

# The TSP Story @ Microsoft IT

Microsoft IT



Microsoft's experience using the **Team Software Process<sup>SM</sup>** from the Software Engineering Institute

- Results from a longitudinal study
- Team members' opinions about TSP
- Tips for proceeding with TSP

- Responsible for information infrastructure
- Responsible for internal development
  - 12 independent departments, each focused on a particular business area
  - 6 units are using TSP regularly, others partially or not at all
  - Aligned directly or indirectly under the CIO
  - Many quarterly or 6-month projects

	<b>Non-TSP Projects</b>	<b>TSP Projects</b>
Released On Time	42%	66%
Average Days Late	25	6
Mean Schedule Error	10%	1%
Production Defects/KLOC	1.8	0.5
Sample Size	80	15

# Longitudinal TSP Study

## *Defects in Test and Production*

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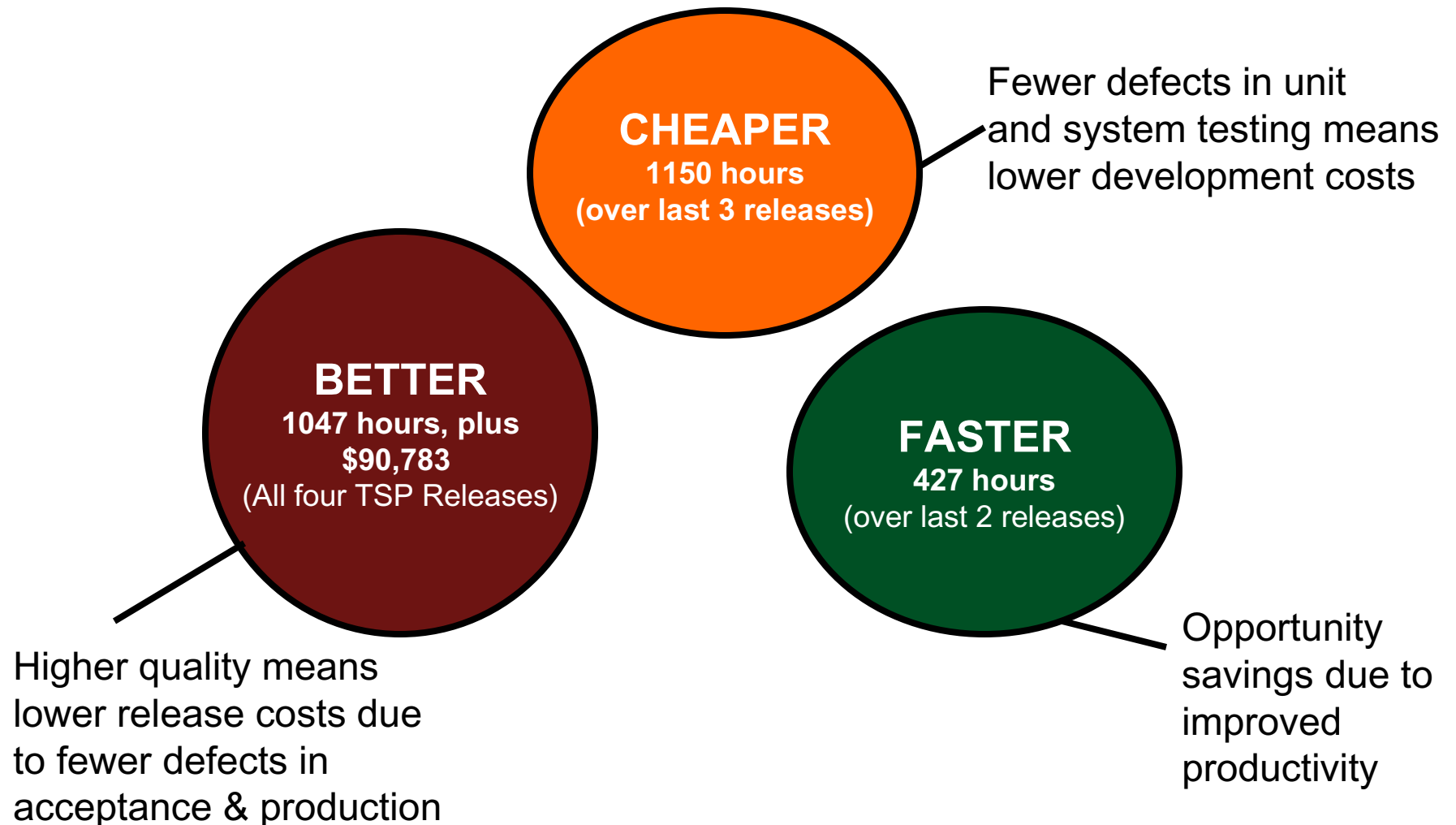
### “IT Config” project

