and marketer of small kitchen and garment care appliances and recently entered the home environment category with a line of air purifiers, humidifiers and the TrueAir™ odor eliminator. They outsource all of their manufacturing. The company sells more than 40 million small appliances every year. One out of every four small electric appliances sold in the United States is a Hamilton Beach Brands model.

By adopting Execution Management, Hamilton Beach increased throughput from 34 to 52 new products introduced in the first year and to 70+ products introduced in the second year with no increase in head count. Projects coming in on time increased from 74% to 88%.

Even though maintaining submarines for the U.S. Navy is quite a different vocation from inventing new toasters, the dynamics of projects are the same and the results of Execution Management are every bit as impressive.

"In ship maintenance, when you disassemble a valve, you never know what you will find—making it impossible to stick to a precise plan," says Joseph Bradley, Captain (Ret.), U.S. Navy. "We never had enough capacity. We were always moving people around"

Switching to Execution Management, the Submarine Maintenance & Repair Station at Pearl Harbor increased its job completion rate to 98 percent and reduced cost per job 33 percent while manning dropped 25 percent. Importantly, overtime was reduced by 49 percent, a \$9 million savings in the very first year.

Why would both a consumer products company and a military maintenance organization find such similar results from Execution Management despite obvious disparity between their projects? It boils down to changing the rules of running projects and prioritizing resources.

## **It's Not a Perfect World—Uncertainties and Competition for Resources Typify Projects**

Everyone understands that plans are only approximate and that projects are riddled with uncertainties such as:

- Customer requirements change
- Technical problems are found
- Additional work is discovered
- Vendors do not deliver on time
- The work materializes slower than expected
- Approvals do not come in on time
- Priorities change
- Etc.

We all also know that contention for resources is a reality. Still, traditional methods assume a perfect world, one where events can be precisely planned, and everyone knows exactly when projects will get the resources they need.

In single, simple projects, you can accommodate these uncertainties by adding a little safety in each task. In contrast to single project work, with multiple projects, small uncertainties multiply as delays on one project cascade to others through shared resources.

As a result, the required safeties become very large and, all too often, tasks that should take hours and days end up taking days and weeks. Thus, creating precise schedules for people and tasks is actually a recipe for disaster in multi project situations. Yet, this is what traditional project management methods are forcing people to do.

Moreover, as uncertainties multiply, plans go awry. Lacking a good way to prioritize resources across multiple projects, people are constantly pulled from one project to fix other projects' problems. Priorities become unclear and people start multi-tasking. The result is not surprising; delays and firefighting break out all over.

Experienced managers intuitively know the devastating effects of uncertainties and contention for resources. Therefore, they respond by starting their projects as soon as possible to have any hope of meeting their commitments. Unfortunately, when too many projects are in execution, it only increases contention for resources

Even though this scenario is repeated from project to project on a consistent basis, organizations always seem surprised by the ensuing schedule slips on their present-day projects. Again and again, they shift their focus from that of delivering projects to that of explaining delays.

In the end, the organization gives up on planning, having determined that dictating commitments and managing on the fly looks much more attractive. Who can blame them? Why should they embrace project management when all it does is make life worse while providing no benefits? Why should they be forced to create project plans that will become obsolete before execution begins or issue status reports that are misleading?

Adding more software to track and report delays is not going to help, nor is making project managers more skilled at negotiating resources for their projects at the expense of all other projects. To obtain the required leap in performance, old rules for managing uncertainties and shared resources must be abandoned!

### How Execution Management Works

In 1997, Dr. Eliyahu M. Goldratt introduced a fresh approach in his book called "Critical Chain". Applying the Theory of Constraints, a concept he developed in the 1980s for manufacturing, Goldratt provided the basis to make projects run faster with fewer resources and without chaos.

The Harvard Business Review reported in its March, 1998 issue, "... [It] works well for project managers dealing with individual projects. But ... senior managers need to take a broader perspective into account in order to manage a portfolio of all but the most innovative projects... and we question whether even properly focused managers can easily overcome the many balkanizing pressures that projects, in all their uncertainty, often fall prey to."

