

Independent Study Project Report

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COURSE : OMS 750

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TITLE : Designing a role transition program for transitioning employees from technical to project management roles.



Executive Summary

In the past decade, the IT services sector has grown exponential in emerging economies like India, China and Ireland. A highly respected study by the Standish group posits that of all IT projects, nearly 2/3ds do not meet their schedule and/or budget goals. One of the major reasons identified is the lack of management skills in people in-charge of projects. The senior management of the firm (ABC) that we studied for this research, recognizes this problem and was interested in creating a training program to help its professionals make the transition from technology centric roles to management centric roles by enhancing their softer skills.

Objective:

The objective of the study was to design a role transition program from a technical team member to a project leader position. The focus of the program was on the softer skills required for effective project management.

Methodology (The Six Step Process):

In this study we followed the following six step process:

- (1) Mapped roles in the software industry to the competencies required for them
- (2) Classified competencies based on their ease of teach-ability
- (3) Identified competencies that should be pre-requisite for recruitment and those that should be included in a transition training program.
- (4) Defined the scope and phases for a role transition program to teach the softer skills.
- (5) Proposed a delivery format for a scalable role transition training program.
- (6) Proposed a pedagogical approach for effective transfer of the soft skills.

Findings:

The technical personnel in IT firms like ABC typically have an engineering or science degree and good knowledge of programming languages. While on a technical track they perform well, however, often times, a transition to the project management track reveals wide gaps in their repertoire of softer skills required for successful execution of the role. Sometimes these employees have complained that they are being pushed into positions before they are ready for them.

Recommendations:

The recommendations of the study are meant for two constituents in a software firm - The recruiting department and the training department. The recruiting department is made aware of the *non-teachable* or difficult to teach soft competencies that they need to ensure exist in the people who join the firm. The training department is made aware of the *teachable* softer skills which it should ensure are made available to all its recruits. The training department is also made aware of the *somewhat-teachable* skills which it should try to inculcate in the employees on an as needed basis.

Conceptual Framework

Need for A Behavioral Approach to IT Project Management

One of the main assets of any organization is its human capital. The intelligent and effective use of the available individuals can lead to some companies gaining a competitive advantage over others. The importance of people is all the more critical in organizations where the production of the goods or services in which they deal depends directly on the performance of their personnel.

Software companies are an obvious example of organizations of this kind, since software construction is a primarily intellectual process. Koontz and O' Donnell (1972) defined five basic principles for managing software people that provide guidelines for improving the software organization's staffing situation with a view to achieving gains in productivity. These principles can be summarized as:

1. The principle of Top Talent (use better and fewer people).
2. The principle of Job Matching (fit the tasks to the skills and motivation of the people available).
3. The principle of Career Progression (an organization does best in the long run by helping its people to self-actualize).
4. The principle of Team Balance (select people who will complement and harmonize with each other).
5. The principle of Phase Out (keeping a misfit on the team doesn't benefit anyone).

Software development organizations need to understand that dealing with software problems does not only involve the technical dimensions, like introducing a new tool or selecting a method. The human dimension can be considered even more important than the technical side as most software development projects fail because of failures with the team running them.

Paradoxically, though the IT industry has multiple models for understanding the technical aspects, there is a significant shortage of formalized models and mechanisms for understanding the people side of software project management.

It is no surprise then that the major sources of project failure in surveys such as the Standish Report are people oriented; lack of user input, incomplete and changing user requirements, lack of executive support, inexperienced management, unrealistic expectations, unclear objectives and unrealistic budgets and schedules.

Generally, the people dimension is managed unsystematically in software projects depending on the opinions and abilities of the project manager. This intuitive procedure

does not formalize the skills and capabilities of software team members to assure that the project team is effective and efficient.

This independent study focuses on the particular challenge of extending software project management to more explicitly address people considerations.

We try to address the people considerations by identifying the capabilities needed to produce good results in a given role, and using them to build capabilities models, which can then be used to establish procedures for selecting personnel and assigning them to jobs that are best suited to their capabilities.