	Non-TSP		TSP			
<b>Release</b>	<b>2.5</b>	<b>3.0</b>	<b>3.1</b>	<b>3.2</b>	<b>3.3</b>	<b>3.4</b>
<b>Size</b>	45,717	6,022	4,027	3,698	7,224	8,462
<b>ST</b>	?	80	10	3	7	1
<b>UAT</b>	?	5	0	0	0	0
<b>Production</b>	?	7	1	0	0	0
<b>Total Defects</b>	855	343	11	3	7	1
<b>ST</b>		13.28	2.48	0.81	0.97	0.12
<b>UAT</b>		0.83	0.00	0.00	0.00	0.00
<b>Production</b>		1.16	0.25	0.00	0.00	0.00
<b>Total Density</b>	18.70	15.28	2.73	0.81	0.97	0.12

# Longitudinal TSP Study

## *Summary of Economic Benefits*

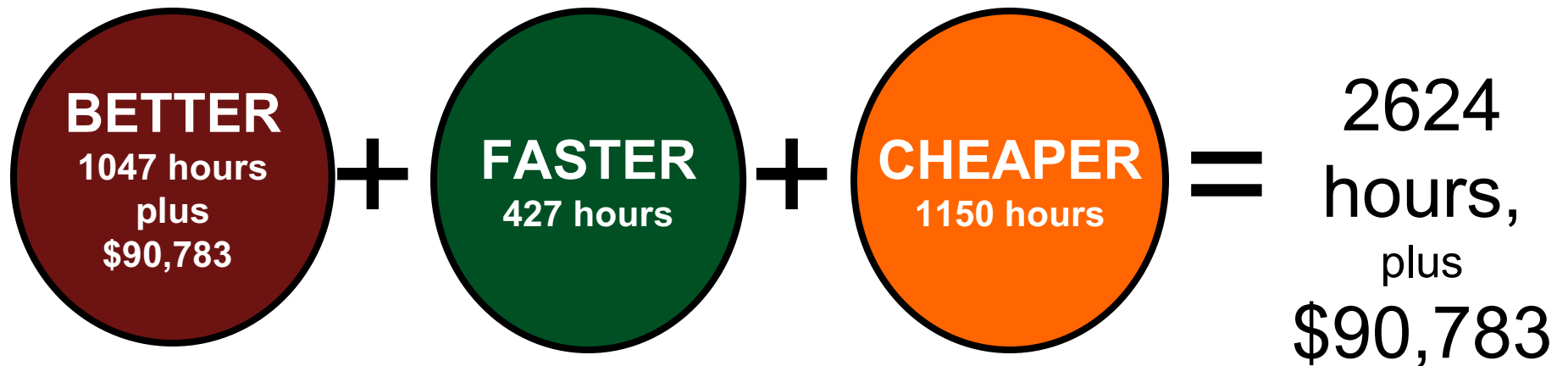
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# Longitudinal TSP Study

## Summary of Economic Benefits

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	€ 20/hr	€ 40/hr	€ 60/hr	€ 80/hr	€ 100/hr
2624 hrs +\$90,783	€178,249	€283,209	€388,169	€493,129	€598,089

Currency calculation on 24-April-2006, €1 = \$1.23

# Longitudinal TSP Study

## *Additional Data*

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- Productivity gains drove scope increases rather than team size reduction
- Customer satisfaction survey result – 9 out of 10 across the board for the last release

Customer Feedback for v3.4 release			
Milestone	Quality	Action Oriented	Holistic Customer Focus
9: Very Satisfied	9: Very Satisfied	9: Very Satisfied	9: Very Satisfied





TSP @ Microsoft Video

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# Bringing TSP to a new department

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- Sharing data
- Build management support for 1-2 pilots
- Train staff on that pilot team
- Launch using an experienced coach
- Take advantage of experienced PSP devs if possible

# Characteristics of successful projects

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- Team members experienced using PSP
- Strong top-down support for TSP
- One-on-one coaching
- Thorough postmortems

