

TSP in non-implementation phases

An experience in how disciplined measurement of non-development processes has helped in overcoming obstacles in deploying TSP in Mexican organizations

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Who we are...

- The SIE Center promotes the development and competitiveness of the IT industry through **research, training, consulting and implementation** of best practices with its consultants and with the network of international partnerships



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How this begun...

- The TSP / PSP initiative was launched by the ITESM and the SEI in 2008
- The initiative promotes the understanding and use of TSP in the Mexican IT industry
- As part of this initiative, also the ITESM and the SEI have designed a new evaluation and certification method based on TSP



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What do we want...

- Substantially increase the efficiency and quality of Mexican IT companies
- To position Mexico as a destination for outsourcing with a highly competitive and recognized quality

Our projects have applied the PACE with successful results



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In particular these organizations...

- Are small, medium and very small
- Located across the country
- External enterprises or internal IT departments
- Some of them do not have the Coding discipline in house, they are using outsourcing
- None of them have structured and disciplined development methods for Requirements, High Level Design and Solution Architecture
- Is the first time to formally adopt a software quality oriented development Methodology



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Actual Needs...

- “We want to define and follow our Development Life Cycle complete”
- “Our main problem is in specifying Requirements”
- “We do not code our Requirements, we use outsourcing to do it”
- “The Product Line manager, prioritizes the high quality of the main documents sending to our Client”



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Actual Needs...

- “We have a fellows program and one of their duty is to code our Requirements based on the HLD and the Solution Architecture”
- “We know if we build Requirements, HLD and Architecture of high quality, we increase the possibility to deliver a high quality Software product”
- “If you modify the code, please, adjust the Analysis and the HLD”



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Actual Needs...

We believe that Requirements Analysis, High Level Design and Solution Architecture processes are key in achieving successful projects and high quality products for our organization



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So...

**We need Requirements,
HLD and Architecturs of
high Quality !!!**

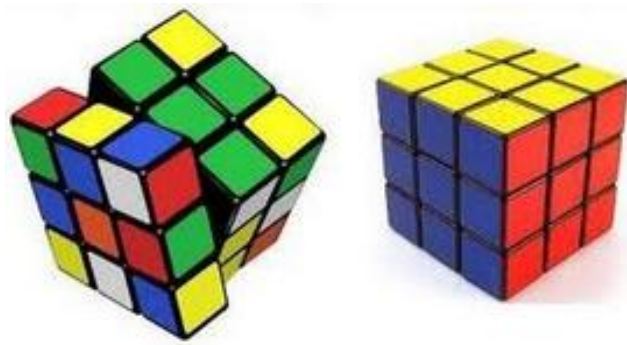


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The Challenge

“If you can show me that TSP can solve this, I will continue sponsoring TSP in our company”



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Things to solve before to achieve...

- The Process
 - What do we produce?
 - Everything is a Requirement? What is a Requirement?
 - How big could be an Architecture, and the HLD?
 - Who will do it and how?
 - Do we know how to do it?
 - Just a team member, not a PSP team member?
 - The Team Member Course is enough?
- The Measures
 - What do I measure now that I do not have LOCs?
 - How good is good?
 - And my PQI (I really love the PQI)?

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Things to solve before to achieve...

- The Forms
 - We need the initial infrastructure
 - Text and graphics, both mean something
- The Standards
 - Defects, defects, defects
 - Standards for something that we had not done
- The Historical Data
 - Of course, we don't have...
- New quality indicators
 - We need new benchmarks
 - We can not wait for our PQI of new processes
- And finally... what about the PACE?
 - Before us, it was made mainly for CODING

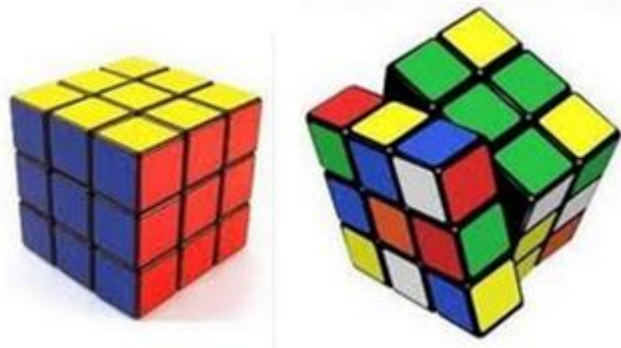
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The Challenge grows

“We opened new problems that we need to solve”



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First, we had to define what we do...

