Using A Maturity Model for ITIL v3 in Practice

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Abstract— ITIL is the most popular “best practices” framework for managing Information Technology (IT) services. However, implementing ITIL is not only very difficult but there also are no recommendations for implementing ITIL. As a result, ITIL implementations are usually long, expensive, and risky. In a previous paper we proposed a maturity model to assess an ITIL implementation and provide a roadmap for improvement based on priorities, dependencies, and guidelines. In this paper, we demonstrate a practical application of the proposed model with a questionnaire to assess the Incident Management and Configuration Management processes as well as the Service Desk Function. We evaluate the questionnaires in 17 assessments in seven Portuguese organizations and then implemented a prototype to support the assessments.

Keywords- ITIL; implementation; maturity model

I. INTRODUCTION

IT Service Management (ITSM) is the discipline that strives to better the alignment of IT efforts to business needs and to manage the efficient provision of IT services with guaranteed quality [1]. Although there are many other frameworks, the Information Technology Infrastructure Library (ITIL) has become the most popular for implementing ITSM [1,2] and, as a result, the framework of choice in the majority of organizations [3]. With ITIL, organizations aspire to deliver services more efficiently and effectively, with more quality and less cost [2,3,4]. Furthermore, preliminary results have shown that ITIL works in practice [4].

ITIL was launched by the Central Computer and Telecommunications Agency (now OGC) in the UK with the aim of providing technology-related services in a cost-efficient and reliable manner, by offering a systematic approach to the delivery of quality IT services [5]. ITIL presents a comprehensive set of guidelines for defining, designing, implementing, and maintaining management processes for IT services from an organizational (people) as well as from a technical (systems) perspective [6].

Many organizations that decide to implement ITIL fail completely. Many others keep implementing ITIL long after the planned deadline. Empirical evidence shows that several organizations underestimate the time, effort, and risks – not to mention the cost – of implementing ITIL. The problem is that implementing ITIL is not easy [7].

Maturity models in IT management have been proposed since at least 1973 [9]. More than one hundred different maturity models have been proposed [10] but most are too general and, as a result, not well defined and documented [11]. The Process Maturity Framework (PMF) [12] is the only maturity model specifically designed for ITIL but, in a few pages, cannot provide enough information to help an ITIL implementation.

The maturity model we propose is more descriptive, detailed, and useful because it was designed specifically for ITIL and contains comprehensive questionnaires for each ITIL process. This model can be used to help an ITIL implementation step-by-step by assessing the maturity of the existing processes and suggesting what to improve or implement next.

In this paper we describe our most recent results built on top of the maturity model described in the previous paper [12].

Since the last paper we used the maturity model to build more questionnaires in order to assess more processes in more organizations, getting valuable feedback to improve the model.

We also implemented a prototype to support the assessments that has already been discussed in two organizations.
II. PROBLEM

Every year, more organizations desire to implement ITIL. However, a significant number of them fail and some organizations even collapse trying to implement ITIL [7,13]. Some of the most common mistakes made by organizations when implementing ITIL are [13]:

- Lack of management commitment
- Spend too much time on complicated process diagrams
- Not creating work instructions
- Not assigning process owners
- Concentrating too much on performance
- Being too ambitious
- Failing to maintain momentum
- Allowing departmental demarcation
- Ignoring constant reviewing of the ITIL
- Memorizing self ITIL books

Certainly, many other reasons cause ITIL implementations to fail. In particular, reasons that cause information system projects in general to fail – such as organizational resistance to change, unproven business value, strong organizational culture, and so on – also are to blame, as ITIL implementations usually are based on complex IT platforms. But these other reasons can be dealt with by general techniques for implementing projects in general.

The main problem for implementing ITIL resides in the fact that ITIL dictates to organizations “what they should do” but is not clear about “how they should do it.” Based on a large number of tightly integrated processes, the steps for ITIL implementation aren’t clear [3]. Faced with so many processes, the majority of organizations have no idea which process to implement first and/or how far they should go with that first process. Then the problem is repeated for the second process, and so on, until they get lost and start looking for help. But since each ITIL implementation is unique, there are no “silver bullets” to solve this problem.

ITIL implementation is too expensive and CEOs think twice before going forward with the implementation. Combine that with unrecoverable money losses in many known ITIL implementation failures and this certainly becomes a problem.