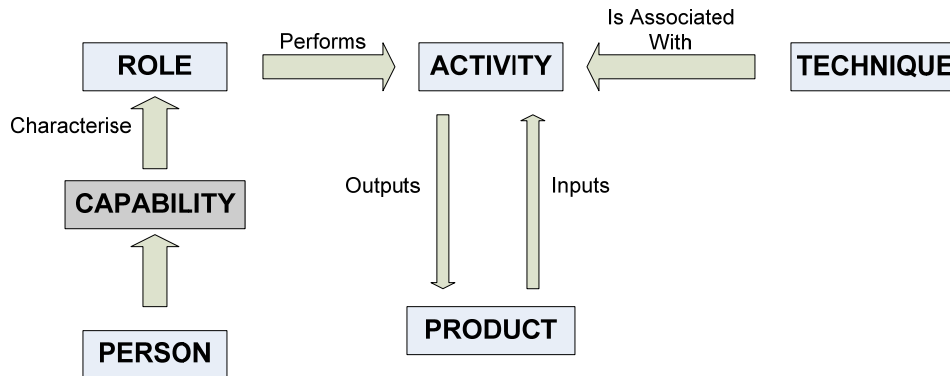
The primary objective is to define a group of people-ware activities, which are normally missing from typical software project management models, to take into account the capabilities of the people who play roles in software project management.

The productivity of software developers and the quality of the software products and services provided are intrinsically dependent on the effectiveness of the associated processes. This view has driven work on software productivity and quality towards software process modeling, management and improvement upon the hypothesis that software product quality is determined by the quality of the production process.

We want to add to this that the inclusion of people and organizations in the software process will improve the quality of the process and, ultimately, of the resulting product.

Place of Capabilities in a Software Process Model

The following schematic clearly illustrates the place of the capabilities in a software process model and why its inclusion is critical.¹



A brief description of each of the elements is mentioned below:

Activity: This element defines the activities performed by the actors to develop a product

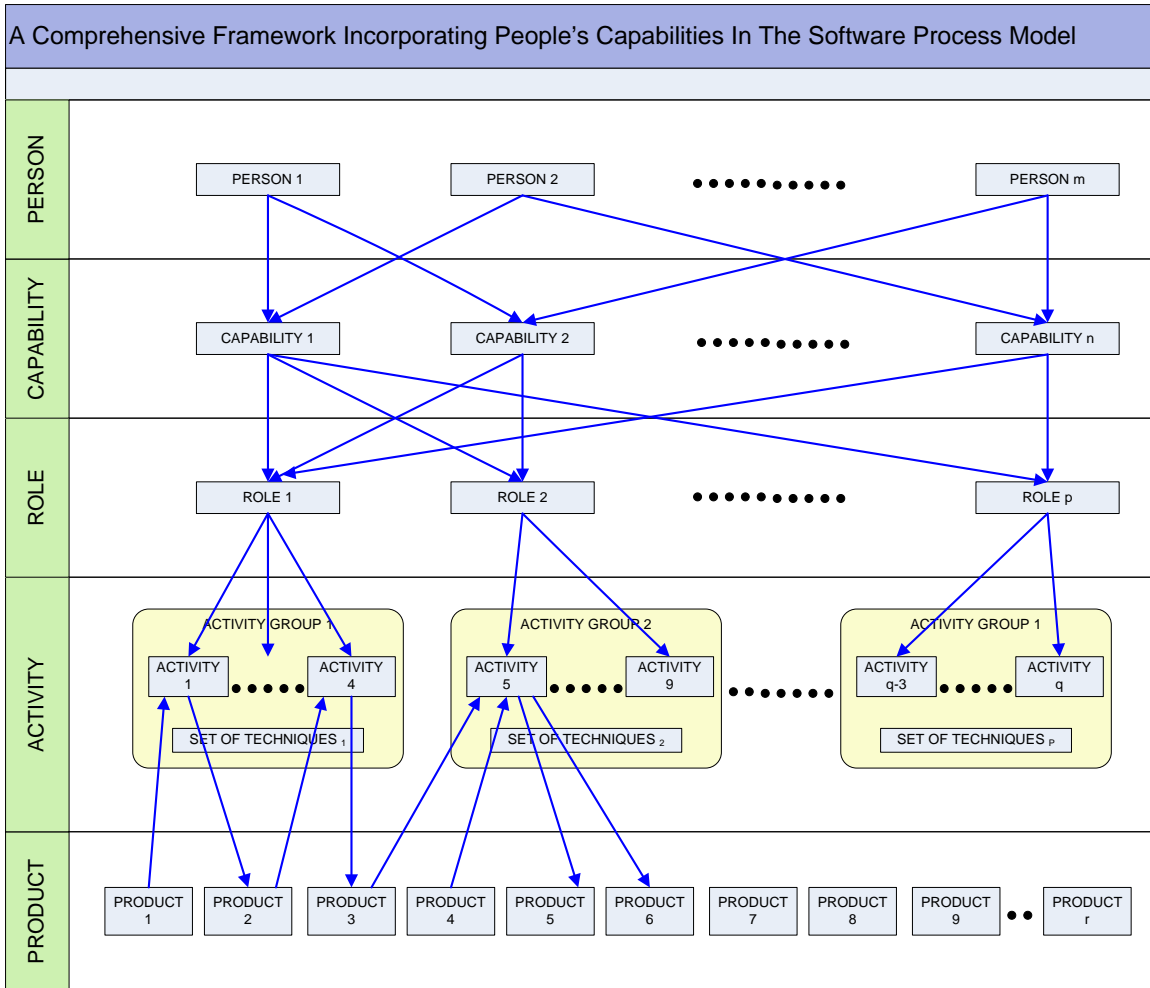
Role: This element defines the products generated by the activities.

