

Shift Into High Gear

Transport optimization project team uses DMAIC to **improve efficiency, customer satisfaction**

by Amanda Hankel, contributing editor

In 50 Words Or Less

- Inefficiencies in management's service and delivery processes were causing customer dissatisfaction.
- The team implemented a transport optimization project using the Six Sigma define, measure, analyze, improve and control method.
- Project benefits included \$630,000 in annual savings and gold-level recognition at the 2012 International Team Excellence process.

NO ONE PARTICULARLY likes waiting. Whether it's in a line or in a room full of patients at a doctor's office, it's simply no fun. But when you're a customer waiting for an important component necessary to run your business, waiting advances beyond no fun—it becomes unacceptable.

When customers of tgestiona, the business process outsourcing company of the Telefónica Group, a telecommunications organization in Argentina, began expressing dissatisfaction about the organization's inefficient service and delivery processes, including lack of on-time deliveries and long invoice processing times, it decided to embark on a transport optimization project to turn things around.

Using the define, measure, analyze, improve and control (DMAIC) method, the organization improved process efficiency, achieved significant cost savings, and increased customer and employee satisfaction—earning it gold-level status in the 2012 ASQ International Team Excellence Award (ITEA) process.

Defining, measuring inefficiencies

Based in Buenos Aires City, tgestiona provides companies with comprehensive solutions for operational and administrative needs in areas including HR, logistics, real estate management, security, financial and economic services, and IT.

The organization bases its operations on four strategic pillars:

1. **Customer**—customer satisfaction.
2. **Platforms**—operational efficiency.
3. **Culture**—human capital.
4. **Offer**—growth and leadership.

When the organization began seeing troubling variations in its logistical key performance indicators (KPI) for its transport and distribution processes, it realized there might be quality shortfalls in each of the pillars hindering its performance. In an average year, tgestiona was transporting the equivalent of 87 jumbo jets in tons of weight to 1,600 destinations in Argentina and traveling the equivalent distance of 36 laps around the world. But it wasn't doing it in an efficient and effective manner that was satisfying its customers.

"Complaints from customers indicated that we needed to significantly improve service levels agreed upon by our customers, invoice processing times and delivery van fill rates," said Matias Gadda Thompson, Telefónica improvement chief. "These factors generated stakeholder dissatisfaction and prevented us from meeting the strategic objectives of the company."

In fact, when it analyzed its initial situation, tgestiona identified several problems that needed to be addressed:

- There was a high frequency of visits to the same location—sometimes as often as 15 times per month.
- There was excessive administrative burden on staff, resulting in a loss of management focus.
- Staff members were faced with extremely complex processes, which also resulted in a heavy burden on employees.
- The organization was compliant with only 54% of its customer service agreements, mainly due to a lack of on-time deliveries.
- It took 47 days for process invoices to be received.
- The fill rate of delivery vans averaged just 60%.

Using a suppliers, inputs, process, outputs and

customers diagram, along with process mapping and brainstorming, the organization pulled together an improvement team made up of internal and external stakeholder representatives.

Internal stakeholders included the CEO and members of the board of directors, internal customers from Telefónica and Telefónica's Movistar business unit (a mobile phone operator), the quality department, financial management, IT, and dispatch and transit teams. External stakeholders included the transport companies working with tgestiona.

"All the internal and external stakeholders' representatives were involved on the improvement team," said María Laura Festa, who is responsible for quality and processes at tgestiona. "The representatives' degree of involvement depended on the number of solutions with which each stakeholder was associated."

So began the transportation optimization project to improve tgestiona's performance, with a focus on five key components:

1. Increasing level of compliance with service agreements.
2. Improving delivery van fill rates.
3. Reducing CO₂ emissions.
4. Improving invoice processing time.
5. Reducing the administrative burdens on staff.

Analyzing the situation

As part of the Telefónica Group, tgestiona is no stranger to process improvement projects and initiatives. Telefónica Group earned gold honors in last year's ITEA process after implementing a project to remedy outages in the group's broadband network that affected thousands of customers. Movistar also won bronze honors that year.

In meetings between the project team and stakeholders, the tgestiona team followed in its colleagues' footsteps by first using brainstorming, five whys, fishbone and affinity diagrams, and multivoting to identify potential root causes of its problems. From there, it applied box plots, impact matrixes and Pareto charts to reduce the number of potential causes and identify the five root causes with the greatest impact:

1. Poor customer planning.
2. Problems with invoice processing.
3. Lack of route optimization software.
4. Deficiencies in document monitoring.
5. Difficulties in generating remittance invoices.



