TSP-PACE SM an Experience Report

TSP Symposium 2014

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SM Team Software Process, TSP, Personal Software Process, and PSP are service marks of Carnegie Mellon University

Agenda

- Background
- TSP-PACE Overview
- On-site Evaluation Process
- Summary of Results
- Conclusions

Background

Initial Objectives for the Method

- Evaluate not only process compliance, but also training and performance (project & product)
  - Data based evaluation
- Be able to evaluate an organization that is just starting to implement TSP (i.e. one project) as well as an organization that have TSP experience and many projects
  - Very important for Mexican Government, so it is possible to "certify" that funds given to implement TSP were well spent
- Easy for a customer to know " TSP coverage" in the organization
- Don't use "organizational levels"
- A lot cheaper than other evaluations
- Be able to create a National Database

Timeline

Date	Event
Jan. 2008	•Sarasota meeting
2009	•Version 1 of TSP-OEC (Organizational Evaluation and Certification) •Trial/experimental pilots
Feb. 2010	•First full pilot (TSP-OEC v1)
2012-2013	•Version 2 of TSP-OEC •Three pilots
Sept. 2013	•TSP-PACE (Performance And Capability Evaluation)
2014	•Nine TSP-PACE evaluations

TSP-PACE Overview

PACE Considers Three Evaluation Units

Evaluation can be performed in three ways.

- Evaluation of individuals
- Evaluation of processes
- Evaluation of products

Each method has strengths and weaknesses.

TSP-PACE uses all three.

Evaluate Capability, Performance, and Outcomes

- Team Members
  - Know how to use proper methods
  - Know how to use data
- Process
  - An effective Process has been defined and measured
  - The defined process has been planned, used faithfully, and tracked with high quality data
- Product
  - Committed products are produced with few defects
  - Customers are satisfied with the results

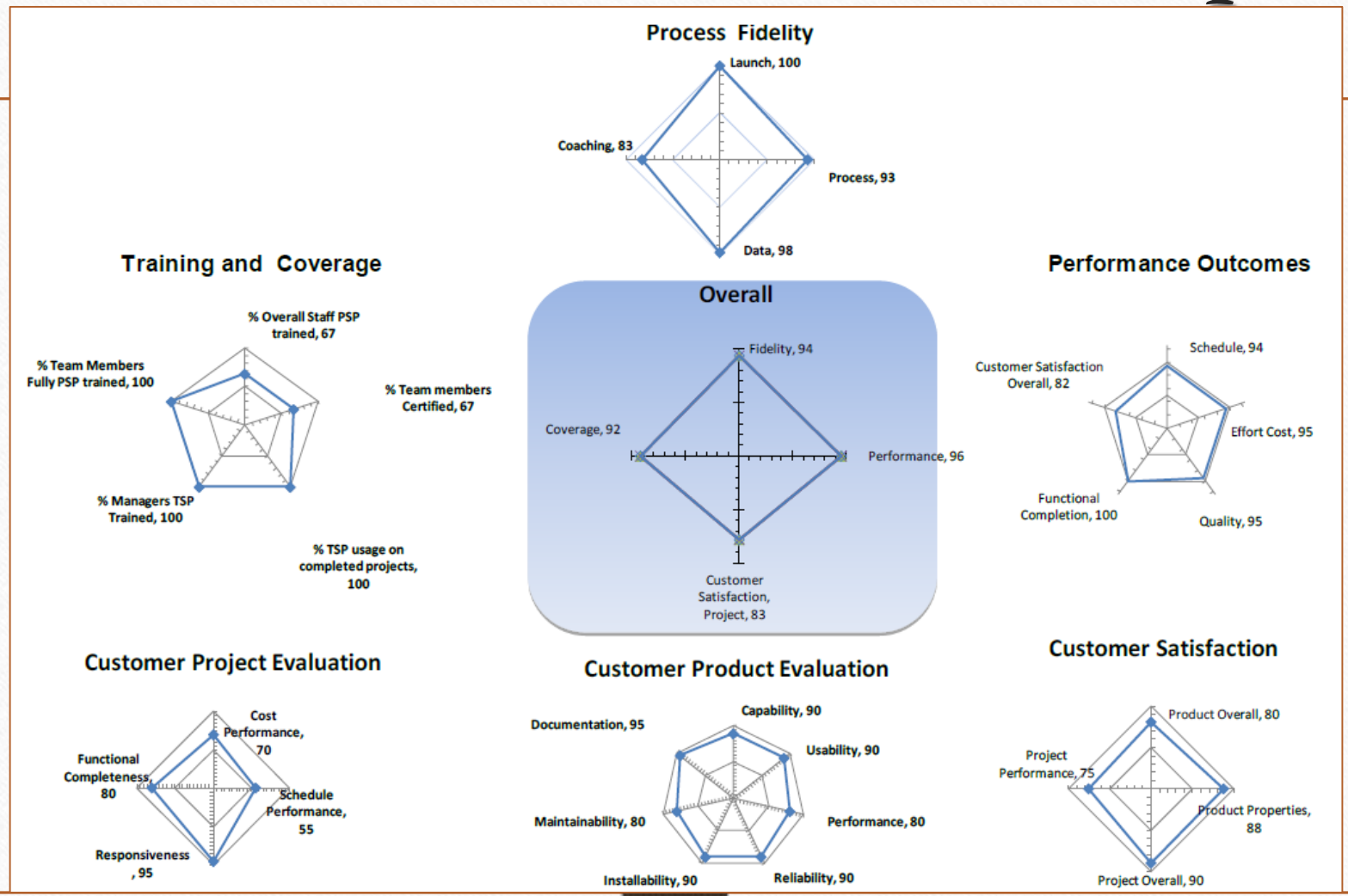
The Evaluation Criteria

Good results are likely if the teams consistently

- Are properly trained
- Come to a common understanding of the project
- Negotiate commitments with management
- Receive good coaching
- Collect the necessary data
- Use the data to manage their projects

When the organization's teams can provide the required data for a profile, they receive the certificate and a report summarizing the key facts.

