



# BUILD THE “RIGHT” REGRESSION SUITE USING BEHAVIOR DRIVEN TESTING (BDT)

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- *Anand Bagmar*
- *Test Practice Lead* **ThoughtWorks®**



# *Building the “right” regression suite using Behavior Driven Testing (BDT)*

Anand Bagmar, Test Practice Lead, **ThoughtWorks**®

Feb 18, 2015

# ABOUT ME

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@BagmarAnand

[about.me/anand.bagmar](http://about.me/anand.bagmar)

*Concept #1*

*The Test Pyramid*

# AUTOMATION – A SAFETY NET

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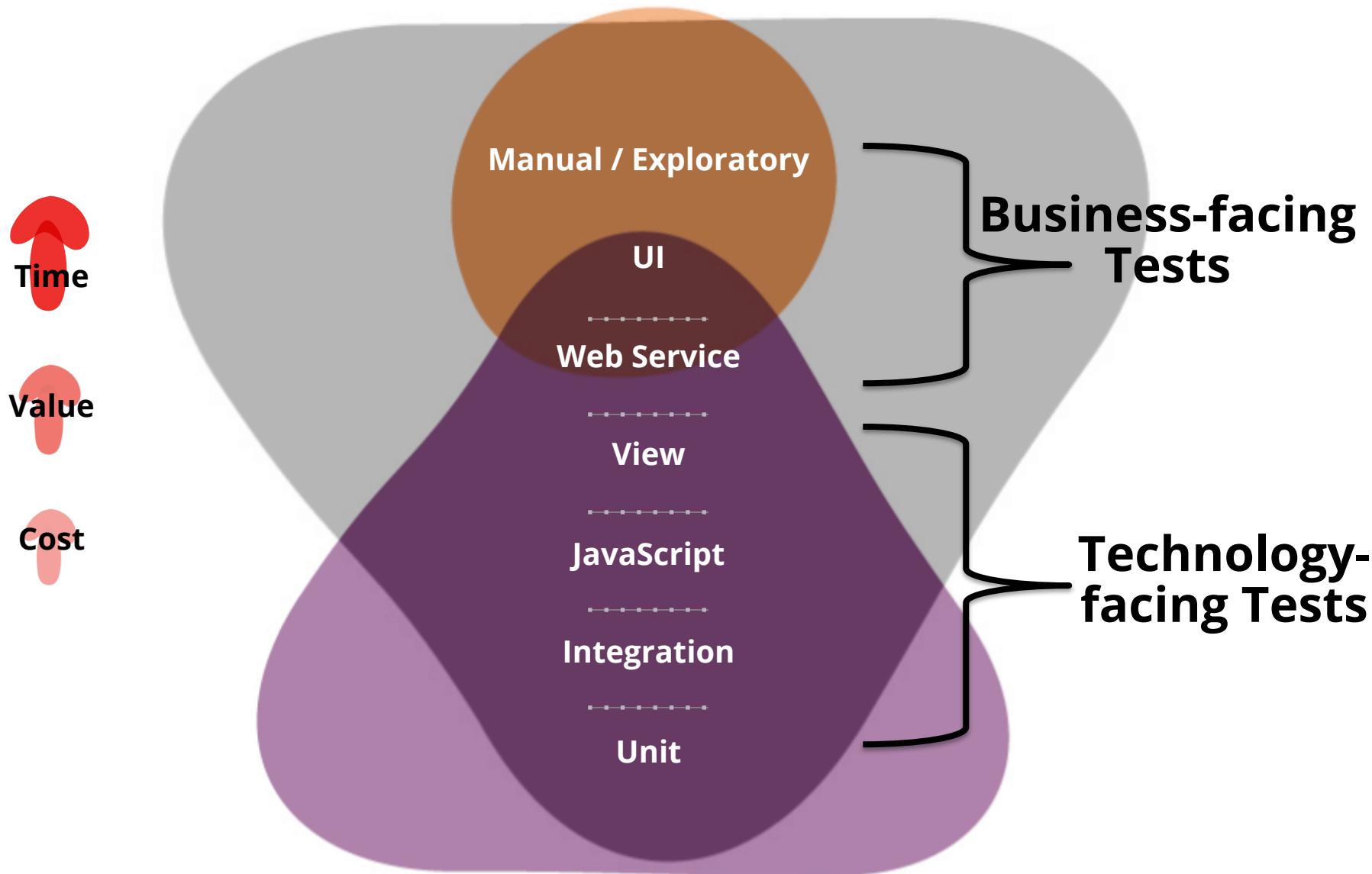
# THE TEST PYRAMID

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- “Succeeding with Agile” – Mike Cohn
- Martin Fowler – Test Pyramid

[martinfowler.com/bliki/TestPyramid.html](http://martinfowler.com/bliki/TestPyramid.html)

# IDEAL TEST AUTOMATION PYRAMID



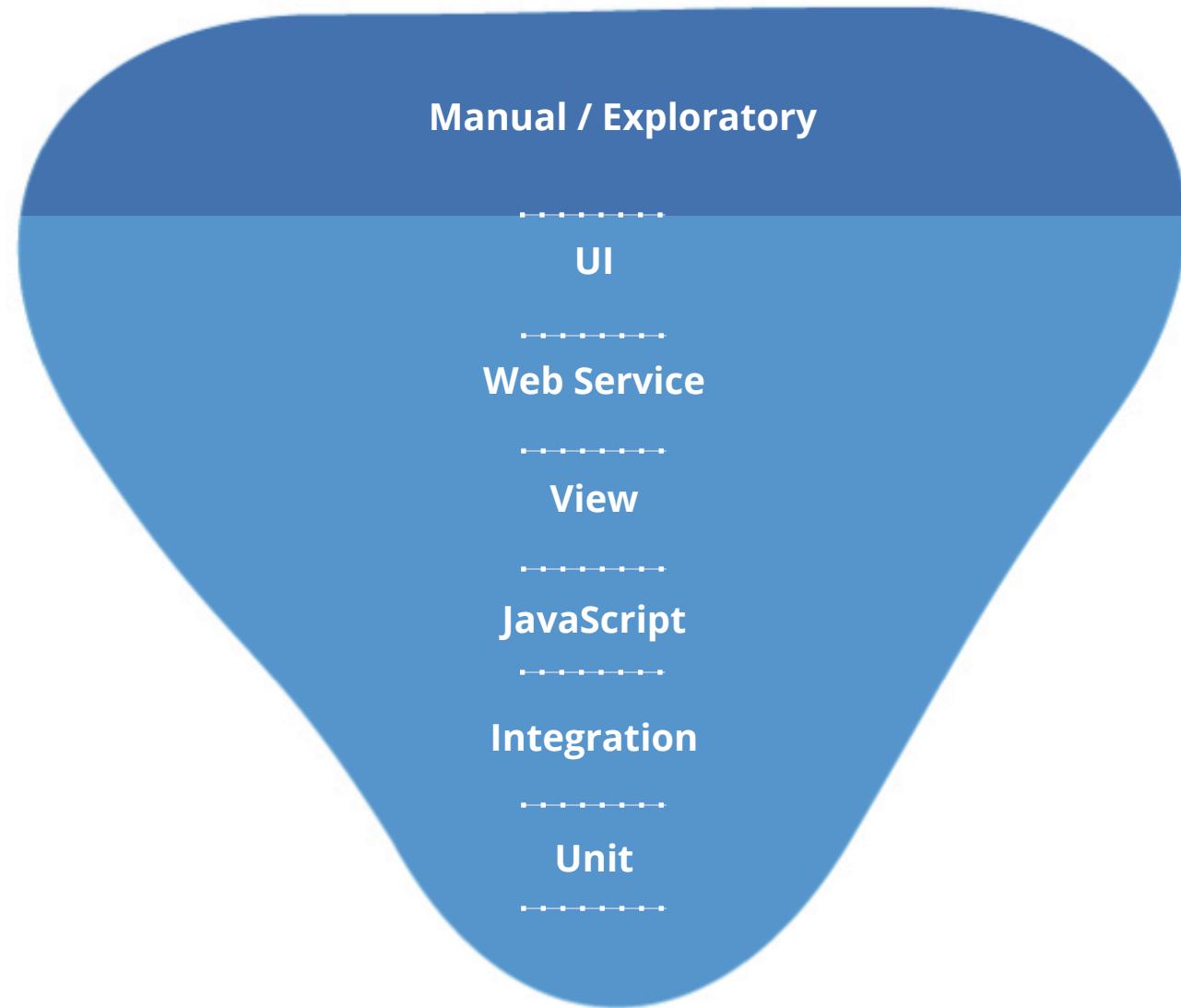
# REALITY

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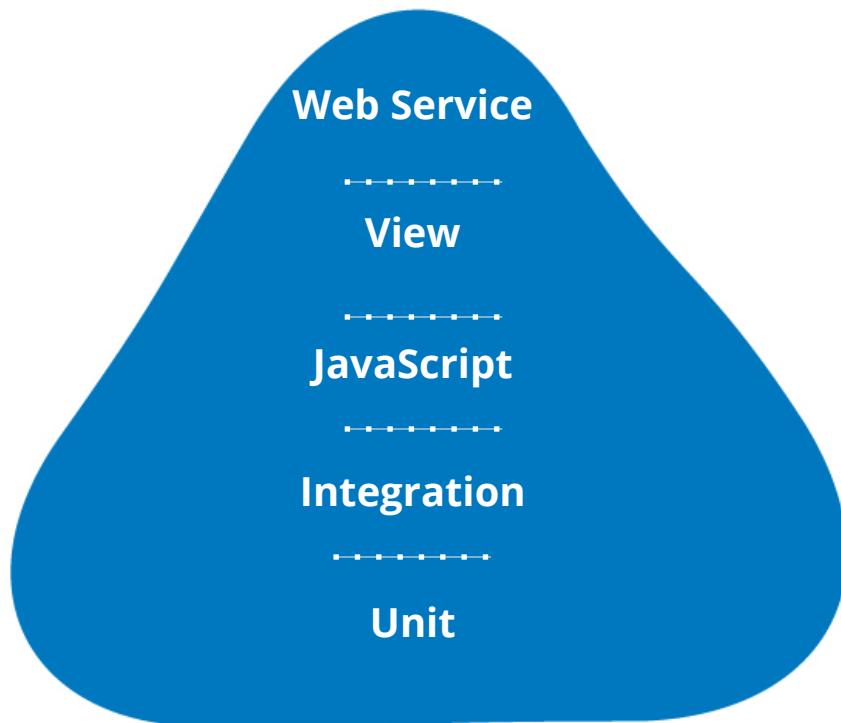
# ICE CREAM CONE ANTI PATTERN

