

USER MANUAL

TPI NEXT TEST MATURITY MATRIX TOOL

Document History

Document Location

The source of this document can be retrieved from Sogeti Nederland B.V.

Revision History

Date of this Revision:	Date of next Revision:
-------------------------------	-------------------------------

Version	Date	Authors	Distribution
1.0	17-11-2009	Reinder Otter, Loek Wilhelmus	www.tpinext.com

CONTENTS

CONTENTS.....	1
1 INTRODUCTION.....	3
2 USER SCENARIO'S	4
2.1 First Business Driven TPI assessment	4
2.1.1 <i>Using Key Areas</i>	4
2.1.2 <i>Using Business Driven TPI and CMMI</i>	5
2.2 Successive TPI NEXT assessment(s)	6
2.2.1 <i>Using Clusters</i>	6
3 FUNCTIONALITY	7
3.1 Using Business Drivers	7
3.1.1 <i>Creating a Business Driver</i>	7
3.1.2 <i>Dependencies when using Business Drivers</i>	8
3.2 Reporting	9
3.3 Field on the Information sheet	9
3.4 List all Checkpoints	11
3.5 Changing lanes.....	11
3.6 Refreshing	12
3.7 Graphics	12
3.8 Test Maturity Matrix	14
4 FREQUENTLY ASKED QUESTIONS.....	15
5 KNOW ISSUES AND WORK AROUNDS	16
5.1 Information sheet	16
5.2 Test Maturity Matrix	16
5.3 All checkpoints	16
5.4 Key Area sheet.....	16
5.5 Cluster sheet.....	17
5.6 CMMI sheet	17
5.7 Checkpoints to improve.....	17
6 APPENDICES	18
6.1 Bibliography.....	18

1 INTRODUCTION

In November 2009 Sogeti presented the book "TPI NEXT - Business Driven Test Process Improvement". This book describes the new Business Driven TPI model and how to use this model in various situations.

References to this book will be made throughout this manual as follows (where [1] stands for the TPI NEXT book):



 [1] 5: BDTPI follows the steps of a generic change process.

The Test Maturity Matrix tool is created to support the use of the TPI NEXT book and support the creation of a Test maturity matrix. In this document the use of the Test Maturity Matrix tool will be explained by following certain user scenario's as described in chapter 2. References from chapter 2 will be made to chapter 3 (for more detailed explanation). This process is as follows:



 3.2: Reporting

In chapter 2.1.2 it will be explained how to use Business Driven TPI and CMMI in the tool with references not only to the book, but the white paper as well. References to this paper will be made in the same way as to the book but with [2] instead of [1] in front of the chapter.

Chapter 3 provide more details about the complete functionality of the tool without explaining the different scenario's.

Throughout this document, warnings about the functionality or process will be shown as follows:



In order to be able to understand the tool, we assume you have knowledge about TPI NEXT and its terminology. If not, we would recommend reading this book first. The tool and this manual do **not** explain TPI NEXT assessments and improvements.

If for some reason problems within the document can occur, this will be shown as follows:



The Test Maturity Matrix tool is created in **Microsoft Excel** for version 2007 and 2003. However, if you use another version or different software (like Open Office), guarantees about the functionality cannot be made.


Test maturity matrix

On the left side, the sheet name will be placed (as shown) for which certain actions are described.

If a user has changed anything in the tool, for instance indicating if Checkpoints have been fulfilled, the button "Redraw matrix" must be selected before the new information becomes visible.

2 USER SCENARIO'S

We would like to explain the tool through standard user scenarios. This is done in order to show the user how best to use the tool and in what way he or she should perform certain actions in order to get the best results. These scenarios have been based on the actions that are described in the TPI NEXT book and are commonly taken when executing a TPI scan.

 For this version of the tool, a **new file** should be used when executing a new TPI NEXT assessment. It is not yet possible to log successive assessments in the same document.

2.1 First Business Driven TPI assessment

2.1.1 Using Key Areas

When assessing a test organization for the first time, it is recommended to use the Key Area sheets to do this. In this way, the checkpoints are bundled per Key Area which makes it easier to address certain aspects of the organization.

