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"Model-Driven Software Development"

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PMBOK and PRINCE 2 for the Management of ITIL Implementation Projects

Grupo de Metodologías de Gestión de Proyectos of the itSMF Spain under the coordination of Javier García-Arcal

In this article we analyse a compilation of tools and techniques produced by a working group coordinated by itSMF Spain with a view to providing professionals involved in projects implementing ITIL best practices with a range of project management tools and techniques (based on PMBOK and PRINCE2 methodologies) to facilitate project management and ensure a successful implementation of ITIL.

Keywords: Best Practices, CSF, Implementation, ITIL, ITSMF, PMBOK, PRINCE2, Project Management, Success Factor, Tools.

1 Introduction

The purpose of this article is to develop and disseminate tools that will ensure the successful execution of ITIL implementation projects and help the parties involved meet the challenge of implementing ITIL.

First we will give a brief explanation of the acronyms used to refer to these methodologies:

ITIL (*Information Technologies Infrastructure Library*) is a set of best practices for the administration and management of IT services in terms of the people, processes and technology employed, developed by the UK government agency, the OGC (*Office of Government Commerce*). ITIL provides recommendations and guidelines for IT management aimed at achieving alignment between technology and business.

The *Project Management Body of Knowledge* (PMBOK®) is a compilation of knowledge acquired in project management. It belongs to the PMI, *Project Management Institute*, whose members are professionals from various fields, such as law, finance, etc. The PMI encompasses both traditional and more innovative practices.

PRINCE2, on the other hand, is a structured method of project management which seeks to develop the organization, administration, and control of projects based on project management best practices.

In order to implement ITIL in an organization or department we first need to make a study of potential advantages and how those advantages can be gained by the end of the project. The work performed by our group has resulted in an eminently practical approach for ITIL implementation projects.

2 Work Methodology

A work methodology based on brainstorming was designed and it was decided to apply decomposition techniques to the analysis of information sources.

In addition to brainstorming, we used information from PMBOK, PRINCE2, and the ITIL V2 and V3 books, as well as the know-how of each member of the group.

In the first stage of the work we established the critical

Authors

Grupo de Metodologías de Gestión de Proyectos (Project Management Methodologies Group) of the itSMF (IT Service Management Forum) is a multidisciplinary working group which was convened following a directive from the standards committee of itSMF Spain to create a line of research into project management methodologies applied to the management of ITIL implementation projects. It is coordinated by Javier García-Arcal.

Javier García-Arcal is a Doctor of Engineering by the *Universidad Politécnica de Madrid*. He works as a consulting manager at IT Deusto and as a lecturer in Project Management at the *Escuela Técnica de Ingeniería Informática* and at the *Escuela de Ingeniería Técnica Industrial* of the *Universidad Antonio de Nebrija*. He has collaborated in the review of the books *ITIL V3 Service Operation* and *Fundamentos en ITIL V2*. Javier has pursued his career in process consulting, defining ITIL processes for major multinationals in the Consulting, Retail, Telephony, and Public Administrations sectors. He has worked in twelve countries in IT Governance coordination, administration, and project management, in software development in IT departments of various consulting firms (Secuencia, Citi Technologies, etc.), and in service companies such as Sermicro, and multinationals such as Chep and Telefónica I+D <javier.arcal@gmail.com>.

success factors for an ITIL implementation, while in the second stage we analysed each of the tools and techniques proposed by PMBOK and PRINCE2 with a view to seeing just how useful these tools and techniques were for implementing ITIL. In the third stage of our work we considered how to maximize the usefulness of the results for those involved in ITIL implementations. It was decided to use a graphical method based on hierarchical relationships similar to the one used by the metrics group of itSMF Spain [1].

3 Results

We go on to show some of the results obtained from this study for both PMBOK and PRINCE2. We have explained the methodology used to obtain results; now we will explain the content of each "tree" in which these results are represented, and show how to use these trees to extract practical and useful information for the management of ITIL implementation projects.