Creación de la Especificación de Requisitos de Software	
Junta con el usuario	15%
Definición del alcance del proyecto	10%
Definición	15%
Identificación	5%
Definición	10%
Definición de restricciones de diseño, de construcción y Legal...	5%
Revisión del ERS	15%
Inspección del ERS	10%
Validación por el usuario	10%
Postmortem	5%

Requirements

PreAnálisis de Requerimientos	
Planeación del PreAnálisis	5%
Entrevista con el cliente	50%
Integración de la información	20%
Revisión del documento	10%
Inspección del documento	10%
Postmortem PreAnálisis	5%

Requirements

Creación de Casos de Uso	
Entender el problema	15%
Definir el alcance del caso de uso	5%
Definir los actores	5%
Diseñar el caso de uso	30%
Realizar el diagrama	5%
Revisar el caso de uso	15%
Inspeccionar el caso de uso	15%
Validación por el usuario	5%
Postmortem	5%

Use Cases

Casos de uso	
Elaboración de CU	47%
Revisión de CU	23%
Inspección de CU	23%
Postmortem	6%

Use Cases

Base de datos del conocimiento	
Planeación de la BC	15%
Organizar Inventario	30%
Subir Catálogos faltantes	5%
Relacionar Catálogos	15%
Revisión del Inventario	30%
Postmortem de la BC	5%

Data Base

Requerimientos	
Planeación Requerimientos	5%
Entrevistas	10%
Generación de Especificaciones Suplementarias	4%
Especificación de Requerimientos	6%
Generación de Requerimientos	12%
Revisión de Requerimientos	11%
Generación de Modelos	12%
Modelo de Negocio	6%
Revisión de Modelo de Negocio	9%
Inspección de documentos de Requerimientos	20%
Postmortem Requerimientos	5%

Requirements

PreAnálisis de Requerimientos	
Planeación del PreAnálisis	5%
Entrevista con el cliente	50%
Integración de la información	20%
Revisión del documento	10%
Inspección del documento de la Entrevista	10%
Postmortem PreAnálisis	5%

Analysis

Creación de Diseño Técnico	
Entender el ERS	15%
Definir la tecnología	5%
Generar el diseño de Alto Nivel	5%
Definir el Diagrama de Flujo	25%
Generar prototipos	15%
Revisar el Diseño Técnico	20%
Inspeccionar el Diseño Técnico	10%
Postmortem	5%

HLD

Arquitectura (HLD)	
Diseño Estructural	7.5%
Estrategia de Desarrollo	7.5%
Estrategia de Diseño de Alto Nivel	20%
Primer ciclo de diseño	25%
Revisión de primer ciclo	10%
Estrategias de integración	15%
Inspección de Diseño	10%
Postmortem	5%

Architecture

Flujo de Integración de Información	
Planeación de Flujo	5%
Definición de de Requerimientos Funcionales y No Funcionales d...	10%
Análisis y diseño de Flujo	25%
Revisión de análisis y diseño de Flujo	15%
Inspección de Flujo	5%
Coordinación de Flujo	5%
Revisión de Flujo	5%
Pruebas Unitarias de Flujo	5%
Postmortem de Flujo	2.5%

Business Processes

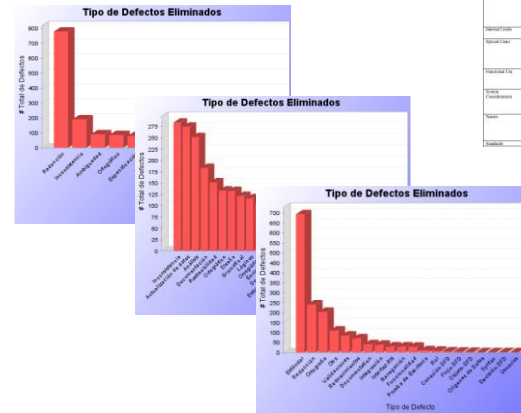
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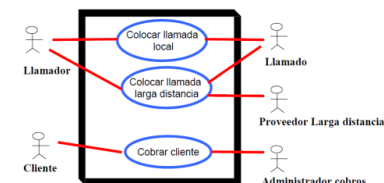
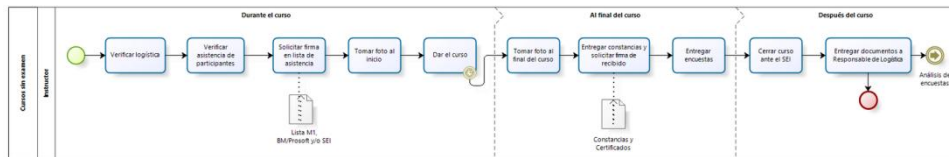
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Then, we defined the Infrastructure

