

Project Management Course Book

T++ Technical Skills Training Program

CUNY Institute for Software Design & Development (CISDD)

New York Software Industry Association (NYSIA)

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Class 1 October 5th, 2004

Class Agenda

1:30-2:15 Class Introductions

2:15-2:30 How We Develop Software Matters - Course Motivation (Presentation)

2:30-2:45 Course Outline

2:45-3:00 Break

3:00-3:30 Core Principles (Presentation)

3:30-4:00 Exercise 1 - 5 Key Skills of a Project Manager

4:00-4:15 Break

4:15-4:45 Break Out Presentations

4:45-5:30 FourM Historical Overview

Instructor

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Zoteca Corporate Website: <http://www.zoteca.com/>

FOSS Resources: <http://www.fourm.info/>

Course Motivation

How We Develop Software Matters

- Saves Money
- Save Jobs
- Save Lives

Bibliography

The Mythical Man-Month: Essays on Software Engineering by Frederick P. Brooks, Jr.

The Ropes to Skip and the Ropes to Know: Studies in Organizational Behavior by R. Richard Ritti, Steven Levy

Agile Software Development by Alistair Cockburn

Agile and Iterative Development: A Manager's Guide by Craig Larman

Agile Management of the Software Engineering by David J. Anderson

UML Distilled: A Brief Guide to the Standard Object Modeling Language, 3rd Edition by Martin Fowler

Writing Effective Use Cases by Alistair Cockburn

The Rational Unified Process: An Introduction by Philippe Kruchten

Agile Software Development Ecosystems by Jim A. Highsmith, Donald Eastlake

Extreme Programming Explained: Embrace Change by Kent Beck

Online Bibliography: <http://www.fourm.info/TPPPM/Presentations/biblio.html>

Course Outline

I. Introduction

II. Core Principles of Project Management

Process

Project

People

III. The Mythical Man Month

Historical Overview

Why Projects Fail

Principles of Human Centric Project Management

IV. Process

Process Models

Traditional

Iterative

Agile

Theory of Agile Management

Methods Overview

Unified Process (UP)

Feature Driven Development (FDD)

Extreme Programming (XP)

SCRUM

Choosing Methods

The Language of Methods

UML

Use Cases

V. Project

Project Planning

Management Tasks

Operations

Metrics

VI. People

Human-centric Management

Communications

Core Principles

Three P's

- Process
- Project
- People

What is Process?

- Method/Methodology
- A systematic procedure for creating a product
- A project succeeds if it creates a working product that meets customer needs
- A useful process leads to successful projects

Process Scales

- Formal vs. Informal
- Explicit vs Implicit
- Autocratic vs Anarchic

Pithy Sayings about Methods

- 'An ecosystem that ships software' - Alistair Cockburn (Complex)
- 'A social construction' - Ralph Hodgson (Human Centric)
- 'Theory building' - Peter Naur (Creative)

Project Constraints/Limits

- Match Product Expectations - Scope Constraint
- Allocate Finances - Budget Constraint
- Keep to Schedule - Time Constraint
- Keep People Productive - People Constraint
- Allocate Resources - Resource Constraint
- Risk

Project Activities

- Planning - Create Estimates
- Tracking - Estimate vs. Actual
- Communications
- Quality Control

People Factors Dominate Software Development

- Problem Complexity
- Social Interactions
- Creative Work

People Constraints

- Leadership
- Motivation
- Interaction
- Ability
- Training

People Activities

- Communications
- Communications
- Communications

FourM Historical Overview

Early Days

- The Fifties - Hardware dominates
- High level languages - Fortran, Cobol
- Small and efficient programs
- Compiler tricks

The Sixties - The rise of software

- 1965 G. Moore's (Intel) Law - 'The density of chips doubles every year'
- 1968 Data General Nova - 32K \$8,000
- Software costs exceed hardware
- OS/360 + High level languages - programs portable and durable

New Criteria for Successful Software Development

- A relatively low cost of initial development.
- Easily maintained.
- Portable to new hardware.
- Does the job the customer wants.

Edsger Dijkstra

- March, 1968 Letter to the Editor of the CACM
- GoTo Considered Harmful
- 'A Discipline of Programming' - Computer Science as Mathematics
- None of the programs in the book were actually run on a machine

Structured Programming

- Developing programs top-down (as opposed to bottom-up).
- Using a set of specific formal programming constructs (the go to was to be banished).
- Following some formal steps to decompose the larger problem.
- Human readable vs. Machine readable
- 1971, Professor Nicklaus Wirth Pascal

Structured Analysis and Design

- 95 Theses
- Software Engineering
- Methods Wars
- Guru Consultants - Edward Yourdon, Peter Coad, James Martin, and Tom DeMarco

Fred Brooks - The Mythical Man Month

- PM of IBM s Operating System/360 (OS/360) in the early 1960's.
- Software development a human-centric process, not an engineering discipline.
- Why programming is hard to manage
- Why Projects Fail
- The Mythical Man Month Method (FourM)