



# Deploying TSP to a Nation: Early Results from Mexico

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# ▶ Agenda

Background

Results

Lessons Learned

Conclusions

Next Steps



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## *Background*

- **The Problem**
- The Mexican Solution
  - Goals
  - Strategy
  - Challenges
- New Approaches

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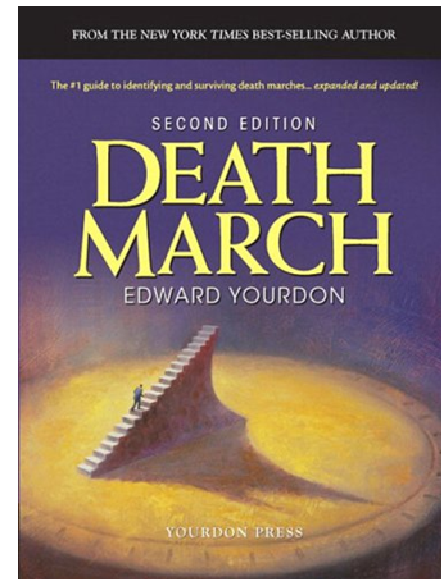


# The Software Project Problem

Typical software projects are not successful.

In engineers' opinions, these projects

- Were not achievable from the outset
- Had excessive management pressure
- Required unreasonable overtime
- Were technically frustrating
- Had lots of team conflict
- Operated in a chaotic environment



# The Software Quality Problem



Typical software projects are not successful.

- About half of development time and expense involves defect removal.
- Each mistake typically results in one or more product defects.
- Experienced developers typically inject 100 or more defects per 1,000 lines of code (KLOC).



# The Mexican Challenge

## Goals

- Export \$5 Billion (USD) of software production
- Achieve the average in global spending on IT
- Become the leader in providing Spanish language digital content



# Challenges

## Scale

- This has never been attempted at a national level.
- Will need a large number of developers and coaches.

## Cost

- There is a large number of Small and Medium size Enterprises (SME).
- It takes time to train teams.

## Distance

- The SEI is geographically far from the Mexican teams.
- The SEI coaches have limited Spanish language skills



# New Approaches

## Training

- Co-teach with Spanish language instructors
- New courses
  - PSP Fundamentals
  - PSP Advanced





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## Strategic Partner

- Develop Mexican training capacity
- Mexican instructors now offer
  - PSP Instructor Training
  - TSP Coach Training



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## Certification

- PSP Engineer
  - Mexico leads the world in certified engineers
- TSP Coach



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▶ **Results**

- **Team Examples**
- Schedule
- Cost
- Quality
- Implementation Timeline
- Perceptions