Information

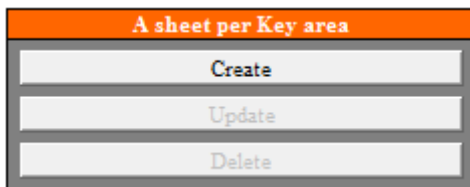


Figure 1 Create Key Area sheets


Select "Create" in "A sheet per Key area"; after selecting "yes" in the popup, the tool will generate all 16 key area sheets. Selecting "no" will close the popup window and no actions will be executed.

Key area sheet


TPI [®] NEXT Test Maturity Matrix		Test project	
Stakeholder commitment			
Sequence	Checkpoint	Fulfilled?	Notes
Controlled			
01.c.1	The principal stakeholder is defined (not necessarily documented) and known to the testers.	N	
01.c.2	Budget for test resources is granted by and negotiable with the principal stakeholder.	Y	
01.c.3	Stakeholders actually deliver the committed resources.	NA	
01.c.4	The principal stakeholder is responsible for a documented product risk analysis (the input for the test strategy).	N	

Figure 2 Filling in the Key area sheets

For all Checkpoints of the Key areas it can be indicated if a Checkpoint has been fulfilled by selecting "Y" instead of the default "N". "NA" (not applicable) is possible as well. Additional comment can be added if necessary.

 Selecting **NA** will make this checkpoint obsolete and therefore it will not be included in the graphics and other calculations within the tool.

Test Maturity Matrix After filling in checkpoints, the Test Maturity Matrix needs to be updated in order to show the results by pressing the “Redraw Matrix” button. Reason for this is that automatic calculations in the sheets are turned off because of performance.

 Redrawing the Matrix may take some time depending on the **processor speed** of your computer.

  3.6 Refreshing

When checkpoints have been filled in, the Business Driver can still be changed or filled in. When all is ready, a report can be generated with the checkpoints to improve.

  3.2

2.1.2 Using Business Driven TPI and CMMI

This function can be used to map the results to the CMMI levels 2, 3, 4 and 5. The Checkpoints of the Business Driven TPI model are divided over the CMMI level they belong to; per CMMI level the Checkpoints are shown, related to their original Key area. Note that two key areas, Test tools and Test environment, are not applicable in this situation and are marked grey in the maturity matrix.

Test Maturity Matrix

# Key areas	H	N	L	Initial	Controlled			Efficient			Optimizing		
1 Stakeholder commitment					A	A	A	B	B	B	D	D	D
2 Degree of involvement					A	A	A	A	A	B	D		D
3 Test strategy					A	A	B	B	B	B	B		D
4 Test organization					A	A	B	B	B	B	B	C	C
5 Communication					A	A	A	A	A	A	B		D
6 Reporting					A	A	A	A	A	A	B		D
7 Test process management					A	A	A	A	A	A	D		D
8 Estimating and planning					A	A	A	A	A	A	B	B	C
9 Metrics					A	A	A	A	A	B	B	C	D
10 Defect management					A	A	A	B	B	C	C	C	D
11 Testware management					A	A	A	A	A	B	C	C	-
12 Methodology practice					A	A	A	B	B	B	C	C	D
13 Tester professionalism					A	A	A	B	B	B	B	B	D
14 Test case design					A	A	B	B	B	B	B	B	D
15 Test tools													
16 Test environment													



Figure 3 CMMI Test Maturity Matrix

All available Checkpoints can now be logged with their related results, fulfilled or not fulfilled.

When the checkpoints are filled in and you want to change (back) to the TPI NEXT matrix, this can be done by changing lanes:

  3.5 Changing lanes

For more detailed information about the mapping of CMMI and TPI NEXT, the corresponding Whitepaper can be used.

  [2] White Paper, TPI NEXT Business-Driven Clusters for CMMI

2.2 Successive TPI NEXT assessment(s)

2.2.1 Using Clusters

If you already have done a TPI NEXT assessment with the tool using the Key Area sheets, it is recommended that in the successive assessments, the checkpoints are filled in with the cluster sheets. In this way, you can now easily see what checkpoints need to be improved in order to get to the next cluster (step) in the improvement process.