III. RELATED WORK

There are many maturity models, like CMM, CMMI for services, PMF, Trillium, Bootstrap, ITSCMM, etc. These models differ from each other in terms of their factors and characteristics. In this paper, we will compare different maturity models in order to select the most suitable to base our maturity model. Basically, we need three steps: the first step is to select some models for comparison; the second step is to find the variables for comparing the models; and the third step is to select the most suitable model(s) from the comparison. We choose known models that have proven successful before, as well as the models that relate to ITIL.

Table 1 shows the comparison of the chosen models by the selected variables.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Bootstrap</th>
<th>Trillium</th>
<th>PMF</th>
<th>CMM</th>
<th>ITSCMM</th>
<th>CMMI-SVC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Success</td>
<td>Medium</td>
<td>Medium</td>
<td>Very Low</td>
<td>Extremely High</td>
<td>Medium</td>
<td>High</td>
</tr>
<tr>
<td>Staged model (SM)/Continuous model (CM)</td>
<td>Continuous Model</td>
<td>Continuous Model</td>
<td>Both</td>
<td>Staged Model</td>
<td>Staged Model</td>
<td>Both</td>
</tr>
<tr>
<td>Number of maturity levels</td>
<td>0-5</td>
<td>1-5</td>
<td>SM: 1-5</td>
<td>1-5</td>
<td>1-5</td>
<td>SM: 1-5</td>
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<tr>
<td>Scope</td>
<td>Software</td>
<td>Software</td>
<td>Services</td>
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<tr>
<td>Details</td>
<td>Medium</td>
<td>Medium</td>
<td>Low</td>
<td>High</td>
<td>Extremely High</td>
<td>High</td>
</tr>
<tr>
<td>Base for</td>
<td>Any model</td>
<td>Any model</td>
<td>Any model</td>
<td>Many Models</td>
<td>CMMI-SVC</td>
<td>-----------</td>
</tr>
</tbody>
</table>
A. Models compared

We will compare the models Trillium, Bootstrap, Capability Maturity Model (CMM), Process Maturity Model (PMF), IT Service Capability Maturity Model (ITSCMM) and Capability Maturity Model Integration for Services (CMMI SVC).

Trillium is a model that covers all aspects of software development life cycle and was designed to be applied to embedded systems like telecommunications [14].

The fundamental practices are at the lower levels, whereas more advanced ones are at the higher levels. In order to increase the effectiveness of higher level practices, it is recommended that the lower level practices be implemented and sustained [15].

Bootstrap, was developed in a context of a European research project in order to provide a method for assessing and improving the software process. Bootstrap was the base for SPICE (now ISO 15504), and was later extended to include guidelines from the ISO 9000. Bootstrap began with five levels and now has six levels [16]. Software Process Improvement programs are implemented in many organizations and a frequently used and successful methodology for improving the software process is the Bootstrap methodology [17].

Process Maturity Framework (PMF) is described in the ITIL book. PMF can be used either as a framework to assess the maturity of the ten Service Management processes individually, or to measure the maturity of the overall Service Management process as a whole [18]. However, PMF is described only in ITIL v2 books and not on ITIL v3 books, which creates some doubts about its usefulness and success.

The IT Service CMM is a capability maturity model that specifies different maturity levels for organizations that provide IT services.

The main focus of the model is on the maturity of the service provided by the organization. The model does not measure the maturity of individual services, projects, or organizational units [19].

CMMI-SVC integrates bodies of knowledge that are essential for a service provider. It was designed to improve mature service practices and contribute to the performance, customer satisfaction, and profitability of the economic community [20]. It has been proven that the adoption of CMMI by companies brings good results with regard to delivery time and the reduction of defects and costs [21].

B. Adopted variables

The adopted variables were:

1. Success: know if the model was implemented and used successfully before and try to count how many times.
2. Number of maturity levels: know how many levels of maturity they assume and what their descriptions are.
3. Staged /Continuous Model: understand what kind of model approach is used by each model.
4. Details: the detail level of each model, given the goals, practices, and factors addressed.
5. Scope: know the area where each model is applicable.
6. Base for: understand if the model was base for other models.

These certainly are important variables to consider in comparing the models. To measure these variables, we study documentation about the models.