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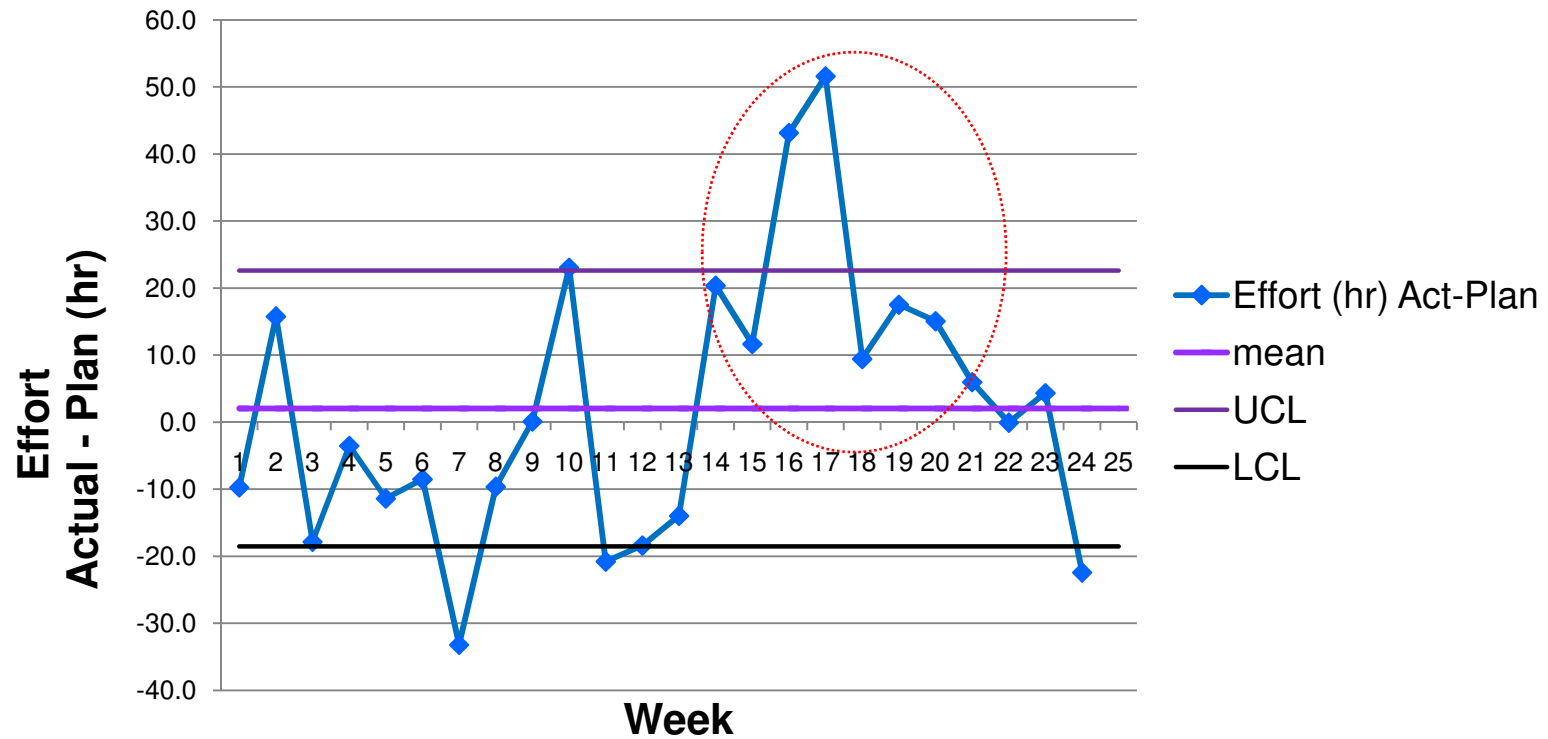
# Team Example I

## Challenges and Barriers

- Team of company engineers and contractors
- Resources reassigned
- Team Lead promoted



# Team Example: Effort Management



# Team Example I

## Outcome

- By end of the launch, the team was integrated.
- The team always managed to re-plan.
- This group was by far the most satisfied in the facility.



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## ***Results***

- Team Example
- **Overall Results**
  - Schedule
  - Cost
  - Quality
  - Perceptions

