Proposal of the improvement of actual ITIL version based on comparative IT Service Management methodologies and standards – Final measurements and the selection of the improved model

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Abstract: - Mapping processes from other frameworks and standards in order to form final models of ITIL 2011 framework has produced a result of 16 final models of ITIL 2011 framework. All 16 final models have achieved almost the same results which are all above 85% of successful implemented recommendations for each model. It means that all 16 models can be used in some specific industrial environments. The result of research which is done through measurements of 16 final models of ITIL framework is an improved model of ITIL that consists of eleven new added processes from other methodologies and standards for the management of IT services. Processes that are now placed in Service Strategy phase are: Define a strategic plan and the information architecture, Financial Management for IT services, Demand Management, Service Portfolio Management and Define the IT processes, organization and relationships. Processes that are presented in Service Design phase are: Design Coordination, Define and manage service levels, Service Level Management, Capacity Management, Availability Management, IT Service Continuity Management, Establish ISMS + Implement and operate ISMS + Monitor and review ISMS + Maintain and improve ISMS and Supplier Management. Seven processes are placed in Service Transition phase of the new performed model ITIL 2011 framework: Transition Planning and Support, Change Management, Service Asset and Configuration Management, Release and Deployment Management, Service Validation and Testing, Change Evaluation and Educate and train users. The largest number of new added processes are in Service Operation phase: Assurance Customer Relationship Management, Assurance Service Management & Operations, Request Fulfillment, Assurance Resource Management & Operations and finally Fulfillment Service Management & Operations. Continual Service Improvement phase still contains one process 7-Step Continual Service Improvement Process.

Key-Words: - Define a strategic plan and the information architecture, Define the IT processes, organisation and relationships, Define and manage service levels, Educate and train users, Assurance Customer Relationship Management, Assurance Service Management & Operations, Assurance Resource Management & Operations, Fulfillment Service Management & Operations, Capacity Management, Supplier Management, Establish ISMS + Implement and operate ISMS + Monitor and review ISMS + Maintain and improve ISMS.

1 Introduction

The main goal of this research is to improve the existing model of ITIL 2011 framework through comparative analysis with other IT service management frameworks and standards. The result of comparative analysis should be new models of ITIL framework for which will be done new measurements of the implementation. These results will be compared and based on this will be chosen new improved model of ITIL framework. The results of the comparative analysis may serve as a basis for future research related to the improvement of each of the frameworks or standards which are mentioned in this paper. Recent research in this area show that there are many disadvantages in the existing ITIL 2011 framework especially in Service Operation phase which is responsible for relationship with end users.

This research is divided into five parts. The first part describes previous research, research methodology and test environment. The second part of research describes the implementation of all IT Service Management frameworks and standards in test environment. The third part describes a comparative analysis of results and gives a proposal

for new models. The fourth part of the research describes measurements of final models for ITIL and the election of the improved model for ITIL 2011 framework. The last part of the research describes in details the improved model of ITIL 2011 framework and shows future directions of research. This paper is the fourth part of the research.

Section 2. describes a procedure of creating a final models for ITIL 2011 framework. Section 3. of the paper is an analysis of implementation of final models of ITIL 2011 framework and the election of final improved model for ITIL 2011 framework. Section 4. is the conclusion of the paper in which are shown all processes that are the part of final models for ITIL 2011 framework.

2 Creating of final models for ITIL 2011 framework

The hypothesis with which we start with the creation of the final models of ITIL 2011 framework is to take only those processes that have achieved positive results of the implementation which are equal or greater than 80% of positive implemented recommendations [15]. In this way are eliminated processes that are very close to this negative limit of 75% of positive implemented recommendations. This only applies to those processes where there are two or more complementary processes that have achieved positive results of measurement. From tables I. to XI., we can conclude that only two processes are by the results of their functions in the range of 75% to 80% of positive implemented recommendations: Enterprise Strategy & Planning as the replacement for ITIL Strategy Management for IT services and Progress - Managing Product Delivery process as the replacement for ITIL Supplier Management process. For both processes there is at least one process from another complementary framework or standard that has achieved the positive result of the implementation.

