

Mini Guide Functional Testing : Governance based on testware metrics

What to do when you want to outsource
your testing service to a Test Factory?



Ton Dekkers
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- Why NESMA
- About LEDAmc
- The question
- Want to improve
- Typical Problems
- What to do
- Examples
- And in Agile...

Ton Dekkers

- Nesma | President
- Interdependent | Software Cost Engineer
- ISBSG | Past President - Board
- COSMIC | IAC member

Partners

- Galorath | US
- Leda | ES
- Metrieken.nl | NL
- PRICE systems | UK



The renewed website is organized into 6 themes:

- Benchmarking
- Outsourcing
- Productivity
- Project Control
- Estimation
- Sizing methods

Vision

- **nesma** is the not-for-profit organisation in the area of predictability of the cost of the delivery and the maintenance of software
- **nesma** joins as much as possible existing standards with a different focus than measurement
- **nesma** connects surrounding attention domains
- **nesma** is independent from customers and suppliers



- 1. Guideline for metrics in contracts (resume)
- 2. Development methodologies;
- 3. Maintenance;
- 4. Management;
- 5. RFP Questions;
- 6. Functional Quality;
- 7. Pricing Mechanisms;
- 8. Technical Quality;
- 9. Assessing Suppliers Performance;
- 10. Software Metrics in Contracts;
- 11. Requirements for Supplier organizations;
- 12. Requirements for Customer organizations.

13. Functional Testing

Publication	Language	Year	Platinum member	Gold member	Individual member	Registered user	Full price
[1] Guideline for the use of software metrics in contracts	English	2015	Free	Free	Free	Free	<div>1</div> <div>FREE - ADD TO CART</div>
[2] Mini Guide for Development Methodologies	English	--	Free	€ 10,=	€ 20,=	€ 40,=	in progress
[3] Mini Guide for Maintenance	English	--	Free	€ 10,=	€ 20,=	€ 40,=	in progress
[4] Mini Guide for Management	English	--	Free	€ 10,=	€ 20,=	€ 40,=	<div>1</div> <div>€60,00 - ADD TO CART</div>
[5] Mini Guide for RFP questions	English	--	Free	€ 10,=	€ 20,=	€ 40,=	<div>1</div> <div>€60,00 - ADD TO CART</div>
[13] Mini Guide: Functional Testing	English	--	Free	€ 10,=	€ 20,=	€ 40,=	in progress