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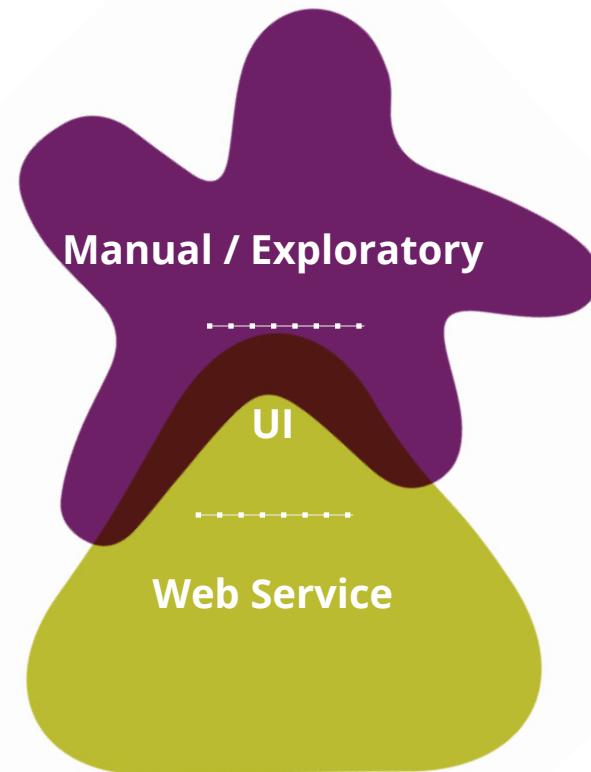


# DUAL TEST PYRAMID ANTI-PATTERN

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Developers Test Pyramid



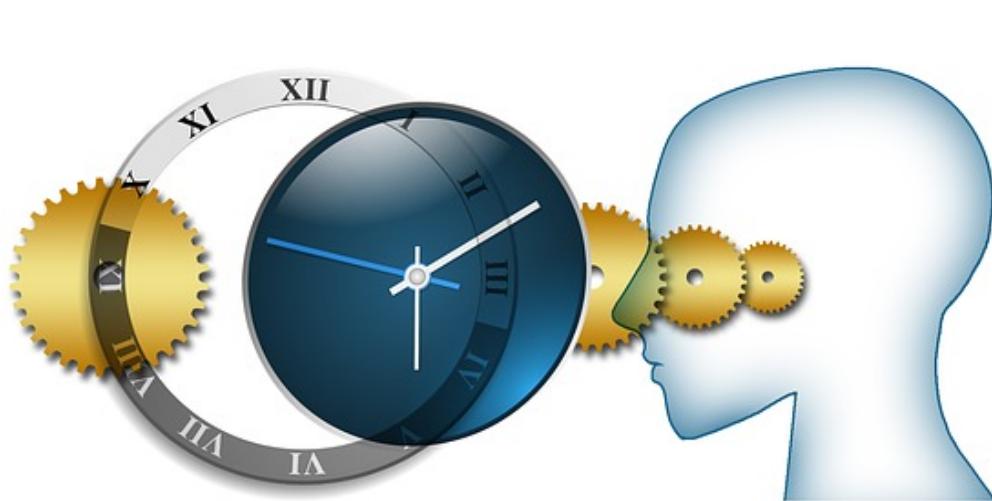
QA Team Test Pyramid

## *Concept #2*

*Behavior Driven Testing (BDT)*

# BEHAVIOR DRIVEN TESTING (BDT)

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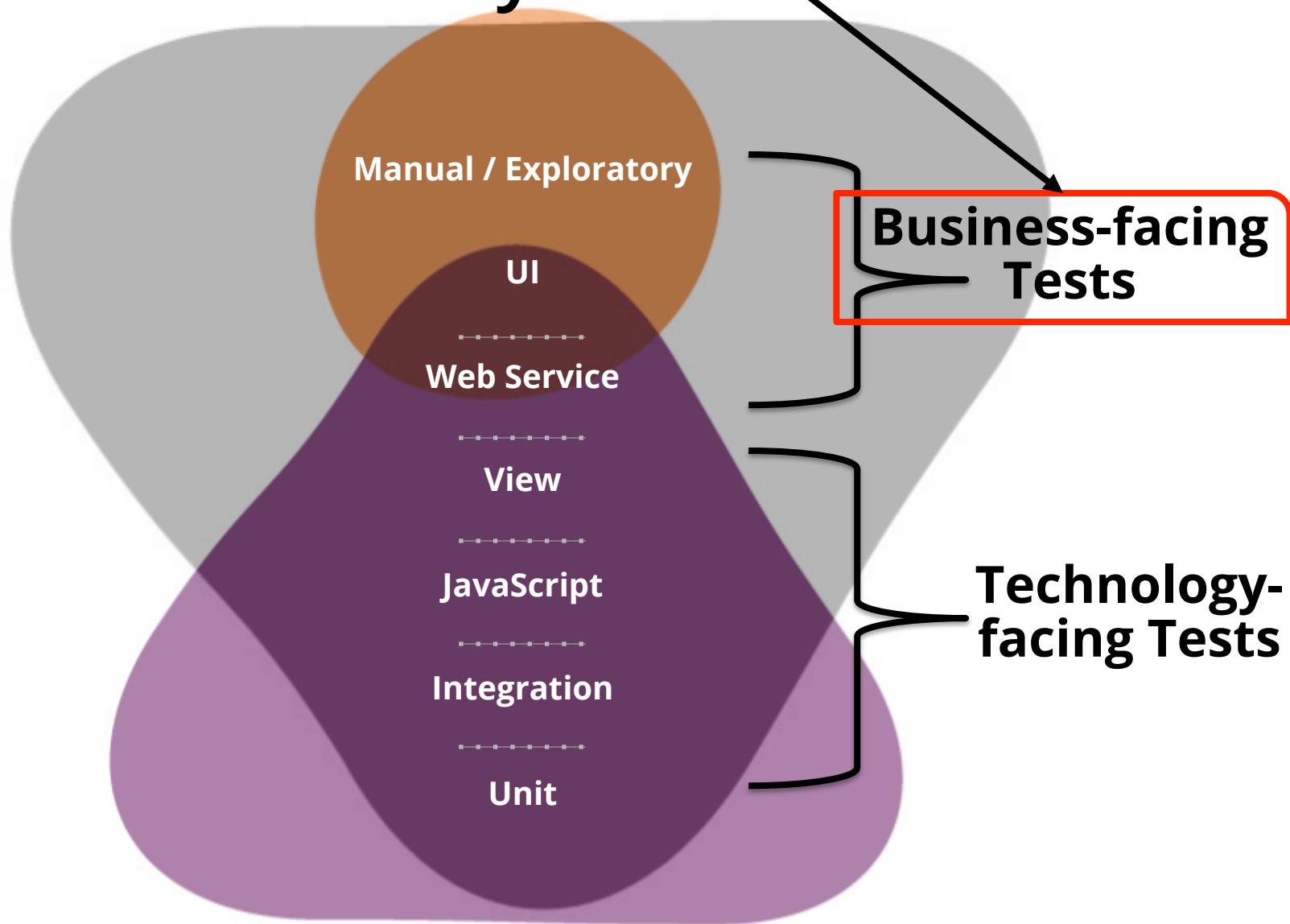


# THE BIG PICTURE

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- How is this functionality going to be used by the end-user?
- What is their thought process going to be when using this product?
- What “core-business-value” should be delivered to the end-user?

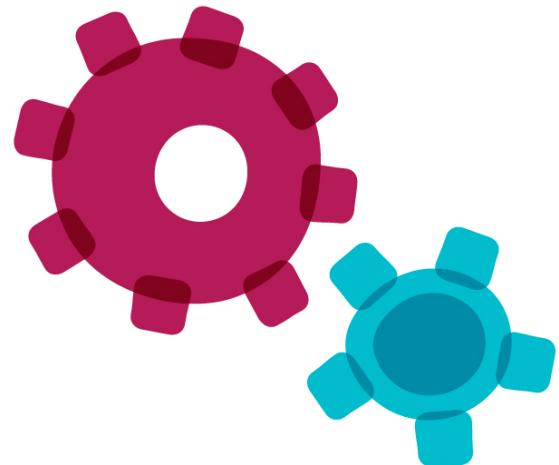
# Identify the “right” type of tests that sit on top of the Test Pyramid



# TOOLS TO ENABLE BDT

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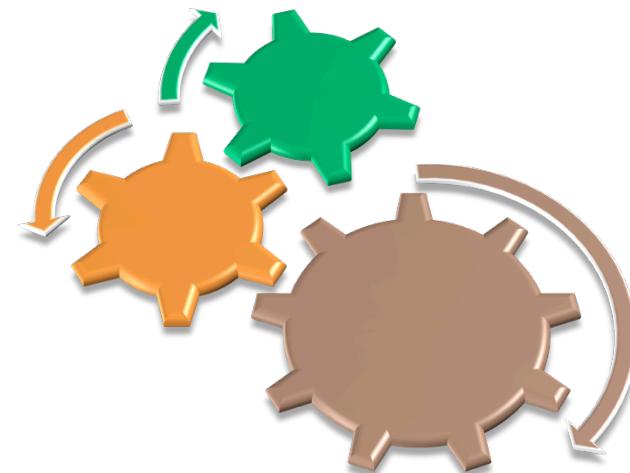
- Whiteboards
- Mind maps
- Flow charts
- ***Collaboration!!***



# AUTOMATE THE TOP LAYER USING

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- BDD Tools, or,
- Directly in any appropriate programming language / tools