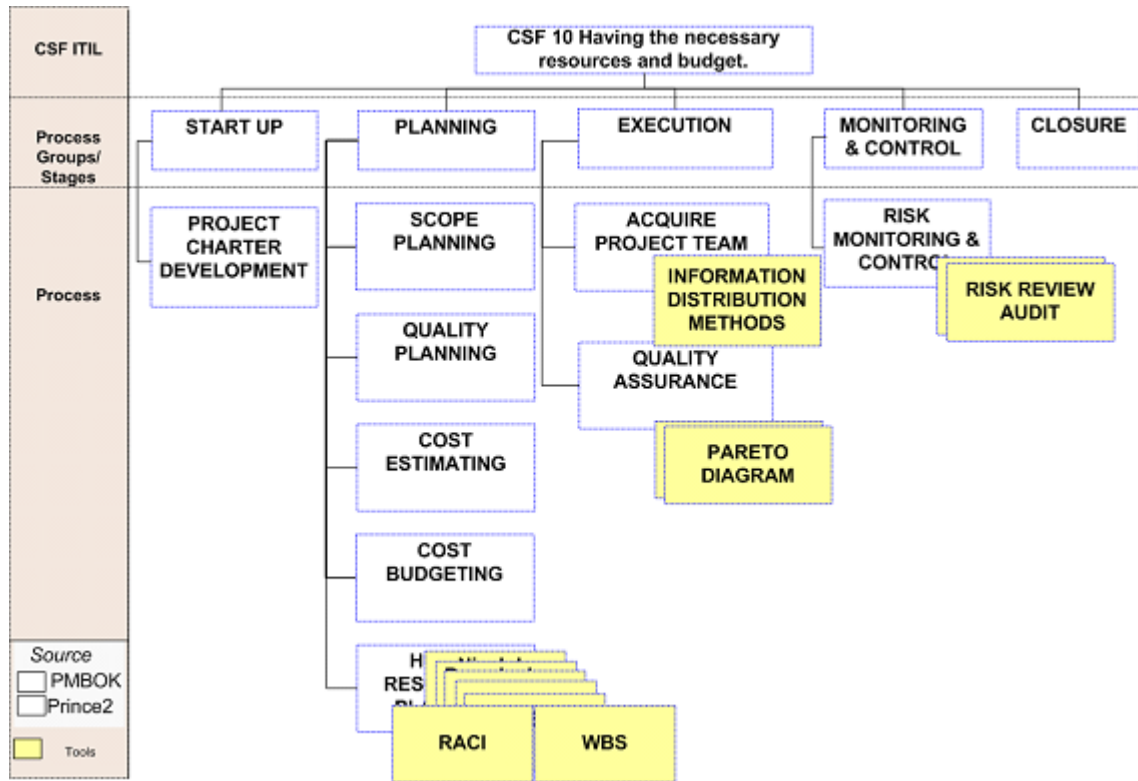


Figure 1: Tree for PMBOK-CSF 10 *Having the necessary resources and budget.*

The analysis of the trees can be performed bottom-up, from the tool to be used to the CSF (*Critical Success Factor*) on which it impacts, or top-down, from the CSF that we want to improve/reach to the tools. The top-down method will be used to give greater emphasis to the tools used and to make it easier to trace the process through the tree. As we can see, level 1 is the CSF itself which in turn is related to all the PMBOK stages forming level 2 of the tree.

Each PMBOK stage has a number of activities which

may have or suffer from some degree of dependence with the CSF which it is evaluating. Only those activities which, in the course of our work, have been seen to contribute added value in the achievement of the CSF in question will appear on the tree. These activities comprise level 3 of the tree. Finally, on level 4 will be all the tools, techniques, inputs and/or outputs related to a PMBOK activity which is useful to the CSF and may also contribute to the success of the CSF.

R = responsible
 A = accountable
 C = consulted
 I = keep informed

MILESTONE/TASK	CAPTAIN	NAVIGATOR	1/2 OFFICER	CHIEF ENGINEER	PURSER	STORES PROVISIONS	PORT AUTHORITY
1 CHART ROUTE	C	R/A	I			I	
2 ORDER PROVISIONS	C			C		R/A	
3 ORDER FUEL	C			A		R	
4 GAIN APPROVAL TO LEAVE	A			R	R	R	
5 SET SAIL	A	C	R	I			
6 TAKE CONTROL FROM PILOT	R/A				I		I

Figure 2: RACI Matrix.