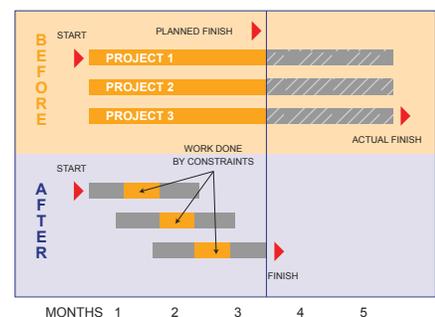
Quickly thereafter, under Dr. Goldratt's guidance, Realization Technologies developed a complete process and system for managing project execution.

Since 1998, Execution Management has been adopted in a wide range of industries to realize dramatic gains. In 2003, Financial Times Prentice Hall published "The Definitive Guide to Project Management", categorically stating that "projects managed using the critical chain method have been shown to have a far greater chance of delivering the required outputs on time and on budget than those managed any other way."

Execution Management works by defying conventional practices:

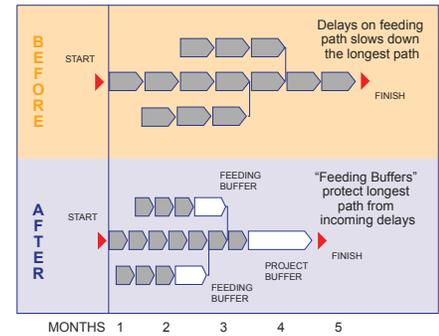
**1. Don't start projects ASAP.** Starting all projects as soon as possible is counter-productive in the multi-project world. It creates unnecessary bottlenecks, gives rise to confusion about priorities and induces multi-tasking. Instead, multi-project success starts with acknowledging that the most heavily loaded resources (constraints!) determine how many projects can be done. Releasing projects faster than what the constraints can handle is useless.

Therefore, the first rule of execution success is to release work into execution based on the availability of those constraints.



**2. Assign buffers to projects where they can do the most good—protect the longest path.** To protect projects from uncertainties in single projects, the most typical option is to add safeties to every task. However, in projects, small uncertainties multiply and the safeties become immense.

Therefore, the second rule of execution success is to have strategic buffers placed to protect the longest path, which ensures that the overall project keeps moving despite local delays. This is much more efficient than building safeties into individual tasks.



**3. Don't create precise schedules for resources at planning time.** Instead of creating precise schedules for tasks and resources at planning time, the third rule of execution success is to set schedules in execution based on how much buffer is remaining. Tasks with the lowest buffer ahead of them get the highest priority. If buffers in a project are running too low, project managers and executives now have the early warning signs missing from traditional project management methods.



Someone famous once said, “The more complex a problem is, the simpler its solution ought to be.” So it is with Execution Management, which simply and efficiently helps executives identify constraints, assign buffers where they do the most good, and drive execution priorities based on relative buffer consumption.

**Results Show that Breaking Old Rules Gets the Desired Results**

**Hamilton Beach Brands** is very involved with its suppliers as most of its manufacturing is outsourced. At the same time, development cycles are becoming shorter and shorter as customers wait until the very last minute to commit to purchasing the newly designed product, not yet in production. Of course, as changes to the product are requested by the customer, changes to the industrial design (general industrial design at Hamilton Beach; detailed industrial design at the manufacturer) follow.

“We used to start the project by modifying our own templates,” Blankenship remembers. “However, our database would seldom be up to date and only a very few people had access to it.” The results showed it.

The first test of Execution Management was on an aggressive project to introduce four new toasters in only nine months. Nobody felt they could do it. Thus, it would be a very good way to test Execution Management. The results were bottom line. They made their dates and decided to expand the use of Execution Management.

“We found that Execution Management is an intelligent approach,” emphasizes Blankenship. “Within 60 days, we went live with 40 projects, all major projects, no derivatives. Today, we run 150 projects with Execution Management. Our managers now manage because they have the resources that they can check themselves.”