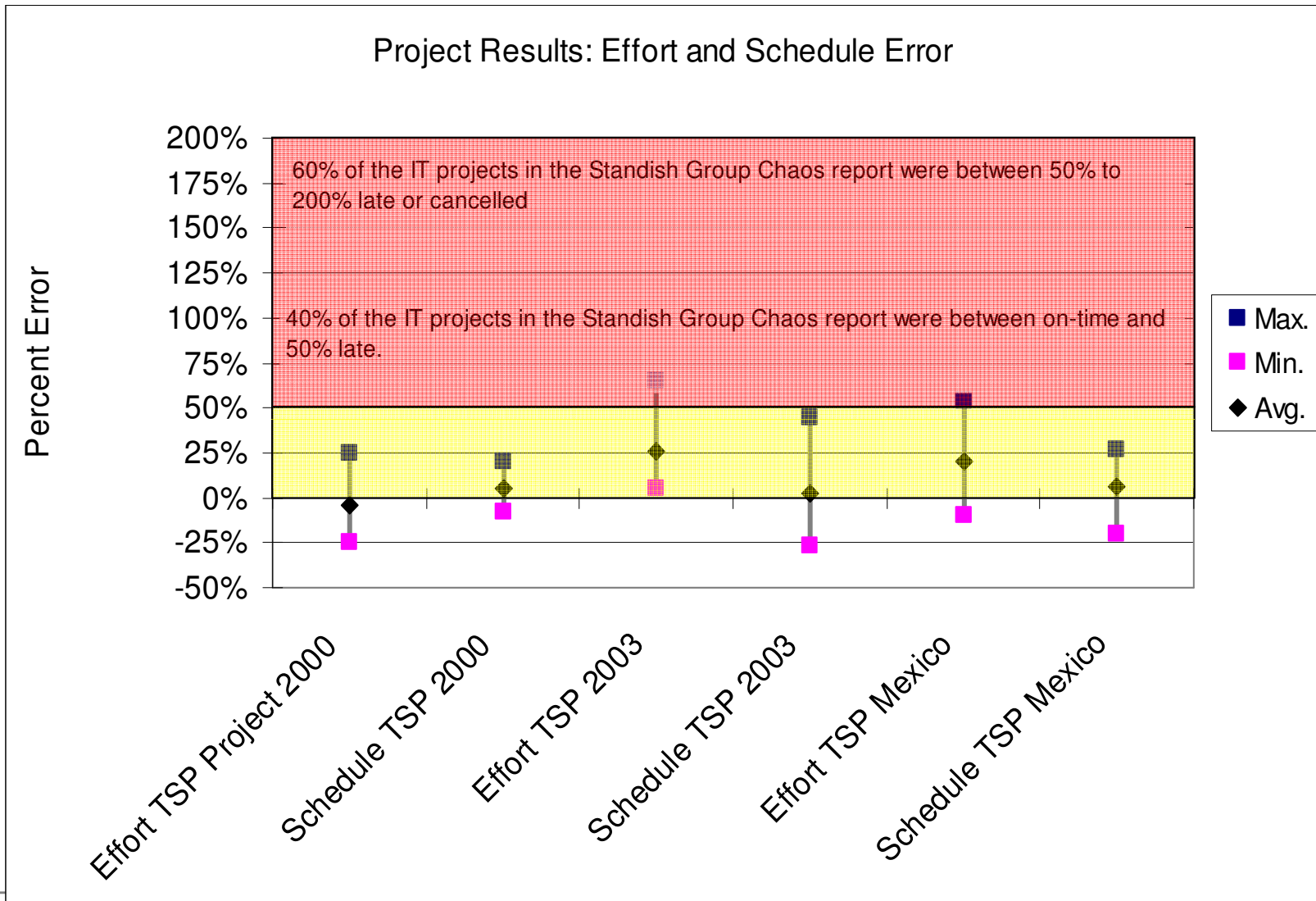
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