*Concept #3*

*Test Specification Styles*

# TEST SPECIFICATION STYLES

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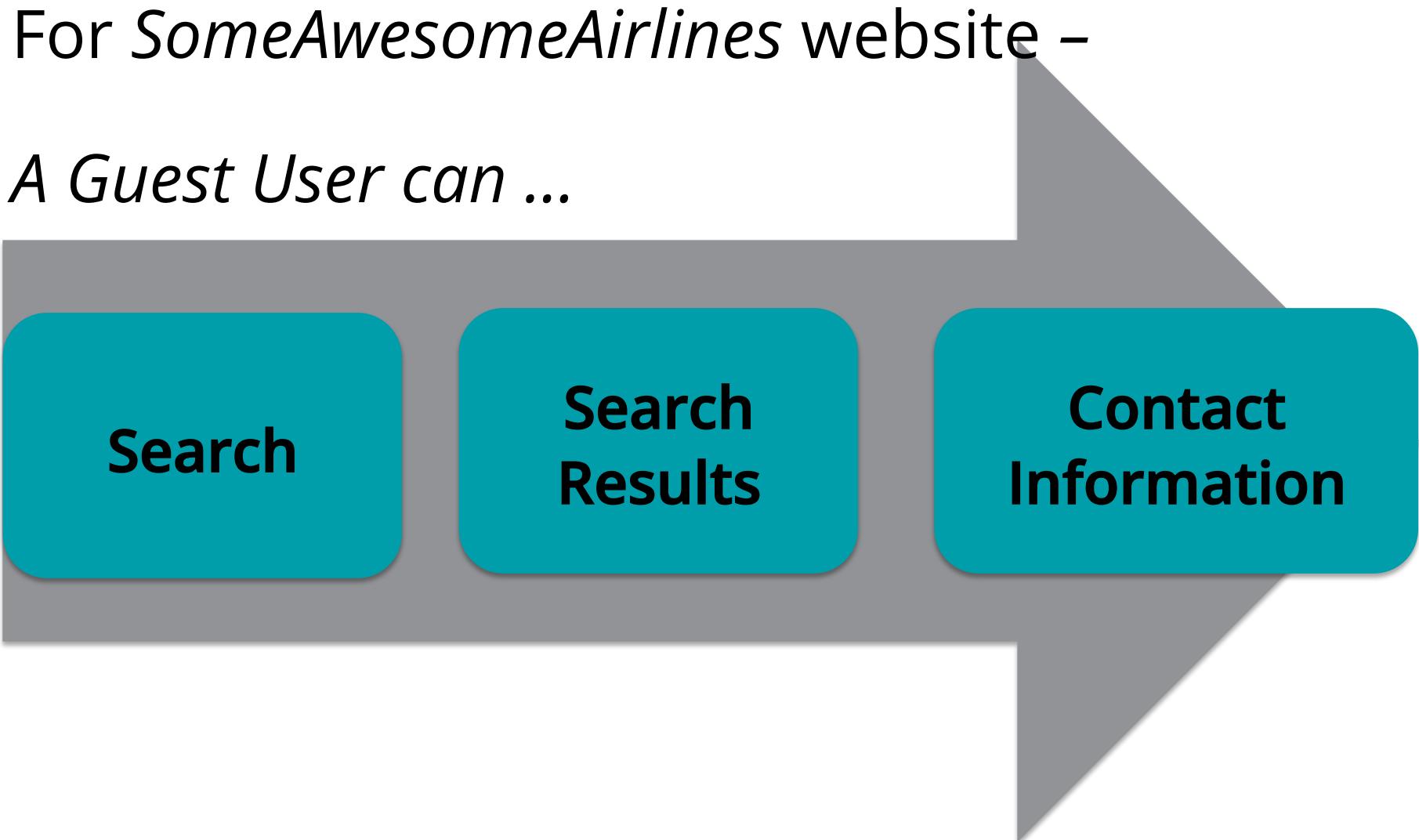
- Imperative
- Declarative

# AN EXAMPLE

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For *SomeAwesomeAirlines* website –

*A Guest User can ...*



Search

Search  
Results

Contact  
Information

# IMPERATIVE STYLE

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Given I am a guest user on the home page

And I choose “**round**” trip option

And I select “**Chicago**” from the origin dropdown

And I select “**San Francisco**” from the destination dropdown

And I select departure date as “**5 December 2013**”

And I select returning date as “**25 December 2013**”

When I click on Search

Then I should see the search results page

And I should see at least 1 option for my criteria

...

# IMPERATIVE STYLE ...

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...

When I select the “**first**” option

Then I am on the Contact Information page

When I enter first name as “**Anand**”

And I enter last name as “**Bagmar**”

...

...

And I click the “**Select and Continue**” button

Then I should be on the next page

# DECLARATIVE STYLE

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Given I am a guest user

When I search for flight options for a **“one-way”** trip for **“1”**  
**“Adult”** from **“Chicago”** to **“San Francisco”**

And I select the **“first”** flight

And I enter **“valid”** contact details for **“traveller1”**

Then I am able to Save and Continue

# REFERENCES

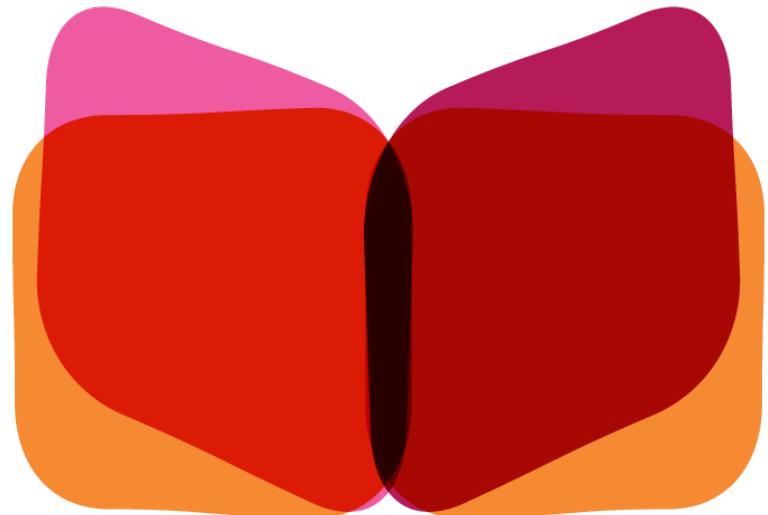
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- Ben Mabey -  
[http://benmabey.com/2008/05/19/  
imperative-vs-declarative-scenarios-in-  
user-stories.html](http://benmabey.com/2008/05/19/imperative-vs-declarative-scenarios-in-user-stories.html)
- Alister Scott -  
[http://watirmelon.com/2010/12/10/  
cucumber-imperative-or-declarative-that-  
is-the-question/](http://watirmelon.com/2010/12/10/cucumber-imperative-or-declarative-that-is-the-question/)

# CASE STUDY

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- Multiple, long running projects
- Legacy applications
- Integrated



# FUNCTIONAL TESTING CHALLENGES

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- Limited / flaky / long-running Automation
- Long regression cycle
- Huge cost of fixing defects



# AS A RESULT

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- Brittle
- Little / less value
- No visibility into what is tested
- Maintenance nightmare
- Outdated
- Expensive



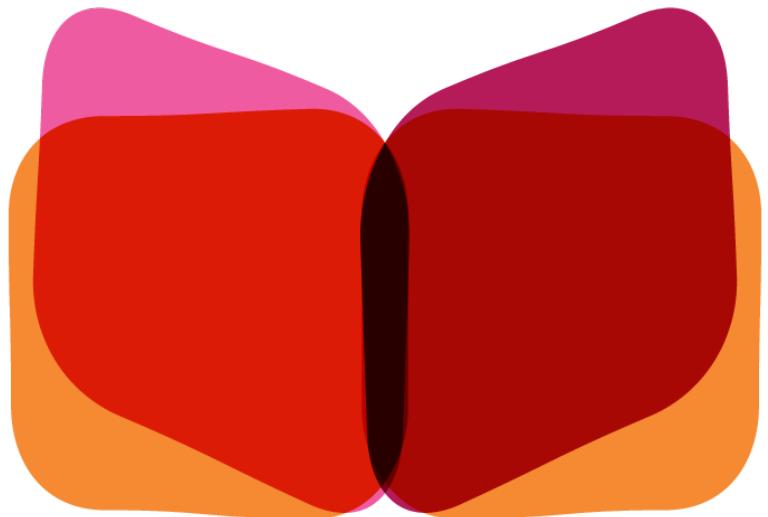
# BIGGEST PROBLEM

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- Trust deficit on the team
  - In existing Automation
  - In manual testing
- Finger pointing / blame game



# *My Case Study*



# Run 1 1991 Acura MDX



MMR
<a href="#">View Details</a>
Black Book

Not Available  
At Auction  
PA - Manheim

[More Details](#)  
[VHR](#)

VIN:	3A472HCN9XM396414
Odometer:	41,274 mi
Transmission:	Not Specified
Engine Cylinders:	6 Cylinder
Drive Train:	2 Wheel Drive
Fuel Type:	Gasoline
Exterior Color:	Black
Interior Type:	Not Specified
Body Style:	SUV
Doors:	Not Specified
Audio:	Not Specified
Top Style:	Not Specified

## Equipment

Equipment Included:

## Sale Statistics

[END SALE](#)

	Total	Total Floor	Total Bid	Variance
Sold	0	\$0	\$0	\$0
No Sale	0	\$0		

**Run Now:****SUBMIT****Starting Bid:**

4000

**SUBMIT****-\$200****\$200****-\$400****\$400****-\$1,000****\$1,000****-\$2,000****\$2,000****-\$4,000****\$4,000****Starting Bid:**  
**\$4,000**Asking Bid: \$4,000  
Floor Price: \$4,000  
Bid Increment: \$200**NO SALE****SELL**

## Bid History

New ask...\$4,000

Received new run: 1

[Preview](#)[History](#)

**1991 Acura MDX**  
JA3808H03E364196  
ODO: 41,274 mi

At Auction  
PA - Manheim

Run 2

[Get CARFAX](#)  
[AutoCheck VHR](#)

**1991 Acura MDX**  
VG6W5Z8D74M314861  
ODO: 41,274 mi

At Auction  
PA - Manheim

Run 3

[Get CARFAX](#)  
[AutoCheck VHR](#)

**1991 Acura MDX**  
2CM2RK1M6V4148109  
ODO: 41,274 mi

At Auction  
PA - Manheim

Run 4

[Get CARFAX](#)  
[AutoCheck VHR](#)

**1991 Acura MDX**  
5GT4567S3SM301914  
ODO: 41,274 mi

At Auction  
PA - Manheim

Run 5

[Get CARFAX](#)  
[AutoCheck VHR](#)

