

Supplier Performance Management

Implementing a process to select a single
supplier and manage it based on actual
performance

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- **Short intro:**

- **Sogeti Nederland BV** senior consultant Software Metrics
- **ISBSG** president
- **NESMA** board member
- **NESMA** working group chair COSMIC
- **NESMA** working group chair Benchmarking
- **COSMIC** IAC member



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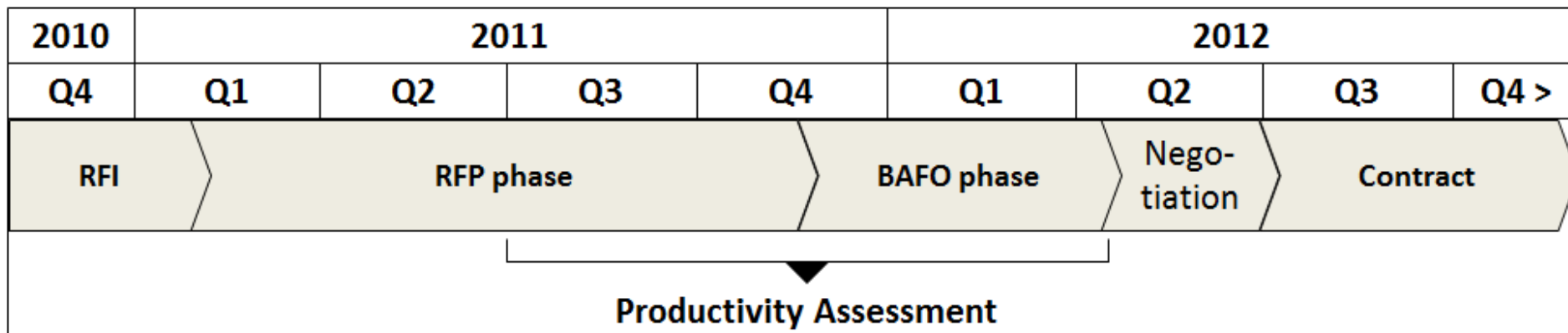
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New trend

- **Outsource the complete IT function to one single supplier**
 - Select the best possible supplier (based on quantitative data)
 - Agree on cost reduction targets
 - Measure the supplier's performance over the contract period
- **Supplier Performance Management (SPM)**
 - Best practice to select the best supplier
 - Implementing a process to measure the suppliers performance
- **Case: Large Telecom Provider in the Netherlands**

Procurement phases

- **Typical phases for selecting a single supplier**
 - Request for Information: Collect written information about the capabilities of the various suppliers
 - Request for Proposal: Invitation to submit a proposal for the contract
 - Best-and-final-offer: Part of the RFP phase in which the best technical and financial offers are made
 - Negotiations and signing of the contract



Supplier Performance Management SPM

Three phases:

1. Select the best supplier

- Based on objective selection model (quantitative)
- Based on supplier historical project data

2. Implement the ~~SPM~~ process

- Baseline the productivity
- Implement procedures, templates, standards, etc.
- Training/communication
- Implement Management reporting mechanisms

3. Carry out the SPM process

- SPM becomes business as usual

Why Productivity metric added?

- **Objective selection criteria**
- **Supplier willingness to show their transparency**
- **Basis for productivity baseline**
- **Insight in quality level**
- **Negotiations for year on year cost reduction**
- **Relation to continuous improvement steps**

Phase 1: Select the best supplier

- **RFI phase: Inform potential suppliers**
 - Selection is based on productivity/quality
 - Suppliers should be willing and capable of sharing real data
- **RFP phase: Questions in RFP**
 - Submit historical data of 6 completed projects
 - Provided Template historical data should be used
 - Criteria with respect to UoM, size range, representativeness
 - What productivity improvements are expected the next 5 years?
 - What will you do to improve the productivity over time?
 - How will you invest in continuous improvements?