Generate the Profile and a Report



On-site Evaluation Process

Previous (1/3)

- Check data
  - Projects
  - Products
  - Quality
  - Time
  - Plan vs Actual

Previous (2/3)

- Get issues
  - Delays
  - Weekly meetings
  - Size Estimation
  - Effort Estimation
  - Work load

Previous (3/3)

- On-site plan
  - Roles,
  - Interviews schedule
- Check plan
- Define questioner
  - Specific questions
  - Issues

On-site Interviews (1/4)

- Overview
- Personal interviews
  - Coach
  - Leader
  - Team members
- General comments

On-site Interviews (2/4)

- Coaching plan
- Weekly meetings
- Processes
- Time and size estimation
- Task hours
- Time recording
- Defects recording
- Delays
- Scripts
- Earned value

On-site Interviews (3/4)

- In the beginning
  - lack of memory on events
  - nervousness on questions
  - short answers
  - fear to give incorrect answers

On-site Interviews (4/4)

- After some evaluations
  - Have a team interview at the beginning to talk about projects details
  - Ask team members to get their personal computers to the interview

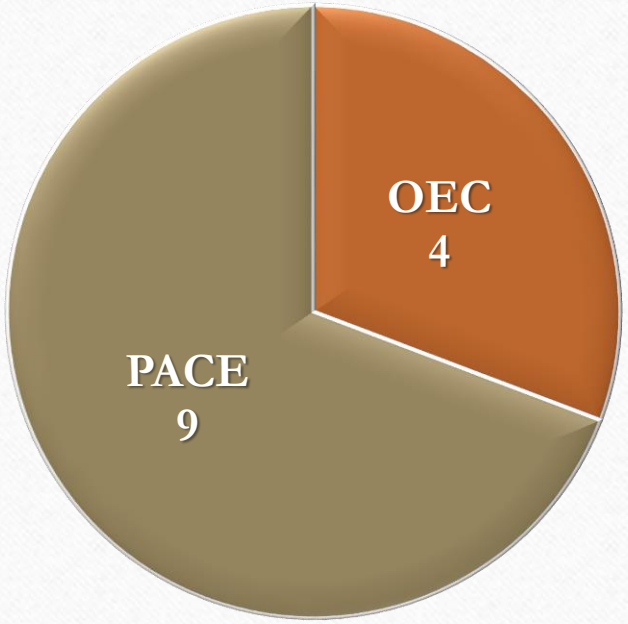
General comments from participants of on-site evaluations

- "We had a launch rehearsal before the launch and it helped a lot"
- "Before the second launch, we had some days to review problems on the first launch and that helped us a lot"
- "The use of the dashboard was so difficult at the beginning, so we didn't record times accurately, we used tasks instead of processes"
- "The second launch was so much easier"
- "We didn't have weekly meetings until the third week"
- "Having the owner of the company as a team leader was difficult to manage"
- "We had excellent feedback from the checkpoint, it helped us so much"

