Maturing by Learning
Can aiming at shared minds result in an action plan for growing to the next level in IT Process Maturity?

Gwenda Frijns, 30 May 2008
Maturing by Learning
Can aiming at shared minds result in an action plan for growing to the next level in IT Process Maturity?

Gwenda Frijns
Gwenda.Frijns@Officedepot.com
Mobile 0651207088
Open Universiteit Nederland
Faculty Managementwetenschappen (Science of Management)
MSc. Business Process Management & IT
OU number 850086668

Commission:
Examinator1 : prof. dr. ir. Kees Takkenberg
Examinator2 : ir. Kees Aarts

Stakeholders:
Manager : Kees Gülcher (Director Office Depot IT Governance Europe)
          : Martial Frugier (Sr Director Office Depot IT Europe)
          : Yann DeMonclin (Director Office Depot IT TSS Europe)

Status : Definitive
Version : 1.0
Date : 30 May 2008
"Do not follow where the path may lead. 
Go instead where there is no path and leave a trail". 
Harold R. McAlindon (American vice-president, CEO of several institutions)

"Never tell people how to do things. 
Tell them what to do and they will surprise you with their ingenuity". 
George Patton (American General 1885-1945)
PREFACE

A long time ago, a history lesson about the "Homo Universalis" has been a true inspiration for me. Only the combination of several competencies will make a person complete.

Several competencies can be learned by sharing knowledge and learning from others. A person can develop and mature by doing this. My interest in psychology and discussions with prof. dr. ir. Kees Takkenberg made me wonder whether the same is applicable for organizations. Would it not be interesting if parts of an organization could mature by learning from each other?

The search started within the complexity of available maturity models within the area of Information Technology and progressed through change approach strategies to the MetaPlan brainstorming method. As the research developed from technical towards more social and psychological aspects of change, my interest and motivation increased to discover the result of all these pieces of information. This report provides a model that will support maturing IT Processes by learning through aiming at a shared mindset.

Managers and other individuals involved in managing change will find interesting information to support them in the journey of change. Researchers will find suggestions for further research. The report starts with an introduction and proceeds with the description of the research scope and approach. After this a maturity model, a change strategy and communication approach are described in chapter four and five. Chapter six presents the practical approach and result of this research. The research report will be closed by conclusions, recommendations and a reflection.

The main conclusion of this report is that MetaPlan brainstorming can lead to an action plan with limited or extra effort to move to the next level of maturity, as defined in the IT Process Maturity Model. However the model needs to be pre-discussed with the brainstorming participants before the actual brainstorm session. The outstanding question however, is whether a maturity model or a benchmark scorecard has been created.

Like with any other study, but especially with this one that took multiple years, I am not able to see the world the same as before I started it. Performing this research learned me a lot about maturity models, change strategies and brainstorming, but most of all about myself and the people in my environment.

First of all I would sincerely like to thank Frans van Duivenboden for expressing his believe in life long learning when I requested for this MSc. Business Process Management & IT education in 2005. Also I would like to thank my manager Kees Gülcher for facilitating me and prof. dr. ir. Kees Takkenberg for coaching me and stimulating my creativity during the execution of this research. Furthermore, I would like to express my gratitude towards the participants of the pilot project for their trust and participation. Within the scope of this pilot project, a separate thank you goes to Tjerk Heijmens-Visser for sharing his expertise and active support during the execution.

Most of all I would like to thank my partner in life, Geert Linssen, for supporting me in my drive for personal development and the challenging learning experience of which the result lies in front of you.
TABLE OF CONTENTS

PREFACE ................................................................................................................................. 4
ABSTRACT ................................................................................................................................. 7

1. INTRODUCTION .................................................................................................................. 9
   1.1 Research environment: Office Depot IT Europe ............................................................. 9
   1.2 Maturing towards a service oriented organization ....................................................... 9
   1.3 Changing by learning ................................................................................................... 10

2. RESEARCH SCOPE ......................................................................................................... 11
   2.1 Basis of this research .................................................................................................. 11
   2.2 Goal of the research .................................................................................................... 11
   2.3 Research main and sub-questions ............................................................................. 11

3. RESEARCH APPROACH .............................................................................................. 13
   3.1 Explanation regarding used research method ............................................................ 13
   3.2 Visualization of the research scope .......................................................................... 14
   3.3 Search strategy ........................................................................................................... 14

4. SELECTING THE RIGHT MATURITY MODEL ............................................................ 16
   4.1 A single process model for IT ..................................................................................... 16
   4.2 Why existing models aren’t good enough .................................................................. 17
   4.3 Design of the IT Process Maturity Model .................................................................. 18

5. PAVING THE PATH FOR CHANGE .............................................................................. 21
   5.1 A collective learning process approach ....................................................................... 21
   5.2 A method to determine the path .................................................................................. 22
   5.3 Risks and limitations of brainstorming ....................................................................... 25

6. VALIDATION MATURITY MODEL AND METAPLAN .............................................. 28
   6.1 Approach of the pilot MetaPlan session ....................................................................... 28
   6.2 Execution of the pilot MetaPlan session ...................................................................... 29
   6.3 Survey results participants .......................................................................................... 32
   6.4 Survey results experts ................................................................................................ 33

7. CONCLUSIONS .............................................................................................................. 35
   7.1 IT Process Maturity Model ........................................................................................ 35
   7.2 MetaPlan brainstorming method ................................................................................. 37
   7.3 Maturing IT processes by learning through MetaPlan ................................................. 38
8. RECOMMENDATIONS ............................................................................................................ 40
8.1 IT Process Maturity Model .......................................................................................... 40
8.2 MetaPlan brainstorming method ............................................................................... 41
8.3 Suggestions for future research ................................................................................ 42
8.4 Roadmap for growing in process maturity ................................................................. 43
8.5 Product reflection ..................................................................................................... 44
9. REFLECTION ...................................................................................................................... 45
EPILOGUE .................................................................................................................................. 46
LITERATURE ........................................................................................................................... 47
GLOSSARY ................................................................................................................................ 49
Appendix A. Gartner IT Management Process Maturity Model ......................................... 51
Appendix B. Process Classification Framework (APQC organization, 2006) ....................... 52
Appendix C. IT Hierarchical Process Framework ............................................................... 53
Appendix D. Maturity Models Compared ........................................................................ 54
Appendix E. IT Process Maturity Model .......................................................................... 56
Appendix F. Change colors at glance .............................................................................. 63
Appendix G. Survey questions participants ..................................................................... 64
Appendix H. Returned Survey Metaplan expert ............................................................... 67
Appendix I. Returned Survey APQC expert ..................................................................... 68

Table of Figures
Figure 1 Problem complexity ........................................................................................... 9
Figure 2 Enablers of a learning organization (Takkenberg, 2003) ..................................... 10
Figure 3 Regulative cycle (Aken van, 1994) .................................................................. 13
Figure 4 Research model (Verschuren et al., 2002) ....................................................... 14
Figure 5 MetaPlan Brainstorm Process Maturity Model ................................................ 30
Figure 6 The IDEAL Model (Gremba & Myers, 1997) .................................................... 43

Table of Tables
Table 1 Search terms ........................................................................................................ 15
Table 2 Existing maturity level titles compared ............................................................... 18
Table 3 Selected maturity levels and main criteria ......................................................... 19
Table 4 Brainstorming risks ............................................................................................ 26
ABSTRACT

Purpose
This report presents the approach and results of a case study at the Information Technology (IT) department of Office Depot Europe, where brainstorming is used to create a plan for growing in process maturity. First an IT Process Maturity Model is selected that is most applicable for a European IT organization that is currently at an early stage of maturity and is aiming to move towards a service oriented organization. The criteria for maturity level zero to three that are needed to move to the next level of maturity and priority indications are included in this model. The maturity model describes what needs to be done to move to the next level in maturity. The next step is to determine how to achieve this. A brainstorming method is selected that can result in planning actions to move to the next level of maturity and support cross-silo communication. Furthermore, the risks of the selected brainstorming method and possible alleviations are described.

Taken approach
The selection of the IT Process Maturity Model and the brainstorm method were done by performing a literature study on relevant subject matter articles. After the literature study a brainstorming pilot project was executed and closed by a survey filled out by the participants. Furthermore experts have been asked to share their opinion by filling out a survey as well. The combination of results of the literature study, the participant's feedback and external opinions resulted in recommendations regarding the creation of an action plan through brainstorming in order to move to the next level in the selected IT Process Maturity Model.

Findings IT Process Maturity Model
A process model is best suited as the organizational reference model to ensure anticipation on the cross-departmental approach of the model. The Process Classification Framework of The American Productivity and Quality Council (APQC) consists of a list of business areas and processes, including Information Technology. The maturity levels that are used in the Gartner IT management process maturity model, the Capability Maturity Model integrated and the IT Service Capability Maturity Model are analyzed, combined and added to the APQC IT Process Framework resulting in the IT Process Maturity Model. The most important criteria for each maturity level have been described and extended with an additional split in three sub criteria, to simplify the required process change steps. The process areas have also received a priority number and all processes that have obvious direct customer contact have been marked to provide extra support to management.

Findings MetaPlan brainstorming
Two change strategies have been combined. Creative tension, where the desired future is described in the maturity model, and green-print-thinking, where the change of behavior will be achieved through participation. For the participation element of this research the MetaPlan brainstorming method has been selected. MetaPlan brainstorming is suitable for creating a cross-departmental, shared mindset and can result in the creation of an action plan. The most important risks with this approach are incorrect group size, no variation or new input during the session, groupthink or groupshift, unequal speaker time, lack of trust or involvement and cultural differences and an inexperienced moderator. Anticipations for these risks have been addressed in this research.
Conclusions and practical implications
The presented IT Process Maturity Model is not a traditional maturity model. The basis of the model is a scorecard for benchmarking the maturity of any given process. Priority numbers indicate in which maturity level each process should be executed. For using the IT Process Maturity Model it is necessary to understand the basic concepts of maturity models and process modeling. In order to get the model embedded in an organization it is important that it is recognizable for the users. MetaPlan brainstorming can lead to an action plan with limited or extra effort to move to the next level of maturity, as defined in the IT Process Maturity Model. The model needs to be pre-discussed with the brainstorming participants before the actual brainstorm session. However, before being able to discuss about growing in the level of maturity it is a requirement to have a view on the current situation.

Limitations and suggestions for further research
The results of this research are based on one case study and two expert opinions. Future case studies on the presented subject could emphasize the outcome presented in this report and with that either increase or decrease the significance of this research.

Originality and value
No or limited research is available regarding to the approach how to achieve what has been described as being the next step in a maturity model. Most studies only describe what needs to be done, this study also describe how this could be done.
1. INTRODUCTION

An introduction will be given through a description of the research environment. The goal of this research will be explained through a decomposition of the problem complexity.

1.1 Research environment: Office Depot IT Europe

Office Depot is a global acting retail company in office products. Incorporated in 1986 and headquartered in Delray Beach, Florida, United States, Office Depot has annual sales of approximately $15.5 billion and employs approximately 52,000 associates around the world. Currently, the company sells to customers directly or through affiliates in 44 countries.

The European head quarters of Office Depot resides in Venlo. The European IT department supports all European departments and 16 countries.

As Office Depot is a retail organization Information Technology will play more and more an important role to serve customers. IT can support the business in achieving competitive advantage. However, the current IT organization is perceived by the business as slow and not supporting in a fast changing environment. This is visualized by the fig 1 Problem complexity. A quick-review performed by Gartner in October 2007 confirmed that IT is considered as a "showstopper" for the business.

1.2 Maturing towards a service oriented organization

The European IT leadership team would like to change the current setting of the IT organization, as it doesn’t measure up to the demands of the business. To be more in alignment with customer demands, Senior IT Management would like to move towards a service oriented organization. The Gartner IT Management Process Maturity Model (shown in Appendix A: Gartner IT Management Process Maturity Model) was presented in a management meeting in June 2006 as a mirror in order to show that the organization is only at the beginning of this journey.

Though this appears to be a very suitable model for the Office Depot European IT situation, it is specifically aimed at IT Management processes. Other maturity models have additional IT processes that have not been included in the Gartner model. This research answers whether another model or a combination of models is better suited for the Office Depot European IT organization.
1.3 Changing by learning

The next challenge arises once the right model is available. Defining an action plan based on a theoretical model is rather difficult. Especially in a fast changing environment, management does not have sufficient time or management resources available to prepare the plan themselves. In order for organizations to change fast the traditional hierarchic and matrix approaches will no longer suffice, because these approaches slow down communication. Another issue is the plans which have been created in "ivory towers", do not receive the operational and tactical commentary needed to complete them. Senior management may have a clear idea of what they would like to achieve, but it is the tactical and operational level that have to come up with ideas on how to achieve the status desired by senior management.

A possible approach is to develop more into a learning organization. A learning organization stimulates learning and development of all participants and transforms itself constantly. Figure 2 shows the enablers of a learning organization.

![Figure 2 Enablers of a learning organization (Takkenberg, 2003)](image)

Growing towards a service organization will require cross-silo communication. The emphasis in this research project will be on the cross-departmental communication area: involving employees through participative planning. One possible way of doing this, is by organizing brainstorming sessions.
2. RESEARCH SCOPE

The initiation and goal of the research will be described in this chapter, based on the introduction that has been given in chapter one. The direction of the research will be explained through main questions and sub-questions.

2.1 Basis of this research

With the many different maturity models available, the challenge is to make the correct choice as to which maturity model is the best in a specific situation. After selection it has been proven difficult in practice to create an action plan to move to the next level of maturity and how to involve and commit the executioners of the action plan in a fast changing environment.

2.2 Goal of the research

The goal of this research is to present a set of recommendations for defining planning actions through brainstorming in order to move to the next level of IT process maturity.

2.3 Research main and sub-questions

The questions formulated below supported in meeting the goal of this research. The first set of questions focuses on the creation of a useful maturity model. The second set of questions focuses on the method that was used to determine how changes in the next phase should be performed based on the model. The third and last set of questions resulted in recommendations based on expert opinions and a pilot.

First research question:
Which IT process maturity model is most applicable for a European IT organization that is currently at an early stage of maturity and is aiming to move towards a service oriented organization?
   1. What criteria can be used to assess the baseline maturity of a process (phase 0-1)?
   2. What are the criteria to move to the next level of maturity (phase 1-2)?
   3. What can be added to the model to support management in prioritizing the process areas and processes?

Second research question:
Is it possible to define planning actions to move to the next level of maturity through a brainstorming method?
   1. What brainstorming method is most suitable for cross-silo communication and creating a plan?
   2. What risks can be expected when using the selected method and what can be done to alleviate these risks?
Third research question:

Can brainstorming support the creation of an action plan in order to move to the next level of maturity as defined in the IT process maturity model?