<http://nesma.org/publications/downloads/guides/software-metrics-in-contracts/>

About LEDAmc



Quantify

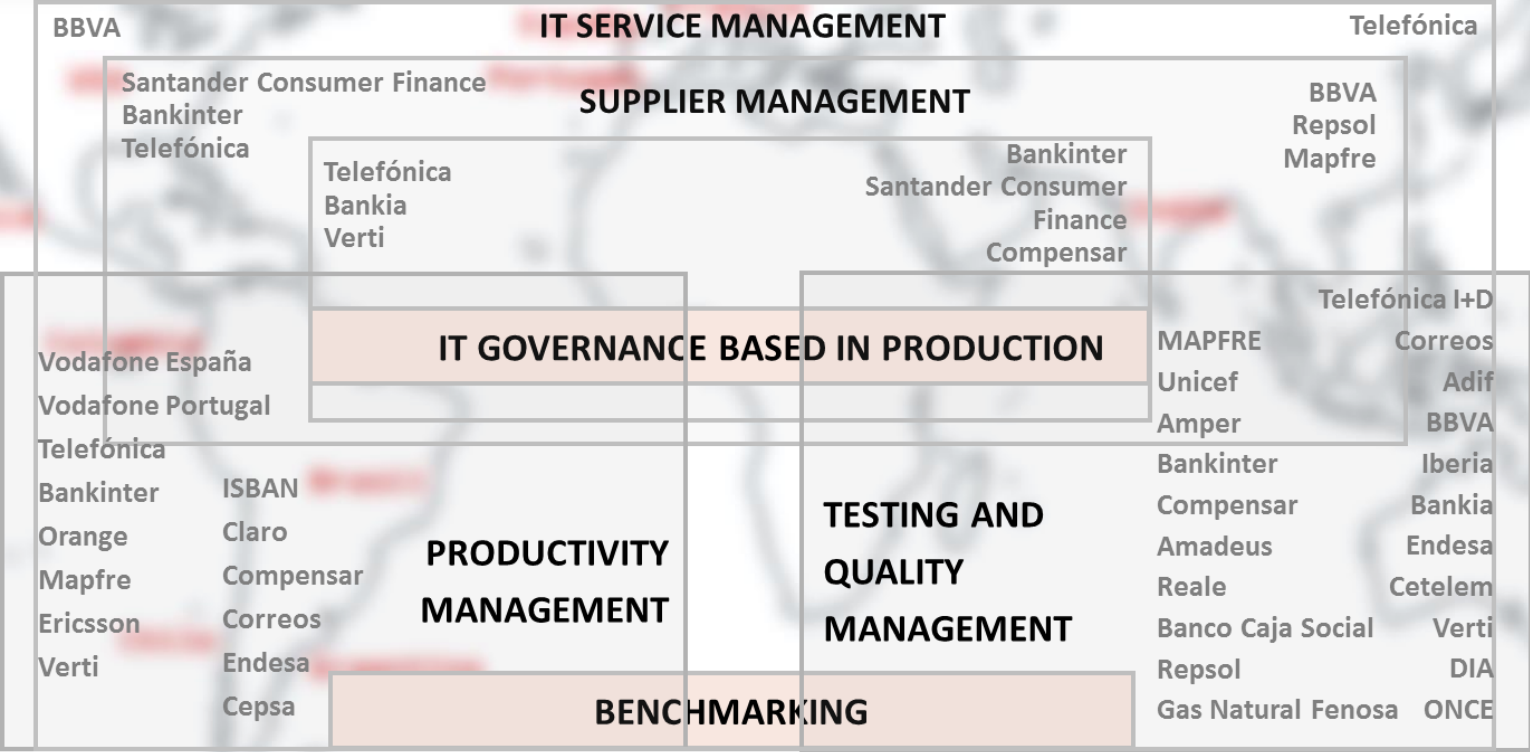


Optimize

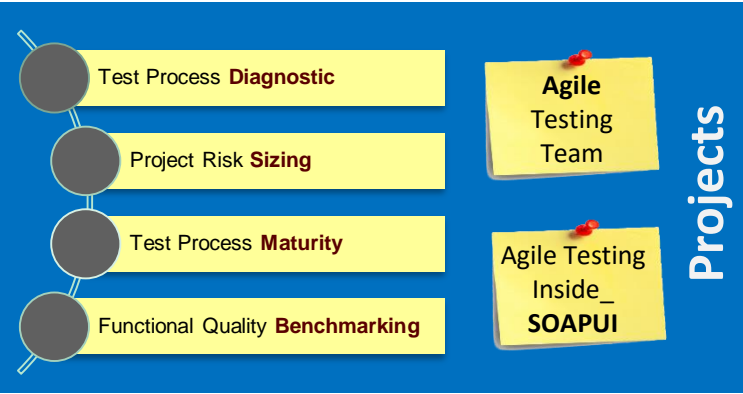
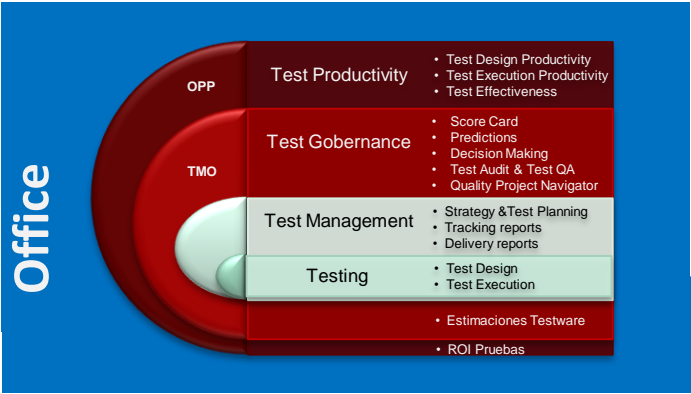
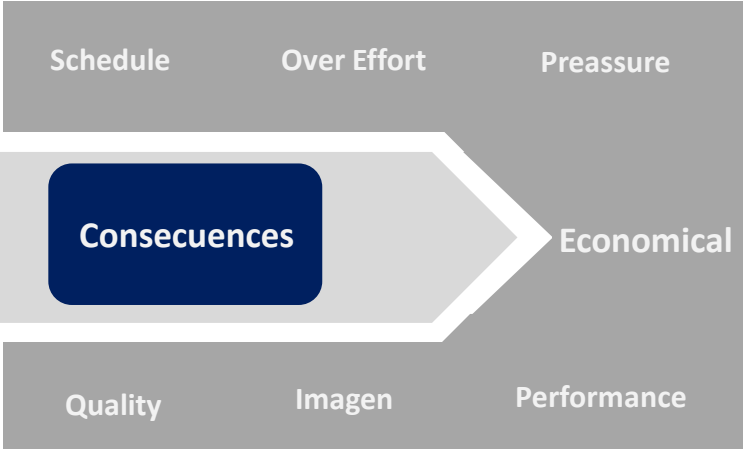
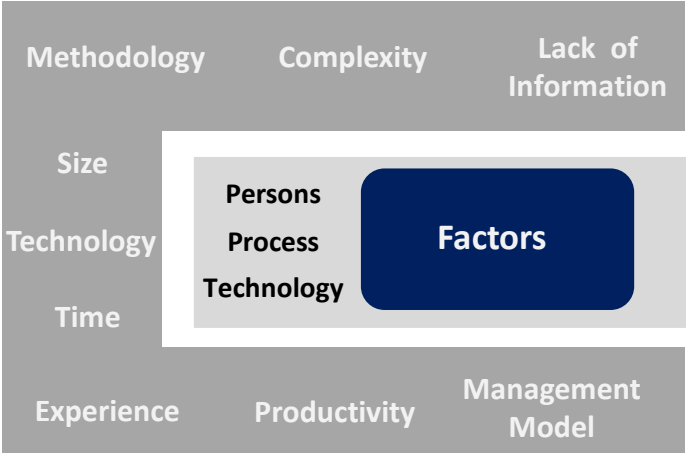