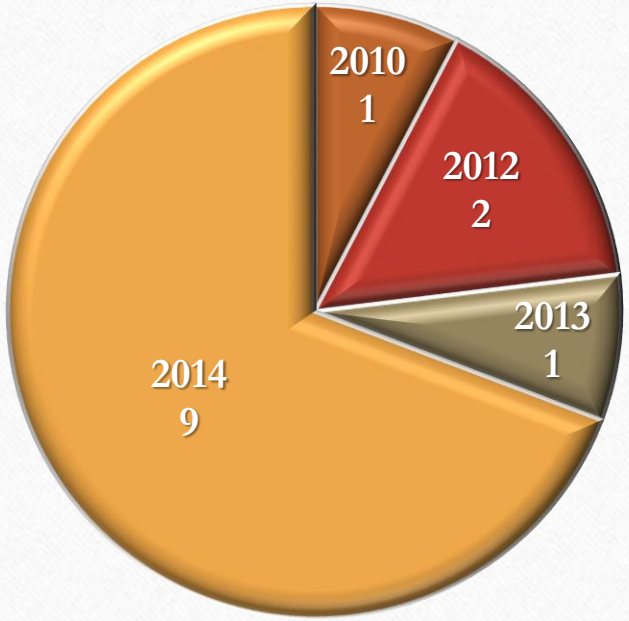
Summary of Results

Some Demographics

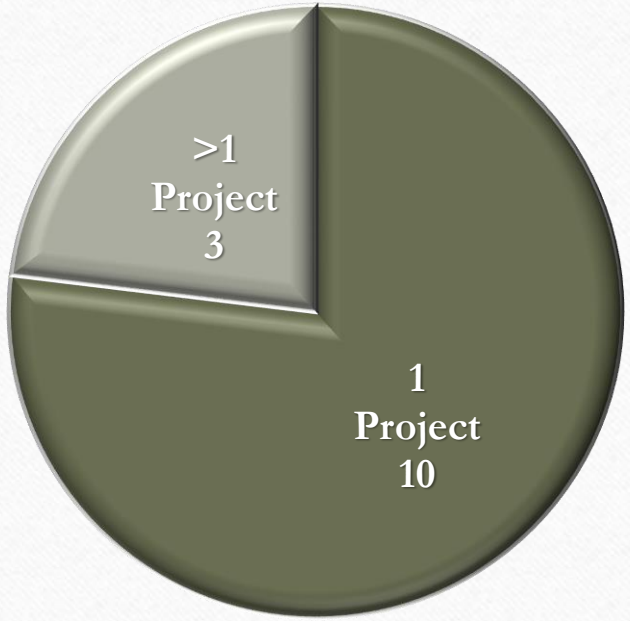
Number of evaluations



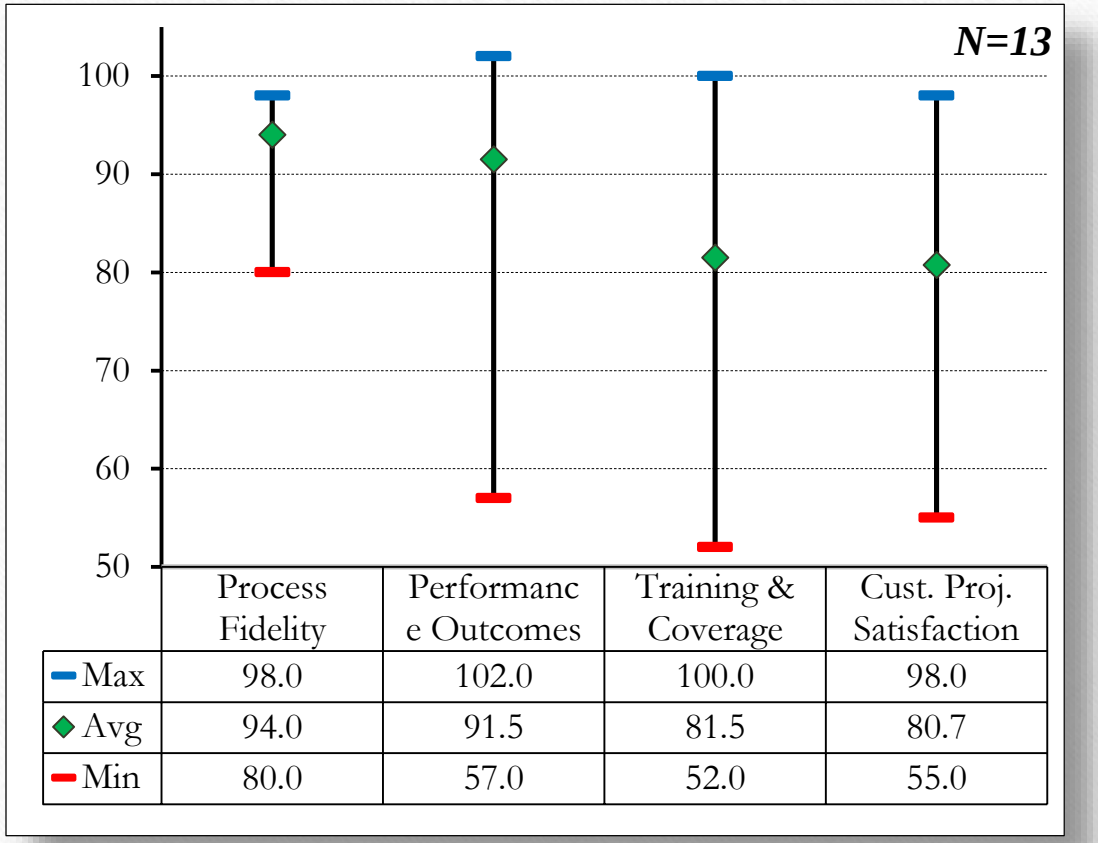
Year of evaluation



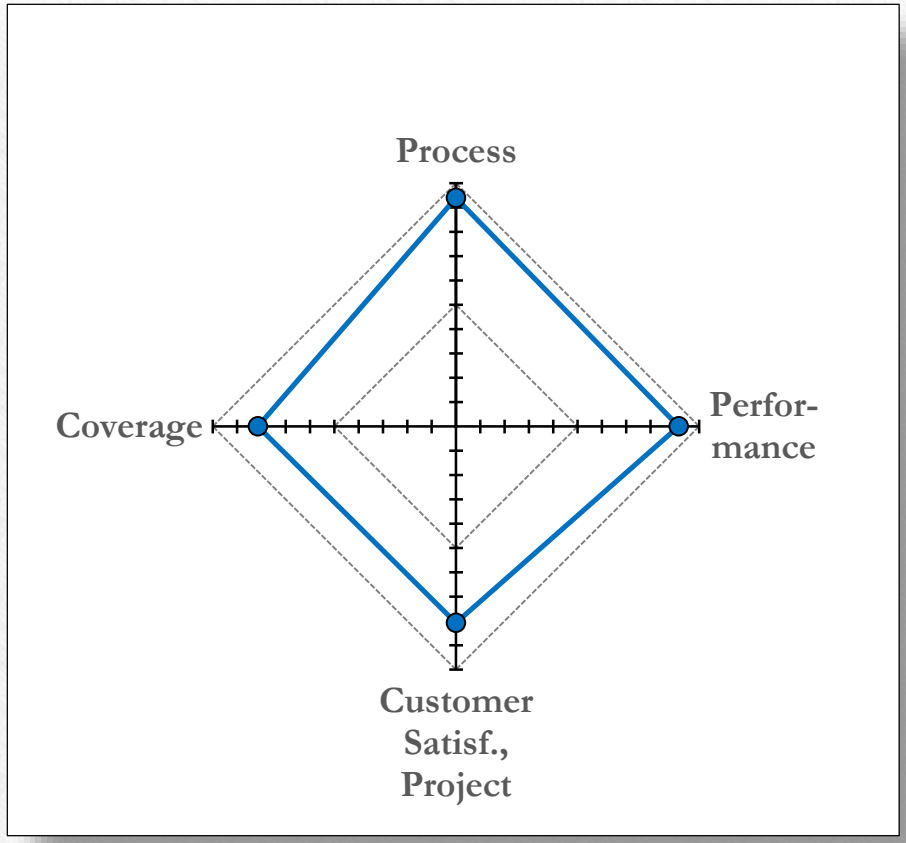
Size of Eval. (# of proj.)