As result of Table 1, we conclude that the most suitable models to base our model are ITSCMM and CMMI-SVC. The reasons for our choice are:

1. Both focus on service
2. ITSCMM are very well detailed
3. CMMI-SVC have Staged Model and Continuous Model
IV. PROPOSAL

On this section we will explain the methodology used to design our model, as well as a detailed description of the model.

A. Methodology

To design our maturity model for ITIL, we based our model on the chosen models ITSCMM and CMMI-SVC. In order to give organizations more flexibility in ITIL assessment, we will design our model with Staged Model and Continuous Model like CMMI-SVC. To do that we will design maturity levels for Staged Model and Continuous Model that will follow the CMMI-SVC and ITSCMM approach, as well the ITIL context.

To provide a maturity model that assesses organizations’ ITIL and at the same time provide a roadmap to ITIL implementation, we need a very well detailed maturity model. Each factor (goal, practice, sub-practice, etc.) indicated by the chosen models will be validated by us in ITIL books.

Our model obviously is different from the models compared before. While the compared models were made for a specific context (software development or service delivery), our model was designed specifically to help organizations measure their ITIL maturity and guide them in implementation, in order to reduce the risk.

Only PMF really could be compared with our model because was made for ITIL, however, there are some differences:

1. PMF was designed for ITIL v2 and our model was designed for ITIL v3
2. PMF is too simple in terms of factors (goals, practices, sub-practices, etc.)

We obviously can conclude that our model is different from the ones compared.

B. Continuous Model

As we saw before, ITIL is very complex; however, some organizations already know which process or processes they want implement or assess, and for that they should use the Continuous Model.

To assess a process, the Continuous Model has a questionnaire that will be composed of factors of ITSCMM and CMMI-SVC, previously validated, and everything not included in the factors but contemplated by ITIL (process dependencies, specific roles and responsibilities, documents, plans, etc.). The definition of maturity levels for the Continuous Model is:

**Level 1:** Ad-hoc, success depends on individual effort and heroics.
**Level 2:** Resources and train are provided. Responsibilities and roles are assigned. The process is executed in accordance with a plan and policy. The process is controlled and monitored.
**Level 3:** The process is documented and all the documents become assets of the organization in order to institutionalize the process so it becomes a standard process of the organization.
**Level 4:** Measurements, audits, reviews, and reports are provided, managed, and controlled. Quantitative objectives for quality and process performance are established and used as criteria in managing the process.
**Level 5:** Continuous process improvement is enabled by quantitative feedback from the processes and from piloting innovative ideas and technology.

So far, we have just designed the questionnaire for Incident Management and did the assessment in two Portuguese organizations; we will show and describe the results later in this paper.

C. Staged Model

As we saw, ITIL is very complex and wide; although the number of organizations that want to implement ITIL increases each year, most of them don’t know where to start. In this case, the organizations should follow the Staged Model that guides organizations in ITIL implementation, telling them which process they should implement first and how far they should go in each process.
The definition of maturity levels for Staged Model is:

**Level 1:** Ad-hoc, success depends on individual effort and heroics.

**Level 2:** Projects establish the foundations for an organization to become an effective service provider. This enables organizations to understand what they provide, with/for whom and how they provide it. The focus is on customer satisfaction and organization train.

**Level 3:** The IT service processes are documented, standardized, and integrated into standard service processes. Highly important processes to the organization that allow having high levels of performance in the management of IT are included.

**Level 4:** Manage and control the information. Both service processes and the delivery services are quantitatively understood and controlled.

**Level 5:** Continuous process improvement is enabled by quantitative feedback from the processes and from piloting innovative ideas and technology.

A Staged Model maturity levels are assigned to ITIL processes by the compatibility of a process objectives with the maturity level description.

### D. Staged Model and Continuous Model Relation

As we can see in Table 2, the Staged Model and the Continuous Model are not independent of each other, at least in part. When an organization chooses to follow the Continuous Model, it already knows which process or processes