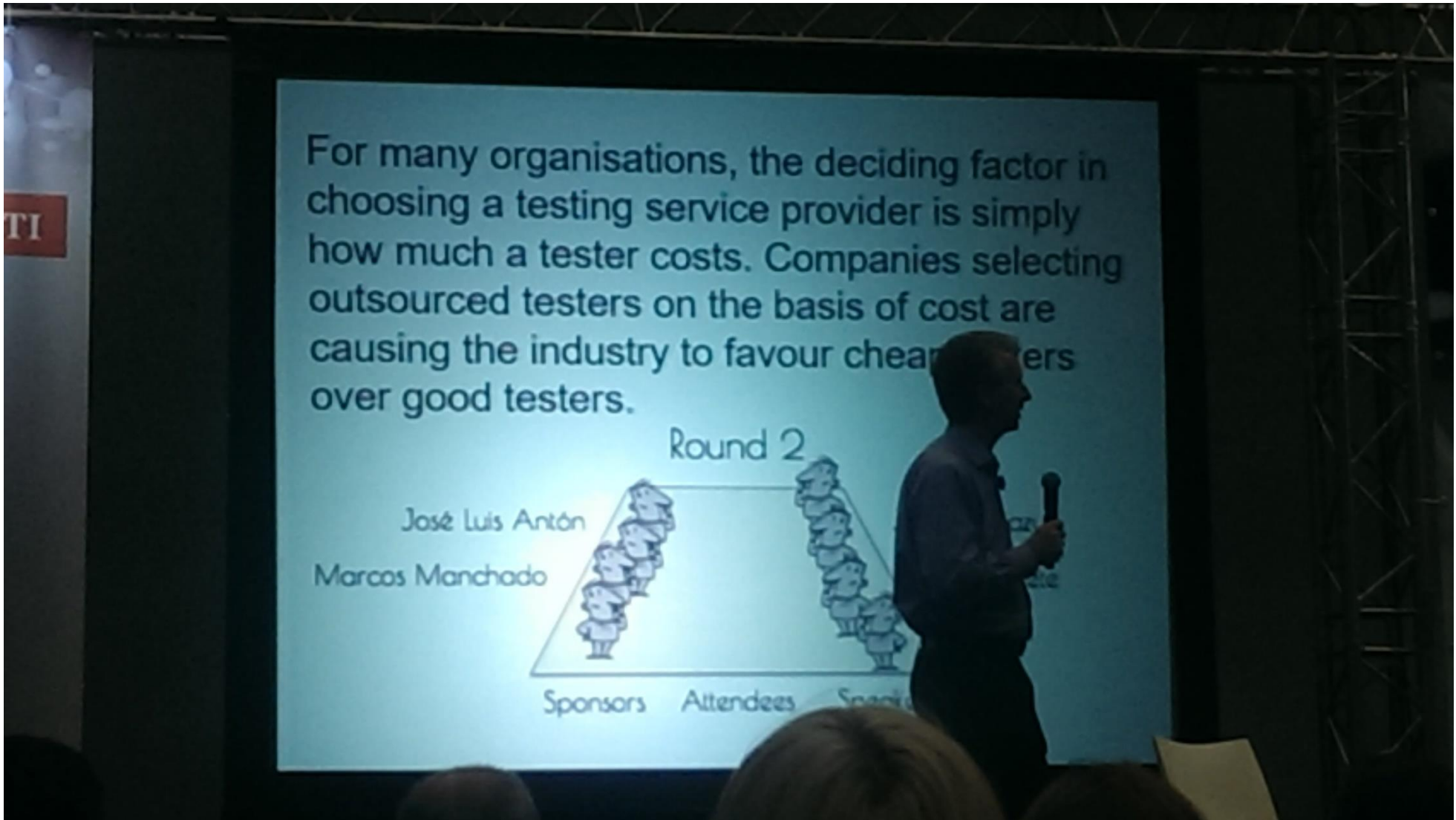
Projections

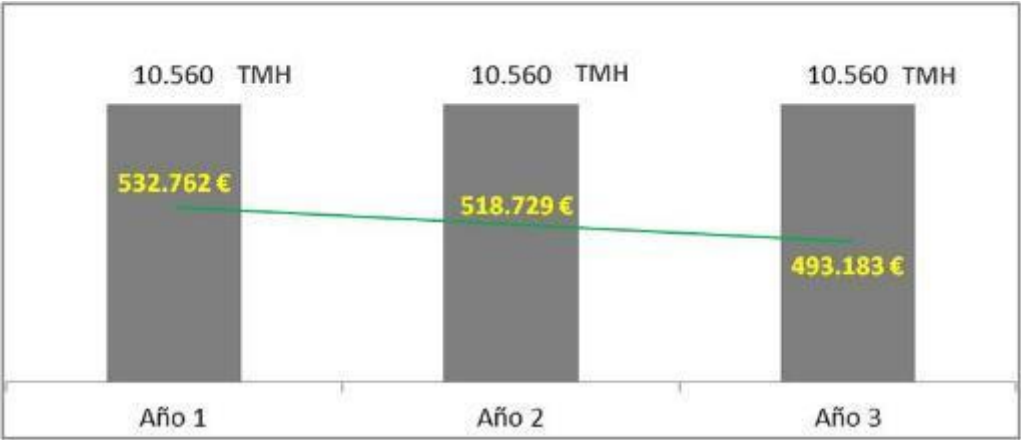
- Spanish company
- > 100 employees
- Office in Madrid and Bogota
- Customers in Europe, USA, LATAM and ASIA
- Focussed in Outsourcing Management
- > 70% FP certified consultants in Spain
- ROI service commitment (47M€ 2015)



Much more than Sw Testing!





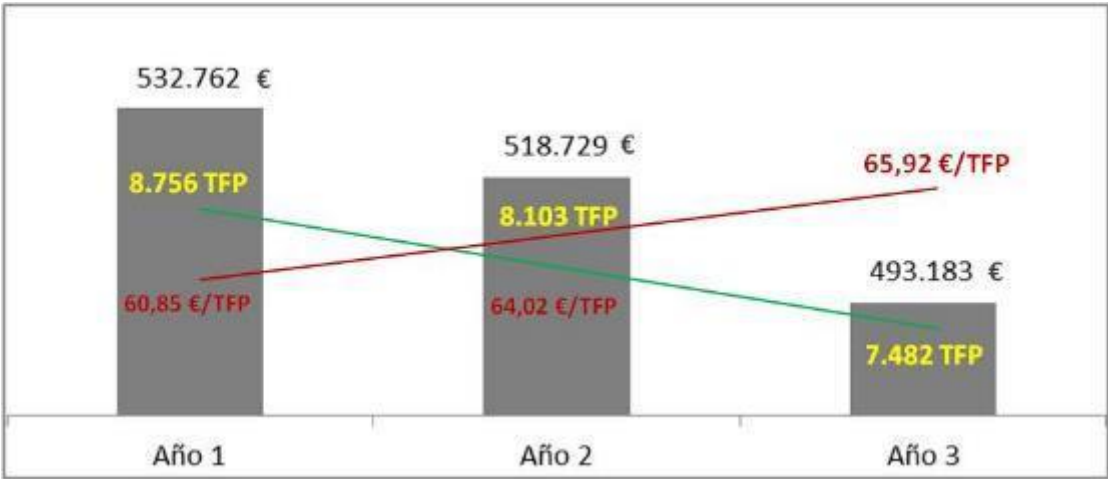


Esfuerzo de pruebas:

Disminución del coste por reducción de tarifa

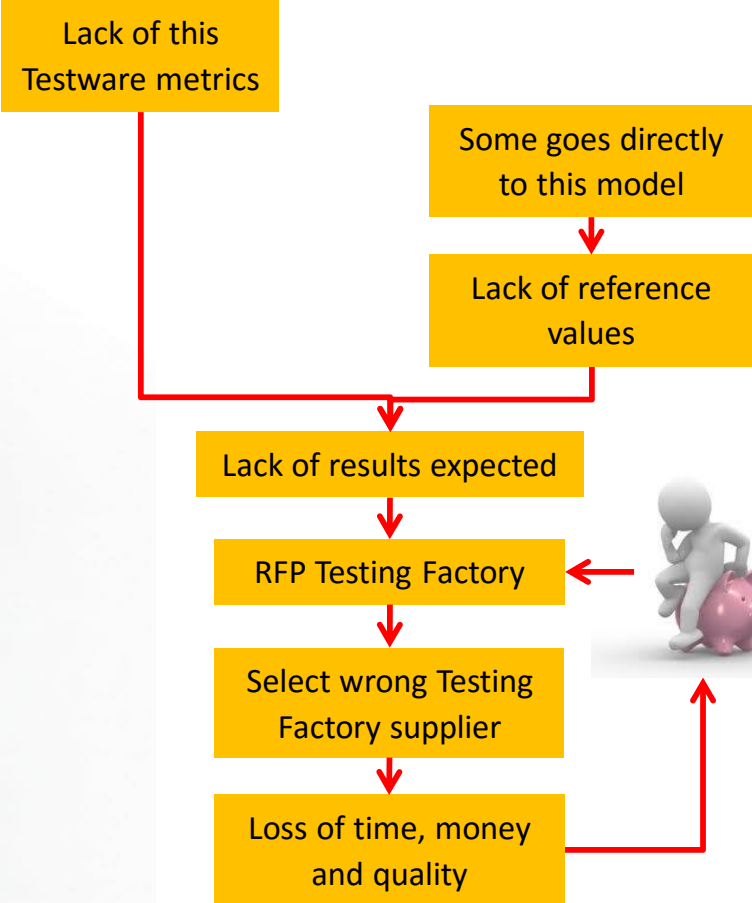
Producción de Pruebas (TFP):

