

CMPT 473  
Software Testing, Reliability and Security

# Test Planning

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# Planning Tests

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- We still haven't tried to rigorously create tests.
- Recall: Quality comes from process
  - The testing process is guided by a *test plan*

# Test Plans

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Were these useful? Why?

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The nature & uses of a test plan depend on the project.

# Why Use Test Plans?

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What happens if you skip clear requirements and specifications for the software itself?

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  - Clear definition of what to do, how, and when
  - Enable developers (& customers) to communicate about the process
  - Structures the process to aid in scheduling & management
  - Testing after the fact is too late

# What Should It Include?

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Structure may vary but contents often show

- Purpose & Objectives

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- Evaluation Criteria (Test Requirements)
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- Deliverables

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- *Regression test plans*- regular tests to maintain quality
- *Master test plans*- overall plan for all testing
- ...

# Objectives

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- Specification of the software & feature under test
- Functional requirements that the test process should help assure.
- Nonfunctional requirements
  - resources, performance, reliability, portability, usability,  
...

# Test Process Requirements

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## Environmental

- What platforms, resources, and other preconditions are assumed for running the test?

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- What platforms, resources, and other preconditions are assumed for running the test?
  - e.g. operating system, operating system version, supporting software/libraries, build tools, processor, attached hardware, remote networks/servers, ...

# Addressing Multiple Configurations

Many different environments & build options may be desired.

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## Options

- Test most expected / common configurations
- Test most extreme scenarios
- Combinatorial testing once again



# Deliverables

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What are the intended results?

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What do you expect to see from running a test suite?

# Deliverables

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What are the intended results?

- Documented test cases?
- Test scripts?
- Logs of the test process?
- Summaries of failures?
- Aggregate summaries? (How many failed/passed)
- Adequacy assessments?

# Balancing

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- Fast paced, agile, & low risk?
  - Less detailed docs & more detailed whiteboarding.



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- Monolithic & high risk process?
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- Fast paced, agile, & low risk?
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There is no cookie cutter process  
to follow *every* time.

# Contention

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  - Why might this be the case?

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  - Don't miss the forest for the trees

# Contention

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- There is a growing tendency against traditional test plans
  - Why might this be the case?
- Lighter weight approaches examine higher level project quality
  - Easier to visualize & manage
  - Don't miss the forest for the trees
  - Don't require updating project level documents

# Attribute-Component-Capability

- *Attributes*
  - (*adj*) high level (non)functional properties to ensure

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  - (*noun*) chunks of software or features
- *Capabilities*
  - (*verb*) user actions

Test process is organized by a matrix showing how attributes are satisfied

# ACC Matrix

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Component	Attributes		
	Fast	Secure	Personalized
Shopping Cart			
Item Search			
Notifications			

Attributes & Components form the columns & rows of a matrix.

# ACC Matrix

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Component	Attributes		
	Fast	Secure	Personalized
Shopping Cart		<ul style="list-style-type: none"><li>• Credit card information is stored encrypted.</li><li>• Passwords are not stored plain-text</li></ul>	
Item Search			
Notifications			

Capabilities for each component fit into the cells.

# ACC Matrix

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Component	Attributes		
	Fast	Secure	Personalized
Shopping Cart			
Item Search			
Notifications		(5/7)	

Test cases fall into cells of the matrix.

# ACC Matrix

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Component	Attributes		
	Fast	Secure	Personalized
Shopping Cart	Green	Green	Green
Item Search	Green	Yellow	Green
Notifications	Green	Yellow	Red

Results can be easily visualized.

# ACC Testing

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- What are the risks?

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- A traditional test plan formally specifies the goals, assumptions, methodologies, & outcomes.
- Newer test plans take higher level perspectives.
- Neither approach is best in general.

Once again, there is no silver bullet.