

Build the Right Product Right

Transitioning Test from Critiquing to Defining

Gerard Meszaros

Independent Consultant

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These slides: <http://StarCanada2015.gerardm.com>

My Background

•Software developer
•Development manager
•Project Manager
•Software architect

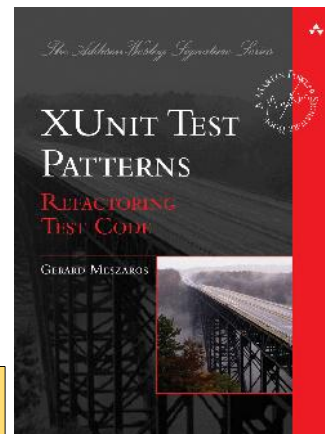
*Embedded
Telecom*

•OOA/OOD Mentor
•Requirements (Use Case) Mentor
•XP/TDD Mentor

I.T.

•Agile PM Mentor
•Test Automation Consultant & Trainer
•Lean/Agile Coach/Consultant

Product & I.T.



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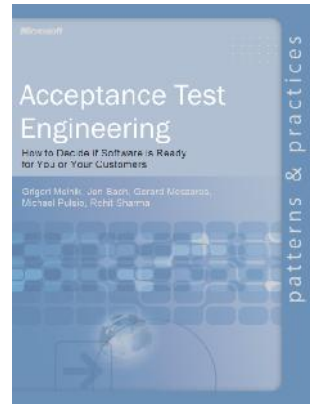
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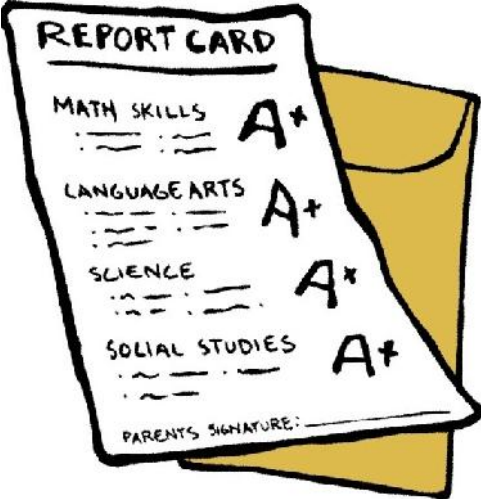
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I'm From Development and I'm Here to Help



Johnny's Report Card



<http://fabulouslyfrugal.com/report-card-freebies-for-good-grades/>

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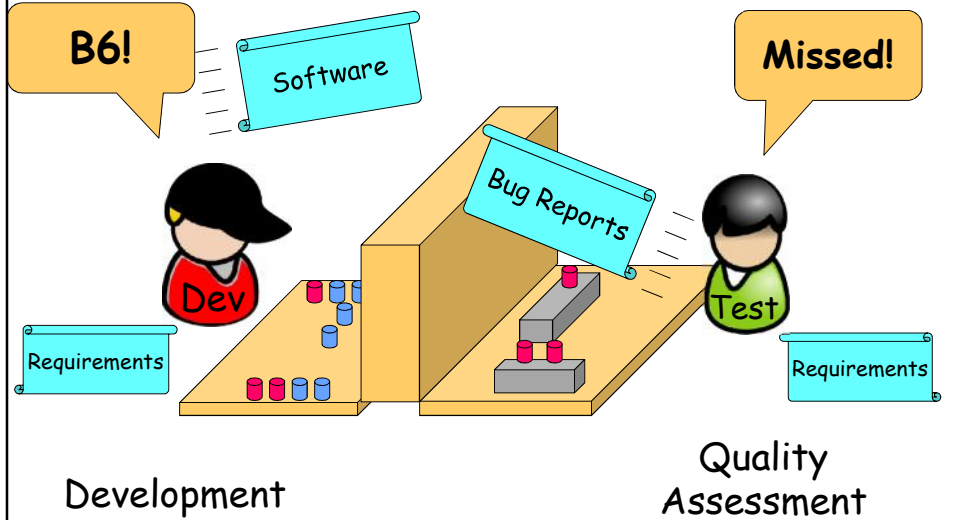
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QA as Quality Assessment



Test & Fix “Battleship”



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The Agile Test Problem

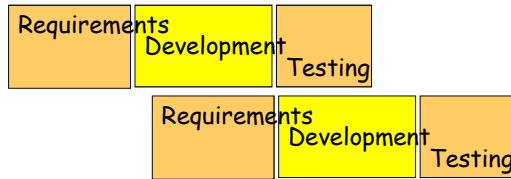


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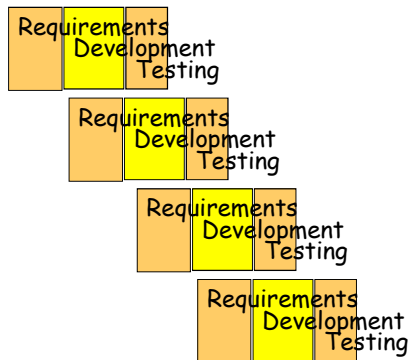
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The Agile Test Problem



The Agile Test Problem



Automated Testing is Essential



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<http://www.cordistech.com/>

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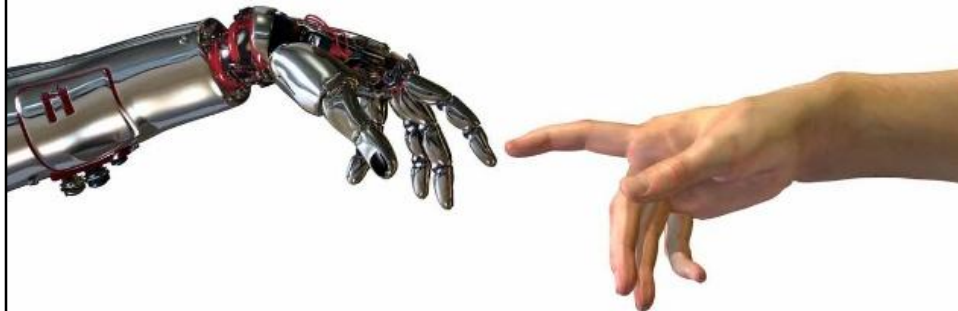
<http://www.etfile.com/blog/to-automate-or-not-to-automate-that-is-the-question/>

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ROBOTS **empowering** HUMANS



<http://www.slideshare.net/b2bSEO/robots-replacing-humans-automation>

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Value of Automated Tests

- Tests as Documentation**
- Faster regression testing**
- Faster feedback on impact of changes**
- Better coverage of data combinations**
- Test with data without seeing that confidential data**
- Provides more time for exploratory testing**
- Can be done off hours; reduces delay/resources**
- Writing tests helps us understand code better**
- Know when problem was introduced**
- Fast sanity checking**
- Performance or load testing**
- Setting up complex scenarios for manual/exploratory testing**
- Unit/module tests improve modularity design and API's**
- Help Business understand what we/they are asking for**

Courtesy of participants of Tuesday's tutorial

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Automated Tests are Just Code That Tests Other Code



Who Tests This Code? Who Should Write This Code?

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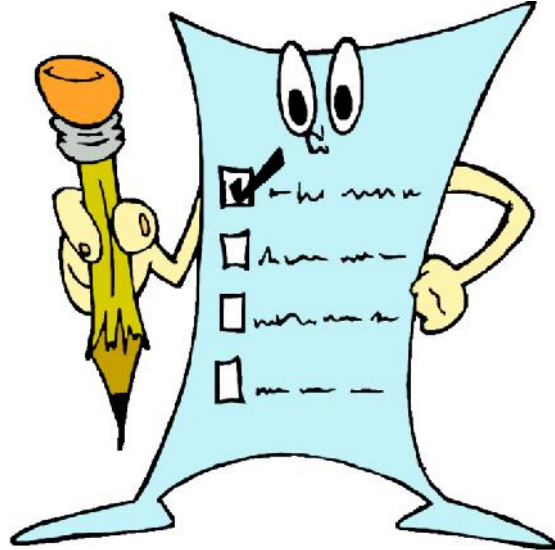


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Audience Survey (Part 2)