Blankenship also says that Execution Management has put the company-versus-teams approach on the shelf. If there is conflict among marketing teams, for instance, it is understood and accepted by all that the boss will make the decision best for the company. It is agreed that, sometimes, one project must be moved out to get a more important one done.

Capt. Bradley (Ret.) of the U.S. Naval Shipyards agrees that Execution Management changes the way people approach their jobs. "Most people get promoted in shipyards because they're good firefighters, they get their job done. Yet our real job should be to improve the cost of maintenance while fixing what we've got so we have more money to build more ships, so important to our national security and readiness."

The numbers involved in these shipyards are overwhelming. The four naval shipyards employ approximately 24,000 people maintaining and modernizing ships and submarines. Tasks are completed using 81 specific trade skills.

Their MRO (maintenance-repair-overhaul) challenges were monumental. Neither the scope nor work at the shipyards is clear up front but, nonetheless, they must make firm commitments before the projects, which can run from three months to three years, begin. Although their people and equipment resources are already overloaded, they have to accept more work. To make matters worse, the shipyards are being asked to deliver more scope in less time even though they had already been undertaking heroic efforts to meet due dates.

According to Bradley, "One never knows what will be found when a ship comes into dock. It seemed the shipyards never had enough people and they were always moving people around. Meanwhile, their older workers were retiring and being replaced by new workers and resulting lower efficiencies.

"We never knew how many people we had loaded. Upon using Execution Management, we found that one department was only 29 percent loaded and, interestingly, that's where we found the greatest utilization of overtime. We used Execution Management's buffer management priorities to limit this overtime and saved \$9 million the first year, a better than four-to-one payback of our investment. We went from a manning of 550 to 440 workers on one ship at Pearl Harbor."

The Naval Shipyards also bear witness to keeping it simple. "Tell me what to do and I'll do it. That's what they say," Bradley says.

### **Execution Management is Successful in a Wide Range of Organizations**

A consumer product's new product development department and a military maintenance and overhaul operation are two very different types of organizations. However, it is not the simplicity or logic of Execution Management that is fermenting its use as the new mainstream way to manage projects and programs. It is the successes being reaped with Execution Management at hundreds of other organizations just like them and quite different from them. Success is breeding demand.