1. What is the expert opinion regarding to brainstorming in order to define an action plan for moving to the next level in the IT process maturity model?
2. Has the pilot group succeeded in creating a plan based on the IT process maturity model through brainstorming?
3. Based on the answers of the previous two questions, what recommendations can be made regarding the creation of an action plan through brainstorming in order to move to the next level in the IT process maturity model?

Now that the questions have been formulated that describe what was researched, the next chapter will get into details how this was done.
3. RESEARCH APPROACH

Several research methods are used for this research project, which are explained in more detail. The scope of the research project is visualized through a model. The last paragraph explains the applied search strategy.

3.1 Explanation regarding used research method

The research method followed in this report is primarily based on the theory of Verschuren en Doorewaard (Verschuren & Doorewaard, 2002). The research model based on this theory is shown in the next paragraph. Additionally, the theory of Saunders and Lewis (Saunders & Lewis, 2007) has been used, especially in the literature study and for the checklists that support quality evaluation of the performed research.

For the validation of the research, the regulative cycle described by van Aken has been used (Aken van, 1994). Van Aken describes three types of science:
(a) Formal science, validated through logical consistency.
(b) Empirical science, validated through the truth of reality.
(c) Design science, validated through test cases.

Since it is difficult to establish validity by logical consistency or observation of reality when a new artifact is being designed, the most reliable test is through a case study. The method for validation is qualitative.

![Regulative cycle](image)

**Figure 3 Regulative cycle (Aken van, 1994)**

The regulative cycle (Fig. 3 Regulative cycle (Aken van, 1994)) contains the IT process maturity model that is used to test for a specific process area in IT. This area has been diagnosed with regard to the current situation (as is) and a plan has been created (to be) by means of a brainstorming method. The intervention part is not in scope for this research due to lack of time. However, the pilot brainstorming group has been asked to provide their feedback regarding to the feasibility of the approach. The results of the brainstorming session were evaluated with the pilot group and IT management. External experts provided their opinions regarding the brainstorming approach to defining an action plan for moving to the next level in the IT process maturity model as well.
3.2 Visualization of the research scope

This research model is based on the theory of Verschuren and Doorewaard (Verschuren et al., 2002).

<table>
<thead>
<tr>
<th>Resources</th>
<th>Knowledge</th>
<th>Validation</th>
<th>Conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory IT processes</td>
<td>IT Process Maturity Model</td>
<td>Expert opinions</td>
<td>Recommendations brainstorm method for creating action plan based on IT Process Maturity Model</td>
</tr>
<tr>
<td>Theory Maturity Models</td>
<td>Analyze results</td>
<td>Pilot Brainstorm session</td>
<td></td>
</tr>
<tr>
<td>Theory Service Organization</td>
<td>Brainstorm method</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Theory Brainstorming</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Theory Learning organizations</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 4 Research model (Verschuren et al., 2002)

Explanation of this research model in wording:
(a) Studying the theories of IT processes, maturity models, service organizations and the theories about learning organizations and brainstorming,
(b) Will result in a IT process maturity model and a method for brainstorming,
(c) Which will be tested by performing a pilot brainstorm session and inviting expert opinions,
(d) Resulting in a set of recommendations for creating an action plan through brainstorming to move to the next level in the IT process maturity model.

3.3 Search strategy

The most important research literature databases that have been used for this research are "ABI Inform" and "Elsevier Science Direct". Besides these two databases other databases have been used as well, such as "Emerald" and "Springer Link". However, these mostly did not result in a contribution to the result of this
literature study. Also the library databases from the HEAO in Sittard, the Technical University in Eindhoven and the University of Tilburg have been browsed to find articles for the creation of this report.

Regarding to articles that have been used to create this report it is important to be aware that there are significant differences in quality. Some internet articles have been used, such as the MetaPlan article from 12manage.com. Though internet is not considered to be a qualitative source for scientific research, it provides useful background information on a variety of subjects. In addition articles have been used that have been created by companies, such as the article written by IBM employee Keel (Keel et al., 2007). These articles could potentially be written in favor of the supplier. However, articles written by companies are interesting, due to the usability of these articles for practical application.

Furthermore, the aim of this research was to use articles that have been published after 2002. For the selection of the IT Process Maturity Model this was an achievable target. However, for the subject brainstorming and especially MetaPlan this target has not been achieved. Mostly the recent articles on these subjects, if available, were not applicable for this research project.

The instruction from the Open University is to focus on articles and not on books, due to the strict time limits that are set. A minimum of fifteen articles were be used for this research. Experience in practice learned that it is rather difficult to write a literature study without using any books. However, the amount of books used has been kept to a minimum to comply as much as possible with the instructions from the University.

The table below displays the primary search terms that have been used for this research project.

<table>
<thead>
<tr>
<th>Primary search terms</th>
<th>Theoretical reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT Process Maturity Model</td>
<td>Compare the Gartner IT management process maturity model (GITMM), the Capability Maturity Model integrated (CMMi), the IT Service Capability Maturity Model (ITSM) and the Service Firm Capability Maturity Model (SFMM) regarding to IT process completeness. Specifically focus on delivering service and business alignment.</td>
</tr>
<tr>
<td>Maturity model levels</td>
<td>Focus on criteria that determine which current maturity level the organization resides in and what criteria need to be addressed in order to achieve the next level of process maturity.</td>
</tr>
<tr>
<td>Service Organization</td>
<td>Determine what criteria make an organization a service organization.</td>
</tr>
<tr>
<td>Learning organizations</td>
<td>Appropriate change strategy for quick changing competitive environment. Investigate participative planning.</td>
</tr>
<tr>
<td>Brainstorming methods</td>
<td>Define an approach for the pilot project.</td>
</tr>
</tbody>
</table>

Table 1  Search terms

The results of the literature research approach that has been described in this chapter, are detailed in the next two chapters.
4. SELECTING THE RIGHT MATURITY MODEL

The right maturity model needs to be selected for Information Technology (IT). This chapter describes what criteria have been used to select a model and describes the structure of the model in more detail.

4.1 A single process model for IT

Models can be used to create a common view and ontology regarding the direction of the strategy. They enable an organization to move towards a more learning organization. Furthermore, models can assist in generating new ideas.

By describing a specific reality on paper, tacit knowledge becomes explicit, enabling others to learn from it, preventing the organization from reinventing the wheel. A single model will enable cross-silo communication and make it easier to compare results. “The result of using a single model is a greater appreciation for how various parts function, a rising interest in group problem-solving and a general increase in cooperation across the organization” (Ibrahim et al., 2004).

It is important to select the right view to use for the model. Using a different view of reality will result in a different interpretation and discussion. Also the level of education and experience might have effect on the usability of the model. A basic starting point should be that the model is understandable for everybody that is expected to apply it.

According to Kusters (Kusters et al., 2004) there are several approaches possible when creating an organizational reference model:

1. Organizational structure. In the organizational structure model existing organizational units are defined as are the functional relationships between these organizational parts.
2. Functional decomposition. This model is often used within the Administrative Organization approach, where core functions such as the procurement function, the sales function, the production function are distinguished. Categorizing functions into sub functions is referred to as functional decomposition.
3. Process approach. A process is described as a purposeful and interconnected series of activities.

The organization structure model has the disadvantage that it often changes and is therefore less interesting to use when the goal is to understand the key characteristics of the organization. The functional approach focuses on the competencies of an organization, but not particularly on the execution of these competencies. The process approach explicitly focuses on the execution of activities, as well as paying attention to the interconnection and purpose of the activities.

In order for an IT organization to move from a technical oriented organization, towards a service oriented organization quality processes need to be implemented in order to be able to provide service to the customers (Keel et al., 2007). Services are based on several processes, which make it highly important to take a cross-departmental approach. For this reason the process approach is used for this research to create a common language.
Ibrahim (Ibrahim et al., 2004) confirms that process improvement can lead to meeting business needs and goals more effectively. "These goals might be to enhance customer satisfaction, create higher quality products and services, lower development and maintenance costs, shorten the time to deliver its products and services, or increase the predictability of product and service development". Ibrahim also confirms that "Programs and organizations pursuing process improvement have consistently reported enhanced productivity, higher quality, increased ability to predict schedules and allocate resources, higher morale, and better communications and teamwork".

4.2 Why existing models aren’t good enough

The choice for this research is to use a maturity model and not a Total Quality Management Model or any other available improvement models. The main reason is that a maturity model was already introduced in IT and there is no obvious reason against using a maturity model. The reasons that are applicable for not implementing the Capability Maturity Model integrated are potentially applicable for other maturity models as well: the organization is too small, the services are too costly, the organization has no time or the organization is using another improvement approach. Small organizations tend to state that adopting is unfeasible, but not state it would be unbenefficial (Staples et al., 2007).

Based on available knowledge and experience with maturity models, four process-driven models have been considered for use in maturity level process improvement:

1. Gartner IT management process maturity model (GITMM) (Curtis, 2006)
2. Capability Maturity Model integrated (CMMi) (Huang & Han, 2006)
3. IT Service Capability Maturity Model (ITSM) (Niessink et al., 2005)
4. Service Firm Capability Maturity Model (SFCMM) (Chase & Hayes, 1991)

As with most models, these models illustrate a limited view of IT maturity, because they primarily focus on a specific area. Attention is, for example, given to the development, operations, infrastructure or the strategic management aspects of IT. These models are fine if the aim is to focus on one specific area. Focusing on multiple areas will require multiple models, increasing complexity of communication within an organization, because one single process model for IT is not available. A combined model of all these different processes is required in order to provide IT management the total scope of the required improvements.

Furthermore it is important to align the process model with the business and not to treat IT as a separate island, to ensure that the model can be referenced to, by the business when required, in the near future.

The American Productivity and Quality Council (APQC) has created a business Process Classification Framework (PCF) (APQC organization, 2006) that includes Managing Information Technology (see Appendix B: Process Classification Framework) (APQC organization, 2006). The APQC grouped the managerial and administrative processes together. These processes apply specifically to those processes within a single organization (Amaravadi, 2005). Some discretion is still required with this model, as it is still in development phase. It is written as a generic organization model and it is quite abstract for creating specific actions. Especially this last comment has a significant impact on the outcome of this research. Another disadvantage of this model is that no maturity levels have been included.
Though the disadvantages of the model were clear, the “Managing Information Technology” process will be the basis for the creation of a maturity model. The model has been selected for its cross-functional business approach and broad IT process approach. For the readability an IT Hierarchical Process Framework has been created, that will show the main processes on one page (see Appendix C: IT Hierarchical Process Framework). Applicable parts from the four maturity models that have been mentioned earlier in this paragraph are used to create maturity levels to turn the PCF model into a maturity model (see Appendix E: IT Process Maturity Model).

### 4.3 Design of the IT Process Maturity Model

To determine the levels of maturity for the process model, the maturity levels of the Gartner IT management process maturity model, the Capability Maturity Model integrated, the IT Service Capability Maturity Model and the Service Firm Capability Maturity Model have been compared. Table 2 below shows the titles of the different maturity levels in existing models. A more detailed description of the maturity levels can be found in Appendix D. Maturity Models Compared.

<table>
<thead>
<tr>
<th>Level</th>
<th>CMMi</th>
<th>Gartner ITM</th>
<th>ITSCMM</th>
<th>SFC</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Chaotic</td>
<td>Initial</td>
<td>Initial</td>
<td>Available for service</td>
</tr>
<tr>
<td>1</td>
<td>Initial</td>
<td>Reactive</td>
<td>Repeatable</td>
<td>Journeyman</td>
</tr>
<tr>
<td>2</td>
<td>Managed</td>
<td>Proactive</td>
<td>Defined</td>
<td>Distinctive competence achieved</td>
</tr>
<tr>
<td>3</td>
<td>Defined</td>
<td>Service</td>
<td>Managed</td>
<td>World class service delivery</td>
</tr>
<tr>
<td>4</td>
<td>Quantitatively managed</td>
<td>Value</td>
<td>Managed</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Optimizing</td>
<td></td>
<td>Optimizing</td>
<td></td>
</tr>
</tbody>
</table>

**Table 2 Existing maturity level titles compared**

Going through this table it is clear that some differences can be identified regarding to the levels of the different models. The main issue with the CMMI model is that it is designed for the software engineering area within IT. The IT SCMM has the disadvantage that it is mainly based on the ITIL processes, which limits the scope. Also level 0 is missing in this model and details regarding to the key process areas of level 1 aren't described. For the Gartner model it is not clear whether a scientific approach has been taken for the creation of the model. However, it might have a higher practical value than the models that have been created according to a scientific method.

It is important to be aware that there are different level names within CMMI, depending on whether the continuous or the staged approach is being used. The difference is (Chrissis et al., 2003):

“*Capability levels, which belong to the continuous representation, apply to an organization’s process improvement achievement in individual process areas. These levels are a means for incrementally improving the process corresponding to a given process area. There are six capability levels, numbered 0 through 5*."

"*Capability levels, which belong to the continuous representation, apply to an organization’s process improvement achievement in individual process areas. These levels are a means for incrementally improving the process corresponding to a given process area. There are six capability levels, numbered 0 through 5*."
"Maturity levels, which belong to a staged representation, apply to an organization’s process improvement achievement across multiple process areas. These levels are a means of predicting the general outcomes of the next project undertaken. There are five maturity levels, numbered 1 through 5”.

The overview of the levels of the staged approach as described in the article “Selection priority of process areas based on CMMi continuous representation” (Huang et al., 2006) will be used for this research. The staged approach has been selected to make it possible to compare different maturity models.

For this research the focus will be on level 0 to 3 of the maturity models. Looking at the terminology that is used it is very confusing what is meant by each term. As the Gartner model also shows a phase 0 this term will clearly be used to describe the 0 stage. For the other three levels the terminology of the IT SCMM model will be used, because level 1 and 3 are equal to the CMMi model, which shows some consistency. Level 2 is described as managed by the CMMi model, which is quite confusing as the term managed is also used in the fourth level of ITSCMM and combined as “quantitatively managed” in the CMMi model. This results in the following selection of maturity levels and main criteria that will be used to create the IT Process Maturity Model, based on the Process Classification Framework:

<table>
<thead>
<tr>
<th>Level</th>
<th>Criteria for each process</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Chaotic</td>
</tr>
<tr>
<td>1</td>
<td>Initial</td>
</tr>
<tr>
<td>2</td>
<td>Repeatable</td>
</tr>
<tr>
<td>3</td>
<td>Defined</td>
</tr>
</tbody>
</table>

Table 3 Selected maturity levels and main criteria

As it is expected that reaching level 4 will take companies years to achieve. “Software organizations spent an average of two years to raise the level of their process maturity if they choose the staged representation of a CMMi model” (Huang et al., 2006). The levels above level three have not been included in this research project. However, further investigation might be interesting for future research.