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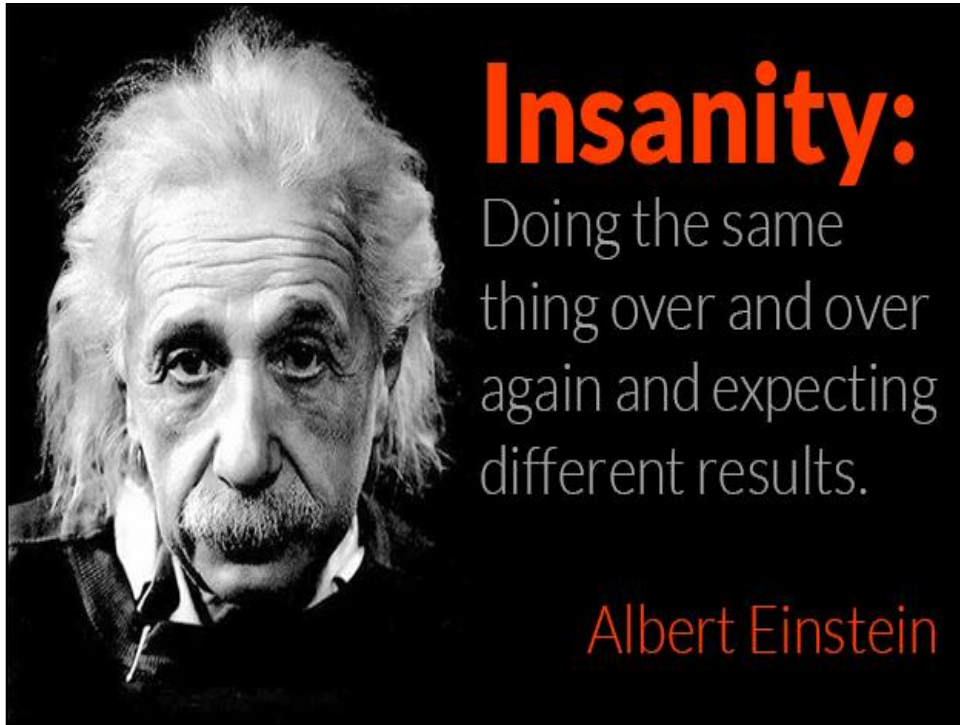
Audience Survey (Part 3)



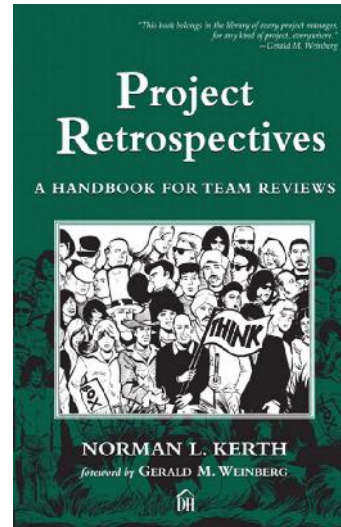
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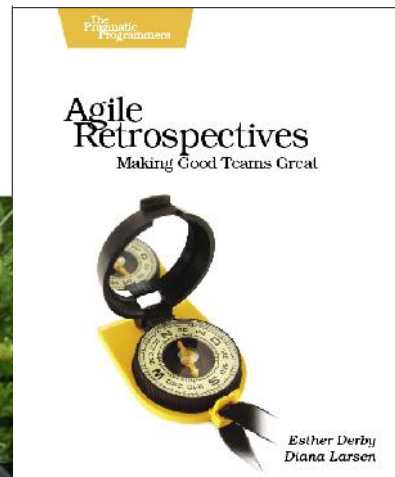
Project Retrospectives



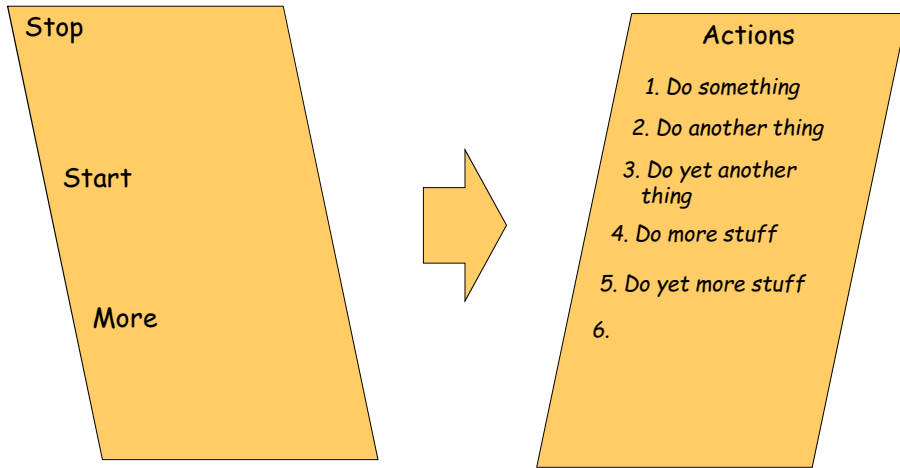
The Prime Directive

Regardless of what we discover, we understand and truly believe that everyone did the best job they could, given what they knew at the time, their skills and abilities, the resources available, and the situation at hand

Agile Retrospectives / Sprint Reviews



Ineffective Retrospectives

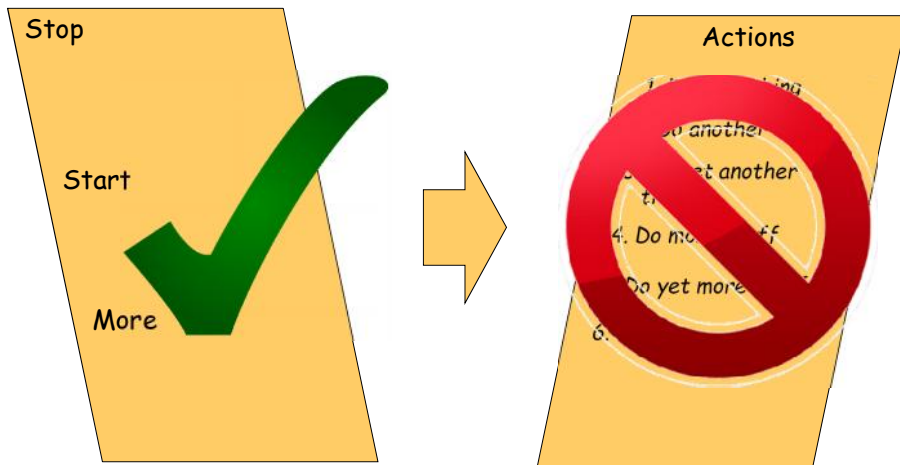


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Ineffective Retrospectives



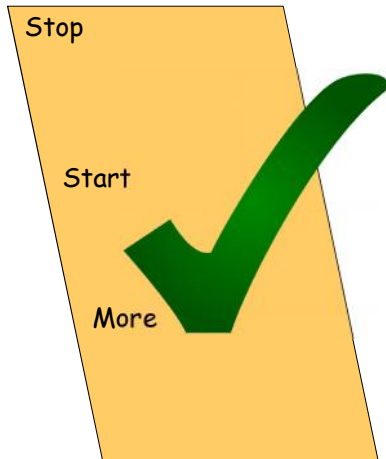
How Do We Improve Retrospectives?

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One Experiment per Iteration



1. Hypothesis
2. Experiment
3. Analyse
4. Communicate

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5 Why's



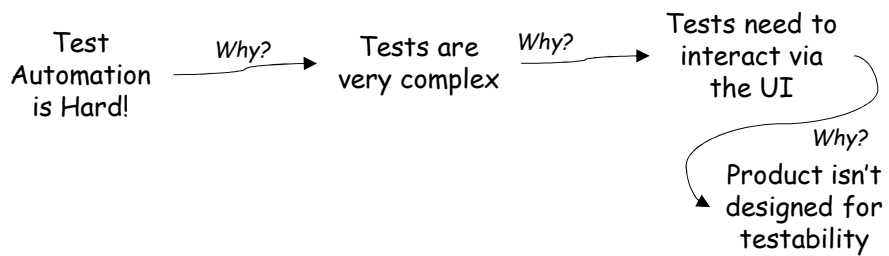
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5 Why's of Test Automation Being Hard

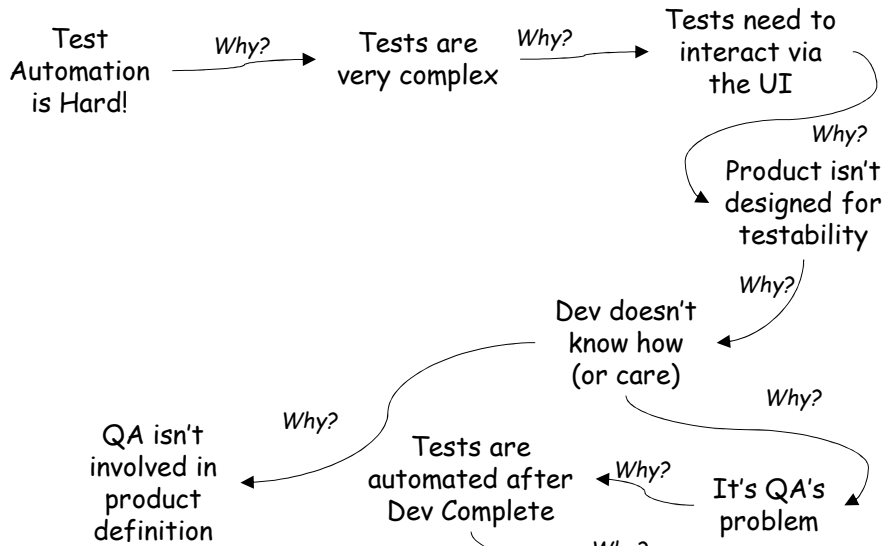


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5 Why's of Test Automation Being Hard

