People Projects: Psychometric Profiling

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This article introduces a tool known as the Compatibility Identification Set (CIS). The CIS is an approach used to help project managers (PM) build successful project teams by examining the specific job skills of each potential member. The CIS provides the PM with new insight as to how this proposed team will work with one another on a daily basis, and identifies potential problems and personality conflicts before they become exposed in the workplace.

You might infer from the title "People Projects" that this article will cover the softer aspects of software project management; you may be correct depending on what you consider *softer* to be. Nevertheless, the following information attempts to persuade you that people are the chief component in a system also known as a project team – a *hard* element indeed.

Knowing that people are responsible for everything on the planet but the weather and other such divinities is the first and most basic concept required in managing any person, program, project, or idea. Managing teams is an art, not a science, because the essence of what is being managed invariably will always be a person. Please refer to "The Second Law of Consulting: No matter how it looks at first, it's always a people problem" [1].

This law draws from a greater belief that every problem, issue, philosophy, concept, and process stems from the same source: humans. People are the spice of life, the straw that stirs the drink, and the cause of, as well as the answer to, most of life's problems. So why are the majority of project efforts spent analyzing and developing software?

Think of both people and software from a systems perspective. Software components are not inserted into an existing system without first knowing what affect they might have on the other components and the system as a whole. Project teams however, are created based on availability or convenience without giving conscientious consideration to how each person and the team will perform when the time comes to roll up your sleeves and actually perform the work. Assuming it is agreed that the person is the most important component in any project, should not equal time be spent defining the human mechanisms of our frontline system, the project team?

Humans are tempered by different belief systems, educations, hopes, dreams, goals, and even different metabolic rates that physically limit how fast people think

and work. So why would project managers (PM) ever think they could pigeonhole employees into the same styles of management, project or otherwise?

A New Approach to Forming Project Teams

How do PMs form and manage great teams? This article introduces a three-pronged approach known as the Compatibility Identification Set (CIS). The CIS is an approach used to bring together defined skills, intangible abilities,

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and the requirements of the project team position to provide a PM with the information needed to form an effective unit.

Before exploring the CIS, please understand that it is assumed the PM knows the formal training and defined job skills of each person in the organization, or that this information is available though the candidate's current position description or resume.

The three prongs of the CIS are composed of two categorical groupings, candidate traits (CT) and position characteristics (PC); and the existing information

(EI) referred to above as formal training and job skills. Each grouping will be described in detail later in this article, but the following is a high-level description.

The CT assist in defining the intangible traits and abilities of potential project team members. The PC simply define the intangible requirements of the position to be filled. A cross-comparison of the CT, the PC, and the EI presents a focused perspective of what is needed for project success. The CIS brings the three areas together to present a clear picture of who should be selected as project team members, thus giving the project team the best chance for success (see Figure 1).

Identify Your Staffing Needs

The first step is to examine what the project team is to accomplish. Nothing is new here; simply find multiple experts that are available to help you accomplish the project goal, and identify any expertise gaps in which your organization may be lacking. Now you know what you have to choose from and where you may need to fill in some expertise from a different source.

Do not just take who or what is offered to you by your superior. Receiving permission to hand-select a team may take some lobbying efforts on your part, but a project worth funding is a project worth staffing and doing right. Make the point to your supervisor that this minimal amount of time spent building a good team will significantly reduce project duration and cost.

A study in the *Journal of Applied Psychology* found that the more complex the task, the greater the disparity in productivity between highly productive people and average performers (127 percent difference in complex tasks) [2]. Tom DeMarco has stated, "An individual can only succeed to the extent that the whole prospers. And the whole can only prosper to the extent that everyone does well" [3].

The issue of teaming has the greatest single effect both on schedule and budget in the communication-centric software profession. Teaming is also the reason

staffing profiles are a key element in successful cost estimation techniques. Experience, knowledge, environment, communication skills, and even task complexity all play significant roles in the productivity and functionality of project teams. If noncohesive project teams begin with one strike against them, then it seems only reasonable that managers take the time to implement some form of analysis to build cohesiveness and give the team the best chance of success.