Two processes for the replacement of ITIL Strategy Management for IT services have achieved positive results: CobiT process Define a strategic plan and the information architecture [21], [25] and PRINCE2 process Organization – Controlling a Stage [13], [20]. Both processes will be taken for the creation of final models of ITIL 2011 framework (table I.).

Just one process for the replacement of ITIL Business Relationship Management process has achieved positive results. This is the CobiT process Define the IT processes, organisation and relationships [22], [23]. This process will be taken for the creation of final models of ITIL 2011 framework (table II.).

Just one process for the replacement of ITIL Service Catalogue Management process has achieved positive results of implementation. This is a process Define and manage service levels from CobiT framework [27], [28]. This process will be taken for the creation of final models of ITIL 2011 framework (table III.).

Two processes for the replacement of ITIL Capacity Management process have achieved positive results of implementation: CobiT process Manage performance and capacity [24] and ISO/IEC 20000 process Capacity Management [15], [31]. Both processes will be taken for the creation of final models of ITIL 2011 framework (table IV.).

Four processes for the replacement of ITIL Information Security Management process have achieved positive results of implementation [6]: Establish ISMS + Implement and operate ISMS, Establish ISMS + Implement and operate ISMS + Monitor an review ISMS, Establish ISMS + Implement and operate ISMS + Maintain and improve ISMS and Establish ISMS + Implement and operate ISMS + Monitor an review ISMS + Maintain and improve ISMS [29], [30]. All these processes will be taken for the creation of final models of ITIL 2011 framework (table V.).

Just one process for the replacement of ITIL Supplier Management process has achieved positive results of implementation and this is ISO/IEC 20000 process Supplier Management [7], [8]. This process will be taken for the creation of final models of ITIL 2011 framework (table VI.).

Just one process for the replacement of ITIL Knowledge Management process has achieved positive results of implementation and this is CobiT process Educate and train users [23], [26]. This process will be taken for the creation of final models of ITIL 2011 framework (table VII.).

Just one process for the replacement of ITIL Event Management process has achieved positive results of implementation and this is eTOM process Assurance Customer Relationship Management [16], [18]. This process will be taken for the creation of final models of ITIL 2011 framework (table VIII.).

Just one process for the replacement of ITIL Incident Management process has achieved positive results of implementation and this is eTOM process Assurance Service Management & Operations [17]. This process will be taken for the creation of final models of ITIL 2011 framework (table IX.).

Just one process for the replacement of ITIL Problem Management process has achieved positive

results of implementation and this is eTOM process Assurance Resource Management & Operations [19]. This process will be taken for the creation of final models of ITIL 2011 framework (table X.).

Just one process for the replacement of ITIL Access Management process has achieved positive results of implementation and this is eTOM process Fulfillment Service Management & Operations [16]. This process will be taken for the creation of final models of ITIL 2011 framework (table XI.).

Five processes from CobiT are taken in creation of final models for ITIL 2011 framework: Define a strategic plan and the information architecture, Define the IT processes, organisation and relationships, Define and manage service lelels, Manage performance and capacity and Educate and train users. Just one process is taken from PRINCE2 in creation of final models for ITIL 2011 framework Organization – Controlling a Stage. Four processes from eTOM are taken in creation of final models for ITIL 2011 framework: Assurance Customer relationship Management, Assurance Service Management & Operations, Assurance Resource Management & Operations and Fulfillment Service Management & Operations. Two processes from ISO/IEC 20000 are taken in creation of final models for ITIL 2011 framework: Capacity Management and Supplier Management. Finally, four processes from ISO/IEC 27000 are taken in creation of final models for ITIL 2011 framework: Establish ISMS + Implement and operate ISMS, Establish ISMS + Implement and operate ISMS + Monitor and review ISMS, Establish ISMS + Implement and operate ISMS + Maintain and improve ISMS, and Establish ISMS + Implement and operate ISMS + Monitor and review ISMS + Maintain and improve ISMS. The total number of created final models for ITIL 2011 framework is 16. Figure 1. shows the procedure of mapping processes from other frameworks and standards in order to form final models of ITIL 2011 framework.

