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Lifecycle Quality Solutions

Finding Success in System Testing

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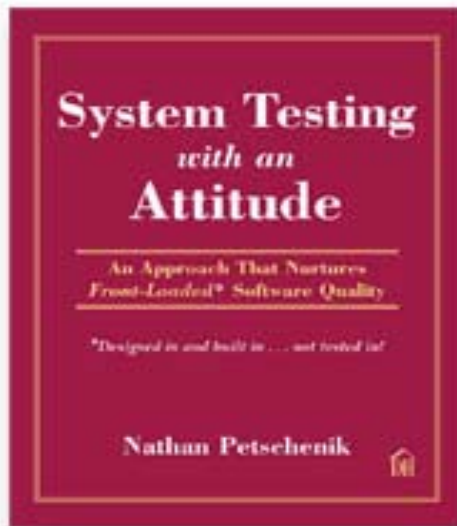
Page 1

The Formula for Success in System Testing

System Testing Success =
(Technical Excellence)
+
(Nurturing Front-Loaded Quality)

where:
(Technical Excellence) >0
(Nurturing Front-Loaded Quality) >0

Main Source



System Testing with an Attitude

*An Approach That Nurtures
Front Loaded Software Quality*

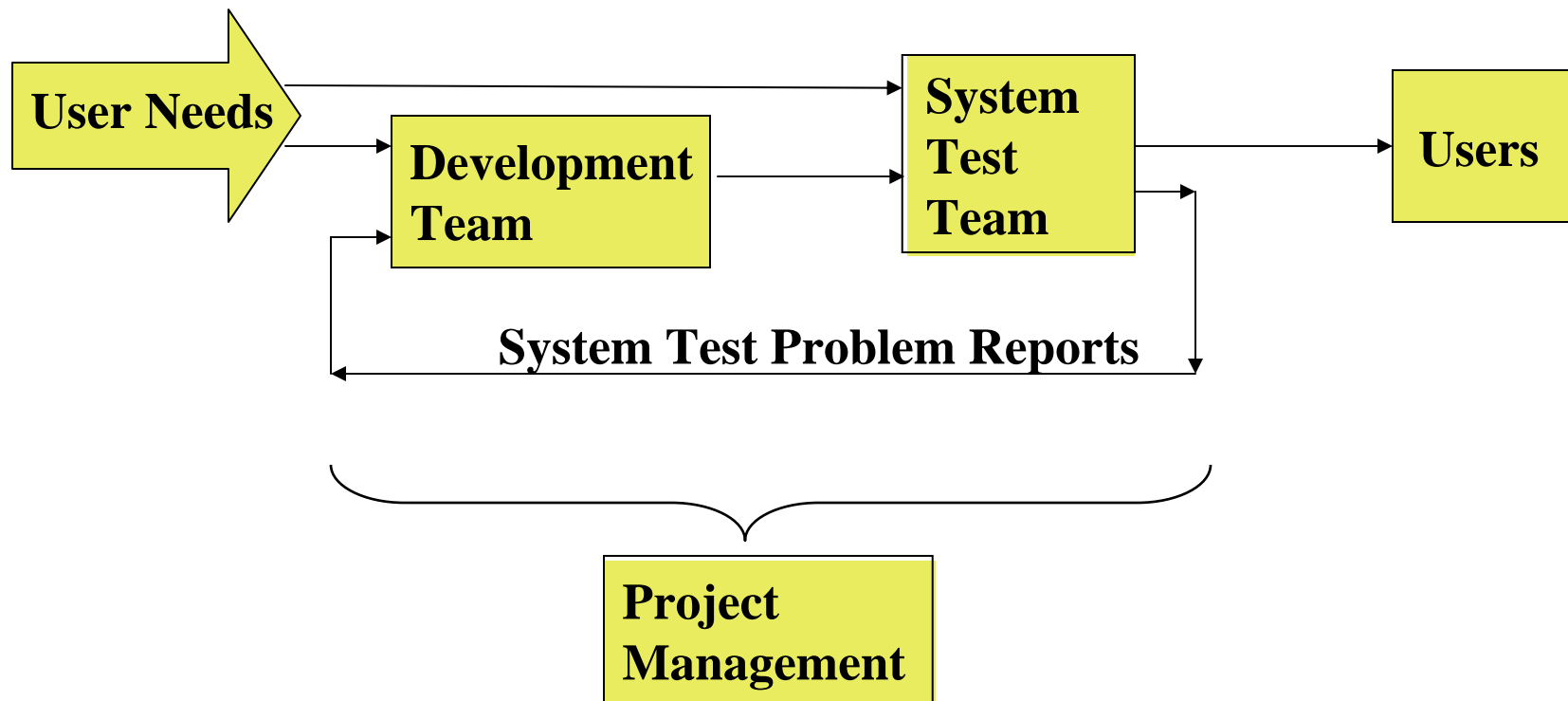
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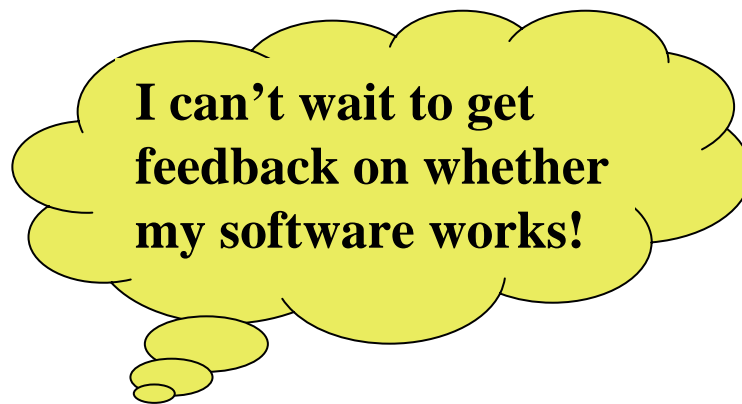
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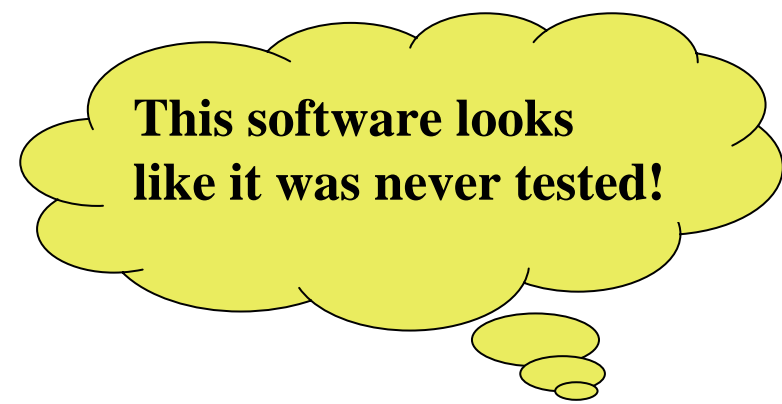
Model of System Testing