## EXECUTION MANAGEMENT RESULTS

	BEFORE	AFTER
<b>Electrical Power Transmission, Engineer-to-Order</b> ABB AG, Power Technologies Division	Throughput was 300 bays per year.	Throughput increased to 430 bays per year.
<b>Transformer Repair and Overhaul</b> ABB, Halle	42 projects completed January-December 2007. On-time delivery of 68%.	54 projects completed January-December 2008. On-time delivery of 83% .
<b>Theme Park Design, Install and Commissioning</b> Action Park Multiforma Grupo	121 projects completed in 2004.	142 projects completed in 2005. 153 projects completed in 2006.
<b>Telecomm Switches Design, Development &amp; Upgrades</b> Alcatel-Lucent	300-400 active projects with 30+ deliveries a month. Lead times were long. On-time delivery was poor.	Throughput was higher by 45% per person. Lead times are 10-25% shorter. 90+% on-time delivery.
<b>Customer Experience Systems – Customized SW Development for Telecommunications</b> Amdocs	8 projects in crisis requiring CEO level attention in 2007. Market pressures to reduce cost and cycle time of projects.	0 projects in crisis in 2008. Project cycle time decreased by 20%. Increase of 14% in revenue/man-month across 4,000 people.
<b>Iron Ore Asset Development Projects</b> BHP Billiton	25,800 man-hours of engineering design work had to be completed in 8 months. Historical delays of 2 weeks and man-hour overruns of 20%.	Project finished 3 weeks early. Productivity increased by 25% with only 19,500 man-hours needed.
<b>Satellite Design and Assembly</b> Boeing Space & Intelligence Systems	Antenna Assembly and Test was the constraint in Satellite delivery.	Antenna Assembly and Test was no longer the constraint in Satellite delivery. Productivity increased by 64% on the next Satellite and a further 26% on the subsequent Satellite.
<b>Nuclear Power Engineering</b> Central Nuclear Almaraz Trillo	19 design evaluation and modification projects were completed per month.	Throughput increased by 25% to 24-30 projects per month.
<b>Nuclear Power Engineering</b> C.N. Cofrentes (Iberdrola)	Due date performance was 60%.	Due date performance increased to 95%. Throughput increased by 30%.
<b>Oil &amp; Gas Platform Design &amp; Manufacturing</b> LeTourneau Technologies, Inc.	Design Engineering took 15 months. Production Engineering took 9 months. Fabrication and Assembly took 8 months.	Design Engineering takes 9 months. Production Engineering takes 5 months. Fabrication and Assembly takes 5 months with 22% improvement in labor productivity.
<b>Advertising Product Development</b> Marketing Architects	Completed 7 projects in 2006.	Completed 7 projects in 8 months of 2007.
<b>Steel Plant Maintenance</b> TATA Steel	Boiler Conversion projects took 300-500 days. Routine maintenance and upgrade took too long.	Boiler Conversion projects took 120-160 days. In 2007, 1st year of Critical Chain, reduced maintenance and upgrade cycle times by 10-33%—saving of \$13.4 million. In 2008, achieved a further 5-33% reduction in cycle time.
<b>Defense Products Design and Manufacturing</b> TECNOBIT	Difficult to synchronize Design and Manufacturing. Long project cycle times with frequent delays.	Project cycle times were reduced by 20%.
<b>Automotive Assembly Systems, Engineer-to-Order</b> ThyssenKrupp (Johann A. Krause, Inc.)	70% of projects were late. High overtime and outsourcing.	Lateness reduced by 50%. 63% productivity gain. 15% more projects completed.
<b>Custom Furniture Design and Manufacturing</b> Valley Cabinet Works	Struggled to complete 200 custom furniture projects per year. Revenues were flat, business was just breaking even. A lot of firefighting in execution.	Completed 334 projects in 9 months. Revenues increased 88% and profits increased by 300% in the first year. Firefighting and thrashing eliminated.
<b>Equipment for Manufacturing Solar Panels, Engineer-to-Order</b> Von Ardenne	Revenues of €130 M. Profits of €13 M. Cycle time 17 weeks. On-time delivery of 80%.	Revenues of €170 M. Profits of €22 M. Cycle time 14 weeks. On-time delivery of 90%.