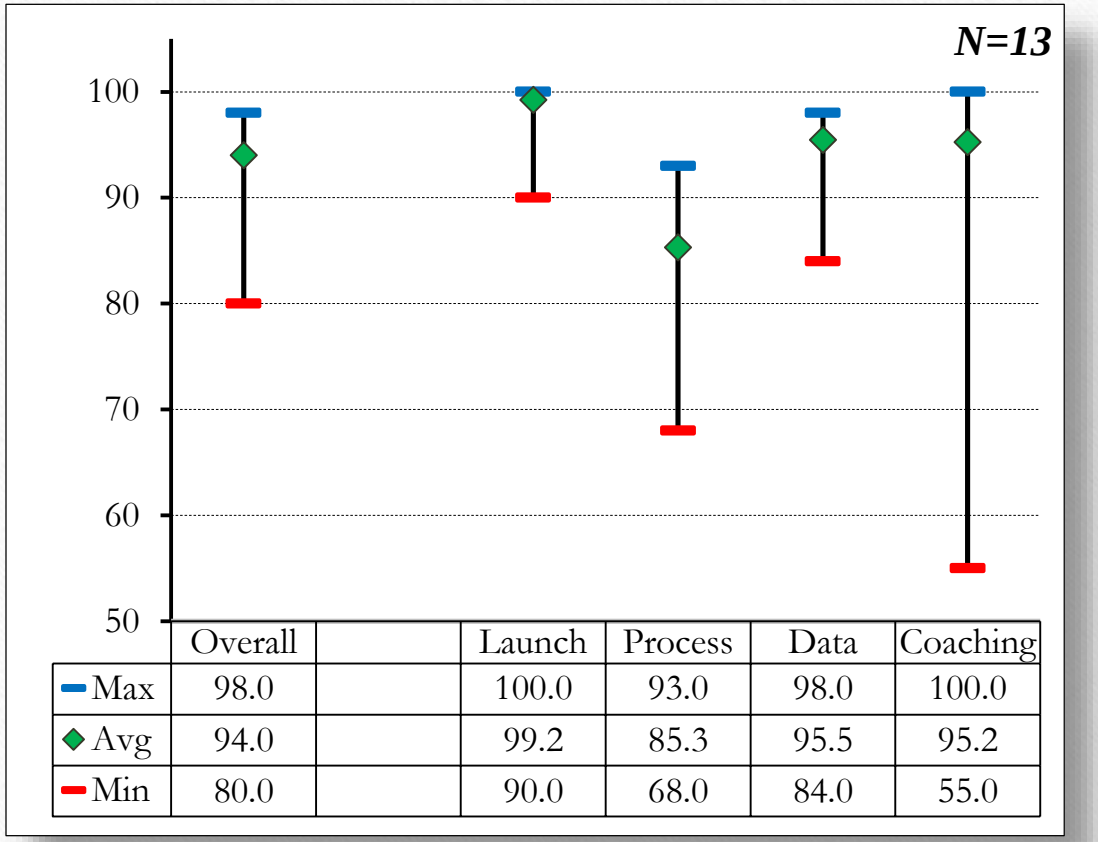
Overall PACE Evaluation



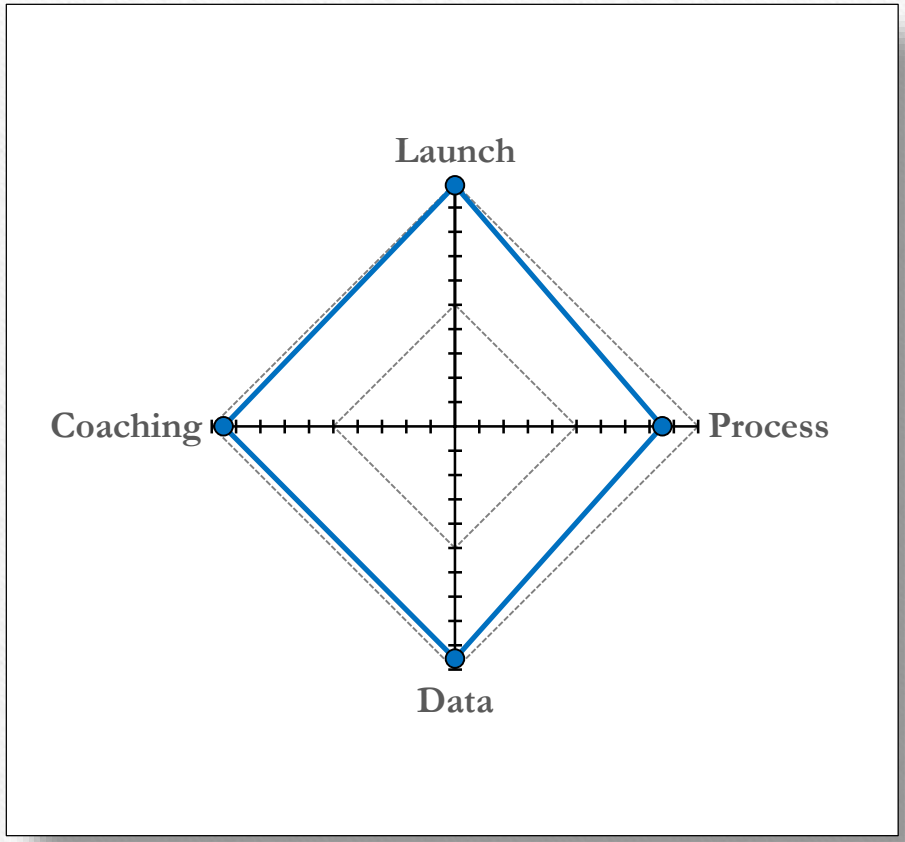
	Process Fidelity	Performance Outcomes	Training & Coverage	Cust. Proj. Satisfaction
Max	98.0	102.0	100.0	98.0
Avg	94.0	91.5	81.5	80.7
Min	80.0	57.0	52.0	55.0