Historical Project Data form (1)

Historical Project Version 1.0

Project Information

Supplier name:
Project Name:
Project ID:

Project Description

Form submitted by:
Responsible manager:

Project End date:

	Name	Size (FP)	Defects (systems test)	Defects (total)	Effort (person hours)	(KPN) Application Name
Team 1:	Team 1	378	35	39	8183	Application XYZ
Team 2:						
Team 3:						
Team 4:						
Total:		378	35	39	8183	

Criteria historical project data

- **Minimum of 6 representative projects**
- **Minimum of 3 carried out in the clients organization (when possible)**
- **Current scope of technology domain**
 - Generic software, e.g. mainframe/Cobol environments
- **Measured in IFPUG 4.x or NESMA 2.1**
- **Size range: 300 FP – 1000 FP**
- **All data fields have to be filled**
- **Response is limited to the provided template**

Model to assess productivity

- **Constructed by metrics desk,**
- **Reviewed by RFP assessment team**
- **Not communicated to suppliers beforehand, to avoid tweaking the data**
- **Tools used:**
 - ISBSG datasets for 3GL and 4GL projects
 - Selected from the ISBSG 'New developments and enhancements' repository R11
 - QSM SLIM tooling: Productivity index and QSM trendlines

The model

- **Characteristics:**

- Degree of openness and compliancy
- Completeness and cohesion of submitted data
- Productivity benchmark against each other and industry
- Delivered Quality
- During the RFP phase the data will be considered as correct, but will be checked on reality

- **The 3 test criteria:**

- Compliancy value (10%)
- Reality value (30%)
- Productivity / Quality value (60%)

Compliance value (cv)

- Supplier starts with 10 points
- For every compliance violation: -2 points
- Weight: 10%
- Results:

Supplier	Compliance Value
Supplier A	0
Supplier B	0
Supplier C	4
Supplier D	0
Supplier E	0

Reality value (rv)

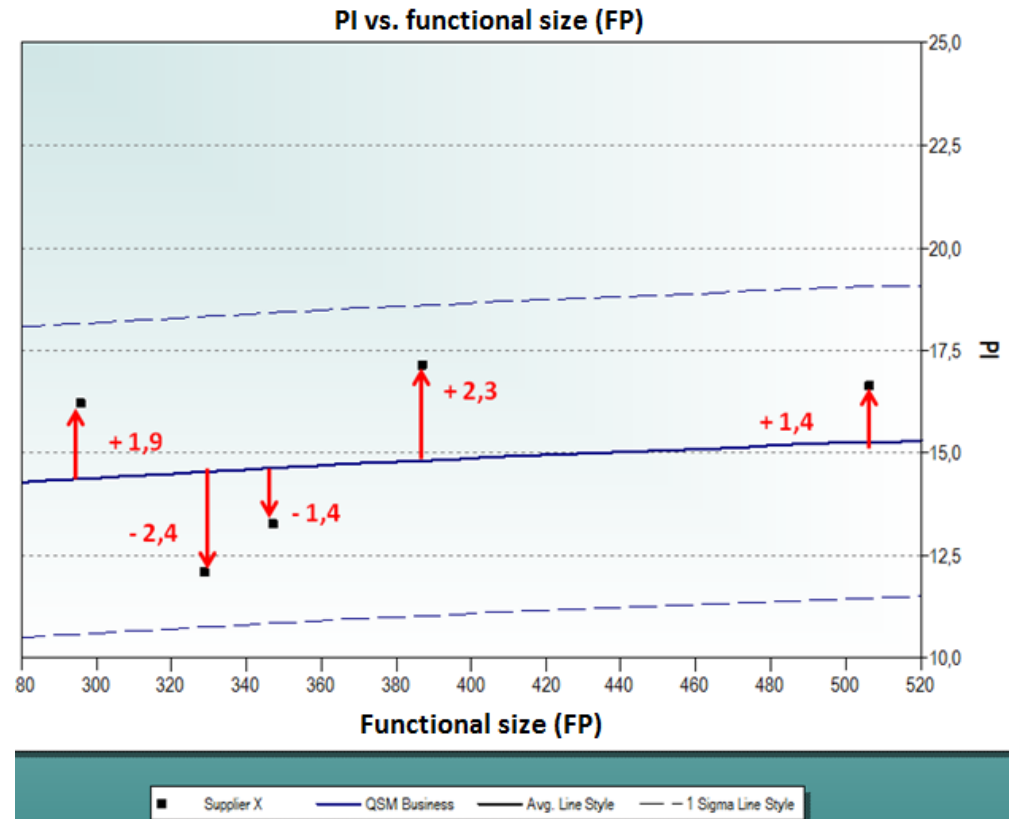
- **Project data that is too productive is not believed, unless a good explanation is given**
- **Two criteria:**
 - PDR criterion: Project is assessed unrealistic when the PDR is lower than the P25 of the relevant ISBSG dataset selected
 - PI criterion: Project is assessed unrealistic when the PI is higher than the QSM trendline + 2 standard deviations
- **The supplier starts with 10 points for the reality value**
- **For every project assessed unrealistic: -2 points**
- **The unrealistic projects are excluded from the analysis**