3 The analysis of implementation of final models for ITIL 2011 framework

Table XII. shows final results of measurements and the ranking model of final created models of ITIL 2011 framework. The distance between minimal value and maximum value for all models for Technical Management function is 1.61%, for models for Application function the distance is 1.39%, for models for Service Desk function the distance is 1.08% and for models for IT Operations Management function the distance is 1.44% [1], [2], [3], [4], [5]. All models for all four functions have results which are above 85% of positive implemented recommendations. The conclusion from this is that all 16 models have pretty the same results and that all models can be called as improved models of ITIL 2011 framework [9], [10], [11]. What is the most important is that all models have for all four functions results above 85% of positive implemented recommendations.

The best results has achieved a final model 4. This model has achieved results which are above 87% of positive implemented recommendations for all four functions [12], [14]. Figure 2. shows that Technical Management function has achieved the result of 88.04% of positive implemented recommendations, Application Management has achieved the result of 89.40% of positive implemented recommendations, Service Desk has achieved the result of 87.46% of positive implemented recommendations and IT Operations Management has achieved the result of 87.03% of positive implemented recommendations for all processes [14]. Figure 2. shows results of measurements for the improved model of ITIL 2011 framework.

This final model is called an improved model of ITIL 2011 framework which is the final result of this project. Figure 3. shows new processes which are added in the improved model of ITIL 2011 framework. The improved model of ITIL 2011 framework has eleven new added processes which include:

- **Define a strategic IT plan and the information architecture** which is the replacement for Strategy Management for IT services process
- **Define the IT processes, organisation and relationship** which is the replacement for Business Relationship Management process
- **Define and manage service levels** which is the replacement for Service Catalogue Management process
- **ISO/IEC 20000 Capacity Management** which is the replacement for Capacity Management process
- **Establish ISMS + Implement and operate the ISMS + Monitor and review the ISMS + Maintain and improve the ISMS** which is the replacement for Information Security Management process
- **ISO/IEC 20000 Supplier Management** which is the replacement for Supplier Management process

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- **Educate and train users** which is the replacement for Knowledge Management process
- **Assurance Customer Relationship Management** which is the replacement for Event Management process
- **Assurance Service Management & Operations** which is the replacement for Incident Management process
- **Assurance Resource Management & Operations** which is the replacement for Problem Management process
- **Fulfillment Service Management & Operations** which is the replacement for Access Management process.

4 Conclusion

Measurements have showed that 16 processes have achieved positive results from other ITSM frameworks and standards. These processes from CobiT are: Define a strategic plan and the information architecture, Define the IT processes, organisation and relationships, Define and manage service levels, Define and manage performance and capacity and Educate and train users. Only one process from PRINCE2 is achieved positive results: Organization – Controlling a Stage. These processes from eTOM are: Assurance Customer Relationship Management, Assurance Service Management & Operations, Assurance Resource Management & Operations and Fulfillment Service Management & Operations. The processes with a positive result of implementation from ISO/IEC 20000 are: Capacity Management and Supplier Management. These processes from ISO/IEC 27000 are: Establish ISMS + Implement and operate ISMS, Establish ISMS + Implement and operate ISMS + Monitor and review ISMS, Establish ISMS + Implement and operate ISMS + Maintain and improve ISMS, Establish ISMS + Implement and operate ISMS + Monitor and review ISMS + Maintain and improve ISMS.

Based on this, final models of ITIL 2011 framework are created. The total number of final models for ITIL 2011 framework was 16. Results of measurements of these final models have showed that the distance between minimal value and maximum value for all models and for all functions is approximately 1.38% [12]. It means that all final models for ITIL 2011 framework have almost the same results. The conclusion is that all these 16 final models of ITIL 2011 framework have better results than the existing model of ITIL. These models can be implemented in different business environments [3], [4].

The improved model of ITIL 2011 framework has a new process model. It has eleven new added processes. Only the Service Portfolio Management from the first measurement doesn't have a replacement process [1], [5]. The improved model of ITIL 2011 framework will be described in details in next last part of this research.