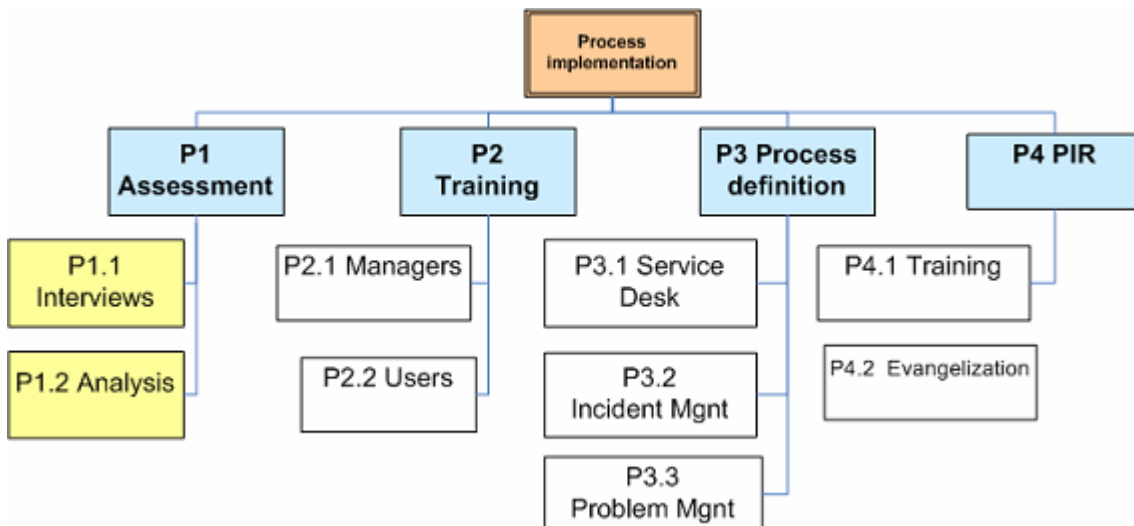


Figure 3: Work Breakdown Structure.

Therefore, if we wish a certain CSF to be achieved, we can use the tools that figure in the tree, concentrating on those that are easier to use in our project or those that most benefit our project.

If we apply this analysis to CSF 10, "Having the necessary resources and budget", the purpose of which is to ensure that the team carrying out the project has all the resources necessary to complete it successfully, we get the tree shown in Figure 1. To achieve this CSF the following tools can be used, among others: RACI, WBS, and Pareto diagrams.

The horizontal rows of the RACI matrix set out in Figure 2 show project activities while the vertical columns represent all the people involved in the project. The idea is to

obtain detailed knowledge of each person's degree of involvement in each activity and this is done by assigning each person a role in each task he or she is involved in. The roles defined for a RACI matrix are:

The **WBS** or Work Breakdown Structure shows how project outcomes are subdivided into work packages (see Figure 3). This representation provides us with a clear idea of what outcomes the project will produce.

The last tool that can be used to achieve this CSF is the **Pareto Diagram**, which is designed to show any defects that have been produced by grouping them together according to their origin/cause (see Figure 4). This technique allows us to identify potential deviations in the success of the project before they occur, or as soon as possible after they appear.

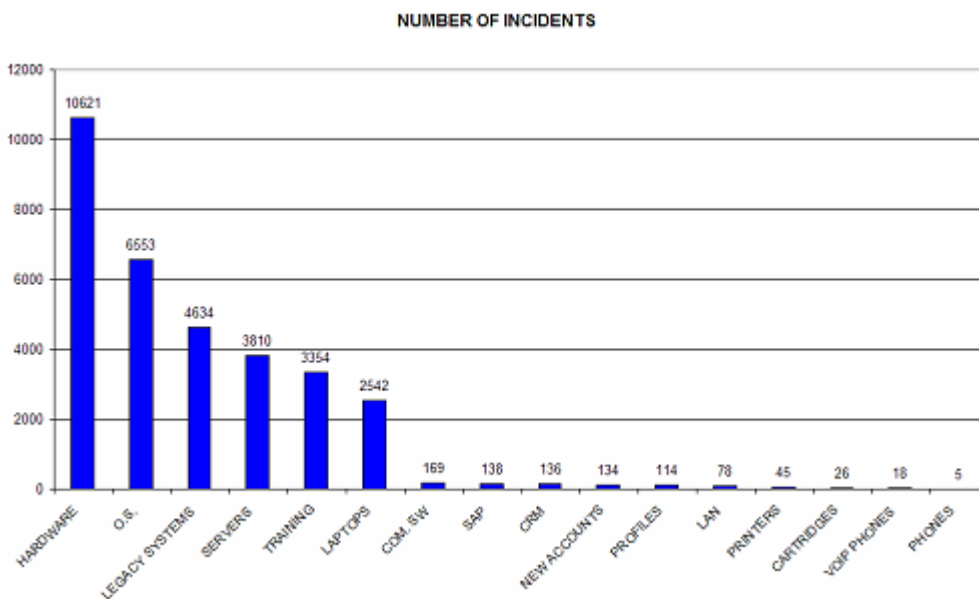


Figure 4: Pareto Diagram.

