Good afternoon members of the jury and members of the audience.

I am Ernesto Marano, champion of our project, which is called “Surfing is not so complex.”
Telefónica Group is the market leader in telecommunications in Argentina, and provides a wide variety of communication services. In particular, we provide almost 1.5 million broadband internet accesses across the country.
Telefónica’s improvement system includes the promotion of quality standards and excellence models. COPC certification has been achieved in customer contact areas, and many processes have been certified to ISO standard. The group won Bronze and GOLD in the 2010 National Team competition; and last May, Telefónica’s project “Cutting Cuts” became the first project from Argentina to win the International Team Excellence Award.
The network on which our broadband internet customers depend contains access, transmission and backbone equipment connected by more than twenty thousand kilometers of fiber optic cable. When one of these elements fails, the whole system is affected.

These outages can normally be quickly diagnosed and resolved, in keeping with our customers’ expectations, using known processes and tools. However, some complex outages, for example cases of low surfing speed, were much harder to detect, diagnose and resolve using the same processes and tools, meaning long resolution times and unhappy customers.

Our challenge was to achieve a substantial reduction in the duration of complex outages using Lean Six Sigma methodology.
Next, Santiago Canale, a project Green Belt, will describe project selection and purpose.
Thanks Ernesto… Good Afternoon.
Telefónica selects improvement projects with a high impact on its strategic objectives. These are prioritized through analysis of data such as:
- Customer satisfaction surveys
- Strategic and operational indicators
- Internal and external audits

Projects are selected using the Corporate Project Selection Matrix, which evaluates expected results, simplicity and impact to select the most beneficial project.

The Executive Committee, supported by the company’s Master Black Belt, carries out final validation and prioritization of projects.
Our project achieved an impact evaluation of 304 (three hundred four) points in the project selection matrix, making it one of Telefónica’s high priority projects, as the Pareto diagram on the screen shows.
When our project started we had an average of 25 (twenty five) complex outages per month, leaving thousands of customers with reduced broadband service for long periods of time.

When the cost of refunds for loss of service was added to the cost of additional call center resources to handle complaints, we estimated an annual loss to the company of almost U$S 400.000 (four hundred thousand dollars).

Our project was selected because it provided important opportunities for improvement – using Six Sigma DMAIC methodology based on Telefonica’s standard improvement system – that would have a positive impact on the company’s four strategic indicators. As we will see in 1B, these are QUALITY, OPERATIONAL EFFICIENCY, HUMAN CAPITAL and GROWTH.
The Executive Committee and the Quality management identified an initial group of potential stakeholders representing the departments with direct involvement in the provision of broadband services and who would form the initial project team. These potential stakeholders will be discussed again in 1Ca. While senior members of the Operations and Maintenance departments participated in project selection meetings as already described, Back Office supplied some of the data used for project selection, such as the number of customer complaints made to call centers as mentioned in 1Ab.
Our project affected all of the company's strategic indicators:
• Customer Satisfaction (by reducing average outage duration)
• EBITDA Financial indicator (by improving profitability)
• Great Place To Work Ranking (through a better working environment) and
• Customer Loyalty (by improving service performance levels).

This in turn had an impact on the ORGANIZATIONAL GOALS, as we can see on the screen.
The project goals had a positive impact both on operational indicators and organizational goals.

For example: reducing average outage duration would result in increased broadband availability, improving the customer satisfaction index and impacting positively on the organizational goal of QUALITY. At the same time it would help reduce costs, impacting positively on OPERATIONAL EFFICIENCY.
The degree of impact on the organizational goals was calculated using an operational impact matrix in which impacts were graded as high, medium or low based on the code shown in the slide.

Continuing the example from the previous slide, the increase in CUSTOMER SATISFACTION was assessed as having MEDIUM IMPACT on QUALITY since outages affected less than 2% of broadband customers per month. At the same time, we considered the reduction in operating and maintenance costs to have a HIGH IMPACT on OPERATIONAL EFFICIENCY, since the reduction of costs was more than 2%.
1Ca
The initial team used the Six Sigma tools SIPOC, PROCESS MAP and BRAINSTORMING to analyze which departments were affected by the project or could benefit from project opportunities; impact on other areas of activity; and possible conflicts of interest. This analysis identified our potential stakeholders. In addition to the same internal stakeholders who participated in project selection in 1Ac, a potential external stakeholder was also identified.
To identify the type of potential impact on stakeholders, the team held meetings with key personnel from each stakeholder to conduct a Force Field Analysis. Detected impacts were classified as positive or negative.