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TABLE I. SELECTING THE BEST COMPLEMENTARY PROCESS AS A REPLACEMENT FOR ITIL PROCESS STRATEGY MANAGEMENT FOR IT SERVICES

Process Name	TM	AM	SD	IT OM	The order in successful implementation
Define a strategic plan and the information architecture	86.59%	82.80%	89.65%	85.30%	I
Organization – Controlling a Stage	80.69%	81.68%	84.91%	80.50%	II
Strategy & Enterprise Planning	81.52%	77.54%	82.66%	83.45%	III
Strategy Management for IT services	53.55%	68.67%	67.61%	70.00%	IV

TABLE II. SELECTING THE BEST COMPLEMENTARY PROCESS AS A REPLACEMENT FOR ITIL PROCESS BUSINESS RELATIONSHIP MANAGEMENT

Process Name	TM	AM	SD	IT OM	The order in successful implementation
Define the IT processes, organisation and relationships	80.69%	81.68%	84.91%	80.50%	I
Enterprise Effectiveness Mng	77.42%	69.56%	80.65%	69.31%	III
Business Relationship Management (ISOIEC 20000)	73.62%	67.48%	81.07%	76.58%	II
Business Relationship Management (ITIL 2011)	52.80%	45.00%	68.50%	57.50%	IV

TABLE III. SELECTING THE BEST COMPLEMENTARY PROCESS AS A REPLACEMENT FOR ITIL PROCESS SERVICE CATALOGUE MANAGEMENT

Process Name	TM	AM	SD	IT OM	The order in successful implementation
Define and manage service levels	87.62%	94.78%	78.54%	85.88%	I
Service Catalogue Management	76.07%	94.50%	54.40%	83.81%	II

TABLE IV. SELECTING THE BEST COMPLEMENTARY PROCESS AS A REPLACEMENT FOR ITIL PROCESS CAPACITY MANAGEMENT

Process Name	TM	AM	SD	IT OM	The order in successful implementation
Manage performance and capacity	81.69%	82.79%	88.94%	85.47%	II
Capacity Management (ISO/IEC 20000)	84.28%	82.15%	89.45%	86.16%	I
Capacity Management (ITIL 2011)	74.93%	79.61%	85.81%	82.78%	III

TABLE V. SELECTING THE BEST COMPLEMENTARY PROCESS AS A REPLACEMENT FOR ITIL PROCESS INFORMATION SECURITY MANAGEMENT

Process Name	TM	AM	SD	IT OM	The order in successful implementation
Establish ISMS + Implement and operate ISMS	83.48%	82.67%	83.00%	82.96%	I
Establish ISMS + Implement and operate ISMS + Monitor an review ISMS	83.26%	82.50%	82.97%	82.93%	II
Establish ISMS + Implement and operate ISMS + Maintain and improve ISMS	82.12%	81.60%	82.48%	82.36%	III
Establish ISMS + Implement and operate ISMS + Monitor an review ISMS + Maintain and improve ISMS	82.76%	81.78%	81.68%	82.00%	IV
Information Security Management	55.00%	61.55%	52.79%	69.43%	V

TABLE VI. SELECTING THE BEST COMPLEMENTARY PROCESS AS A REPLACEMENT FOR ITIL PROCESS SUPPLIER MANAGEMENT

Process Name	TM	AM	SD	IT OM	The order in successful implementation
Quality – Initiating a Project	72.68%	71.56%	81.48%	64.23%	IV

Change – Managing Product Delivery	77.81%	71.62%	77.44%	66.51%	III
Progress - Managing Product Delivery	82.65%	80.67%	84.25%	78.56%	II
Supplier Management (ISO/IEC 20000)	81.12%	80.69%	81.15%	80.00%	I
Supplier Management (ITIL 2011)	70.63%	63.86%	74.13%	58.00%	V

TABLE VII. SELECTING THE BEST COMPLEMENTARY PROCESS AS A REPLACEMENT FOR ITIL PROCESS KNOWLEDGE MANAGEMENT

Process Name	**TM**	**AM**	**SD**	**IT OM**	**The order in successful implementation**
Educate and train users	79.48%	82.79%	81.39%	82.58%	I
Knowledge Management	68.39%	57.88%	64.06%	56.20%	II

TABLE VIII. SELECTING THE BEST COMPLEMENTARY PROCESS AS A REPLACEMENT FOR ITIL PROCESS EVENT MANAGEMENT

Process Name	**TM**	**AM**	**SD**	**IT OM**	**The order in successful implementation**
Assurance Customer Relationship Management	83.61%	84.57%	83.53%	87.48%	I
Event Management	57.69%	66.87%	56.00%	66.33%	II