MEMBERS OF THE tgestiona team celebrate their award in May at ASQ's World Conference on Quality and Improvement in Anaheim, CA, with ASQ Chair-elect John C. Timmerman (far left) and Patti Trapp, chair of the International Team Excellence Award (ITEA) committee (far right). The team earned gold-level status in this year's ITEA process for its transport optimization project that used the define, measure, analyze, improve and control method to improve efficiency and customer satisfaction.

Ways to improve

The improvement team identified possible solutions for the root causes that had been validated in the analysis phase first by generating as many solutions as possible using brainstorming and then putting them into groups using an affinity diagram, Festa explained.

The team looked for more solutions by benchmarking industry best practices among national transport companies and using information from the Transport Chamber of Argentina. Using multivoting, the team selected the most relevant solutions and validated them with pilot tests. Finally, a prioritization matrix helped the team identify the final solutions based on impacts on KPIs, cost effectiveness, ease of implementation and scale of applicability.

The group settled on seven final solutions that addressed each of the five previously identified root causes:

1. Better delivery planning. Before the project, routes were largely unplanned. The team decided to improve delivery planning by establishing a long-term delivery schedule.

2. Automated calls to delivery destinations. An automated calling service was implemented so customers could be informed of an expected delivery date.

3. Modified organizational structure. Before the project, the organization's structure had no clear objective. The project established the objective of focusing on the customer. A new structure was implemented with dispatch and transit teams, with the focus remaining on the customer.

4. Modified invoice processing. Before the project, invoice processing was controlled by the transport company, and tgestiona faced excessive bureaucracy. After the project, Telefónica simplified and took ownership of its process, implementing a new one to reduce control and validation times.

5. Installed software. New software helped map and create more efficient delivery routes.

6. Online monitoring tool. In the past, the organization was reactive to customer complaints. With the implementation of an online monitoring tool, outstanding deliveries could be monitored, helping

(continued on p. 36)

2012 BRONZE-LEVEL WINNERS

Alcoa Inc.

Morristown, TN



The ceramic core excellence team drove significant culture change by using A3 thinking, a method to streamline the problem-solving process, to define its target. It also used process management, workflow designs and the define, measure, analyze, improve and control (DMAIC) method to achieve target conditions. As a result, the team improved delivery time by 63% and reduced costs by 26% annually. Additionally, the parts per million defect rate decreased by 52%, and employee absenteeism dropped by 30%.

For more information: <http://wcqi.asq.org/team-competition/pdf/Alcoa.pdf> (case sensitive).

Anheuser-Busch InBev

Oklahoma City



The liner continuous improvement team was formed to optimize the placement of the liner compound used to create an airtight seal on beer cans. Following a standardized improvement team process, several designed experiments determined how to successfully optimize the compound placement. These innovations reduced the possibility of potential quality issues and cut costs while maintaining efficiency.

For more information: <http://wcqi.asq.org/team-competition/pdf/Anheuser-Busch.pdf> (case sensitive).

CSX Transportation/General Electric

Jacksonville, FL



CSX Transportation and General Electric partnered in a fuel and emissions conservation project that documented 6.9% fuel savings for their pilot trains and a potential 390,000-ton reduction in greenhouse gas emissions annually. Ultimately, this project improves the air quality and helps reduce dependency on an increasingly scarce natural resource, according to the team. The team used the define, measure, analyze, design and verify project discipline to execute multiple pilots to validate the results.

For more information: <http://wcqi.asq.org/team-competition/pdf/CSX-GE.pdf> (case sensitive).

National Reconnaissance Office

Chantilly, VA



The team used the DMAIC method to facilitate critical communications, reduce production defects and implement sustainable improvements to the process of gathering, creating and managing customer requirements. Accuracy rose from a baseline sigma of 1.5 to 3.3, which is a 96.96% improvement score, and the average cycle time for project creation decreased by seven minutes, generating significant cost savings. Customer satisfaction scores also increased from 97.8 to 98.7%.

For more information: <http://wcqi.asq.org/team-competition/pdf/NRO-Media-Services-Center.pdf> (case sensitive).

Reliance Industries Ltd. Hazira

Surat, Gujarat, India



Reliance, which says it's the largest polyester POY producer in the world, challenged itself to increase POY production without incurring any capital expenditure and to earn higher revenue by using available polymer capacity. The team used quality tools—such as mind mapping, cause-and-effect matrixes, the theory of constraints, simulation models, failure mode and effects analysis, and design of experiments—to achieve an annual savings of \$3.1 million while increasing productivity. This modification also was incorporated into other organizational sites and into future projects.

For more information: <http://wcqi.asq.org/team-competition/pdf/Reliance-Hazira.pdf> (case sensitive).