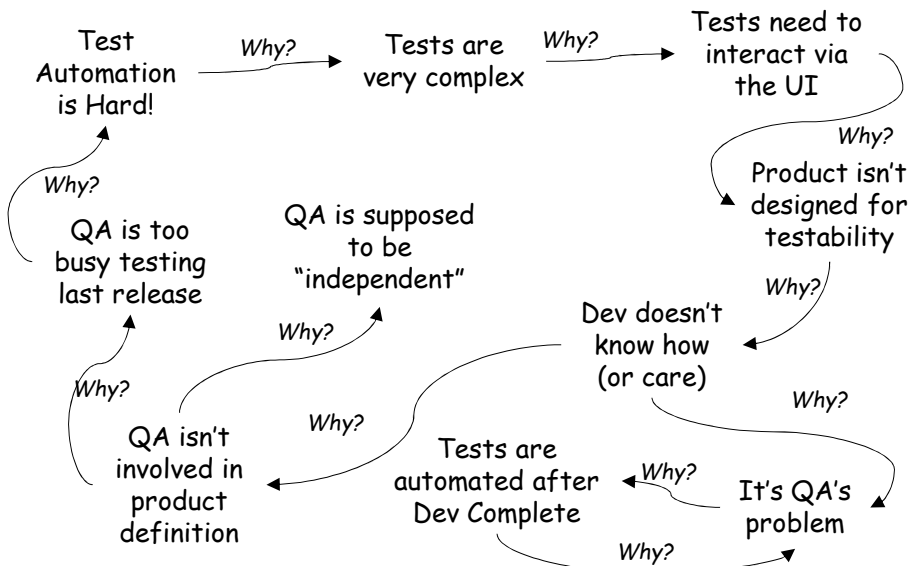


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5 Why's of Test Automation Being Hard

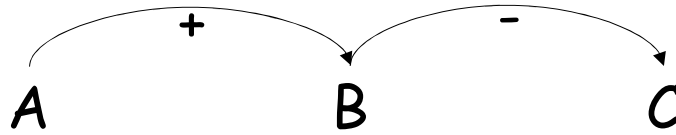


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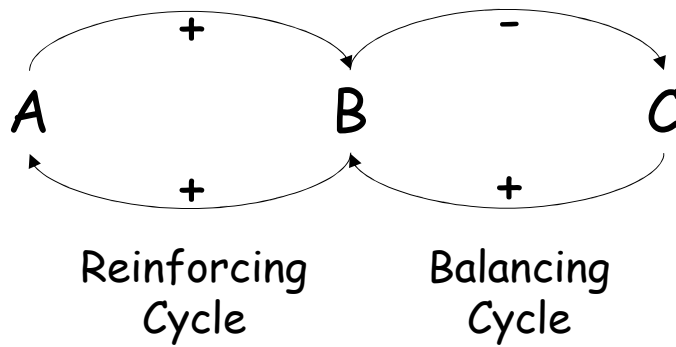
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Systems Thinking



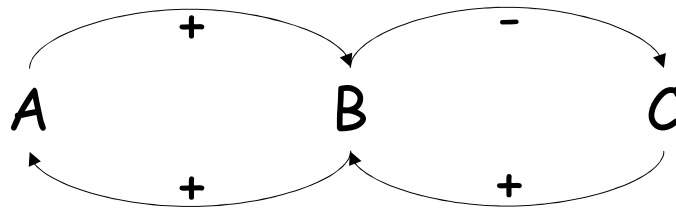
Notation:
+ Increasing
- Reducing

Systems Thinking



Notation:
+ Increasing
- Reducing

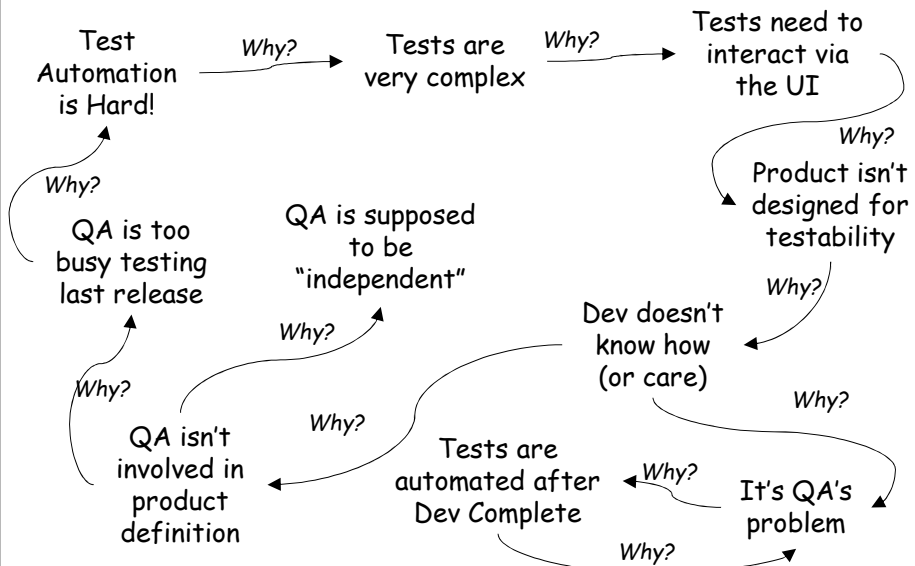
Systems Thinking



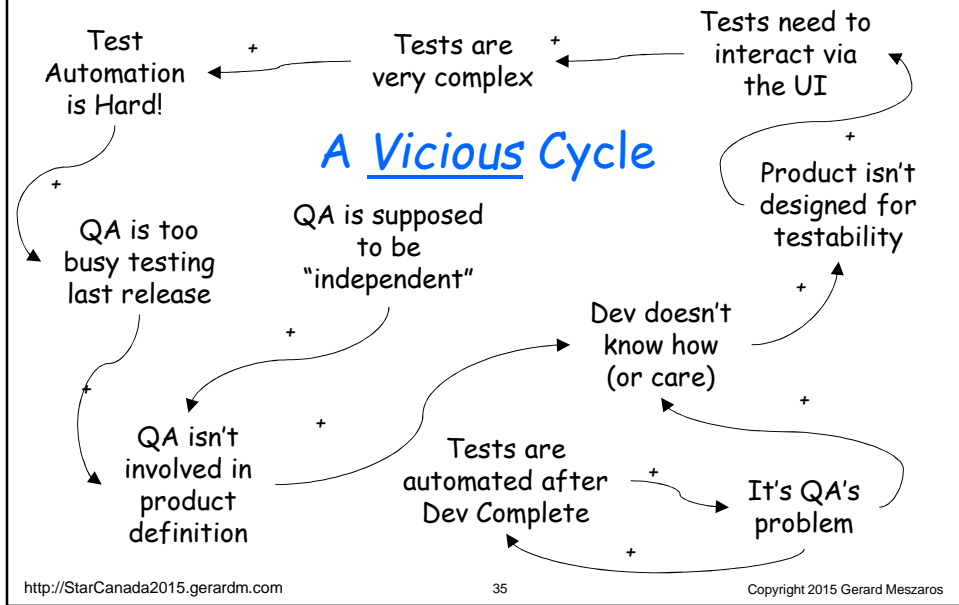
Vicious or
Virtuous
Cycle

Notation:
+ Increasing
- Reducing

5 Why's of Test Automation Being Hard

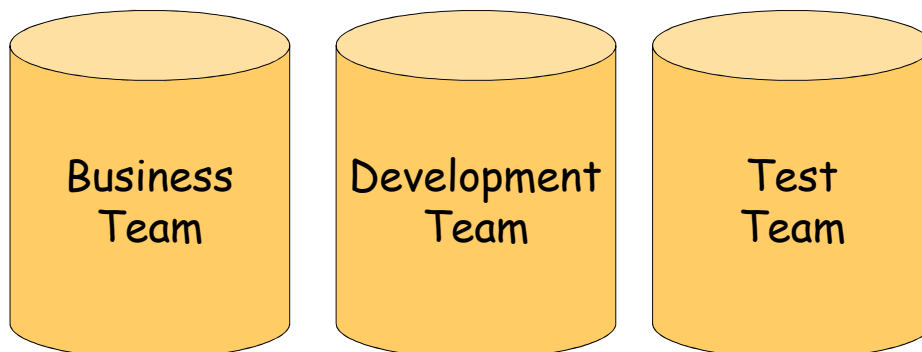


Test Automation – Systems Thinking Diagram

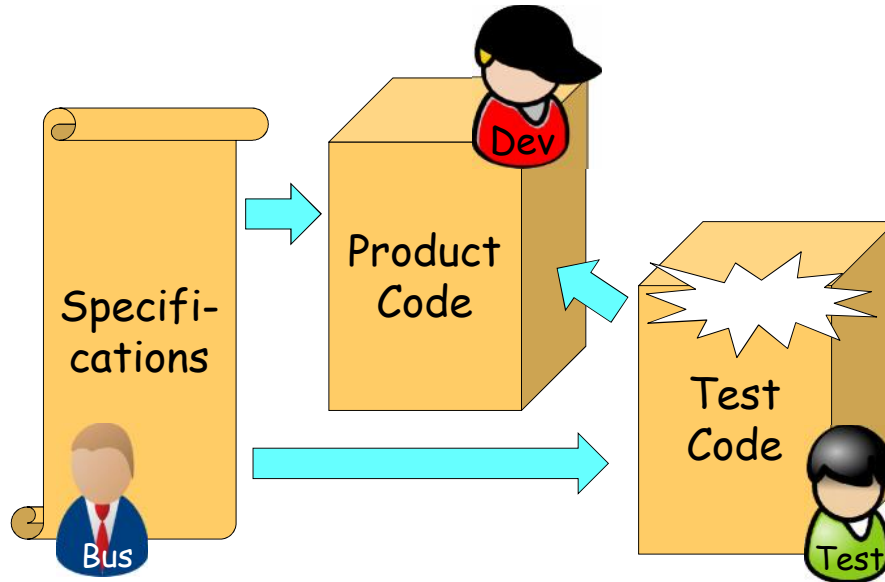


Conway's Law

The Architecture of System will resemble the Organization that Built it.



