Pictures at CSEE&T 2016

Keynotes, Panels & Presentations

Day 1, April 5
Topics

- What is continuous delivery and what problem does it solve?
- What skills do the students need and what is the industry need for such skills?
- What do we teach in our courses and what supporting material do we use?
- How advanced is the material and what level of students should be taught this material?
Impact of the Use of Industrial Modelling Tools on Modelling Education

Grischa Liebel, Rogardt Heldal, and Jan-Philipp Steghöfer
The students can teach themselves the tools, that should be trivial
Teach the ideas!

Want to teach the ideas:

Do not want to teach the tools:
Student Backgrounds

- For the Masters of Software Engineering (MSSE) program students must have...
  - two or more years of industrial software development experience
  - basic CS and mathematics background

- For them MSIT and ESE programs must have
  - 1 or more industrial internships
  - team project experience
  - basic CS and mathematics background and reasonable grades/GPA.
expert role (Papyrus)

every questions from students
about the tool, at least within 24 hours.
and to meet the tool expert face to face a week.
pressure on the tool
Much Direction – 3

- Directed process framework:
  - specified that all teams use Team Software Process (TSP) - training provided by the SEI
  - provided structure and consistency

- Strengths and weaknesses:
  - students did not think, did not practice judgment in how to select, instantiate, and tailor processes
  - after a time, teams merely went “through the motions” – do something to make mentors happy
  - if teams are bent on hacking, they will hack… issuing a fixed process framework won’t help
Meeting Industry Needs
Return on Investment
Conclusions and Lessons Learned
Early Attitudes

- Research papers
  - too theoretical

- Manage hypothetical teams
  - too clumsy and inconsistent

- Remote teaming
  - too many students could not synchronize their schedules
  - most have "real jobs"
Students develop incomplete set of UML models for a system
Introduction

Project Management (PM) is an important area of SE education.

It is a critical area for many software organizations

Currently, a significant amount of software projects still fail!
- The absence of a PM process is pointed out as one of main causes.

Lack of proper PM process Leads to
- Unaccomplished deadlines
- Budget overrun
- Incomplete scope coverage
Outline: Importance of Object Oriented Programming

- Object Oriented Programming is based on the concept of objects and class.
- Advantages:
- Objects in OOP can be reused in various programs.
- OOP is easier to program and maintain than non-object oriented programming.
- Many real-time applications including mobile application can be developed using OOP.
- Many advanced computer science courses are included in the curriculum which requires the solution of complex problems to be solved using OOP.
- Studies have shown OOP improves the problem-solving and analytical skill of students.
Software Estimation and Measurement
Course -- Topics

- Fundamentals of Measurement (GQM)
- Data Analysis for the Statistically Challenged (central tendency, variability, measurement error, SD)
- Measuring Size (lines of code, function points, shals, use case points)
- Complexity (size, cyclomatic complexity, Halstead’s metrics, information flow metrics, maintainability index, object-oriented metrics)
- Function Points and Gearing Factors (IFPUG, COSMIC)
- Estimating Effort (Delphi, using benchmarks, analogy, algorithmic models)
- Agile Estimation, Custom Models, and Tools (story points, planning poker)
- Duration (Putnam-Norden-Rayleigh curve, models based on the QSM & ISBSG datasets, team size)
- Dynamic Defect Models (Rayleigh model)
- Static Defect Models (COQUALMO)
- Measuring and Predicting Reliability (reliability function, mean time between failure, operational profiles)
- Performability and Presentability (Dashboard, Data Viz)
- In-Process Metrics (Defect discovery rate, code turnover rate)
Dynamic Software Updating Techniques in Practice and Educator's Guides: A Review

Ville Ilvonen, Petri Ihantola, Tommi Mikkonen
Tampere University of Technology
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THE SWE BACHELOR OF ENGINEERING PROGRAM

- First US SWE program also has an ABET accredited general engineering curriculum.
- Students prepared to sit for the Fundamentals of Engineering (FE) examination
- Curriculum: 141 Credit Hours
  - Part of Stevens Undergraduate Engineering
  - 9 SWE Courses, +2 Senior Design
  - Includes Systems Engineering
- CO-OP: Highly Recommended
- Culture: Small, Personal Program
- Fall 2015: 18 Frosh, 5 Soph, 1 Jr
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Root Cause: Lack of an OOAD Methodology

- A lot of effort and $$$ have been spent on process.
- In my opinion (definition), a process specifies when to do what, but not how to do them.
- A methodology details the phases of a process. It specifies HOW-TO perform the phased activities of a process.

Conventional and agile projects require a process methodology.

Personality plays an important role for team/individual learning effectiveness in controlled PBL
[CSEE&T'13][CSEE&T'14][TETC'16]
Data Collection
Motivation (1/3)

- Software systems are getting to new dimensions
  - Voyager ... 3 KLOC (1977)
Teaching Agile Collaboration Skills in the Classroom

Martin Kropp, University of Applied Sciences and Arts Northwestern Switzerland
Andreas Meier, Zurich University of Applied Sciences Switzerland
Robert Biddle, Carleton University Canada