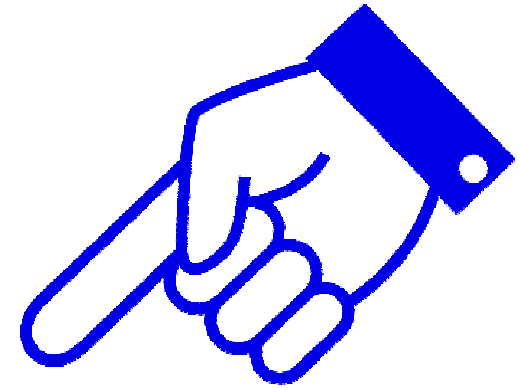
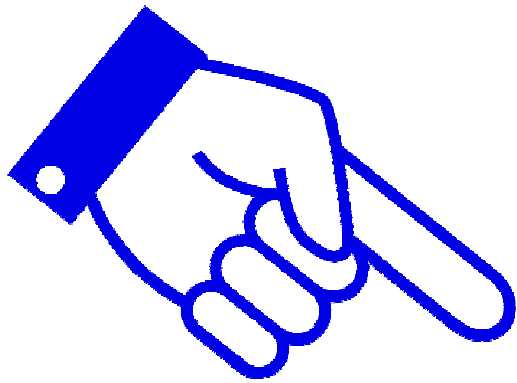
Misunderstanding Between Developers and Testers



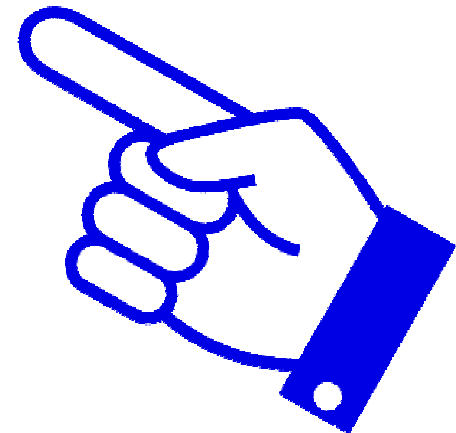
Developer



System Tester



***How could you
have missed
that problem?***



Role Awareness Seminars

Objectives:

- Build awareness of system testing issues
- Clarify expectations
- Change attitudes
- Influence behavior

Technique:

- Small groups of developers, system testers, and project managers
- 12 True/False Questions
- Open discussion of answers

Sample Questions from Role Awareness Seminar

The role of the System Test Team is:

to supplement the testing done by the developers so as to achieve *exhaustive* coverage of the system.