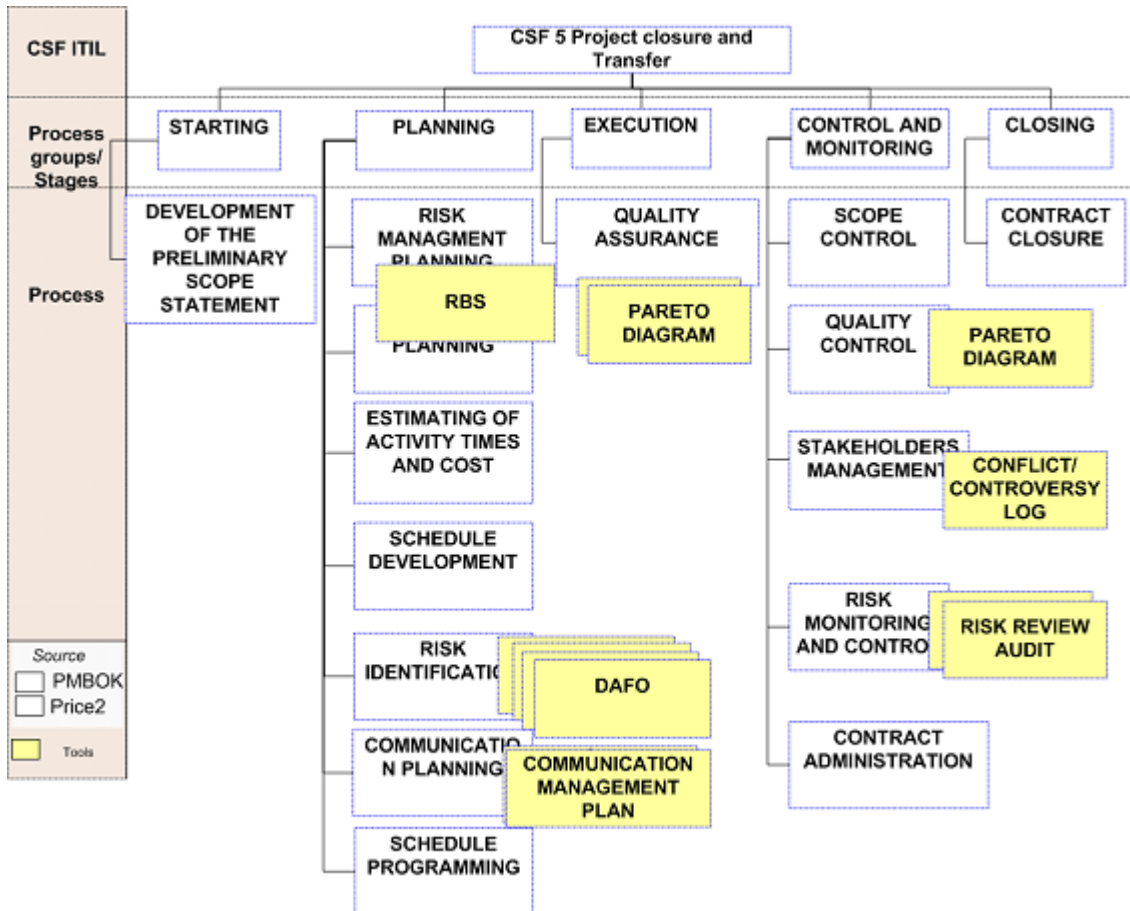


Figure 5: Tree for PMBOK-CSF 5 Project closeout and transfer.