Incremento de coste por pérdida de productividad de pruebas





Testing factories



Functional Testing
Miniguide

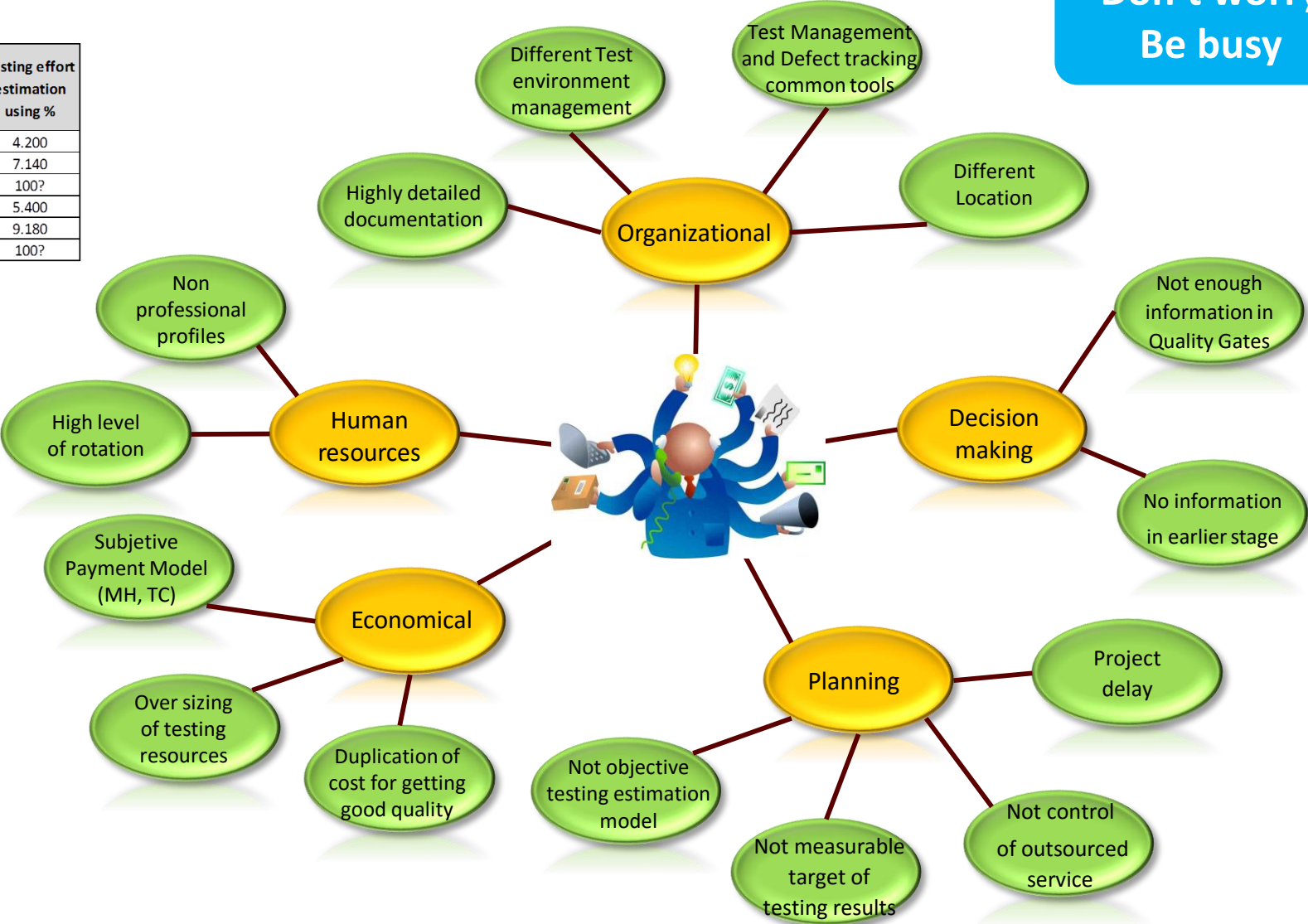
Typical Problems

Don't worry
Be busy

Functional size	Experience and productivity of development team	Total Men Hour project estimation	Testing activity	Testing effort estimation using %
3.000 Function Point	High	42.000	Test Plan Design	4.200
			Test Case execution	7.140
			Bug Fixing	100?
	Low	54.000	Test Plan Design	5.400
			Test Case execution	9.180
			Bug Fixing	100?

Capability
Performance
Effectiveness
Savings

?



What to do to mitigate problems?



Four Stages during the testing outsourcing process to mitigate the problems :

- RFP preparation: before the RFP adjudication
- RFP adjudication: during the RFP adjudication



- Service Operation: during the operation of the outsourced testing service
- Close/Renewal of service: during the termination or renovation of the outsourced service