Because the expectations are that the maturity of Office Depot will reside somewhere between step 0 and 2, an additional split within each maturity level has been created. The purpose of this step is to simplify the required process change steps, ensuring that changes are more easily visible and will simplify making the desired road to change concrete.

To support management in determining in what order the processes should be addressed, the processes themselves have also received a priority number, mostly applicable for a complete process area. The numbers are in line with the priority given by the maturity models that have been included in this research. In the existing models often the same processes are mentioned in the different levels of maturity. In each level, the maturity of the specific process increases. For the model developed in this research, a combination has been created for measuring the different process maturity levels and also to provide some guidelines for management as to what order the different processes can best be addressed.

Some processes such as those related to knowledge management are not specifically mentioned in the afore mentioned IT maturity models (CMMi, ITSMM, GITMM). For this reason, some processes do not have a maturity level priority number.
Occasionally, processes receive different priority numbers depending on the maturity models. In this case the levels have been given priority in the following order: GITMM, ITSMM, CMMi.

Because the existing maturity models focus more on one specific area, the processes contain more detail. This results in several missing processes in the Process Classification Framework. For this research, the original process areas of the PCF model have not been changed. Mapping the processes on the organization and identifying whether all areas are enclosed are questions for future research. For now the model has been assessed as being the most complete for the purpose of this research. Examples of possible missing processes include: project monitoring and control, service quality assurance processes, set-up and monitoring of Operational Level Agreements.

The Service Firm Capability Maturity Model is not usable within IT Process Maturity Model. However, emphasizing on the service oriented approach that Office Depot will take; all processes that have obvious direct customer contact have been marked to draw extra attention from management.

Now that a maturity model is available, the next step is to decide how to make the changes happen in the organization, which is described in chapter five.
5. PAVING THE PATH FOR CHANGE

In the previous chapter a IT Process Maturity Model was been developed that aims to describe what management would like to achieve. The second question is how the tactical and operational level can develop a plan, intended to achieve the desired state for each process. This chapter provides information regarding the selection of the method, that answers this second question.

5.1 A collective learning process approach

In the research of Schimmel (Schimmel, 2007) two types of changes are distinguished:

1. ‘First order change’ in which changes will be brought about within existing cognitive frameworks or models. At most there will be a learning process in which existing mental frameworks will not be discussed. In this process existing norms and values will not be changed (improvement learning or single loop learning from Argyris & Schöen, 1978).

2. ‘Second order change’ in which changes will not be brought about within existing cognitive frameworks or models. In contrast to first order change, in this learning process, existing mental frameworks and subsequent norms and values will be changed (similar to renewing learning or ‘double loop learning’ from Argyris & Schöen, 1978). The thought behind this is that behavioral changes will only endure when variables (cognitions, attitudes) that cause this behavior will change correspondingly.

The aspect of change which is important for this research is that there is a necessity to provide employees insights in the usage of process chains. This is classified as a second order change. The motivation for change is that the knowledge with regards to the functioning of process chains is generally weak or non-existent in organizations in which functional and hierarchical management takes place on an activity level (Schimmel, 2007).

According to Senge (Senge, 1990) leadership in a learning organization starts with the principle of creative tension, where there is a gap between a compelling picture of the desired future and an accurate picture of current reality. Leading through creative tension is different to solving problems. Changes that are initiated by problems lose energy when the urgency of the problem decreases. In this research the creative tension will be visualized by the IT Process Maturity Model. The model shows the future vision but will also support the change process by creating a view of the current reality.

There are several change strategies that can be applied. Caluwé and Vermaak (Caluwé de & Vermaak, 2004) introduce the color-approach. The same approach has been taken in Schimmel's research (Schimmel, 2007). Yellow-print thinking is based on socio-political concepts, where opinions play the most important role. Blue-print thinking is based on rational and planning. Red-print thinking is strongly related to Human Resources Management and change of behavior. Green-print thinking closely relates to learning organizations. White-print thinking is strongly related to the
complexity theory. Details about the different approaches can be found in Appendix F: Change colors at glance.

Senge (Senge, 1990) recommends taking a managerial systems thinking approach. People are used to looking at their environment in terms of static images. Problems are being reacted to as isolated events, not as part of a process. As long as leaders fail to see the interrelationships of the events, they will not be successful. Three tools are mentioned to "enhance leaders' conceptual abilities and foster communication and collaborative inquiry in learning organizations": "System archetypes" to reveal vicious circles, "Charting of strategic dilemmas" to unfreeze existing views that undermine change and the "Left hand column" exercise to surface mental models.

The point of departure will be to use the creative tension approach of Senge in combination with "Green-print thinking" of Caluwé and Vermaak. Schimmel concludes that approaching change as a collective learning process, which is similar to the green-print thinking approach, does not have any conceptual weaknesses. However, creating the unique conditions to initiate a collective learning process (to be allowed, the willingness and ability to learn), has proven to be difficult in practice. It is recommended not to use one single change strategy such as "Green-print thinking" or "White-print thinking", but also to pay attention to "Blue-print, Yellow-print and Red-print thinking" (Schimmel, 2007).

The other color change strategies could potentially be part of future research, but will not be included due to time limitations and lack of experience. The managerial systems thinking approach from Senge could also be interesting for further research in order to examine silo-thinking at the leadership level.

There is an important condition for green print thinking that could have a potentially negative effect on the outcome of this research, namely the implicit motivation of the employees. This refers to the willingness to learn, exchange experiences and to experiment. The change ideal is to move towards a "learning organization", that consciously applies intentional learning. Pitfalls in this approach are the unwillingness or inability to learn (in part due to missing skills) (Schimmel, 2007).

5.2 A method to determine the path

As described in the introduction of this research report, the focus of generating an action plan will be on cross-silo communication and brainstorming is a possible way to achieve this. The following criteria have been used to select the most appropriate brainstorming method:

- Suitable for creating a cross-silo, shared mindset
- Usable in a participative planning setting
- Resulting in the creation of an action plan

Now that it is clear that we would like to go to the sea, we should think of the path to take in order to get there. Perhaps we should start by thinking about the different pavements we may need. Simple stones will not do, as the path will be bumpy and full of obstacles. There will be rivers, mountains and other challenges. The people who reside in the original environment will probably not be motivated to change their nice comfortable environment into a structured path, where everything will be visible to everybody. Most likely though, in spending all day with their feet in the mud, they will be the experts on how to anticipate the challenges ahead. Actively contributing in paving the path will involve them; increasing the success in achieving the sea. They might even advise us that we don't need pavement, but a boat to sail the river to the sea...
Based on these criteria, three methods have been reviewed for use in this research: Action Planning, Mind Mapping and MetaPlan.

Action planning is an organizational development approach which emphasizes that change is achieved through action, as opposed to sitting around talking. Further investigation made it clear that this is not a brainstorming technique, since observation and sociological insights are most important aspects of this approach. Action planning is most applicable for teams that are feeling unsettled in their new roles, for example due to uncertainty or seemingly needless delaying. As this research focuses primarily on achieving a shared mindset and improving communication, instead of enhancing morale, this approach does not appear to be the best choice for the situation at hand.

Mind mapping and MetaPlan are both brainstorming techniques. Brainstorming is used to generate a large number of ideas on a given subject. The technique is based on the fact that ideas generated by a group are likely to be much more numerous and creative than those generated by an individual. Brainstorming is easy to use and can be used to identify problems, the causes of problems and their solutions. Eckerson (Eckerson, 1988) notes that brainstorming can break down the barriers between work groups or departments and give a company a competitive edge in a quick changing environment. Furthermore, Eckerson states that often an idea turns out to be an obvious solution that no one person or department working in isolation was able to grasp. The whole is often greater than the sum of the parts.

Zemke (Zemke, 1993) distinguishes three main brainstorming techniques:

1. Classical brainstorming
   "A classic brainstorming session brings together five to twelve individuals, chosen because of their knowledge of or experience with a problem that needs to be solved. A trained facilitator explains the format and purpose of the meeting, reviews the rules and principles of brainstorming, conducts a sample or warm-up exercise with the group if they have never brainstormed before, and defines the problem the group has been brought together to solve".

2. Interactive techniques
   "These techniques are like classical brainstorming because they also depend on group discussion. The best result is obtained when the group is small (fewer than ten people), time is plentiful, differences in status and opinion or viewpoint are likely to be minor, and discussion is deemed useful".

3. Parallel techniques
   "These techniques depend on solitary idea generation followed by pooling and discussion of the results. These methods are also referred to as "brain writing" techniques and work best with larger groups or teams, when time is at a premium, when status differences need to be equalized, or when a lot of ideas are considered important to the problem-solving process. They are also useful when anonymity might be desirable, at least during the initial idea-generating phase. Brain writing is especially appropriate when solitary reflection and a certain period of incubation are likely to produce better solutions to the problem at hand".

Beasley (Beasley et al., 2006) categorizes brainstorming techniques in to open brainstorming, round-robin brainstorming and electronic brainstorming. The open brainstorming from Beasley is comparable to the classical and interactive brainstorming techniques as mentioned by Zemke.
Mind mapping can be classified as an open brainstorming technique. Ideas are visualized by pictures that support a separation of the main issues from the less important or more detailed issues. The main disadvantage of this approach is that it is not as structured as parallel techniques.

"MetaPlan is a facilitation method that can be used by groups as a communication model, in which opinions are developed, a common understanding is built and objectives, recommendations and action plans are formulated to focus on a problem and its possible solutions" (Website 12manage, 2008).

Based on this definition, MetaPlan has been chosen as the most applicable method for this research. The three criteria that were used as starting point, are all addressed, namely a common understanding, a group communication model and creation of action plans.

Electronic brainstorming is also an interesting approach to generate ideas and to create a shared mindset. Electronic brainstorming can either be done in the same room or at different geographic locations. The electronic approach enables anonymity, which has a positive effect on the satisfaction of group members, increases the number of good ideas and enhances semantic diversity. "Anonymity positively affects groups' performance in idea generation, reducing the evaluation effect and the fear of disagreeing" (Pissarra & Jesuino, 2005). Other advantages of electronic brainstorming are that the participants can share ideas simultaneously, the possibility to work with larger groups, participation from different geographic locations, generating more ideas, shortening of meeting times and the reduction of personalizing ideas when conducted anonymously (Beasley et al., 2006).

The disadvantage of electronic brainstorming is the loss of social interaction that is the basis for trust and collegiality within the group. This could result in lower participation by group members which consider these factors as incentives to participate (Beasley et al., 2006). A further disadvantage of dispersed brainstorming is that participants aren't visible. Part of the information will be missing due to the invisibility of non-verbal communication and there is no guarantee that the individual group members are participating actively. For all intent and purpose, they might be performing other tasks simultaneously.

Basically MetaPlan will be applied in the practical part of this research, without any electronical support. MetaPlan can also be done anonymous, using simple techniques not requiring any software. However, anonymity is not a requirement for this research. Mindmapping could potentially be used in a later stage, in order to zoom in on specific plans or ideas that have been generated by MetaPlan. The interrelationships that result out of these sessions could then be used to create system archetypes as suggested by Senge, which have been mentioned in the previous paragraph. However, Mindmapping and System thinking will not be performed as part of the scope of this research.
5.3 Risks and limitations of brainstorming

Critique on the brainstorming process has been made by Arthur B. VanGundy Jr, as reported by Zemke (Zemke, 1993). VanGundy describes several generally supported findings that describe the downside of brainstorming:

- "Deferring judgment does not produce better ideas than simply asking participants to come up with high-quality ideas".
- "The "quantity-breeds-quality" principle appears to be valid. However, there is evidence that quality of solutions and ideas may be more closely related to the participants' personality characteristics than to a facilitator encouraging them to generate many ideas. In short, quality breeds quality: The selection of participants may be more important than the process they are instructed to follow".
- "Contrary to popular belief, brainstorming groups are not necessarily more cohesive, better motivated or more satisfied with their procedures than groups that use more judgmental techniques".
- "Brainstorming produces better results if the maximum number of participants is eight or nine, not twelve".

These comments provided by VanGundy contradict the goal to increase motivation. However, the nuances in VanGundy's statements should be recognized in the wording "not necessarily", which implies that it is possible but not a standard outcome. Furthermore, the recommendation to use high quality personnel is contradicted by Schwartz (Schwartz, 1991). Schwartz emphasizes that getting the best and brightest in one room, will not lead to the desired result. It will all depend on the proper techniques being used. Using a parallel and structured technique will be significantly better regarding to the number and quality of ideas produced according to VanGundy (Zemke, 1993).

Even though MetaPlan is a parallel and structured technique, there are still risks associated with this approach. The most important risks to have been mentioned as these could have a potentially significant impact on the research outcome. The table below presents an overview of the most important risks and how they can be addressed.

<table>
<thead>
<tr>
<th>Nr</th>
<th>Risk name</th>
<th>Description and recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Before the brainstorming session</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Group too large/small</td>
<td>VanGundy recommends to limit the group to nine participants (Zemke, 1993). Beasley recognizes that a larger group will lead to better results, but smaller groups will lead to quicker results (Beasley et al., 2006).</td>
</tr>
<tr>
<td>2</td>
<td>No variation or new input</td>
<td>Identify participants with different backgrounds in education and experience and encourage preparation before the session (Beasley et al., 2006).</td>
</tr>
<tr>
<td></td>
<td>During the brainstorming session</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Groupthink (Website 12manage, 2008)</td>
<td>According to Ivan D. Steiner &quot;Groupthink often occurs when highly cohesive groups are insulated from the critique of outsiders or groups have leaders who strongly advocate their own preferred solutions&quot; (Donhardt, 1993) According to Janis and Mann there</td>
</tr>
</tbody>
</table>
are safeguards that a moderator can use to protect his planning group from groupthink: try to remain impartial, built a title free atmosphere, ask contradicting questions, query each member and seek outside advice (Donhardt, 1993). This risk is also confirmed more recently by Beasley (Beasley et al., 2006).