For example; using the cluster sheets, you can now see that in cluster A only two (2) checkpoints remain and in cluster B ten (10). This means that the first step (cluster A) is now only a matter of improving those two checkpoints and the focus should be on the checkpoints from cluster B.

On the other hand, if Cluster A still needs to improve ten (10) checkpoints and cluster B only two (2), this means that cluster A needs all the attention before moving on to the checkpoints in cluster B.

If there are still a lot of checkpoints left to improve, using these cluster sheets can now give you the opportunity to only focus on the first few clusters (up until 15 checkpoints for example) and not the whole matrix.

Information First copy your initial scan before making any changes. Next thing you do is deleting the Key Area sheets. And choose "yes" when asked to preserve answers and notes.



3.5 Changing lanes

Now you can create the cluster sheets by choosing "create" as shown below:

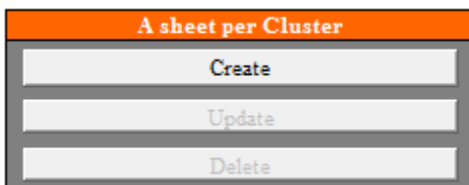


Figure 4 Creating Cluster sheets

Of course you should change the data on the "information" sheet as well.



3.3 Field on the Information sheet

These steps should be taken with every successive assessment for a particular test organization and/or project.



Be aware that when changing the business driver, an **update** needs to be done in order to put the checkpoints in the correct cluster sheet.

3 FUNCTIONALITY

3.1 Using Business Drivers

Choosing the correct Business Driver is a process on its own and is not supported by the tool. However, if you know which Key areas are above or below average relevance to improve, you could fill this in directly.

3.1.1 Creating a Business Driver

Test Maturity Matrix

A business driver provides the opportunity to give Key areas a certain weight. This weight will usually be specific for a certain client situation or the goal that organization wants to reach. For example giving a higher weight to Tester professionalism will move the first Checkpoint of this Key area from cluster D to cluster C, because for this specific organization it is an important issue.



- [1] 2.2.1 The model has specific properties to ensure its quality and relevance
- [1] 6.6.1 TPI used in a 'business driven' manner

Standard is the **N**eutral weight which is given to each Key area. Depending on your Business driver, you can give a Key area a **H**igher or **L**ower weight. The Clusters will automatically change with these weights.

You can only fill in a "x" (or capital "X") in the fields below the H/N/L. Furthermore, it is only possible to choose one option (e.g. not H and N together, but only H or N). While changing the relative weight of the Key areas, the base Clusters will be adapted and the business-driven Clusters will become visible in the Test maturity matrix.

Deleting a value will set the "x" to Neutral (basic value).

If you already created Cluster sheets and changed the Business Driver afterwards, a warning will be shown.

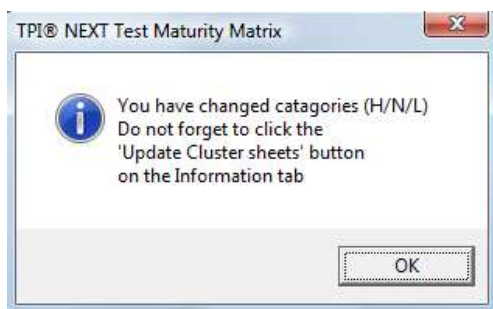


Figure 5 Warning when changing Business driver

Information

It is important to update the sheets because clusters have been changed by changing your business driver. The update function will remember your already filled in answers and notes, so can be used at any time. Updating can be done by clicking "update".

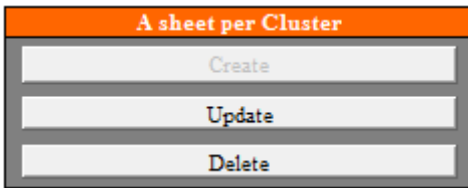



Figure 6 Update the cluster sheets

 It is recommended that you think about your business driver before you start assessing. However, it can still be changed during or after the assessment. The "checkpoints to improve" sheet should be generated again after changing the driver.

3.1.2 Dependencies when using Business Drivers

Test Maturity Matrix

In the above mentioned process of creating new business drivers by changing the relative value on a Key area, sometimes a warning will be produced. This is because the model comprises dependencies between some Checkpoints and changing the order of Key areas in a Cluster will violate against those rules. An example of these warnings is shown below.

