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What is software project management

- The Art and science of planning and leading software project, and requires knowledge of the entire development lifecycle:
  - Defining the vision
  - Planning the tasks
  - Gathering people who will do the work
  - Estimating the efforts
  - Creating the schedule
  - Overseeing the work
  - Gathering the requirements
  - Designing and programming the software
  - Testing end products

Tasks of the Project Manager

- Planning
- Organizing
- Staffing
- Directing
- Controlling

Steps in project planning

- Set objectives
- Develop project strategies
- Develop project policies
- Conduct Risk assessment
- Identify alternate solutions
- Develop project plan(tasks, size, schedule)

Organizing activities

- Identification and grouping functions and activities
- Creating organizational positions
- Defining responsibilities
- Documentation of organizational decisions

Directing Project

- Build teams
- Provide leadership
- Coordinate and communication between stakeholders
- Supervise and motivate personnel
- Resolve conflict

Controlling software projects

- Develop standards of performance
- Establish monitoring and reporting systems
  - Task Milestones
  - Work products
  - Quality assurance
- Measure and analyze results
- Initiate corrective actions
- Reward and discipline
- Document controlling methods

Strategies for handling Risk

- ***Crisis management***: fight fires after risks turn into full-blown problems
- ***Fix on failure:*** early detection and quick reaction when risks materialize
- ***Risk mitigation:*** have contingency plans, but do nothing to eliminate them in the first place
- ***Risk prevention:*** identify risks and prevent them from becoming problems
- ***Elimination of root causes:*** remove factors that make risks possible

CHARACTERISTICS OF GOOD SPM

- Leadership
- Communications
- Problem Solving
- Negotiating
- Influencing the organization
- Mentoring
- Process and technical expertise

Types of Management

- Democratic decentralize
  - Rotates the task coordinators
  - Decisions are made by group consensus
- Controlled decentralized
  - There is a permanent team lead
  - Whole group is involved in problem solving
  - Subgroup implements solutions
- Controlled centralized
  - Top level problem solving is used
  - Internal coordination is managed by the team lead

Centralized management

- Hierarchical structure of communication
- Highly structured
- Definite team lead
- Communications are vertical
- Narrow span of control
- Employees tend to work in departments

Decentralized management

- There is no real leader
- All group members participate in problem solving and decision making

Pros of Centralized Management

- Less time wasted in useless discussions
- Decisions are made quickly
- Tasks are completed on schedule
- Best for simple projects

Cons of Centralized Management

- Group morale and goal motivation are low
- Quality of project depends greatly on leadership qualities of lead
- Untapped creativity of other group members
- Not appropriate for large innovative projects

Pros of Decentralized management

- Good for long-term continuing projects
- Good where there are no time constraints
- Good for difficult problems where pooling of ideas is essential
- Exhibit greatest job satisfaction
- Generate more and better solutions to problems

Cons of Decentralized Management

- Not good for rushed, or crucial projects
- Because there is no one point of failure, individuals participate in more risky behavior
- Group performance is negatively correlated with co-operation requirements

Factors influence the success of a project

- Project Management -Plan -Direct -Solve problems -Communicate
- People -Skills -Motivation -Quantity –Continuity
- Business -Alignment -Funding -Risk -Return on investment -Data
- Technical -Hardware -Software -Testing -Relationships between elements
- Method -Approach -Procedures -Tools

A wide variety of ideas and suggestions to consider and act upon

- Common pitfalls and challenges
- Key considerations
- Observations, key findings, and conclusions
  - Proposed actions
- Focus on risk methodology
- Case study

Why do software projects fail?

- The team has an unrealistic idea about how much work is involved.
  - From far away, most complex problems seem simple to solve
  - Teams can commit to impossible deadlines
  - Few people realize the deadline is optimistic

Ways that project fail

- Consultant interview— questions and answers
- Reasons for failure
- What does project management mean?
- How much management?
- Success factors

- Defects are injected early but discovered late.
  - Projects can address the wrong needs
  - Requirements can specify incorrect behavior
  - Design, architecture and code can be technically flawed
  - Test plans can miss functionality
  - The later these problems are found, the more likely they are to cause the project to fail

- Programmers have poor habits – and they don't feel accountable for their work.
  - Programmers don't have good control of their source code
  - Code written by one person is often difficult for another person to understand
  - Programmers don't test their code, which makes diagnosing and fixing bugs more expensive
  - The team does not have a good sense of the overall health of the project.