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Groupshift</td>
<td>Groups tend to make judgments that are systematically different from those of individual group members. This could potentially lead to the group taking more risks or the group being more conservative (Beasley et al., 2006). Potentially the approach taken with groupthink can also be used to anticipate groupshift.</td>
</tr>
<tr>
<td>5</td>
<td>Unequal Speaker time</td>
<td>It is likely that a more extravert person will be speaking more than a more introvert person. The moderator will have to ensure that the more introvert person will also have sufficient speaking time. In case a very extravert person will participate, it is possible to make agreements with this person before the actual session regarding to the expected behavior.</td>
</tr>
<tr>
<td>6</td>
<td>Lack of experience</td>
<td>The moderator does not have sufficient experience to lead the session, resulting in too much detail or insufficient detail (Website 12manage, 2008). To prevent this, clear directions will be asked to experienced MetaPlan moderators.</td>
</tr>
<tr>
<td>7</td>
<td>Lack of trust/involvement</td>
<td>Gain trust by setting ground rules (Beasley et al., 2006). Set ground rules such as thinking outside the box, using other's comments or ideas as building blocks, not criticizing and allowing others to speak. Praise the group and not individuals to ensure that everyone will be encouraged to participate and take ownership (Beasley et al., 2006).</td>
</tr>
<tr>
<td>8</td>
<td>Cultural differences</td>
<td>For some cultures it is difficult to accept an open participative approach to problem solving and decision-making. This will have to be addressed before the meeting starts. Expectations of the participants needs to be expressed by the moderator. Any individual concerns can be discussed without the whole group being present. (Habershon, 1993)</td>
</tr>
</tbody>
</table>

**Table 4 Brainstorming risks**

Donhardt states that "whether they are total strangers or life-long acquaintances, planning team members are likely to exhibit some basic dynamics common in small groups. How well these individuals work together in planning sessions will affect their productivity" (Donhardt, 1993). It is important to be aware that during the session the group will evolve through four stages according to Tuckman (Zanten van, 2003): forming, storming, norming and performing.
Although participation during change is mostly being described as positive there are also some possible negative effects. Extensive participation can be very time-consuming, affecting daily operations. Furthermore, "if participants are asked to participate without having any real effect on decisions that are made, then participation will be costly for that particular change initiative, since organizational members are more likely to resist change". This is likely to have long-term effects, as subsequent change processes may be met with cynicism (Meyer & Stensaker, 2006).

Encouraging employees to creatively come up with solutions will also lead to staff starting to make their own decisions and action plans. Inevitably mistakes will be made. For management, the implications are that they allow for these mistakes and support staff in improving their work practices. This is particularly difficult if management is used to taking most decisions themselves.

Chapter six will provide details regarding the approach and outcome of the practical part of this research, of which the theoretical basis has been explained in chapter four and five.
6. VALIDATION MATURITY MODEL AND METAPLAN

A pilot MetaPlan brainstorm session has been executed based on the IT Process Maturity Model. The approach taken with this pilot, the execution and the results of the pilot will be discussed in this chapter.

6.1 Approach of the pilot MetaPlan session

The main objective of the session was to validate the theories described in the previous chapters and to gather information for recommendations regarding to the creation of an action plan through brainstorming in order to move to the next level in the IT process maturity model.

The derived sub goals were:

- Are the employees learning by sharing unexpected ideas, generated by combining employees of different departments?
- Is it possible to create a plan to increase maturity, based on the outcome of the brainstorm session?
- Is brainstorming an approach that could potentially be used more often to enable growth in process maturity?

In order to establish a representative brainstorm group several criteria have been taken in consideration. Different IT departments have been involved to enable cross-silo communication between different sub IT departments. Next to the involvement of several sub IT departments, a non-IT department person has been involved to enable cross-silo communication between IT and other departments. The process selected from the IT Process Maturity Model needed a manager (owner) that was willing and able to spend the required time in advance and during the session. Furthermore the managers' team should be allowed to spent preparation and execution time as well. Only Dutch attendees were involved in the first pilot to avoid possible cultures that have difficulty with accepting an open participative approach to problem solving and decision-making. No costs were made for traveling or tooling. Employees on operational levels were involved as they are daily "with their feet in the mud". The members already had some experience in process thinking to enable them to understand the concepts that were explained during the session. The participants relationship with the moderator was comfortable enough for the moderator to perform an experiment. No additional training was completed by the moderator. The preparation consisted of reading a book about the MetaPlan method and discussing the possibilities with colleagues that have some experience in brainstorming. A colleague with external experience of moderating MetaPlan sessions has been involved in the pilot to ensure experienced moderation of the session.

Based on the model, the following processes have been selected:

1. IT area "Deliver and support IT services", zooming in on the main process "Manage Infrastructure operations". The sub processes that have been discussed during the brainstorm session is "Manage account management related inquires".
2. IT area "Manage business resiliency and risk", zooming in on the main process "Develop and implement security, privacy and dataprotection controls". The sub processes that has been discussed during the brainstorm session is "Administering, auditing and reporting of account management controls".
This resulted in a group of seven participants that have been involved in the pilot session. The group consisted of one member of the project center that supported in moderating the session, one representative from the IT Helpdesk, three representatives of the IT IDentity and account Management, the IDentity and account Management manager, an IT Compliance and Security Officer and one representative from Human Resources.

Due to the operational responsibilities and the unfamiliarity of these kind of sessions, part of the day was authorized to spend on the MetaPlan session, from 09:00 to 14:00. Lunch has been included to enable a brief evaluation. Following actions have been planned in advance to do during the session:

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>09:00</td>
<td>Introduction, explanation theories and rules.</td>
</tr>
<tr>
<td>09:45</td>
<td>Gather expectations.</td>
</tr>
<tr>
<td>10:00</td>
<td>Utopiagame.</td>
</tr>
<tr>
<td>10:45</td>
<td>Process Maturity Model explanation.</td>
</tr>
<tr>
<td>11:00</td>
<td>Break.</td>
</tr>
<tr>
<td>11:15</td>
<td>Fill out Process Maturity Model.</td>
</tr>
<tr>
<td>12:00</td>
<td>Brainstorm from A to Better.</td>
</tr>
<tr>
<td>12:40</td>
<td>Group and prioritize from A to Better.</td>
</tr>
<tr>
<td>13:00</td>
<td>Lunch evaluation in subgroups.</td>
</tr>
<tr>
<td>13:30</td>
<td>Closing and evaluation.</td>
</tr>
<tr>
<td>13:45</td>
<td>Fill out evaluation forms.</td>
</tr>
</tbody>
</table>

The participants of the group have received an email in advance to inform them of the brainstorm, to provide them with some additional information and a request to prepare for the session.

Validation of the model will be performed by using a predefined set of criteria. The three criteria used by Niazi will be applied to the model in this research (Niazi et al., 2005):

- Ease of learning (is it easy to explain the model)
- Ease of use (does the model lead to a roadmap with activities)
- Satisfaction (what is the opinion of the participants with respect to the model and the approach)

The evaluation will be done by performing a survey with the participants of the pilot group. The outcomes of the survey will be discussed and evaluated with the IT Leadership team. After this, a feedback meeting will be held with the participants of the pilot session.

### 6.2 Execution of the pilot MetaPlan session

This paragraph describes the execution of the brainstorm session as perceived by the moderator and author of this thesis.

The group phases as described in paragraph 5.3 were experienced. The group was formed by the moderator, but immediately after the start there were signs of storming and norming. During the presentation of the summary of the strategy, cross-silo communication and the theoretical framework several questions were asked regarding to the backgrounds and basis of all of these subjects.
The group moved quickly to the performing phase during the gathering of the expectations. Gathering these expectations took longer than planned, as initially it was difficult to formulate the expectations but during the process a lot of ideas were generated, such as: an open session, exchanging of ideas and learning, broader insights in possibilities and impossibilities of growth path, something tangible, think more freely/ openness for other methods, think more process oriented, insights in the cross departmental handover moments, resources for process support (e.g. architecture), process implementation/follow up, common understanding process Identity Management and responsibilities, view on issues and challenges.

Because the group was up to speed on brainstorming the decision was taken by the moderators to skip the Utopiagame, as the timeframes were exceeded. The basics of the Process Maturity Model were explained and the group was asked to fill out the Process Maturity Model by adding dots. The colors of the dots were explained. Green dots for "where do you think we are now" and red dots for "where do you expect we could be in a year from now". After this each individual was asked to add the green and red dots. Yellow dots were improvised during the discussion as issues were experienced with processes that were considered level two but still had some outstanding actions that were assessed as minor issues, in level one. A picture of the model with the complete result has been taken after the brainstorm and is displayed in Figure 5. "MetaPlan Brainstorm Process Maturity Model".

![Figure 5 MetaPlan Brainstorm Process Maturity Model](image-url)
The blue dots were originally planned to use for the priority, but have been used to do a second exercise to determine the current state, after discussions were held about the naming and concept of the process. There was no concession in the group regarding to the name of the process. Issues were being experienced to the usage of English terms and the concept of a process. After adding three names of procedures it was possible to proceed with the estimations. The maturity of the process was estimated a lot higher when discussing about the procedures. After approximately fifteen minutes the group was asked whether anything was written about these procedures that could be used by multiple departments. This is where the group understood clearly that procedures and work instructions are described, but no information is available regarding to the cross-departmental process.

At the end of this discussion regarding to the expected achievable state, which is represented by the red dots at the bottom, it was also decided by the group that the first estimation of the current state was most likely correct. A and B represent the eventual outcome of the session of where the process resides in the "as-is maturity" and the "to-be maturity".

The process to mark the A and B in the model took approximately two hours. There was only half an hour left for the actual brainstorm about how to get from A to B. At the start of the brainstorm each individual reasoned from his or her own perspective. The further the brainstorm progressed the more the individuals felt they could individually contribute to the whole of the sum of the parts. Unfortunately there was no more time left to proceed with the brainstorm and the MetaPlan brainstorm session was closed by a brief evaluation. Overall the participants were positive about the MetaPlan brainstorm session, but slightly disappointed that there was no time left to ensure they could leave the session with a tangible plan or process description.

During the brainstorm the theoretical risks have been taken into account. The amount of participants can be a potential risk, but an amount of seven participants has been experienced as a good number. Not enough preparation by the participants has also been identified as a potential risk and during the execution of session it became clear that more preparation time is needed before the session. This is not because there was not sufficient variation or input, but to prepare the concepts that will be discussed. Also the session itself needed more time, half a day is not sufficient to get the expected results. During the discussion of the processes on a work instruction level group opinions were taken over by other participants. However, this issue was solved after several questions were asked by the moderator to the group to prevent groupthink and groupshift. The risk of unequal speaker time was an issue during the session and was difficult to anticipate on. There seemed to be enough trust and involvement during the session. Everybody was participating actively. No cultural issues were experienced as the whole team consisted out of Dutch participants. The last important risk that needed considering was the lack of experience by the moderator, which has been addressed by the involvement of an experienced moderator during the session. This could not totally prevent issues with regards to the management of timeframes and applying active-listening-techniques. However, it reduced the possible issues that could have been encountered. Furthermore, more fun needs to be added to the session to increase "thinking out of the silo-box", which could have been added as a potential risk as well.
6.3 Survey results participants

The participants have been asked to fill out a short survey. The questions of the survey have been included in Appendix G. Survey questions participants. Seven out of seven surveys have been returned. The factual data of the surveys is described in this paragraph.

MetaPlan brainstorm experience
Six participants felt they could say anything during the session and none of the participants felt criticized or judged by the group. Six participants got better or partially better insights in other colleagues and departments point of view through the brainstorm session. Five participants got new ideas by the brainstorm session and five participants got more ideas during the brainstorm session due to the attendance of different departments.
Four participants felt involved or partially involved in the IT strategy by attending this session. Five participants are more motivated to take action to improve IT processes now they have attended this session. Not all attendees needed for the session were present, the group missed participation of the business.

The moderation of the session
The attendees were overall happy with the meeting set-up. However, there was not enough time planned and the time management of the different items could be better. Especially, additional time is required for the actual brainstorm for creating a plan. The session needs improvement regarding to the leading/steering to create more contact between the attendees and moderators, by making sure to use active listening techniques. Stronger guidance is needed for these sessions to ensure equal speakertime. The presentation that was used to guide the session and explain the concepts was not clear enough. This was mainly caused by the conceptual approach of the IT Process Model and some items were difficult to read. The moderation of the brainstorm session and the guidance during the session was OK. However, the session could have been done more energetic; informal exercises are required to create openness. The theory could be presented more illustrative, less formal, as well.

The IT Process Maturity Model
The model is not self-explanatory and required additional explanation. Limitations were experienced during the session when asked about the "as is" and "to be" situation and exceptions caused confusion. In addition, the framework descriptions of the subprocesses were not recognizable enough for the individuals involved, which resulted in more discussion. The average grade for the IT Process Maturity Model given by the participants is 6,4 (scale 0-10).

Future relevance of the pilot
All participants think that brainstorm sessions can lead or partially lead to maturing the IT processes. None of the participants expect that based on the outcome of the brainstorm session it will not be possible to write a plan (such as a Project Initiation Document) or a roadmap. However the expectations vary from "very limited possible" to "yes with extra effort". All participants think it is a good idea to set up more brainstorm sessions and involve other IT, Staff (such as HR, Finance, Legal) and Business departments. Average grade MetaPlan Brainstorm session given by the participants: 7,1 (scale 0-10).
6.4 Survey results experts

Because the timeframe for this research only allowed for the execution of one pilot MetaPlan session, two experts have been asked to share their opinion regarding the IT Hierarchical Process Framework, the IT Process Maturity Model, the maturity levels, the relation to existing models and the creation of a plan/roadmap based on the outcome of the brainstorm session and the future relevance of this research. In addition feedback has been received regarding the strategic management approach in relation the problem that is being addressed by this research. The actual data can be found in Appendix H. Returned survey MetaPlan expert and Appendix I. Returned survey APQC expert.

**IT Hierarchical Process Framework**

The APQC expert expects that the IT Hierarchical Process Framework will provide management a comprehensive overview of IT processes.

**The IT Process Maturity Model**

The maturity model is not self-explanatory according to the MetaPlan expert, since it tries to explain various states of an organization and it outlines a growth path. Both elements will trigger discussions, and will lead to discussions about definitions when people try to get their opinion accepted. The APQC expert would view the IT Process Maturity Model more as a type of benchmarking scorecard than a maturity model. The IT Process Maturity Model is a way to check current maturity levels as determined by a governing person/group. It needs further clarification regarding the requirements of IT Leadership and IT customers.

**The maturity levels**

The maturity levels make sense to the APQC expert. However, it will be up to some unbiased 3rd party to actually enforce consistency among the processes. Going three levels deep in the processes seems like a good balance, not too broad and not too detailed. The sublevels will help define how to get to the next sublevel and give a little more detail/meaning to the current maturity level of a process. The sublevels also provide a clearer justification for why one is at a certain level (people tend to get defensive), according to the APQC expert.

**Relation to other models**

The APQC expert expects that it is selectively possible to specifically mark processes associated with best practices/standards such as ITIL, CMM, ISO, COBIT in the IT Process Maturity Model. For example it should be possible to use much of the ITIL framework in conjunction with section 7 (Deliver & Support IT Solutions) and to use concepts from CMM in conjunction with the review process to indicate current maturity.

**Creating a plan/roadmap based on the outcome of the brainstorm session**

According to the MetaPlan expert the workshop did provide output that would make it possible to write a project plan. Furthermore, it provided valuable information about the mindset of the participants and the resistance to change that will be encountered when IT process changes will be implemented. The APQC expert expects that it might be possible to come up with some type of next step document. However, in order to make any decisions on what to tackle first it is most likely that data showing the "as is" for each of the ideas and an estimate for the "to be" in each
case needs to be provided. From there some type of ranking scale should be
developed to show which areas make sense to improve.