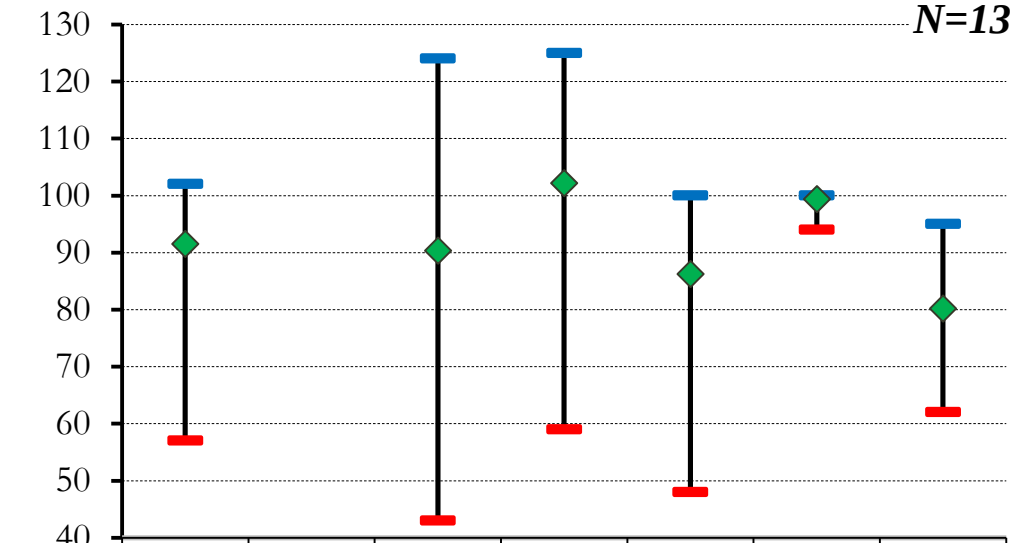
Process Fidelity



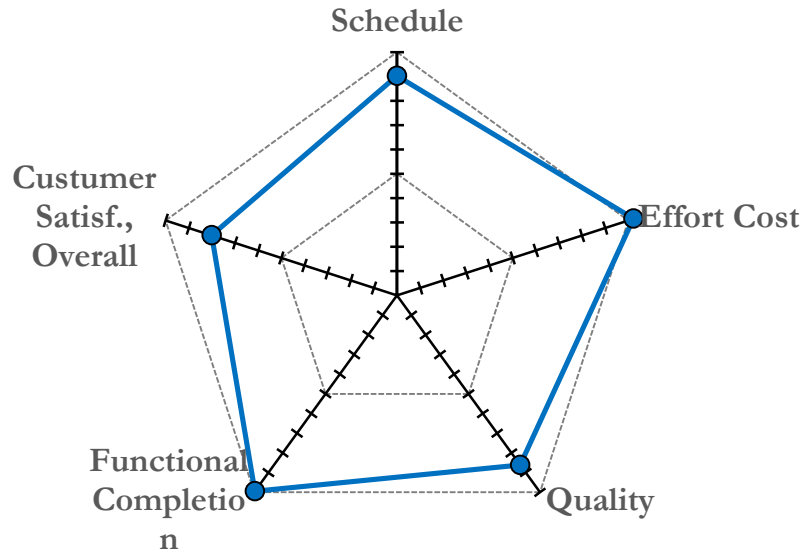
	Overall		Launch	Process	Data	Coaching
Max	98.0		100.0	93.0	98.0	100.0
Avg	94.0		99.2	85.3	95.5	95.2
Min	80.0		90.0	68.0	84.0	55.0



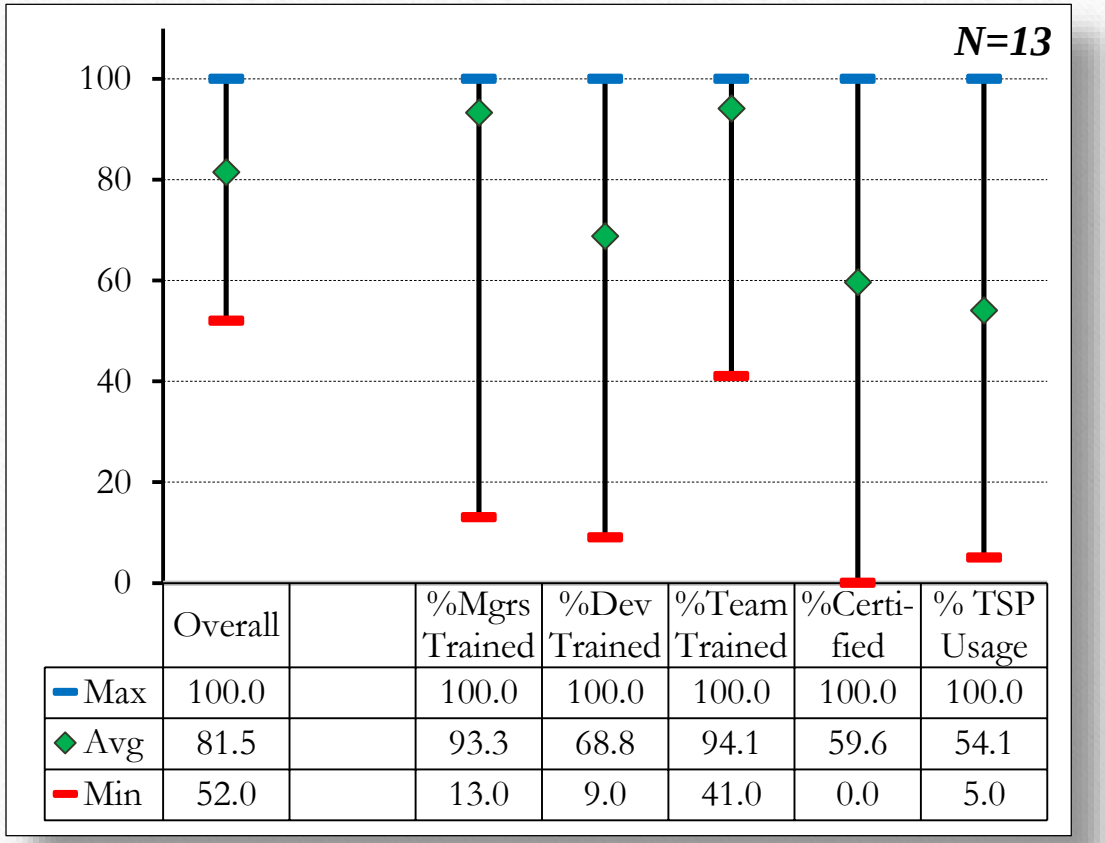
Performance Outcomes



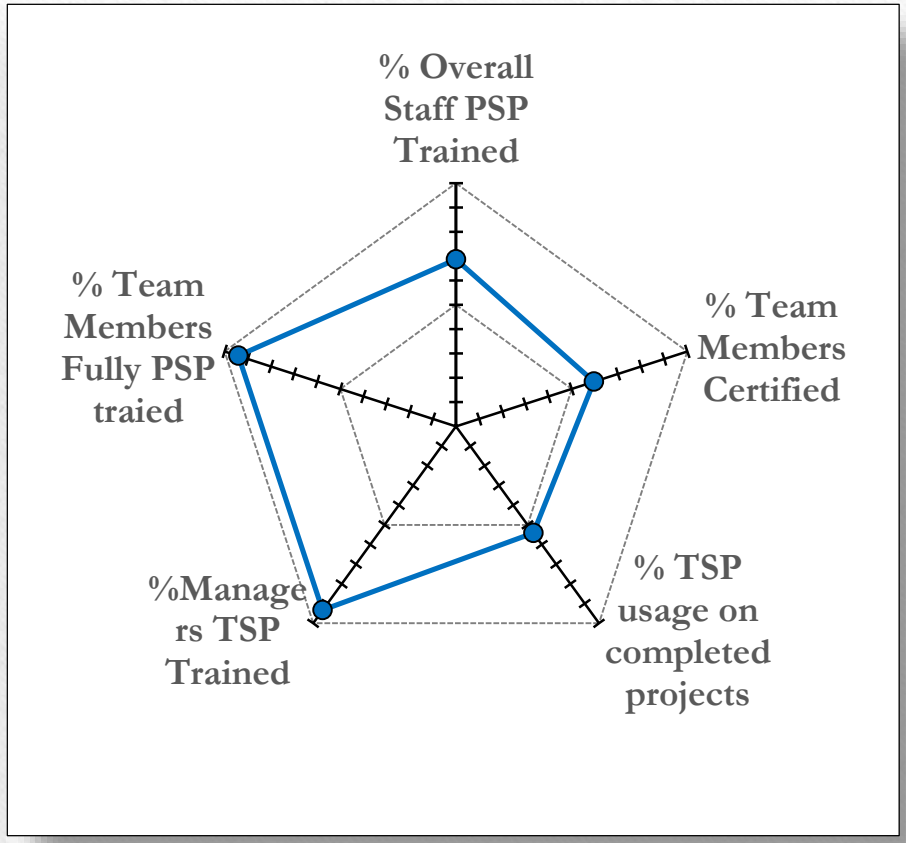
	Overall		Sche-dule	Cost	Quality	Func-tion	Custo-mer
Max	102.0		124.0	125.0	100.0	100.0	95.0
Avg	91.5		90.3	102.2	86.2	99.4	80.2
Min	57.0		43.0	59.0	48.0	94.0	62.0