- Managers try to test quality into the software.
  - Everyone assumes that the testers will catch all of the defects that were injected throughout the project.
  - When testers look for defects, managers tell them they are wasting time.
  - When testers find defects, programmers are antagonized because they feel that they are being personally criticized.
  - When testers miss defects, everyone blames them for not being perfect.

Why Projects Fail

- Project failures can be easily attributed to a number of factors
- Failure to align with constituents
- Lack of proactive risk management
- Poor performance measurement
- Loose definition of project scope and management
- Insufficient project communication
- Missing methodology

Why Projects Fail

- Primary causes for the failure of complex IT projects
- Poor planning
- Unclear goals and objectives
- Objectives changing during the project
- Unrealistic time or resource estimates
- Lack of executive support and user involvement
- Failure to communicate and act as a team
- Inappropriate skills

FBI Virtual case file example

- Poor planning including missing dependencies
- Requirements changed and were not finalized
- Key requirements were missed
- High turnover of top IT managers

Why projects fail

- A failure is defined as any software project with severe cost or schedule overruns, quality problems, or that suffers outright cancellation

Reasons for failure

- Poor user input
- Stakeholder conflicts
- Vague requirements
- Poor cost and schedule estimation
- Skills that do not match the job
- Hidden costs
- Failure to plan
- Communications breakdowns
- Poor architecture
- Late failure warning signals

Why project management

- Project management represents

1. Discipline
2. Organization
3. Accountability

How much project management is necessary?

- Individual worker –prepare estimates and schedules, perform project work, and report on activities
- Project manager –plan, direct, and solve problems
- Department managers – administer resources
- Executive management – establish priorities and monitor project progress

How to increase your IT Project Success

- Key findings 1.42.5% did not deliver all benefits;
- 44% were delivered over budget;
- 42% were not delivered on time
- Multiple attributes contribute to IT project success
- Key attributes: (1) planning, (2) project management, (3) consultant/ experience, (4) user management, and (5) soft skills

- Planning
- Clearly defined realistic scope Project management
- Frequent and open communication
- Industry specific User management
- Realistic outcome expectations Soft skills
- Problem solving and flexibility

Improving IT Project Outcomes

- Research explains a new and different Methodology focus is on these risks
- Financial
- Operational
- Market
- Sovereign approach to improving IT project

Action to consider

- Strong coordination between technology and finance organizations
- Integration of risk into project planning using risk management tools

Seven reasons why IT projects fail

- Poor project planning and direction
- Insufficient communication
- Lack of change, risk, financial, and performance management
- Failure to align with constituents and stakeholders
- Ineffective involvement of executive management
- Lack of skilled team members in the areas of soft skills, ability to adapt, and experience
- Poor or missing methodology and tools

Poor project planning and direction

- Evidence “poor planning”and “lack of empirical data”
- “team does not have clear goals and responsibilities”
- “missed important items that should have been caught”
- “poor general management skills”
- “Not assign the right people to the right task”

-Recommendations

- Utilize a planning method supported by a tool
- Make clear assignment to team members and make changes as necessary

What is a planning method

- Organic method (items that appear in internal company guidance)
- Set up an electronic project notebook (repository)
- Establish written project objectives (communication)
- Work with the technical lead to establish tasks within phases (planning)
- Ask team members to estimate tasks (estimating)
- Create a formal project plan and manage to it (directing)
- Proactively solve problems that arise (problem solving)

Insufficient communication

- Evidence
- “infrequent open communication”
- “status reports are not objective”
- “poor communication with sponsors and business users”
- “failure to properly involve others like hardware vendor”

•Recommendations

- Mix up the way that the message is delivered, especially for executive reviews

How can we support behavior of life in IT today?