**Future relevance**
The MetaPlan expert has the opinion that a maturity model can be used in a
MetaPlan session, but it needs sufficient explanation and agreement from the
participants if it is to be used to create output. A separate workshop with the
participants would be useful to get buy-in into the maturity model. Furthermore, the
target groups and application of MetaPlan need to be determined to create optimal
results. The APQC expert expects that MetaPlan can possibly lead to maturing the IT
processes, based on the IT Process Maturity Model. However, the expert is not a big
fan of any type of brainstorming session to solve problems. It may just be an
organizational cultural issue but in the experts experience brainstorming is often a
precursor to large-scale project scope creep. She would recommend a Six
Sigma/Lean approach that identifies organizational process inefficiencies, with
underlying data, that can be used to prioritize projects based on strategic variables
such as reducing costs, improved ROI and improved cycle times.

**Strategic approach**
The APQC expert would recommend a more focused discussion in the beginning
about what is the actual problem that IT is trying to address. There is the risk of
creating a supposedly mature IT organization in terms of progression of levels for
each process. This does not mean that a "service organization" has been created, but
more administration has been created. Additional clarification with regards to what a
service-oriented organization is, would be beneficial.
The approach of "fix IT" seems a little bit backwards to the expert. Fixing the
business process of which IT is an important player would be a more logic approach.
The IT alignment problem will be solved naturally by making IT a part of the solution
to the problems.
Furthermore the expert recommends a review board to change the existing
framework in a company specific framework, to ensure the framework will address
the companies' needs.
7. CONCLUSIONS

All research questions posed in the second chapter will be answered in the next paragraphs. The conclusions that will be presented are based on the information from chapter four, five and six of this report.

7.1 IT Process Maturity Model

This paragraph will answer the questions that relate to the first research question. The information that supports the conclusions in this paragraph can be found in chapter four.

**Question 1: "Which IT process maturity model is most applicable for a European IT organization that is currently at an early stage of maturity and is aiming to move towards a service oriented organization?"**

The APQC IT Process Framework, changed into an IT process Maturity Model has been selected as the most applicable maturity model. However, a peer review suggests that the model that has been created is more a benchmark scorecard than an actual maturity model. In theory maturity models are also benchmark models to assess the current situation, which leaves the posed criticism unanswered.

**1st Conclusion.** The IT Process Maturity Model appears to be the most applicable model. However, the model does not describe the required processes that need to be addressed in a certain level of maturity, but resolves this by the given priority numbers in the model. Possibly the maturity model is more a benchmark scorecard than an actual maturity model.

Another question is whether there is actually a need for a maturity model or is a benchmarking scorecard the management requirement.

**2nd Conclusion.** The research has been focused on an appropriate maturity model. However, the requirement appears to be a benchmark scorecard that can assist in the assessment of the current and desired maturity situation for a certain process.

A point of concern mentioned in paragraph 4.2, was that the model might be too abstract for creating specific actions. One of the criteria based on the study of Niazi was that the model should be easy to read. In practice issues were being experienced whenever certain sub-maturity-levels were applicable for a certain process and others didn’t not seem to according to the users of the model. Specifically for adding dots in the model it will be essential that the users understand the conceptual thinking of a maturity model, in the sense that no levels can be skipped. If not all criteria are addressed in a certain (sub) level, the process is in a lower maturity level.

**3rd Conclusion.** The IT Process Maturity Model is not self-explanatory and is quite conceptual.

The maturity levels that are used in the Gartner IT management process maturity model, the Capability Maturity Model integrated and the IT Service Capability Maturity Model have been combined and added to the APQC IT Process Framework. The criteria for the maturity levels that have been used in the existing maturity models included in this research have been added to the IT Process Maturity Model.
Question 1.1: "What criteria can be used to assess the baseline maturity of a process (phase 0-1)?"
The IT Process Maturity Model maturity levels have been extended with an additional split. Using three sublevels for each main level theoretically is a good balance and supports in assessing why a process is in a certain level of maturity.

4th Conclusion. Level 0, chaotic, has been split in three criteria that grow in maturity, which are: "not aware", "partially aware" and "aware but no action". Level 1, reactive, has also been split in three criteria: "process has been identified", "process goal and areas defined" and "process is generally described". This means that if there is awareness about a process but no identification of the process in the organization yet, the process resides in level 0. Identifying the process in the organization will lead to growing into the next level of maturity. From a practical point of view no issues have been experienced with these criteria. From a theoretical perspective it would be interesting to have an independent third party to review consistency between the processes.

After the criteria are selected that can be used to assess the current situation, criteria will have to be selected that can support in assessing the desired situation. To find the answer to this, question 1.2 has been posed in this research.

Question 1.2: "What are the criteria to move to the next level of maturity (phase 1-2)?"

5th Conclusion. The criteria for level one have already been answered in the 4th conclusion. Level 2, repeatable, has been split up in "stakeholders defined", "controls and KPI’s are defined" and "monitored controlled and reviewed". The result of this is a process that is generally described resides in maturity level 1. Defining stakeholders, controls and KPI’s will result in growing into maturity level 2.

Next to the additional splits, additions have been made to make it easier to use the IT Process Maturity Model as a Management tool, which will be discussed in the last sub question of the first main research question.

Question 1.3: "What can be added to the model to support management in prioritizing the process areas and processes?"

6th Conclusion. To support management in determining in what order the processes should be addressed, the processes themselves have received a priority number, mostly applicable for a complete process area. All processes that have obvious direct customer contact have been highlighted in order to draw extra management attention. It is also selectively possible to specifically mark processes associated with best practices/standards such as ITIL, CMM, ISO, and COBIT in the IT Process Maturity Model.
7.2 MetaPlan brainstorming method

Chapter five provides all the information that leads to the conclusions presented regarding to the MetaPlan brainstorming method. The second collection of questions are answered in this paragraph.

For the completeness of the research, an additional research regarding to "change" is added and answered in this section. The question was taken into account during the literature study, but not explicitly mentioned in the research questions.

**Additional question: "What change approach is most applicable for an organization that would like to approach communication and change as a learning organization?"

**7th Conclusion.** When behavioral change is required it is important that attitudes will change. There are several change strategies that can be applied. For a learning organization the green-print thinking is the most applicable approach. The creative tension approach will also be applied by using the IT Process Maturity Model as the desired state to achieve.

Expectations were that brainstorming would be suitable for defining planning actions for change. Literature has been reviewed to get confirmation on this expectation.

**Question 2: "Is it possible to define planning actions to move to the next level of maturity through a brainstorming method?"

This question will be answered in more detail in the sub-questions. For this main question the answer will be provided regarding to the suitability of brainstorming for approaching change.

**8th Conclusion.** The green-print-thinking strategy approaches change as a collective learning process. Brainstorming is suitable for sharing ideas and learning in groups.

Knowing which change strategy approach to take still leaves a lot of room in how the participation will take place. There are several different brainstorming methods available in literature. For this research Action learning, Mindmapping and MetaPlan have been considered.

**Question 2.1: "What brainstorming method is most suitable for cross-silo communication and creating a plan?"

**9th Conclusion.** MetaPlan has been found to be the most applicable method for this research project. The three criteria that were used as starting point are all included: a common understanding, group communication model and the creation of action plans. In practice participants are positive about taking MetaPlan approach. Keep in mind though that this conclusion is based on only one practical session.
There are risks that need to be mitigated with the MetaPlan approach, to ensure the desired result.

**Question 2.2: "What risks can be expected when using the selected method and what can be done to alleviate these risks?"**

**10th Conclusion.** Nine participants is a good amount for brainstorming. In preparation of the session the concepts need to be discussed individually with all participants. The brainstorm session will need at least one day after the concepts have been explained. Issues with regards to groupthink and groupshift can be addressed by questions from the moderator. The risk of unequal speaker time is difficult to anticipate on. Dutch participants have no issues with the technique of brainstorming. The lack of experience by the moderator is a realistic risk, which can not be addressed completely by the involvement of an experienced moderator during the session. Issues as result of inexperience in guarding timelines and active-listening-techniques will still be encountered. It was not identified as being a risk but it is important to add a fun element in the session to increase "thinking out of the silo-box".

### 7.3 Maturing IT processes by learning through MetaPlan

The answers of third research questions are mainly based on the information from chapter six of this report.

**Question 3: "Can brainstorming support the creation of an action plan in order to move to the next level of maturity as defined in the IT process maturity model?"**

**11th Conclusion.** Yes, MetaPlan brainstorming can lead to an action plan with limited or extra effort to move to the next level of maturity, as defined in the IT Process Maturity Model, if the model is pre-discussed with the brainstorming participants before the actual brainstorm session.

Two experts have been asked to peer-review the expectations of this research. The information has been captured by surveys.

**Question 3.1: "What is the expert opinion regarding to brainstorming in order to define an action plan for moving to the next level in the IT process maturity model?"**

**12th Conclusion.** Expectations are that it is possible to write a project plan or some type of next step document through a brainstorming method. MetaPlan can possibly lead to maturing the IT processes, based on the IT Process Maturity Model. A maturity model can be used in a MetaPlan session, but it needs sufficient explanation and agreement from the participants if it is to be used to create output. A separate workshop with the participants would be useful to get buy-in into the maturity model. It will be necessary to determine who will be part of the sessions. Furthermore, the "as is" and "to be" information will be needed in order to make any decisions on what to tackle first. Brainstorming can result in large-scale project scope creep. A Six Sigma/Lean approach is being recommended for process improvement projects.
Question 3.2: "Has the pilot group succeeded in creating a plan based on the IT process maturity model through brainstorming?"

During the preparation of the pilot MetaPlan brainstorm session this question is split up in three subquestions based on renewed insights after the literature study was completed.

Question 3.2 a: "Are the employees learning by sharing unexpected ideas, generated by combining employees of different departments?"

**13th Conclusion.** Overall the brainstorm session led to a shared mindset of the participants. The group atmosphere was positive. The usability of the brainstorm session is high as it creates higher involvement and motivation.

Question 3.2 b: "Is it possible to create a plan to increase maturity, based on the outcome of the brainstorm session?"

**14th Conclusion.** The model does not easily lead to a roadmap with activities. With the current set-up the possibility to create a plan based on the outcome of the session is limited, but not impossible.

Question 3.2 c: "Is brainstorming an approach that could potentially be used more often to enable growth in process maturity?"

**15th Conclusion.** Brainstorm sessions can lead or partially lead to maturing the IT processes. It is a good idea to set up more brainstorm sessions and involve other IT, Staff (such as Human Resources, Finance and Legal) and possibly also Business departments.

Besides the conclusions based on the outcome of the research questions, other conclusions can be drawn based on the outcome of the brainstorm session as well.

**16th Conclusion.** Issues are being experienced with a model that users do not recognize. The tendency of users is to focus on the potential weaknesses.

**17th Conclusion.** For laymen in process-thinking it is difficult to understand the difference between sub-processes (cross-departmental) and procedures or work instructions (task-level).

**18th Conclusion.** When having a brainstorm session it is important that all relevant participants are available. The absence of relevant participants can lead to resistance during the session.

**19th Conclusion.** When brainstorming about a process it is important to have consensus about the process name before the brainstorm session or start a separate discussion about the name at the beginning of the session.

**20th Conclusion.** When a plan is the expected result of a brainstorm session it is important to also define the expected content.
8. RECOMMENDATIONS

The last sub research question, Question 3.3: "...what recommendations can be made regarding the creation of an action plan through brainstorming in order to move to the next level in the IT process maturity model?", will be answered based on the conclusions. Furthermore recommendations are provided regarding to possibilities for future research. This chapter will be closed by describing a roadmap for departments and organizations in an early stage of process maturity.

8.1 IT Process Maturity Model

Following recommendations are made regarding to the IT Process Maturity Model:

1. **Use the IT Process Maturity Model as a benchmark scorecard.** The IT Process Maturity Model can support management or a governance group in determining the current and desired level of maturity for a process.

2. **Ensure clear requirements before choosing a type of model.** Every type of model has a different goal. Maturity models address which processes should be addressed until a certain degree. Benchmark scorecards provide information regarding to where a certain item is, compared to similar items.

3. **Create a model that doesn't have a complex conceptual background.** In case there is not sufficient time in advance to explain the concepts of a model, create a separate "in-between-model" for operational departments.

4. **Use the criteria created for Level 0 and 1 to assess process maturity.** If there is awareness about a process but no identification of the process in the organization yet, the process resides in level 0. Identifying the process in the organization will lead to growing into the next level of maturity.

5. **Use the criteria created for Level 1 and 2 to assess process maturity.** A process that is generally described resides in maturity level 1. Defining stakeholders, controls and KPI's will result in growing into maturity level 2.

6. **Use priority numbers and highlights in the IT Process Maturity Model.** This will support management or a governance group in determining the importance order in which the processes need to be addressed.

7. **Add reference marks for existing frameworks and best practices.** Adding reference marks for best practices and existing frameworks such as ITIL, CMM, ISO, COBIT to the IT Process Maturity Model will make it possible to combining models in order to keep the overview.

8. **Create a company specific process framework** that people will recognize when discussing about processes. This will reduce resistance and ensure any discussions will be about the process itself instead of the given name tag.

9. **Provide training to create process awareness.** Explain the difference between sub-processes procedures and work instructions.
8.2 MetaPlan brainstorming method

Following recommendations are made regarding to the MetaPlan method:

10 **Use green-print-thinking for changing behavior and in learning organizations.** Use the green-print-thinking approach in combination with other change strategies such as the creative tension approach.

11 **Use brainstorming to share ideas and to enable learning in groups.** This supports the green-print-thinking approach, which supports a collective learning process.

12 **Use MetaPlan brainstorming** to create a common understanding, establish group communication and for creating an action plan as a group.

13 **Plan enough time for the MetaPlan brainstorm session.** At least one day of resource time is required for MetaPlan brainstorm sessions, two days is probably more realistic. Half a day is not good enough to achieve the desired result of the creation of a plan.

14 **Provide information before the brainstorm session.** Especially conceptual information needs to be provided before the session to ensure the discussions will be about the information presented in the model, instead of the model itself. Use an accepted model.

15 **Ask questions during the brainstorm session.** If the moderator asks questions the risk of groupshift and groupthink will be reduced.

16 **Make sure the main moderator is experienced.** Moderators should actively use active listening techniques and time management skills.

17 **Ensure a fun-element in the session.** This will enable creative thinking and helping participants to speak free. The potential risk is a decreased result without the fun-element.

18 **Use brainstorm sessions for maturing the IT processes.** Involve other IT, Staff and in a later stage Business departments.