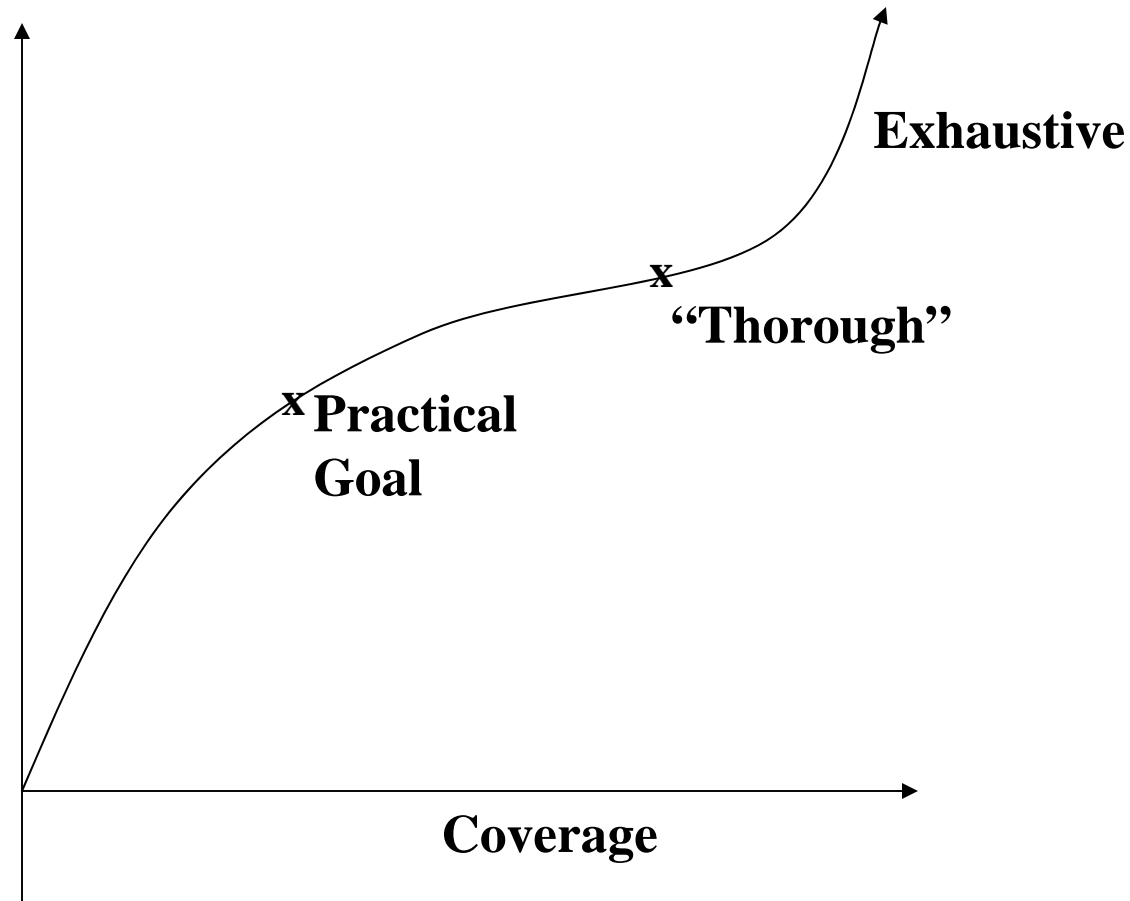
T () F ()

to test and retest the system *thoroughly* during the system test phase of the project.

T () F ()

Levels of System Testing

No. of Test Cases that would need to be executed during System Testing to achieve different levels of coverage. (Log₁₀ scale)



Selecting Test Cases for System Testing

System testers select test cases using factors not considered in white box and black box coverage methodologies

- System Testers are looking for “important” problems that must be fixed before the system is provided to users
- System Testers are looking for the types of problems that may have been missed in the testing performed by developers prior to System Testing

Practical Priorities in System Testing

Rule A: Testing the system's capabilities is more important than testing its components.

Rule B: Testing old capabilities is more important than testing new capabilities.

Rule C: Testing typical situations is more important than testing unlikely situations.

Sample Question from Role Awareness Seminar

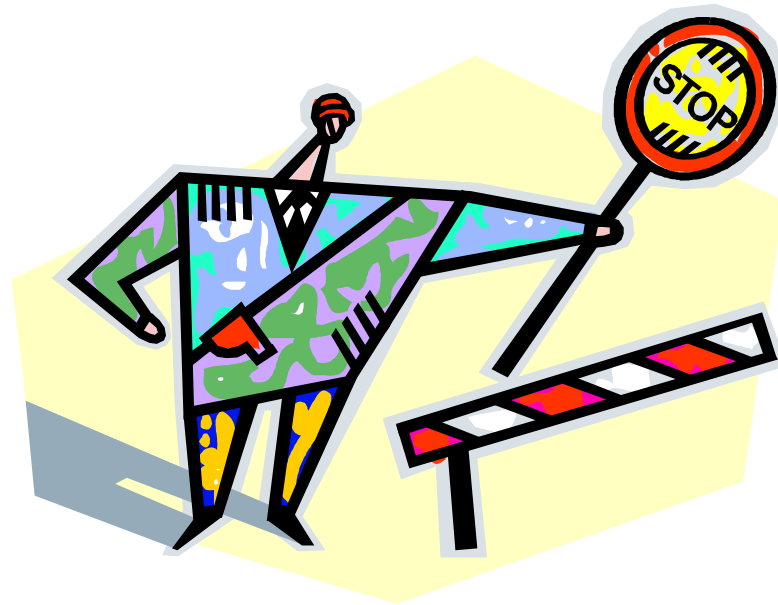
The role of the System Test Team is:

to help developers complete their testing.