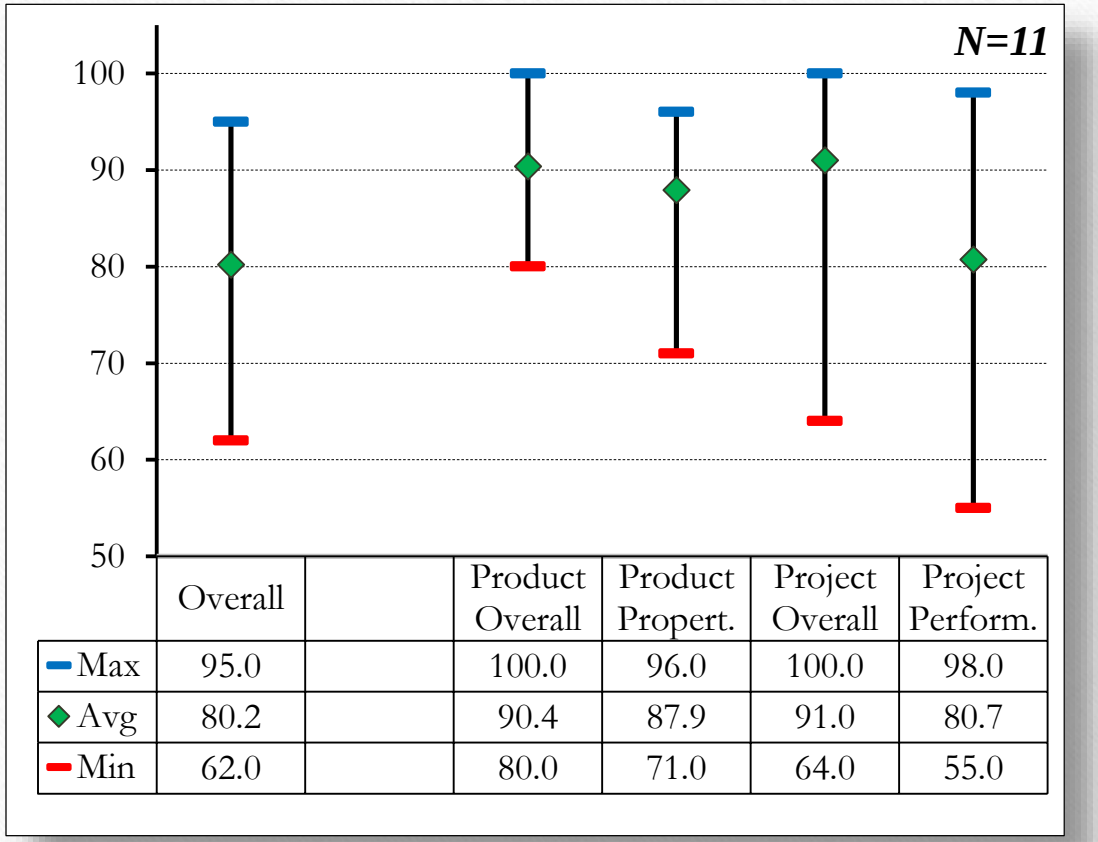
Training and Coverage



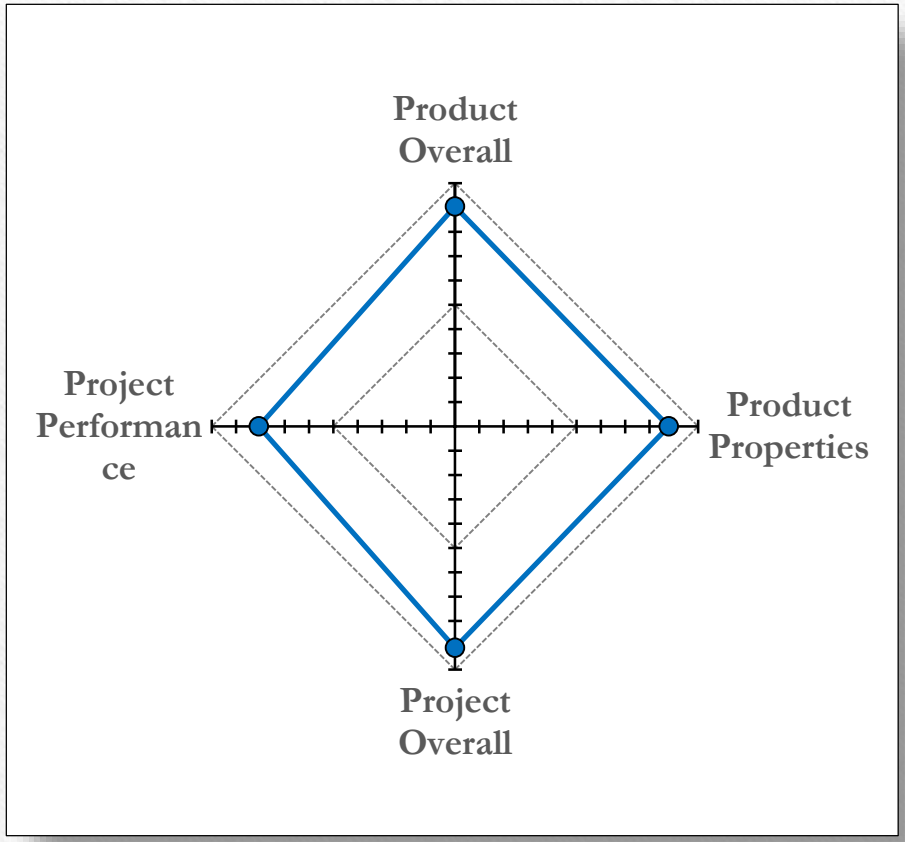
	Overall		%Mgrs Trained	%Dev Trained	%Team Trained	%Certi-fied	% TSP Usage
Max	100.0		100.0	100.0	100.0	100.0	100.0
Avg	81.5		93.3	68.8	94.1	59.6	54.1
Min	52.0		13.0	9.0	41.0	0.0	5.0