More than 50,000 organizations in the United States alone perform psychometric testing as a means of hiring, placement, and promotion [2]. A survey of 500 top executives across the United States reveals that 76 percent of these companies test more than 150 people per year, 35 percent test more than 500 people per year, and 30 percent declared they would increase the practice in future years [4].

Groups such as Chevron Corp., Hewlett-Packard Company, T. Rowe Price Investment Services Inc., Federal Reserve Bank, Wells Fargo & Company, Stanford University, and SBC Communications, Inc. (formerly Pacific Bell) use psychometric profiling to decipher employee skills and abilities. Such profiling methods become essential not only to find out what skills are lacking but also to identify utilizable strengths and potencies in areas previously undiscovered. These same methods also make information available that can be used for building truly great project teams.

An example of this is found in the consultation work performed by Dr. Nancy Haller of Applied Psychometrics. Haller stated, "Team building occurs when there is an understanding of work styles among team members" [5]. Haller uses psychometric testing to elicit data from individuals to learn what areas most interest and stimulate each person. Conversely, these same tests provide insight into what areas of work a person detests or feels apprehension toward. The results allow for an educated placement of the individual not only for their benefit and enjoyment, but also for the improvement of the organization as a whole.

Evaluating What You Have

Once you have identified a list of potential experts and specialists, you need to explore what makes each person tick. While exploring, keep an eye open for individuals with an aptitude for learning or willingness for training. Training existing personnel is usually a less costly option than bringing in outside help. Also, once a team member is trained they tend to share
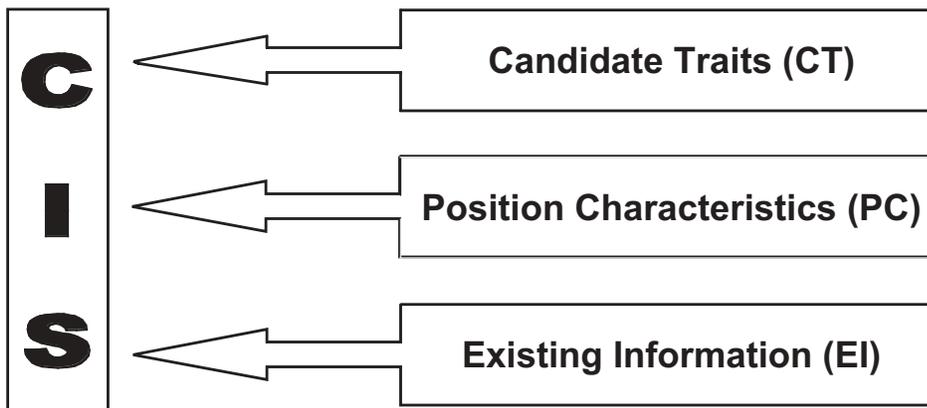

Figure 1: *Compatibility Identification Set*

their learning with others by exhibiting the new skill, allowing others to learn by observation.

Without getting into the discrediting practice of labeling people, the PM needs to identify traits; the traits that may or may not make this person a good fit for your project. This step assumes multiple resources are available. It is understood that this is a luxury, and if it is not one offered by your organization, see the section "Managing With What You Have." Government organizations and larger private industries usually do have multiple resources and if that is the case, each person available should be placed into the CT prong of the CIS.

The CT prong (see Figure 2), the first of three, actually consists of seven groups of traits or specific qualities. The purpose of the CT prong is to identify these traits in potential project team members. Traits should not be considered either bad or good. It becomes apparent that each grouping of traits has positive aspects if used in the correct combination and setting as well as possible negative aspects if no thought is used in the positioning of the person possessing those traits.

It is understood these are generalities and this exercise entails inserting people into predefined groups. However, it is also understood that a great portion of the PM's job is performing these duties by selecting the best person for the job and selecting the best team for the project. Admittedly there is a lack of science in

this process but remember this is an art, not a science. These are people who are associates, people who when treated like a number, an object, or a unit will reciprocate that treatment in the work they perform. Also remember, the CIS is a tool to assist PMs in selecting and managing their number one resource: people.