Resulting Architecture



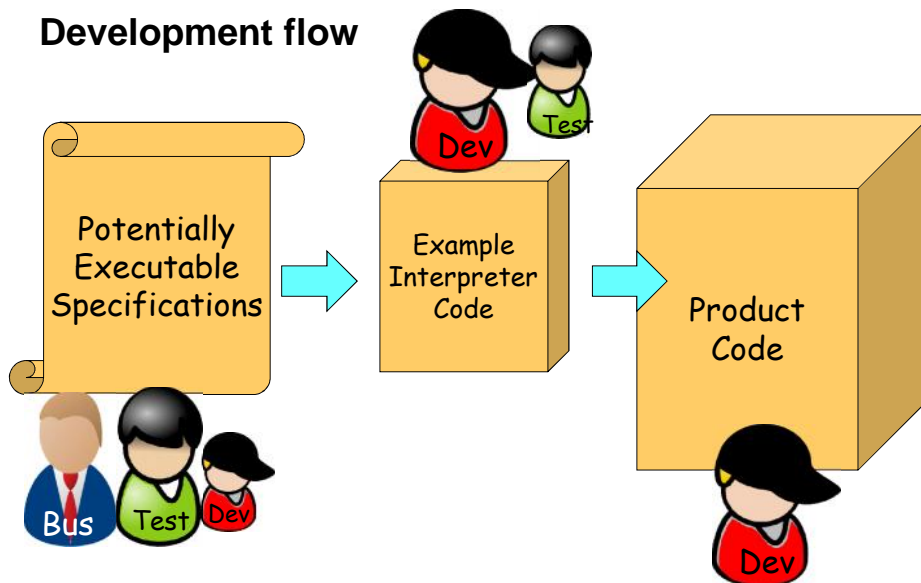
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Example-Driven Development

Development flow



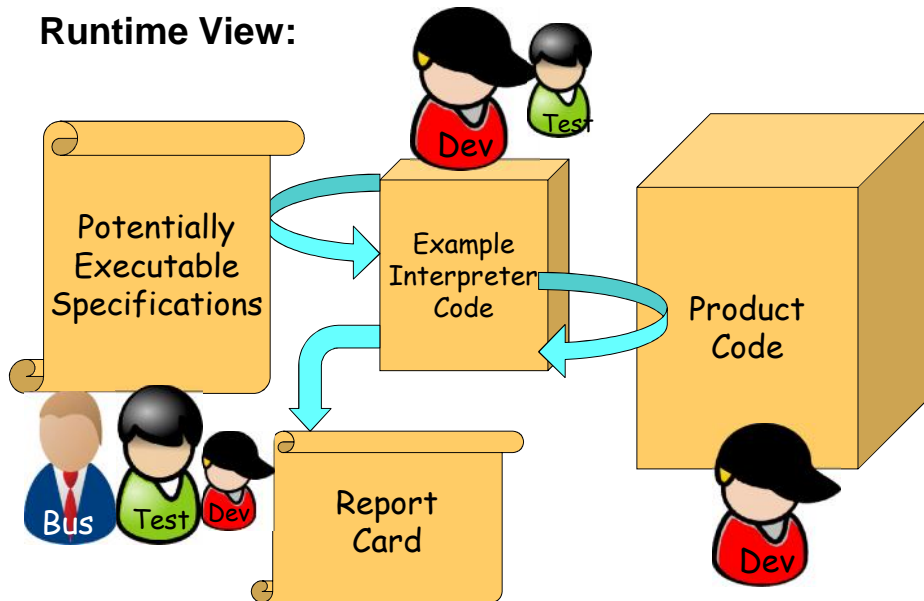
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Example-Driven Development

Runtime View:



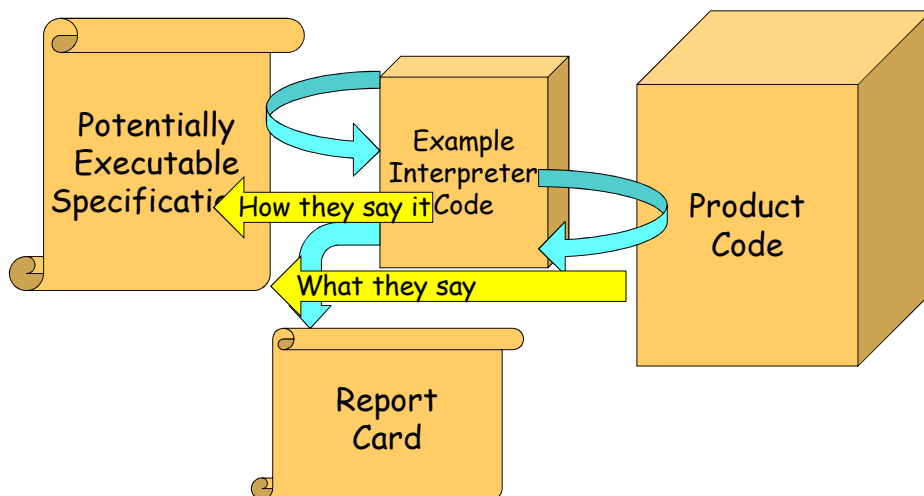
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Example-Driven Development

Feedback Loops:



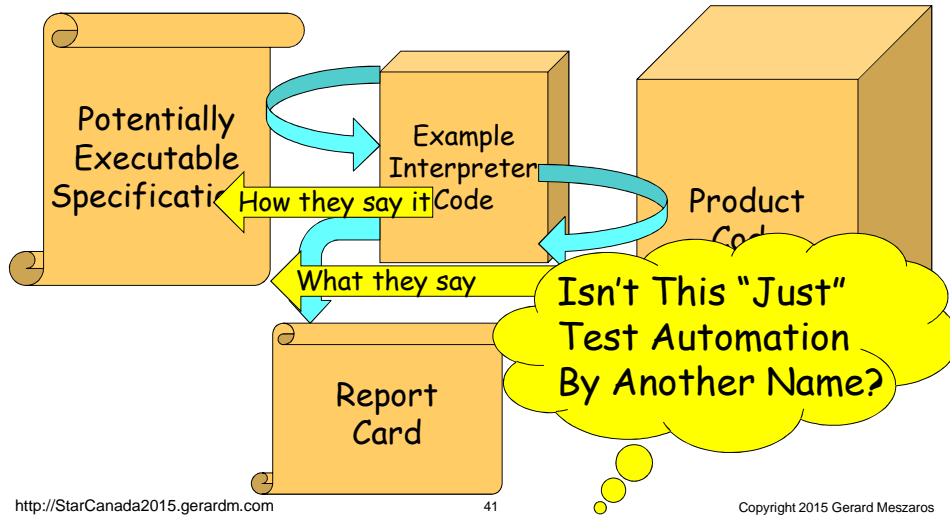
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Example-Driven Development

Feedback Loops:



Tests vs. Checks vs. Examples?

ref: <http://www.satisfice.com/blog/archives/856>



Preparing Good Examples

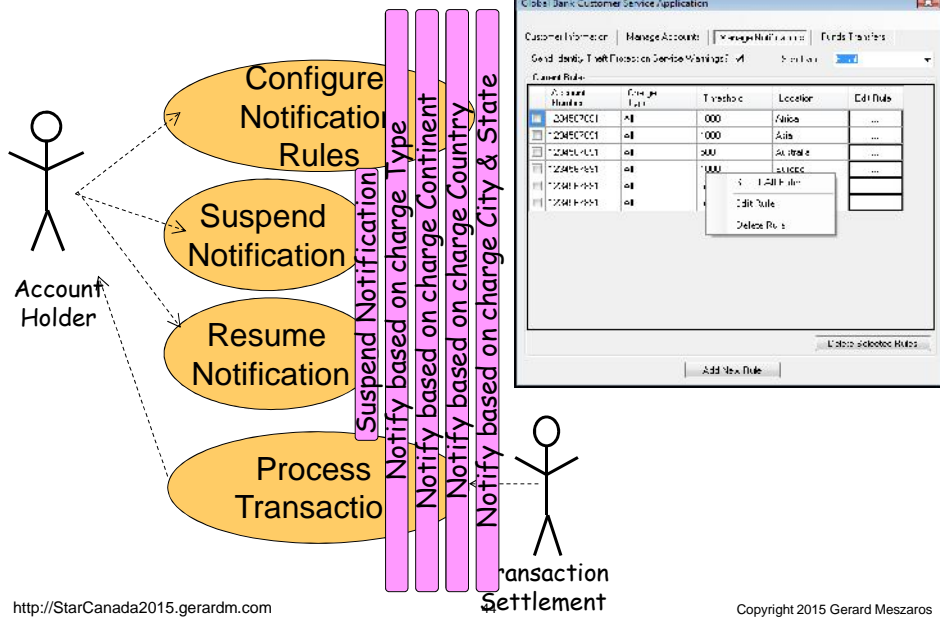


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Example: Notifying of Bank Transactions



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Checking Notifications

- Open MegaBank app
- Log in as “BobMa” with password *****
- Click on “Manage Notifications” tab
- Click on “Add New Rule” button
- Select account “10035692877”
- Type “Default Rule” into field “rule name”
- Type “1000” into field “threshold amount”
- Click on “all transaction types” radio button
- Click on “all locations” radio button
- Click on “save changes” button
- ...
- ...

