Announcements - 1

- Exam 1, in-class Thursday, March 16
  - Open-book, open-notes
- A take-home component will be available on Thursday also, due next week.

Announcements - 2

- Team member requests:
  - If you have requests for team members, please send them to me by this Friday, March 17.
  - Target team size is 5
  - You need not identify 4 other people in order to send a request; smaller group requests are fine, but I will attempt to fill out as many groups as possible to size 5
Reading

- Team Software Process text, Ch. 1, 2, 3

Topics

- Intro to TSPi
- What’s coming in the rest of the semester?
- Some problems and warnings

Quandary

- Most of the technology you will need to understand to be successful in your jobs doesn’t exist yet.
- Employers identify problem solving as the key employee skill.
- In some crucial ways, the main thing to learn is a process for dealing with new problems.
**TSPi overview**

- i stands for instruction.
- Subset of TSP
- Focus:
  - Based on PSP
    - Scripts, measurements, metrics
- Teams & roles
  - Different members responsible for different parts of joint project
- Develop complete product in several complete cycles

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**TSPi Structure and flow**

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Needs statement

Cycle 1 Launch
Strategy 1
- Plan 1
- Requirements 1
- Design 1
- Implementation 1
- Test 1
- Postmortem 1

Cycle 2 Launch
Strategy 2
- Plan 2
- Requirements 2
- Design 2
- Implementation 2
- Test 2
- Postmortem 2

Cycle 3 Launch
Strategy 3
- Plan 3
- Requirements 3
- Design 3
- Implementation 3
- Test 3
- Postmortem 3
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**TSPi Development Script - 1**

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Guide team through dev. software project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entry Criteria</td>
<td>Instructor to guide and support project</td>
</tr>
<tr>
<td></td>
<td>Students know PSP</td>
</tr>
<tr>
<td></td>
<td>Instructor has project description</td>
</tr>
<tr>
<td></td>
<td>Instructor has described project objectives</td>
</tr>
<tr>
<td>Exit Criteria</td>
<td>Completed project</td>
</tr>
<tr>
<td></td>
<td>Completed user documentation</td>
</tr>
<tr>
<td></td>
<td>Completed and current project notebook</td>
</tr>
<tr>
<td></td>
<td>Documented team evaluations and cycle reports</td>
</tr>
</tbody>
</table>
TSPi Development Script - 2

<table>
<thead>
<tr>
<th>Wk</th>
<th>Step</th>
<th>Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Review</td>
<td>Read TSP ch. 1 and 2.</td>
</tr>
<tr>
<td>2</td>
<td>LAU1</td>
<td>Assign teams and roles.</td>
</tr>
<tr>
<td></td>
<td>STRAT1</td>
<td>Produce conceptual design, establish dev. strategy, make size estimates and assess risk.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Read TSP ch. 4.</td>
</tr>
<tr>
<td>3</td>
<td>PLAN1</td>
<td>Produce cycle 1 team and engineer plans</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Read TSP ch. 5 &amp; App C.</td>
</tr>
<tr>
<td>4</td>
<td>REQ1</td>
<td>Define and inspect cycle 1 requirements.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Produce system test plan and support materials.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Read TSP ch. 6 and test sections of ch. 9.</td>
</tr>
<tr>
<td>4</td>
<td>DES1</td>
<td>Produce and inspect cycle 1 high-level design.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Produce integration test plan and support materials.</td>
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<td></td>
<td></td>
<td>Read TSP ch. 7.</td>
</tr>
</tbody>
</table>

TSPi Development Script - 3

<table>
<thead>
<tr>
<th>Wk</th>
<th>Step</th>
<th>Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>IMP1</td>
<td>Implement and inspect cycle 1.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Produce unit test plan and support materials.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Read TSP ch. 8.</td>
</tr>
<tr>
<td>6</td>
<td>TEST1</td>
<td>Build, integrate, and system test cycle 1.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Produce user documentation for cycle 1.</td>
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<tr>
<td></td>
<td></td>
<td>Read TSP ch. 9.</td>
</tr>
<tr>
<td>7</td>
<td>PH1</td>
<td>Conduct a postmortem and write cycle 1 final report.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Produce role and team evaluations for cycle 1.</td>
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<tr>
<td></td>
<td></td>
<td>Read TSP ch 10, 16, 17, and 18.</td>
</tr>
<tr>
<td>CYCLE 2</td>
<td></td>
<td>Repeat above for cycle 2 (we won't have time for this).</td>
</tr>
<tr>
<td>CYCLE 3</td>
<td></td>
<td>Repeat above for cycle 3 (we won't have time for this).</td>
</tr>
</tbody>
</table>

