

Making of a Project Manager for Statistical Programming

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ABSTRACT

After sizeable experience in the industry, most statistical programmers aspire to become a 'Project Manager' and get into the act of 'managing the project and people'. What is it that makes a successful project manager? – Specific number of years in the industry? Experience of working on multiple projects, clients and Therapeutic areas? Or are there other attributes?

While technical skills and soft skills are undoubtedly the most essential skills required, there are many other facets and dimensions to this role. Grooming someone into a successful project manager requires a well planned, focused and systematic approach with desirable milestones and measurement criteria well documented. This paper attempts to cover the following aspects:

1. Expectations from a prospective project manager
2. The approach and methodology that the supervisor should take to support and guide the PM.

INTRODUCTION

Observations made in this paper are drawn from the author's personal experience gained over seven years during which a Statistical Programming team was built from scratch to a count of over 130 people spread across two locations, and in the process, grooming a sizeable number (over 10) of young programmers into very competent managerial roles.

The contextual backdrop of this experience is an India-based services organization that focuses sharply on Biostatistics and Statistical Programming, serving large global biopharmaceutical companies, in long-term Functional Service Provider (FSP) contracts, and a number of biotech and smaller pharmaceutical companies in study-specific engagements. The focus is also much more on forging capable managers from among the ranks of existing team, rather than external lateral hires.

This context has some interesting and somewhat unique features.

One, from the Indian context, is that a majority of Statistical Programmers strongly aspire for their role to contain managerial or supervisory content, fairly early in their career. This contrasts strongly with their western counterparts who typically spend many years in a technical, first-hand programming role, thus considerably deepening their skill in specific areas such as therapeutic areas of the phase of studies or the kind of work output.

Two, the most vital expectation of the client (whether this is a large global FSP client, or our own US-based parent company leading study-specific engagements), is stability and continuity of the individual for several years.

These two views often lead to interesting and powerful contrasts in the objectives of the individual and the client.

On this backdrop, grooming and mentoring aspiring managers becomes a very absorbing challenge that demands balancing of two separate sets of expectations.

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What, in this context, is our perception of a Project Manager?

Leaning on a couple of dictionary meanings here:

Project: *a large or major undertaking, especially one involving considerable money, personnel, and equipment; something that is contemplated, devised, or planned;*

Manage: *to bring about or succeed in accomplishing, sometimes despite difficulty or hardship; to handle, direct, govern, or control in action or use*

Drawing on these meanings, putting them in our context of interesting contrasts as described above, and then taking a bit of light-hearted liberty of interpretation, we might define our brand of project manager here as

Project Manager: Super(wo)man who is expected to succeed in accomplishing, often (always?) despite difficulty or hardship, a large or major undertaking that involves considerable money, personnel and equipment.

This paper aims to amplify the expectations and their contrasts, and then proceeds to describe how the authors engineered the mentoring of such project managers with reasonable success.

ATTRIBUTES OF AN EFFECTIVE PROJECT MANAGER

As Cornelius Fichtner says, 'The P in PM is as much about 'People Management' as it is about 'Project Management'. Just concentrating on the core project parameters such as Scope, Cost, Schedule and Quality does not necessarily yield the required results. Especially in case of statistical programming project managers where most of the work is done by 'people', this aspect of project management becomes quite critical.

As explained in the PMBoK, every project has to operate with Core management functions, which are:

- Scope
- Quality
- Time
- Cost

and the facilitating functions, which are:

- Information/Communication
- Contract/Procurement
- Human resources
- Risk

To manage the core functions, there are well-established and well-defined formal techniques. For the purpose of this paper, the focus is more on the other critical function, which is Human Resources. In our context managing a project necessarily implies getting work done by a team. With that clear necessity, Project Managers picked simply on the strength of their technical competence can be a mistake. First-hand technical expertise is certainly a strong advantage, but not at the cost of other attributes such as communication, and the ability to draw the best out of the team and the specialists; and planning, forecasting and ability to act decisively.

With now proceed to think about what techniques applied to potential PM candidates can lead to success. Here, "potential candidates" means those that aspire or hunger to take on PM roles, as well as have the desirable attributes, which, with appropriate grooming and mentoring, would very probably lead to success.

The nine Belbin team roles help us to focus on what to look for, among available team members. The assumption, of course, is that we seldom have the luxury to pick new team members with all the ideal attributes. The realistic situation is that we need to look at the team we have and pick among those. The table below describes the nine Belbin team roles.