- Size Measures, Checklists, Defect Types, Forms and Tools
 - Business Process
 - Requirements
 - Use Cases Design
 - Data Base Design
 - Solution Architecture
 - High Level Design



The image shows several overlapping checklist forms. The most visible one is the 'PSP1 Design Review Checklist'. It includes sections for 'General', 'Requirements', 'Design', 'Code', and 'Testing'. Each section contains a list of specific items to be reviewed, with checkboxes for 'Yes', 'No', and 'Not Applicable'. Other checklists like 'PSP2 Design Review Checklist' are partially visible behind it.

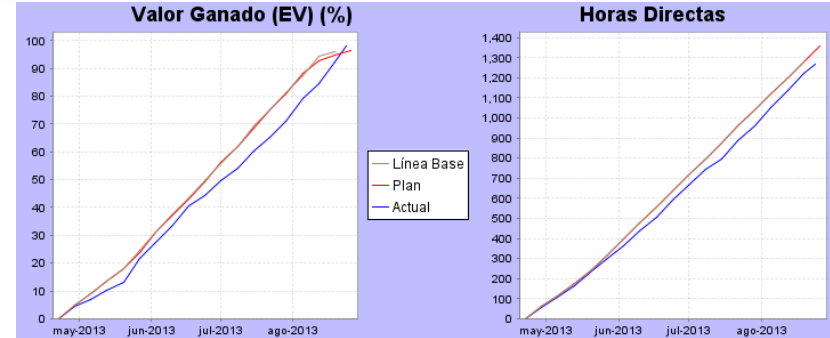
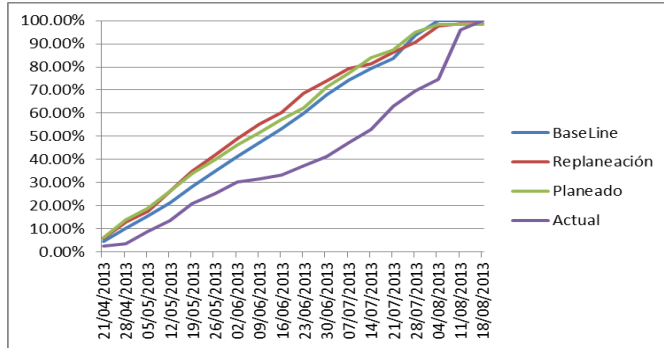


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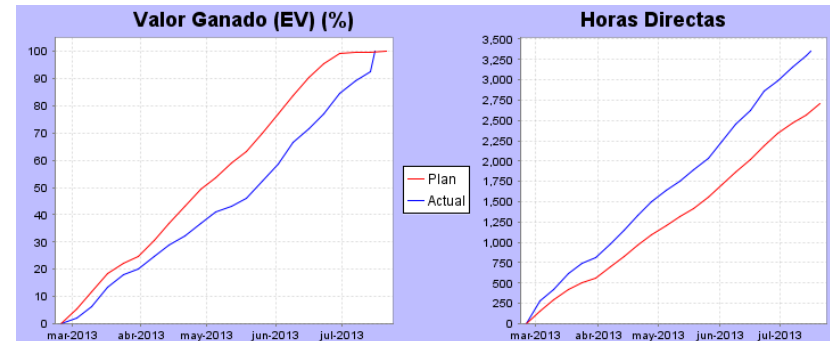
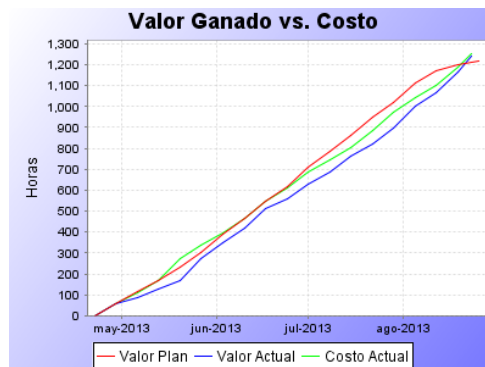


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And we had results...