Productivity/Quality value (p/q value)

- **The productivity and quality of the project is analyzed**
- **Productivity assessment of the projects**
- **PI score:**
 - average distance of the suppliers' submitted project PI's to the QSM trendline
 - Supplier with highest PI score: 10 points, 2nd: 8 points, etc.
- **PDR score:**
 - the average difference between PDR and ISBSG median PDR
 - Supplier with highest PDR score: 10 points, 2nd: 8 points, etc.

PI score

- QSM business trendline
- Measure the distance between the project and the trendline
- **Example:**
 - Sum: +1.8
 - Avg: $+1.8/5 = 0.36$
 - If this is the highest PI score of the suppliers: 10 points



PDR score: dataset selection

- **ISBSG dataset selection 3GL**

- Data quality A or B (C and D excluded)
- Count approach IFPUG 4.x or NESMA 2.x
- Year of delivery > 1999
- Language type = 3GL

- **Result:**

- 221 projects
- Normalized to requested project lifecycle (PDR -25%)
- Median PDR: 8.6 hours/function point

PDR score example

ID	PDR (h/FP)	PDR ISBSG median	PDR score
7	5,9	8,6	-2,7
8	6,0	8,6	-2,6
9	6,9	8,6	-1,7
11	6,2	8,6	-2,4
12	7,3	8,6	-1,3
Average:			-2,1

- **Project ID's 7-12 are of 1 supplier**
- **All 3GL projects**
- **PDR score is average difference between project PDR and ISBSG dataset median**
- **Best PDR score: 10 points, 2nd: 8 points, etc.**

Quality score

- Calculate Defects/1000 FP for all projects
- Only defects delivered to customer are assessed:
 - Defects acceptance test
 - Defects first month production
- In case of missing defect data: 1000 is put in
- Median value is used for quality score, so 1 project with missing data is not crucial
- Example:

ID	Defects/FP	Quality score
15	41,7	
18	13,9	
21	66,7	
22	4,0	
23	10,0	
Median		13,9

P/Q value

- **Productivity/Quality value =**
(Points PI score * 0.5) +
(Points PDR score * 0.3) +
(Points Quality score * 0.2)
- **Productivity/Quality value weight: 60 % of the assessment model**
- **Supplier points =**
(Compliance value * 0.1) +
(Reality value * 0.3) +
(Productivity/Quality value * 0.6)

Results of Compliancy (2)

Supplier/ Project Name	Size (FP)	PI	PDR Hours/FP	Quality Defects/FP	KPN Project	Generic Domain
Supplier A						
Project A1	1.567	15	4,5	5,5	No	Yes
Project A2		10	5,7	2,6	No	Yes
Project A3		13	4,7		No	Yes
Project A4	1.157	10	4	1.000,0	No	Yes
Project A5		14	7,0	3,5	No	Yes
Project A6	1.600	11	4,0	1,9	No	Yes
Supplier B						
Project B1	96	8	5,9	41,7	No	Yes
Project B2		11	6,0	13,9	No	Yes
Project B3	72	9	6,9	66,7	No	Yes
Project B4		12	7,7	4,7	No	Yes
Project B5	75	7	6,2	4,0	No	Yes
Project C1		19,3	7,4	10,0	No	Yes
Project C2		15,1	39,0	51,1	No	No
Project C3		20,9	19,6	68,0	Yes	No
Project C4		15,0	20,1	52,6	Yes	No
Project C5		16,9	19,9	78,9	Yes	Yes
Project C6		16,8	23	1.000,0	No	Yes