FP PROJECTS RISK FOLLOW UP								
	Customer	Technical	Project	Project Team	Sums		CONTINGENCY ALLOWANCE	REVENUE DEDUCTION
	A	B	C	D	Risks	Risk x Proba	Risk x Proba	Risk x Proba
K€								
10%			43,2		43,2	4,3		4,3
50%		14,0		100,1	114,1	57,1	57,1	
90%			108,2		108,2	97,4	97,4	
Sum					265,5	158,8	154,4	4,3
					Amounts in K euros			
CONTRACT AMOUNT					€713.8K			(*)
BASELINE MARGIN INDICATOR								(*)
NO. OF INITIAL SDs								(*)
CURRENT STAGE OF THE PROJECT					3. DEVELOPMENT & TESTING			(*)
(*) Only figures to be added to this forms								
							CONTINGENCY ALLOWANCE	REVENUE DEDUCTION
Risks x Proba / CA					29,20%		29%	1%
Chosen Risk Provisions					72,0 k€		€69,0 K	€3,0 K
Provision / CA					10,10%		9,70%	0,40%
Coverage					-136,4		-135,1	-1,3

Figure 6: RBS, Risk Breakdown Structure.



Figure 7: Diagram SWOT.

In Figure 5 shows the tree for the PMBOK corresponding to CSF5, "Project closeout and transfer", which is about closing the project in the best possible manner. To increase the effectiveness of this CSF the following tools can be used, among others: Communications Management Plan, RBS, SWOT, and even the Pareto diagrams mentioned earlier.

The **Communications Management Plan** contains all the information deemed necessary to ensure that the project stakeholders can perform their functions efficiently. This information includes: distribution frequency, format, respon-

sibility, purpose of information, etc. Meanwhile **RBS** (Risk Breakdown Structure), an example of which can be seen in Figure 6, is a hierarchical description of project risks of the project, identified and organized by risk category and subcategory, which pinpoints various areas of risk and potential causes.

The **SWOT** (Strengths, Weaknesses, Opportunities, and Threats) **diagram** helps us analyse these factors by providing the answers to the questions posed in Figure 7.

