

# Best Practices in Software Project Management

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There are a few best practices in the IT industry which every firm follows. Because of the nature of technical work, there is lot of scope for innovation in the products and processes of software development. This article explains the best practices followed by the well-known IT firms. Best practices in project management, software development methodologies, software development processes, selection, recruitment, recognition and reward, system, training, environment and project-wide best practices are explained in this article.

**W**e have more than 50% of the world's SEI-CMMi level five companies in India. We have many ISO 9001:2000 certified and People Capability Maturity Model (PCMM) certified companies in Indian software industry. It is the standards, quality of work and skilled manpower, which is attracting the western clients towards Indian software houses. In this article, we will see some of the best practices followed by these software houses in their day-to-day operations. These best practices are useful in making company profitable, making employees happy and making the customers satisfied. Hence, let us observe these best practices carefully.

## Recruitment: Best Practices

Recruitment is the first step in any organization. Project inception also starts with recruitment of team members and the project manager. Usually while recruiting employees organizations take utmost care in recruitment process. Particularly the Small and Medium size Enterprises (SMEs) go for the known resources for getting the better talent. The organizations usually use the following sources to recruit new employees:

- Employee referral.
- Through selected vendors.
- Through selected job boards on Internet such as naukri.com, monsterindia.com, jobstreet.com and jobsahead.com, etc.
- Calling the resigned employees back, which BHEL was doing in large scale.
- Through job fairs, for example, job fairs conducted by timesjobs.com, naukri.com and *The Hindu*, etc.
- News papers.
- Employment agencies.
- Manpower consultancies.

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### **Selection: Best Practices**

Selection of suitable candidates is the next step to recruitment. Different companies use different approaches for the selection of candidates for their organization. The best practices among those selection methods are case-based approach and aptitude tests. For example, Microsoft's case-based approach for recruiting programmers and architects is widely known. Other companies such as TCS and Infosys conduct analytical tests for fresh graduates during the campus interviews. Some companies such as Computer Associates and Sasken conduct technical tests such as C++ and Java for the entry-level programmer positions.

Using these techniques, programmers and technical leads are recruited into the team. Product development companies conduct tests on specific programming language skills in software industry. Because their products are being developed in specific technologies, they want gurus in that technology only. Where as software services organizations, recruit people with some average technical skills with good analytical and numerical aptitudes, so that they can train them on any technology and put them in any project. Moving these programmers across the projects and verticals becomes easy for software services firms.

While selecting candidates for project, program and delivery manager positions, companies usually look at their stability in the current organizations and while conducting selection tests; they may put psychometric tests for the candidates. Using these tests, the companies test the confidence level, maturity and leadership skills of the candidate. These kinds of tests were very common in advanced countries such as the US and the UK for recruiting candidates for managerial roles.

### **Reward and Recognition System**

Usually the reward and recognition system is at the organization level in small enterprises, where as this system is at both project level and organization level in big software organizations.

Some of the best practices followed by the software organizations as far as reward and recognition systems are concerned are as follows.

- Employee of the month. E.g., TCS.
- Employee of the quarter. E.g., Interwoven.
- Best Employee for the project duration—Some of the IT companies give during the project closure time.
- At Organization level: TCS, Wipro, Infosys.

Some companies give awards for the best performers at the functional level.

### **Performance Appraisals: Best Practices**

Every software organization conducts performance appraisals to their engineers periodically. The best practice is to do the job conformance appraisal from six months to one year of the candidate's joining date in the organization. Many IT firms have this practice of confirmation appraisals in their organizations. It is better to have self-appraisal,

supervisor's appraisal and a reviewer comments for each employee's performance appraisal. Usually rating scale method is followed in the appraisal forms. It is better to appraise the communication and presentation skills of the engineer in addition to the technical skills. While appraising project, program and delivery managers it is their managerial skills, which needs to be appraised. It is their project and people management skills, which needs to be evaluated for the appraisal period.

### Switching Team Members between Projects

Usually every employee needs a change in job responsibilities after some years. For e.g., ITC and HLL moves senior management professionals cross functionally among non-IT sector companies. Similar movement of employees is happening in software companies as well. For e.g., TCS, Wipro and Infosys rotate team members across the projects.

Some of the best practices followed by these companies are as follows:

- Rotating between technical and managerial roles.
- Rotating between on-site and off-shore teams.
- Changing the technologies.
- Changing responsibilities—such as development, test, building, configuration management, packaging and technical support.
- Giving more responsibilities at a very early age—You find managers in late 20s in the IT organizations these days.

Some of the companies move employees cross functionally as well. A software engineer worked in product development team will be moved to marketing team. The engineer has to use his technical knowledge in marketing the software products to the customer. For example, In SIEMENS, USA, a software program manager was made as marketing manager for the same product after he obtained his MBA degree. As such there are many instances in IT MNCs, where they moved technical project managers into marketing roles.