19 **Have individual pre-discussions with each of the participants.** In preparation make sure that expectations of the session are aligned, that the right persons are involved and the level is in alignment with the attendees.

20 **Have process name discussions** to create a shared mindset regarding to which processes there are and what they are. Before brainstorming about the maturity of a process, the process name needs to be shared and discussed with the attendees in advance.

21 **Gather available information about the process before the session.** This will make it easier for the participants to determine the current state of a process during the session.
Make sure that there is a tangible group-goal to achieve. Not only intangible goals, such as increased sharing of information. This will support the measurement of the outcome of the brainstorm session.

8.3 Suggestions for future research

Following investigations could potentially be interesting for future research:

Models/Frameworks:
- Assessing the maturity level name and criteria for maturity level 4 and 5, which have been excluded in this research.
- A review by maturity model experts to assess whether the IT Process Maturity Model should be called a maturity model or a benchmark scorecard.
- Mapping the APQC process framework on organizations and assessing the completeness of the processes proposed in the APQC IT Process Framework.
- It would be interesting to have an independent third party to review consistency between the sub-maturity-levels in the IT Process Maturity Model.

Change styles:
- This research selected green-print-thinking change strategy and combined it with the creative tension strategy. It could be interesting to combine the green-print-thinking strategy with other "color" strategies.
- Managerial systems thinking approach (system archetypes) could potentially be interesting to examine silo-thinking on management level.

Brainstorming/MetaPlan:
- Other brainstorming techniques besides Action Planning, Mindmapping and MetaPlan could also be interesting to use, such as parallel techniques.
- This research excluded electronic brainstorming. However, electronic brainstorming techniques change over time and might get more useful.
- To create a larger chance of success during brainstorming it could be interesting to assess what stages people go through when they are defending an opinion regarding a model. This could be useful to be able to either avoid the defensive attitude or to anticipate on it.
- The MetaPlan brainstorming resulted in a limited action plan. MetaPlan provides several different approaches. Taking a different approach or combining MetaPlan with other methods such as Mindmapping might lead to a more detailed plan.

Business/practical:
- Matching the IT Process Maturity Model with existing standards and best practices, such as ITIL, Cobit and ISO.
- There are many process improvement methods available. Perhaps the choice for a certain methodology depends on the process maturity.
- Other methodologies that can support in defining how to grow in maturity instead of the definition of what maturity looks like.
- It would also be interesting to find out whether the outcome of the MetaPlan session would be the same with a multi-cultural group.
8.4 Roadmap for growing in process maturity

In addition to generic recommendations, specific recommendations will be done in this paragraph to have a view on the next steps. The actions listed in this paragraph are based on the outcome of this research and recommendations from the CMMi Roadmap created by Cannegieter (Cannegieter, 2008).

Three major phases are recommended:
1. Create a view on the current process situation.
2. Execute and learn from process projects.
3. Mature standardization, measurements and process organization.

The sequence of the actions is based on the IDEAL model, which is visualized in the picture below.

![Figure 6 The IDEAL Model (Gremba & Myers, 1997)](image)

1. Create a view on the current process situation.
   a) Create awareness by defining an organization/departmental specific process framework which provides a high level overview of most important processes;
   b) Get a high level view on the desired situation. What would the organization or department like to achieve with growing in process maturity (create creative tension);
   c) Identify any problems that are being experienced or potential roadblocks that can be expected;
   d) Determine process project priority based on a predefined set of criteria;
   e) Select one process based on the priorities and perform a pilot project;
   f) Create standards for creating process flows and descriptions.
2. **Execute and learn from process projects.**
   
g) Plan the process project;
   h) Execute the process project;
      - Define the goal of the process;
      - Identify the main areas (links other departments) of the process;
      - Create a description of the process;
      - Define initial easy-to-set-up controls and/or KPI's;
      - Implement and embed the process in the organization.
   i) Evaluate the taken approach;
   j) Learn from the experience and propose actions for new process project.

3. **Mature standardization, measurements and process organization.**
   After the most important "as is" processes have been described, process improvement initiatives can be taken:
   k) Analyze the current process;
   l) Define (additional) controls and KPI's;
   m) Improve processes based on these analyzes;
   n) Standardize the processes in the organization (level 3:defined);
   o) Define a basic set of processes as basis for continuous improvement;
   p) Make a set of clear requirements for the quality system of the organization;
   q) Define processes due to the implementation of regulations, such as Sarbanes Oxley Act, ISO 9000 or other regulations.

The approach as described above is also applicable for the Office Depot European IT department. The recommended approach is first to get a clear view of the current and desired process situation to understand what needs to be done, as described in phase one. The second phase is to get a view on how this needs to be done. After growing further in maturity, performance tools such as the Balanced Scorecard can support growing further in process maturity, like described in phase three.

### 8.5 Product reflection

The results of this research are useful to use when an organization or departments would like to grow in process maturity. The IT Process Maturity Model is possibly no maturity model according to some reviewers, but it will support in creating a view on the current and desired state of any given process. For maturing a specific process area, the recommendation is to use the process area specific maturity model (e.g. CMMi for development processes, ITSMM for ITIL related processes). These models contain additional information per process such as abilities, activities and verifications.

For this research the MetaPlan brainstorming method has been used to define how a process can grow in maturity. It would be interesting to review other methods as well, as limited information is available on the subject as to how to change to the next maturity level. The pilot project showed that it is not impossible to discuss the desired growth. However it is quite time consuming if it is not clear beforehand what the current and desired situation is. Furthermore, independent of which maturity model is selected for discussion, it is important that the model is known to the users. This ensures that the content of the model is discussed instead of the relevance of the model itself.
9. REFLECTION

Performing research is all about combining several learning processes. My evaluation regarding to these processes is briefly described in this chapter.

Research learning process
Renewed insights create new directions as the research progresses, effecting the scope of the research several times. In addition the choice of a research method or making no choice of a method will have effect as well.

Subject-matter learning process
A lot has been learned around the subject matters of maturity models, change strategies and brainstorming, which has provided me more in-depth knowledge of what has been learned during the theoretical years of the MSc. Business Process Management & IT education.

Environmental learning process
Ensuring alignment with the university is important to ensure the research is according to expectations. Discussing the research and the progress with colleagues, friends and family significantly helped in the learning process, if only just by structuring what is in the mind.

Personal learning process
The research was started as a solo execution, which I experienced as boring and frustrating. After involving others and sharing my views, my motivation significantly increased. Eventually I discovered that the performed research applied more to myself then I expected. This brings me to a quote of Aristotle, closing this reflection: "Knowing yourself is the beginning of all wisdom".
EPILOGUE

Before starting this research, my environment warned me that performing research required a lot of discipline. However, it was not the discipline that caused my concerns, it was having to work alone at my desk or in a library for months.

Fortunately, I have found a way to make my research life a lot more interesting by the involvement of anybody that crossed my path. I consider myself very lucky having all these people around me that are willing to listen and share their minds even if the subject was sometimes very detailed, and for those in a complete different area of expertise, not even interesting.

Expectations are that an experienced researcher will find sufficient gaps in this research. Perhaps a significant article has been missed, or some of the articles that have been used are too old. The main point of critics could be that the conclusions and recommendations are based on only one brainstorm session and two expert opinions. To me personally this research proves that I am able to perform research independently, but not alone. Secondly it shows that a problem is addressed in a practical setting, based on the knowledge I have learned at the MSc. Business Process Management & IT.

Providing a positive contribution to the development of the process maturity of the European department of Information Technology at Office Depot has given me satisfaction with regards to the outcome of this research. This research resulted in a project approach and initiation regarding to IT maturing processes. Furthermore, I really enjoyed performing a structured brainstorm session. After nine months I am able to look back on this research project with a satisfied smile.

Gwenda Frijns
May 2008
LITERATURE


GLOSSARY

Action Learning  
Action learning is an educational process whereby the participant studies their own actions and experience in order to improve performance. This is done in conjunction with others, in small groups called action learning sets.

APQC  
The American Productivity and Quality Council. Founded in 1977, APQC is a member-based nonprofit that provides benchmarking and best-practice research for approximately 500 organizations worldwide in all industries.

Archetypes  
Common occurring structures with typical pattern of behavior (feedback loops).

Balanced Scorecard  
A performance management tool. Supports management focus on performance metrics while balancing financial objectives with customer, process and employee perspectives.

Benchmark  
A point of reference for a measurement.

Brainstorming  
A group creativity technique designed to generate a large number of ideas for the solution to a problem.

CMMI  
Capability Maturity Model Integration is a process improvement approach that provides organizations with the essential elements of effective processes. CMMI best practices are published in documents called models, which each address a different area of interest. There are now two areas of interest covered by CMMI models: Development and Acquisition.

Change  
Add to, to make different in some way.

Cobit  
Control Objectives for Information and related Technology (COBIT) is a set of best practices (framework) for information technology (IT) management. COBIT provides managers, auditors, and IT users with a set of generally accepted measures, indicators, processes and best practices to assist them in maximizing the benefits derived through the use of information technology and developing appropriate IT governance and control in a company.

Cross-silo communication  
Communication that passes departmental barriers.

GITMM  
Gartner IT management process maturity model. Model that supports IT Management to assess their level of IT management process maturity and to determine a course of action for improvement. Supports in evolving IT operations to more business-oriented.

Green-Print-Thinking  
Change strategy where collective learning by people, will result in the learning of an organization. The different organizational behavior will result in change.

Groupshift  
The initial positions of individual members of a group are exaggerated towards a more extreme position.

Groupthink  
A type of thought exhibited by group members who try to minimize conflict and reach consensus without critically testing, analyzing, and evaluating ideas. During groupthink, members of the group avoid promoting viewpoints outside the comfort zone of consensus thinking.

Hierarchical Process Framework  
The Hierarchical Process Framework is a decomposed process model, modeling organizational areas with their processes.

IDEAL  
An organizational improvement model (from software process improvement) that serves as a roadmap for initiating, planning and implementing improvement actions. The IDEAL model is named for the five phases it describes: initiating, diagnosing, establishing, acting and learning.

IT  
Information Technology.
ITIL
Information Technology Infrastructure Library is a set of concepts and techniques for managing information technology infrastructure, development, and operations.

ITSMM
Information Technology Service Capability Maturity Model. Growth model for IT Service providers, based on CMM.

ISO
International Organization for Standardization is an international standard-setting organization composed of representatives from various national standards organizations.

KPI
Key Performance Indicators are financial and non-financial metrics used to help an organization define and measure progress toward organizational goals.

Learning organization
Places where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning to see the whole reality together (The Fifth Discipline, Peter Senge).

Maturity model
A maturity model is a structured collection of elements that describe certain aspects of maturity in an organization. A maturity model can be used as a benchmark for assessing different organizations for equivalent comparison.

MetaPlan
Metaplan, Metaplan technique or simply card technique is a system for collecting ideas (or Creativity technique) when a group of people are working together. The method was initiated by Eberhard Schnelle in Hamburg, Germany.

Mindmapping
Creating diagrams that represent words, ideas, tasks or other items linked to and arranged radically around a central key word or idea. It is used to generate, visualize, structure and classify ideas, and as an aid in study, organization, problem solving, decision making, and writing.

Moderator
Supervisor of the MetaPlan session. To become a highly experienced moderator, versed in the complexity of organizational problem solving and innovation, takes many years and interaction at the most senior levels of organizational decision making.

PCF
Process Classification Framework. Cross-industry business process framework developed by APQC. As a common language and open standard, the PCF allows organizations to see and discuss their activities from an industry-neutral viewpoint. Regardless of size, industry or geography, organizations can use the PCF to benchmark and improve processes.

Process
A series of actions or operations conducting to an end.

ROI
Return on Investment is the ratio of money gained or lost on an investment relative to the amount of money invested. ROI is usually given as a percent.

Six Sigma
Six Sigma is a set of practices originally developed by Motorola to systematically improve processes by eliminating defects. A defect is defined as nonconformity of a product or service to its specifications.

SFMM
Service Firm Capability Maturity Model. Model to evaluate competitive service position varying from "available for service" to "world-class service".

System thinking
Views certain 'problems' as a part of the overall system so focusing on these outcomes will only further develop the undesired element or problem. Systems thinking is a framework that is based on the belief that the component parts of a system will act differently when the systems relationships are removed and it is viewed in isolation.
APPENDIX A. GARTNER IT MANAGEMENT PROCESS MATURITY MODEL

Level 0
Chaotic
- Ad hoc
- Undocumented
- Unpredictable
- Multiple help desks
- Minimal IT operations
- User call notification

Level 1
Reactive
- Fight fires
- Inventory
- Desktop SW distribution
- Initiate problem mgmt. process
- Alert and event mgmt.
- Measure component availability (up/down)

Level 2
Proactive
- Analyze trends
- Set thresholds
- Predict problems
- Measure application availability
- Automate
- Mature problem, configuration, change, asset, and performance mgmt. processes

Level 3
Service
- IT as a service provider
- Define services, classes, pricing
- Understand costs
- Guarantee SLAs
- Measure & report service availability
- Integrate processes
- Capacity mgmt.