- Senior people are likely doing several projects or supporting multiple programs at the same time
- Specialized personnel have a narrow focus and are often shared resources
- Daily professional life isn't naturally an ordered set of activities

Lack of change, risk, financial, and performance management

- Evidence
- “not managing changing objectives and goals”
- “lack of proactive risk management”
- “poor coordination between technology and finance” “no performance measurement”

•Recommendations

Implement a straightforward change-management process with estimating and approval steps

Utilize a risk-management assessment tool

Have finance representation on the team and formalize a business case

Identify discrete performance measurements like starts/completes

Failure to align with constituents and stakeholders

- Evidence
- “failure to align with constituents”
- “unmanaged outside forces”
- “stakeholder conflicts”
- “poor user input”
- “poor coordination with core outside teams like finance”

•Recommendations

Target specific initiates to ensure interlock and communication with stakeholders

Input gathering meetings, communication to push information, sign-offs of work products, etc.

Ineffective involvement of executive management

- Evidence
- "insufficient high-level sponsorship"

•"executive does not monitor project progress"

•"executive management does not establish priorities"

•Recommendations

Participation of executive sponsor in key operational working sessions with overall team

Specific status meetings and communications to be held

Lack of skilled team members

- Evidence
- “slow to adapt”and “lack of experience”
- “team does not have the right composition of skills”or “skill do not match the job”
- “lack of focus”and “lack of maturity”
- Recommendations
- Utilize monitoring approach for less experienced team members
- Include required education in overall project schedule
- Seek skilled personnel through internal and external routes

Poor or missing methodology and tools

- Evidence
- “project methodology and tools are poor”
- “not using proper tools and automation”
- “lack of methodology to achieve beyond basic level of success”

•Recommendations

There needs to be a methodology or framework upon which the management is based

Project basics

- Clear project goals? Yes/no. If no, what is not clear?
- Firm project scope? Yes/no. If no, is change-management being used?
- Achievable plan? Yes/no. Note: the scope of this question is feasibility.
- Adequate resources? Yes/no. If no, what additional resources are needed?
- Sufficiently skilled team members? Yes/no. If no, what skill-areas are missing or are too few?
- Turnover in personnel? Yes/no. If yes, why are people moving off the project?
- Team is motivated to succeed? Yes/no. If no, what could be done to motivation?
- Communication plan in-place? Yes/no. If no, what is needed to establish regular communication?
- Problems being shared with management? Yes/no. If no, why are they not being shared?
- Functional management involved at the right level? Yes/no. If no, what can you do to change this?
- Senior management participating in executive status? Yes/no. If no, should there be senior-management meetings or communications?

How can we make sure that our projects succeed?

- Make sure all decisions are based on openly shared information
  - It's important to create a culture of transparency, where everyone who needs information knows it.
  - All project documents, schedules, estimates, plans and other work products should be shared with the entire team, managers, stakeholders, users and anyone else in the organization.
  - Major decisions that are made about the project should be well-supported and explained.
  - Everyone agrees on what needs to be built, how long it will take and what steps will be taken, how to know it has been done properly.

- Don’t second-guess your team members’ expertise
  - Managers need to trust team members and make them productive.
  - Just because a manager has responsibility for a project’s success, it doesn’t mean that he’s more qualified to make decisions than the team members.
  - No way a single person can fill all the roles. They make recommendation, you make the informed decisions.
  - However, do not blindly trust your team. Evaluate their ideas in relation to solid engineering principles.

- Introduce software quality from the very beginning of the project
  - Review everything, test everything. Review is not just force people to sign and make commitment.
  - Use reviews to find **defects** – but don't expect the review to be perfect. Catch enough defects to more than pay for the time to hold it.
  - Faster to fix something on paper than build it first and fix it. A few minutes review can save hours, days or weeks in fixing code.
  - Use reviews to gain a real **commitment** from the team.

- Don’t impose an artificial hierarchy on the project team
  - All software engineers were created equal.
  - A manager should not assume that programming is more difficult or technical than design, testing or requirements engineering.
  - Managers should definitely not assume that the programmer is always right, or the tester is always raising false alarms.
  - Team feels respected and valued and gain a true commitment to make the software the best.

- Remember that the fastest way through the project is to use good engineering practices
  - Managers and teams often want to cut important tasks – especially estimation, reviews, requirements gathering and testing.
  - Do not like adopting practices unless they believe they will see a net gain.
  - Every one uses these practices is about saving time and increasing quality by planning, finding defects early.
  - Cutting cost time and reduce quality.

Using Project Management Effectively

- Understanding Changes
- Management and Leadership
- Managing an Outsourced Project
- Process Improvement

Thank You