TABLE IX. SELECTING THE BEST COMPLEMENTARY PROCESS AS A REPLACEMENT FOR ITIL PROCESS INCIDENT MANAGEMENT

Process Name	**TM**	**AM**	**SD**	**IT OM**	**The order in successful implementation**
Quality – Closing a Project	52.68%	35.48%	58.62%	50.74%	III
Assurance Service Management & Operations	83.54%	80.22%	82.47%	80.10%	I
Incident Management	56.21%	37.95%	63.68%	53.80%	II

TABLE X. SELECTING THE BEST COMPLEMENTARY PROCESS AS A REPLACEMENT FOR ITIL PROCESS PROBLEM MANAGEMENT

Process Name	**TM**	**AM**	**SD**	**IT OM**	**The order in successful implementation**
Assurance Resource Management & Operations	81.46%	80.32%	85.69%	83.16%	I
Problem Management	67.82%	53.04%	70.86%	67.50%	II

TABLE XI. SELECTING THE BEST COMPLEMENTARY PROCESS AS A REPLACEMENT FOR ITIL PROCESS ACCESS MANAGEMENT

Process Name	**TM**	**AM**	**SD**	**IT OM**	**The order in successful implementation**
Fulfillment Service Management & Operations	88.51%	86.12%	89.42%	88.11%	I
Access Management	75.60%	69.43%	84.96%	86.67%	II

TABLE XII. FINAL RESULTS OF MEASUREMENTS AND THE RANKING OF FINAL MODELS OF ITIL 2011 FRAMEWORK

The name of model	**Technical Management**	**Application Management**	**Service Desk**	**IT Operations Management**	**The order in successful implementation**
Model 1.	87.20%	88.87%	87.11%	86.35%	7.
Model 2.	88.01%	89.38%	87.41%	87.00%	2.
Model 3.	87.98%	89.34%	87.38%	86.96%	4.
Model 4.	88.04%	89.40%	87.46%	87.03%	1.
Model 5.	87.10%	88.91%	87.11%	86.36%	8.
Model 6.	87.11%	88.92%	87.13%	86.39%	6.
Model 7.	87.98%	89.34%	87.38%	86.96%	3.
Model 8.	87.12%	88.93%	87.16%	86.41%	5.
Model 9.	86.51%	88.06%	86.42%	85.62%	15.
Model 10.	86.50%	88.06%	86.43%	85.63%	14.
Model 11.	86.43%	88.01%	86.38%	85.59%	16.
Model 12.	87.33%	88.56%	86.50%	86.10%	10.
Model 13.	86.53%	88.08%	86.43%	85.61%	13.
Model 14.	87.33%	88.58%	86.57%	86.12%	9.
Model 15.	87.21%	88.49%	86.48%	86.05%	12.
Model 16.	87.33%	88.56%	86.50%	86.10%	10.