The seven categories below are used to define how a person interacts with another or a group. Use these categories to classify potential team members to use in conjunction with the data output from the PC prong that will be defined later. Try to find the category that best describes the potential project team member. Each person may be a combination of categories but select only the one that is most descriptive.

Candidate Traits

- **Bridges** [6]. Individuals who allow two or more people to communicate more effectively simply through their presence. Bridges bring people together due to an ability to communicate with a variety of individuals. Bridges put others at ease and have a sociability and responsiveness that invites others to participate. Bridges also increase communications throughout the project by increasing the communication of those around them.
- **Clusters** [6]. Individuals who associate with others of a similar skill set. An example might be quality assurance or configuration management personnel.

Figure 2: *Compatibility Identification Set Traits and Areas*

Candidate Traits (CT)		Position Characteristics (PC)
Bridges	Liaisons	Communications
Clusters	Social Networks	Work Intensity
Heroes	Well-Wishers	Level of Technical Knowledge
Isolates		Problem Solving and Politics

A cluster enjoys talking about work even outside of the office. A cluster is usually very confident and capable when working within his or her domain.

- **Heroes.** Individuals who are motivated by new challenges, lack fear of failure, and look to champion new ideas and projects. Usually lacks a specific expertise but possesses a well rounded, but limited background in many skills. Sometimes a hero is just someone who loves his or her job and enjoys what he or she does for a living.
- **Isolates** [6]**.** Individuals who prefer little to no personal interaction. Isolates are generally unassuming with meticulous and methodical work habits. Isolates are very structured in their approach and can work to a schedule. It is sometimes assumed that isolates are a hindrance when working in a team and that can be true, but isolates are also dependable, capable, and hard working. Such people can be invaluable on a project.
- **Liaisons** [6]**.** Individuals who transfer information to others effectively through their communicative abilities. Liaisons crave communication and involvement. Liaisons increase communications throughout the entire project but unlike the bridge that helps others to communicate, the liaison does the communicating through his or her own efforts.
- **Social Networks** [6]**.** Groups of people who associate together based on social or other life-style type similarities such as race, sex, faith, pay scale, etc. Social network members can be invaluable when working with customers, contractors, or any stakeholder of the same social network. A member of a social network should not be construed as difficult to work with outside of his or her established associations. On the contrary, he or she has already displayed an aptitude for building relationships while working with others. Politics and sociability are a factor on any project, and a person with social skills can open doors and clear paths for project managers when there is seemingly no other route. Do not, however, mistake sociability with good communication skills.
- **Well-Wishers.** Individuals with no vested interest in the project who show no concern with the success of the group or organization as a whole. This person has no malicious intent but rather simply lacks a desire to get involved. In other words, he or she wishes others well but would rather not get involved. The value here is in identifying the person as a well-wisher and therefore knowing not to enlist their services.

Keep in mind that each person, no matter how neatly they fit into a category, is going to possess a differing level of skills and knowledge (existing information) that must be weighed either with or against their identified traits.

Some work on your part may be required depending on how well you know the person or how long this person has been with the organization. In some cases the person may be a new hire or a transfer. In that case, you may need to contact past supervisors. It is suggested that every candidate be interviewed. The interview questions will be designed by you to elicit information specific to your project. Make

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this interview short, to the point, and painless for both you and the candidate by being straightforward. Questions should be drafted with the project needs in mind so as to find out if this person is a possible asset. Evidence of the candidate's communication skills will be demonstrated from the onset of the interview, but talk to co-workers and past supervisors as well, after all, everyone has a bad day now and then.

During the interview, take five minutes with each candidate to talk about their goals, likes, and dislikes of the position they are in currently. Find out if they are looking for career broadening opportunities or just to do something they love, or at least something different. Ask questions specific to the project and begin to look for a fit. Even the best of managers do not know all their people have to offer. Likewise, the best managers realize that the skills their people are trained in are sometimes not suited to their personal traits.

Without being rash, take another five minutes to look over your notes from the interview. Form a profile of your potential project-team member based on his or her track record with other projects, past personal experiences, your personal opinion (managers can actually have these without being sued), and information from the interview that was recently held.