We go on to describe two CSFs and how they relate to

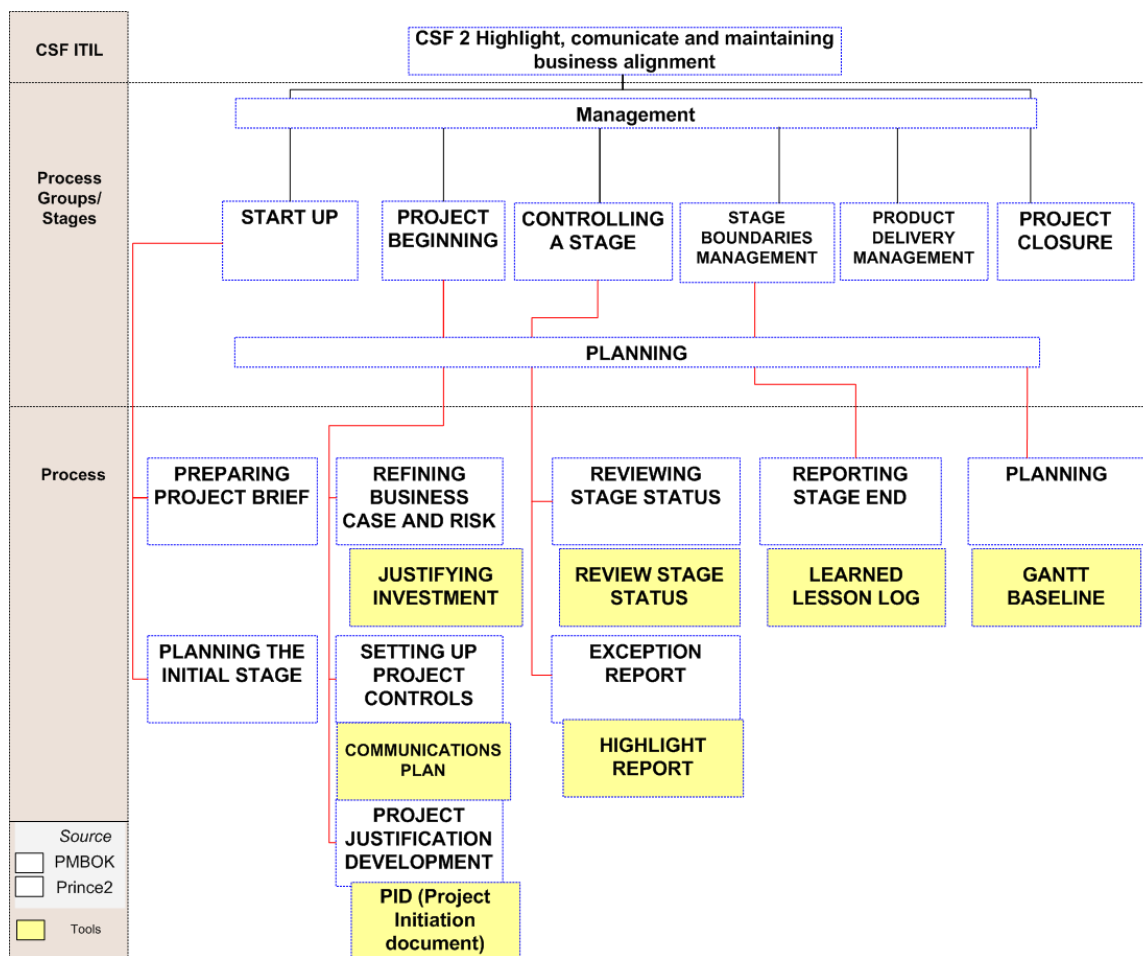


Figure 8. Tree for PRINCE2-CSF 2 Highlight, communicate and maintaining business alignment.

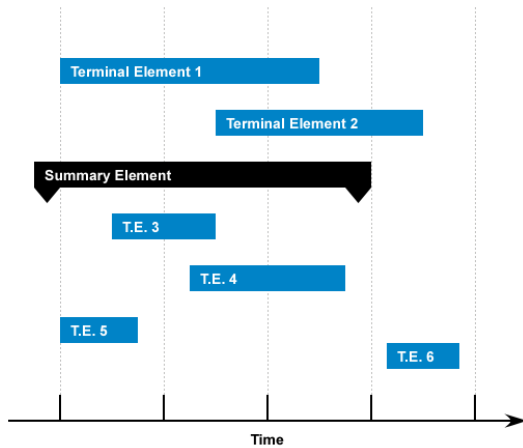


Figure 9: Gantt Diagram.

PRINCE2 methodology.

Figure 8 shows the tree for PRINCE2 corresponding to CSF 2, "Highlight, communicate and maintaining business alignment", which is about adopting a number of measures to deliver value to business through ITIL implementation. This tree focuses on the following tools/techniques: Project Initiation Document or PID, Gantt diagrams, baseline, lessons learned file, and configuration item report.

The **Project Initiation Document**, or PID, establishes the reference terms of the project, project role definitions, and a communication plan in order to ensure that the approach, work plan, functions, and scope are clear. A well put together PID lends visibility to the project while maintaining business alignment.

The **Gantt diagram** (see Figure 9) is a graphical tool for showing expected time dedication for the different tasks or activities over a given total time period. In spite of the fact that, in principle, a Gantt diagram does not show relationships between activities, the position of each task over time makes it possible to identify these relationships and interdependencies.

A **baseline** is a way to store project-related information such as starting dates, costs or resources so as to be able to compare interim adjustments with the initial schedule or budget and so measure the degree of progress of the project.

The **lessons learned file** contains previous project management resolutions while **configuration item reports** keep version control of the elements and processes being implemented so as to be able to align them with business and keep track of which versions are current.

Finally we will take a look at CSF 10, "Having the necessary resources and budget" as it relates to PRINCE2 methodology.

As can be seen in Figure 10, to achieve this CSF the following tools may be used: business case, matrix role-responsibility and matrix role-competency.

Business case consists of ensuring that there is an appropriate balance between revenues and resource costs, based on expected return on project parameters for each company or entity. This will include the following content,

among other: information on revenues such as invoicing and collection schedule, all sources of expected income, etc., and information on costs; for example, contingency risks, internal and external costs.

The purpose of the **role-responsibility matrix** is to ensure that the responsibilities and competencies needed for the proper performance of each role in the project are appropriately defined. In order to build this matrix we need a general list of applicable roles, responsibilities for each role, and competencies for each role. By using the matrix we can obtain a detailed definition of responsibilities and competencies, with the expected degree of competency required by each role, which provides the organization with a catalogue of the resources required by the project.