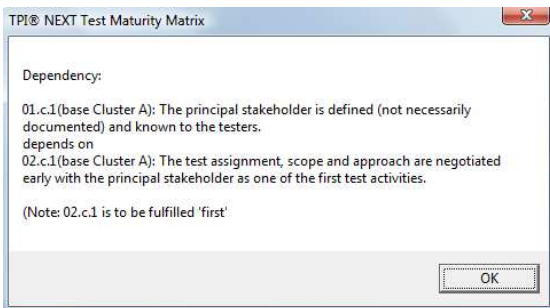




Figure 7: Examples dependency message.

Next to this popup message (which will occur only once), the dependencies will be shown underneath the Test maturity matrix. The assessor can decide to ignore the messages or change the priority of certain Key Areas.

 [1] 3.6: Dependencies assist in defining the sequence of improvement

 Note that when dependencies are violated, the cluster of that checkpoint **does not change** unless the depending Key Area is changed as well.

3.2 Reporting

At the end of an assessment (be it the first or a successive one), a sheet can be generated which contains all Checkpoints that need are not fulfilled yet. This can be done by clicking on the "Create" button as shown below.

Information

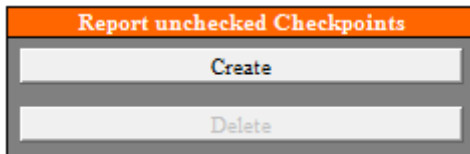


Figure 8 Report unchecked Checkpoints - Create

A new sheet will be created called "Checkpoints to improve". On this sheet only those Checkpoints which have a "N" or "n" in the field "Fulfilled" will be shown.

Of course this sheet can be generated at any time during a scan. To generate a new report, you have to delete the sheet "Checkpoints to improve" first by clicking the "Delete" button as shown below.

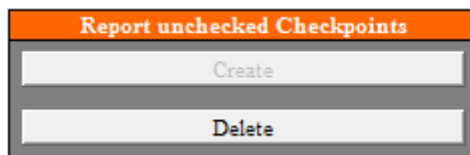




Figure 9 Report unchecked Checkpoints - Delete


The button "Create" will now be enabled again and a new "Checkpoints to improve" sheet can be created.

 When "changing lanes", note that the generated report will be deleted as well.

3.3 Field on the Information sheet

Information On this sheet you can fill in some information of the project and/or the TPI NEXT assessment. The field will be explained below.

 These fields are not protected and can be changed according to the taste of the assessor. **However:** if you add or delete *rows*, remember that the buttons and layout of the sheet can be altered as well.

 Be sure when altering the sheet that row 40 contains the header of the **history table** and the first row of that table is on row 42. If this is not the case, the automatically generated rules will appear somewhere else on the sheet.

General information	
Project (client):	UWV - New project
TPI assessor #1:	Alexander van Ewijk
TPI assessor #2:	Reinder Otter
TPI assessor #3:	

Figure 10 General information

With project (client), the name of the project and/or client can be filled in for reference. A TPI NEXT scan can be executed by 1 assessor, but can obviously (in larger projects), be done by more assessors. Normally no more than 3 assessors are needed in order to keep the assessment itself controlled.

Entry date: maandag 2 november 2009

Figure 11 Entry date

This is the date of the execution and/or filling in the answers of the TPI NEXT assessment.

Review:	Date	Reviewer	Internal/External
	4-11-2009	Reinder Otter	Internal
	5-11-2009	Testmanager	External

Figure 12 Reviewers

With every assessment, it can be very useful if a colleague reviews this in order to get a correct image of the assessment. The Test Maturity Matrix tool should also be reviewed by the stakeholder(s) that have undergone this assessment before making it final.

Notes: Project discription. What does it do, how does it work? Why do we execute a TPI assesment. Other information that can be usefull for the assesment.

Anything that has anything to do with the test process can be placed here.

Figure 13 Notes

Notes can be made about anything that has to do with the assessment or the test process which cannot be placed anywhere else in the tool and are still valuable for the assessment.