Person: This element defines the actors who have the capabilities required to play a given role.

Capability: This element defines an individual's behavioral skill or personal attribute that can be considered characteristic of that person's behavior and, according to which the activity-oriented behavior can be logically and reliably classified. It is shaded in the figure above to illustrate that this is an element that is the focus of this study.

Technique: This element defines the methods and/or techniques used to perform the different activities.

A more comprehensive framework illustrating the links between these elements is shown on the next page:¹



Focus on Soft Competencies

The concept of competency is generally associated with other concepts such as knowledge, skill, ability, know-how, experience, aptitude, capacity, personality feature, behavior etc.

Competencies can be broadly divided into two categories: Hard competencies and Soft competencies.

Hard Competencies: identify the basic (and generally technical) resources that are required to perform an activity. These resources are generally expressed in terms of knowledge, skills and abilities (KSA).

Soft Competencies: are personal behaviors, personal traits and motives. Examples are: leadership, working with others, integrity, persuasiveness, adaptability etc.

Hard competencies (KSA) are focused on technical aspects, whereas soft competencies make the difference at a given level of KSA. If you picture an iceberg, the soft competencies come below the water line, like the driving forces of an observable behavior.

In this paper we focus on soft competencies, which are also sometimes referred to as behavioral competencies or capabilities.

A behavioral competency or capability is defined as a behavioral skill or personal attribute of an individual that can be considered as characteristic of that person's behavior and, according to which the activity oriented behavior can be classified logically and reliably.

A Classification of Soft Competencies

The list of behavioral competencies can be further divided into the following four categories¹:

Intrapersonal Skills: An individual's underlying, general elementary behavioral skills or competencies developed through education and enculturation.

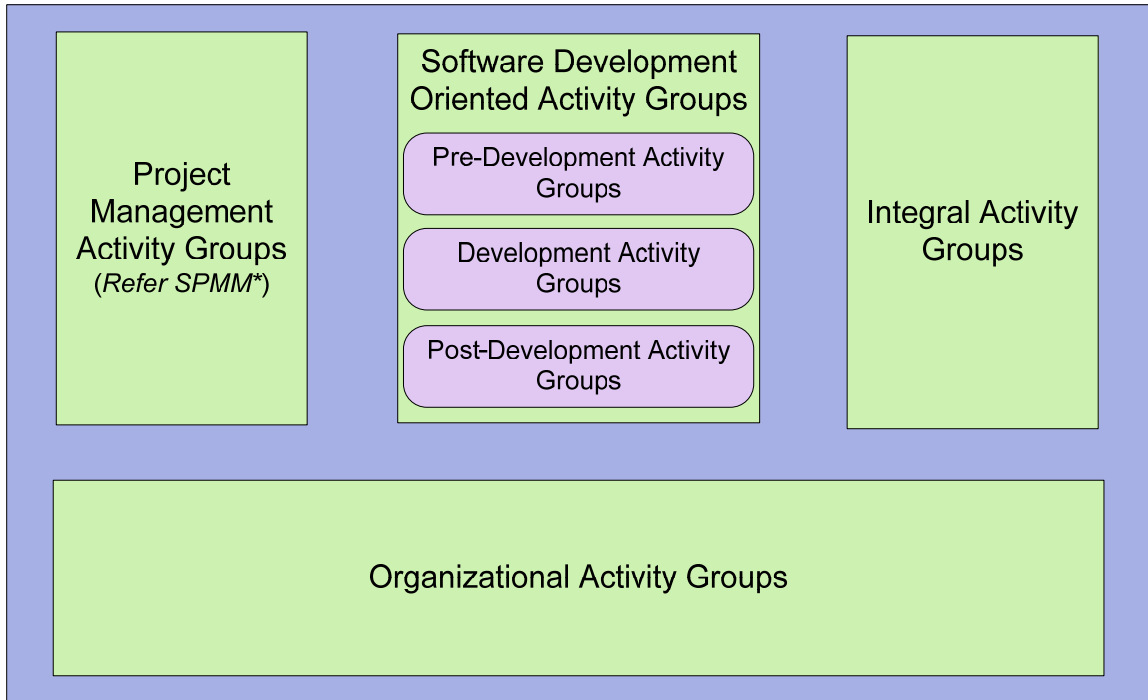
Organizational Skills: Behavioral skills or competencies related to effective job performance from the viewpoint of both individual, personal performance and the professional's adaptation to the life of a structured organization with a view to progressing within that organization.