For example, one of the positive impacts was a reduction of complaint calls to back office, resulting in cost savings.

The negative impacts listed on the slide later formed the basis of the anticipated stakeholder resistances we will refer to in 4.Ab.
In those meeting the degree of impact on stakeholders was quantified by analysis of the relationship between the level of impact on the strategic objectives and project goals, and the ease of implementation of those goals, leading to LOW, MEDIUM and HIGH impact.
For example, we detected HIGH positive impacts on:
• the Executive Committee, due to improvements in the company’s four strategic indicators
  and
• Operations and Maintenance, due to optimization of resources and a substantial improvement in communication between departments.
We detected HIGH and MEDIUM negative impacts in relation to Operations and Maintenance and BackOffice, caused mainly by a natural fear of extra work as a result of new procedures.
Next, Daniel Lopez, a Green Belt and heir of the project, will describe our analysis of the current situation.
2Aa (1/2)

Thanks Santiago!! Good Afternoon.
Potential causes were identified in two stages using the methodology set out in Telefonica’s standard improvement system.

In Step 1, the team analyzed the outage resolution process at the beginning of the project. Based on the SIPOC and the PROCESS MAP from 1Ca, we generated a VALUE STREAM MAPPING to analyze process flows and identify wasted time. We also analyzed CONTROL CHARTS to detect variations in the process, and PROCESS CAPABILITY CHARTS to assess its fitness for purpose.
In Step 2, the team held a brainstorming session to identify potential causes of long resolution times and grouped them according to affinity. Then, those groups were displayed in a CAUSE AND EFFECT DIAGRAM and analyzed more deeply using 5 Whys. Finally we ranked potential causes in order of priority using multi-voting.

These tools enabled us to compile the widest possible list of potential root causes based on the available data.
2Ab (1/2)

Step 1 of the data analysis measured process performance based on stakeholder data in the form of the SIPOC inputs and outputs, the Process Map and the Value Stream Mapping. This revealed a complex process with waste in the form of duplicated activities, rework and dead time.

Analysis of the twenty most recent outages, using control and capability charts, showed a high scatter rate, a repetition rate of 10%, and an average duration of 383 hours, or 16 days.
In Step 2 of the analysis, the data obtained in Step 1 was combined with detailed reports of repeated complex outages. With all this data the team, assisted by experts from Operations and Maintenance, used the remaining methods and tools described in 2Aa to identify, classify and prioritize a set of eleven potential root causes. Also, the team implemented a Quick Wins of a new coding system for recording customer complaints during a complex outages.

Reading time: 33 seconds
The stakeholders identified in 1.Ca participated in several ways in the identification of potential root causes, as shown on the slide. For instance, the Maintenance department provided detailed information about maintenance processes and technical knowledge while Back Office provided important details of the reasons for customer complaints. All of the principal stakeholders were also central to the brainstorming of possible causes.
To identify final root causes, the team used the following tools from Telefonica’s standard improvement system:

Correlation, for statistical identification of the most closely related causes; and Best subsets, which allowed us to consider which, of all the possible combinations of causes, best predicted our output variable Average Duration.

These tools were applied to a number of successive samples to reach a final list of root causes.
We analyzed the data used to identify the 11 potential root causes in 2Ab with the tools and sequence described in the previous slide. By means of correlation and best subsets, we identified the combination of root causes which enabled the behavior of the output variable AVERAGE DURATION to be predicted in more than 80% of cases. As a final test, we excluded potential root causes which did not have a HIGH impact on average outage duration in at least two of every three consecutive samples. The result of this analysis was a list of seven final root causes.
2Bc
The final root causes are listed on this slide. We validated them with stakeholders and experts based on Hypothesis and Pilot Test results.
The example of the dead time root cause is shown on the screen. A change in the resolution process to reduce dead time was pilot-tested in a controlled environment, which verified statistically that average duration was also reduced as a result.
Each of the final root causes was validated in the same way.
Now, Mario Ghioni, a Green Belt and the project leader, will describe Solution Development.
Thanks Daniel.
Good afternoon.
The selection of solutions was conducted in two stages using the methodology set out in Telefonica’s standard improvement system.
In Step 1, we generated as many solutions as possible for each validated root cause, using divergent thinking in brainstorming sessions to generate original ideas; and then we grouped them in an affinity diagram.