History:	Date	Change	User	Add rule
	4-11-2009 0:00	Send fille din scan to TM	Avewijk	
	13 nov 2009, 13:29	Create Key area tabs	rotter	
	2-11-2009 0:00	Filled in form	rotter	

Figure 14 History

Every time a button is used (for creation, deleting or updating), a new rule is created and filled in. This way you can always trace the actions that someone has taken during the assessment. The actions that are not generated automatically can be entered manually by clicking the "add rule" button which created a new rule on the top of the table.

3.4 List all Checkpoints

If you do not want to work with sorted sheets, but already know the answer to most checkpoints, you could choose to generate a sheet with all the checkpoints listed. This might give some more overview in the work. You can always choose to "change lanes" and create Key area sheets after filling in the checkpoints.

Information

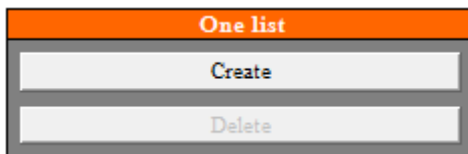


Figure 15 Creating one list with all checkpoints

By selecting "Create", a list of all Checkpoints is created, either in sequence or per Cluster. This will facilitate the process of indicating per Checkpoint whether it has been fulfilled or not.

3.5 Changing lanes

Changing lanes does what the name implies; you can change from one option to another without losing already filled in information. For example, you can choose to fill in your checkpoints by creating a list of all checkpoints (3.4) and after the assessment, change to sheets by Key area.

Information

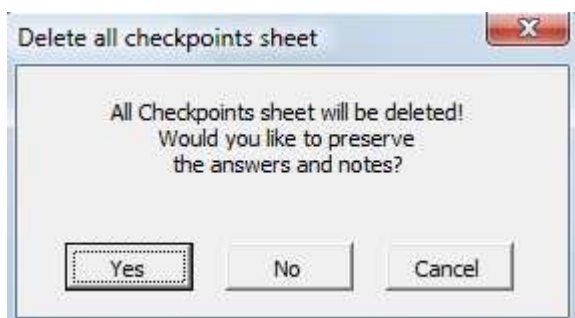


Figure 16 Choosing "yes"

This can be done by deleting the sheets that were created and choosing "yes" when asked to preserve the answers and notes. When a new option is chosen, these answers and notes will be placed back into the sheets. This is a good option to use when you want to see how well the test organization matches to CMMI. By simply deleting your sheets, preserving the answers and creating the CMMI sheets, the new CMMI view of the assessment can be shown.

✘ It is very important to choose "yes" when deleting sheets or your answers and notes will be deleted forever.

✘ Some functionality does not work correctly: see issue **IS.02** (5.1)

3.6 Refreshing

Information If anything has been changed in the Test maturity matrix, for instance by setting a value to the Checkpoints, the button "Redraw Matrix" must be used before the new information becomes visible. Reason why this is not done automatically is because there are a lot of calculations and formulas in the sheets, which make the tool very slow when this would be done continually. For this reason only, automated calculation has been deactivated and can only be activated by pressing the button.