**1991 Acura MDX**  
4F48FJPW45A414053  
ODO: 41,274 mi

At Auction  
PA - Manheim

Run 6

[Get CARFAX](#)  
[AutoCheck VHR](#)

**1991 Acura MDX**  
1GT303PT8J1941478  
ODO: 41,274 mi

Run 7

# HOW TO SOLVE THE PROBLEM?

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# SOLUTION

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- Remove the ambiguity
- Same visibility for all



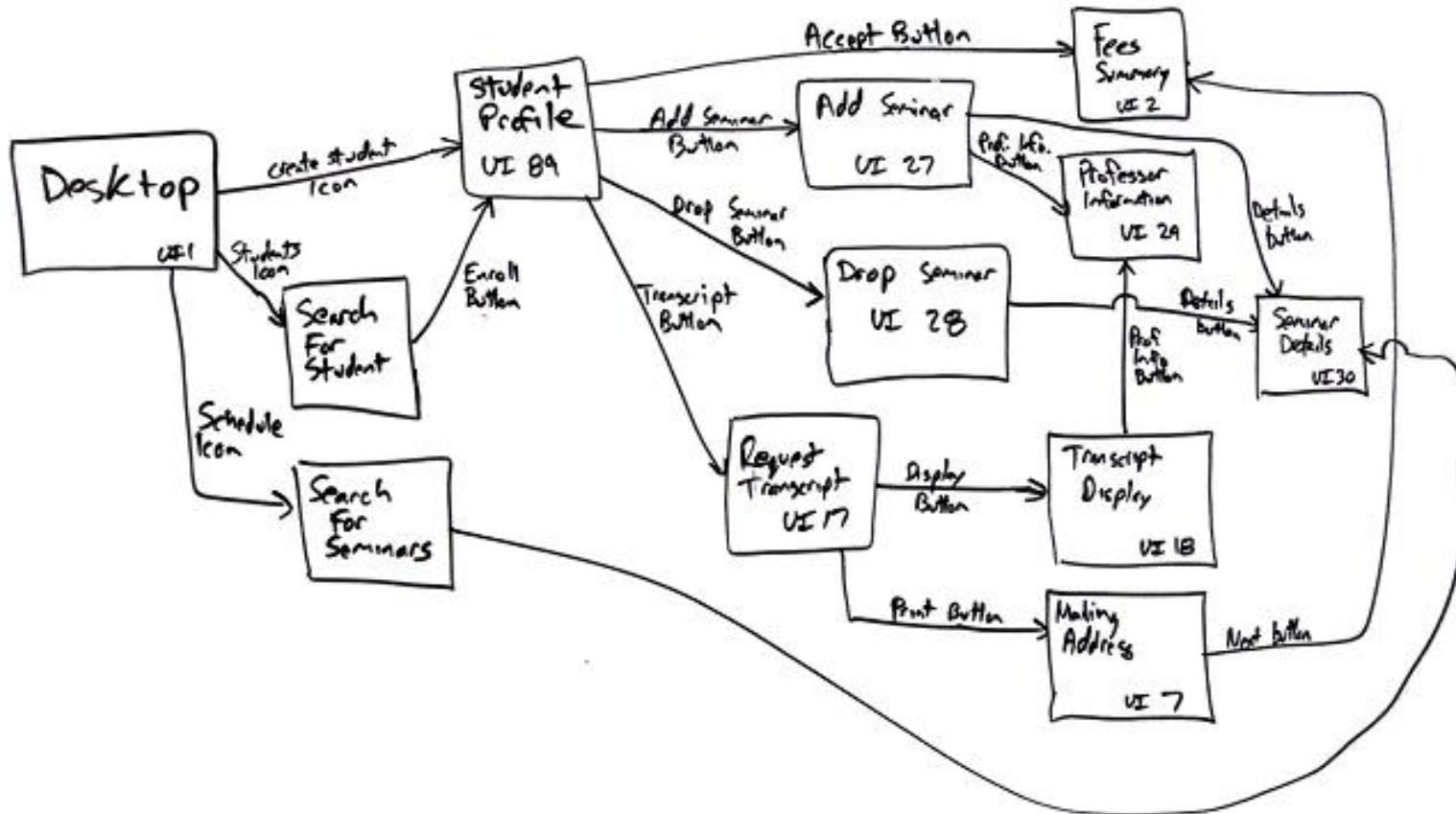
# HOW DID WE ACCOMPLISH THIS?

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# IDENTIFY BUSINESS FLOWS

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# HOW TO IDENTIFY BUSINESS FLOWS ?

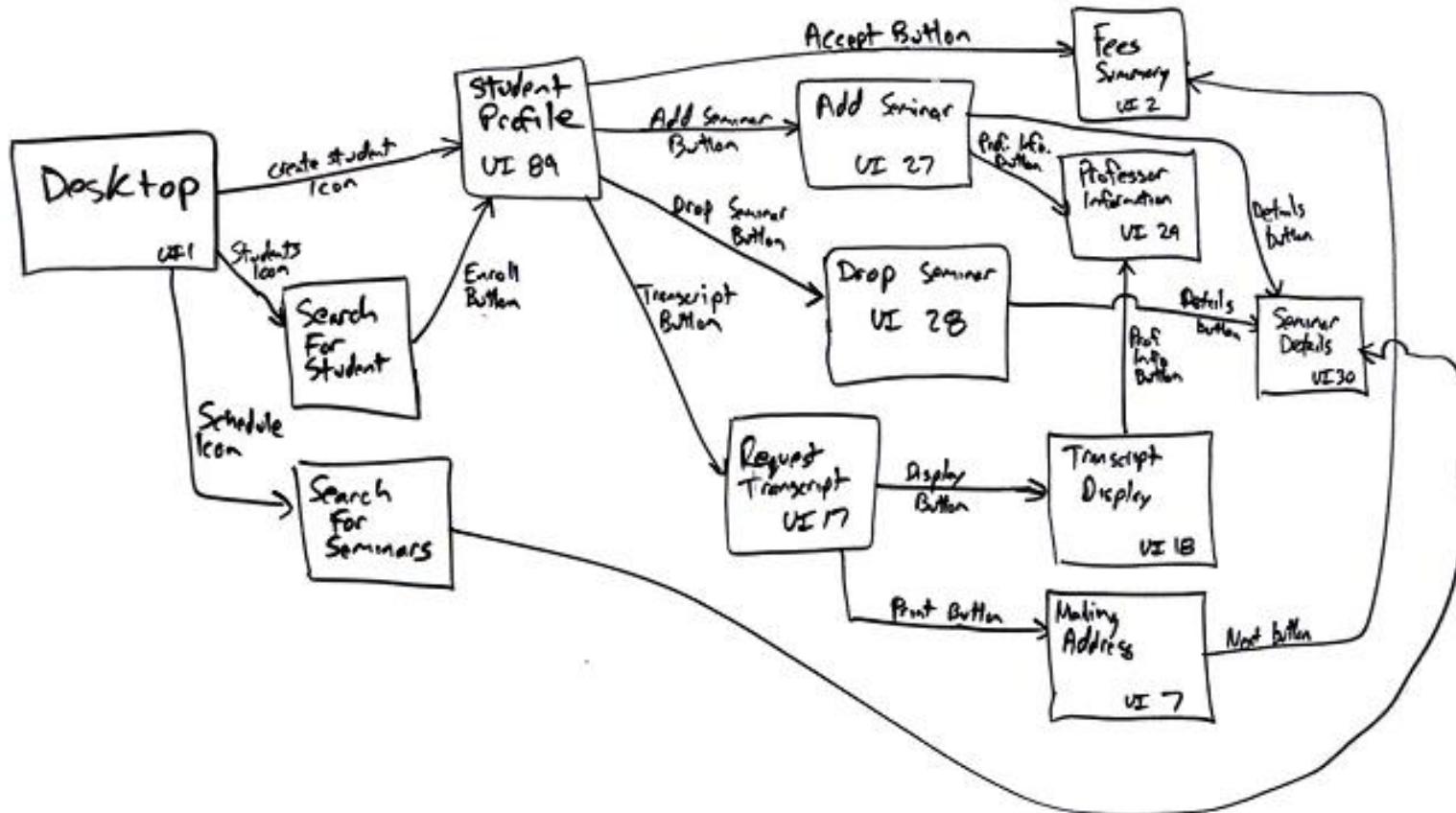
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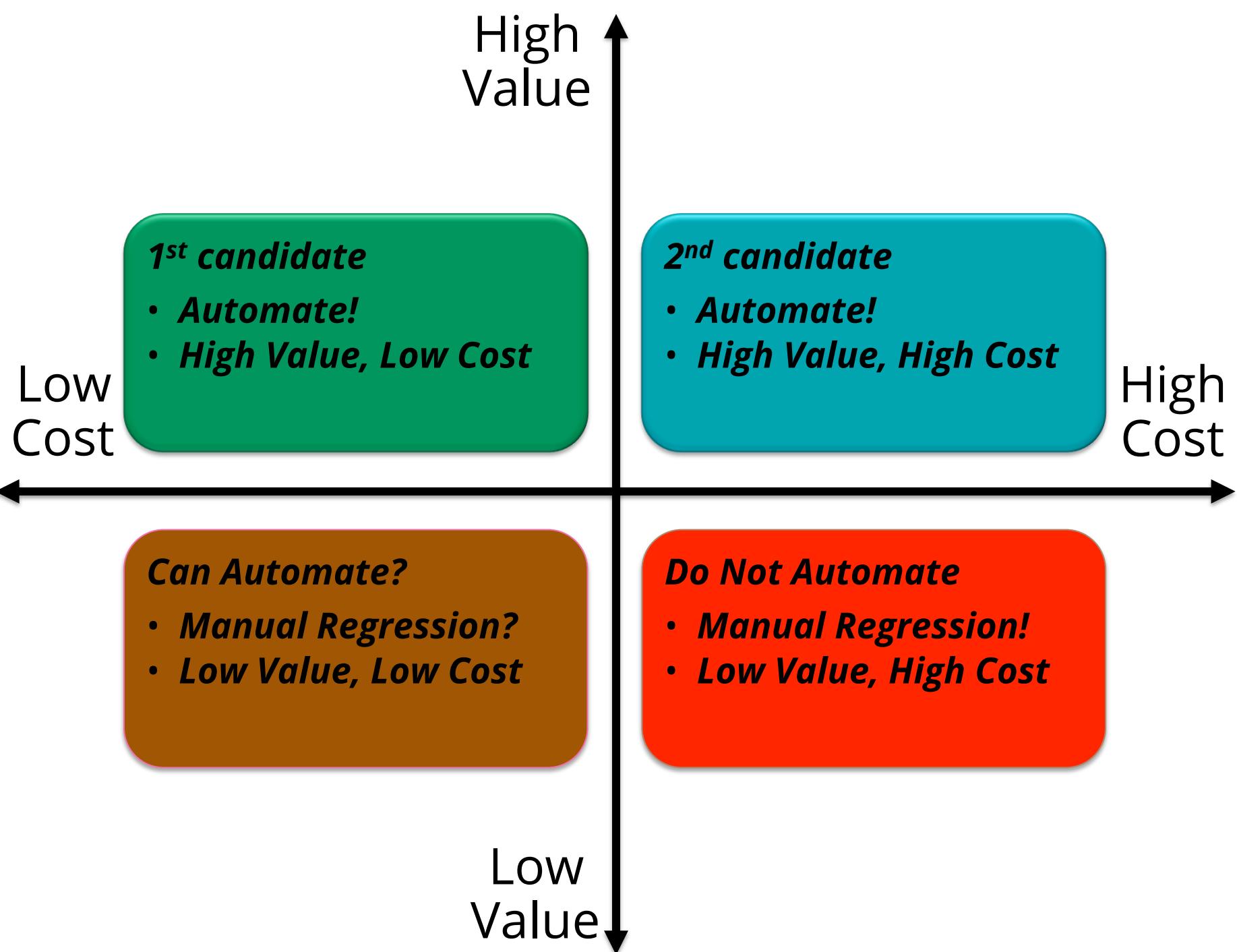
- Identify business flows based on personas, and how the personas use the business functionality, or,
- Identify business flows, and how different user personas can use the business flows