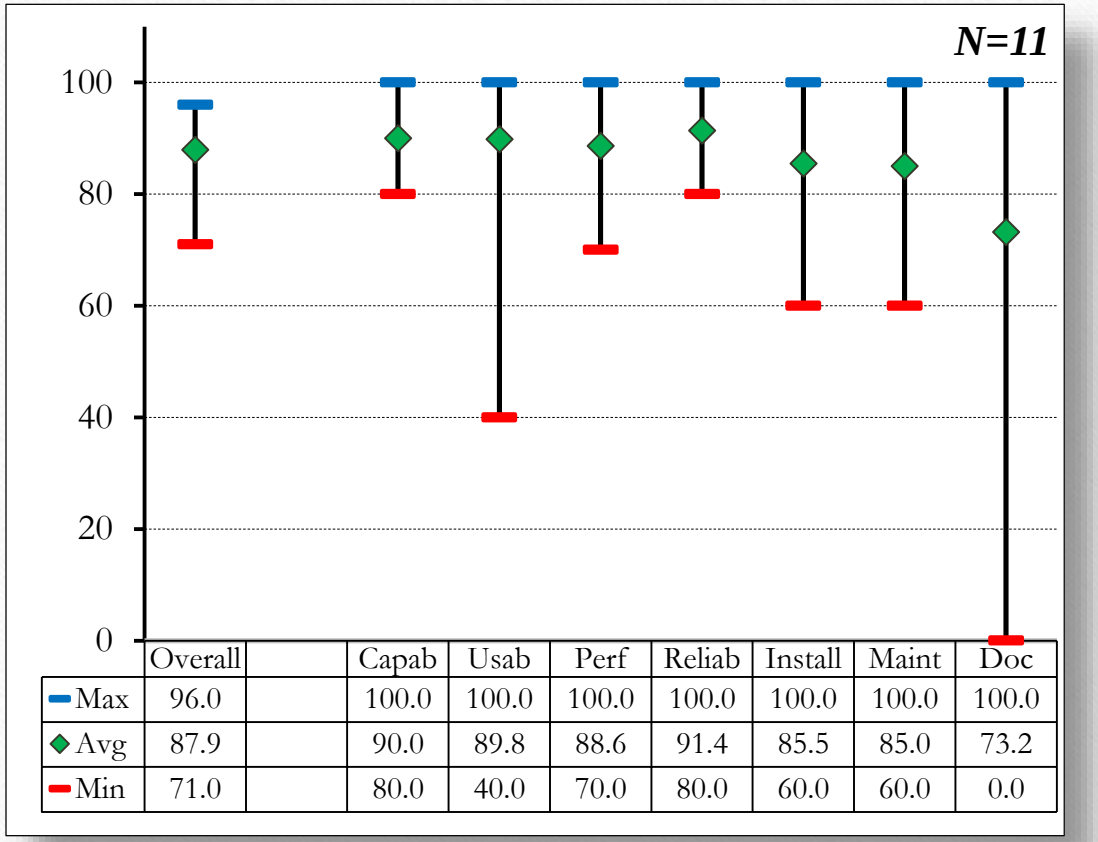
Customer Satisfaction



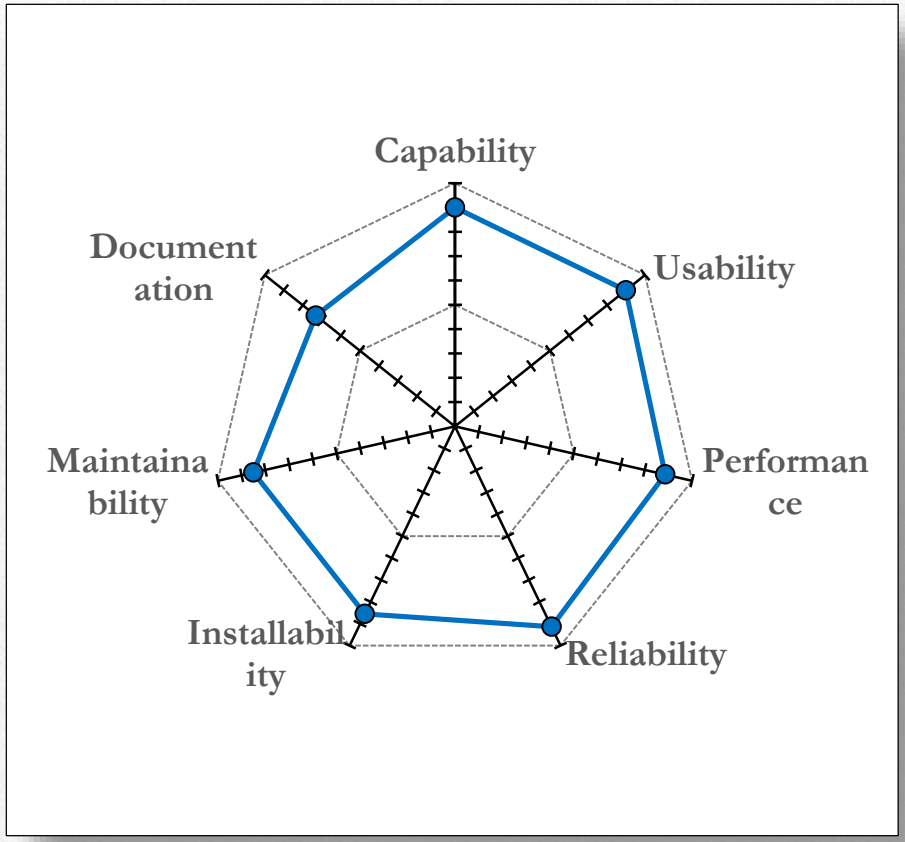
	Overall		Product Overall	Product Propert.	Project Overall	Project Perform.
Max	95.0		100.0	96.0	100.0	98.0
Avg	80.2		90.4	87.9	91.0	80.7
Min	62.0		80.0	71.0	64.0	55.0