<table>
<thead>
<tr>
<th>ITIL processes</th>
<th>Staged Model Maturity Level</th>
<th>Continuous Model Maturity Levels</th>
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<tbody>
<tr>
<td>Service Catalogue Management</td>
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<td>Service Level Management</td>
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<td>Supplier Management</td>
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<td>Service Asset &amp; Configuration Management</td>
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<td>Event Management</td>
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<td>Level 2</td>
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<tr>
<td>Incident Management</td>
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<td>Level 3</td>
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<td>Request Fulfillment</td>
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<td>Level 4</td>
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<td>Monitoring &amp; Control</td>
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<td>Level 5</td>
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<td>Service Desk</td>
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<td>Technical Management</td>
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<td>Service Generation</td>
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<td>Demand Management</td>
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<td>IT Financial Management</td>
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<td>Service Portfolio Management</td>
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<td>Capacity Management</td>
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<td>Availability Management</td>
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<td>IT Service Continuity Management</td>
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<td>Transition Plan &amp; Support</td>
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<td>Change Management</td>
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<td>Release &amp; Deployment Management</td>
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<td>Service Validation &amp; Testing</td>
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<td>Problem Management</td>
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<td>Access Management</td>
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<td>Information Security Management</td>
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<td>Evaluation</td>
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<td>Knowledge Management</td>
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<td>Service Report</td>
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<td>Service Measurement</td>
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<td>Service Improvement</td>
<td>5</td>
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</table>
it wants implemented and just uses the Continuous Model to assess each chosen process. But if the organization doesn’t know which process(es) to implement first and uses the Staged Model to determine that, then it must use the Continuous Model to assess the previous chosen process(es), too.

So, when the organization knows the process(es) it wants to implement/assess, it should use the Continuous Model and corresponding questionnaire; when it doesn’t know which process(es) to implement, it first should use the Staged Model and then the Continuous Model and the corresponding questionnaire.

The evolution of the maturity described by the Staged Model is incremental. For example, to achieve Staged level 2, the organization must achieve Continuous level 2 of the 10 processes included in Staged level 2, but to achieve Staged level 3, the organization must achieve Continuous level 3 of the 14 processes included in Staged level 3, and achieve Continuous level 3 of the 10 processes included in Staged level 2 and so on.

The different colors used in Table 2 show this propriety.

V. Evaluation

In this section we will present and discuss the evaluation of the results of the assessments performed using the Incident Management, Configuration Management processes and the Service Desk function questionnaires in five Portuguese organizations. We chose these questionnaires (and not others) because these two processes and this function are the most popular in organizations implementing ITIL, particularity in Portuguese organizations. Each questionnaire contains three kinds of question:

1. **Key questions**: All these questions are essential for the correct implementation of each specific level of the process, and all must be implemented to reach the level. Basically, they’re related with roles, responsibilities, activities, documents, audits, reviews, etc.

2. **Non-key questions**: Not all of these questions need to be implemented, just 75 percent of them. Basically, they’re related with sub-practices; they are not the main focus.

3. **Dependent key questions**: These questions are related to dependencies between processes. If the process that is being assessed depends in some way on other ITIL processes and the organization has those processes implemented, too, then the question must be implemented; otherwise, it shouldn’t be.

The organizations can answer each question of the questionnaires with:

1. Yes: They have the question implemented
2. No: They don’t have the question implemented
3. Don’t know: They don’t understand the question or don’t know the answer
4. In implementation: If they are already in an implementation phase of that question

Due to a high number of questions and answers, in this section we will only present a resume of the assessments. Table 3 shows a resume of the results of all assessments, as well as the answers to the open questions. In fact we made some question before and after the questionnaires in order to understand the quality and completeness of our proposed questionnaire and the vision that each organization has about its own ITIL implementation.

The columns in Table 3 mean the following:

- Simple: If the person responsible for the process understood all the questions.
- Complete: If the questionnaire had all the activities and practices implemented by the organization.
- Copy: If the organization wants a copy of the questionnaire with the results.
- State: What is the idea of the person responsible for the process about the percentage of implementation until now?
- Model State: It’s the state of the implementation based on the results of the questionnaire
- Start: When did the organization start implementing ITIL?
- Finish: Did the organization already finish their ITIL implementation?
- People: How many people do they have in their IT department?
- Budget: What is the budget of the IT department?
- Level: Maturity level of the ITIL implementation based on the results of the assessment.
TABELA III. ASSESSMENTS RESULTS SUMMARY

It should be noted that we assessed two Service Desks and Incident Management processes in the Organization 2, and therefore we can make a comparison of different teams in the same organization.

Not all organizations were comfortable to disclose their budget; therefore we don’t have information about all the budgets.