T () F ()

My Entrance Criterion to System Test

Developers must believe that the software is ready for users on the day that the software enters the system test phase



Obstacles to Meeting My Entrance Criterion

- Staff?
- Schedule?
- Lack of a stable integration testing environment?
- Lack of training in testing?
- Tools?
- Holes in Requirements?

Results of Breaking Down Real and Perceived Barriers to Quality

- Better developer testing
- Higher quality software to System Test
- Higher quality software to Users
- Productivity increases
- Non-tangible benefits

Ways for a System Test Leader to Nurture Front Loaded Quality

- Conduct Role Awareness Seminars (and stimulate action on follow-up items)
- Formalize Entrance Criteria to System Test
- Infiltrate the SDLC
- Champion the need for static testing techniques throughout the SDLC
- Be the collector and interpreter of measurements
- Become a role model for accountability

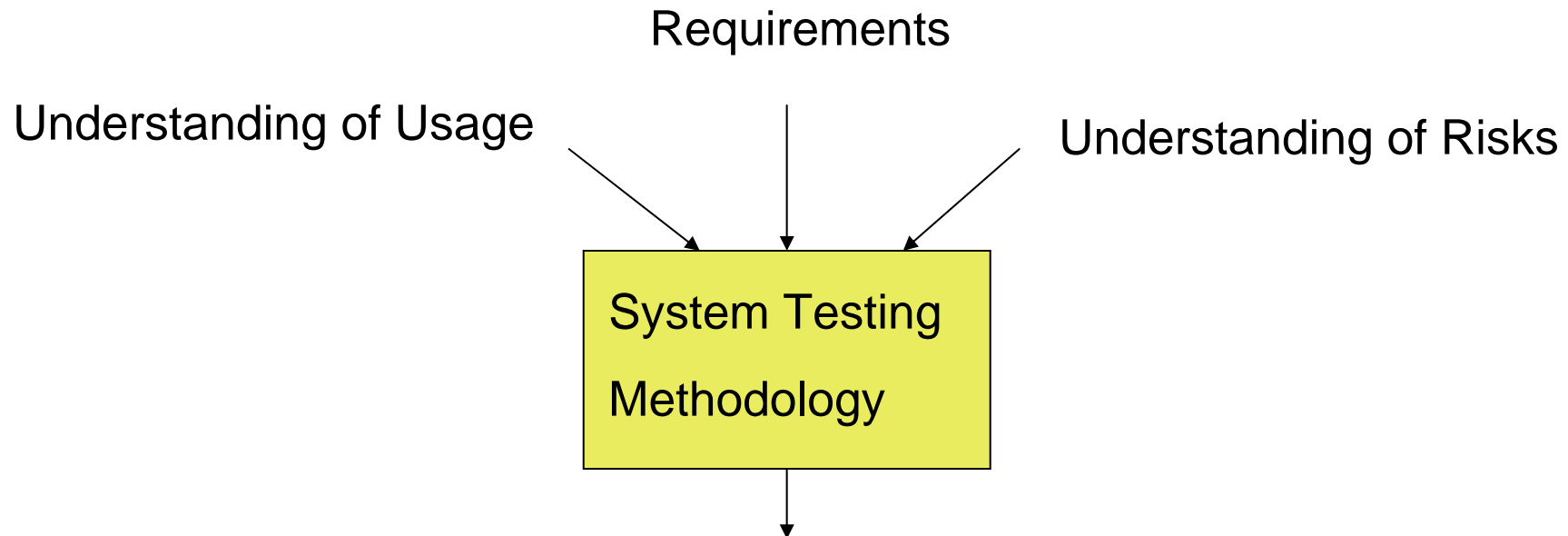
What does it mean for a System Test Team to Achieve Technical Excellence?

- Team consistently prevents important problems from reaching users
- Team members share a common approach, process, and/or methodology for addressing the technical challenges of system testing

Elements in the Science of System Testing

- What system tests need to be developed?
- How do you design system tests?
- How do you make a test repeatable?
- How do you solve cycle acceleration problems?
- How do you test transactions-in-progress?
- What should you measure?

1. What system tests need to be developed?



- Architecture of System Tests
- Coverage responsibilities of each System Test in the Architecture (Test Objective)