Interpersonal Skills: Behavioral skills or competencies related to successful performance of jobs involving interpersonal contact for correct performance of the process activities. These skills are generally closely related to effectiveness in positions of social contact.

Management Skills: Behavioral skills or competencies which are essential for managing other people within the organization, directing their performance at different levels of supervision and with varying degrees of responsibility.

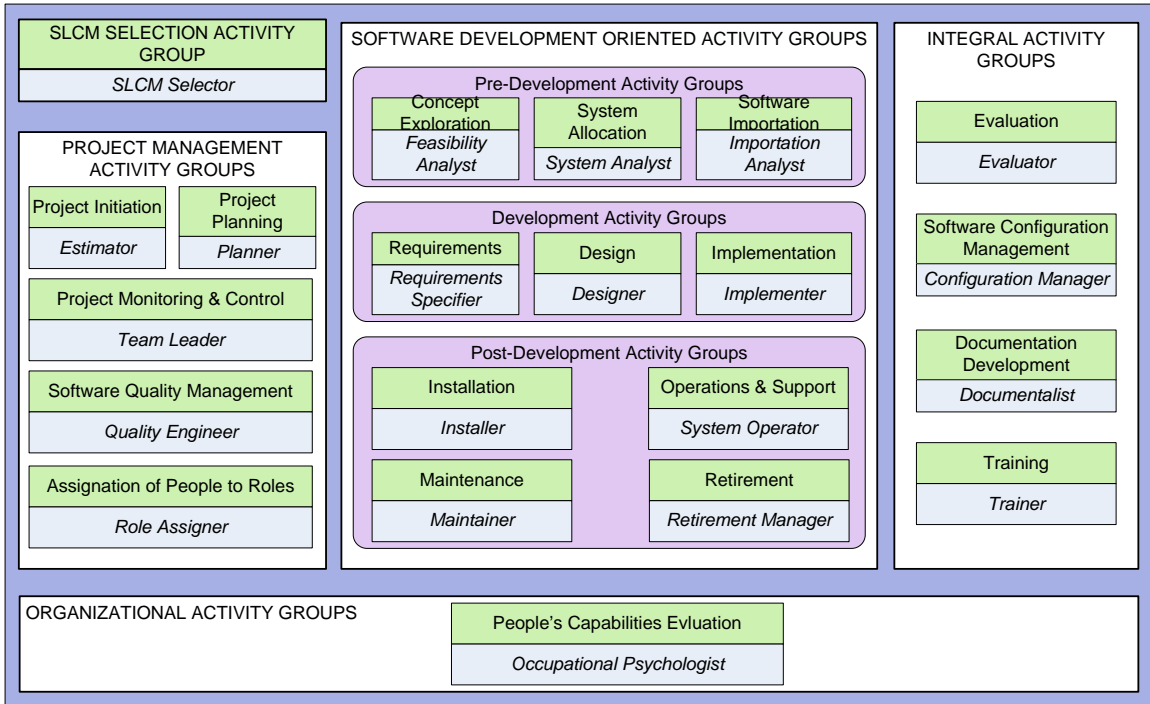
Identifying Activities within a Software Process Model

The following figure illustrates the major activity groups within a software development organization¹.



The activities grouping above can then be used to identify the roles that are required for each activity. Further these roles can then be extrapolated to identify the capabilities and behavioral competencies demanded by a role.

The figure below identifies the roles required by each of the activity groups¹.



The grid below is the next logical step, where we map the roles to the required behavioral competencies for each role¹.