Getting reference values of testing activities	Define testing service payment model	Define Testware estimation model	Define testing ecosystem conditions of outsourced service	Sizing of human Resources needed	Selection of possible suppliers	Justify savings with outsourcing to testing factories
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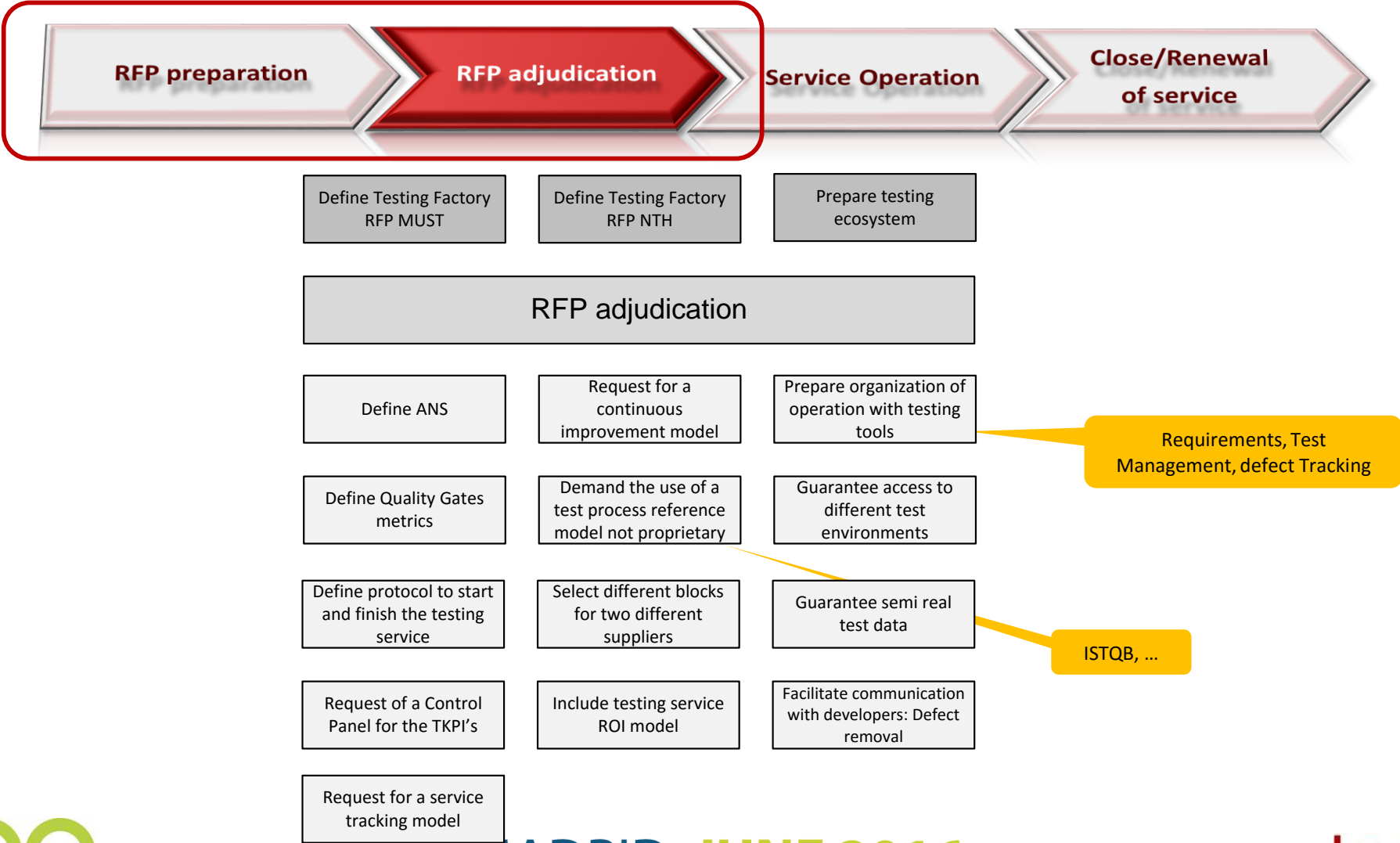
RFP preparation

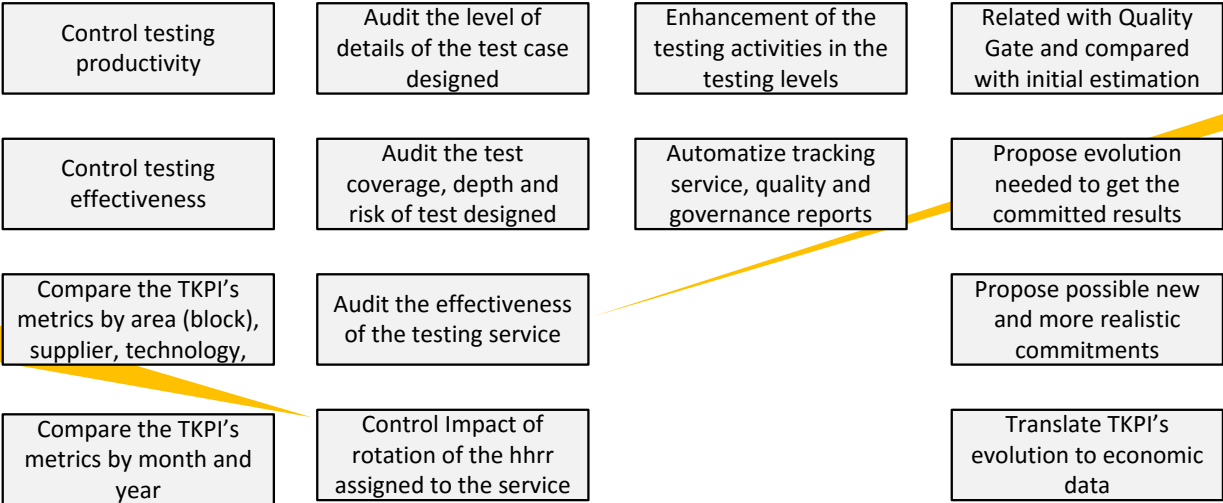
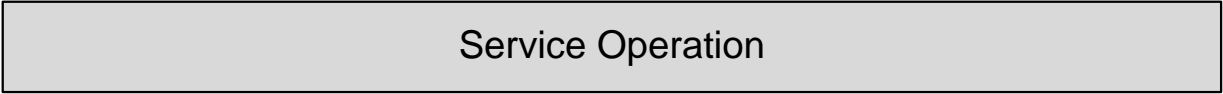
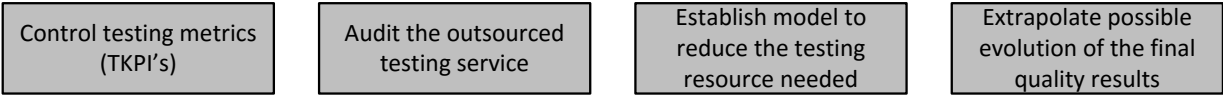
Getting reference values of testing productivity	Define Non subjective payment model	Define size estimation model of the project	Define outsourcing location	Sizing of testing resources	Analyze the size and business focus of the suppliers needed	Justify savings in time
Getting reference values of testing effectiveness	Define testing service ROI model	Define size of testware	Define model of outsourcing testing factory	Sizing of defect removal resources	Ask for a RFQ to no more than six suppliers	Justify savings in Quality
Getting reference values of current testing cost	Define bonus/penalty scheme	Define test effort estimation model	Define testing level to be outsourced	Test design, Test execution, Test automation		Justify savings in €

Function Points tested or any other functional size metrics

Function Points or any other functional size metrics

Designed test case , expected to be detected defects, expected incidence in production (during the guarantee period and Quality debt)