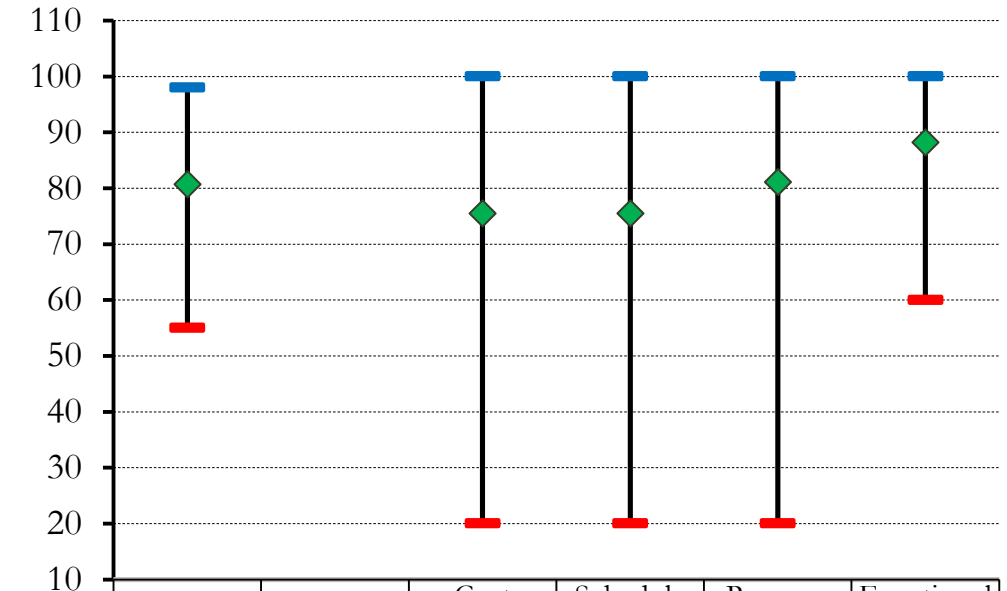
Customer Product Evaluation



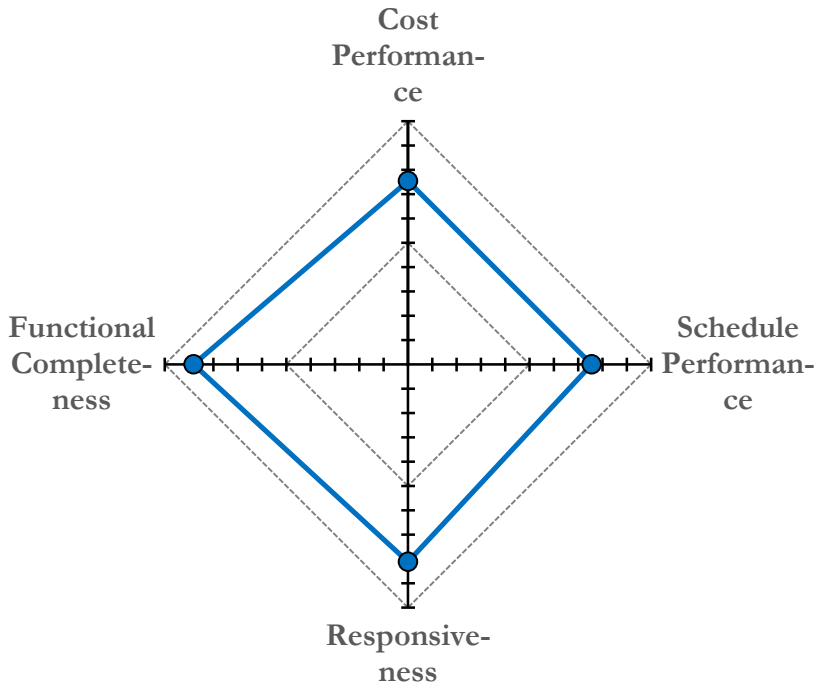
	Overall		Capab	Usab	Perf	Reliab	Install	Maint	Doc
Max	96.0		100.0	100.0	100.0	100.0	100.0	100.0	100.0
Avg	87.9		90.0	89.8	88.6	91.4	85.5	85.0	73.2
Min	71.0		80.0	40.0	70.0	80.0	60.0	60.0	0.0



Customer Project Evaluation



	Overall		Cost Perform.	Schedule Perform.	Respon-siveness	Functional Complet.
Max	98.0		100.0	100.0	100.0	100.0
Avg	80.7		75.5	75.5	81.1	88.2
Min	55.0		20.0	20.0	20.0	60.0



Customer Satisfaction Correlations

Variable 1	Variable 2	Correlation (r)	Significance
Comp*: Overall Satisfaction	CE: Functional Completeness	0.7532	0.0074
CE**: Project Satisfaction	CE: Usability	0.8908	0.0002
	CE: Maintainability	0.8065	0.0027
	CE: Functional Completeness	0.7642	0.0062
	Comp: Product Properties	0.7796	0.0047
CE: Product Satisfaction	NONE	-	-
Comp: Project Performance	CE: Product Performance	0.9002	0.0002
	CE: Maintainability	0.7926	0.0036
	Comp: Product Properties	0.7433	0.0087

* Comp = Composite (average)

** CE = Customer Evaluation

Other Variables that Correlate

Variable 1	Variable 2	Correlation (r)	Significance
Overall Performance (composite)	Schedule Performance	0.7381	0.0040
Functional Completeness	% Team Members Fully PSP Trained	0.9456	0.0000

Conclusion

Conclusion

- We are just starting… more data will permit even better analysis and correlations
- Method have proved to be effective with varying situations:
  - Very small evaluations (one team of 2) up to medium evaluations (6 projects & one team of 15)
  - From full software cycle projects to only requirements projects
  - From regular TSP to functional TSP
  - Using external coaches to having internal coaches
  - Organizations just starting (first pilot project only) to organizations using TSP for years
- We have to see how well performs on very large installations
- Method is cheaper than other evaluations, but we still have to automate more parts of the process to make it cheaper
- We are in a good path to create a National Database (or World Database?)

Future Work

- Automate data gathering and sanitizing
- Automate the extraction process to feed the National Database
- Analyze not only evaluation data, but the project by project detailed data

Thank you

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