Why projects fail

- Rarely for technical reasons
  - Internal politics
  - Team does not bind
  - Fail to develop rapport with customers
  - People will fight over meaningless issues
- Pressure is a problem
  - Having a plan of action helps
    - Know real issues that must be resolved rather than worrying about imaginary problems
Common team problems

- Ineffective leadership
  - Few people are natural leaders, but can get better with practice
  - Beneficial to have effective examples (people)
- Some people don’t know how to compromise
- Lack of participation
- Procrastination/lack of confidence
- Poor quality
- Function creep
- Poor peer evaluation

Team definition

- For TSP, a team consists of
  - at least 2 people (TSP designed for 5), who
  - are working toward a common goal, where
  - each member is assigned specific responsibilities and where
  - successful completion of project requires team members to contribute.

Jelled teams

- Whole greater than sum of parts
- Great satisfaction for members
- Necessary conditions
  - Task to be performed clear
  - Team responsible clearly identified
    - Including who is and is not on team
  - Team has control over tasks
  - Can be dangerous to team members
    - “Can’t ‘not do it’ attitude
    - Hard on personal relationships (spouses, significant others)
    - See “Soul of a new machine” by Tracy Kidder
      - Identified as one of best 100 books of 20th century
How to build teams

- Common goals
- Assigned roles
  - Most people want to contribute.
  - Each person needs specific task to complete that he/she understands, and
  - Peer pressure has an effect.
- Need plans
  - Strategy for achieving goals
- Communication
  - Weekly meetings – if possible part of recitation time

Problems & warnings

- TSP instruction problem:
  - Students learn TSP by doing a "big" project
  - Students need to know TSP before they start
  - So, we need to finish the TSP book by Tuesday so you can start the semester-long (well, half semester) project
  - And we can't
  - You are the victims of an experiment!
  - Struggle with better ways of teaching what you need to know OVER THE LONG RUN
  - Changing views on how to do this

Launching a new team

- Defining goals for team and team members
- Defining roles
  - How the group is to be organized
  - Establish responsibilities of each role
    - Just makes is easier and quicker to divide up work
  - Still, everybody develops and tests code, everybody manages some aspect of the project
- Assigning roles
Goal considerations

- Aggressive but realistic
  - Here, we want to stretch your abilities, but not crush you
- Avoid timid, safe goals
  - Should strive to achieve, but cannot be punished severely if not achieved
  - They matter (but they don’t)

Identifying team goals

- Write them down
- Decide how to measure
- Explain why you picked them
- Give copy to other team members and to instructor
- Have the support manager put a copy in the project notebook

General comments on goals

- Should relate to how a user will perceive the product:
  - Quality
  - Utility
  - Costs
  - When available
- In 350, instructor and grader are the customers
Possible goals

- Attempt 1:
  - Produce a quality product
  - Run a well-managed project
  - Extend project beyond minimal
- These may seem too vague, but if concrete measurements are added:

Goals and metrics - 1

- Team goal 1: Produce quality product
  - Percent of defects found before 1st compile: 80%
  - Number of defects found in system test: 0
  - Requirements functions included at project completion: 100%

Goals and metrics - 2

- Team goal 2: Run a well-managed project
  - Error in estimated product size: < 20%
  - Error in estimated development hours: < 20%
  - Percent of data recorded and entered in project notebook: 100%
  - Number of days project completed before deadline: 3
Goals and metrics - 3

- Team goal 3: extend project beyond minimal requirements
  - Bonus points possible

TSPi team members - 1

- Team leader
  - Resolves issues among members
  - Facilitates meetings
  - Much more, see text. See fig 3.1
    - e.g. decides how the project notebook will be kept
    - See appendix G for notebook specs and standards
- Development manager
  - Lead all development work
  - Much more, see text
- Planning manager
  - Lead team planning and progress tracking
  - Much more, see text