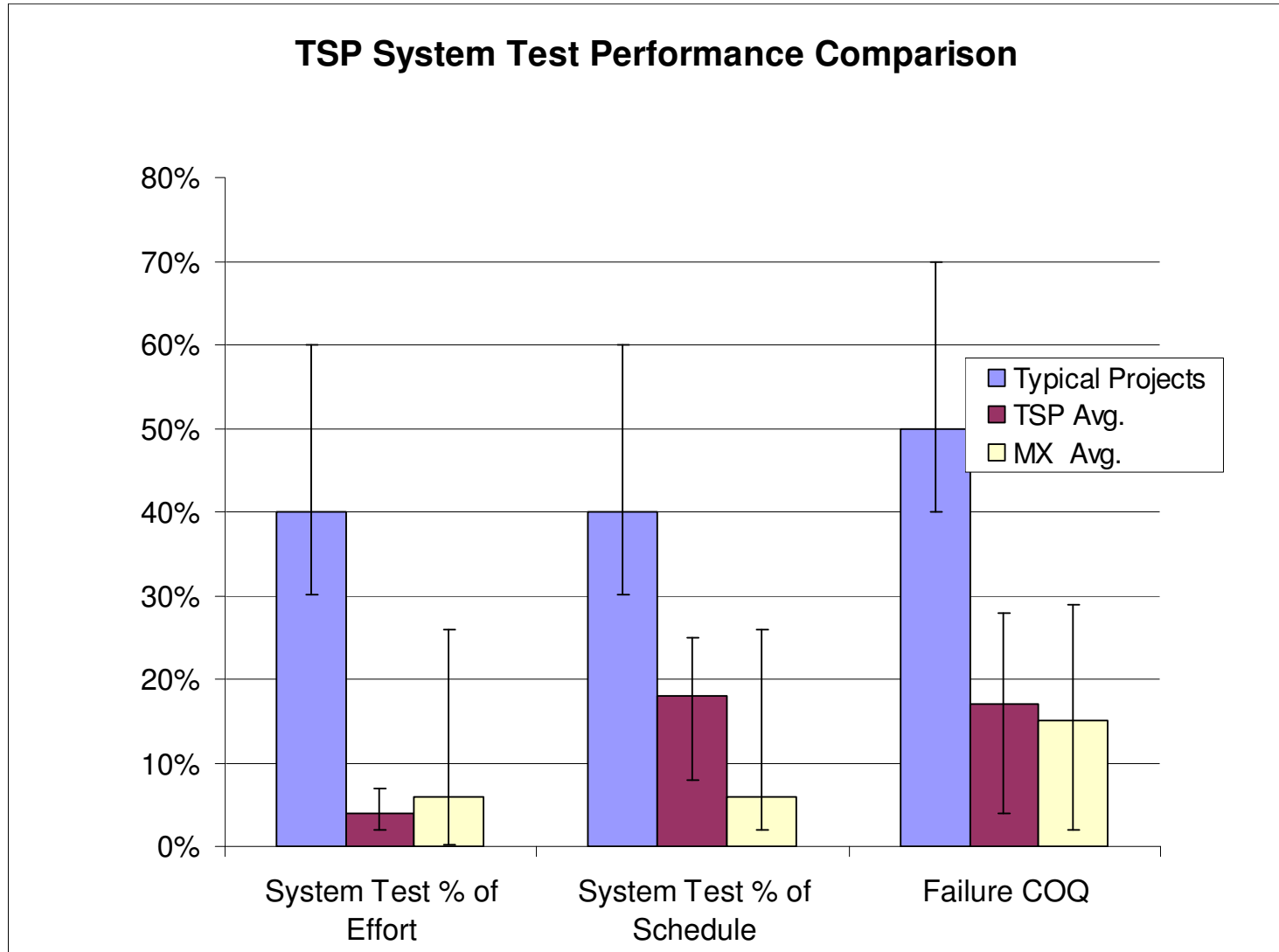