ACTIVITY GROUPS	ROLES	CAPABILITIES																		
		Intrapersonal Skills						Organizational skills				Interpersonal Skills				Mgt. Skills				
		Analysis	Decision-Making	Independence	Innovation / Creativity	Judgement	Tenacity	Stress Tolerance	Self-Organization	Risk Management	Environmental Knowledge	Discipline	Environmental Orientation	Customer Service	Negotiating Skills	Empathy	Sociability	Teamwork/Co-operation	Co-worker Evaluation	Group Leadership
SLCM SELECTION ACTIVITY GROUP	SLCM Selector																			
PROJECT MANAGEMENT ACTIVITY GROUP																				
Project Initiation	Estimator																			
Project Planning	Planner																			
Project Monitoring & Control	Team Leader																			
Software Quality Management	Quality Engineer																			
Assignment of People to Roles	Role Assigner																			
SW DEVELOPMENT ORIENTED ACTIVITY GROUPS																				
PRE-DEVELOPMENT ACTIVITY GROUPS																				
Concept Exploration	Feasibility Analyst																			
System Allocation	Systems Analyst																			
Software Importation	Importation Analyst																			
DEVELOPMENT ACTIVITY GROUPS																				
Requirements	Requirements Specifier																			
Design	Designer																			
Implementation	Implementer																			
POST-DEVELOPMENT ACTIVITY GROUPS																				
Installation	Installer																			
Operation & Support	System Operator																			
Maintenance	Maintainer																			
Retirement	Retirement Manager																			
INTEGRAL ACTIVITY GROUPS																				
Evaluation	Evaluator																			
Software Configuration Management	Configuration Manager																			
Documentation Development	Documentalist																			
Training Activities	Trainer																			

Real Life Application

Company Introduction and Background:

The rest of this paper discusses the application of the above concept base for the development of a role transition program for one of the top software services firms in India (lets call it ABC software services incorporated).

ABC started as a pure play software outsourcing firm by maintaining a relentless focus on its global delivery model. As part of this model, the sales personnel and other staff spent time at the client site, allowing the company to leverage the low-cost labor pool in India while building and maintaining client relationships. For example, a small group of people from each project team typically stays on site with the client, interacting with other resources in India on key issues such as the clarification of requirements and change requests. These tactics, coupled with a relentless focus on quality (ABC is SEI CMM level 5), helped ABC transform its image from that of a pure offshore development company to a “global IT-based problem solver.”

ABC’s explosive growth can be attributed to a multitude of factors. However, the most significant element is its recognition that the ability to attract and retain great people is a critical success factor in its line of business.

Hence the firm has invested significant capital to create world-class facilities and to create an attractive compensation structure. Additionally, limitless learning opportunities and a strong belief in empowerment contributed to ABC’s ability to attract the best and the brightest from the second largest English-speaking pool of “scientific manpower” in the world – i.e. India.

Challenges Faced By Firm – Need for Project:

Perhaps the most significant problems for ABC are related to the rapid growth that the company is experiencing. ABC has been increasing its manpower by 30% on a yearly basis. This exponential growth is expected to continue in the coming years. With this growth, increasing strain is being placed on ABC’s resources and culture. With demand outstripping supply, personnel with unproven technical and industry experience are being pushed into leadership positions. For example, the employees themselves have complained that they are being pushed into leadership positions too soon, sometimes with only two to three years of experience. This has especially been a problem for employees located onsite with a client, where industry expertise, relationship management, and customer interaction are often the most critical management skills required. ABC will

have a difficult time expanding into new markets and maintaining quality unless it can attract experienced, local talent, to supplement its strong base of software engineers.

ABC top management realized that though its recruiting process ensures the selection of some of the brightest technical minds from India's top engineering schools, it does not ensure the presence of softer managerial skills that are becoming increasingly important in a global workforce.

Specifically, ABC has a huge challenge in transitioning its technical resources to high caliber project leaders and project managers. Increasingly, technical resources with little aptitude for project management are being pushed to manage projects without a planned transition path defined to enable them to build the requisite skill set.

In an effort to fill this gap, ABC has maintained a focus on getting its project managers PMP certified. However, with time the senior management has realized that while the PMP certification can provide the knowledge, skills and tools for project management, it does not provide any inputs on the softer management skills.

With this in mind, ABC management decided to create a soft skills training program that will help its technical resources make a successful transition to project leader and project manager positions. Let's call this training program the ABC 'Role transition program'. The following steps give a brief overview of the steps that were followed:

Steps for Developing Role Transition Program:

Step I – Role to Soft Competencies Mapping

The following grid was developed for the identification of the skills that are required to developed technical members of a software team into technical leaders.