3.7 Graphics

Test Maturity Matrix

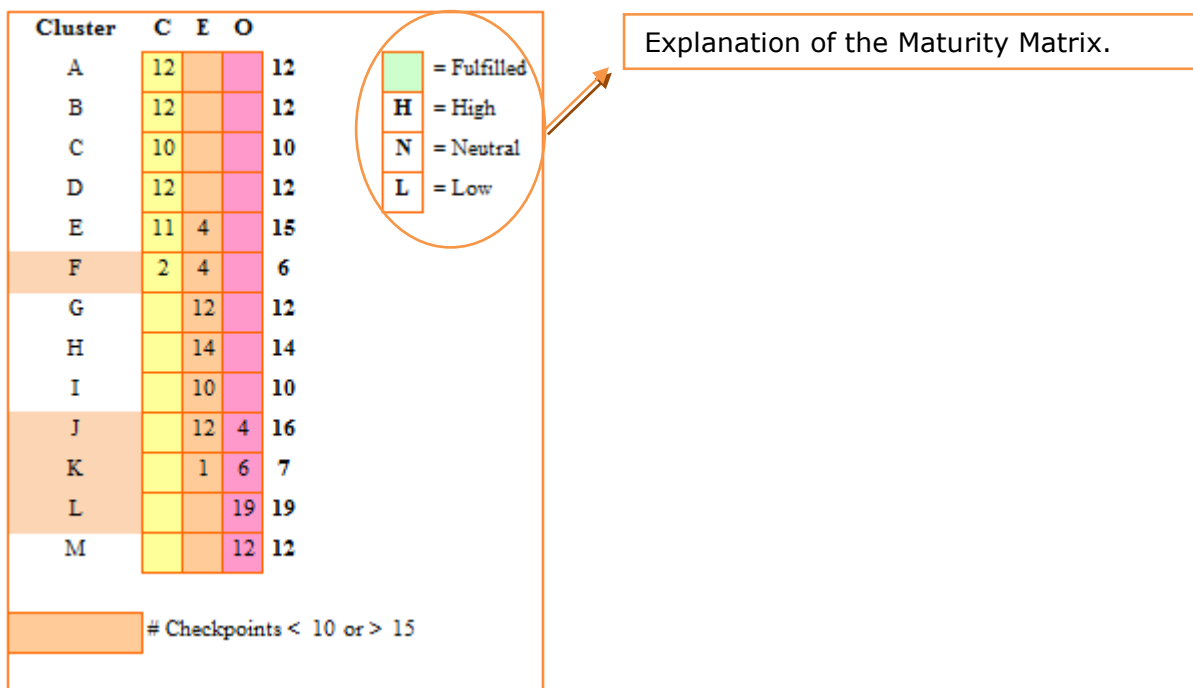


Figure 17 Number of checkpoints

In order to have clusters that are manageable, the number of checkpoints it must consist of should not exceed 15. And on the other hand, the clusters should be big enough to have any considerable impact.

Test Maturity Matrix

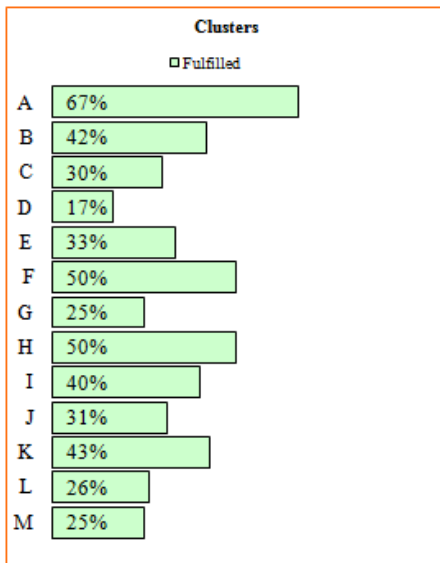


Figure 18 Progress

The chart as shown in the figure above, shows the progress of each of the clusters. For example Cluster A has 67% of its checkpoints fulfilled. All checkpoints filled with "NA" are not included. In other words; if a Cluster is at 100%, the next step (cluster) of Test Process Improvement can be taken. Normally you will see that this chart will show some sort of "staircase" (the higher the cluster, the lower the fulfillment).

