

CS 350, slide set 6

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Old Dominion University  
Spring 2006

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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.

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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

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## Reading

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

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## Topics

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

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## Quandary

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- 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.

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## 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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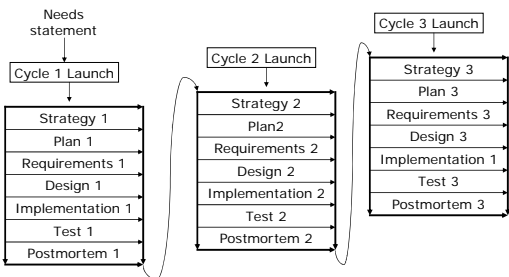
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## TSPi Structure and flow




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## TSPi Development Script - 1

<b>Purpose</b>	Guide team through dev. software project
<b>Entry Criteria</b>	<ul style="list-style-type: none"> <li>■ Instructor to guide and support project</li> <li>■ Students know PSP</li> <li>■ Instructor has project description</li> <li>■ Instructor has described project objectives</li> </ul>
<b>Exit Criteria</b>	<ul style="list-style-type: none"> <li>■ Completed project</li> <li>■ Completed user documentation</li> <li>■ Completed and current project notebook</li> <li>■ Documented team evaluations and cycle reports</li> </ul>

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## TSPi Development Script - 2

Wk	Step	Activities
1	Review	<ul style="list-style-type: none"> <li>Read TSP ch. 1 and 2.</li> </ul>
2	LAU1	<ul style="list-style-type: none"> <li>Assign teams and roles.</li> <li>Read TSP ch. 3, App B and one of ch. 11-15.</li> </ul>
	STRAT1	<ul style="list-style-type: none"> <li>Produce conceptual design, establish dev. strategy, make size estimates and assess risk.</li> <li>Read TSP ch. 4.</li> </ul>
3	PLAN1	<ul style="list-style-type: none"> <li>Produce cycle 1 team and engineer plans</li> <li>Read TSP ch. 5 &amp; App C.</li> </ul>
4	REQ1	<ul style="list-style-type: none"> <li>Define and inspect cycle 1 requirements.</li> <li>Produce system test plan and support materials.</li> <li>Read TSP ch. 6 and test sections of ch. 9.</li> </ul>
4	DES1	<ul style="list-style-type: none"> <li>Produce and inspect cycle 1 high-level design.</li> <li>Produce integration test plan and support materials.</li> <li>Read TSP ch. 7.</li> </ul>

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## TSPi Development Script - 3

Wk	Step	Activities
5	IMP1	<ul style="list-style-type: none"> <li>Implement and inspect cycle 1.</li> <li>Produce unit test plan and support materials.</li> <li>Read TSP ch. 8.</li> </ul>
6	TEST1	<ul style="list-style-type: none"> <li>Build, integrate, and system test cycle 1.</li> <li>Produce user documentation for cycle 1.</li> <li>Read TSP ch. 9.</li> </ul>
7	PM1	<ul style="list-style-type: none"> <li>Conduct a postmortem and write cycle 1 final report.</li> <li>Produce role and team evaluations for cycle 1.</li> <li>Read TSP ch 10, 16, 17, and 18.</li> </ul>
	CYCLE 2	<ul style="list-style-type: none"> <li>Repeat above for cycle 2 (we won't have time for this).</li> </ul>
	CYCLE 3	<ul style="list-style-type: none"> <li>Repeat above for cycle 3 (we won't have time for this).</li> </ul>

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## 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

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## 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

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## Team definition

- For TSPi, 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.

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## 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 20<sup>th</sup> century

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## 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

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## 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

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## 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

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## 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)

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## 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

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## 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

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## Possible goals

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- 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:

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## Goals and metrics - 1

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

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## Goals and metrics - 2

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

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### Goals and metrics - 3

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

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### TSPi team members - 1

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- 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

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### TSPi team members - 2

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- 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

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## 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

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## 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

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## Launch script

<b>Purpose</b>	<ul style="list-style-type: none"> <li>■ To start teams on a development cycle</li> <li>■ Students have read ch. 1, 2, 3, and reviewed NASA requirements</li> </ul>
General	The instructor describes TSPI objectives <ul style="list-style-type: none"> <li>■ Form teams and assign team roles</li> <li>■ Explain objective for the software</li> <li>■ Establish meeting and reporting times</li> </ul> Steps 1, 2, and 3 are completed during the first meeting Steps 4 through 8 are completed during the second meeting
Exit criteria	<ul style="list-style-type: none"> <li>■ Each student has completed and submitted INFO form</li> <li>■ The development teams are formed and roles assigned.</li> <li>■ The instructor has described the overall product objectives</li> <li>■ The instructor has reviews and discussed the TSPI and team's role goals</li> <li>■ Each team has agreed on goals, weekly meeting times, and the weekly data to report</li> </ul>

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## Student information sheets

- 1

Mail to cmo by next Monday, Mar. 20

Rank from 1 (least) to 5 (most) your preferences for serving the the following roles:					
Team Leader	1	2	3	4	5
Development Manager	1	2	3	4	5
Planning Manager	1	2	3	4	5
Quality/Process Manager	1	2	3	4	5
Support Manager	1	2	3	4	5

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## Weekly meeting script

Purpose	To guide teams in conduction weekly meetings
Entry criteria	<ul style="list-style-type: none"> <li>■ All team members present</li> <li>■ All team member have provided updated TASK, SCHEUDLE, and WEEK forms to the planning manager</li> <li>■ The team leader has issued a meeting agenda</li> </ul>
General	<p>In advance of the meeting, the team leader has:</p> <ul style="list-style-type: none"> <li>■ Asked team members for meeting agenda topics</li> <li>■ Prepared and distributed the meeting agenda</li> </ul> <p>The team leader leads the weekly meeting</p> <ul style="list-style-type: none"> <li>■ The quality/process manager records the meeting topics</li> <li>■ Each team member generally reports his/her role work and development work at the same time</li> <li>■ After the meeting, the team leader distributes the meeting report</li> <li>■ Puts a report copy in the project notebook</li> </ul>
Exit criteria	<ul style="list-style-type: none"> <li>■ The meeting report completed and placed in the project notebook</li> <li>■ Updated team and programmer TASK, SCHEDULE, WEEK, and CSR forms in the project notebook</li> <li>■ Updated copy of the ITL (issue tracking log) in the project notebook</li> </ul>

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## 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.

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