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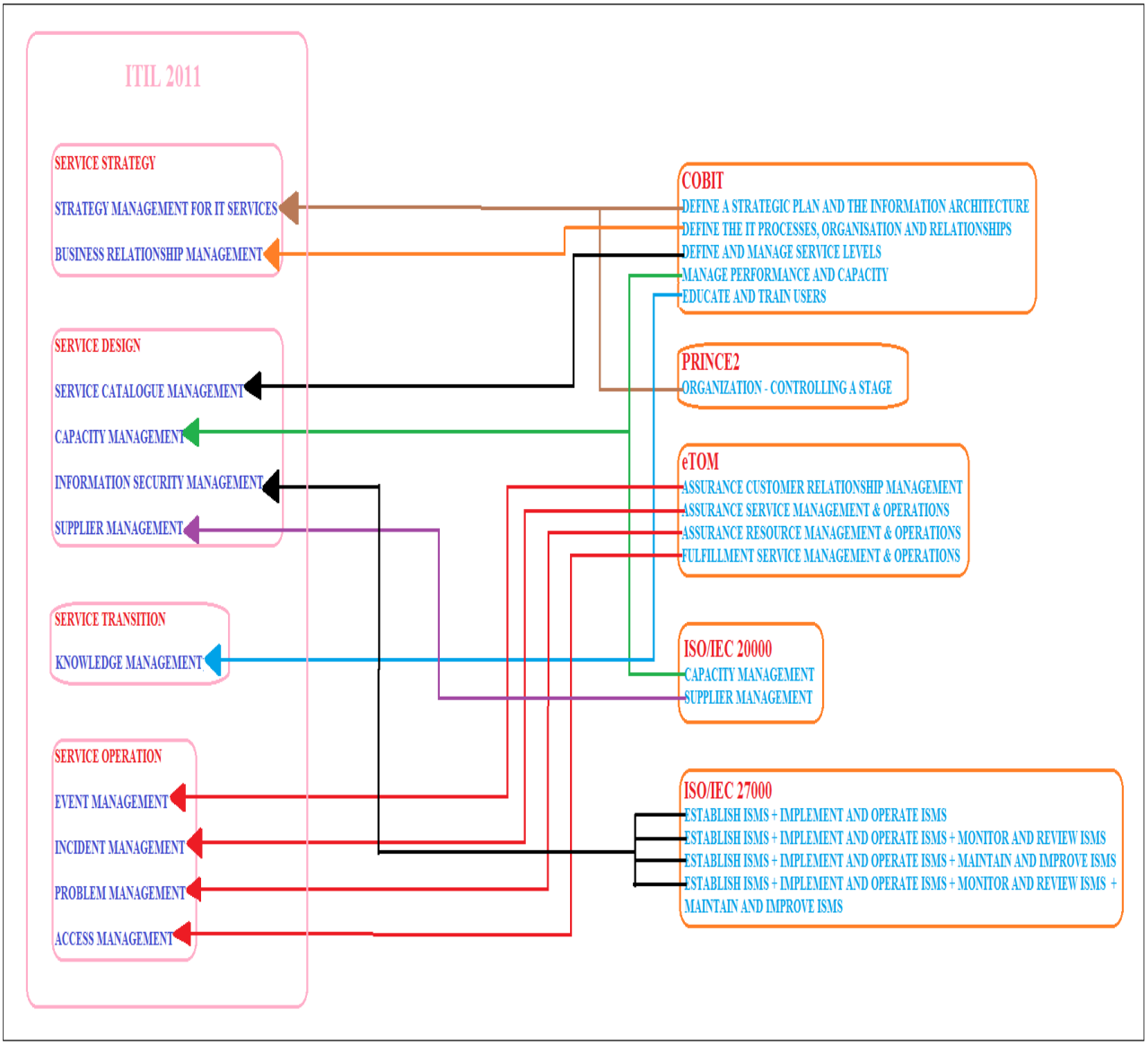

Figure 1. Mapping processes from other frameworks and standards in order to form final models of ITIL 2011 framework

