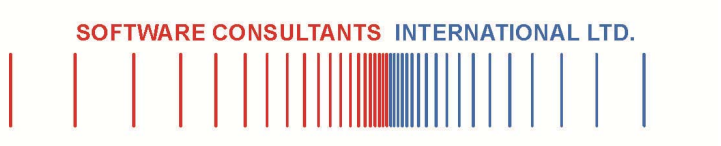

Success in Software Project Management

Presented by
Lawrence Peters PhD, CSDP
Software Consultants International Limited
LJPETERS42@gmail.com

Your Presenter

- 40 years in software (analyst, SW engineer, project manager, consultant, educator (e.g. professional development seminars, & universities)
- Worked in defense, telecommunications, banking, insurance, aerospace, manufacturing, PC graphics, business process reengineering, simulation
- Clients: include IBM, Fujitsu Management Consulting, Siemens, US Department of Defense, Boeing, Canadian Defence Establishment, Xerox, Others

Today's Agenda

- About Software Project Management
- What constitutes success & why is it so difficult to achieve?
- What have we tried so far?
- Where have we looked?
- How did successful software projects do it?
- How to increase your chances of success

Software Project Management

- "Management, not technology, determines success" [1]
- "It includes the processes concerned with identifying, analyzing, and responding to project risk. It includes maximizing the results of positive events and minimizing the consequence of adverse events" [2]
- "It involves planning, scheduling, controlling, staffing, and motivating" [3]

Success

- **Is, "*Subject to change*"**
- **Depends on:**
  - **Meeting requirements – alone, not enough**
  - **Organizational politics (subject to change)**
  - **Budgetary and schedule changes**
  - **What the competition has done or is doing**
  - **Ability to negotiate/compromise**
  - **Other**

So, what's the problem?

- **Software Projects**
  a) Consistently deliver quality results on time
  b) Rarely overrun cost estimates by >10%
  c) Are never cancelled
  d) Are well received by sponsors when done
  e) None of the above

- **Plus, Software Project Managers often operate under misconceptions**

Some Common Misconceptions

- Software project manager – no longer "the boss"
  - To be successful, a coach/servant-leader not a dictator
- Technology will save the day
  - More than 3 dozen software methods, languages, development environments, employed in the last 50 years [4] with little improvement
- Start with more people
  - Using larger teams is a fallacy [5]
- Pay more money, that will motivate them
  - People do not work for money [6]
- There are a lot of "anti-patterns" [7]
- We accurately predict the future without bias

Some Project Management Variables

- People – personality compatibility, communications skills, motivation - almost disregarded
- Process – CMM, CMMI, others emphasized
- Technology – we rely on this the most - methods, languages, environments, ...

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Why Rely on Technology?

- That's where most of us started
- Old habits are hard to break [8]
- We ignore reality,
  "The project manager has a greater impact on project success than all other factors combined" [9,10]

Where We Look For Solutions

- Inside the software domain – why not outside?
- To improve our chances of success, checkout what successful software projects have done
- Some recent findings [11]

Recent Findings Background

- **The goal: Document what successful software projects had in common**
- **The method: analyze 589 successful software projects appearing in refereed publications worldwide from 2000 to 2010**
- **These were filtered down to obtain consistency and completeness of what was reported on**

The Findings

- In whatever way it was deemed successful, none of the projects attributed their success to:
  - Development approach (e.g. Agile, Extreme)
  - Software development lifecycle
  - Programming language
  - Development environment, software tools
- So, what did work for them?

"Success" Factors Present Prior To Project Start

- The following 6 factors were present to start:
  1. Well stated, unambiguous requirements – i.e. agreement on what constitutes success (with the understanding that it may change)
  2. User involvement throughout the project
  3. A competent project manager (more on this next)
  4. Project was adequately been planned & scheduled
  5. Appropriately skilled team members
  6. Teamwork and communications encouraged

A Competent Project Manager

- Wants the job & is trained to do it – including:
  - Knowledge of important factoids
  - Psychology of software engineers
  - Insight into motivating individuals and teams
  - Basics of accounting
  - Communications skills
- Let's look at 3 key competency topics:
  - The estimating challenge
  - The team sizing issue
  - Evaluating individuals & teams

The Estimating Challenge [12]

Type of Project Worldwide	Average % Overrun	Overrun % Range
Railways	45	7 to 83
Bridges & Tunnels	34	-28 to 96
Roads	20	-10 to 50

Why can't we get estimating "right?" Others haven't either!

Estimating (continued)

- Why do we miss the target (applies to all industries, everybody) [13]?
  - Over estimate project team abilities, benefits
  - Under estimate risks
- To correct for this – use Reference Class Forecasting [14] – the American Planning Association told its members to never use conventional techniques unless accompanied by a Reference Class Forecasting estimate

The Team Sizing Fallacy

- Given that adding people to a late project makes it later,
- Software Project Managers should start with larger teams, right? – Wrong [5]
- The bigger the team, the more administrative & coordination effort is required reducing performance – experimental evidence

Evaluating Individuals & Teams

- A very uncomfortable task
- Not often trained to do it [15]
- Some Software Project Managers avoid it
- Software Engineers hate it, misinterpret intent

"Success" Factors Present Upon Project Completion

- These are essentially project "goals"
  - Schedule & budget estimates were maintained
  - Customer and user needs satisfied
  - Job satisfaction
  - Product quality, functionality and performance were acceptable
- What's with Job satisfaction?

Job Satisfaction

- If software engineers do not find the work satisfying (i.e. interesting, significant, challenging, something colleagues would be impressed by), productivity is lower and they may abandon the project [3,15]
- Up to 60% of the cost of a software project can be attributed to personnel turnover [16,17] – the number 1 cause of turnover? - the project manager

Observations

- **Software project success:**
  - **The result of competent project management**
  - **Only somewhat dependent on technology**
  - **Results from a collaborative effort among all stakeholders**

How Can You Achieve Success?

- Train Software Project Managers how to manage people [14,15,17]
- Complement the software technology focus with training in:
  - Communications skills
  - Interviewing, evaluating, motivating
  - Basic accounting, Earned Value Management, team building
- Create a clear path into management [18]

Conclusions

- **Our success rate would be greatly improved if we had better software project managers**
- **Competent software project managers are <u>not</u> born, they must be trained**
- **Focusing our attention on improving software project management skills in planning, scheduling, controlling, staffing and motivating is the most cost effective means of achieving SUCCESS!**

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