# Schedule and Effort

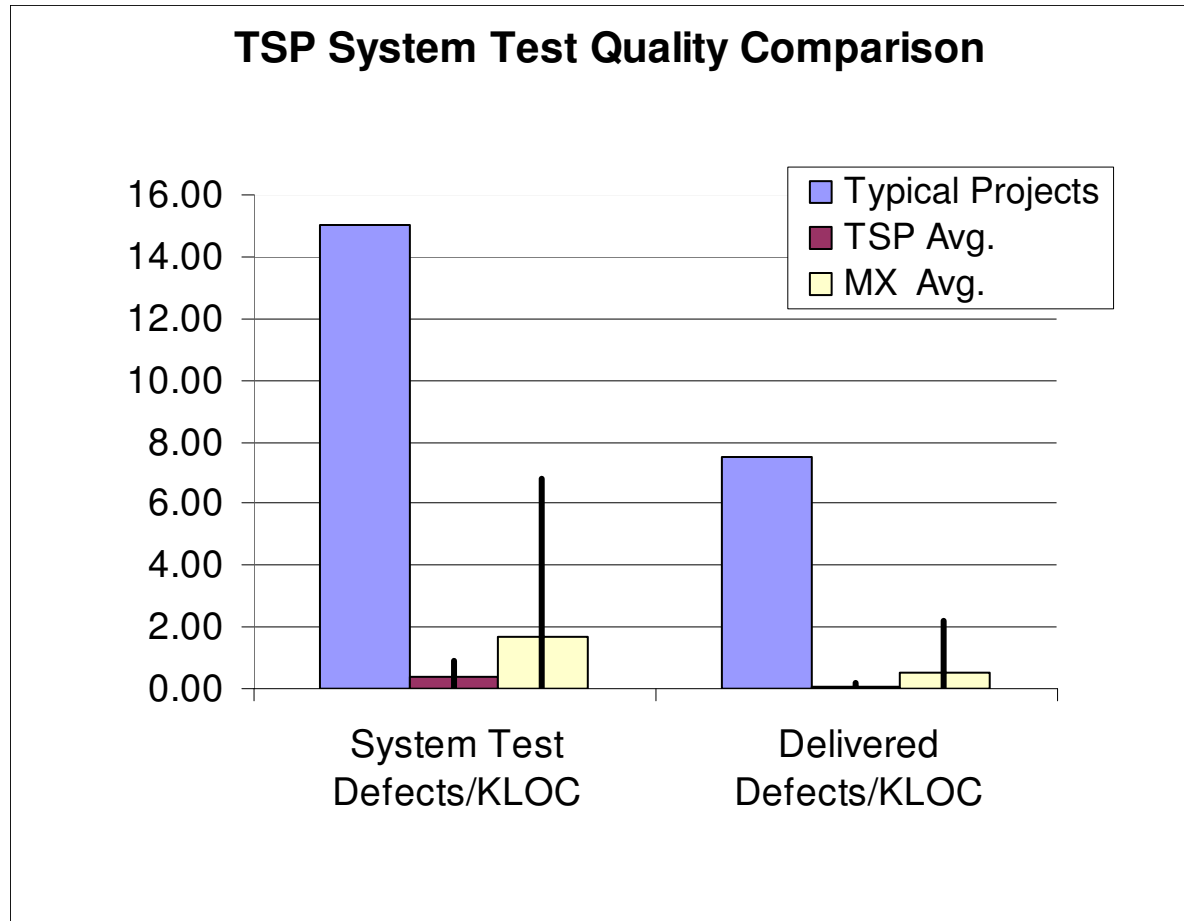




# Quality



# Quality



# Perceptions

What kinds of reactions to using TSP do we expect from team members?



# Perceptions

Quotes from team members:

*“I'd never used review and inspections before, but now I can see how useful they are. The product quality is higher.”*

*“I personally prefer to work in a TSP team, because I have tried many methods, philosophies and recommendations, and all of them, this framework I have personally validate that it really works, and that gives excellent results because it is based on sound science. “*

*“We presented the results of the first pilot to management and they were impressed because the level of data and information the TSP/PSP team was able to provide.”*



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# Lessons Learned

What's different about TSP results from Mexico?

- Nothing! Projects come in on time, on budget, with high quality.

What's different about implementing TSP?