TSPi team members - 2

- Quality/Process manager
  - Lead quality planning and tracking
  - Act as inspection moderator
  - Much more, see text
- Support manager
  - Obtain needed support tools
  - Handle configuration management
  - Much more, see text
Team member goals

Examples
- Be a cooperative and effective team member
  - Average PEER eval. for helpfulness and support > 3
  - Average PEER eval. for overall contribution > 3
- Produce quality products
  - Defect density at compile < 10/KLOC
  - Defect density at test < 5/KLOC
  - Defects found after unit test: 0

Example role goals

Planning manager goal:
- Accurately report team status every week to instructor
Support manager goal:
- No unauthorized changes made to baselined product
Quality/Process manager goal:
- All team inspections are properly moderated and reported

Launch script

<table>
<thead>
<tr>
<th>Purpose</th>
<th>To start teams on a development cycle</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Students have read ch. 1, 2, 3, and reviewed NASA requirements</td>
</tr>
<tr>
<td>General</td>
<td>The instructor describes TSPi objectives</td>
</tr>
<tr>
<td></td>
<td>Explain objective for the software</td>
</tr>
<tr>
<td></td>
<td>Establish meeting and reporting times</td>
</tr>
<tr>
<td></td>
<td>Steps 1, 2, and 3 are completed during the first meeting</td>
</tr>
<tr>
<td></td>
<td>Steps 4 through 8 are completed during the second meeting</td>
</tr>
<tr>
<td>Exit criteria</td>
<td>Each student has completed and submitted INFO form</td>
</tr>
<tr>
<td></td>
<td>The development teams are formed and roles assigned.</td>
</tr>
<tr>
<td></td>
<td>The instructor has described the overall product objectives</td>
</tr>
<tr>
<td></td>
<td>The instructor has reviews and discussed the TSPi and team's role goals</td>
</tr>
<tr>
<td></td>
<td>Each team has agreed on goals, weekly meeting times, and the weekly data to report</td>
</tr>
</tbody>
</table>
Student information sheets
- 1

Mail to cmo by next Monday, Mar. 20

Rank from 1 (least) to 5 (most) your preferences for serving the following roles:

<table>
<thead>
<tr>
<th>Role</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team Leader</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Development Manager</td>
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<td></td>
</tr>
<tr>
<td>Planning Manager</td>
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</tr>
<tr>
<td>Quality/Process Manager</td>
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</tr>
<tr>
<td>Support Manager</td>
<td></td>
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</tr>
</tbody>
</table>

Weekly meeting script

<table>
<thead>
<tr>
<th>Purpose</th>
<th>To guide teams in conduction weekly meetings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entry criteria</td>
<td>All team members present</td>
</tr>
<tr>
<td></td>
<td>All team member have provided updated TASK, SCHEDULE, and WEEK forms to the planning manager</td>
</tr>
<tr>
<td></td>
<td>The team leader has issued a meeting agenda</td>
</tr>
<tr>
<td>General</td>
<td>In advance of the meeting, the team leader has</td>
</tr>
<tr>
<td></td>
<td>asked team members for meeting agenda topics</td>
</tr>
<tr>
<td></td>
<td>The team leader has prepared and distributed the meeting agenda</td>
</tr>
<tr>
<td></td>
<td>The team leader leads the weekly meeting</td>
</tr>
<tr>
<td></td>
<td>The quality/process manager records the meeting topics</td>
</tr>
<tr>
<td></td>
<td>Each team member generally reports his/her role work and development work at the same time</td>
</tr>
<tr>
<td></td>
<td>After the meeting, the team leader distributes the meeting report</td>
</tr>
<tr>
<td></td>
<td>Puts a report copy in the project notebook</td>
</tr>
<tr>
<td>Exit criteria</td>
<td>The meeting report completed and placed in the project notebook</td>
</tr>
<tr>
<td></td>
<td>Updated team and programmer TASK, SCHEDULE, WEEK, and CSR forms in the project notebook</td>
</tr>
<tr>
<td></td>
<td>Updated copy of the ITL (issue tracking log) in the project notebook</td>
</tr>
</tbody>
</table>

Weekly forms

- See text (table 3.5) for meeting step by step details
- Agenda review
- Role reports
- Engineer reports
- Close meeting
- See text (table 3.7) for individual report instructions.