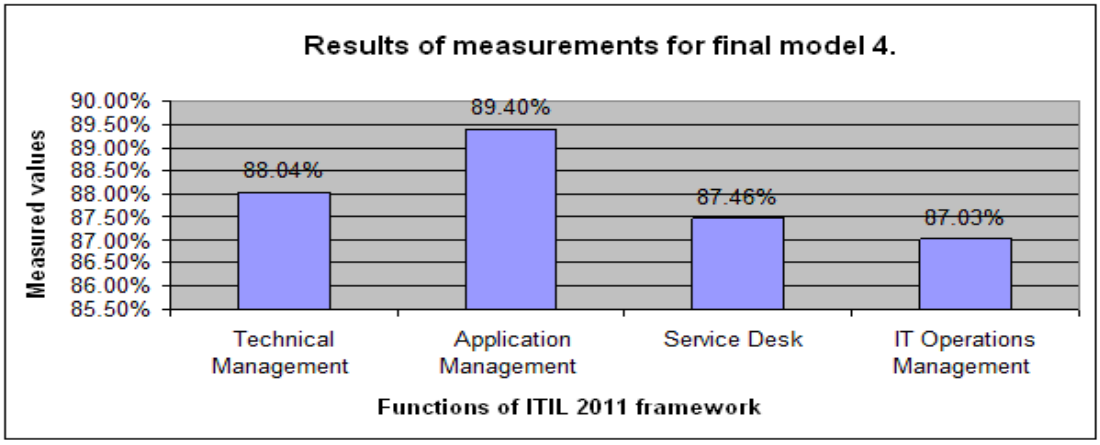

Figure 2. Results of measurements for the improved model of ITIL 2011 framework

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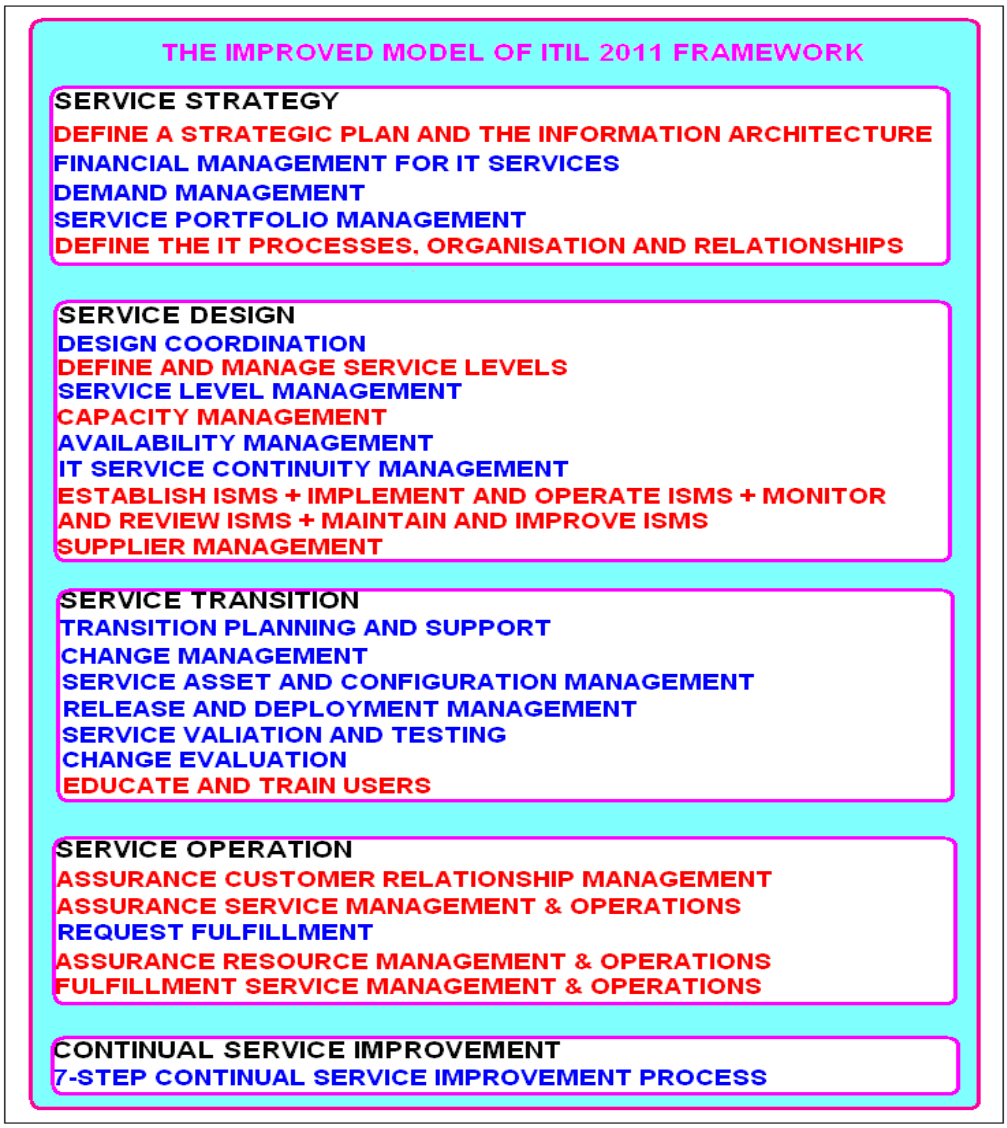

Figure 3. New processes of the new improved model of ITIL 2011 framework are signed with a red colour

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