### Providing Training

As we know very well, GE is spending every year more than a billion dollars to train their employees. Similarly all these big Indian IT firms are spending millions of dollars on continuous training of their programmers, technical leads, team leaders and project, program, delivery and portfolio managers. They provide training on different technologies and different management areas.

Some of the best practices are as follows:

- Providing training in latest technologies such as .Net, C#, Java
- Providing management training.
  - Project Management.
  - People Management.
  - General Management.
  - Project Risk Management.
  - Interviewing Skills.
  - HR for non-HR managers.
  - Finance for non-Finance managers.

Another best practice is to send senior management and middle level managers to Business Schools such as The Wharton, Harvard Business School, Stanford and Kellogg for advanced management training purposes. For e.g., Satyam Computer Services brings faculty from Harvard Business School to train their managers.

Infosys has set up world's largest training facility in Mysore to train their employees. Infosys is recruiting from across the world and bringing them to India and training them in India. TCS has their major training facility in Trivandrum. Similarly, Polaris has its own corporate training university known as Nalanda. Like this every big IT organization is having its own training facility to train their employees. Some companies went ahead and made such policies that every employee of the organization should spent specific number of training days every year in the training room.

### **Providing the Right Environment**

Highly successful software organizations provide the right environment for their employees to work for. The environment includes the internal and external premises of the organization, rest rooms, meeting places and the reception area, etc. For e.g., keeping the premises clean and arranging flowers in reception area and providing big size mirrors in the rest rooms to make the employees look handsome in the office, etc., are the kinds of practice improve the morale and the confidence level of the employees in the organization. These kind of best practices are being followed in many IT forms in India these days. Some of the companies went ahead and took ISO 14000/ISO 14001 environment management systems certifications for their organizations.

### **Best Practices in Project Development Process**

Indian software firms are well-known for their quality consciousness. Majority of the Indian software firms have SEI-CMMi or ISO 9001 certifications or both. These processes help in the quality assurance process for any project. Majority of the organizations are trying for continuous improvement in their process capabilities. For example, Wipro, Infosys and TCS are rated at SEI-CMMi level 5. Wipro is following six-sigma quality process in some of its processes. Rational's Unified Process (RUP) is also a known process followed in software projects.

Not only the software or manufacturing processes are being followed for the quality assurance activities but also the capabilities like project management are being assessed and capabilities are being measured. For example, Project Management Institute's (PMI, USA), Organizational Project Management Maturity Model (OPM3) is useful for assessing and measuring the project management maturity in the organization. Some of the IT firms in USA are going for this kind of project management maturity assessment.

Some of the companies follow PRINCE 2 (Projects IN Controlled Environment) methodology for project management in their projects. PRINCE 2 is from Office of Govt. Commerce, the UK. PRINCE is widely used in Europe and the UK. PMI, USA's PMBOK (Project Management Body of Knowledge) is widely used across the world.

Many of the software houses are encouraging their employees to under go PMI-PMP (Project Management Professional) certification as the western-based customers are insisting on PMP qualified project managers from the performing organizations. PMI also came up with a certification for Program Management (PgMP).

## Best Practices in Software Development Methodologies

There are some of the best practices being followed in the software companies in using the specific software development methodologies. Some of those methodologies are Agile, Extreme programming and Scrum methodologies. Some of the firms use Object Management Group's (OMG) Unified Modeling Language (UML) as their project design methodology.

Another best practice is to conduct peer reviews and/or external (to team) reviews for each deliverable in the software development life cycle. This definitely improves the quality of the deliverable. Collective responsibility and incremental deliverables are some of the coming up concepts and practices in the industry.

## Best Practices in Project Management

Some of the best practices are as follows:

- Maintaining the list of stakeholders.
- Communication with stakeholders periodically.
- Conducting Project Status Review (PSR) meetings.
- Attending Senior Management Review (SMR) meetings.
- Under going regular quality audits.
- Closing and tracking non-conformances.
- Maintaining risk-register and risk monitoring and control.
- Using earned value techniques for project control.
- Maintain a database/knowledge base of all completed and on going projects at the organization level.
- Regular customer calls in onsite/offshore model.
- Formal product handover to support team.

## Projectwide Best Practices

Publishing papers, articles in seminars and conferences definitely bring the visibility to the project or the organization. Publishing in industry related magazines and business newspapers promoting the project/product help the organization in long run. Another best practice is to have internal magazine/news letter. It helps in better communication of the project team members. Using this, project team members share their knowledge and thoughts with their colleagues in the same project/organization. For e.g., Siemens Information Systems Limited (SISL) has an internal magazine in which their employees talk about their projects and interests. This is useful for organization wide communication. Some of the organizations have discussion forums in their Intranet. Instant messaging is also another tool for communication between the team members within the project. For e.g., employees in IBM use instant messaging for quick communication within the team.

## Conclusion

For any organization, there is no point in reinventing the wheel for basic operations. Hence, it can adopt some of the best practices followed in the industry. Usually, there is scope for improvement and innovation in organizational operations. Hence, any software organization can excel in its operations with best practices, innovation and creativity. ❖

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