Level 4
Value
- IT as strategic business partner
- IT and business metric linkage
- IT/business collaboration improves business process
- Real-time infrastructure
- Business planning

- Manage IT as a Business
- Service and Account Management
- Service Delivery Process Engineering
- Operational Process Engineering
- Tool Leverage
APPENDIX B. PROCESS CLASSIFICATION FRAMEWORK
(APQC ORGANIZATION, 2006)
APPENDIX C. IT HIERARCHICAL PROCESS FRAMEWORK

Manage Information Technology
Process Classification Framework

<table>
<thead>
<tr>
<th>Manage the business of IT</th>
<th>Develop and manage IT customer relationships</th>
<th>Manage business resilience and risk</th>
<th>Manage enterprise information</th>
<th>Develop and maintain IT solutions</th>
<th>Deploy IT solutions</th>
<th>Deliver and support IT services</th>
<th>Manage IT knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Develop the enterprise strategy</td>
<td>Develop IT services and solutions strategy</td>
<td>Develop and manage business resilience</td>
<td>Develop information and content management strategies</td>
<td>Develop the IT development strategy</td>
<td>Develop the IT deployment strategy</td>
<td>Develop IT services and solutions delivery strategy</td>
<td>Develop the IT knowledge management strategy</td>
</tr>
<tr>
<td>Define the enterprise architecture</td>
<td>Develop and manage IT service levels</td>
<td>Develop and manage regulatory compliance</td>
<td>Define the enterprise information architecture</td>
<td>Perform IT services and solutions life cycle planning</td>
<td>Plan and implement changes</td>
<td>Develop IT support strategy</td>
<td>Develop and maintain IT knowledge map</td>
</tr>
<tr>
<td>Manage the IT portfolio</td>
<td>Perform Demand Management for IT services</td>
<td>Perform integrated risk management</td>
<td>Manage information resources</td>
<td>Develop and maintain IT services and solutions architecture</td>
<td>Plan and manage releases</td>
<td>Manage IT infrastructure resources</td>
<td>Manage IT knowledge life cycle</td>
</tr>
<tr>
<td>Perform IT research and innovation</td>
<td>Manage IT customer satisfaction</td>
<td>Develop and implement security, privacy and data protection controls</td>
<td>Perform Enterprise data and content management</td>
<td>Create IT services and solutions</td>
<td>Support IT services and solutions</td>
<td>Manage IT infrastructure operations</td>
<td></td>
</tr>
<tr>
<td>Perform IT financial management</td>
<td>Market IT services and solutions</td>
<td>Evaluate and communicate IT Business value and performance</td>
<td>Maintain IT services and solutions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perform IT staff management</td>
<td>Manage IT suppliers and contracts</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## APPENDIX D. MATURITY MODELS COMPARED

<table>
<thead>
<tr>
<th>Phase</th>
<th>CMMi (staged)</th>
<th>Gartner ITM</th>
<th>ITSCMM</th>
<th>SFC</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Not applicable</td>
<td>Chaotic</td>
<td>Not applicable</td>
<td>Not applicable</td>
</tr>
<tr>
<td></td>
<td>(no further details)</td>
<td>Ad hoc</td>
<td>(no further details)</td>
<td>(no further details)</td>
</tr>
<tr>
<td></td>
<td>Undocumented</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Unpredictable</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Multiple helpdesks</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Minimal IT operations</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>User call notification</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Initial (focus ad hoc process)</td>
<td>Reactive</td>
<td>Not applicable</td>
<td>Available for service</td>
</tr>
<tr>
<td></td>
<td>No process areas</td>
<td>Fight fires</td>
<td>(no further details)</td>
<td>Customers patronize service firm for reasons other than performance</td>
</tr>
<tr>
<td></td>
<td>Inventory</td>
<td></td>
<td>Operations is reactive</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Desktop software distribution</td>
<td></td>
<td>Service quality is subsidiary to cost</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Initiate problem management process</td>
<td></td>
<td>Back office is a counting room</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Alert and event management</td>
<td></td>
<td>Customer is unspecified, to be satisfied at minimum cost</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Measure component availability (up/down)</td>
<td></td>
<td>Introduction of new technology only when necessary for survival</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Project monitoring and control</td>
<td></td>
<td>Workforce is a negative constraint</td>
<td></td>
</tr>
<tr>
<td></td>
<td>First line management controls workers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Managed (Basic project management)</td>
<td>Pro-active</td>
<td>Repeatable</td>
<td>Journeyman</td>
</tr>
<tr>
<td></td>
<td>Requirements management</td>
<td>Analyze trends</td>
<td>Service Commitment Management</td>
<td>Customers neither seek out nor avoid the firm</td>
</tr>
<tr>
<td></td>
<td>Project planning</td>
<td>Set thresholds</td>
<td>Service Delivery Planning</td>
<td>Operations functions in a mediocre, uninspired fashion</td>
</tr>
<tr>
<td></td>
<td>Project monitoring and control</td>
<td>Predict problems</td>
<td>Service Tracking and Oversight</td>
<td>Service quality meets some customer expectations, consistent on one or two key dimensions</td>
</tr>
<tr>
<td>Phase</td>
<td>CMMi (staged)</td>
<td>Gartner ITM</td>
<td>ITSCMM</td>
<td>SFC</td>
</tr>
<tr>
<td>-----------------------</td>
<td>--------------------------------</td>
<td>-----------------------------</td>
<td>------------------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>Supplier agreement management</td>
<td>Measure application availability</td>
<td>Subcontract Management</td>
<td>Back office contributes to the service, plays an important role in the total service, is given attention, but is still a separate role</td>
<td></td>
</tr>
<tr>
<td>Configuration Management</td>
<td>Automate</td>
<td>Configuration Management</td>
<td>The customer is a market segment whose basic needs are understood</td>
<td></td>
</tr>
<tr>
<td>Measurement and analyses</td>
<td>Mature problem, configuration, change, asset and performance management processes</td>
<td>Service Request and Incident Management</td>
<td>Introduction of new technology when justified by cost savings</td>
<td></td>
</tr>
<tr>
<td>Process and product quality assurance</td>
<td>Service Quality Assurance</td>
<td>The workforce is an efficient resource, disciplined, follows procedures</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Defined (process standardization)</td>
<td>Service</td>
<td>Defined</td>
<td>Distinctive Competence Achieved</td>
<td></td>
</tr>
<tr>
<td>Requirements development</td>
<td>IT as a service provider</td>
<td>Organization Service Definition</td>
<td>Customers seek out the firm based upon its sustained reputation for meeting customer expectations</td>
<td></td>
</tr>
<tr>
<td>Technical solution</td>
<td>Define services, classes, pricing</td>
<td>Organization Process Definition</td>
<td>Operations continually excels, reinforced by personnel management and systems that support an intense customer focus</td>
<td></td>
</tr>
<tr>
<td>Product integrated</td>
<td>Understand costs</td>
<td>Organization Process Focus</td>
<td>Service quality exceeds customer expectations, consistent on multiple dimensions</td>
<td></td>
</tr>
<tr>
<td>Verification</td>
<td>Guarantee SLA’s</td>
<td>Integrated Service Management</td>
<td>Back office is equally valued with front office, plays integral role.</td>
<td></td>
</tr>
<tr>
<td>Validation</td>
<td>Measure and report service availability</td>
<td>Service Delivery</td>
<td>The customer is a collection of individuals whose variation in needs is understood</td>
<td></td>
</tr>
<tr>
<td>Organizational process focus</td>
<td>Integrate processes</td>
<td>Intergroup Coordination</td>
<td>Introduction of new technology when promises to enhance service</td>
<td></td>
</tr>
<tr>
<td>Organizational process definition</td>
<td>Capacity management</td>
<td>Training program</td>
<td>The workforce is permitted to select among alternative procedures</td>
<td></td>
</tr>
<tr>
<td>Organizational training</td>
<td></td>
<td>Resource Management</td>
<td>First line management listens to customers, coaches and facilitates workers.</td>
<td></td>
</tr>
<tr>
<td>Integrated project management</td>
<td>Problem Management</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Risk management</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Decision analyses and resolution</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# APPENDIX E. IT PROCESS MATURITY MODEL

<table>
<thead>
<tr>
<th>Maturity level priority order (customer contact)</th>
<th>Process number</th>
<th>Key IT process areas according to the Process Classification Framework</th>
<th>Level 0 Chaotic</th>
<th>Level 1 Reactive</th>
<th>Level 2 Repeatable</th>
<th>Level 3 Defined</th>
<th>Level 4</th>
<th>Level 4 Above level 3 processes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Net aware</td>
<td>Partially aware</td>
<td>Aware but no action</td>
<td>Process has been identified</td>
<td>Process goal and areas defined</td>
<td>Process is generally described</td>
</tr>
<tr>
<td>1.</td>
<td>MANAGE THE BUSINESS OF IT</td>
<td>1.1.</td>
<td>Develop the enterprise strategy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.1.1</td>
<td>Build strategic intelligence</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.1.2</td>
<td>Identify long-term IT needs of the enterprise in collaboration with stakeholders</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.1.3</td>
<td>Develop and maintain a long-term business focused enterprise IT strategy and governance model</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.2</td>
<td>Define the enterprise architecture</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.2.1</td>
<td>Establish the enterprise architecture definition</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.2.2</td>
<td>Maintain the relevance of the enterprise architecture</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.2.3</td>
<td>Act as clearinghouse for IT research and innovation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.2.4</td>
<td>Govern the enterprise architecture</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.3</td>
<td>Manage the IT portfolio</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.3.1</td>
<td>Establish the IT portfolio</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.3.2</td>
<td>Analyze and evaluate the value of the IT portfolio of the enterprise</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.3.3</td>
<td>Provision resources in accordance with strategic priorities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.4</td>
<td>Perform IT research and innovation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.4.1</td>
<td>Research technologies to innovate IT services and solutions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.4.2</td>
<td>Transition viable technologies for IT services and solutions management</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.5</td>
<td><strong>Perform IT financial management</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.5.1</td>
<td>Develop and maintain IT services and solutions cost transparency</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.5.2</td>
<td>Establish and maintain accounting process</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.5.3</td>
<td>Tie project funding to business case decision check points</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.6</td>
<td><strong>Evaluate and communicate IT business value and performance</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.6.1</td>
<td>Establish and monitor key performance indicators</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.6.2</td>
<td>Evaluate IT plan performance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.6.3</td>
<td>Communicate IT value</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.7</td>
<td><strong>Perform IT staff management</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.7.1</td>
<td>Develop IT leadership and staff</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.7.2</td>
<td>Manage IT staff performance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.8</td>
<td><strong>Manage IT suppliers and contracts</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.8.1</td>
<td>Develop IT (development and delivery) sourcing strategies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.8.2</td>
<td>Negotiate with suppliers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.8.3</td>
<td>Establish and maintain supplier relationships</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.8.4</td>
<td>Evaluate supplier performance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.8.5</td>
<td>Assess contract performance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.1</td>
<td><strong>Develop and manage IT customer relationships</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.1.1</td>
<td>Research IT services and solutions to address business and user requirements</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.1.2</td>
<td>Translate business and user requirements into IT services and solutions requirements</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.1.3</td>
<td>Formulate IT services and solutions strategic initiatives</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.1.4</td>
<td>Coordinate strategies with internal stakeholders to ensure alignment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.1.5</td>
<td>Evaluate and select IT services and solutions strategic initiatives</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.2</td>
<td><strong>Develop and manage IT service levels</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.2.1</td>
<td>Create and maintain the IT services and solutions catalogue</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.2.2</td>
<td>Establish and maintain business and IT service level agreements</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.2.3</td>
<td>Evaluate and report service level attainment results</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.2.4</td>
<td>Communicate business and IT service level improvement opportunities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>-------</td>
<td>---------------------------------------------------------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.3</td>
<td><strong>Perform Demand Side Management (DSM) for IT services</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>2.3.1</td>
<td>Analyze IT services and solutions consumption and usage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>2.3.2</td>
<td>Develop and implement incentive programs that improve consumption efficiency</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>2.3.3</td>
<td>Develop volume/unit forecast for IT services and solutions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>2.4</td>
<td><strong>Manage IT customer satisfaction</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>2.4.1</td>
<td>Capture and analyze customer satisfaction</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>2.4.2</td>
<td>Assess and communicate customer satisfaction patterns</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>2.4.3</td>
<td>Initiate improvements based on customer satisfaction patterns</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>2.5</td>
<td><strong>Market IT services and solutions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>2.5.1</td>
<td>Develop IT services and solutions marketing strategy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>2.5.2</td>
<td>Develop and manage IT customer strategy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>2.5.3</td>
<td>Manage IT services and solutions advertising and promotional campaigns</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>2.5.4</td>
<td>Process and track IT services and solutions orders</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>3.1</td>
<td><strong>Develop and manage business resilience</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>3.1.1</td>
<td>Develop the business resiliency strategy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>3.1.2</td>
<td>Perform continuous business operations planning</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>3.1.3</td>
<td>Test continuous business operations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>3.1.4</td>
<td>Maintain continuous business operations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>3.2</td>
<td><strong>Develop and manage regulatory compliance</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>3.2.1</td>
<td>Develop the regulatory compliance strategy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>3.2.2</td>
<td>Establish regulatory compliance controls</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>3.2.3</td>
<td>Manage regulatory compliance remediation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>3.3</td>
<td><strong>Perform integrated risk management</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>3.3.1</td>
<td>Develop an integrated risk strategy approach</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>3.3.2</td>
<td>Manage integrated risks</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>3.4</td>
<td><strong>Develop and implement security, privacy and dataprotection controls</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>3.4.1</td>
<td>Establish information security, privacy and data protection strategies and levels</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>3.4.2</td>
<td>Test, evaluate and implement information security, privacy and data protection controls</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. MANAGE ENTERPRISE INFORMATION</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------------------------------</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>4.1</strong> Develop information and content management strategies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.1.1 Understand information and content management needs and the role of IT services for executing the business strategy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.1.2 Assess the information and content management implications of new technologies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.1.3 Identify and prioritize information and content management actions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>4.2</strong> Define the enterprise information architecture</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.2.1 Define information elements, composite structure, logical relationships and constraints, taxonomy, and derivation rules</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.2.2 Define information access requirements</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.2.3 Establish data custodianship</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.2.4 Manage changes to content data architecture requirements</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>4.3</strong> Manage information resources</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.3.1 Define the enterprise information data policies and standards</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.3.2 Develop and implement data and content administration</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>4.4</strong> Perform enterprise data and content management</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.4.1 Define sources and destinations of content data</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.4.2 Manage technical interfaces to users of content</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.4.3 Manage retention, revision, and retirement of enterprise information</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>5. DEVELOP AND MAINTAIN IT SOLUTIONS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>5.1</strong> Develop the IT development strategy</td>
<td></td>
</tr>
<tr>
<td>5.1.1 Establish sourcing strategy for IT development</td>
<td></td>
</tr>
<tr>
<td>5.1.2 Define development processes, methodologies and tools standards</td>
<td></td>
</tr>
<tr>
<td>5.1.3 Select development methodologies and tools</td>
<td></td>
</tr>
<tr>
<td><strong>5.2</strong> Perform IT services and solutions life cycle planning</td>
<td></td>
</tr>
<tr>
<td>5.2.1 Plan development of new requirements</td>
<td></td>
</tr>
<tr>
<td>5.2.2 Plan development of feature and functionality enhancement</td>
<td></td>
</tr>
<tr>
<td>5.2.3 Develop life cycle plan for IT services and solutions</td>
<td></td>
</tr>
<tr>
<td><strong>5.3</strong> Develop and maintain IT services and solutions architecture</td>
<td></td>
</tr>
<tr>
<td>5.3.1 Create IT services and solutions architecture</td>
<td></td>
</tr>
<tr>
<td>5.3.2 Revise IT services and solutions architecture</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5.3.3</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>3</td>
<td>5.4</td>
</tr>
<tr>
<td>3</td>
<td>5.4.1</td>
</tr>
<tr>
<td>3</td>
<td>5.4.2</td>
</tr>
<tr>
<td>3</td>
<td>5.4.3</td>
</tr>
<tr>
<td>3</td>
<td>5.4.4</td>
</tr>
<tr>
<td>3</td>
<td>5.4.5</td>
</tr>
<tr>
<td>3</td>
<td>5.4.6</td>
</tr>
<tr>
<td>3</td>
<td>5.5</td>
</tr>
<tr>
<td>3</td>
<td>5.5.1</td>
</tr>
<tr>
<td>3</td>
<td>5.5.2</td>
</tr>
<tr>
<td>3</td>
<td>5.5.3</td>
</tr>
<tr>
<td>3</td>
<td>5.5.4</td>
</tr>
<tr>
<td>3</td>
<td>5.5.5</td>
</tr>
</tbody>
</table>