The **role-competency matrix** provides the organization with information on project resource requirements in terms of responsibilities and competencies, and on how appropriate those resources are to the needs of the project. Based on a project-specific role-responsibility matrix we can build other matrices with the following information:

- **Role-candidate resource matrix**, with the candidate resources for each role and a comparison of requirement compliance for each candidate.

- **Role-allocated resource matrix**, containing the name of the resource for each role and the degree of requirement compliance for each role.

- **General gap between roles-responsibilities-competencies** and the baseline resource evolution plan.

4 Conclusions

In the journey from a theoretical model of **ITIL** best practices to the proper integration of that model into the processes and culture of the business organization, the **implementation** stage is all important. This is why we need **project management** to control and coordinate project activities within the pre-established constraints of time, cost and resources. We can consider each ITIL process as a project or, conversely, all ITIL processes as a single project.

Our research into **Critical Success Factors (CSF)** for ITIL implementation and how they relate to the processes and tools of the two methodologies we have compared, **PRINCE2 and PMBOK**, defines a number of specific processes and techniques in each methodology for the achievement of those CSF and, therefore, for the successful implementation of ITIL processes. An inappropriate approach to project management is one of the main reasons for the failure of ITIL implementations in organizations.

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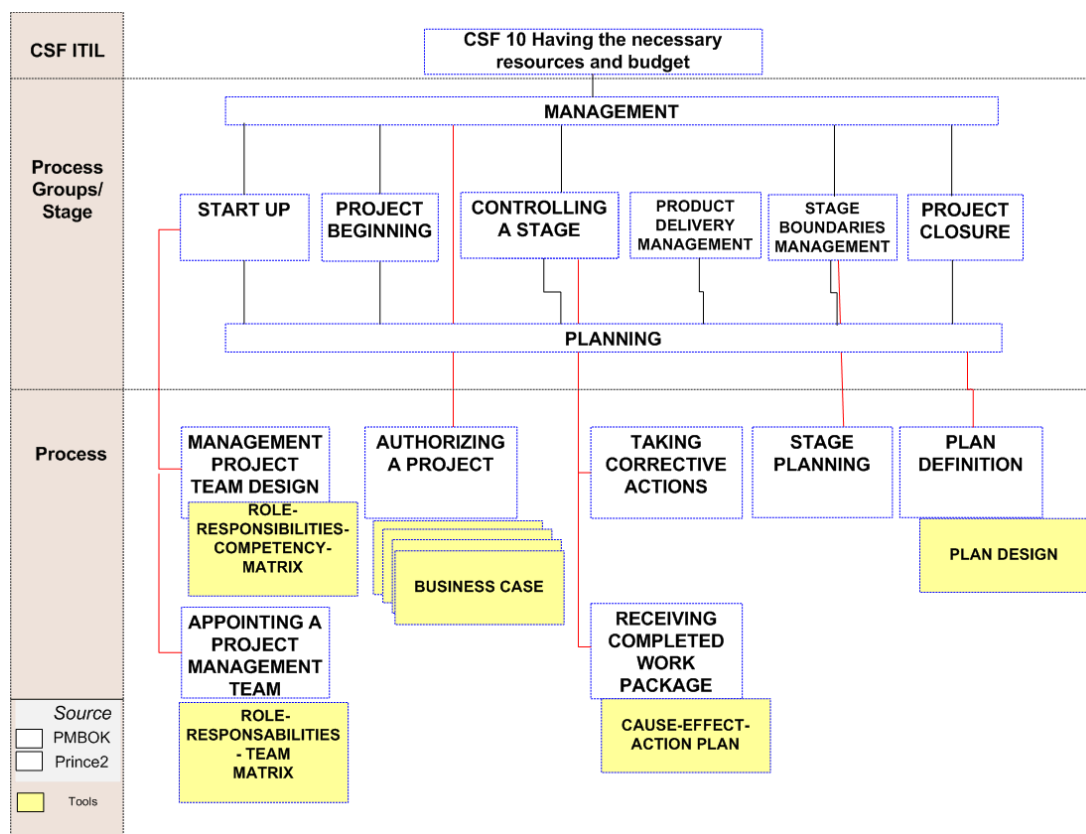


Figure 10: Tree for PRINCE2-CSF 10 Having the necessary resources and budget.

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