Does this person fit precisely into one of the above categories, or is he or she a combination of two or more groupings? Be bold and characterize this person for placement into a singular grouping. Remember that none of the categories should be viewed as negative. Each type, with the exception of the well-wisher, has value in the correct situation, and all may be indispensable depending on what is needed from the positions on your soon-to-be-formed team.

In just a matter of minutes, you have *profiled* your potential team member and know where to best use this person's abilities for the good of the project. The word profiled has recently acquired an unpleasant connotation, but in this case it is favorable for both parties simply because the PM is trying to build a mutually beneficial relationship and place this candidate in a position where they will be successful.

Anyone who has selected another in any professional manner has followed the above steps either formally or informally. The CT prong simply provides a structured method to conscientiously form a profile using defined criteria. For example, you may identify a person as an isolate, and they may also possess the most knowledge on the needed subject matter. The PM must now decide if the isolate and the position are a match.

The position may be an analyst who needs to thoroughly review production reports to remove bottlenecks from a current process. This person may be perfect for the job because he or she likes the solitude of his or her own work area and enjoys problem solving; or, he or she may be wrong for the job due to the fact that this person needs to report findings multiple times per week and dreads the very thought. The PM needs to thoughtfully examine the person's abilities, traits, and the position requirements. The CIS will provide some guidelines to make this a rational decision based on these three factors.

Position Characteristics

The CT prong provided insight into the potential project-team member's traits. Next, the PM will examine the position itself using the PC prong. The PC prong is a group of five loosely defined areas to

help define the characteristics of the position to be filled and more specifically what skills are needed to function effectively in that position. These are nontechnical skills such as personal and group interactions, communications, and mannerisms.

The categories are based on previously observed project teams, project results, and project management methodologies needed to function in a specific arrangement within a larger group [7]. Each area includes questions regarding the responsibilities of the person performing the work. The purpose is to provide a starting point for evaluating possible project team members and the positions they may eventually fill. Here the PM must begin to form specific suppositions as to who should fill this position. The word *suppositions* will undoubtedly raise some eyebrows but there is a need to suppose or assume to provide a basis from which to compare one potential team member with another.

Use the following questions and statements from the PC prong to construct a profile of what the position will require of the person who eventually fills the slot. Ask yourself the questions in each characteristic area pertaining to each specific position on the project team. Multiple *yes* answers designate a strong indication that the position will require that characteristic. A mixture of *yes* answers pertaining to various characteristics indicates a uniqueness of the position and points out the possibility of filling the role with any number of characteristic types. The PC prong, unlike the CT prong, will allow combinations of needed skill due to varied requirements.

- **Communications** [8]. Is this position central to information dissemination? Does this position interact with three or more people on a daily basis? Does this position entail the use of e-mail, phone skills, writing skills, or a strong verbal ability? Is this position responsible for reporting either up or down the chain? If so, an Isolate will not do. Are the people this position communicates with outside this person's particular group? If so, a Cluster may struggle but a member of a Social Network has already proven the ability to communicate with others and may be a good fit in such a position. Communication is essential for most project team members. Reports, conflicts, scope changes, and meeting times all need to be communicated, and it is crucial to keep everyone informed of project status. The best candidate is a Liaison followed closely by a Bridge.
- **Motivation.** Will this position need to

lead others or will this position be required to keep others on task? Is schedule the most important factor to the success of this position? If so, find a person looking to get ahead. Find out what motivates the person who will fill this position. This person may have motivating factors inline with what you are trying to accomplish. Is it money, family, further knowledge or experience, job satisfaction, or is this person just not motivated by anything? The best candidate for a motivation type position is a Hero. A well-placed Hero may cut your work in half but beware, a misplaced Hero may cause scope creep or worse, budgetary problems due to lack of direction from above. Heroes are not happy when they are not busy, and they will find things to do, project related or not. The next best person is a Liaison. A

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Liaison may not motivate or direct others but a worst-case scenario is that the Liaison will communicate your energy and direction to others.