Supplier/ Project Name	Size (FP)	PI	PDR Hours/FP	Quality Defects/FP	KPN Project	Generic Domain
Supplier D						
Project D1	5.309	14	6,3	1.000,0	Yes	Yes
Project D2		16,6	14	1.000,0	No	Yes
Project D3	368	16,4	20	1.000,0	No	Yes
Project D4	286	17,6	10	1.000,0	No	Yes
Project D5	456	18,4	13	1.000,0	No	Yes
Project D6	105	13,4	23	1.000,0	No	Yes
Supplier E						
Project E1	445	16,3	35	1.000,0	No	No
Project E2	425	16,1	40,8	183,5	No	No
Project E3	601	16,4	44,6	66,6	No	No
Project E4	329	21,2	23,0	340,4	No	No
Project E5	531	23,8	15,2	5,6	No	No
Project E6	506	22,3	18,7	122,5	No	No
Project E7	296	12,8	23,4	54,1	No	No
Project E8	387	17,1	13,2	38,8	No	Yes
Project E9	347	14,1	15,6	46,1	No	Yes

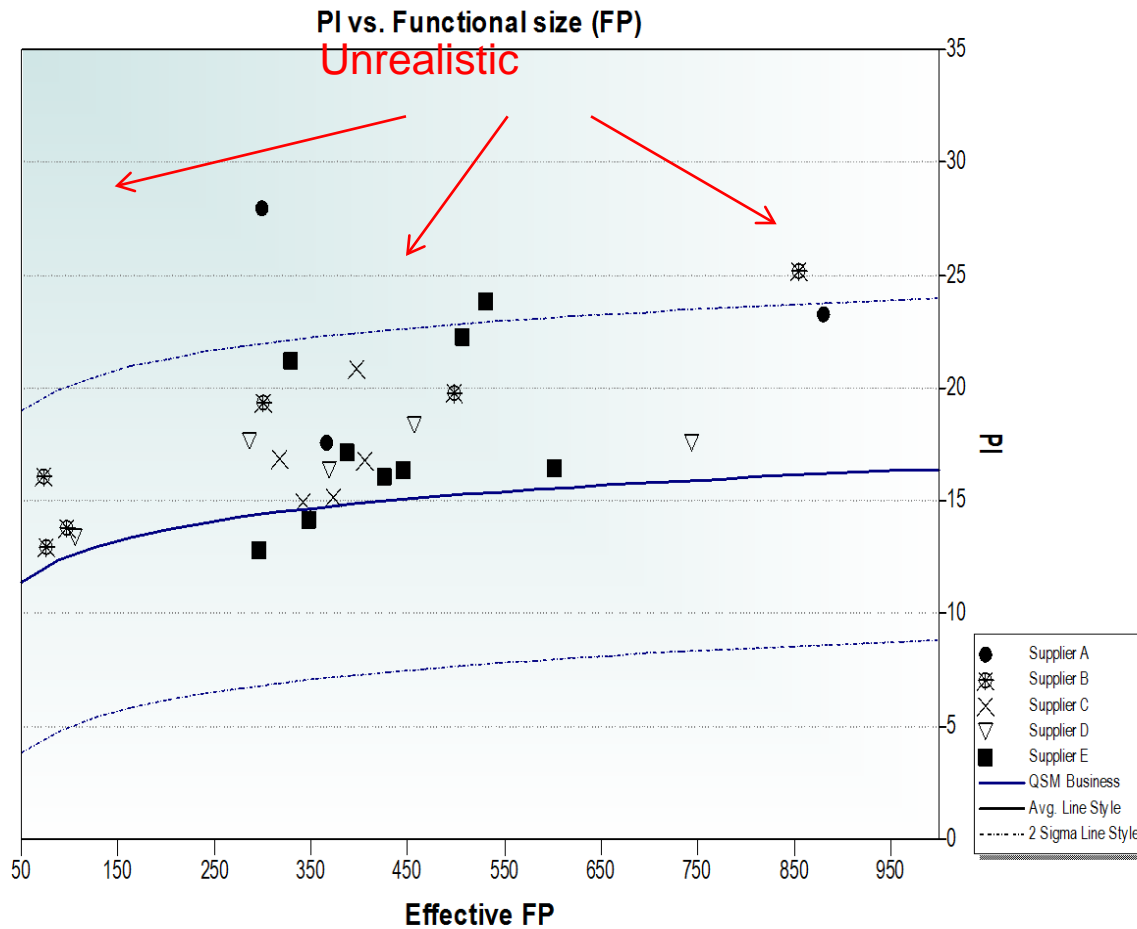
Compliance value

- Compliance to requirements quite low.
- Only one supplier >0 points

Supplier	Compliance Value
Supplier A	0
Supplier B	0
Supplier C	4
Supplier D	0
Supplier E	0

Reality value - PI criterion

- > 2 SD: unrealistic!



Reality value

- Only one project was assessed unrealistic due to the PDR criterion
- Reality value results

Supplier	Unrealistic projects PI criterion	Unrealistic projects PDR criterion	Reality Value
Supplier A	1	1	6
Supplier B	1	0	8
Supplier C	0	0	10
Supplier D	0	0	10
Supplier E	1	0	8

Productivity/Quality value

- **PI score**

Supplier	PI score	Rank PI score	Points PI score
Supplier A	3,9	2	8
Supplier B	5,0	1	10
Supplier C	3,4	3	6
Supplier D	3,0	5	2
Supplier E	3,2	4	4

Productivity/Quality value

- **PDR score**

Supplier	PDR score	Rank PDR score	Points PDR score
Supplier A	-3,2	1	10
Supplier B	-2,1	2	8
Supplier C	16,6	4	4
Supplier D	6,2	3	6
Supplier E	18,3	5	2

- **PI score**

Supplier	PI score	Rank PI score	Points PI score
Supplier A	3,9	2	8
Supplier B	5,0	1	10