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	Team Role	Strengths	Allowable Weaknesses
Action Oriented Roles	Shaper/Architect	- Challenging, dynamic, thrives on pressure - The drive and courage to overcome obstacles	- Prone to provocation - Offends people's feelings
	Implementer	- Disciplined, reliable, conservative and efficient - Turns ideas into practical actions	- Somewhat inflexible - Slow to respond to new possibilities
	Completer / finisher	- Painstaking, conscientious, anxious - Search out errors and omissions - Deliver on time	- Inclined to worry unduly - Reluctant to delegate
People Oriented Roles	Co-ordinator	- Mature, confident, a good chairperson - Clarifies goals, promotes decision-making, delegates well	- Can often be seen as manipulative - Offloads personal work
	Team worker	- Co-operative, mild, perceptive and diplomatic - Listens, builds, averts friction	Indecisive in crunch situations
	Resource Investigator	- Extrovert, enthusiastic, communicative - Explores opportunities - Develops contacts	- Over optimistic - Loses interest once initial enthusiasm passed
Cerebral Roles	Plant	- Creative, imaginative, unorthodox - Solves difficult problems	- Ignore chance - Too pre-occupied to communicate effectively
	Monitor/evaluator	- Strategic, discerning, clear-head - Sees all options - Judges accurately	Lacks drive and ability to inspire others
	Specialist	- Single-minded, self starting, dedicated - Provides knowledge and skills in rare supply	- Contributes only on a narrow front - Dwells on technicalities

OUR EXPECTATIONS FROM THE PROJECT MANAGER

The “our” and “we” in this section refers to the client, as well as the management of the FSP organization. Here are what we typically expect from our Statistical Programming Project Managers:

- Get things done. Make your own decisions, don't ask us.**
 This usually translates to ensuring that every individual in the team under the PM does what is expected from him/her. It also usually means making appropriate decisive choices without asking too many questions.
- Make assumptions, validate them, and use them for action.**
 We almost always operate in a situation of limited and imperfect information. The PM is expected to make reasonable assumptions in the face of information gaps, then ask questions to validate or adjust the assumptions, and then define courses of action. Specifically, we expect the PM not to allow the project to slow down or stall for want of timely information. If some assumptions may be steeped in uncertainty, we expect the PM to be ready with the Plan B if those assumptions are later proven incorrect.
- Take accountability**
 The PM must take full accountability to complete the job Correctly, Timely, and Efficiently. And that, Regularly. We have metrics which we use to quantify these dimensions. And we use them to put the PM under constant scrutiny. We expect the PM to ensure that the team does their own QC seriously, and does not let errors slip through.

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- **Manage your team, manager the project. But yes, do programming yourself!**
Remember the context: our PM has generally come up through the ranks, having been a statistical programmer in previous roles. And has presumably done very well. We are generally very reluctant to let go of that strong capability. So we often expect a person in the managerial role to have his or her own first-hand deliverable load of a sizeable proportion – typically around 50% of time, but sometimes going as high as 70%.
- **Grow your team. Do effective HR Management.**
While specialist HR functions do their task, every manager of teams must play an effective role in HR in many ways: taking newbies and turning them into star performers; mentoring the team; trouble-shooting their technical problems; studying each individuals abilities and aspirations, and showing the way to a growth path.

Clearly, this amounts to quite an onerous expectation that isn't easy to live up to.

INSIDE THE MIND OF THE ASPIRING PROJECT MANAGER

In interesting contrast to the expectations outlined above, the aspiring project manager in our context can have very different perceptions and expectations.

- **Position and Hierarchy**
Capable statistical programmers in India value their job title and hierarchical positions very significantly, and perceive their career progress in terms of how quickly and how frequently these attributes enhance. Job titles like "Lead" and "Manager" are sought early, and the absence of these can lead to considerable disappointment in perceived growth – so much so that this is one of the leading causes of attrition.
- **Variety of work**
There is generally a sustained sense of urgency to gain understanding on many dimensions all at once: different therapeutic areas; different phases of studies; the nature of work, for instance TLG programming versus Data standardization versus independent validation versus interim analyses or rapid-turnaround safety summaries. There is desire to add as many skills as possible in quick time. Among truly capable programmers, this often translates to more feathers in the cap that can lead to faster career growth within the current employer or without!
- **Working directly with client counterparts**
The typical statistical programmer immensely values being permitted to converse directly with a client-team member, as distinct from being an understudy for an onsite lead.
- **Multitasking across different assignments**
Another common attribute is the desire to not be boxed into one specific assignment or project or study, but rather to be involved in different activities in parallel – including generic (not study-specific) tasks like tools development or macro library development.