Understanding Usage: Typical Business Flow

Step 1 – Requisition

User enters request for
equipment, material, or
supplies

Step 2 - Order Placement

System places orders to
vendors

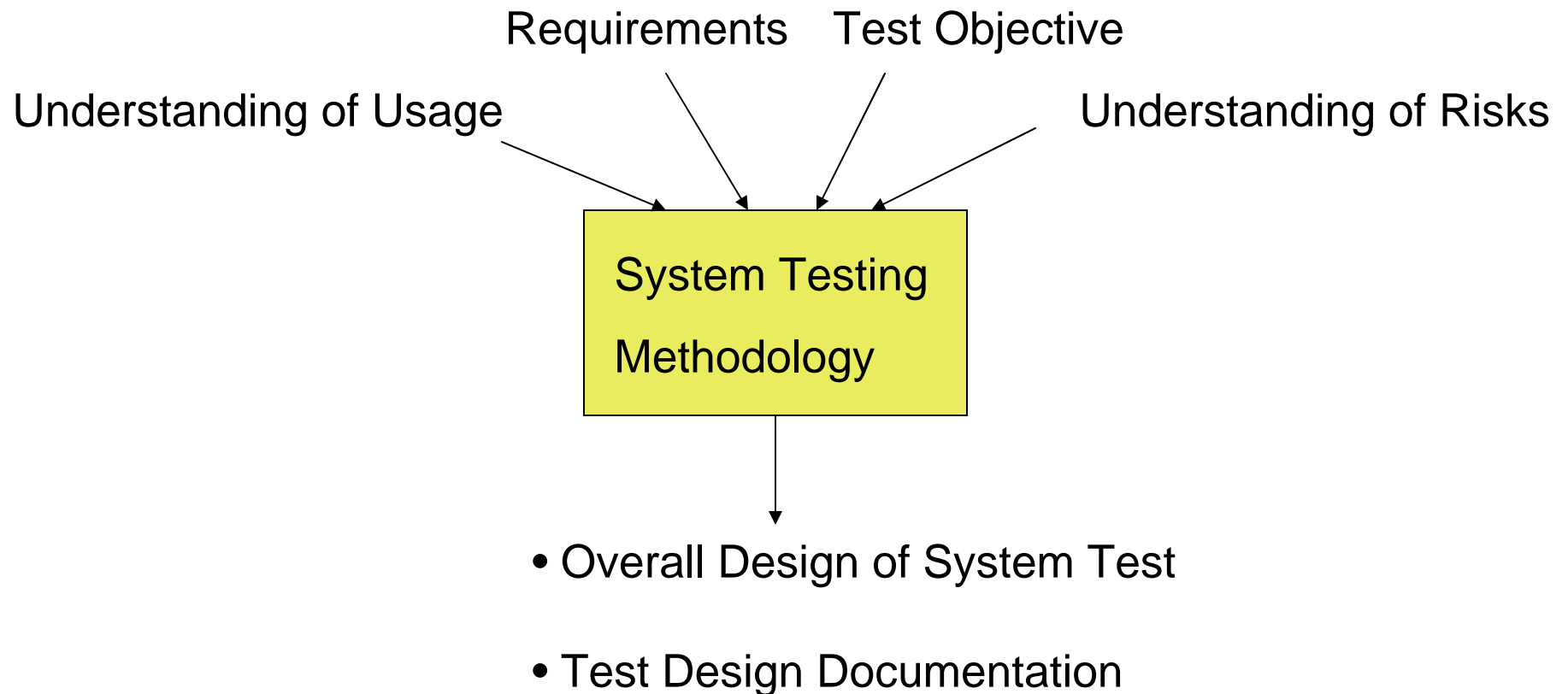
Step 3 - Receipt of Goods

System notifies user when
order is received; user
acknowledges receipt

Step 4 - Payment

System initiates payment
based on payment terms

2. How do you design System Tests?



2. How do you design System Tests? (continued)

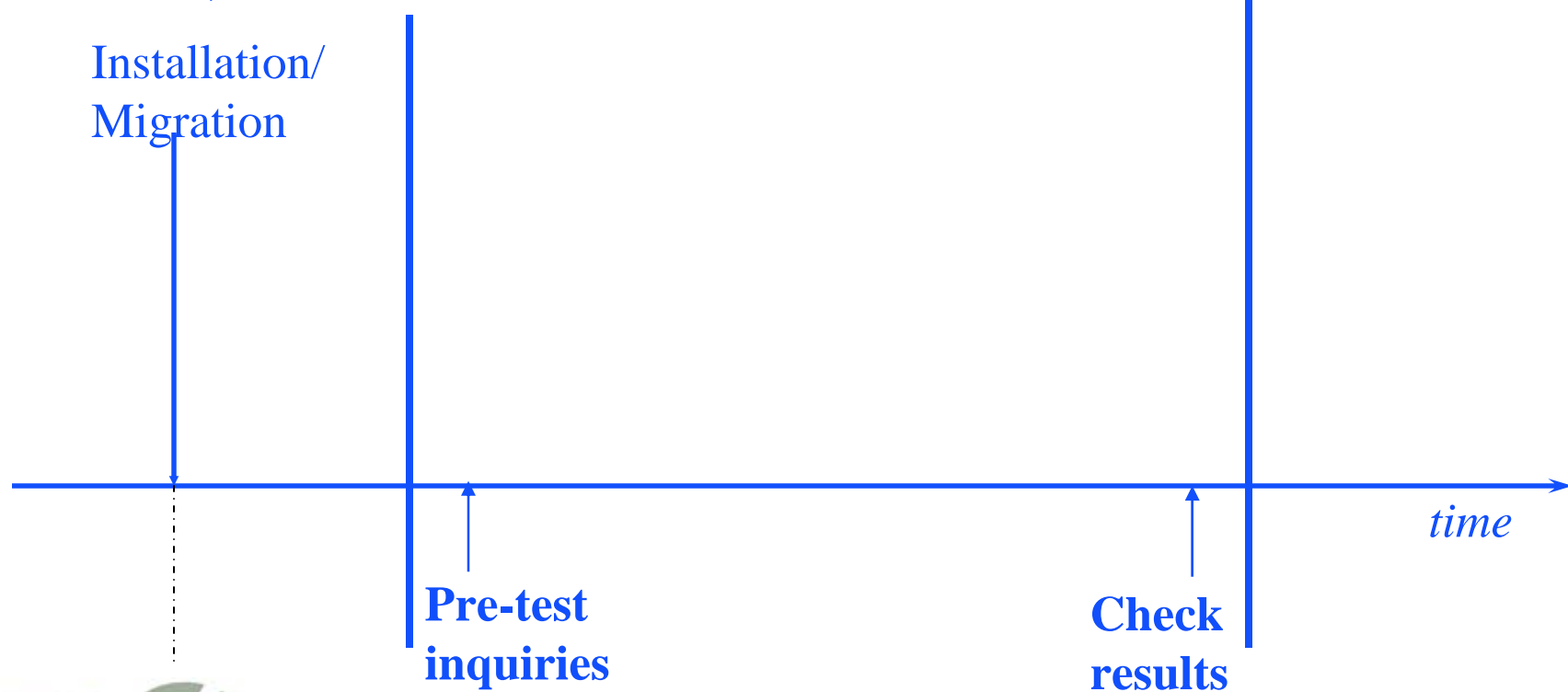
Template for Designing the Story of the Test