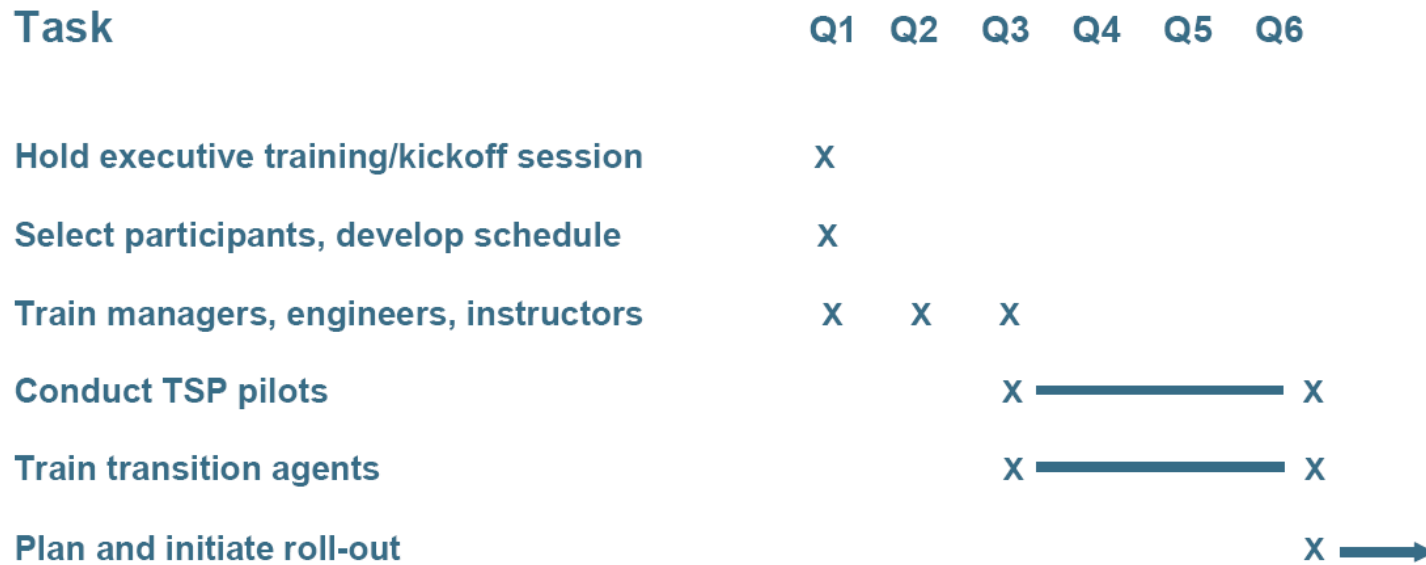
- Scaling to roll out to a nation is different than for a company.
- Need native Spanish speaking instructors and coaches.
- Not much initial resistance from developers.
- Many young and inexperienced developers need coaching attention.
- Difficult to get enough time for training.

How do the new approaches work?

- Teams taking PSP Fundamentals
  - Get to launch more quickly
  - Take good data and get good results
  - Don't achieve the highest quality levels



# Implementation Times



Using Fundamentals, the record launch is 9 days after beginning training!



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# Conclusions

TSP it works!

We are satisfying the strategic objectives

- Promote software exports.
- Develop human capital.
- Achieve international standards in process capability.

Implementation

- Fundamentals accelerates TSP and project startup.
- National roll out requires a large support structure.
- We *can* change the world:
  - One country at a time!
  - One company at a time!
  - One project at a time!
  - One developer at a time!



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# Next Steps

Each of us has a responsibility!

- Engineers: Continue to do your best work.
- Early Adopters and Early Majority:
  - Tell others about your success.
- Executives
  - Don't hesitate; do it!
  - Provide the training.
  - Provide the resources.
- Educators
  - Learn TSP and PSP.
  - Teach students disciplined methods.
- SEI
  - Develop the links between TSP and CMMI.
  - Certify TSP organizations



