How did Mexico do it?
The National TSP Initiative

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A great business opportunity

Software outsourcing
World market

- US$ 49 (2010)
- US$ 71 (2013)

Source: AT Kearney
Software quality challenge

![2000 to 2008 Project Resolution](chart.png)

<table>
<thead>
<tr>
<th>Year</th>
<th>Succeeded</th>
<th>Failed</th>
<th>Challenged</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>28%</td>
<td>34%</td>
<td>32%</td>
</tr>
<tr>
<td>2002</td>
<td>23%</td>
<td>51%</td>
<td>44%</td>
</tr>
<tr>
<td>2004</td>
<td>49%</td>
<td>34%</td>
<td>44%</td>
</tr>
<tr>
<td>2006</td>
<td>23%</td>
<td>51%</td>
<td>44%</td>
</tr>
<tr>
<td>2008</td>
<td>49%</td>
<td>34%</td>
<td>44%</td>
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</tbody>
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TSP Initiative: Context

• The opportunity of a high growth on global sourcing of software development and maintenance.

• The imperative to improve the quality of software development worldwide.

• The challenge to substantially increase the Mexican market share of the global sourcing market.
TSP Initiative: Objective

- International recognition of the Mexican software industry as a high quality industry
  - High quality human resources
  - High quality projects

- Establish TSP capabilities
  - Software development companies
  - Developers
  - Instructors
  - Coaches
TSP Initiative: Benefits of TSP

- 2 to 10 times reduction in testing time
- 2 to 20 times improvement in product quality
- Estimate improvement: estimate difference between +/- 10%
- Quality equivalent to 5.2 sigma (60 defects per MLOC)
- Accelerates CMMI introduction by 60%
1. **TSP Initiative: Operational levels**

- **CMMI** – for *organizational capacity*
- **TSP** – for quality products on cost and schedule
- **PSP** – for individual skill and discipline

*Source: Watts Humphrey, CMU/SEI-2000-TR-023*
TSP Initiative: Time Line

<table>
<thead>
<tr>
<th>2005</th>
<th>2006</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dec</td>
<td>Jan</td>
<td>Feb</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tec visits SEI</td>
<td>IBM</td>
<td>Softtek</td>
</tr>
<tr>
<td>Ministry of Economy support &amp; funding for phase I</td>
<td>• Undergrad student training (1/3)</td>
<td>• Faculty training (1/2)</td>
</tr>
<tr>
<td>CMU-ITESM MOU signature</td>
<td>• TSP initiative launch</td>
<td>• Faculty Workshop</td>
</tr>
<tr>
<td>• Undergrad student training (2/3)</td>
<td>• Undergrad student training (3/3)</td>
<td>• Faculty training (2/2)</td>
</tr>
</tbody>
</table>
TSP Initiative: Barriers

- Understanding of TSP and PSP methodologies
- Culture
- High costs
- Availability of certified developers, instructors, coaches and mentor coaches
- Language
1 TSP Initiative: Conceptual Diagram

- SEI
- Tecnológico de Monterrey
- ProSoft
- States
- Industry

National TSP Initiative

- Software Development Companies
  - Certified Resources

Universities

Global & National Market

Quality & Productivity
TSP Initiative: goals, policies and organization

• Social benefits for Mexico
  – Global sourcing revenue
  – Growth of existing companies and creation of new ones
  – Creation of high value jobs

• Public policy and specific plan to promote it
  – Prosoft: National TSP project
  – Participation of government, industries and universities

• Organizations needed to successfully execute the national project
  – National promotion committee
  – State promotion committees
  – National operational organization
  – SEI-Tec certification organization
"In five years I want the world to be asking,

How did Mexico do it?"

Watts Humphrey, 2008
TSP Initiative
Promotion Strategy

Promotion Channels

Value proposition

Plan and Goals

Target audience

Launching capacities

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Focus group results

- Against
  Participant reacted less interested

+ In favor
  Participant reacted more interested

- Enpowerment
- Estimations
- Planning and implementing
- Metrics
Promotion Strategy

The goal of the NL TSP initiative is to lead specific business companies to understand the benefits of the discipline in the software development practice and embrace TSP.

Change Process

- TSP Steering Committee
  - Awareness
  - Understanding
- TSP consultants
  - Acceptance
  - Commitment
Employment and exports 2018

- 28,750 PSP certified software developers
- USD 2,000 million in software development outsourcing
- Accelerated growth of established business
- New software development companies
- High quality educational programs
The Mexican TSP Initiative

- Development and piloting of the Organizational Evaluation and Certification
- Development and implementation of the national TSP diffusion model.
- Certify 25,000 TSP developers with access to international markets.

**National**
- Development of the TSP organizational standard to be used internationally as a reference for quality and performance improvement.
- Development of a virtuous ecosystem to promote collaboration and synergies among suppliers and clients of outsourcing.

**State**
- Replicate the national diffusion model at the state level.
- Formulate and execute the promotion plans.
- Strengthen of regional clusters.
National Component

Organizational Evaluation and Certification

National performance data base

International positioning

TSP for acquisition

Suppliers development

Developed by:

Software Engineering Institute
Carnegie Mellon

Tecnológico de Monterrey
State Component

Implementation State Plan
- State agreement
- Cluster selection
- State consultant contracting
- Promoting organization
- Implementing the promotion plan

4 months

Training, certification and pilot
- Selection of a pilot project
- Training
- Implementing the pilot with an external coach
- Advanced training
- Developers certifications
- Instructors and coaches certifications

6-7 months
PROSOFT TSP Initiative along with SEI and ITESM

- Global Master Partner from the SEI in Mexico
- High Maturity CMMI and TSP organizational evaluation and certification
- Training and certification of individuals
- Pilot
- Ecosystem
- ITESM
- TSP CMMI–Accelerated Improvement Method (TC-AIM)
- TSP organizational evaluation and certification (TSP-OEC)
- Mexican enterprises as pilots for OEC

9 teams

World’s first place in PSP certified individuals

Instructors, coaches, mentors

http://www.sei.cmu.edu/solutions/processmgt/Mexican-tsp.cfm
The innovation concept of TSP

Watts

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Deming

+ Ishikawa

+ Drucker
TSP: The Software Quality Revolution
The Challenges

1. rational vs fuzzy decision (Daniel Kahneman)
2. adversarial vs collaborative
3. professional vs organizational
4. learning vs training
5. knowledge vs competencies
• We need to accelerate
• We need to change
• We need to change the change
• We need to go from

NO to YES