# Characteristics which tend to hinder success

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- Vendor coach who disappears after launch
- Overburdened coaches who don't have time for 1:1 coaching
- Projects which span multiple geographic regions (recommend to launch separately)
- Team leaders who don't believe in PSP
- Lack of management support

# Handling geographically separated teams

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- Pre-launch strategy to separate work
- Conduct part of launch together (using video conferencing or similar means)
- Construct detailed plans separately
- Track progress both together and separately

# Launching and tracking small projects

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- 1-2 person projects don't require a large launch
- Coach-assisted planning session
- Take advantage of team data

- Identify & train instructors in your organization
- Train project teams soon before their first project launch
- Encourage vendor organizations to train their own employees
- Analyze project data and conduct follow up trainings as necessary

# Contact Information

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# TSP Longitudinal Study

## Supporting data for “Better”

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BETTER					
Description	3	3.1	3.2	3.3	3.4
Size (LOC)	6022	4047	3696.3	7223.7	8462.3
Actual Acceptance Test Defects	9	0	0	0	
Projected Acceptance Test Defects (without TSP)		6	5.5	10.8	12.6
Acceptance Test Effort (30 person-hours per defect)		180	165	324	378
Actual Production Defects Delivered	10	1	0	0	0
Projected Production Defects (without TSP)		5.7	6.1	12	14.1
Production Cost based on historical data		16026	20839	24831	29088.2
<b>Acceptance Test Savings (person-hours)</b>					<b>1047</b>
<b>Savings through reduced production defects</b>					<b>\$90,783.10</b>

### Sample Calculation

Size of 3.0 = 6022 LOC  
 Size of 3.1 = 4047 LOC  
 Actual UAT Defects of 3.0 = 9  
 Projected UAT Defects of 3.1 =  $9/6022 * 4047 = 6$   
 Actual UAT Defects of 3.1 = 0  
 Defects Reduction in 3.1 = 6  
 Dollar Benefits in 3.1 = Defects Reduction in 3.1 \* Cost per Defect

**Key Takeaway: Eliminating UAT and Production defects drove significant soft dollar savings**

Production Cost per Defect in FY05 = \$3,395/Defect  
 Production Cost per Defect in FY06 = \$2,070/Defect

# TSP Longitudinal Study

## Supporting data for “Faster”

Microsoft IT

FASTER			
Description	3.2	3.3	3.4
Code Productivity (LOC per Hour)	13.7	19.2	24.9
Actual code effort in task hours	269.3	375.7	339.9
Projected code effort based on actual size		526.3	616.5
Task hour effort saved ( <b>Projected – Actual</b> )		150.6	276.6
Person-hour effort saved (19 task hrs per 40-hour week)		317.1	582.4
<b>Total person-hours saved due to productivity improvement in versions 3.3 and 3.4 alone</b>		<b>899.43</b>	

### Sample Calculation

Size of 3.2 = 3696 LOC  
 Size of 3.3 = 7223 LOC  
 Actual Effort of 3.3 = 375.7  
 Projected Effort of 3.3 =  $7223/13.73 = 526.30$   
 Effort Saved in 3.3 =  $526.3 - 375.7 = 150.6$

**Key Takeaway: Teams continue improving through TSP team building and continually improving processes (e.g. code productivity increased 81%)**

# TSP Longitudinal Study

## Supporting data for “Cheaper”

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CHEAPER				
Description	3.1	3.2	3.3	3.4
Total COQ/KLOC	133.4	120.82	63.61	62.47
Projected COQ based on actual project size		492.93	963.34	1128.51
Actual COQ		446.6	459.5	528.6
Task hour effort saved		46.33	503.84	599.91
Person hour effort saved (19 task hrs per 40 hr week)		97.54	1060.72	1262.97
<b>Total person-hour benefits due to COQ reduction in versions 3.2 to 3.4</b>	<b>2421.22</b>			

### Sample Calculation

Size of 3.2 = 3696 LOC  
 Total COQ/KLOC in 3.1 = 133.36 hours  
 Projected COQ/KLOC in 3.2 =  $133.36/1000 * 3696 = 492.93$   
 Actual COQ in 3.2 = 446.6  
 Reduction in COQ Effort = 46.33 hours

**Key Takeaway: Better reviews and inspections drove down the failure and repair costs**