# Contact Information

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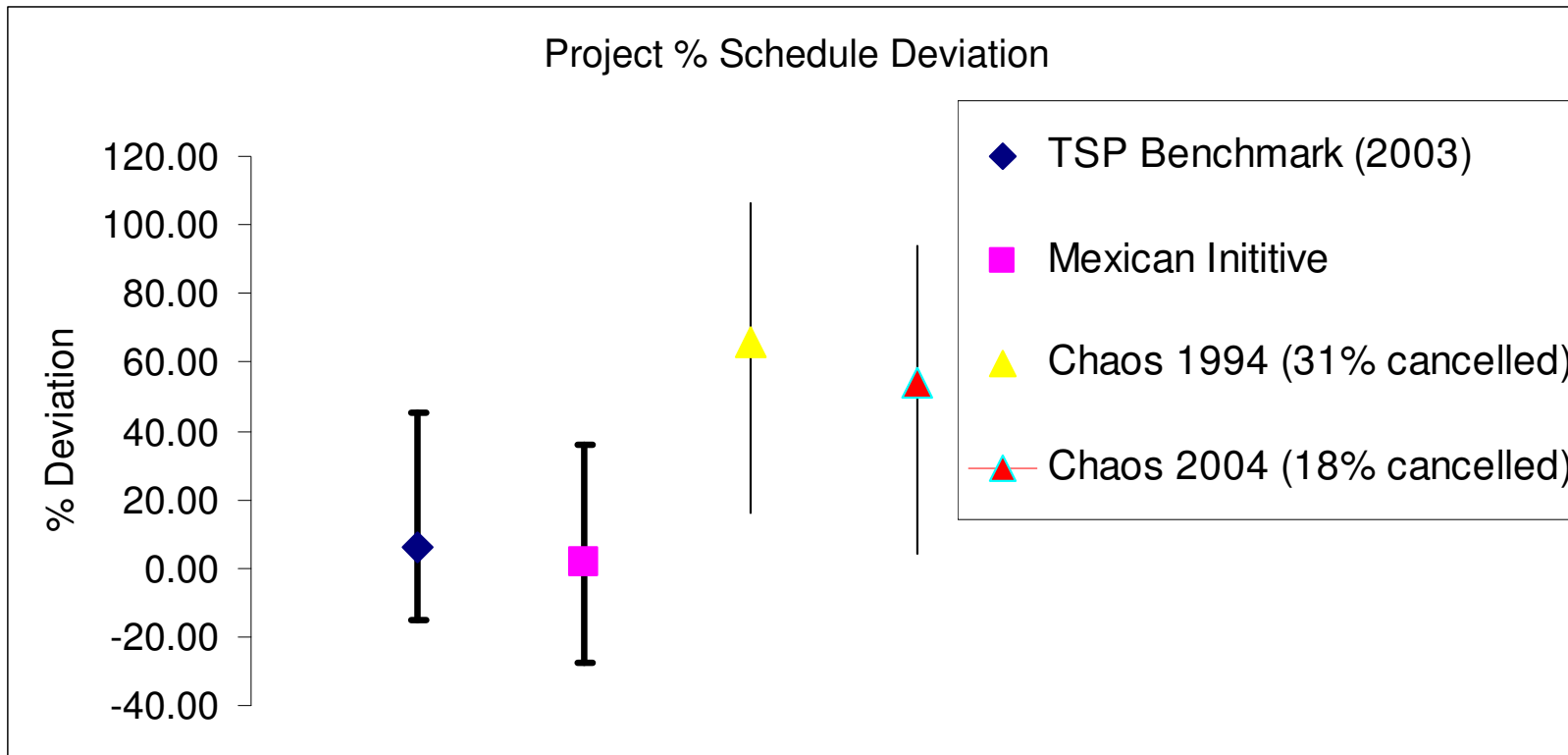
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# Schedule