- **Problem Solving and Politics** [8]. Does this position require autonomy? Will this person be secluded where support and assistance are concerned? Is there an element of creativity needed? Will the position need to be resourceful or resilient when it comes to keeping on schedule and reducing costs? Look closely with whom this position interfaces. Will this position interact with the media, inspectors, supervisors, contractors, the public, or even report to your boss in your absence? Will the work being completed by this position be reviewed by a large number of people? If so, either a Hero or a Liaison is your best bet unless the people this position interacts with are within a specific Cluster or Social Network.

If this is the case, work to your strengths and use the resources you have in those existing areas to magnify previous relationships and ease working tensions as much as possible. People perceive that they work well with others with whom they are already comfortable or have much in common. Perception is sometimes the best tool to break down communication barriers and solicit other's assistance in solving problems.

Recognize that all projects have political factors (both internal and external), from governmental restraints to personal agendas (admit it, everyone has them). A good manager will identify them prior to, during, and even after the project is completed and mitigate such factors by placing the right person in the right position.

- **Work Intensity.** Does this position involve a constant level of similar and repetitive work? Is the position scoped for a single person or even a small team? Is there a lack of variety in the work performed? Does this position entail intense or extensive analysis? If so, look to an Isolate or a Cluster to do the task. Keep in mind that nothing will shut down a Liaison or member of a clearly defined Social Network faster than seclusion. Conversely, work intensity may imply heavily multi-tasked positions. Such positions may require multiple meeting attendance, interaction with teams, individuals, and even learning new tasks on a daily basis. Heroes thrive in such situations and become energized by the variety of people and responsibilities that such a job demands.
- **Level of Technical Knowledge.** You are on your own here. You should know best what is needed, technically speaking. If you do not know, find someone who does so you make sure you have the expertise available. It sounds obvious, but projects without the needed resources flounder and slip into schedule and budget oblivion. Sometimes knowledge is disregarded as a resource but knowledge, like people, drives projects regardless if it is digging ditches or launching satellites. The important thing is to define a specific level of needed expertise from which to cross-reference your candidate's skills.

All too often a project team is comprised of people who have listed skills on their resume, or have once dabbled in a subject, but have never really spent any time learning or work-

ing within the area of expertise that they claim. This is not to say that people will purposely mislead you; just be sure of what you are getting (caveat emptor).

You can now select a well-designed team once you have gathered all the CT, PC, and EI data. Match candidate traits with the position characteristics that are best suited for each other. The next step is to take the multiple matches for the same position and ascertain who is most appropriate based on the position's technical needs.

There is always the possibility that you will have no matches. If this is the case, you will need to ask yourself if you are setting yourself up to fail. *The right tool for the right job* became an adage because it is true. PMs need to tool their projects with the right people or else take a good hard look to see if they should be taking the project on in the first place. If you were the customer, wouldn't you prefer your potential PM told you that they could not perform the job rather than try and fail while wasting your budget for the year?

The purpose of this exercise is not to take the human element away from the selection process but rather to increase it and stimulate some thinking about the work being performed. Thoughts about who will perform the work and with whom team members will interact on a daily basis to accomplish the work should be addressed prior to the project kick-off date rather than two months into the project.

The other option is training. Because you now have a better idea of what your people can do and where their interests lie, you can logically obtain training for the good of the project and the project team member, not to mention the organization as a whole.

Existing Information

The third prong, EI, includes all hard-copy artifacts and intellectual knowledge of a candidate's past training, experiences, or capabilities. Such descriptions are comprised of résumés, certificates of training, degrees, and observations from you, past teammates, or supervisors. The EI prong comes with one caveat: training certificates and listed résumé skills are not proof of ability or alacrity. Find some demonstration or first-hand account of project-required skills prior to placing a team member in a key position based solely on their claim of talent. Remember, in the past year a president of a Fortune 500 company and the head coach of the Notre Dame football team were fired for lying on their résumés.

Managing With What You Have

A lack of resources places further importance on the selection and placement of your project team members. Even if you are handed a pre-selected team, you as the PM have the opportunity to use them in the manner you see fit. A small, thoughtfully formulated and structured team can outperform the largest of its counterparts. By simply using the CIS to identify each individual's traits and evaluate your team's abilities, you can match them with the tasks that need to be accomplished.