In Step 2, we used multi-voting, solution prioritization list and pilot testing to select, test and prioritize potential solutions.
3Ab (1/2)
Process experts helped us analyse relevant data related to the root causes to generate possible solutions.
For example: with Paretto data of the type of failure, together with their geographical location, a redistribution of supplies came up as a possible solution.
To complete Step 2 of the selection process, the team and relevant experts prioritized the list of possible solutions by using multi-voting. Finally, based on the results of several pilot tests in controlled environments, we selected the twenty two potential solutions we considered most effective.
3Ac

To select and prioritize the best solutions the team, stakeholder representatives and experts used the data shown on this slide to define selection criteria such as: IMPACT of the solution on average outage duration; and COST of implementing each solution.

In accordance with Telefonica’s standard improvement system, criteria were aligned with organizational goals: thus the Impact criterion is in line with the QUALITY goal and the COST criterion is in line with the OPERATIONAL EFFICIENCY goal.
Combining the list of proposed solutions with the selection criteria, we used a prioritization matrix in order to determine the relative importance of each solution and select a reduced number of them. The result was the set of 11 final solutions.
The process shown on this slide for two root causes was applied to all of the potential solutions identified in 3Ab. The solution with the highest priority value was selected as the final solution for each root cause. The potential solutions which did not make the final list were not discarded but were implemented separately outwith our project.
To summarize, we created a list of potential solutions on the basis of the validated root causes.

These 22 potential solutions were weighted using appropriate selection criteria linked to the organizational goals, leaving us with the set of eleven final solutions shown on this slide.
3Bc
The some stakeholders involved in the selection of final root causes were also involved in the selection of the final solutions: for example the Executive Committee, approved the selection criteria and the selected solutions in the tollgate at the end of the phase; and Operations and Maintenance, provided technical solutions and critical information, and also validated several proposed solutions.
In this slide we show the final set of solutions for each root cause. The solution for dead time, for example, was to provide better organized and better equipped maintenance teams to provide improved 24 hour cover. This involved a redistribution of technical personnel and specialists so that all shifts covering the detection and resolution of outages did so in a UNIFORM way, thereby eliminating dead time from the process.
The team validated the eleven final solutions using pilot testing, hypothesis testing and the tollgate with the Executive Committee.

As an example, the slide shows how the team validated the proposed reorganization of technical shifts just described using a pilot test limited to a single region. We recorded dead time for four weeks before the pilot test and compared it to the test results. As can be seen in the control charts, dead time was reduced by 60 hours when the solution was tested.
In this slide we can see a further example of validation, this time for the proposed improvements to spare parts distribution. A hypothesis test proved that correctly distributing spare parts to one particular location would cut average outage duration by 20 hours, as shown in the box plot on the screen. We validated the remaining solutions in a similar way.
This slide shows the expected tangible benefits resulting from the final solutions. All of them were linked to the main project objective of reducing average outage duration, for example, the elimination of more than sixty hours of dead time, which was estimated using the Value Stream Mapping in 2Ab. Improved diagnosis, and early detection systems, would result in similar reductions in average duration.
By using the estimated impact of each of the solutions we could project the main indicators of the project together with the economic benefits as you can see in this slide.
3Cb (3/3)

Two of the most important expected intangible benefits were spreading of a quality-based work culture and the service improvement, due to their very positive impact on our work force and customer satisfaction respectively.
The team presented the impact that projected tangible results would have on the organizational goals, as can be seen in the slide. And it also emphasized:

No cost of implementation,
Economic savings,
Positive impact on the working culture,
And Improvement perceived by the customer.

Based on these, both Sponsor and Executive Committee, approved the implementation plan.
Next, Martin Libralato, another of the project Green Belts, will describe

PROJECT IMPLEMENTATION AND RESULTS.
4Aa

Thanks Mario. Good Afternoon

Each stakeholder was involved in implementation in a different way. Most importantly, Operations and Maintenance made a series of technical network changes and restructured its technical shifts, while the technology providers supplied new configurations and programs.
Resistances were identified using the negative forces in the impact matrix seen in 1Cb and 1Cc, and the actions listed in this slide were developed to address them. For example, there was resistance to new procedures in Operations and Maintenance due to a fear of extra work. The team minimized this resistance by sharing projected results with employees, to demonstrate the benefits that could be achieved through proposed changes and increased collaboration between departments.
4Ac
Stakeholder buy-in was detected through feedback in meetings and their validation of a number of proposed solutions; through their high level of participation and clear commitment to the implementation of solutions; and through random questioning of selected operatives of each stakeholder by members of the Six Sigma team.
4Ba (1/2)
Here we show the Implementation Plan agreed in consultation with the stakeholders, which details the various stages prior to launch of the solutions, along with a description of some of the implementation actions and the time allocated for the development of each. Objectives and deadlines for each implementation action were set and monitored using MILESTONES and a SCORECARD.
4Ba (2/2)
We also prepared an FMEA for the implementation plan and a contingency plan as a consequence.
For example: for the high risk of facing inefficient training of technical staff, the contingency plan included online support for them.
4Ba (2/2)
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4Bb
We carried out several changes in procedures and systems. Most importantly, we implemented a single online system for monitoring outage resolution. This provides online visualization of time completion. It also created a standardized Workflow to ensure every network failure is treated in the same way. All of these procedures and systems continue in place today. To ensure results were sustained, a PROJECT HEIR was appointed to oversee outstanding implementation actions, and monitor deviations using the control board.
4Bc
We created a system to measure and sustain results, which we validated using Attribute Agreement Analysis. This system includes a daily control board to track and control the resolution of each outage. Department coordinators and monitors have access to this board, which provides a visual alarm in case of delay in any of the stages of the resolution process, allowing for rapid correction of any deviation.