The Ritz-Carlton, New Orleans

New Orleans



The project team used the Ritz-Carlton's six-step problem-solving process over five weeks to diagnose the cause of defects in its housekeeping department operations—specifically, missing room supplies. By applying the 5S principles and improving training and inspection processes, the team reduced losses by 50% in the first year and realized additional reductions in the second year. The project also reduced the cost of guest supplies by 25% through better inventory controls and management.

For more information: <http://wcqi.asq.org/team-competition/pdf/Ritz-Carlton.pdf> (case sensitive).

INTERNATIONAL TEAM EXCELLENCE AWARD PROCESS

The ASQ International Team Excellence Award (ITEA) process celebrates the innovative use of quality tools and processes by improvement teams at organizations from around the world. This event is the only international team recognition process of its kind in the United States. Since 1985, more than 1,000 teams from around the world have participated. The preliminary round entry requires teams to submit a presentation outlining a project completed within the last two years that achieved measureable results. For information on how to participate in an upcoming ITEA process, visit <http://wcqi.asq.org/team-competition>.

(continued from p. 33)

tgestiona have better control over unfulfilled orders and anticipate its customers' needs more effectively.

7. Modified process for logging materials. A new logging process was carried out at moment of purchase to better log the materials associated with each order.

Controlling implementation

While identifying root causes and solutions to problems is the start of any improvement project, achieving and maintaining buy-in is what puts plans into action and keeps them there. The improvement team maintained buy-in throughout the organization by engaging internal and external stakeholders in meetings to share benchmarking, experiences from pilot tests and project benefits.

A Gantt diagram helped the team develop a schedule of target dates for solution implementation and improvement. A failure mode and effects analysis helped address and anticipate potential failures and their causes, and it enabled the team to develop contingency plans. The organization used the scorecard method to monitor progress of the solutions.

Table 1 shows how the implemented solutions resulted in benefits and improvements for tgestiona's main KPIs. Ultimately, the project team achieved savings of \$630,000 per year by reducing unplanned deliveries from 53 to one, and satisfying service-level agreement indicators at about 95%, helping improve the image of the company and the service provided to its customers.

All results met or exceeded the projections, and had a direct impact on the organization's four main strategic objectives.

Just as important as the tangible results, though, was that the team saw intangible results from the project, including the sharing of best practices among colleagues and departments, the spreading of a quality-based culture and an overall improvement in service, Festa said. It's these intangible benefits of the project that have sparked a change in tgestiona's culture—a change for the better that moves the organization toward continuous improvement.

“The plan is to continue spreading the process improvement culture across the organization by training high-potential and higher-performance resources, and assigning them to work on the most critical processes of each business unit,” Festa said.

The organization has determined the key factors that made this project work, and Festa outlined them to help other organizations looking to make the same changes:

- Top management commitment.
- A robust project team.
- Training of team members to give them the tools and skills needed for proper performance in their roles.
- Effective sponsorship to ensure roadblocks are removed as they appear.
- Effective communication among all stakeholders throughout the entire project.

While the project clearly had a monumental impact on the organization's transport processes, Thompson said the experience of the ITEA process played a valuable role in the organization's overall quality framework.

“This is the first time an improvement team of tgestiona presented and competed in the ITEA competition,” he said. “We are sure that, besides the team's own pride and the tangible results obtained, this is a great opportunity to spread to the rest of the organization the commitment to quality and a structured way to improve processes. Having the opportunity to experience the preparation for this competition let us learn in detail the competition criteria and incorporate key aspects of it into our quality management.” **QP**

NOTE

For more details on tgestiona's project, visit <http://wcqi.asq.org/team-competition/pdf/Tgestiona-Delivering.pdf> (case sensitive). For the full presentation from tgestiona and all recent award winners, visit <http://wcqi.asq.org/team-competition/presentations.html> (case sensitive).

Improvements achieved in tgestiona's main KPIs / TABLE 1

Final solutions	Metrics (per year)	Initial	Expected	Achieved
Better delivery planning	Number of unplanned deliveries	53	< 1	1
Automated calls to delivery destinations	Reduction of CO ₂	–	> 8 tons	10 tons
	Vehicle fill rate	60%	> 80%	93%
Modify organizational structure	Employee satisfaction	70%	> 80%	87%
Modify invoice processing	Time for invoice processing	47 days	< 7 days	6 days
Install route optimization software	Reduction in transport costs	\$4.05	< \$3.5 ton/km	\$2.67/chargeable ton/km
Online monitoring tool	Compliance with agreed service levels	54%	> 90%	91%
Modify process for logging materials	Time to generate remittance advices	96 hours	< 2 hours	1 hour

KPI = key performance indicator