PROJECT STAGE	ACTIVITY	ROLES	Analysis	Decision Making	Independence	Innovation/Creativity	Judgement	Tenacity	Stress Tolerance	Self-Organization	Risk Management	Discipline	Customer Service	Negotiating Skills	Empathy	Sociability	Teamwork/Cooperation	Co-worker Evaluation	Group Leadership	Planning and Organization	
Initiate																					
	Participate in Kick-off meeting	Estimator	H	H	A	A	H		H	A	H			H	A		H	A	H	A	H
	Define Product Acceptance Criteria	Requirements Specifier	H				H		A				H		A	A	H				
	Identify technical/product risks	Feasibility Analyst	H	A	A	H	A		A					A	A	A	H				
	Estimate Product Size	Feasibility Analyst	H	A	A	H	A		A					A	A	A	H				
	Estimate resources - Human & non-human	Feasibility Analyst	H	A	A	H	A		A					A	A	A	H				
Planning																					
	Define phases of product development	System Analyst	H				H		A				H		A	A	H				
	Define activities in each product development phase	Designer	H	H	A			A	A	H		A	A		A		A				
	Sequence the work of the team members	Designer	H	H	A			A	A	H		A	A		A		A				
	Define roles and responsibilities	Role Assigner	H	H	A	A			A	A					A		H	A	H	A	H
	Identify product configuration items	Systems Analyst	H				H		A				H		A	A	H				
	Identify responsibilities for product configuration	Role Assigner	H	H	A	A			A	A					A		H	A	H	A	H
	Plan for product quality	Quality Engineer	H	H	A	A			A	A					A		H	A	H	A	H
	Plan for defect prevention activities	Quality Engineer	H	H	A	A			A	A					A		H	A	H	A	H
	Validation of estimates given by team members	Evaluator			A		A		A	H		H			A		H				
Execution																					
	Allocate resources to the defined activities	Role Assigner	H	H	A	A			A	A					A		H	A	H	A	H
	Allocate work to the resources	Role Assigner	H	H	A	A			A	A					A		H	A	H	A	H
	Identify product related or technical training needs	Trainer							A			A			H		H				
	Review of product deliverables	Evaluator			A	A			A	H		H			A		H				
	Review of various product related documents	Evaluator			A	A			A	H		H			A		H				
	Collect data on product quality	Quality Engineer	H	H	A	A			A	A					A		H	A	H	A	H
	Collect metrics - effort, schedule, cost & quality	Quality Engineer	H	H	A	A			A	A					A		H	A	H	A	H
	Develop reports -	Documentalist							A			A			H		H				
	Perform defect prevention activities	Quality Engineer	H	H	A	A			A	A					A		H	A	H	A	H
Monitor & Control																					
	Identify the changes in product requirements	Configuration Manager			A	A			A	H		H			A		H				
	Estimate the impact of changes on product	Configuration Manager			A	A			A	H		H			A		H				
	Monitor the defects in product development	Quality Engineer	H	H	A	A			A	A					A		H	A	H	A	H
Close																					
	Identify items to be backed up	Configuration Manager			A	A			A	H		H			A		H				
	Identify the media depending on the life of the data	Configuration Manager			A	A			A	H		H			A		H				
	Back up the data	Configuration Manager			A	A			A	H		H			A		H				
	Identify best practices/reusable components	Documentalist							A			A			H		H				
	Arrange retrospective meeting	Documentalist							A			A			H		H				

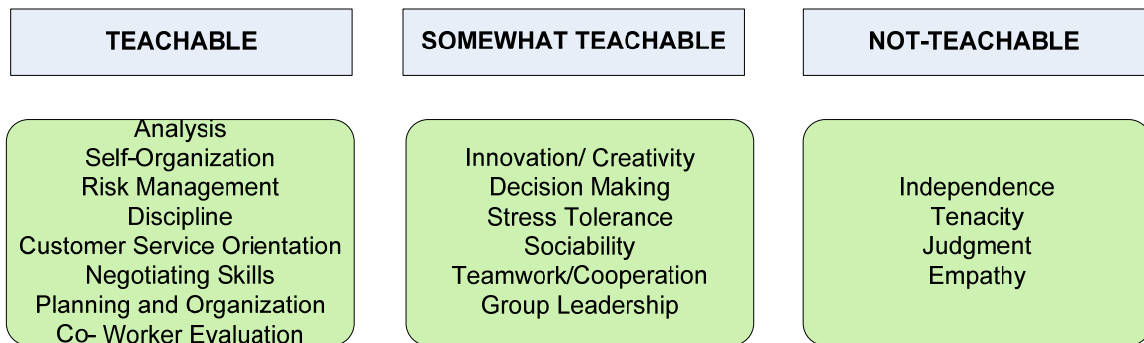
Where: A – Average Correlation / H – High Correlation.