The monthly Punctuality Indicator on the slide, a critical variable, shows that the project results have been maintained throughout inheritance and beyond.
This first slide shows that the tangible results achieved were excellent. By the end of the project, we had exceeded the project objectives: average outage duration was under 96 hours in 100% of cases, with a repetition rate of zero. This was maintained throughout the 12 months of inheritance.

The economic benefits achieved, in terms of less refunds for outages and less demand on call center resources, were in the order of almost u$s 405,000.
The main intangible results relate to the company’s human capital. These include: The sharing of best practices; and a more collaborative and quality-based work culture. These results match the expected benefits listed in 3Cb, and were verified through stakeholder feedback. Creating strong working relationships that went beyond the scope of the project and are helping the daily interaction of the involved departments. Recognition came with the first prize in our Argentine Team Excellence Competition in 2010.
We can see the results of the project, which reflect the anticipated results from 3Cc, and their impact on each organizational goal.

For example, the reduction in average duration, and the elimination of repetitions, had an impact on QUALITY and OPERATIONAL EFFICIENCY. This in turn generated annual savings of u$s 405,000 and an improved customer satisfaction index of 10% , again impacting on QUALITY and OPERATIONAL EFFICIENCY.

Improvement in the quality of the broadband service reduced customer churn, impacting on GROWTH, and increased employee satisfaction impacted on HUMAN CAPITAL.
4Cc
We held meetings with all stakeholders to share project results with them and introduce the project Heir.

The project was formally closed with a presentation to the Executive Committee of Telefónica to demonstrate the results achieved during implementation and inheritance.

Finally, the project was presented to the rest of the organization through various internal communication channels.

A positive feedback was received from all stakeholders.
Next, José Insúa, Project Sponsor, will describe **TEAM MANAGEMENT**.
Thanks Martin!
Team members were selected by Human Capital Management, Quality Management and the Project Sponsor, as well as the Champion and Team Leader, using procedures set out in Telefonica’s standard improvement system.

Candidates’ skills were evaluated and prioritized according to their level of involvement in network processes, resulting in an interdisciplinary team with permanent Master Black Belt supervision.

The Sponsor effectively communicated the project objectives, and promoted necessary changes in culture, to remove resistance to the proposed solutions.

The Team Leader was chosen for his leadership capacity and his knowledge of the tools. The Team Leader and the Champion together set the objectives for each stage, and directed the activities of the team.

Green Belts and the other team members had an important role in collecting relevant process data, in the discussion and selection of solutions, and in the application of Six Sigma tools.

During the last phase of the project the Champion and the Team Leader selected the heir based on his role in the process: his responsibility for the project’s control plan.
The team was trained in Six Sigma Methodology in accordance with Telefónica’s Improvement System. The team leader was also trained as a team facilitator and effective negotiator. The training gave each member the tools and skills needed for the performance of their roles to ensure their successful participation in the project and was followed by theory and practice exam. Quality Management provided methodological support to the team throughout the project. Six Sigma Certification was completed by a general performance evaluation to ensure that the project objectives had been achieved to the relevant established standard.
Four things were identified as essential to effective team performance:

- the sharing of relevant information;
- ensuring effective communication;
- the effective use of meetings
- and results and the feedback received from the Executive Committee and the Master Black belt in the tollgates

This regular communication with the company's senior management ensured the project's visibility and reinforced the importance of the project for the Executive Committee.
Let my finish by saying:

I'm very proud to be part of this team
I's an honor for us to be here presenting our project at such an important event
We really expect to have been clear enough to transmit all of you the relevance of the project
We hope you have enjoyed it as mucho as we did
Thank you very much for your kind attention!!!