***NOTE: Business flows are different from UI flows***

# PRIORITIZE BUSINESS FLOWS

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# WHAT'S NEXT?

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- Identification of Tests
- Automate it!



# EXAMPLE

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Given **auctioneer** creates an auction  
And **5** vehicles are added to the  
auction

When **auctioneer** starts the auction  
And **auctioneer** sets a starting bid  
of **5000**  
And **buyer\_1** bids  
And **buyer\_2** bids

Then **auctioneer Sells** the vehicle  
And **buyer\_2** wins the vehicle

*Who is doing the action?*

*What is the business  
functionality?*

*Depicts a user flow / user  
journey*

*Actions & Verifications  
happen implicitly*

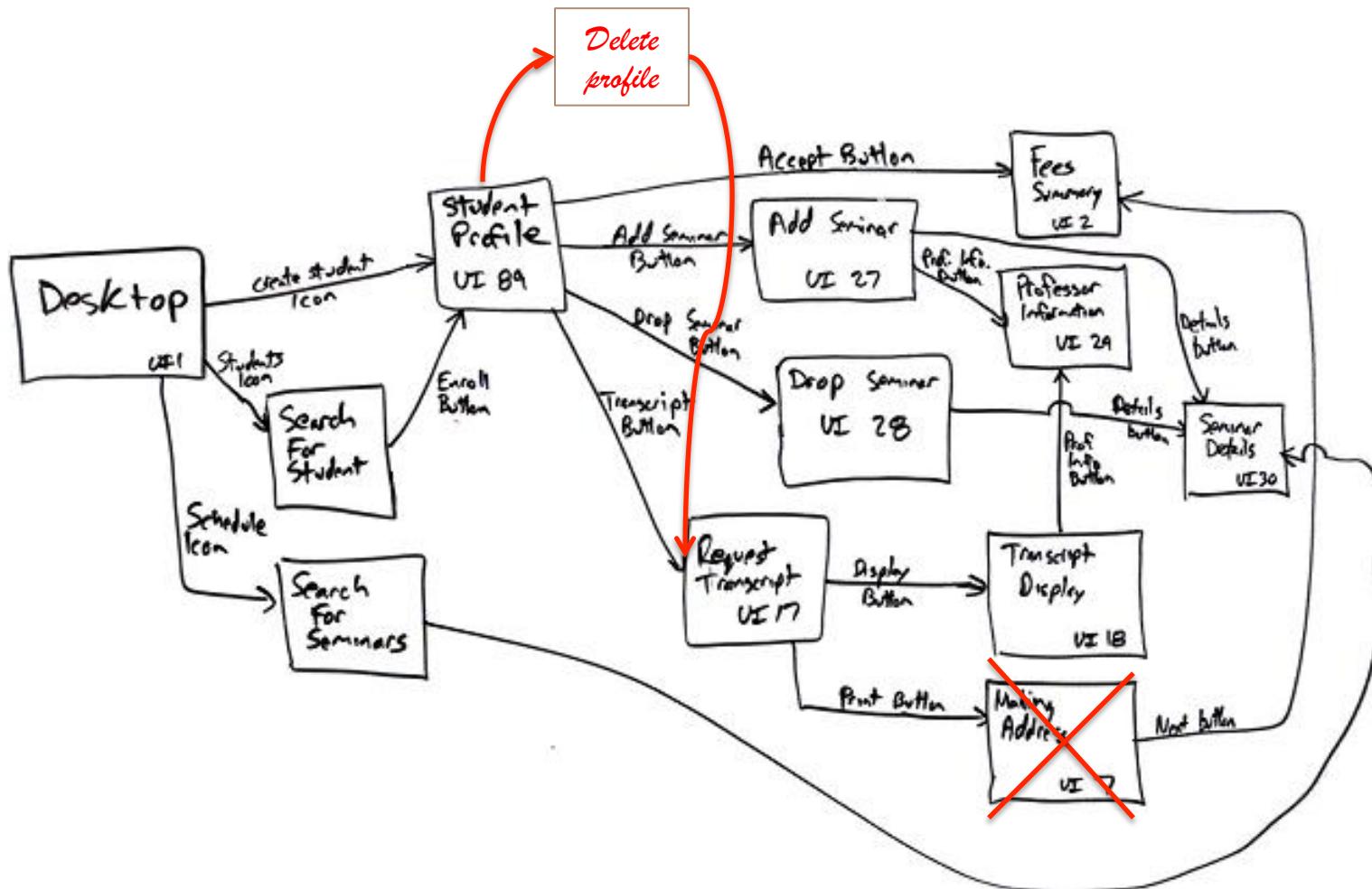
# CAUTION!

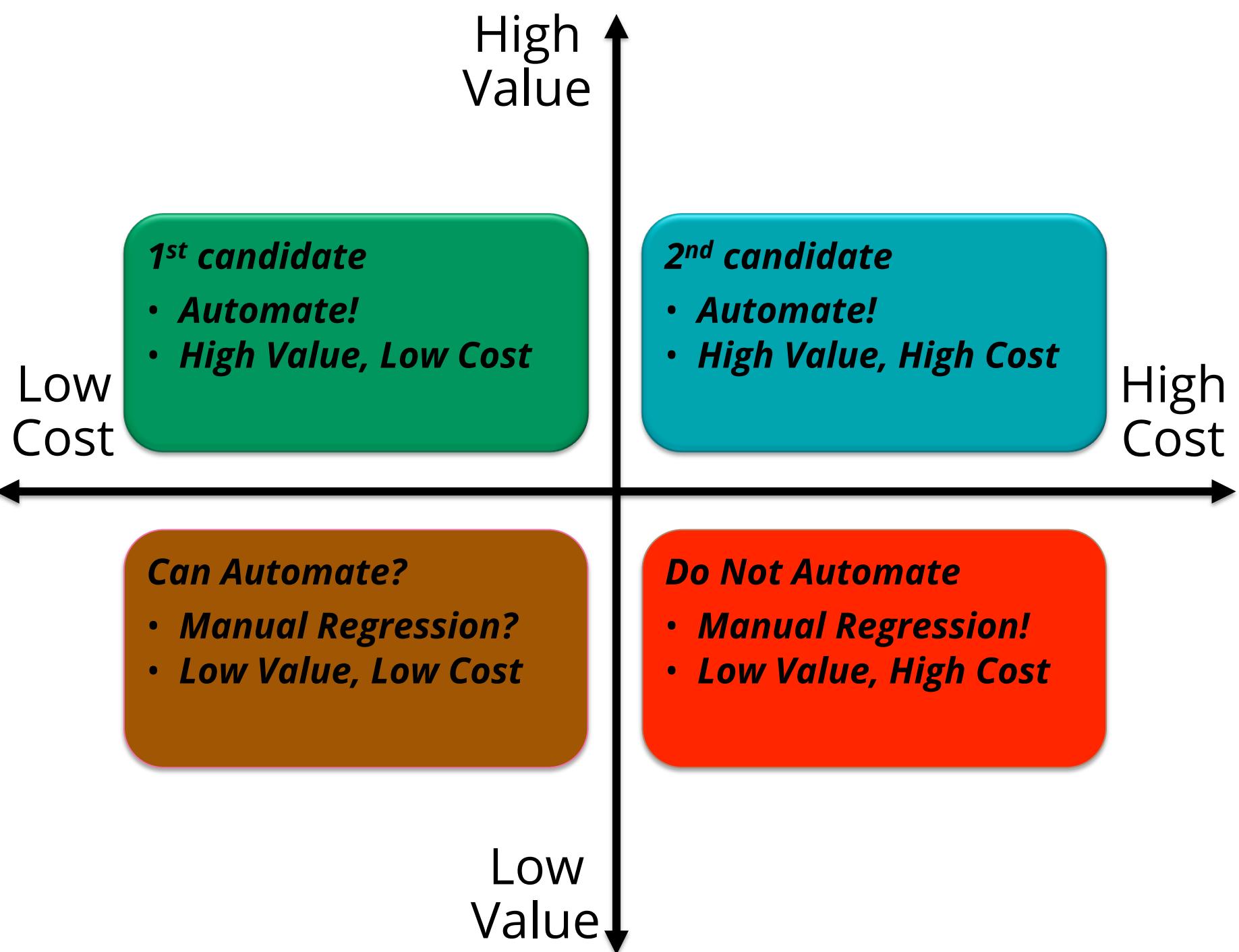
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***AUTOMATE TESTS THAT ARE VALUABLE,  
NOT BECAUSE YOU CAN OR LIKE TO!***