Again, use training, if available, to fill in the gaps where expertise or knowledge is lacking. Another stopgap measure to use when you are understaffed or lacking resources is to merely rely on the existing capability of your team. Sounds novel doesn't it? People are resilient and resourceful. Use them. You have been given a team of people to accomplish a task and although you may not have what you think you need, you do have a fully functioning group of self-reliant, imaginative, and yes sometimes even ingenious people. In fact, humans are the same species of animal that created all this software stuff in the first place.

Gather your team together for an informal *brainstorming* session. You say it sounds outdated. When was the last time you were a part of such a session where no good ideas were formulated? It is a widely held belief in the PM community that the majority of all the world's problems could be solved in just such a meeting. Just as a side note, another name for these brainstorming sessions is resource management.

Bringing It All Together

As the PM, you are the common thread and the sole person to give direction to the project [9]. You also have the ability to elicit ideas from your project team to gain insight as to where the project is heading. You have taken the time to construct a complimentary team, one that will function to its member's strengths. Now listen to your professionals and use their knowledge to further your own. Use every occasion presented to you to benefit from the talent that you have incorporated. If this practice sounds opportunistic, it is. It is also what makes a good PM great.

The CIS will allow you a much better understanding of your team's capabilities. Once you have positioned your Heroes, Isolates, Liaisons, Bridges, and others, take the time to bring the team together and discuss in a group setting what is expected of each person. Make known the capabilities

of everyone involved. What good is expertise if a member of the team who needs assistance is unaware that the capability exists within the group? Explain that crossing over to assist each other is a welcome practice. Portray the idea that the group succeeds or fails together. Then all you have to do is the actual work.◆

References

1. Weinberg, Gerald M. The Secrets of Consulting: A Guide to Giving and Getting Advice Successfully. New York, NY: Dorset House, 1985.
2. Hunter, John E., Frank L. Schmidt, and Michael K. Judiesch. "Individual Differences in Output Variability as a Function of Job Complexity." Journal of Applied Psychology 75.1 (Feb. 1990): 28.
3. DeMarco, Tom. The Choir and the Team. New York, NY: Dorset House Quarterly, 1995.
4. A Human Investment Consulting Firm. Facts and Statistics. 2000. Human Investment Consulting. 30 Jan. 2003 <www.humaninvestment.com>.
5. Haller, Dr. Nancy, Applied Psychometrics. Personal Interview 16 July 2002.
6. Robbins, Steven P. Organizational Behavior: Concepts, Controversies, Applications. 6th ed. Englewood Cliffs, NJ: Prentice Hall, 1996.
7. Pearce and Robinson. Strategic Management, Formulation, Implementation, and Control. 6th ed. Boston, MA: Irwin McGraw-Hill, 1997.
8. Stoner, James A. F., and R. Edward Freeman. Management. 4th ed. Englewood Cliffs, NJ: Prentice Hall, 1989.
9. Smith, Larry W., and Kasey S. Thompson. "Why This Project Is Like Herding Cats." Software Technology Conference, Salt Lake City, UT, 2002.
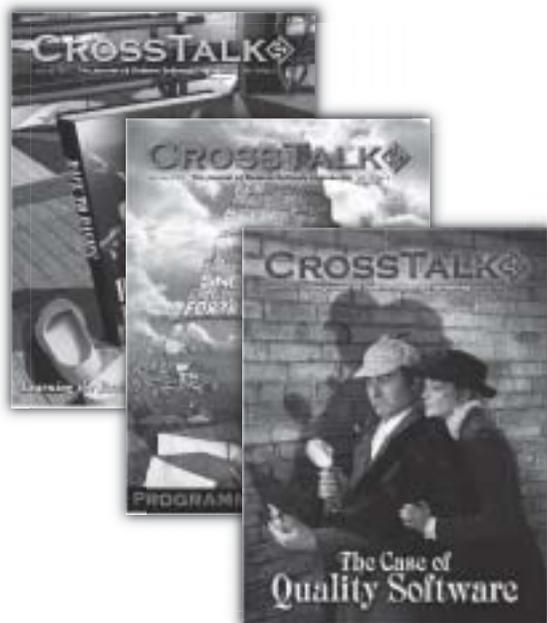
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