Most of the organization thought the questionnaire was simple as we only received four “No”. Interestingly enough, the percentage of implementation for those that answered “No” was relatively low, thus we may conclude the questionnaire was not simple only for those with lower percentage of ITIL implementation. This result must suggest we should design an even simpler questionnaire for organization with a lower level of ITIL implementation, or perhaps a questionnaire that adapts itself to the maturity of the organization.

All confirmed the completeness of the questionnaires, everything they implemented, or plan to implement, was in the questionnaires.

Organization 1 got better results that they were thinking in two questionnaires. We believe the reason has something to do with the strong investment on CMMI they made before starting to implement ITIL. Nevertheless, they still are at level 1.

Organization 2 is one of the organizations that achieved best results. However, they are exaggeratedly optimistic. First their supposed percentage of implementation are overvalued in all the process assessed (they said 100% in two processes), second, although a high percentage of achieved implementation, their maturity level is far from the ideal.

Organization 3 is another interesting case, they don’t give the implementation by ended but they believe to be at 100% of implementation in Service Desk and Incident Management. I believe, after had evaluated the results (Table 15 and Table 16), that they believe to be at 100% of these processes taking into account the answers that they said as “In implementation”. Even taking into consideration the “In implementation” answers their level of maturity, with the exception of the Incident Management that actually would be at level 5 and near 100%, they won’t reach more than level 1.

Organization 4 is clearly aware of their maturity level. However, they keep being in a low level of maturity and gave as completed the ITIL implementation. This is strange because they believe to be at 61% of implementation; they are at level 1 of maturity, they start the implementation in 2008 and affirm that already finished the implementation. Seems like a waste of efforts during the last two years since the beginning of ITIL implementation. I find two possible reasons, and both identified in the problem of this thesis: or they were completely lost in the implementation and didn’t know the next steps, or they just reach the limit budget and demonstrate bad finance management.

Organization 5 is not aware out of their real implementation. They got a low percentage and the lowest level of maturity (level 1) and believe to be much more forward on the implementation. Once more this organization gives the implementation as terminated and 90% as the total of the implementation that is very strange.

Organization 6 achieved the best results and they were clearly aware of their maturity level. Service Desk of Team 1 was a little pessimistic about their level but Incident Management of Team 1 had less percentage and a
higher level of maturity compared with Incident Management of Team 2. Nevertheless, with 90% they should be in a higher level of maturity and the reason they are not should be investigated.

Most organizations fail to implement ITIL properly and remain at a low maturity level, not because they cannot implement a high percentage of what ITIL proposes, but because they fail to implement specific but crucial details. As a result, many organizations end up with the worst of both worlds: they invest on implementing most of ITIL and still cannot recover the return of that investment because they have, in fact, a low maturity model. Our research can then help organizations benefit more from ITIL without making more investments, just by pinpointing what is still missing.

The maturity model suffered some improvements since the beginning of the assessments. More questions were added to the mini questionnaires (before and after each assessment) in order to gather important information to be able to draw more accurate conclusions. Other adjustments were made as some Key questions that come to Non Key, or some superficial improvements as repeated questions or mitigation of redundant information.

VI. DISCUSSION

Although quite useful, as can be seen in the previous section the proposed model is not perfect and on this section we will discuss the pros and cons of the model. According to the evaluation performed so far, the identified pros of the proposed model are:

1. Extremely useful for helping organizations implementing ITIL
2. Very detailed and complete
3. Can be used to assess and guide an ITIL implementation
4. The Staged Model follows an incremental path that reduces the initial effort
5. Enables organization to know “where they are” and “what they should do” regarding ITIL
6. Organizations that follow the proposed model avoid the most common mistakes.
7. The questions are easily understood by most organizations.
8. The model is useful and interesting, until now all organization wished a copy of the questionnaires results.

However, we also identified some cons of the model:

1. Two processes and one function, amongst the 24 processes found on the ITIL v3 books, only cover so far a small part of ITIL
2. The Staged Model cannot be assessed because we are still lacking the questionnaires for most of the level 2 processes.
3. The sequence of implementation proposed by the Staged Model may not be the most appropriate for all organizations.

About the percentage of non-key questions that need to be implemented (75 percent), we don’t have any empirical validation. However the idea isn’t new and the value isn’t arbitrary. Trillium defines a minimum percentage to reach the next level, too (90 percent), but Trillium doesn’t have distinct questions (key, non-key, dependent key). Therefore 90 percent was a high value for those who must implement all key questions, and then we believe that three-quarters of non-key questions is acceptable. This number needs to be confirmed in the future with more assessments.