Another attempt:

Checking Notifications – 1/2

Customer bobma logs in

System lists all available accounts for the authorized customer

account	type	notifications
10035692877	chequing	disabled
10035692890	savings	disabled
20010928892	credit line	disabled

Given:
User and Accounts

When:
Notification Rule is Configured

Customer sets notification threshold for all transactions from all locations to \$10,000.00 on account 10035692877 via email to bobma@live.com

ensure No system messages

ensure System log contains "Customer bobma set notification threshold for all transactions from all locations to \$10,000 on account 10035692877"

System lists all available accounts for the authorized customer

account	type	notifications
10035692877	chequing	enabled
10035692890	savings	disabled
20010928892	credit line	disabled

Then:
Notification Rule is Active

Notification settings for account 10035692877

transaction type	location where initiated	threshold amount	via	address
all	all	\$10,000.00	email	bobma@live.com

Another attempt: **Checking Notifications – 2/2**

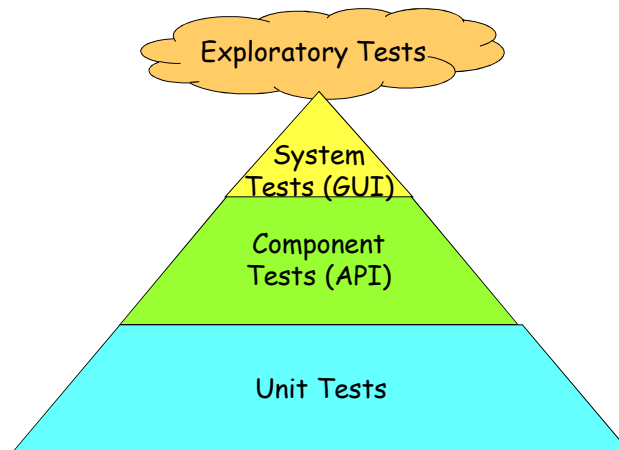
Time now is	9:30AM, 03/18/2008			
Bank processes	debit	to	10035692877	in the amount of \$15,000.00
Bank processes	debit	to	10035692877	in the amount of \$9,000.00
Bank processes	debit	to	10035692877	in the amount of \$11,000.00
Bank processes	debit	to	20010928892	in the amount of \$12,000.00
Bank processes	credit	to	10035692877	in the amount of \$13,000.00
Bank processes	credit	to	10035692877	in the amount of \$9,999.99
Bank processes	charge	to	10035692877	in the amount of \$9,999.99
Bank processes	charge	to	10035692877	in the amount of \$11,000.00

When: The Transactions to be processed

Then: Expected Notifications

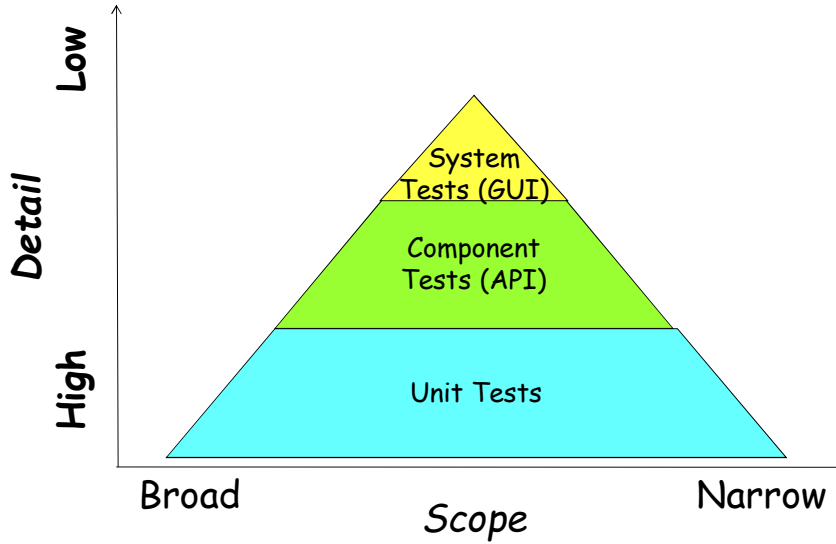
New notifications sent to customer		bobma				
type	account	timestamp	amount	via	address	
debit	10035692877	9:30AM, 03/18/2012	\$15,000.00	email	bobma@live.com	
debit	10035692877	9:30AM, 03/18/2012	\$11,000.00	email	bobma@live.com	
credit	10035692877	9:30AM, 03/18/2012	\$13,000.00	email	bobma@live.com	
charge	10035692877	9:30AM, 03/18/2012	\$11,000.00	email	bobma@live.com	

Test Automation Pyramid



Pyramid originally proposed by Mike Cohn

Behavior Specification at Right Level

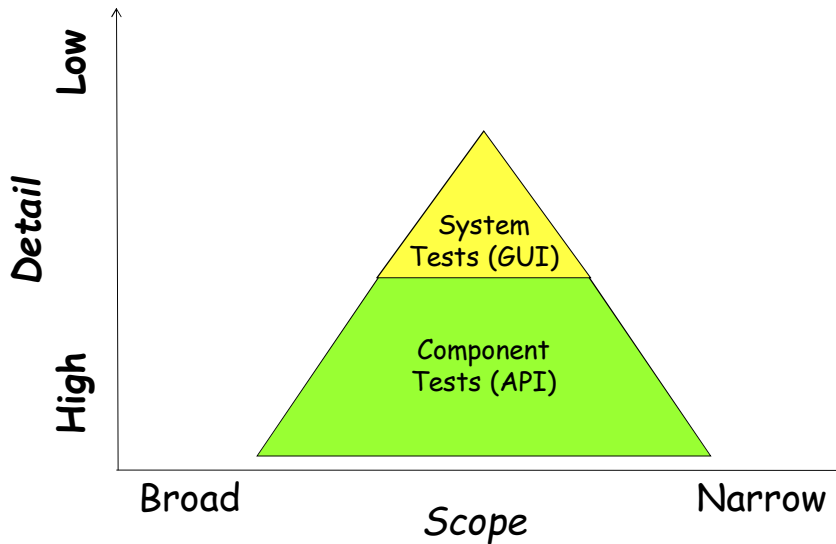


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Behavior Specification at Right Level

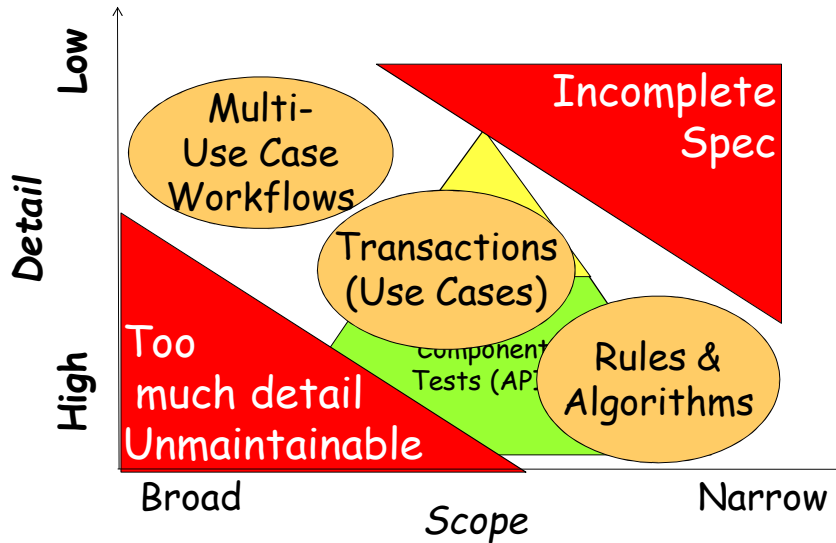


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Behavior Specification at Right Level