Test Maturity Matrix

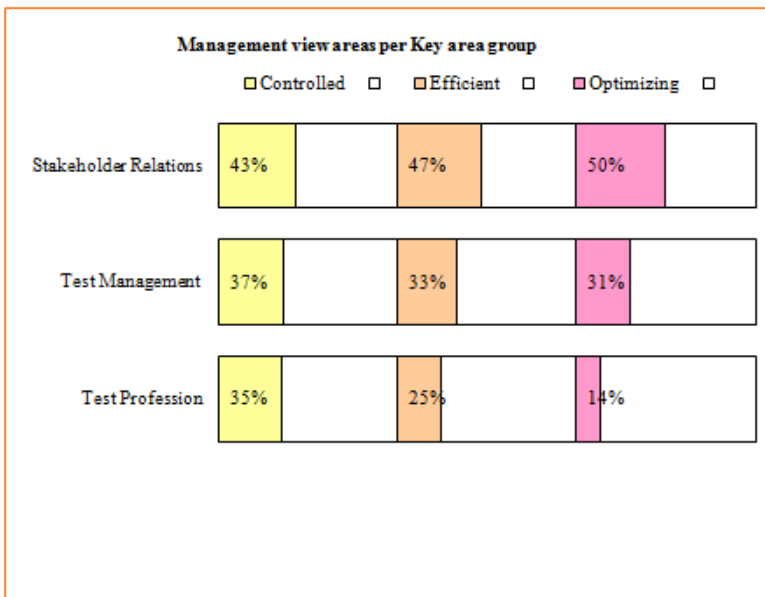




Figure 19 Key area Group fulfillment

This chart shows what the status of the different levels is divided among the different Key area groups. All checkpoints filled with "NA" are not included.

  [1] 3.2: Table 1: Description per Key area

  3.6 Refreshing

Test Maturity Matrix

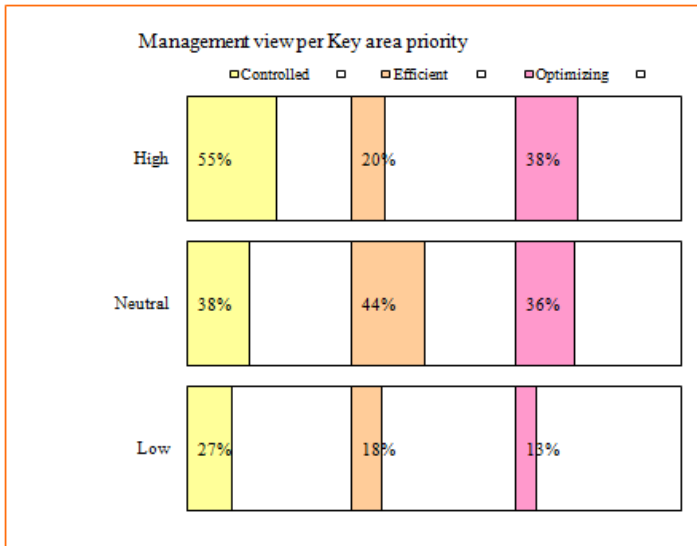


Figure 20 Key area priority fulfillment

This chart shows what the status of the different levels is divided among the different Key area priorities as filled in with the Business driver. If no Business driver has been chosen, this means that only the "Neutral" field will be filled in. All checkpoints filled with "NA" are not included.

3.6 Refreshing

3.8 Test Maturity Matrix

The Test Maturity Matrix is the main reason this tool was created. It will show you what the maturity is of your test organization or test project. By filling in the checkpoints in the different sheet, this Matrix will be colored either "green" (Fullfilled: Y) or "grey" (Fullfilled: NA).

Test Maturity Matrix

# Key areas	H	N	L	Initial	Controlled			Efficient			Optimizing				
1 Stakeholder commitment	x			Initial	A	A	A	B	E	G	G	J	L	L	
2 Degree of involvement		x			A	B				H	J		L	L	
3 Test strategy	x				A	A		The test strategy is based on a product risk analysis.			E	G		J	K
4 Test organization		x			A	D					I	J	J	K	L
5 Communication		x			B	C		F	J		M		M		
6 Reporting			x		B		D	H	H		L		L		
7 Test process management		x			A	A		H	J		K		M		
8 Estimating and planning		x			B	B		H	I	I	K	L	L		
9 Metrics		x			C		C	H	H	I	K		K		
10 Defect management			x		B	B		G	I	K	L	M	M		
11 Testware management		x			B	B		I	J	J	L	L	L		
12 Methodology practice		x			C		D	H	J	J	M		M		
13 Tester professionalism			x		E	E	F	F	H	H	J	J	L	L	M
14 Test case design	x				A	A	D	E	H	H	I	J	J	L	
15 Test tools		x			E	E	E	F	G	G	I	L	M	M	
16 Test environment			x		C	D	D	E	G	H	J	J	L	M	M


Figure 21 Test Maturity Matrix

All checkpoints can be viewed in the Matrix by moving your mouse over them. A comment screen will appear with the according checkpoint. In this way you can easily see what points need to be improved (next to the reporting sheet).


[1] 3.5: Table 1: The Test Maturity Matrix provides a visual overview

4 FREQUENTLY ASKED QUESTIONS


Why is the workbook password protected?