Once upon
a time, ...

Installation/
Migration

...the Plot ...

...and they lived
happily ever after.



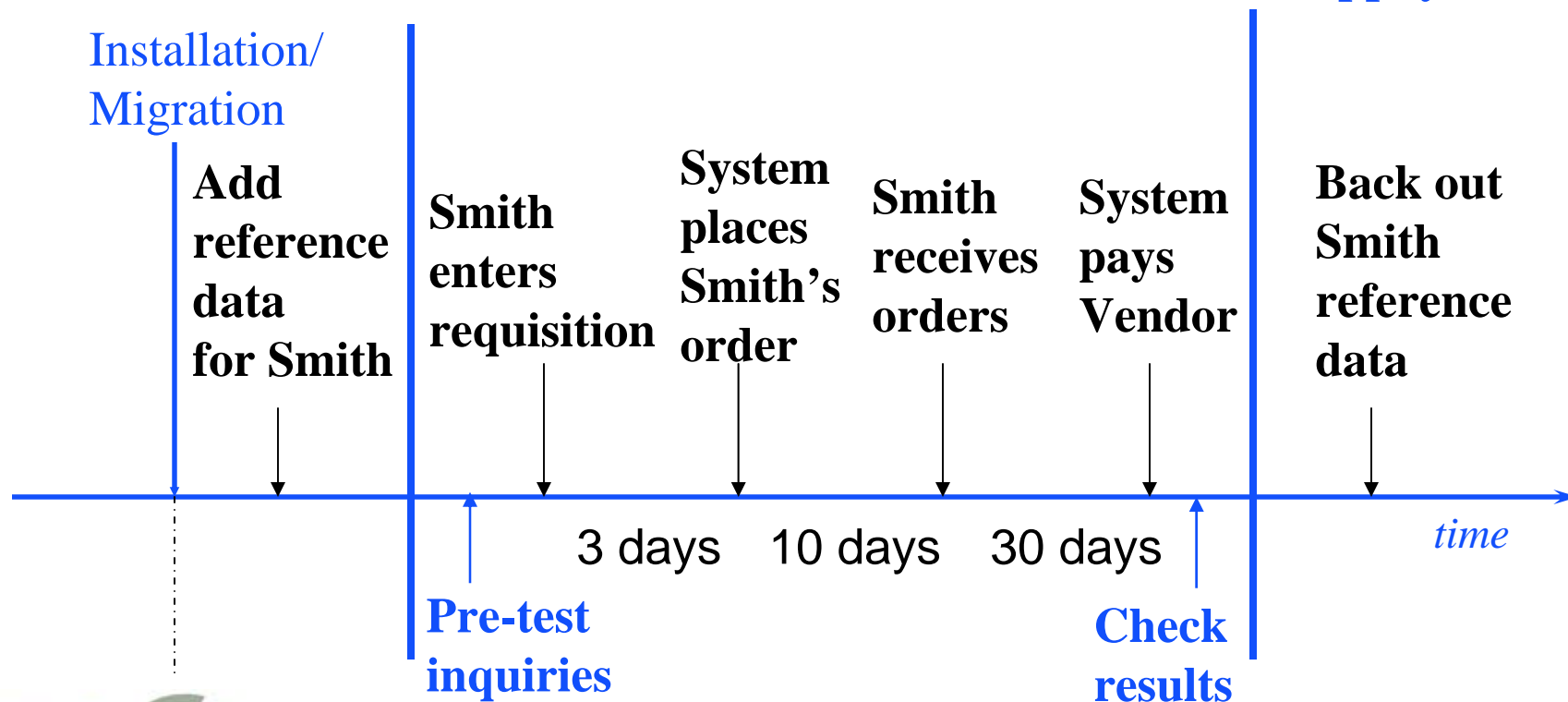
2. How do you design System Tests? (continued)

The Story of the Acquisition Test

Once upon
a time, ...