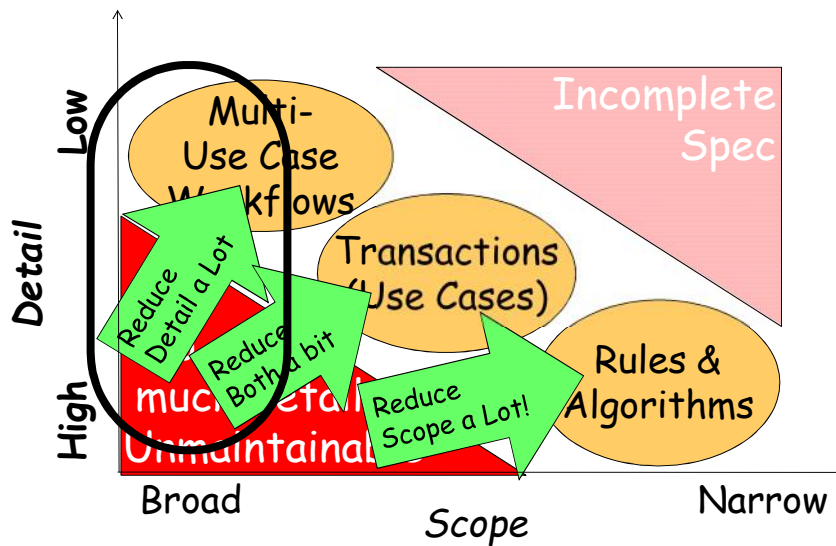


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Changing Level of Abstraction/Detail



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Refactoring Workflow Example

Customer bobma logs in

System lists all available accounts for the authorized customer

account	type	notifications
10035692877	chequing	disabled
10035692890	savings	disabled
20010928892	credit line	disabled

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System lists all available accounts for the authorized customer

account	type	notifications
10035692877	chequing	enabled
10035692890	savings	disabled
20010928892	credit line	disabled

Notification settings for account 10035692877

transaction type	location where initiated	threshold amount	via	address
all	all	\$10,000.00	email	bobma@live.com

Given: User and Accounts

When: Notification Rule is Configured

Then: Notification Rule is Active

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Refactoring Workflow Example

Customer sets notification threshold for all transactions from all locations to \$10,000.00 on account 10035692877 via email to bobma@live.com

"If it isn't essential to conveying the essence of the behavior, it is essential to not include it."

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Refactoring Workflow Example

Time now is	9:30AM, 03/18/2008			
Bank processes	debit	to	10035692877	in the amount of \$15,000.00
Bank processes	debit	to	10035692877	in the amount of \$9,000.00
Bank processes	debit	to	10035692877	in the amount of \$11,000.00
Bank processes	debit	to	20010928892	in the amount of \$12,000.00
Bank processes	credit	to	10035692877	in the amount of \$13,000.00
Bank processes	credit	to	10035692877	in the amount of \$9,999.99
Bank processes	charge	to	10035692877	in the amount of \$9,999.99
Bank processes	charge	to	10035692877	in the amount of \$11,000.00

When: The Transactions to be processed

Then: Expected Notifications

New notifications sent to customer		bobma			
type	account	timestamp	amount	via	address
debit	10035692877	9:30AM, 03/18/2012	\$15,000.00	email	bobma@live.com
debit	10035692877	9:30AM, 03/18/2012	\$11,000.00	email	bobma@live.com
credit	10035692877	9:30AM, 03/18/2012	\$13,000.00	email	bobma@live.com
charge	10035692877	9:30AM, 03/18/2012	\$11,000.00	email	bobma@live.com

Refactoring Workflow Example

Time now is	9:30AM, 03/18/2008			
Bank processes	debit	to	10035692877	in the amount of \$15,000.00
Bank processes	debit	to	10035692877	in the amount of \$9,000.00
Bank processes	debit	to	10035692877	in the amount of \$11,000.00

New notifications sent to customer		bobma			
type	account	timestamp	amount	via	address
debit	10035692877	9:30AM, 03/18/2012	\$15,000.00	email	bobma@live.com
debit	10035692877	9:30AM, 03/18/2012	\$11,000.00	email	bobma@live.com

Refactoring Workflow Example

Customer sets notification threshold for ~~all~~ transactions from ~~all~~ transactions to \$10,000.00 on account 10035692877 ~~via email to bobma~~

Time now is	9:30AM, 03/18/2008				
Bank processes	debit	to	10035692877	in the amount of	\$15,000.00
Bank processes	debit	to	10035692877	in the amount of	\$9,000.00
Bank processes	debit	to	10035692877	in the amount of	\$11,000.00

New notifications sent to customer		bobma				
type	account	timestamp	amount	via	address	
debit	10035692877	9:30AM, 03/18/2012	\$15,000.00	email	bobma@live.com	
debit	10035692877	9:30AM, 03/18/2012	\$11,000.00	email	bobma@live.com	

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Refactoring Workflow Example

Given:
User &
Thresholds

Time now is	9:00AM, 03/18/2008				
Customer	bobma	sets notification threshold to	\$10,000.00	for all transactions	to 10035692877

Time now is	9:30AM, 03/18/2008				
Bank processes	debit	to	10035692877	in the amount of	\$15,000.00
Bank processes	debit	to	10035692877	in the amount of	\$9,000.00
Bank processes	debit	to	10035692877	in the amount of	\$11,000.00

When:
Transactions
Are Processed

New notifications sent to customer		bobma			
type	account	timestamp	amount		
debit	10035692877	9:30AM, 03/18/2008	\$15,000.00		
debit	10035692877	9:30AM, 03/18/2008	\$11,000.00		

Then:
We Expect
Notifications

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Refactoring Workflow Example

Given:
User &
Thresholds

Time now is	9:00AM, 03/18/2008		
Customer	bobma	sets notification threshold to	\$10,000.00 for all transactions to 10035692877
Time now is	9:30AM, 03/18/2008		
Bank processes	debit	to 10035692877	in the amount of \$15,000.00
Bank processes	debit	to 10035692877	in the amount of \$9,000.00
Bank processes	credit	to 10035692877	in the amount of \$11,000.00
Bank processes	debit	to 9991113333	in the amount of \$11,000.00
New notifications sent to customer	bobma		
type	account	timestamp	amount
debit	10035692877	9:30AM, 03/18/2008	\$15,000.00
credit	10035692877	9:30AM, 03/18/2008	\$11,000.00

When:
Transactions
Are Processed

Then:
We Expect
Notifications

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Refactoring Workflow Example

Given:
User &
Thresholds

Time now is	9:00AM, 03/18/2008		
Customer	bobma	sets notification threshold to	\$10,000.00 for all transactions to 10035692877
Time now is	9:30AM, 03/18/2008		
Bank processes	debit	to 10035692877	in the amount of \$15,000.00
Bank processes	debit	to 10035692877	in the amount of \$9,000.00
Bank processes	credit	to 10035692877	in the amount of \$11,000.00
Bank processes	debit	to 9991113333	in the amount of \$11,000.00
New notifications sent to customer	bobma		
type	account	timestamp	amount
debit	10035692877	9:30AM, 03/18/2008	\$15,000.00
credit	10035692877	9:30AM, 03/18/2008	\$11,000.00

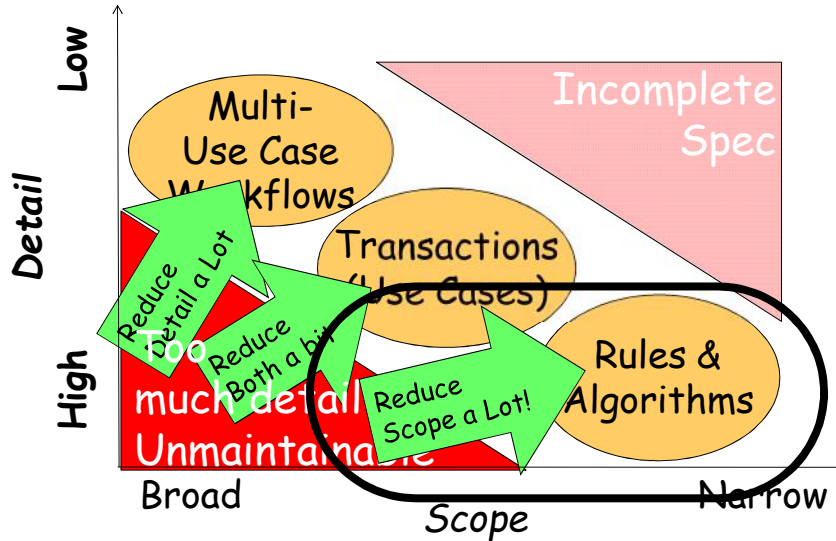
When:
Transactions
Are Processed

Then:
We Expect
Notifications

Broad Scope (Multi-Actor);
Minimum Detail (per Actor/Transaction);

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Filling in the Details



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Business Rule Example

Threshold per Charge Type

Configuration

CustomerAccounts			
Customer	Account	Label	Added()
bobma	100372	Checking	

CustomerThresholds				
Customer	Account	Charge Type	Threshold	Added()
bobma	100372	ALL	10,000	OK
bobma	100372	Travel	1,000	OK
bobma	100372	Restaurant	100	OK
bobma	100372	Groceries	264.23	OK