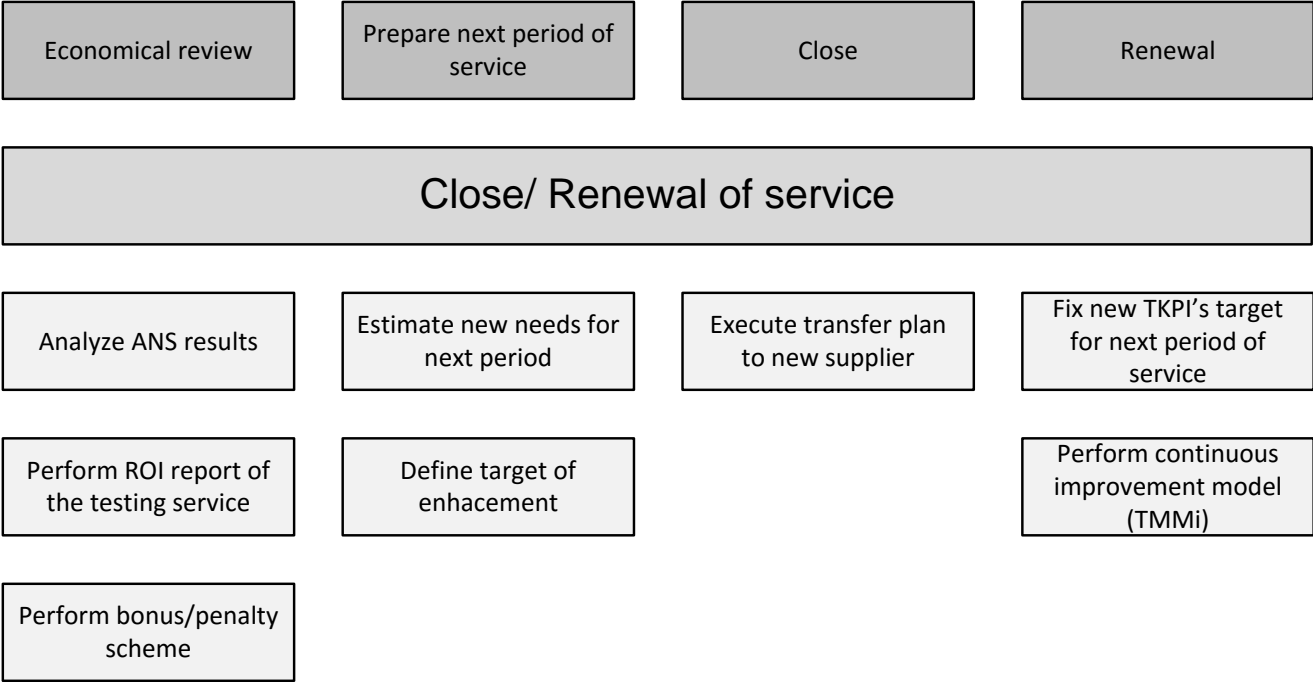




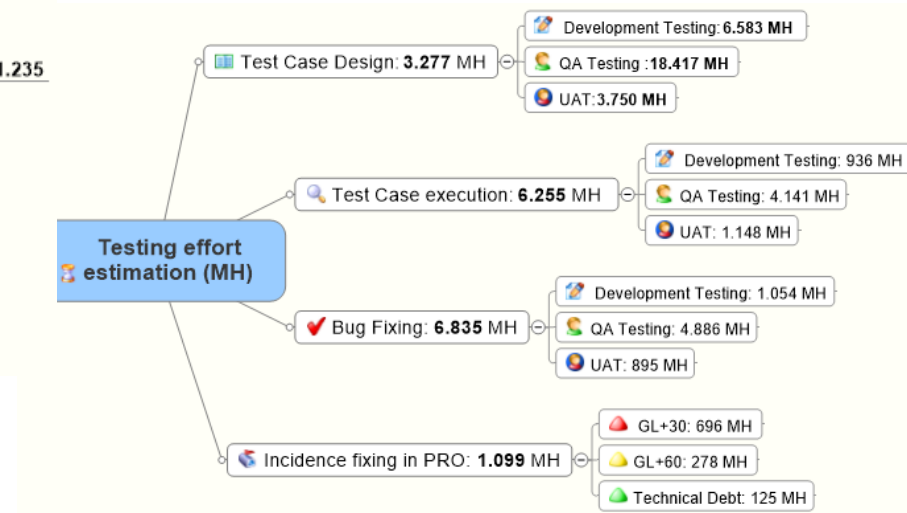
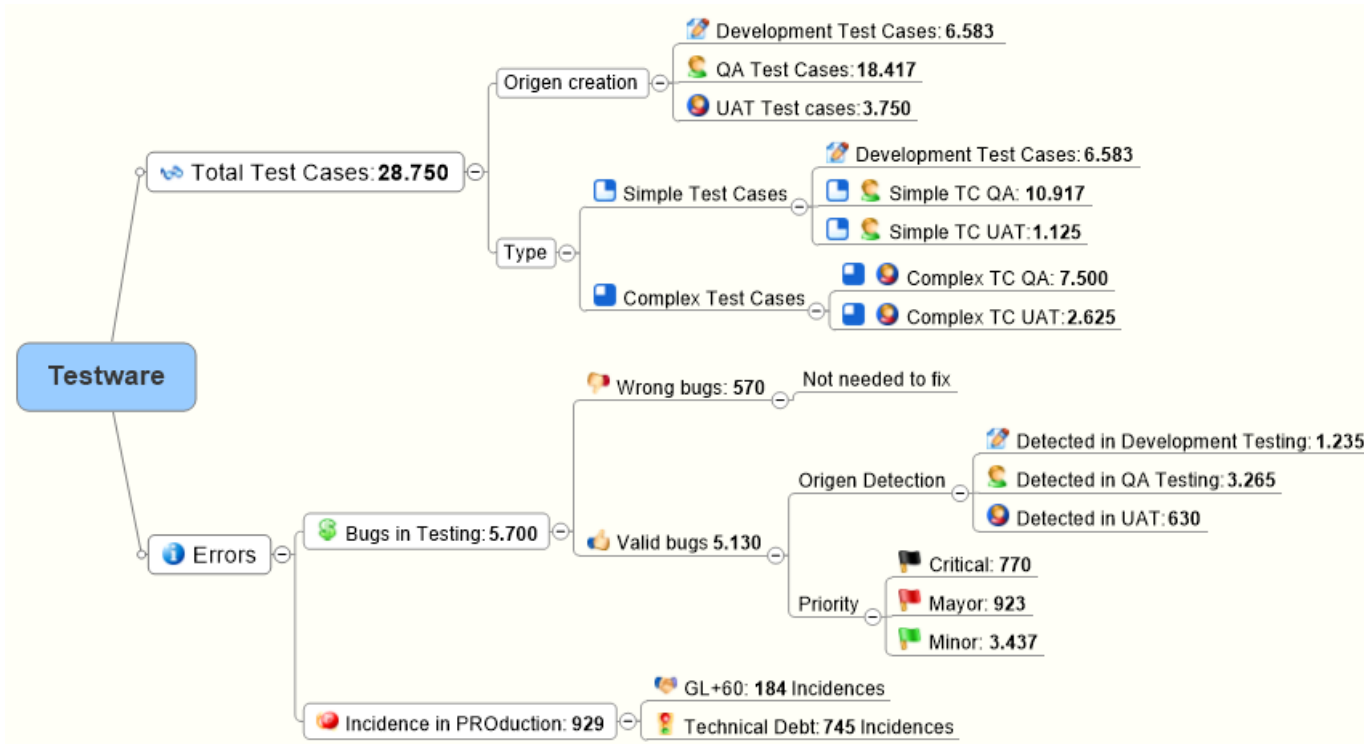
impact in the quality, performance and effectiveness of the testing service