# UPDATE BUSINESS FLOWS





# FINAL STATE ... IN MY CASE STUDY

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Project Management tool	Mingle
Test case repository (manual + automated)	Cucumber .feature files with appropriate tagging
Feature files / Scenarios	33 / 65
# of Manual Tests	0
Tests running on CI (Jenkins)	Since the 1 <sup>st</sup> test was automated
Smoke tests execution time	15 minutes
Regression tests execution time	45 minutes

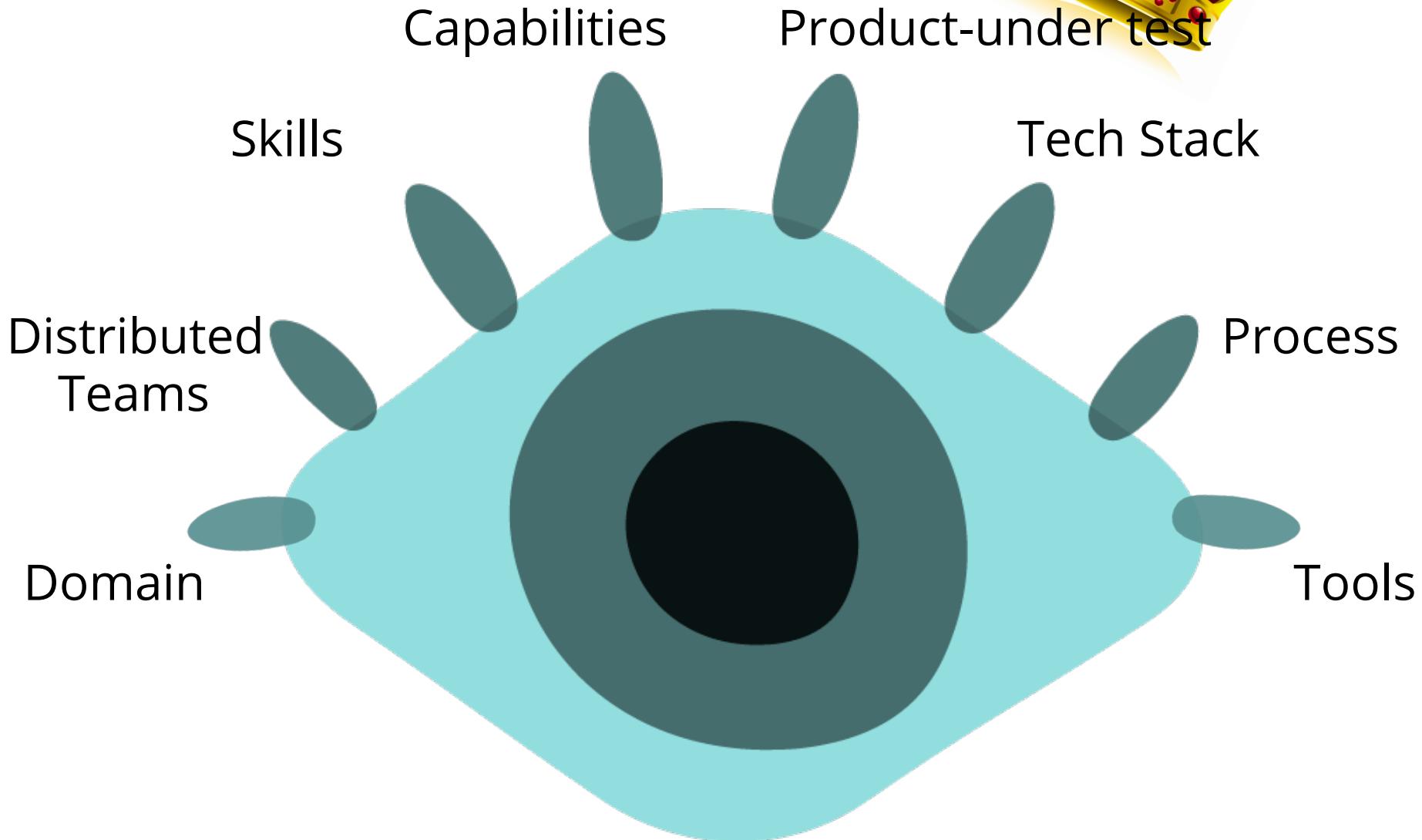
# **ADDITIONALLY ...**

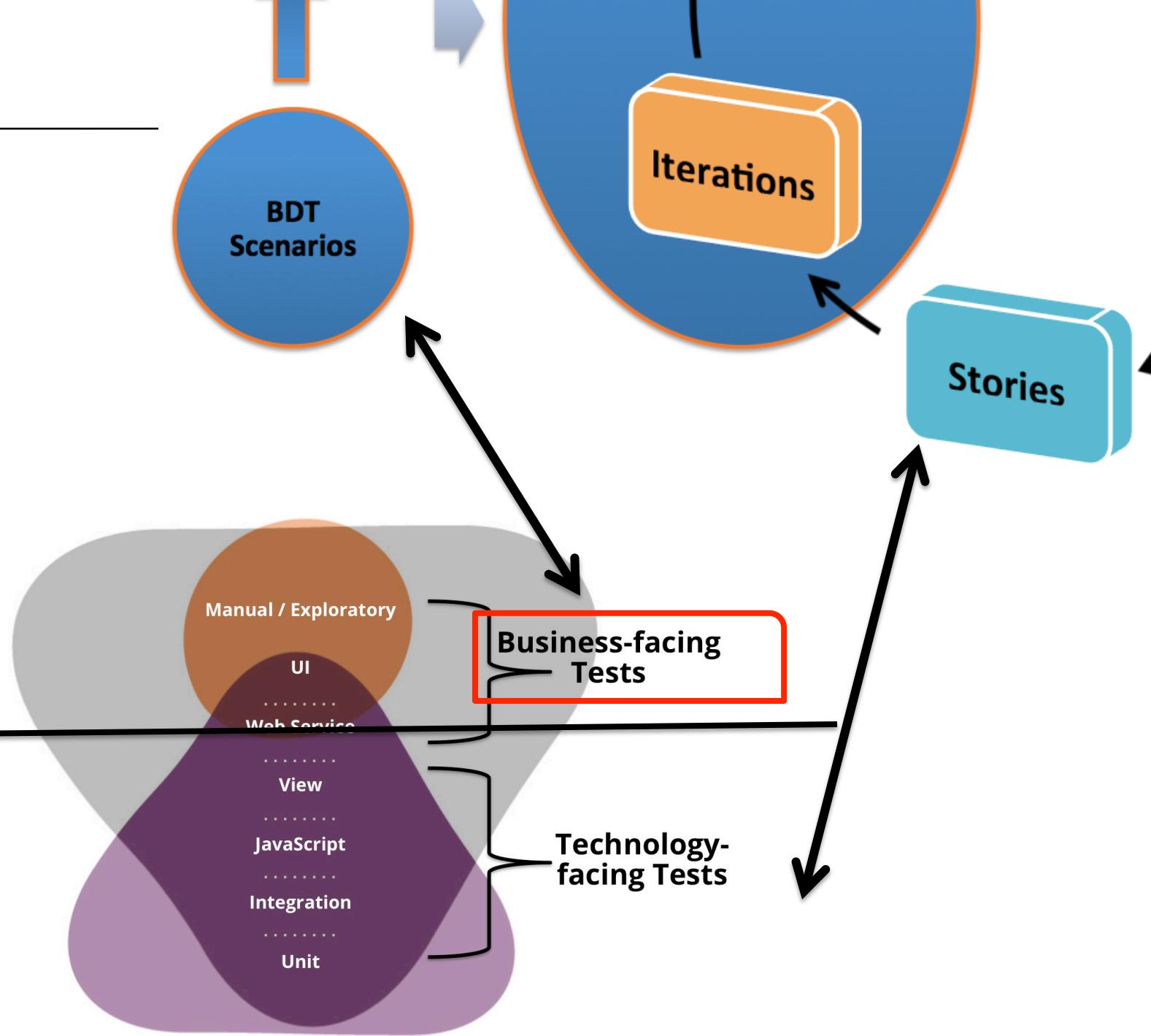
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- Builds and deployments were automated
- Functional Performance and Concurrent Testing automated and ran on demand

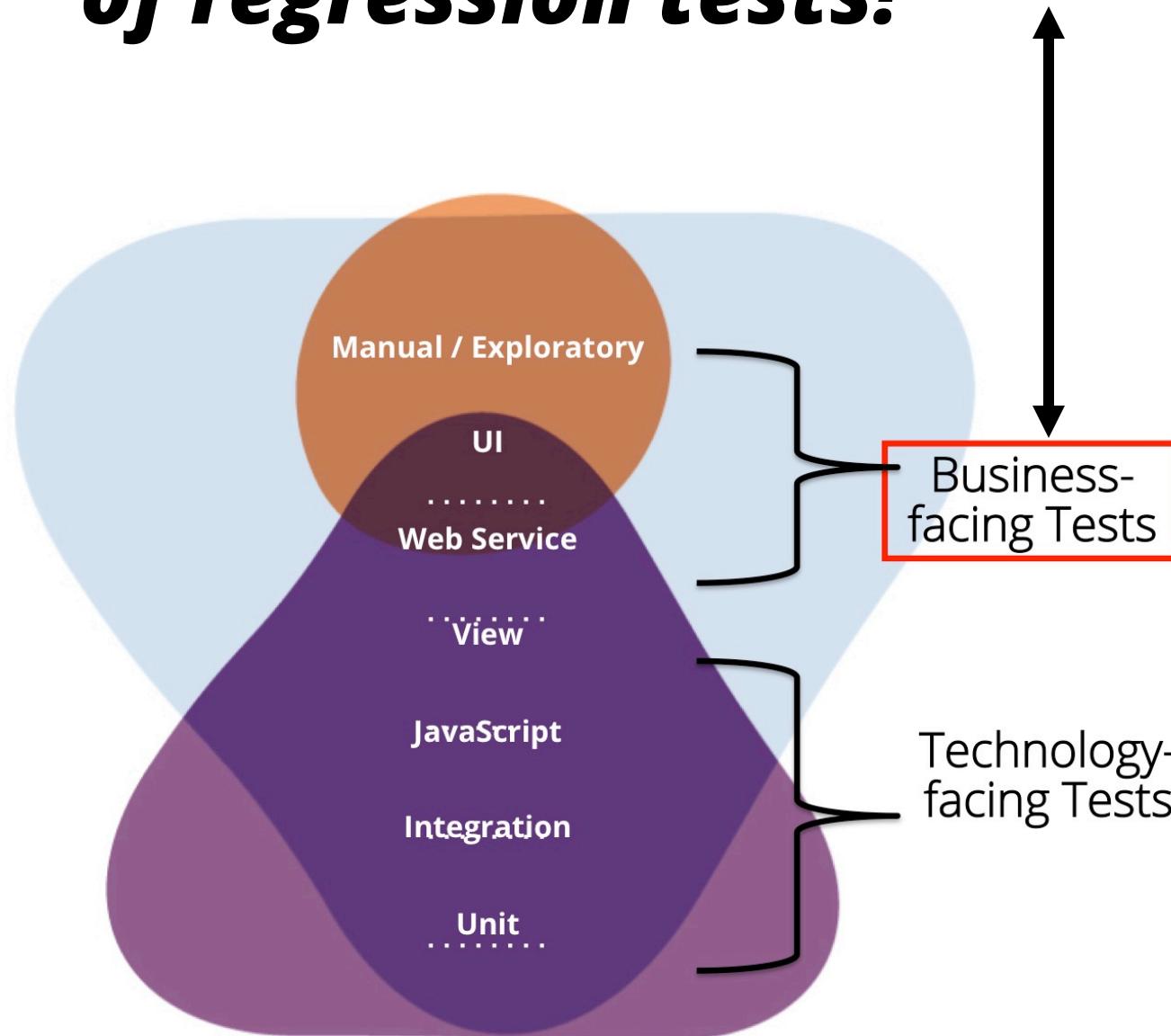
*How did this Technique become successful?*