In resume, organization 6 got the better results and is the most evolved organization in the ITIL implementation. With the average of 1,47 of maturity level I can affirm that the implementation wasn’t well performed or isn’t being well perform. Almost all the organizations believe to be in a better state of implementation (72,6) that they actually are (58,2) in average. All these conclusions match the initial statements on this thesis about the difficulty by the organizations to implement ITIL.

Over all the advantages of the proposal are evident. The present reality of ITIL implementation in most organizations makes this proposal extremely useful. The proof is that all organizations was very interested on our questionnaires and asked for a copy of the results.
VII. Prototype

In order to support these questionnaires we designed and implemented a software prototype that helps the organizations assess their ITIL processes more professionally, easily and efficiently, and it’s free of charge. The prototype has two facets: organization and multi-client, i.e. an organization with two or more functions or processes.

The prototype allows any organizations to assess their processes, delegate questions to other people that the manager believes to be more appropriate to answer, view the results of the assessment, monitor the progress of the assessment, compare assessments between clients and provide a roadmap with next steps regarding the ITIL implementation. The prototype is very simple to learn and use, and shows many graphics (some on real time) to the manager.

Fig. 1 contains a screenshot of the home page (dashboard) where three kinds of information are presented:

1. The percentage of the implementation of each process. On this case we have two teams (clients) and we can see the percentage of both.
2. The number of questions that each user has answered can be useful to monitor the answers to delegated questions.
3. The amount of questions answered per day so the manager can quickly understand if the assessment is progressing well and, if not, do something about it.

![Figure 1. Prototype home page (dashboard)](image)

Another important feature of the prototype is the roadmap that is provided at the end of each assessment. With that roadmap the organization knows what they need to achieve the next level of maturity.

The prototype also allows the manager (the person responsible for the assessment) to monitor all the questions, even those delegated, and send messages to the person.

A mail is sent every time a question is delegated or a message is sent, so that nobody needs to login the prototype just to know what’s going on.
Implementing ITIL is not easy, as seen by the fact that several organizations fail in their efforts to do so; they clearly need something to facilitate that as well as recover more benefits from the investments.

In a previous paper we proposed a maturity model to help organizations assess the maturity level of their ITIL implementations and present a roadmap for improvement.

In this paper we presented an evaluation of the model using 17 assessments in seven organizations, discussed the pros and cons of the proposed model in practice, and summarized a prototype we implemented to support these assessments.

With the 17 assessments made we may conclude the following:

1. Most organizations are at level 1 of maturity, even some with a high percentage of ITIL implementation. This means that they are skipping important details when implementing ITIL.
2. Organizations with a low percentage of implementation cannot understand all the questions. Perhaps in the future the model should be improved in order to make it more flexible and more adaptable to the maturity level of each organization.
3. Some organizations finish their ITIL implementation and do not even have the level 2 of maturity. We should investigate why this is happening because it may be caused by extremely difficulty, high price, and/or a lack of benefits. Again, the proposed model may help solve this problem.
4. An organization already with CMMI can have better results than expected but never reach more than level 1. This is completely normal because the proposed model was based on CMMI-SVC and ITSCMM.
5. Table 3 shows us that the average of maturity level of the organizations is very low. Probably this happens because organizations are not implementing ITIL properly.

We also found that, in most cases, ITIL implementation is not at the level that organizations believe. We also conclude that most organizations implement ITIL as they wish, i.e. not following the ITIL best practices. Our proposed model is very useful because the organizations find what they are not doing properly.

We finally conclude that the assessments demonstrate the usefulness and importance of our research work. The results show that almost all organizations skip important steps and the level of maturity average is only 1.47. The problem we are trying to solve is thus worth our research effort because most organizations are, in fact, implementing ITIL incorrectly and not getting the benefits from their ITIL implementation.

As part of our future research work, we will make many more assessments, in more organizations. This will be achieved partly using the prototype we implemented, thus also serving to improve the prototype. We will also create questionnaires for other popular ITIL processes, such as Change Management. Further down the road, we expect to offer the prototype free of charge as a service on the Internet so that any organization in the world can self-assess their ITIL implementation and receive a personalized roadmap for further implementation.

REFERENCES