...the Plot ...

...and they lived
happily ever after.

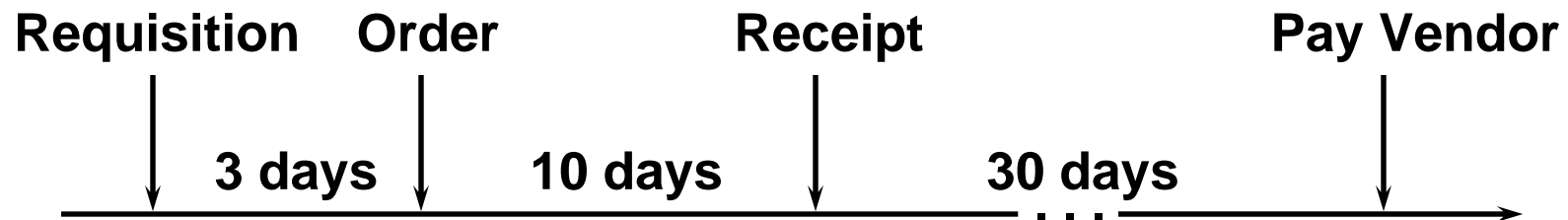


3. How do you make a test repeatable?

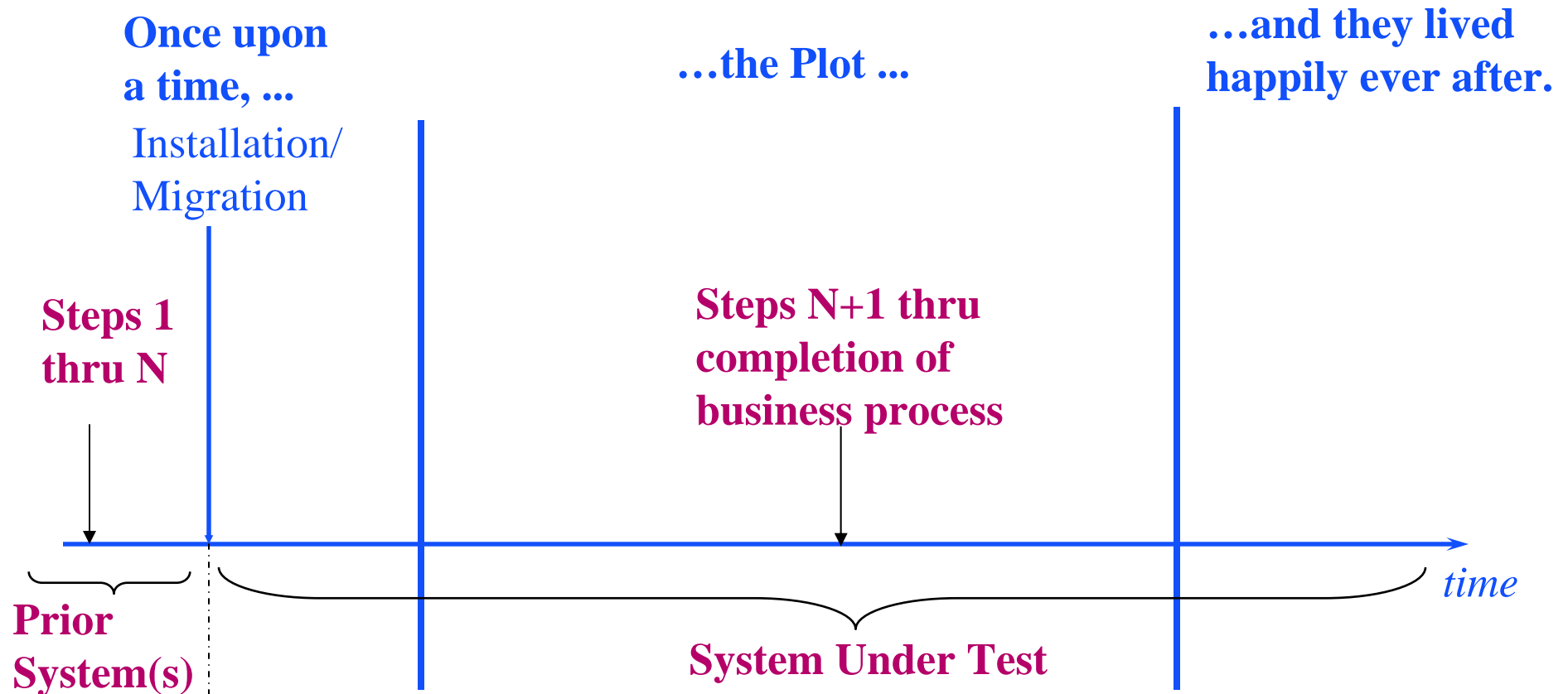
- Why is repeatability important in System Testing?
- Obstacles to repeatability
 - Remnants Problem
 - Common Sandbox Problem
 - Self-Competition Problem