# CONTEXT IS KING!





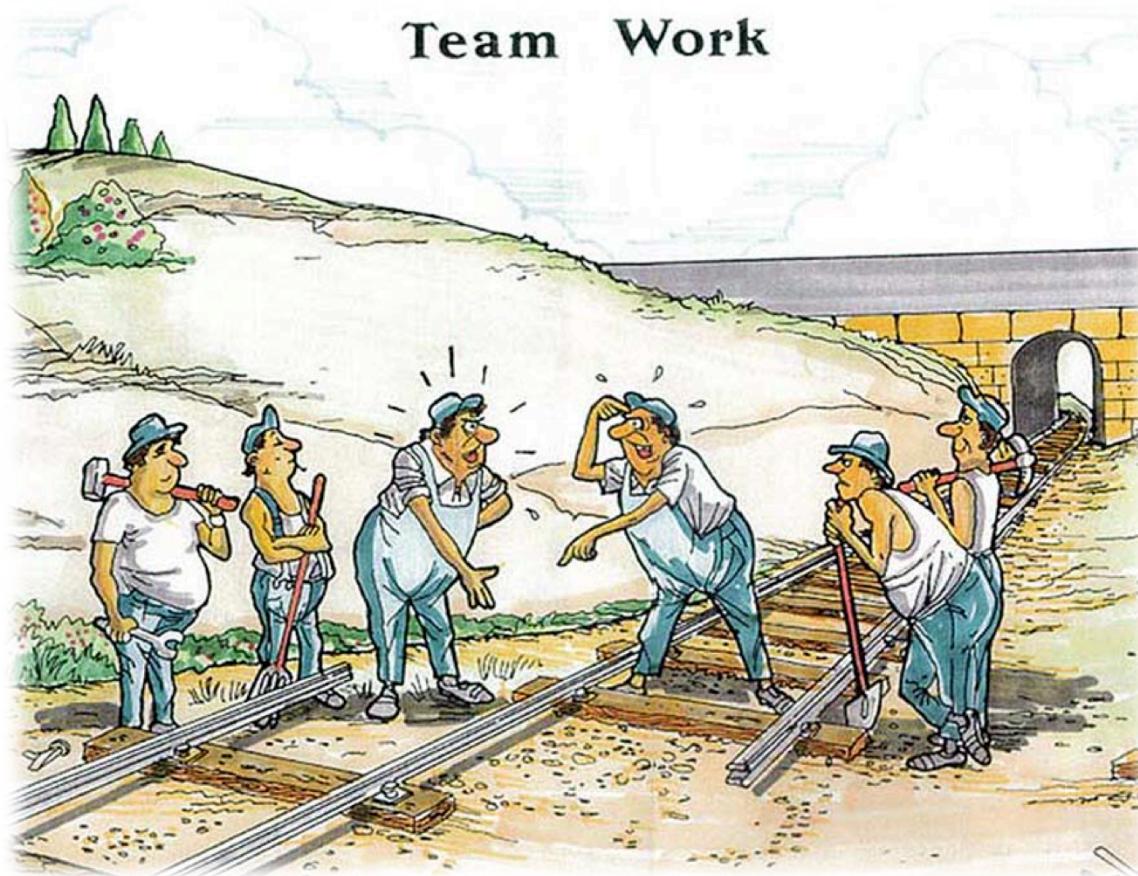
# ***BDT helps identify the “right” type of regression tests!***



# BDT WILL ...

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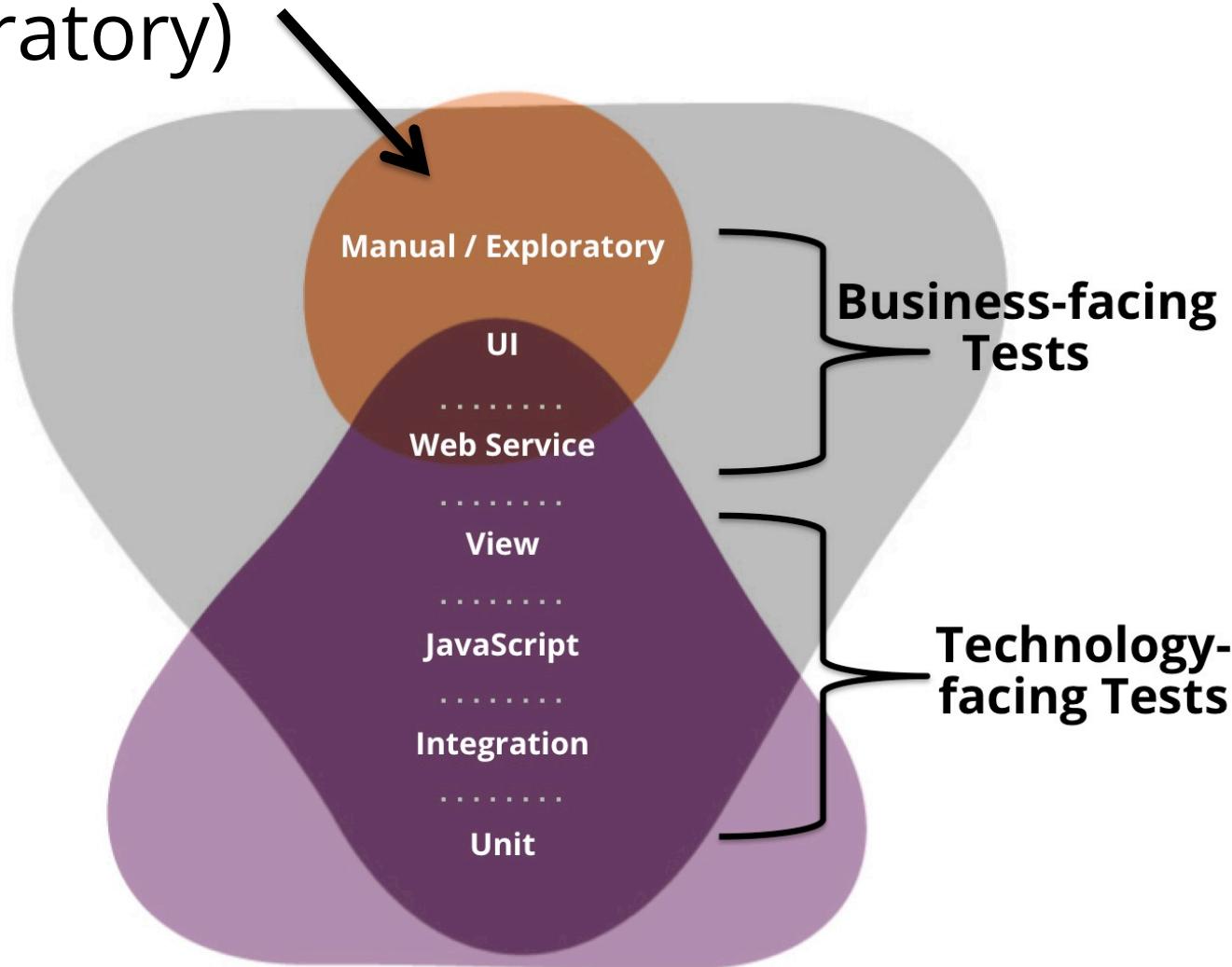
***NOT work in isolation***