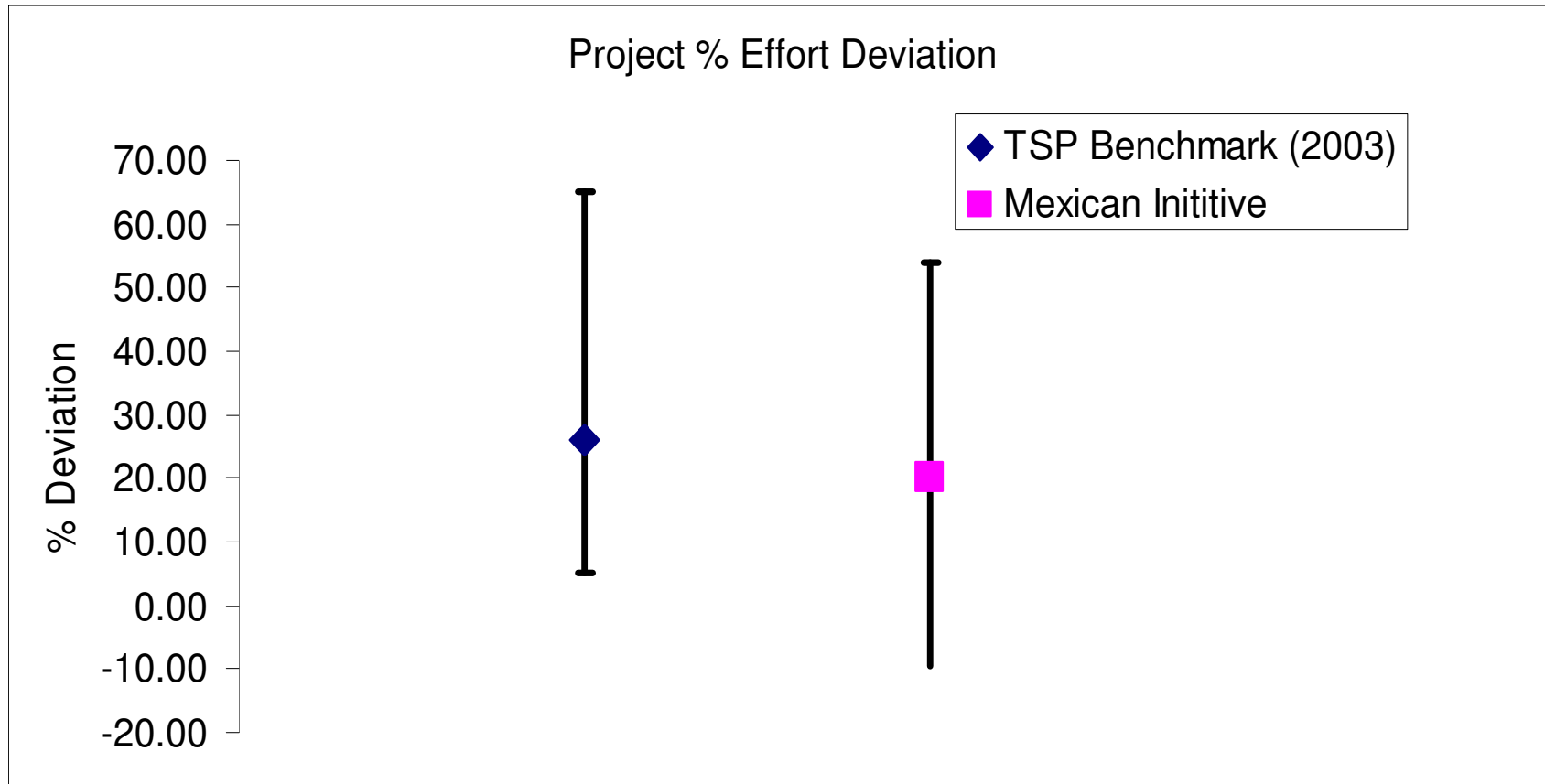


**TSP variation use data range**

**Chaos has no lower bound data, upper bound at 75%**



# Effort



**TSP variation use data range**

**Chaos does not report effort**



# Quality

<i>Measure (TSP)</i>	<i>TSP Benchmark Project Average</i>	<i>Range</i>	<i>Mexican initiative Project Average</i>	<i>Range</i>	<i>Typical Project Average</i>
System test defects (defects/KLOC)	0.4	0 to 0.9	1.7	0.0 to 6.8	15
Delivered defects (defects/KLOC)	0.06	0 to 0.2	0.5	0.0 to 2.2	7.5
System test effort (% of total effort)	4%	2% to 7%	5.93%	0.25% to 26.2%	40%
System test schedule (% of total duration)	18%	8% to 25%	6.20%	2.1% to 26.2%	40%
Duration of system test (days/KLOC)	0.50%	0.2% to 0.8%	5.40%	0.4% to 9.5%	NA
Failure COQ	17%	4% to 38%	15.20%	1.6 to 29.4	50%



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