4. How do you solve cycle acceleration problems?

Typical Chronology for Acquisition Process Business Flow

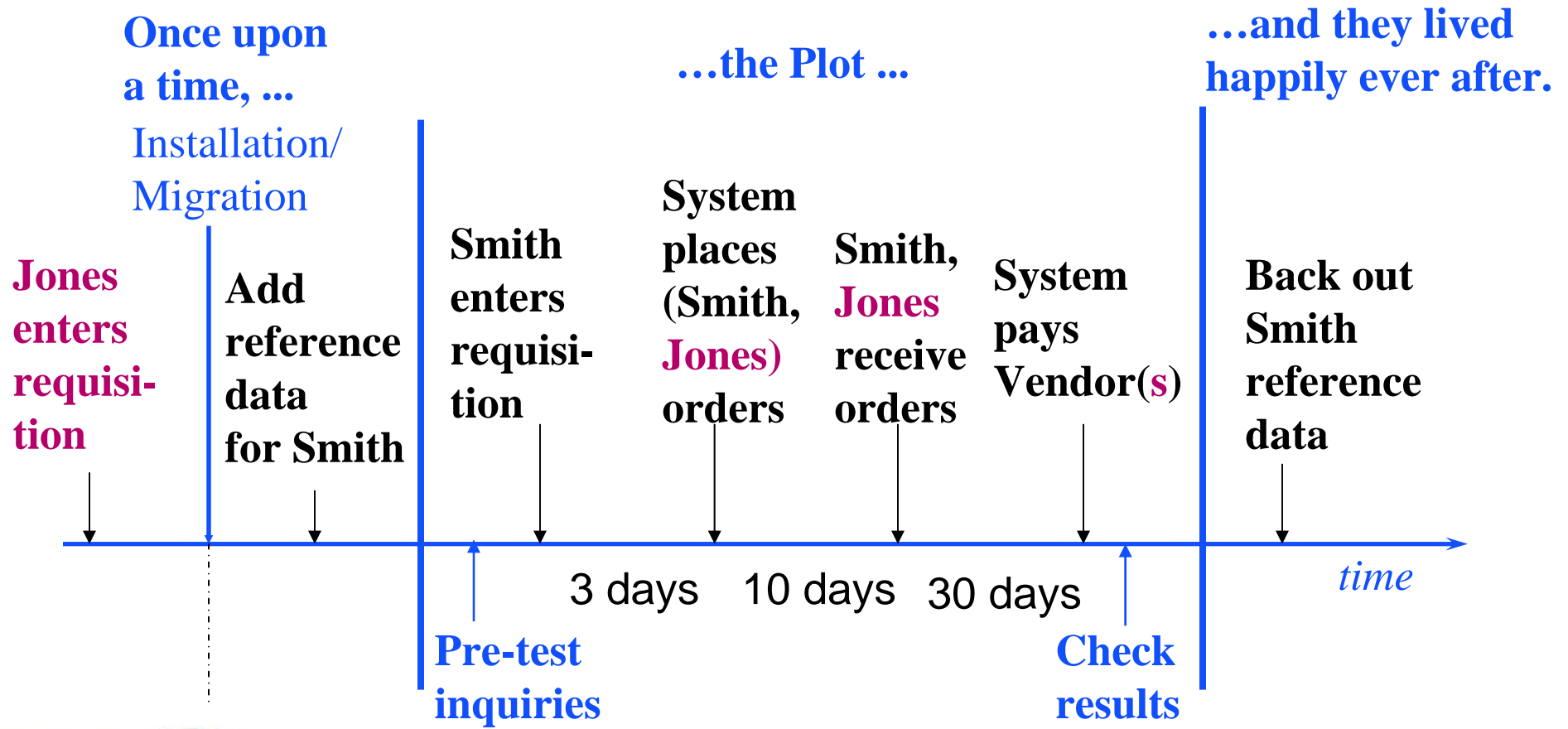


5. How do you test transactions-in-progress?



5. How do you test transactions-in-progress? (cont.)

The Story of the Acquisition Test



6. What should you measure?

$$\text{System Test Team Effectiveness} = \frac{\text{Defects Avoided} \times 100}{\text{Defects Avoided} + \text{Defects Missed}}$$

Finding Success in System Testing

Use this formula:

$$\begin{aligned} \text{System Testing Success} = & \\ & \text{(Technical Excellence)} \\ & + \\ & \text{(Nurturing Front-Loaded Quality)} \end{aligned}$$

where:

$$\begin{aligned} & \text{(Technical Excellence)} > 0 \\ & \text{(Nurturing Front-Loaded Quality)} > 0 \end{aligned}$$