THE CONTRAST, AND HOW THE TWAIN SHALL MEET

As can be imagined, the perceptions as described above lead to a number of contrasts – some ironic and more psychological than real, and some clearly at cross-purposes with the goals of the engagement; but almost all giving rise to challenges in meeting expectations.

Attribute	What we (client/management) expect	What the aspiring PM wants
Job Role	Steady and fixed for a considerable duration: typically at least 2-3 years.	Fast-track change into Lead or Manager labels and positions, because this is perceived as career growth
Work Content	Sustained work in a specific area. Makes for greater depth of expertise, that translates to productivity gain.	Urge to experience variety early. Desire to evolve / change work content typically as often as once a year
Multitasking	Focus on specific specialist tasks. Provide best productivity out of increasing knowledge and skill	Be able to taste variety of tasks in parallel. Aimed at both – gaining a rapidly growing repertoires of skills on the CV, and also minimizing repetitiveness and tedium
First-hand work delivery	Considerable amount of time: ~50% should be on direct deliverables. Important because the learning curve and productivity gain must be exploited	Majority time for managing the team and the project. A small (ideally none!) amount of time on first-hand deliverables.

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The key to grooming, training and retaining a good project manager is to manage these contrasts of expectations.

ATTRIBUTES NEEDED IN THE MENTEE AND THE MENTOR

Grooming a potential candidate into a Project Manager role is a process which requires efforts from both the candidate and the supervisor/organization. This process requires a well planned, focused and systematic approach with desirable milestones and measurement criteria well documented. The skills to look for or instill could be listed as follows:

- First-hand technical expertise. Ability to crack problems of teammates. This skill facilitates the ability to command technical leadership and respect of the team. This greatly influences which individuals may in the first instance be considered for the role of a future PM.
- Wide exposure across multiple dimensions: TAs, Clients, Nature of Work. This per-force means that the potential incumbent should have ideally worked on a wide variety of assignments and engagements. This can sometimes be a limiting factor for choice of candidates.
- Tech-savvy and Tools-savvy. This attribute makes the candidate capable of instilling efficiency and productivity in the team. Not only by needing the team to use technology effectively, but also leading from the front and demonstrating these oneself.
- Ability to listen. Ability to listen between the lines. To the client and to the team. This ability results in reducing or minimizing the delivery gaps by keeping expectations in synch between the teams.
- Ability to inspire Performance from each individual team-member. Pushing just a little bit above par-for-the-course, helps the PM candidate to extract good performance that usually strongly boosts the team's self confidence and purposefulness.
- From Specs to Execution: Absorb >> Digest >> Estimate >> Plan >> Convince Client >> Convince Team >> Inspire Performance >> Deliver.
- Managing time – own and team members. This translates to building skills for very good planning and estimation. Being too optimistic or too conservative can be equally problematic. Also, understanding the exact requirements and thereby estimating the correct time and other resources needed, requires thorough technical and domain knowledge.
- Effective Delegation. Another key factor for the project success! This is a skill which needs to be developed and followed religiously to avoid the risk of remaining person-dependent. Achieving the right balance of the amount and type of delegation can become a challenge for the aspiring PM. The PM also has to keep track of the speed of delegation. Everyone, especially the new PM wants a 'Control' over the project and in this process could fall in the trap of micromanagement. This can have many collateral damages.
- Managing conflicts: Going back to the Belbin roles. If we look at the strengths and allowable weaknesses, the supervisor can find out the areas of improvement in the PM which are needed for managing the conflicts. The organization can then support the PM by providing the needed help and also the trainings, wherever required.

The supervisor or the mentor of the aspiring PM too needs to have or imbibe some attributes like the ones below:

- 'Letting go' attitude so that the delegation can happen effectively. It is important for the supervisor not to be emotionally attached to the project/methods/techniques used in the project management. Being open to new ideas and willingness to try them out is important to give the confidence to the aspiring PM. However, being on top of the situation and being ready with the proper risk assessment with the mitigation and contingency planning is critical.
- Giving candid feedback in a constructive manner and willingness to jump in the situations wherever support is needed before the damage happens
- Providing constructive feedback at the appropriate time helps the PM to gain control over the situation before the damage happens.

Clearly, there is a very significant role for the management and the supervisor to play, to bring about the transformation from an enthusiastic candidate to a competent project manager.