Supplier C	3,4	3	6
Supplier D	3,0	5	2
Supplier E	3,2	4	4

Productivity/Quality value

- **Quality score**

Supplier	Quality Score	Rank Quality score	Points Quality score
Supplier A	3,1	1	10
Supplier B	13,9	2	8
Supplier C	52,6	3	6
Supplier D	1000,0	5	2
Supplier E	94,6	4	4

P/Q value

- **Productivity/Quality value**

Supplier	Points PI score	Points PDR score	Points Quality score	Productivity/ Quality value
Supplier A	8	10	10	9,0
Supplier B	10	8	8	9,0
Supplier C	6	4	6	5,4
Supplier D	2	6	2	3,2
Supplier E	4	2	4	3,4
weight	50%	30%	20%	

Total assessment

Supplier	Compliance value	Reality value	Productivity/ Quality value	Total Points	Rank
Supplier A	0	6	9,0	7,2	2
Supplier B	0	8	9,0	7,8	1
Supplier C	4	10	5,4	6,6	3
Supplier D	0	10	3,2	4,9	4
Supplier E	0	8	3,4	4,4	5
weight	10%	30%	60%		

Conclusions

- **Suppliers A and B should be selected for the BAFO phase**
- **The project data should be verified in detail in the BAFO stage**
 - Functional size
 - Actual project data (duration, effort hours, defects)
- **The ultimate selection depends on other factors as well, like:**
 - Promised productivity gains the first few years
 - The answers to other questions in the RFP phase
- **Overall: Productivity Assessment was felt as a very important step in the procurement process.**

Lessons learned

- **Make sure all parties understand the data collection form and its purpose**
- **Make sure that only project data is submitted that can be verified in a later phase**
- **Construct the model beforehand and don't communicate the model to the suppliers to avoid 'data tweaking'**
- **Arrange site visits to get more feeling for the suppliers' transparency, way of working, maturity, etcetera**



Local touch - Global reach



SPM process, phase 3