Process Transaction

NotificationRequired			
Account	Charge Type	Amount	Notify?
100372	Travel	999.99	No
100372	Travel	1,000.00	Yes
100372	Restaurant	99.99	No
100372	Restaurant	100.00	Yes
100372	Groceries	264.22	No
100372	Groceries	264.23	Yes
100372	Other	9,999.99	No
100372	Other	10,000.00	Yes

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Example: **Business Rule Example**

Threshold per Charge Type

When we ask NotificationRequired? with this transaction:

Given these rules

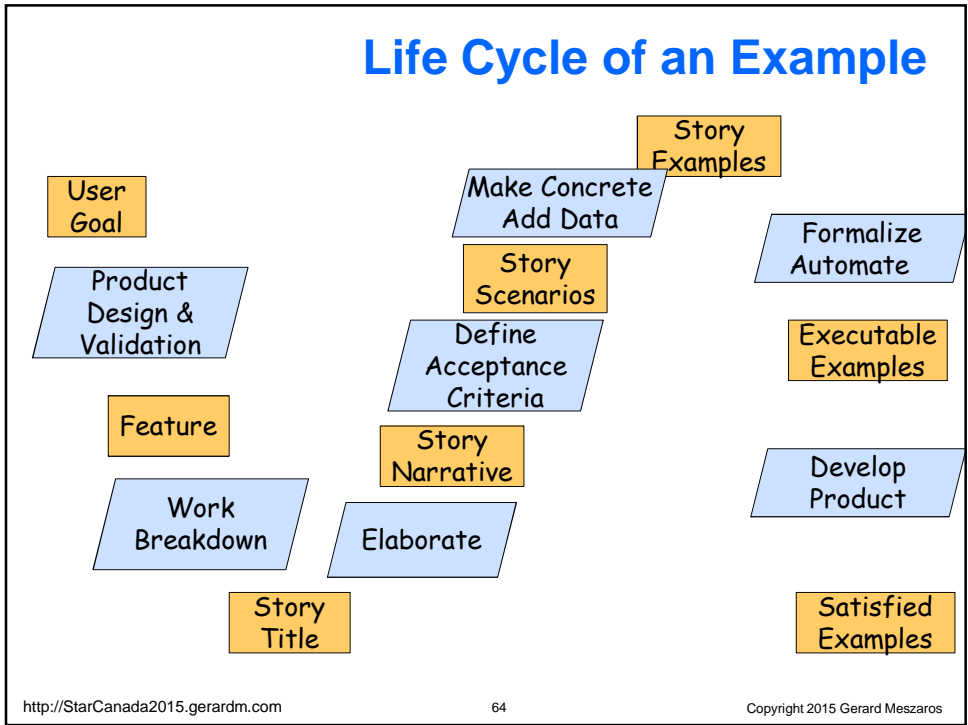
Then: The answer should be

CustomerAccounts			
Customer	Account	Label	Added()
bobma	100372	Checking	

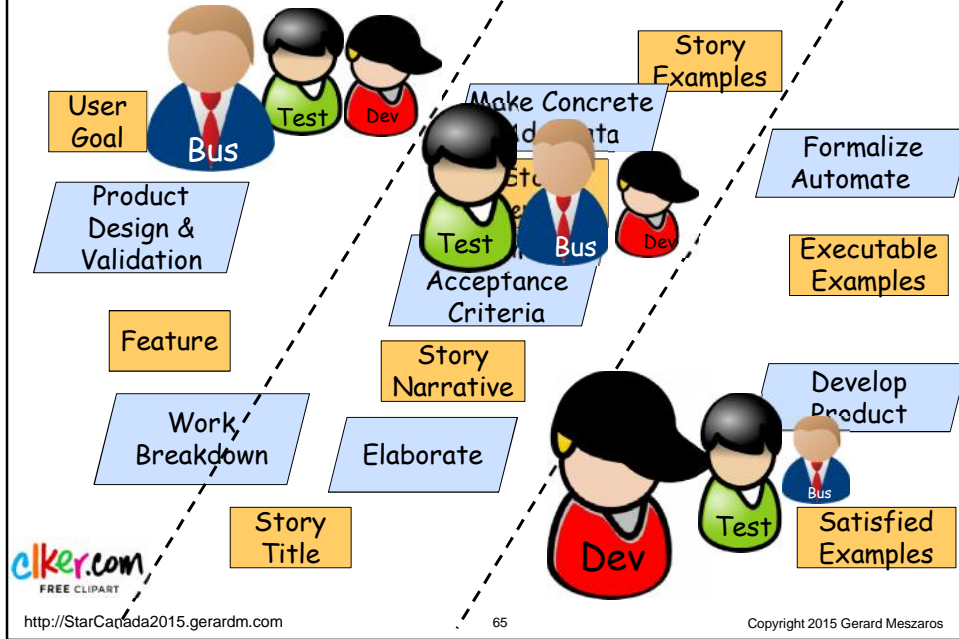
CustomerThresholds				
Customer	Account	Charge Type	Threshold	Added()
bobma	100372	ALL	10,000	OK
bobma	100372	Travel	1,000	OK
bobma	100372	Restaurant	100	OK
bobma	100372	Groceries	264.23	OK

NotificationRequired			
Account	Charge Type	Amount	Notify?
100372	Travel	999.99	No
100372	Travel	1,000.00	Yes
100372	Restaurant	99.99	No
100372	Restaurant	100.00	Yes
100372	Groceries	264.22	No
100372	Groceries	264.23	Yes
100372	Other	9,999.99	No
100372	Other	10,000.00	Yes

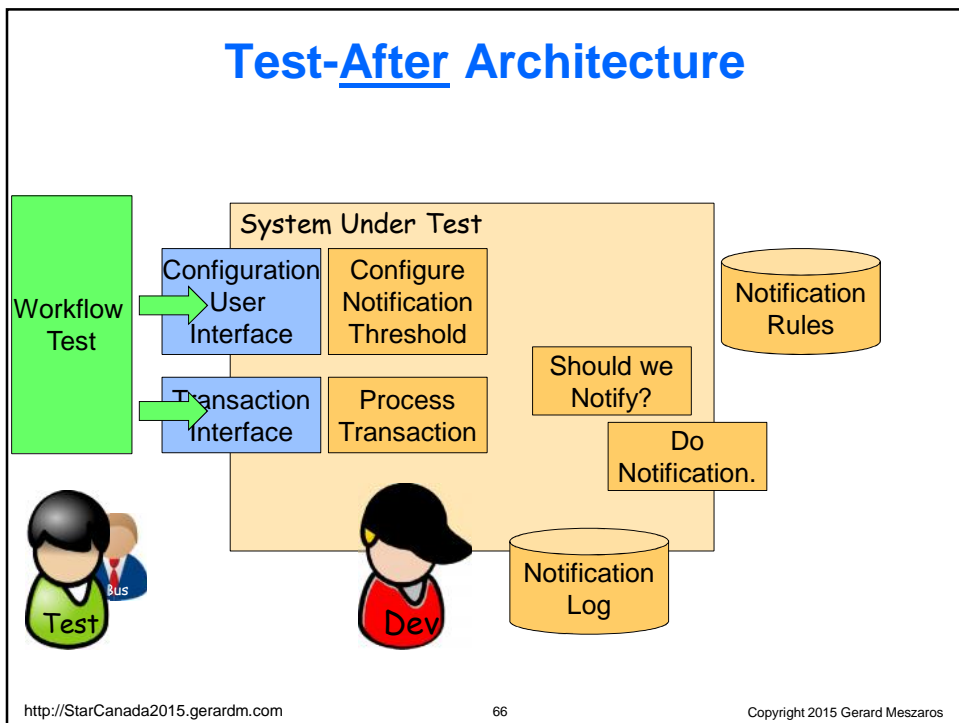
Narrow Scope (Single Rule)
High Detail (Everything that matters)