## EXECUTION MANAGEMENT RESULTS

	BEFORE	AFTER
<b>Next Generation Wireless Technology Product Development</b> Airgo Networks	Cycle time from first silicon to production for 1st generation was 19 months.	Cycle time from first silicon to production for 2nd generation was 8 months.
<b>Customized Software Development</b> Alna Software	Growth was stagnating, becoming insufficient to secure market position.	Throughput increased by 14% in first 6 months. Cycle time reduced by 25% and project completions increased 17% with over 90% on-time delivery.
<b>IT Projects</b> Celsa Group	15 SAP functionality projects were completed per month.	SAP functionality project completions increased by 30% to 20 projects a month.
<b>Automotive Product Development</b> Chrysler	Cycle time for prototype builds was 10 weeks.	Cycle time for prototype builds is 8 weeks.
<b>Biotechnology Plant Engineering</b> Danisco (Genencor International)	20% projects on time.	87% projects on time. 15% immediate increase in throughput.
<b>Pharmaceutical Product Development</b> Dr. Reddy's Laboratories	In 12 weeks prior to Critical Chain 6 projects were completed; 20% were on-time.	In 12 weeks since Critical Chain was implemented, 11 projects completed; 80% on-time.
<b>Telecommunications Network Design &amp; Installation</b> eircom	On-time delivery was less than 75%. Average cycle time was 70 days.	Increased on-time delivery to 98+%. Average cycle time dropped to 30 days.
<b>Semiconductor Design and Manufacturing</b> e2v Semiconductors	Actual cycle time of projects 38 months; 25% of projects were on-time.	Actual cycle time reduced to 23 months; almost all projects are within the committed cycle time of 24 months.
<b>Home Appliances New Product Development</b> Hamilton Beach Brands, Inc.	34 new products per year. 74% projects on time.	Increased throughput to 52 new products in 1st year, and to 70+ in 2nd year, with no increase in head count. 88% projects on time.
<b>Digital Camera Product Development</b> HP Digital Camera Group	6 cameras launched in 2004. 1 camera launched in spring window. 1 out of 6 cameras launched on time.	15 cameras launched in 2005. 7 cameras launched in spring window. All 15 cameras launched on time.
<b>ASIC Design Technology Development</b> LSI Logic	74% projects on time for small projects. Major tool releases were always late.	85% of small projects on time. Major tools released on time for three years in a row.
<b>High Tech Medical Product Development</b> Medtronic	1 software release every 6-9 months. Predictability was poor on device programs.	1 software release every 2 months. Schedule slips on device programs cut by 50%.
<b>High Tech Medical Product Development</b> Medtronic, Europe	Device projects took 18 months on average and were unpredictable.	Development cycle time reduced to 9 months. On-time delivery increased to 90%.
<b>Food Preparation &amp; Packaging</b> Oregon Freeze Dry	72 sales projects completed per year.	171 sales projects completed per year. 52% increase in throughput dollars.
<b>Pharmaceutical Product Development</b> Procter & Gamble Pharmaceuticals	In 2005 completion rate of 5 projects/Quarter; 55% of projects delivered on time.	In 2008, completing 12 projects/Quarter; 90% of the projects on time, with the same number of resources.
<b>Marketing/Publishing Support</b> Rapid Solutions Group	Projects were always late. Lead times were not acceptable.	On-time delivery improved by 30%. Lead times were reduced by 25%.
<b>Garment Design</b> Skye Group	Product ranges were late to market.	100% due-date performance. 30% reduction in lead times and sampling costs.