### DEPLOY IT SOLUTIONS

<table>
<thead>
<tr>
<th></th>
<th>6.1</th>
<th>Develop the IT deployment strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6.1.1</td>
<td>Establish IT services and solutions change policies</td>
</tr>
<tr>
<td>1</td>
<td>6.1.2</td>
<td>Define deployment process, procedures, and tools standards</td>
</tr>
<tr>
<td>1</td>
<td>6.1.3</td>
<td>Select deployment methodologies and tools</td>
</tr>
<tr>
<td>1</td>
<td>6.2</td>
<td>Plan and implement changes</td>
</tr>
<tr>
<td>1</td>
<td>6.2.1</td>
<td>Plan change deployment</td>
</tr>
<tr>
<td>1</td>
<td>6.2.2</td>
<td>Communication changes to stakeholders</td>
</tr>
<tr>
<td>1</td>
<td>6.2.3</td>
<td>Administer change schedule</td>
</tr>
<tr>
<td>1</td>
<td>6.2.4</td>
<td>Train impacted users</td>
</tr>
<tr>
<td>1</td>
<td>6.2.5</td>
<td>Distribute and install change</td>
</tr>
<tr>
<td>1</td>
<td>6.2.6</td>
<td>Verify change</td>
</tr>
<tr>
<td>2</td>
<td>6.3</td>
<td>Plan and manage releases</td>
</tr>
<tr>
<td>2</td>
<td>6.3.1</td>
<td>Understand and coordinate release design and acceptance</td>
</tr>
<tr>
<td>2</td>
<td>6.3.2</td>
<td>Plan release roll out</td>
</tr>
<tr>
<td>2</td>
<td>6.3.3</td>
<td>Distribute and install release</td>
</tr>
</tbody>
</table>
# DELIVER AND SUPPORT IT SERVICES

## 7.1 Develop IT services and solutions delivery strategy
- **7.1.1** Establish sourcing strategy for IT delivery
- **7.1.2** Define delivery processes, procedure and tools standards
- **7.1.3** Select delivery methodologies and tools

## 7.2 Develop IT support strategy
- **7.2.1** Establish sourcing strategy for IT support
- **7.2.2** Define IT support services

## 7.3 Manage IT infrastructure resources
- **7.3.1** Manage IT inventory and assets (Configuration Management)
- **7.3.2** Manage IT resource capacity

## 7.4 Support IT services and solutions
- **7.4.1** Deliver IT services and solutions
- **7.4.2** Perform IT operations support services

## 7.5 Manage IT infrastructure operations
- **7.5.1** Manage IT availability
- **7.5.2** Manage facilities
- **7.5.3** Manage backup and recovery
- **7.5.4** Manage performance and capacity
- **7.5.5** Manage incidents
- **7.5.6** Manage problems
- **7.5.7** Manage inquiries

## 8. MANAGE IT KNOWLEDGE

### 8.1 Develop IT knowledge management strategy
- **8.1.1** Understand IT knowledge needs
- **8.1.2** Understand current IT knowledge flow
- **8.1.3** Coordinate strategy and roles with the enterprise Knowledge Management function
- **8.1.4** Plan IT knowledge management actions and priorities

### 8.2 Develop and maintain IT knowledge map
| 8.2.1 | Define knowledge elements, logical relationships and constraints, and currency rules |
| 8.2.2 | Identify IT knowledge sources and repositories |
| 8.2.3 | Identify knowledge sharing opportunities |
| 8.2.4 | Define IT knowledge processes and approaches |
| **8.3** | **Manage IT knowledge life cycle** |
| 8.3.1 | Gather knowledge elements from IT knowledge sources |
| 8.3.2 | Evaluate, create and codify knowledge elements |
| 8.3.3 | Deploy codified IT knowledge |
| 8.3.4 | Update and retire IT knowledge |
| 8.3.5 | Evaluate and improve IT knowledge strategies and processes |

Example:

<table>
<thead>
<tr>
<th>Process name</th>
<th>Phases of maturity as is and should be</th>
</tr>
</thead>
</table>
## APPENDIX F. CHANGE COLORS AT GLANCE

<table>
<thead>
<tr>
<th>Interventions such as...</th>
<th>Yellow-print</th>
<th>Blue-print</th>
<th>Red-print</th>
<th>Green-print</th>
<th>White-print</th>
</tr>
</thead>
<tbody>
<tr>
<td>form coalitions, changing top structures, policy making</td>
<td>something changes when you bring common interests together</td>
<td>think first and then act according to a plan</td>
<td>stimulate people in the right way</td>
<td>create settings for collective learning</td>
<td>create space for spontaneous evolution</td>
</tr>
<tr>
<td>By... facilitators who use their own power base</td>
<td>power game</td>
<td>rational process</td>
<td>exchange exercise</td>
<td>learning process</td>
<td>dynamic process</td>
</tr>
<tr>
<td>Who have... a good sense for planning skills and mediation</td>
<td>a feasible solution, a win-win situation</td>
<td>the best solution, a brave new world</td>
<td>a motivating solution, the best 'fit'</td>
<td>a solution that people develop themselves</td>
<td>a solution that releases energy</td>
</tr>
<tr>
<td>And focus on... positions and context</td>
<td></td>
<td>analytical and planning skills</td>
<td></td>
<td>knowledge and results</td>
<td></td>
</tr>
<tr>
<td>Result is... partly unknown and shifting</td>
<td></td>
<td>described and guaranteed</td>
<td>outlined but not guaranteed</td>
<td>envisioned but not guaranteed</td>
<td>unpredictable on a practical level</td>
</tr>
<tr>
<td>Safeguarded by... decision documents and power balances</td>
<td></td>
<td>benchmarking and ISO systems</td>
<td>HRM systems</td>
<td>a learning organization</td>
<td>self-management</td>
</tr>
<tr>
<td>The pitfalls lie in... dreaming and lose-lose</td>
<td></td>
<td>ignoring external and irrational aspects</td>
<td>ignoring power and smothering brilliance</td>
<td>excluding no-one and lack of action</td>
<td>superficial understanding and laissez faire</td>
</tr>
</tbody>
</table>
APPENDIX G. SURVEY QUESTIONS PARTICIPANTS

Shared mindset

1. The brainstorm session provided me better insights in other colleagues and departments point of view.
   Yes □
   Partially □
   No □

2. The brainstorm session gave me new ideas.
   Yes □
   Partially □
   No □ if no: skip question 3

3. I got more ideas during the brainstorm session due to the attendance of different departments.
   Yes □
   Partially □
   No □

Group atmosphere

4. I felt I could say anything during the session
   Yes □
   Partially □
   No □

5. I felt criticized or judged by the (individuals of the) group.
   Yes □
   Partially □
   No □

6. All attendees needed for the session were present.
   Yes □
   Partially □
   No □
Facilitation

7. I am happy with the meeting set-up and time frames of the session
   Yes □
   Partially □
   No □ if no, please add comment below

8. The presentation that is being used to guide the session and explain the concepts is clear
   Yes □
   Partially □
   No □

9. The moderation of the brainstorm session and de guidance during the session is OK
   Yes □
   Partially □
   No □
Usability

10. I feel involved in the IT strategy by attending this session
   Yes ☐
   Partially ☐
   No ☐

11. I am more motivated to take action to improve IT processes now I have attended this session
   Yes ☐
   Partially ☐
   No ☐

12. I think that brainstorm sessions can lead to maturing the IT processes
   Yes ☐
   Partially ☐
   No ☐

13. I expect that based on the outcome of the brainstorm session it will be possible to write a plan (such as a Project Initiation Document) or roadmap.
   Please add an X to the most applicable square.
   
<table>
<thead>
<tr>
<th>not at all</th>
<th>very limited</th>
<th>limited</th>
<th>yes partially</th>
<th>yes with extra effort</th>
<th>yes with limited effort</th>
<th>easily</th>
</tr>
</thead>
</table>

14. I think it is a good idea to set up more of these sessions and involve other IT and Staff (such as HR, Finance, Legal) departments
   Yes ☐
   Partially ☐
   No ☐

15. Please grade the use of the IT Process Maturity Model and the brainstorm session (0-10)
   IT Process Maturity Model ☐
   MetaPlan Brainstorm session ☐
APPENDIX H. RETURNED SURVEY METAPLAN EXPERT

Tjerk Heijmens-Visser
"Former MetaPlan moderator at IBM".
European Business analyst at Office Depot.
Office Depot Europe, The Netherlands, Venlo
April 4th 2008.

1. Would you consider the maturity model easy to understand/self-explanatory?

   The maturity model is not self-explanatory since it tries to explain various states of an organization, and it outlines a growth path. Both elements will trigger discussions, and will lead to discussions about definitions when people try to get their opinion accepted.
   (Interesting question: what stages do people go through when they defend an opinion?)

2. Is the maturity model suitable to use as basis for a MetaPlan session?

   A maturity model can be used in a MetaPlan session, but it needs sufficient explanation and agreement from the participants if it is to be used to create output. A separate workshop with the participants would be useful to get buy in into the maturity model.

3. Do you miss anything in the Maturity Model that could be of added value for a MetaPlan session?
   No

4. Do you expect that MetaPlan (structured brainstorm sessions) can lead to maturing the IT processes, based on the IT Process Maturity Model?

   MetaPlan is useful to get involvement from a group of people. Since the IT organization is large, it needs to be determined in what way the MetaPlan method can be applied to create optimal results (which target groups?).

5. Do you expect that based on the outcome of the brainstorm session it will be possible to write a plan or roadmap?

   The workshop did provide any output that would enable you to write a project plan, however it did provide valuable information about the mindset the participants had, and the resistance to change that will be encountered when IT process changes will be implemented. In that sense the workshop helped you to identify areas in which extra attention needs to paid during the project.

6. Do you have any further remarks, comments or suggestions regarding to the the models or information/statement in the draft thesis?

   See comments in thesis.
APPENDIX I. RETURNED SURVEY APQC EXPERT

Kelly Bedrich, PMP.
Director of Information Technology.
APQC, Houston, Texas.
April 3rd 2008.

1. Do you expect that the IT Process Framework will provide management a comprehensive overview of IT processes?

As strictly an ‘overview’, yes. This needs to be vetted with IT leadership within Office Depot to make sure it achieves the goals of this project however which (paraphrasing) is to align better with IT customers. There are several issues to address:

1. Who will be the arbiter/judge of the maturity levels and how will consistency be maintained?
2. How frequently will the reviews occur?
3. What are the goals/incentives for any given process to mature? Is there an ROI component? Is there a corresponding budget to bridge each gap?
4. Who will determine project priorities? An interesting side effect of this exercise will be the abundance of side projects that will immediately be created to bridge the gaps from the ‘as-is’ to the ‘should be’ status of each process. The approach of ‘fix IT’ seems a little bit backwards – it should be to fix the business process of which IT is an important player.

Side note: I’m still a little unclear of the distinction between the ‘IT Process Framework’ and the ‘IT Process Maturity Model’. If the ‘IT Process Framework’ is the same as Appendix C (‘IT Hierarchical Process Framework’) I would suggest simplifying or clarifying the names.

2. Does the IT Process Maturity Model meet your expectations of the concept of a maturity model?

I would view it more as a type of benchmarking scorecard – basically a way to check current maturity levels as determined by a governing person/group. It needs further clarification regarding the questions above as well as a review board of some sort to add/modify/delete any industry or company-specific processes to really internalize it for your companies needs.

On a side note, you run the risk of creating a supposedly mature IT organization in terms of your progression of levels for each process but does that necessarily mean that you’re a ‘service organization’ or have you just created more administrivia that’s actually more of a roadblock for IT? The best way we’ve seen to resolve this is a Six Sigma-type project that evaluates all major business processes for deficiencies regarding cycle time, productivity, etc and creates projects to fix any problems that are uncovered. The IT alignment problem gets solved naturally by making IT a part of the solution to the problems.

3. Do the levels defined for the different levels make sense or do you miss anything?

If you’re referring to the maturity levels, they make sense to me. It will be up to some unbiased 3rd party to actually enforce consistency among the processes.

If you’re talking about the decision to go three levels deep in the processes (1, 2, 3 for example) this also seems like a good balance – not too broad and not too detailed.
4. Do you see the added value of splitting the different maturity levels in sub levels to simplify the required change steps?

   Yes, I think it's helpful. The sublevels help define how to get to the next sublevel and give a little more detail meaning to the current maturity level of a process. The sublevels also provide a clearer justification for why one is at a certain level (people tend to get defensive...)

5. Do you expect that it is possible to specifically mark processes associated with best practices/standards such as ITIL, CMM, ISO, COBIT in the IT Process Maturity Model (as done with the direct customer contact processes)?

   Yes, selectively. For example you should be able to use much of the ITIL framework in conjunction with section 7 (Deliver & Support IT Solutions) and you will most likely be able to use concepts from CMM on conjunction with the review process to indicate current maturity.

6. Do you expect that MetaPlan (structured brainstorm sessions) can lead to maturing the IT processes, based on the IT Process Maturity Model?

   Maybe but I'm not a big fan of any type of brainstorming session (sorry!) to solve problems which is what you're really trying to identify here. It may just be an organizational cultural issue but in my experience brainstorming is often a precursor to large-scale project scope creep. I'd recommend a Six Sigma/Lean approach that identifies organizational process inefficiencies (WITH UNDERLYING DATA!) that can be used to prioritize projects based on strategic variables such as reducing costs, improved ROI, improved cycle times, etc.

7. Do you expect that based on the outcome of the brainstorm session it will be possible to write a plan or roadmap?

   You might be able to come up with some type of next step document, but in order to make any decisions on what to tackle first you'll most likely need to provide data showing the 'as-is' for each of the ideas and an estimate for the 'should-be' in each case. From there some type of ranking scale should be developed to show which areas make sense to improve.

8. Do you have any further remarks, comments or suggestions regarding to the the models or the information in the draft thesis?

   The draft had an academic tone and was light on actionable tasks but that may be a function of your intended audience. I would recommend a more focused discussion in the beginning about what is the actual problem you're trying to address. Becoming a more service-oriented organization is a noble goal and one that many IT shops could benefit from but some clarification/examples of what that actually means within this organization would be beneficial.

   Also, I'd recommend a way to present the proposed IT Process Framework much earlier in the document – I found myself getting bogged down in lengthy discussions of pros/cons of brainstorming without having seen and fully understood the actual IT Process Framework under discussion.