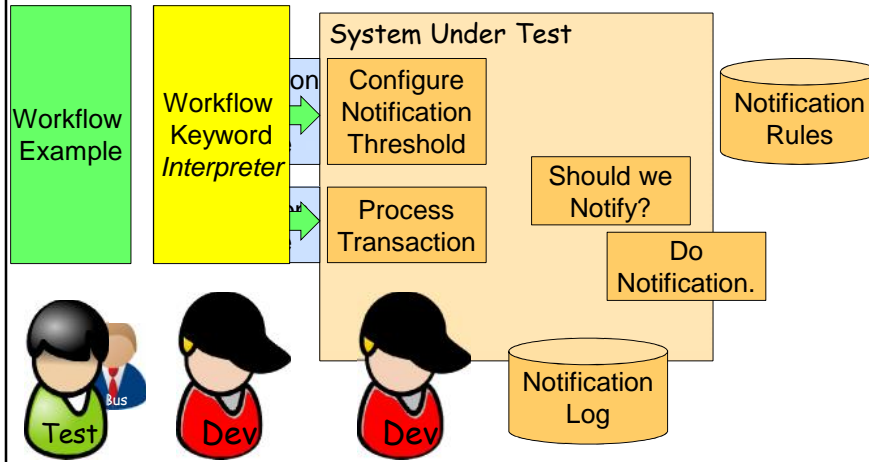
Who Does Activities on an Example



Test-After Architecture



Example-Driven Architecture

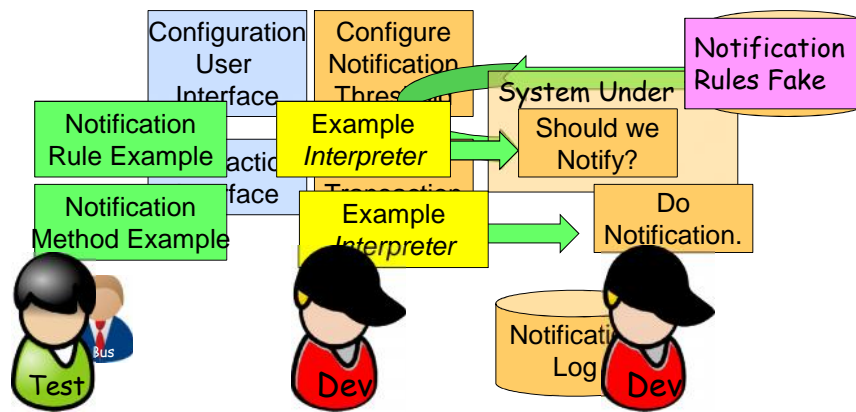


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EDA – Business Rules

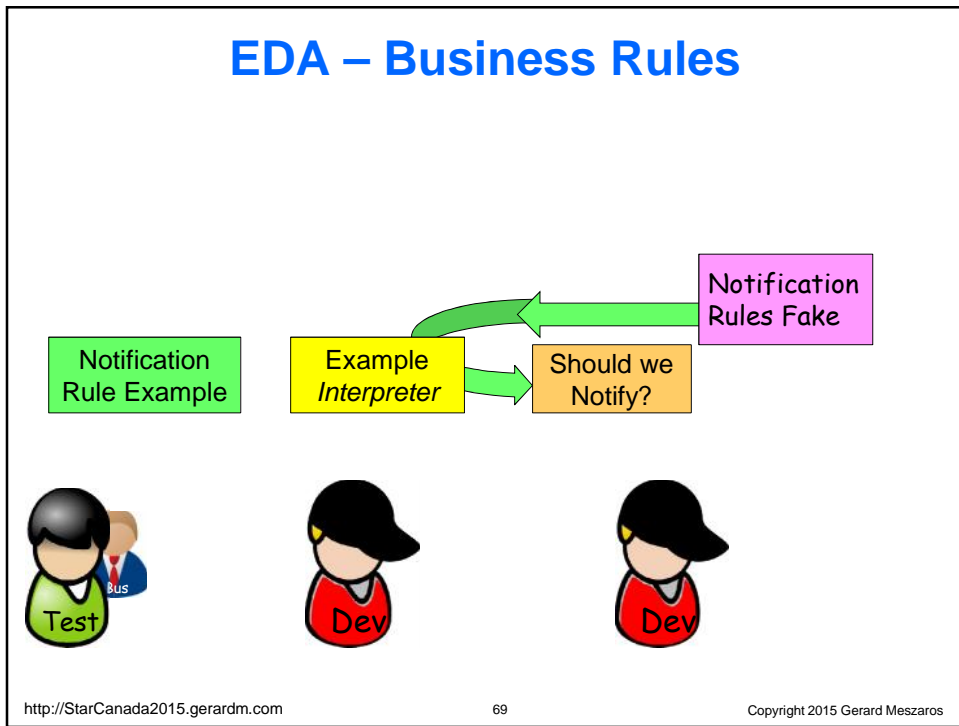


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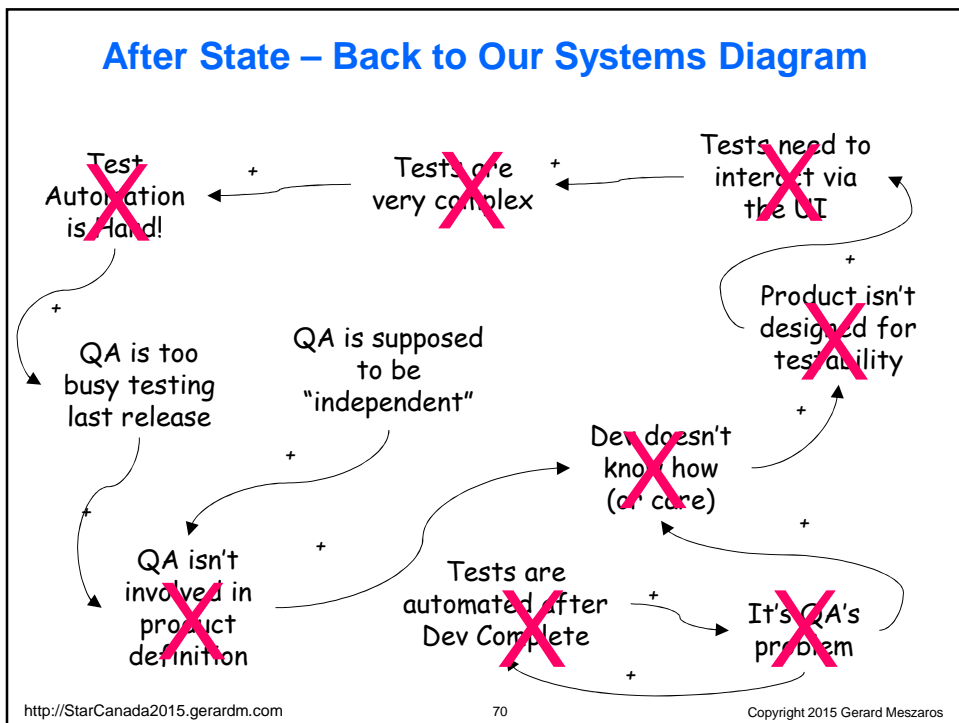
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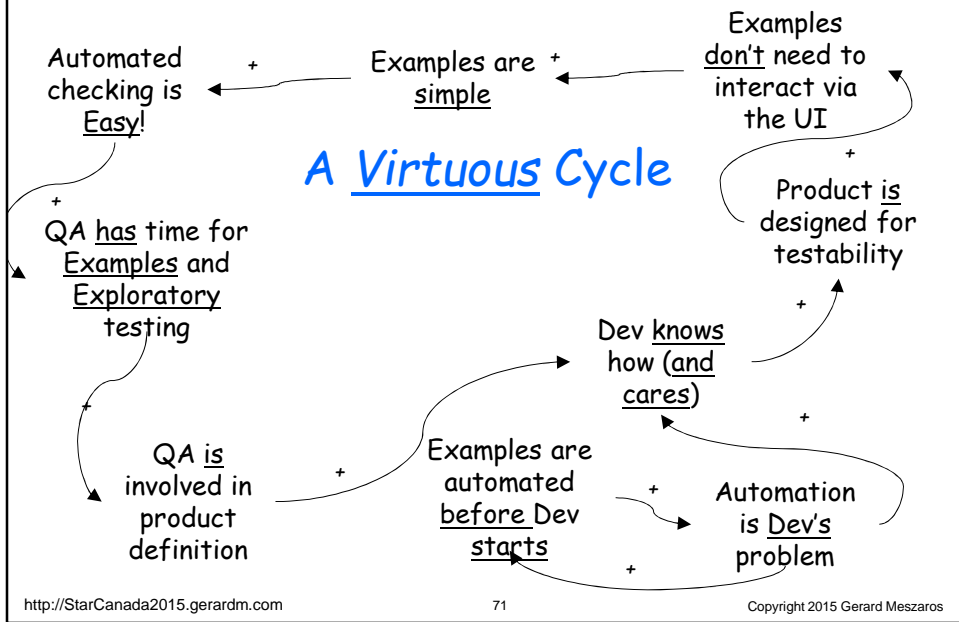
EDA – Business Rules



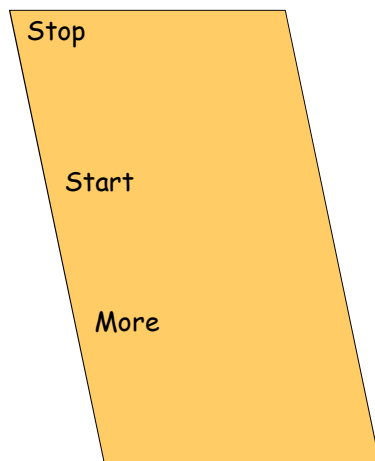
After State – Back to Our Systems Diagram



After State – Back to Our Systems Diagram



My Challenge to You



1. Hypothesis
2. Experiment
3. Analyse
4. Communicate

JUST DO IT.



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Thank You!

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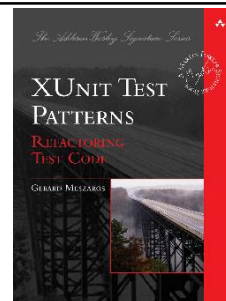
Slides: <http://StarCanada2015.gerardm.com>

Call me when you:

- Want to transition to Agile or Lean
- Want to do Agile or Lean better
- Want to teach developers how to test
- Need help with test automation strategy
- Want to improve your test automation

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