Step II – Classification of Competencies

Once we had identified the soft competencies required in an IT project management setting, we further classified them based on whether they were teachable or not. All the skills were classified into three broad categories:

1. Teachable – those competencies that can be developed in candidates through training, coaching or mentorship.
2. Somewhat Teachable – those competencies that are difficult to teach but which can be developed if the candidate is commitment. Usually requires significant investment from the firm to build up these skill sets in its personnel.
3. Not Teachable – those competencies that cannot be taught. These are skills that people inherently possess or do not possess.

The following figure illustrates the classification of the competencies².



Step III – Identification of Competencies as Pre-Requisites for Recruitment.

Based on the above analysis, we recommend that firm ABC should exclude the ‘Not-Teachable’ competencies from its role transition program as these are almost impossible to teach anyone.

A workaround is a recommendation to the recruitment/HR division to filter out people who do not possess these skills from the manpower pool. Hence potential employees should be tested for the presence of these not-teachable skills in addition to the technical aspects of their job.

²Classification scheme suggested by Prof. Eric Svaan at the Ross School of Business.

The recruiting process should also try to screen out candidates that do not possess the 'somewhat teachable' competencies. The rationale is that there is a small chance that a candidate who does not possess these competencies will be able to master them through training only.

We do appreciate that to fuel the aggressive growth of ABC; it may not be possible to get candidates, all of whom possess all the 'not-teachable + somewhat-teachable' competencies.

However we would strongly recommend against taking in people who do not possess the not-teachable competencies.

Step IV – Defining Scope of Role Transition Program.

We defined the scope of the role transition program for ABC based on two assumptions:

1. Assumption I: The recruiting process is able to filter out candidates who do not possess the 'Not teachable' competencies from entering the firm.
2. Assumption II: Some candidates who do not possess the 'somewhat teachable' competencies do enter the talent pool, either because:
 - a. The recruiting process is not able to filter them out, OR
 - b. The huge demand for candidates prevents ABC from taking such a stance.

Working with these assumptions, we have divided the Role Transition Program into two phases:

1. Phase I: Project Leader Transition Training – Part 1.

This phase of the training will cover the 'Teachable' competencies:

- a. Analysis
- b. Self-Organization
- c. Risk Management
- d. Discipline
- e. Customer Service Orientation
- f. Negotiating Skills
- g. Planning and Organization
- h. Co- Worker Evaluation

This training will be administered to all candidates who are being considered for a role transition to the project leader position. The reason is that since these are

teachable skills, they can be imparted in a much easier and scalable fashion at a lower cost.

2. Phase II: Project Leader Transition Training – Part 2.

This phase of the training will cover the ‘Somewhat Teachable’ competencies:

- a) Innovation/ Creativity
- b) Decision Making
- c) Stress Tolerance
- d) Sociability
- e) Teamwork/Cooperation
- f) Group Leadership

The Phase II training will only be given to candidates on an as-needed basis. The rationale for this is that these competencies have been identified as being somewhat inherent with a person. Hence if a person possesses these skills, training is not going to help him much. By the same reasoning, a person who does not possess these skills can only acquire it to some degree. As a consequence the time and energy invested by both the training as well as the trainee may not yield proportionate results.

The phase II training will only be provided to candidates that have been recommended by their managers or those that have volunteered themselves based on a self-assessment.

Needless to say, ABC will have to design a process which ensures the anonymity of candidates undergoing this training due to the sensitive implications of undergoing this training.

Step V – Selecting a Format for a Scalable Role Transition Training Program.

One of the requirements of firm ABC is that the role transition training program should be scalable. This scalability requirement exists because of the significant volume of candidates who need to be transitioned to project leader positions.

One of the options of training that enables scalability is online learning. However, training people in softer skills in an online environment may lack the effectiveness possible from a face to face live training.

After significant research into similar programs, we concluded that for a start, ABC can try an online training program for the Phase I training which focuses on the ‘teachable’ competencies.

However, the phase II training focusing on the ‘somewhat teachable’ competencies has to be a face to face training.

The rationale behind is that the ‘harder’ nature of the ‘teachable’ competencies make them more amenable to online teaching. Hence it might be possible to give candidates an insight into negotiating by providing tips and checklists. However, it may not be possible to do the same for creativity or tenacity for example.

Step VI – Designing an Approach for Skill Development for a Role Transition.