## EXECUTION MANAGEMENT RESULTS

	BEFORE	AFTER
<b>Engine Repair &amp; Overhaul</b> Delta Air Lines, Inc.	Produced 40 engines per month. 4 weeks piece part cycle time.	Increased production to 50+ engines per month, 16%-26% reduction in engine turnaround time. 2.5 weeks piece part cycle time, 25% increase in piece part throughput.
<b>Helicopter Manufacturing and Maintenance</b> Erickson Air-Crane	Only 33% projects completed on time.	Projects completed on time increased to 83%.
<b>Aircraft Upgrade and Repair</b> French Air Force, SIAé Clermont Ferrand Transall Production Line	5 aircrafts on station. Cycle time of 165 days.	3 aircrafts on station, 2 aircrafts returned to Air Force, replacement value of €300 M. 15% cycle time reduction, 15% increase in output with 13% fewer resources; 22% reduction in support shops' cycle time.
<b>Warfighter Systems Testing</b> US Air Force Operational Test & Evaluation Center	Long cycle times. Low utilization of resources. Poor visibility of project slips.	30% reduction in cycle time measured over 900 projects. 30% improvement in resource utilization. 88% on-time delivery performance.
<b>Aircraft Repair &amp; Overhaul</b> US Air Force, Ogden Air Logistics Center, C130 Production Line	21-24 aircrafts on station.	Reduced to 18 aircrafts on station. 25 out of 26 aircrafts delivered on-time or early. (Accumulated 191 days of early delivery in 6 months total).
<b>Aircraft Repair &amp; Overhaul</b> US Air Force, Oklahoma City Air Logistics Center, B-1 Bomber Line	Turnaround time 162 days. 7 aircrafts in repair cycle.	Turnaround time reduced to 115 days. 4 aircrafts in repair cycle (3 returned to customer). Production output increased from 185 hours/day to 273. 1 1/2 dock spaces freed up.
<b>Aircraft Upgrade and Repair</b> US Air Force, Oklahoma City Air Logistics Center, B52 Production Line	Produced 11 aircrafts a year. Cycle time of 225 days.	Produced 17 aircrafts a year. Cycle time of 195 days.
<b>Aircraft Upgrade and Repair</b> US Air Force, Oklahoma City Air Logistics Center, E3 Production Line	4 aircrafts on base. Cycle time of 183 days.	On average 2.6 aircrafts on base. Cycle time of 155 days. 11% capacity released for additional workload.
<b>Aircraft Repair &amp; Overhaul</b> US Air Force, Warner Robins Air Logistics Center, C5 Production Line	Turnaround time 240 days. 13 aircrafts in repair cycle.	Turnaround time 160 days. 7 aircrafts in repair cycle. 75% fewer defects.
<b>Aircraft Upgrade &amp; Repair</b> US Air Force, Warner Robins Air Logistics Center, C17 Production Line	Throughput of 178 hours per aircraft per day. Turnaround time 46-180 days. Mechanic output was 3.6 hours per day.	25% increase in throughput. Turnaround time reduced to 37-121 days. Mechanic output increased to 4.75 hours per day. 40% overtime reduction.
<b>Army Vehicles Maintenance &amp; Repair</b> US Marine Corps Logistics Base, Barstow	Repair cycle time for MK48 was 168 days. Repair cycle time for LAV25 was 180 days. Repair cycle time for MK14 was 152 days. Repair cycle time for LAVAT was 182 days.	Repair cycle time for MK48 is 82 days. Repair cycle time for LAV25 is 124 days. Repair cycle time for MK14 is 59 days. Repair cycle time for LAVAT is 122 days.
<b>Aircraft Repair &amp; Overhaul</b> US Naval Aviation Depot, Cherry Point	Average turnaround time for H-46 aircrafts was 225 days. Average turnaround time for H-53 aircrafts was 310 days. Throughput was 23 per year.	Reduced H-46 turnaround time to 167 days, while work scope was increasing. Reduced H-53 turnaround time to 180 days. Delivered 23 aircrafts in 6 months. Throughput increased to 46 per year.
<b>Submarine Maintenance &amp; Repair</b> US Naval Shipyard, Pearl Harbor	Job completion rate was 94%. On-time delivery was less than 60%. Cost per job was \$5,043.	Job completion rate increased to 98%. Increased on-time delivery to 95+%. Reduced cost per job to \$3,355, a 33% reduction. Overtime dropped by 49%, a \$9M saving in the 1st year.

## **The Votes Are Also in**

Attendees at the 2004 Project World held in October in Washington, voted, by an impressive majority of 92 percent, not to continue to throw more software at project management software problems. The consensus was that whether it's called 'project portfolio management,' 'enterprise project management' or 'collaborative project management,' they simply get more reports, more graphs, and more useless data. Yet, their projects are still delivered late, over budget and under scope.

"Execution Management is an extraordinarily powerful method which aligns business priorities and product pipeline execution," affirms Medtronic's Steve Schwister. "It provides us with improved pipeline velocity and increased productivity."

Like Schwister, today's executives know that their organizations have to deliver more projects faster, sometimes with fewer resources. Now they no longer need to feel stymied by the limitations of traditional project management, and increase project flow to meet the needs of business.

### **Is Execution Management right for your organization?**

- Is your organization project-driven? Does increasing project speed or throughput translate into higher sales, competitive advantage and customer satisfaction?
- Do your projects require coordination of more than a handful of people and a few tasks? Are resources shared among multiple projects and contention for resources frequent?
- Are your project teams constantly rewriting project plans? Is project administration consuming excessive overhead?

If your answers to the above questions are "yes", contact us at [info@realization.com](mailto:info@realization.com).