defects in the next testing phases

dates and quality

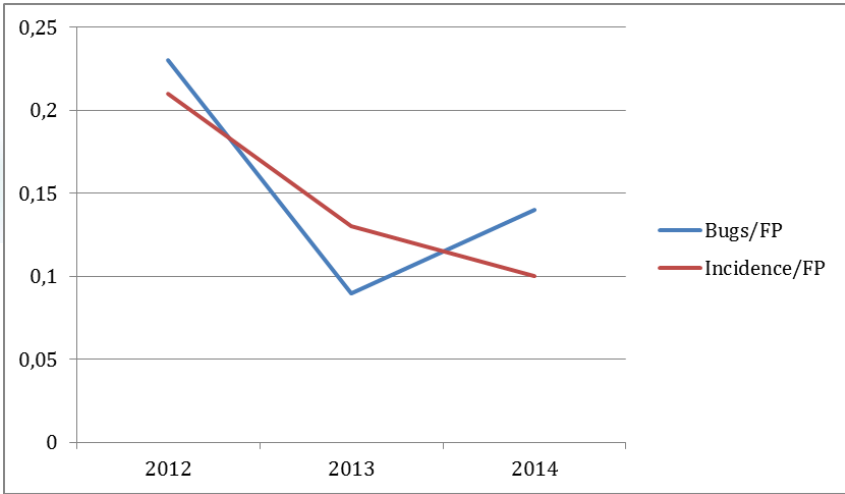
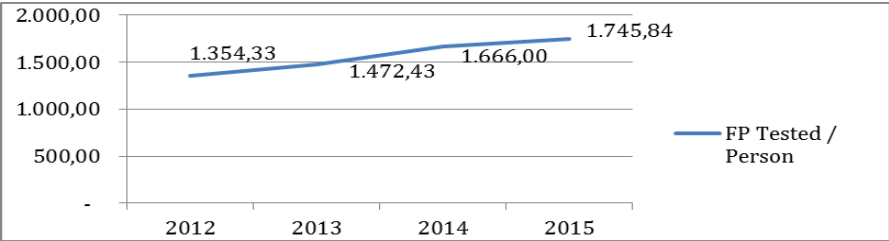
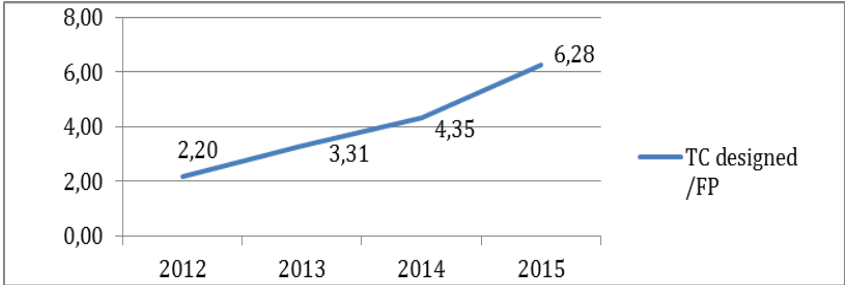
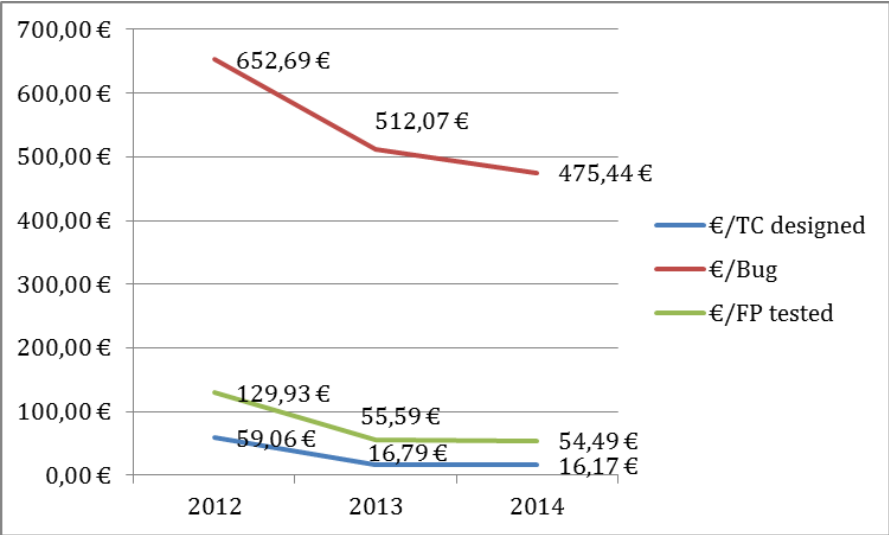


Early test-ware size and effort estimations





Effort (MH)			Know data					Estimation for 100% resources	Simulation for less resources	
		Effort (MH) estimated	Start date estimated	End date estimated	# Man Days	Days available	Hours available	Resources needed	# lower resources estimated	Lower coverage accepted
QA	Team	9.524								
Design Test Cases	Testing Factory	4.484	15/09/2015	01/11/2015	34	67	272	16,49	8,5	51,56%
Execution Test Cases	Testing Factory	5.040	01/11/2015	31/12/2015	44	67	352	14,32	7,5	52,38%
UAT		3.053								
Design Test Cases	Business	1.145	31/12/2015	15/02/2016	33	67	264	4,34	2,5	57,64%
Execution Test Cases	Business	1.908	15/02/2016	30/03/2016	33	67	264	7,23	4	55,35%
Bug Fixing		13.066								
Bug Fixing System Test	Software Factory	7.040	01/11/2015	31/12/2015	44	67	352	20,00	14	70,00%
Bug Fixing UAT	Software Factory	1.759	01/01/2016	30/03/2016	64	67	512	3,44	2,5	72,77%
Bug Fixing Incidence in PROduction(GL+60)	Software Factory	4.267	01/04/2016	01/06/2016	44	67	352	12,12	11	90,74%