Successful development of soft competencies, of course, is more than just following a cook book list of sequential behaviors. Developing highly competent management skills is much more complicated than developing skills such as those associated with a trade (Eg: welding) or a sport (eg: shooting hoops).

Any approach to soft skills development, must involve a heavy dose of practical application in addition to having a solid conceptual understanding.

Based on research by Cameron and Whetten, 1984; we have identified the following five step model for training people on soft skills³:

Step I: Skill assessment:

Objective: To assess current level of skill competence and knowledge, create readiness to change.

Step II: Skill learning:

Objective: To teach correct principles and present a rationale for behavioral guidelines

Step III: Skill analysis:

Objective: Provide examples of appropriate and inappropriate skill performance. Analyze behavioral principles and reasons they work.

Step IV: Skill practice:

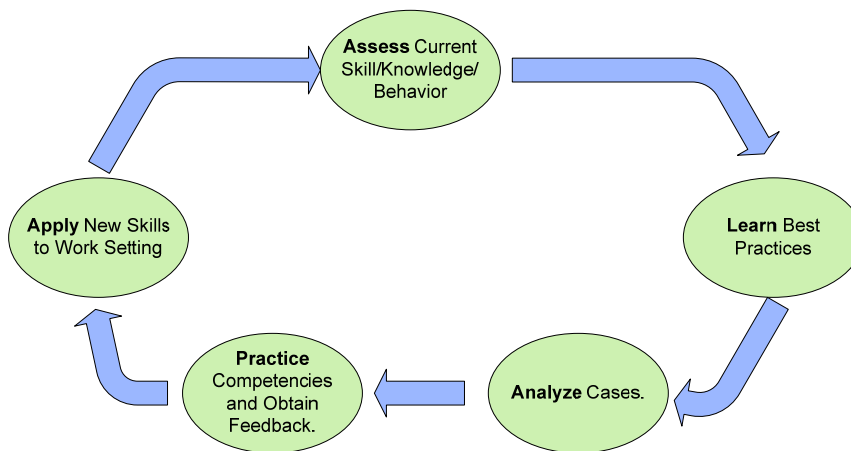
Objective: Practice behavioral guidelines. Adapt principles to personal style. Receive feedback and assistance.

Step V: Skill application:

Objective: Transfer classroom learning to real-life situations. Foster ongoing personal development.

The figure below provides a pictorial of this training approach³:

E-learning Framework



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Conclusion:

Our final recommendation to ABC is that it should not look at all soft competencies in the same light. There are some that can be easily developed while there are some at the other extreme that usually are impossible to teach or transfer.

Assuming ABC agrees with this premise, this report lays out a structured approach to identify the competencies that should be classified as teachable and those that should be considered pre-requisite skills for recruitment.

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Appendix: Log of Hours

DATE	LOCATION	Start Time	End Time	Total Time
5/10/2006	Kresge Library	1:00 PM	7:00 PM	6:00
5/11/2006	Home (US)	8:00 AM	10:00 AM	2:00
5/22/2006	Home (US)	8:00 PM	10:00 PM	2:00
5/24/2006	Home (US)	8:00 AM	11:00 AM	3:00
5/27/2006	Art & Architecture Library	2:00 PM	5:00 PM	3:00
6/2/2006	Home (US)	9:00 AM	12:00 PM	3:00
6/5/2006	Home (US)	3:00 AM	7:00 AM	4:00
6/19/2006	Software Firm ABC (India)	9:00 AM	12:00 PM	3:00
6/20/2006	Software Firm ABC (India)	10:00 AM	12:00 PM	2:00
6/21/2006	Software Firm ABC (India)	3:00 PM	5:00 PM	2:00
6/22/2006	Software Firm ABC (India)	9:00 AM	12:00 PM	3:00
6/23/2006	Home (India)	2:00 PM	4:00 PM	2:00
6/23/2006	Home (India)	10:00 AM	12:00 PM	2:00
6/23/2006	Home (India)	6:00 PM	8:00 PM	2:00
7/6/2006	Kresge Library	1:00 PM	4:00 PM	3:00
7/7/2006	Kresge Library	3:00 PM	6:00 PM	3:00
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7/9/2006	Home (US)	10:00 AM	12:00 PM	2:00
7/10/2006	Home (US)	3:00 PM	5:00 PM	2:00
7/12/2006	Kresge Library	3:00 PM	7:00 PM	4:00
8/12/2006	Home (US)	8:00 AM	10:00 AM	2:00
8/13/2006	Home (US)	7:00 PM	9:00 PM	2:00
				59 hours

Faculty Comments

Signature of Faculty Supervisor

Title