Indicador	Plan	Actual	Plan / Actual	Plan - Actual
Horas productivas (sin tareas misceláneas) acumuladas	1132	950	1.19	182
Valor Ganado acumulado	100	100	1	0
Horas totales (con tareas misceláneas) acumuladas	1542	1404	1.098	138



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And we had results...

Summary	Plan	Actual
Productivity (LOC/Hr)	0	0
Error de Estimación de Tiempo		0.51%
Error de Estimación de Tamaño		0.69
Tiempo	1261.23	1267.47
CPI (Cost-Performance Index)		0.99

Defects/Page	Plan	Actual
Requirements Review	25.7	7.31
Requirements Inspection	10.3	12.2

Size	Plan	Actual
Text Pages	0	0
Requirements Pages	461	70
HLD Pages	0	0
Detailed Design Lines	0	0
LOC Base	0	0
Deleted LOC	0	0
Modified LOC	0	0
Added LOC	0	0
Reused LOC	0	0
LOC Nuevas & Cambiadas	0	0
LOC Total	0	0

Defects Injected

Defects Injected	Plan	Actual	% Actual
Management and Miscellaneous	0	0	0%
Launch and Strategy	0	0	0%
Planning	0	1	0.07%
Requirements	2998	1050	76.6%
System Test Plan	0	0	0%
Requirements Review	0	318	23.2%
Requirements Inspection	0	1	0.07%
High-Level Design	0	0	0%

Defects Removed

Defects Removed	Plan	Actual	% Actual
Management and Miscellaneous	0	0	0%
Launch and Strategy	0	0	0%
Planning	0	0	0%
Requirements	0	4	0.29%
System Test Plan	0	0	0%
Requirements Review	1799	512	37.4%
Requirements Inspection	719	854	62.3%

Size	Plan	Actual
SSS Pages	0	0
SSDD Pages	0	0
SRS Pages	181	306
STP Pages	0	0
Test Cases	0	0
SDD Pages	71.5	110
Text Pages	59.6	351
Detailed Design Lines	0	0
LOC Nuevas & Cambiadas	1680	191

Tiempo revisión de requerimientos VS tiempo de generación de requerimientos	
Planeado	Actual
50%	39.34% Tiempo revisión VS tiempo de generación de requerimientos
Defectos de revisión	
Planeado	Actual
10 defectos	3.83 Defectos por Páginas
Defectos de Inspección	
Planeado	Actual
5 defectos	6.86 Defectos por Páginas

Phase Yields

	Plan	Actual
Requirements	0%	0.38%
System Test Plan	0%	0%
Requirements Review	60%	37.5%
Requirements Inspection	60%	100%

	Plan	Actual
% COQ de Evaluación	27.3%	33.2%
% COQ de Falla	0%	0%

Inspection / Review Rates

	Plan	Actual
Requirements Review	0.41	0.31
Requirements Inspection	0.4	0.35

Development Time Ratios

	Plan	Actual
Requirements Pages (Appraisal/Development)	0.46	0.72

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Results reflected in the PACE...

- “It was found ample evidence that the teams used data regularly to manage their work, and report status to management
- The data has been determined to be accurate and reliable for evaluation and reporting of project status
- These results provide an excellent baseline against which to measure future progress”



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But also...

- The projects and self-directed teams, for the first time
 - Were based on self-directed teams
 - Have implemented their firsts TSP cycles
 - Have customized their planning and quality metrics
 - Have adjusted their traditional tools and repositories
 - Virtually all productive roles in the organization (analysts, architects, developers and testers) participated in this effort
 - This type of projects encouraged a successful cross-training
 - The team consciously followed this cross-training
 - This cross-training substantially has reduced the change resistance
 - The team had the commitment to follow disciplined activities to measure and gather data

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And finally...

- The organization learnt
 - The TSP team can learn, define, use and improve key organizational processes in short periods of time
 - The TSP team can build, use, measure and improve all the necessary infrastructure that those processes need
 - The TSP team can build products of better quality and start to define their particular benchmarks
 - The TSP team can work in a self-directed approach and achieve challenges that never before had been enunciated
 - The TSP team is motivated thanks to the achievements as a team and as a professional

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Conclusion

The TSP team have inspired other members of the organization to follow TSP, in order to achieve similar or better results, independently that they do not do Coding activities

So, all these results have motivated senior executives to continue the TSP implementation in their organizations



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Questions?

Thanks! ¡Gracias!

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