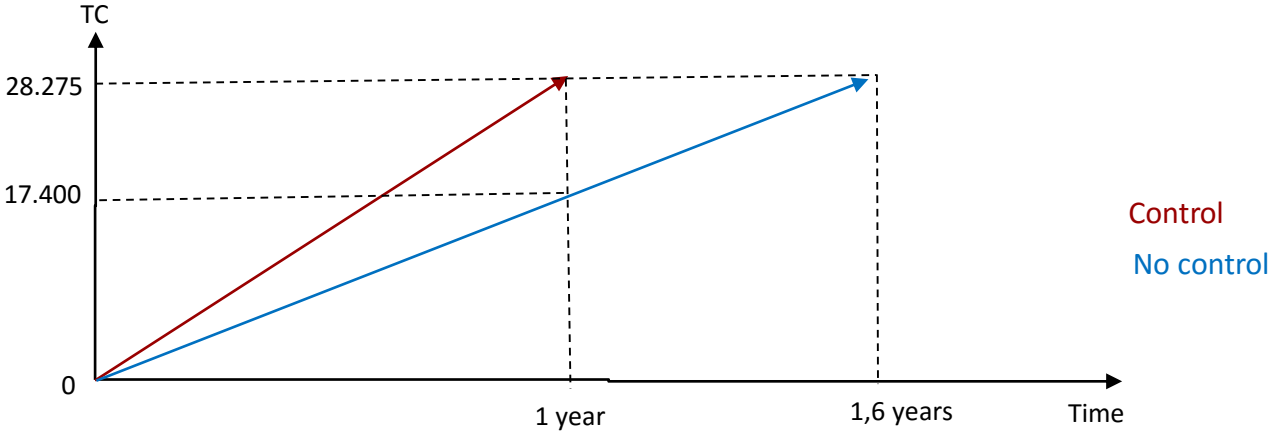


KPI	Indicator	Control	No control
Productivity	Time to create a TC	24	39
	Time to execute a TC	32	48
Effectiveness	% Bugs detected	81%	49%
	% Wrong bugs	8,0%	15,7%
	Bug Fixing	67,0%	26,7%

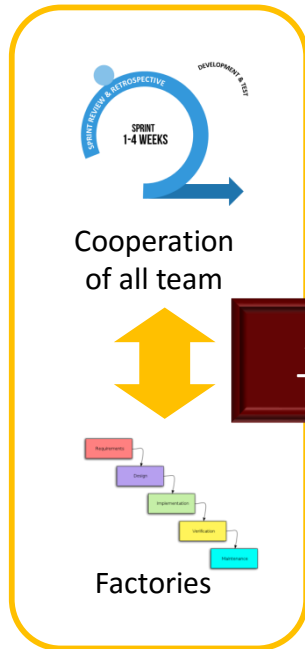
KPI	Indicator	Control	No control	GAP	%
Productivity	Total TC designed by person/year	3.575	2.200	1.375	62,5%
	Total TC executed by person/year	2.681	1.788	894	50,0%
Effectiveness	Total Bugs detected by person/year	203	75	127	168,6%
	Total Wrong Bugs reported by person/year	16	6	10	168,6%
	Total Bugs fixed by person/year	136	20	116	574,8%

Project Size			5.236 PF
Testware estimation	Test size	# TC	28.275
		# Bugs	3.677
	Test effort	TC Design	4.166
		TD execution	5.024

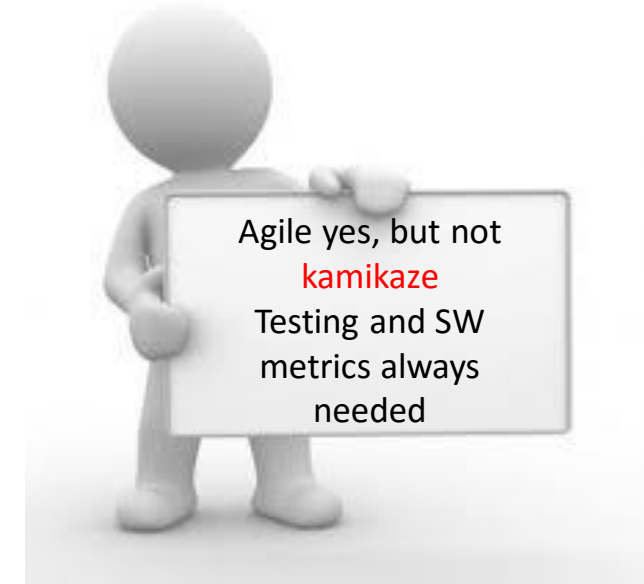
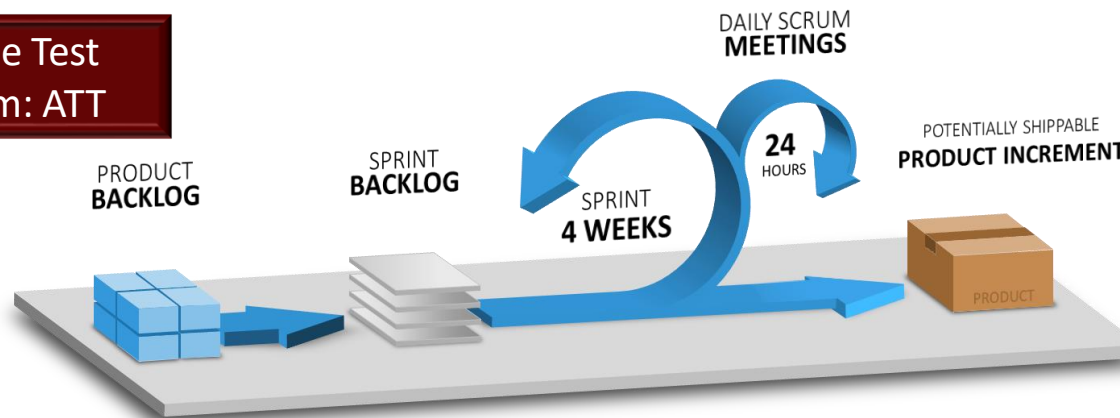
	Control	No control	GAP	%
Size Test Team	8	13	- 5	62%
Total Cost	417.600	588.120	170.520	29%



Software Testing metrics in Agile projects



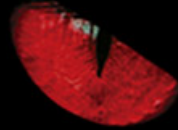
- Relation between History Point and Function Point
- Quality debt by team (current and future)
- Quality team ranking
- Sprint amount needed by 100 implemented History Point
- Test automation effectiveness



- | | |
|---|-----------------------------|
| • Average test cases designed by person [/ day] | • €/ 1 designed Test Case |
| • Average test cases executed by person [/ day] | • €/ 1 executed Test case |
| • Average defects checked by person [/ day] | • €/ 1 detected defect |
| • # detected defects by History Point | • €/ 1 avoided defect |
| • % total errors detected QA / UAT's / Production | • €/ 1 tested History Point |



Be agile,
flexible, but
not fragile



► Gobierno del Riesgo SW, mucho más que Pruebas

visión 360°
de la
calidad
Be Agile, Not Fragile



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