The process of grooming an effective Project Manager will span several years. Therefore it is vital to "catch them young" and start the process of grooming much earlier than that role is actually awarded to potential candidates. This need poses its own share of challenges, because the intent must be declared early, which can give rise to expectations which could later be belied or delayed. Nevertheless, for engineering successful result by design, it is necessary to clearly chart out the roadmap for the benefit of the prospective PM.

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RECIPE FOR MAKING A GOOD PROJECT MANAGER

Distilling from the real-life experience of grooming a sizeable number of PMs, the authors propose the following approximate sequence of actions (“recipe” if you will), on a rough time-scale from the beginning of a prospective PM’s career. The timeline mentioned here is with an assumption of a fresher hire into the role of a junior Statistical Programmer.

Stage of grooming	Typical duration or point on timescale (years)	Steps to take to groom the prospective manager
A Enhance Tech skills	Throughout the career	Encourage continuous addition to technical skills. Even after acquiring supervisory or managerial responsibility, the PM needs to continue doing hands-on programming work, stay abreast of versions, technology, also new software tools. It is important for an effect PM to keep his/her programming skills sharp and fresh.
B Assess Potential	2 years	Assess potential for future managerial ability. Assuming potential exists, hold open and detailed talk with the candidate. Ensure interest in the managerial path (if not enthused, career path should divert in a different direction that is outside the subject matter of this paper). Assuming both interest and potential, hold open discussion explaining the start of a grooming process. Set tentative timelines. Set milestones for review – both of the timelines and of the performance against expectations.
C Tech Leadership Exposure	2yr – 3yr	Provide small but growing opportunity of technical leadership of a small team. Define clear objectives, such as: • Technical trouble-shooting with research and study • Understanding work specifications, preparing documentation, ensuring dissemination and understanding among the team • Preparing effort estimates. Refining and finalizing them with the help of PM or mentor. • Making work plans in line with estimates • Playing the Point of Contact role
D Honing and enhancing communication	2yr – 5yr	Communication Training. Extent of training depends on gaps between the requirement and existing level of ability. With increasing order of sophistication and engagement, the communication training from the early part to the later part of this stage would contain many or all of the following: • Effective Email writing for brevity and clarity • Voice communication over Telephone and Video conferences • Creating Agenda for meetings and documenting minutes • Defining the right questions to ask and how to articulate them • Maintaining task lists, issue logs, and other follow-up items • Writing Reports • Communicating feedback on performance to individuals
E Formalize lead role	Around 3 years	Around this time, it would usually be appropriate to formalize an increased responsibility in terms of technical leadership of a small team. Typically at this stage the candidate may get his/her first direct reportee.
F Project Management training	4yr – 6yr	Formal project management training at this stage is very useful to for the candidate to learn estimation, planning, monitoring, control, execution and closure.

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Stage of grooming	Typical duration or point on timescale (years)	Steps to take to groom the prospective manager
G Shadow Project Management	5yr – 6yr	During this phase, the actual PM or mentor would allow the candidate to conceptualize, design, define and even partly execute the tasks of the PM, while the PM will continue to own accountability. This stage would work like a tutelage delivered under the wings of the PM. The candidate would also typically get either a shadow or a direct Point of Contact role in relation to the client.
H HR management of team	5yr-8yr	The candidate would carry out specific tasks related to managing the team of reportees. Typically these would include: • Performance Assessment of team members • Providing focused and constructive feedback • Defining KRAs and Goals for near future (typically 6 months) • Setting up and measuring performance metrics • Work allocation among team members

The duration mentioned above should be taken as a guideline that will need to be tweaked for specific individuals with respect to their ability to absorb, learn and implement. While 8 years seem to us to be a reasonable duration for getting someone to a PM role, we have seen outliers of both kinds – a few people who would get there faster, and others who despite much longer working experience may fall short of the skills required.

CONCLUSION

Making of a good project manager is a long-duration project. Starting from picking the potential candidates, the path would typically traverse through a variety of focused training and mentoring activities as described in detail earlier. Just as there would be specific expectations from the PM candidate, so also would the Mentor have substantial well-defined responsibilities to bring about the transformation of a programmer into PM.

In the specific context under discussion, there are interesting and major contrasts between the client's and management's expectations from the PM candidate, as compared to the candidate's own perception and aspirations.

With the correct assessment of the combination of interest and ability, the management can ensure a high incidence of success in grooming young candidates into becoming capable project managers.

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