 **Answer:** This is done because of the fact that the (accidental) removal or renaming of sheets, can lead to unwanted effects. For example; if a created sheet (Cluster A) was deleted manually, the button "Delete" would generate an error. A workaround for this is available however, see XXX


Why is the sheet Test Maturity password protected?

 **Answer:** This is done because of the fact that the (accidental) removal or changing of cell content, can lead to unwanted effects. For example; if a cell in the matrix was deleted (1.c.1 for example), the filtering of the different checkpoint would give an error on sheet creation. Furthermore, the charts would be interpreted incorrectly as well.


Why is the VBA Code password protected?

 **Answer:** This is done because of the fact that the (accidental) removal or changing of the code, can lead to unwanted effects. For example; changing a name of a function that is referred to from other functions in the code, will lead to errors.

Will there be upgrades of the tool?

 **Answer:** Since this is just the first version of the tool, the intention is to improve this by letting people use it and give feedback on it. When this feedback can be integrated in a newer version is not yet clear because of the availability of application administrators.

Can I make suggestions for a change?

 **Answer:** Yes. If the suggestion is made by more people and found to be a improvement of the tool, it will be integrated in the next release.

5 KNOW ISSUES AND WORK AROUNDS

Because this is the first version of the Test Maturity Matrix tool, there are still some known issues which are not yet solved. These will be listed below. If you find any other issues that are not stated below, please let us know and we will try to solve them with the next version of the tool.

5.1 Information sheet

ID	Type	Discription
IS.01	Change	Layout of buttons should be made more effective
IS.02	Issue	When "all checkpoints" sheet is deleted and the option "preserve answers?" is "no", the answers are nevertheless preserved. Workaround: 1. Delete "all checkpoints sheet" (choose "no"). 2. Create "Cluster" sheets. 3. Delete "Cluster" sheets. 4. Choose "no". Answers are now deleted.

5.2 Test Maturity Matrix

ID	Type	Discription
TMM.01	Issue	Dependency 7.C.3 and 8.C.1 is not checked when both LA 7 and 8 are set to low and KA 7 I set to high. When KA 8 is set to low when level 7 is not, the dependency does work.

5.3 All checkpoints

ID	Type	Discription
AC.01	Issue	If project(client) is not filled in in the "information" sheet, a "0" will appear on the first row.
AC.02	Change	Dropdown "fulfilled" shows not only N/Y/NA, but n/y/na as well. Would be one choice, but when filled in with the keyboard, both should be possible.

5.4 Key Area sheet

ID	Type	Discription
KA.01	Issue	If project(client) is not filled in in the "information" sheet, a "0" will appear on the first row.
KA.02	Change	Dropdown "fulfilled" shows not only N/Y/NA, but n/y/na as well. Would be one choice, but when filled in with the keyboard, both should be possible.

5.5 Cluster sheet

ID	Type	Description
CL.01	Issue	If project(client) is not filled in in the "information" sheet, a "0" will appear on the first row.
CL.02	Change	Dropdown "fulfilled" shows not only N/Y/NA, but n/y/na as well. Would be one choice, but when filled in with the keyboard, both should be possible.

5.6 CMMI sheet

ID	Type	Description
CM.01	Issue	If project(client) is not filled in in the "information" sheet, a "0" will appear on the first row.
CM.02	Change	Dropdown "fulfilled" shows not only N/Y/NA, but n/y/na as well. Would be one choice, but when filled in with the keyboard, both should be possible.

5.7 Checkpoints to improve

ID	Type	Description
CI.01	Issue	If project(client) is not filled in in the "information" sheet, a "0" will appear on the first row.
CI.02	Change	Dropdown "fulfilled" shows not only N/Y/NA, but n/y/na as well. Would be one choice, but when filled in with the keyboard, both should be possible.

6 APPENDICES

6.1 Bibliography

[1] TPI NEXT, Business Driven Test Process Improvement, Sogeti, Tutein Nolthenius publishers, 2009, ISBN 90-72194-97-7

[2] White Paper, TPI NEXT Clusters for CMMI, Sogeti/Capgemini, <http://www.tpinext.nl>, 2009