# BDT REQUIRES ...

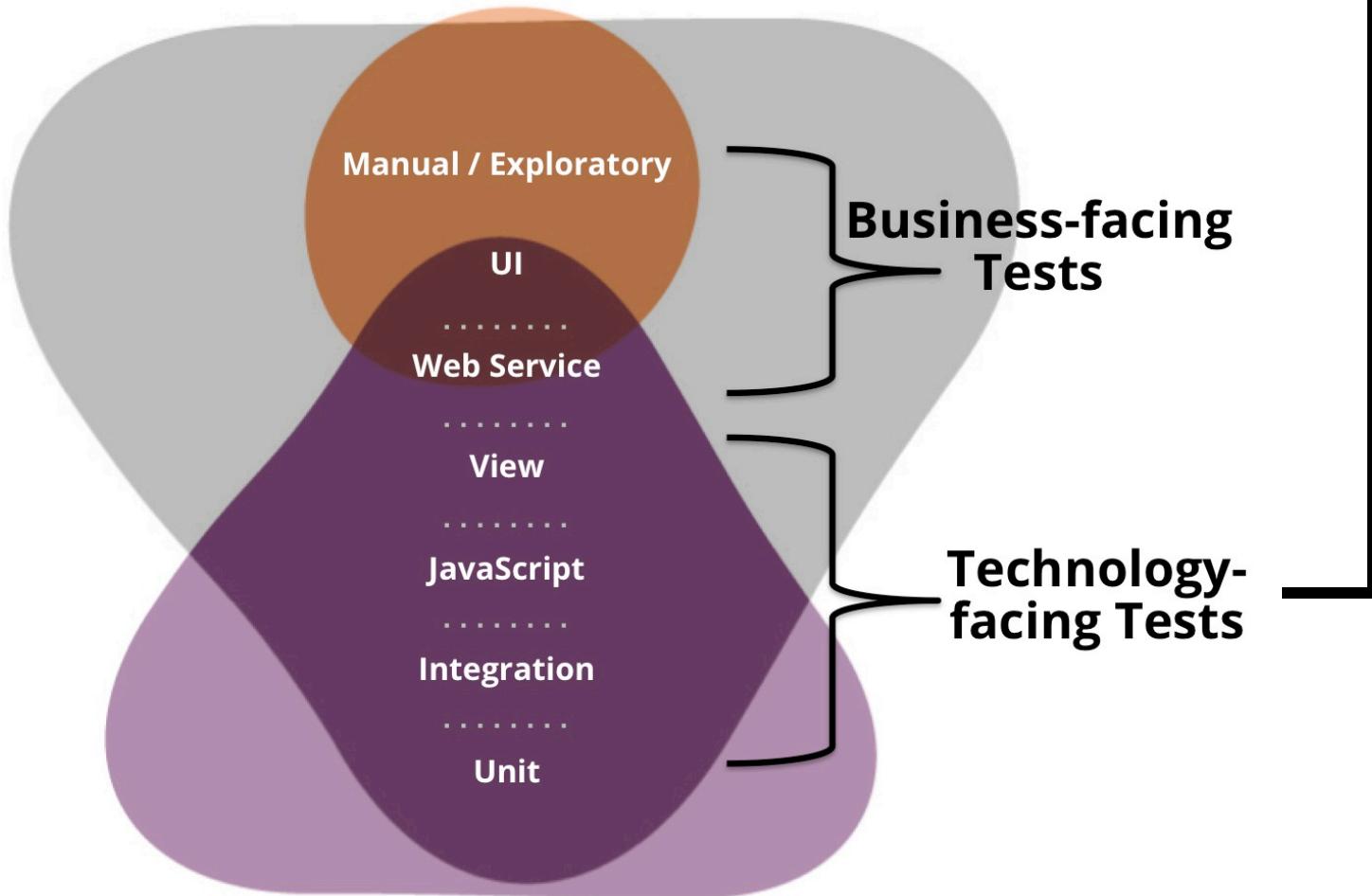
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Dedicated and Focused testing (manual / exploratory)



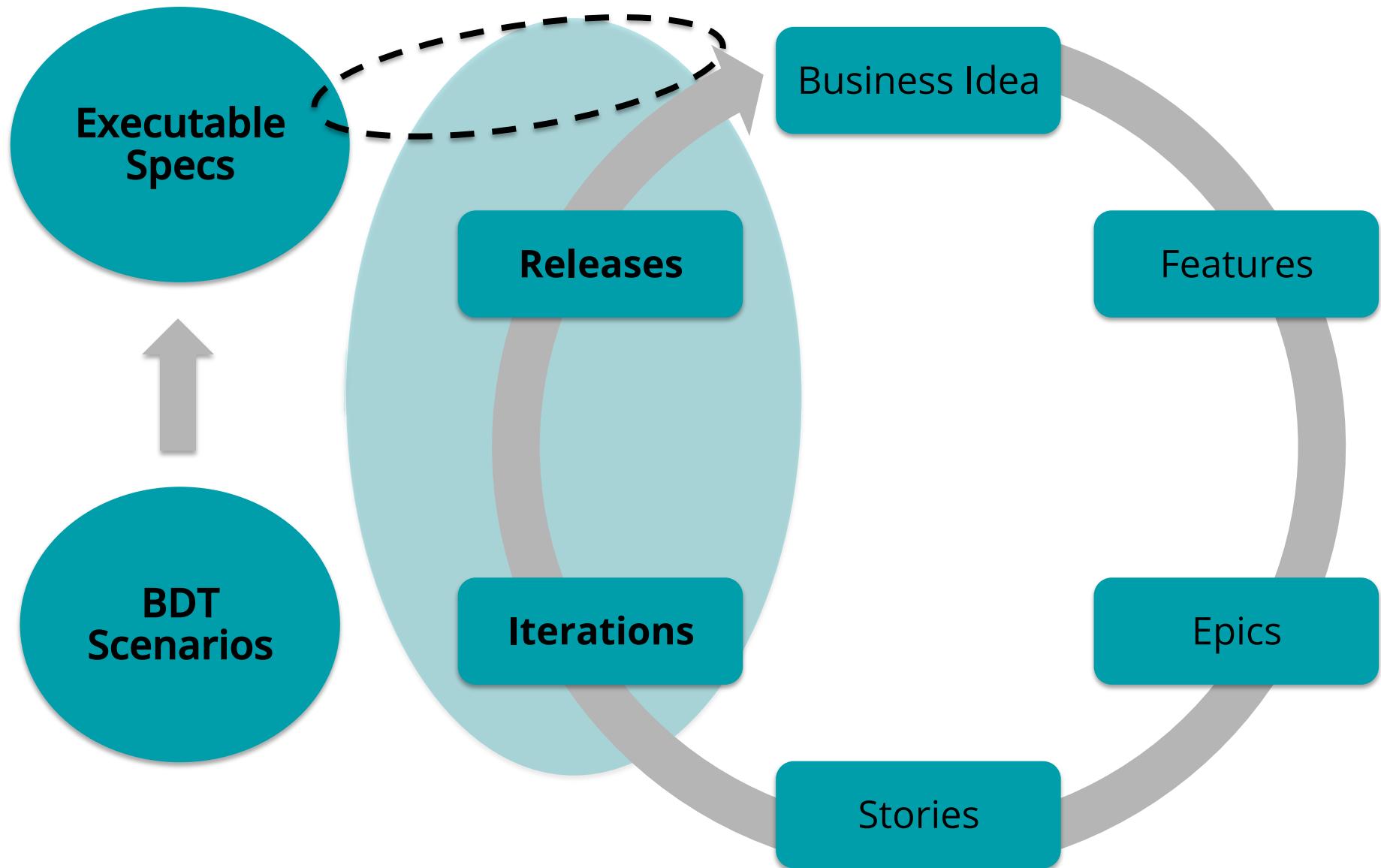
# BDT REQUIRES ...

Lower layers of Test Pyramid to be well automated!



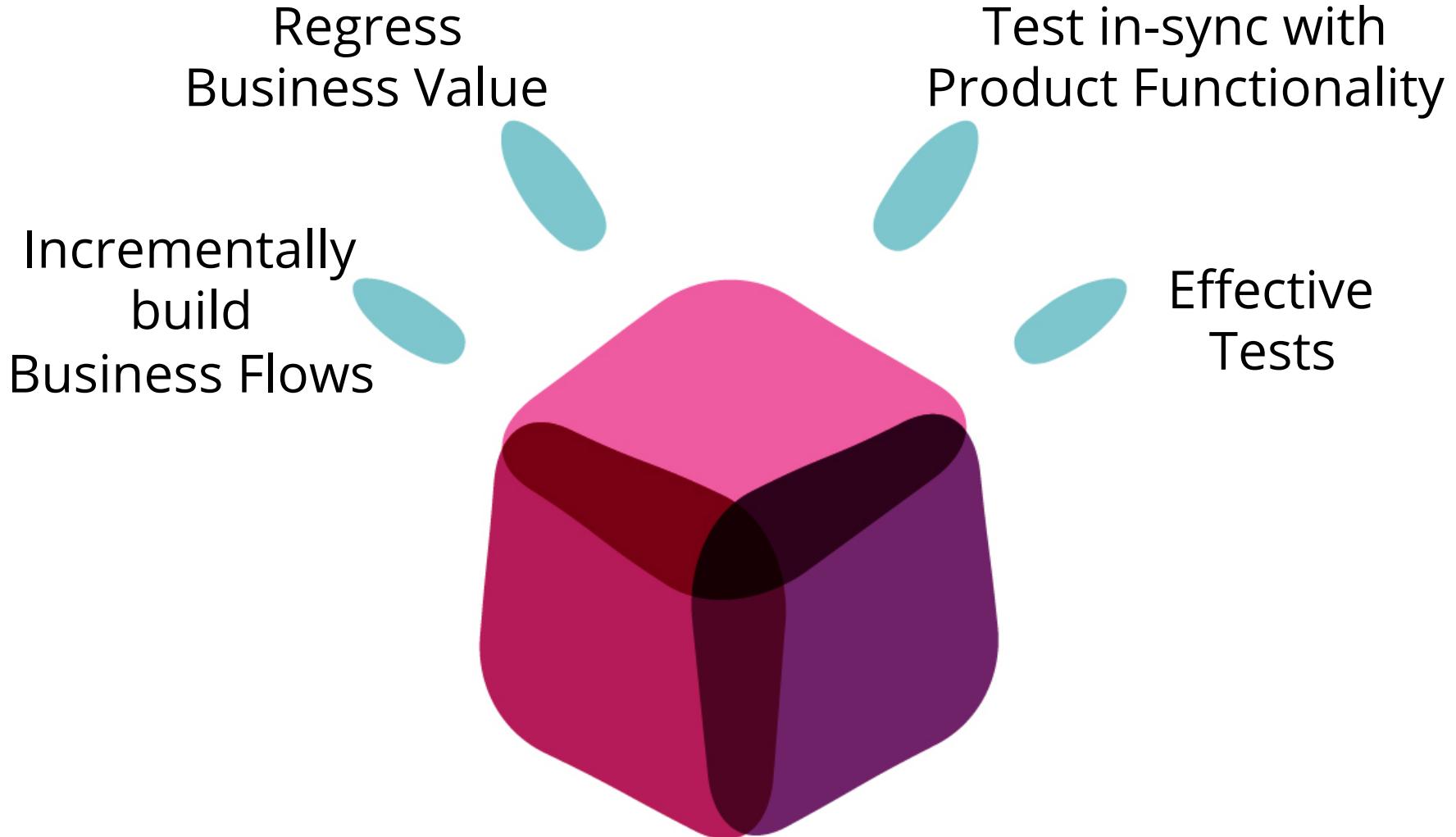
# BDT VALUE PROPOSITION

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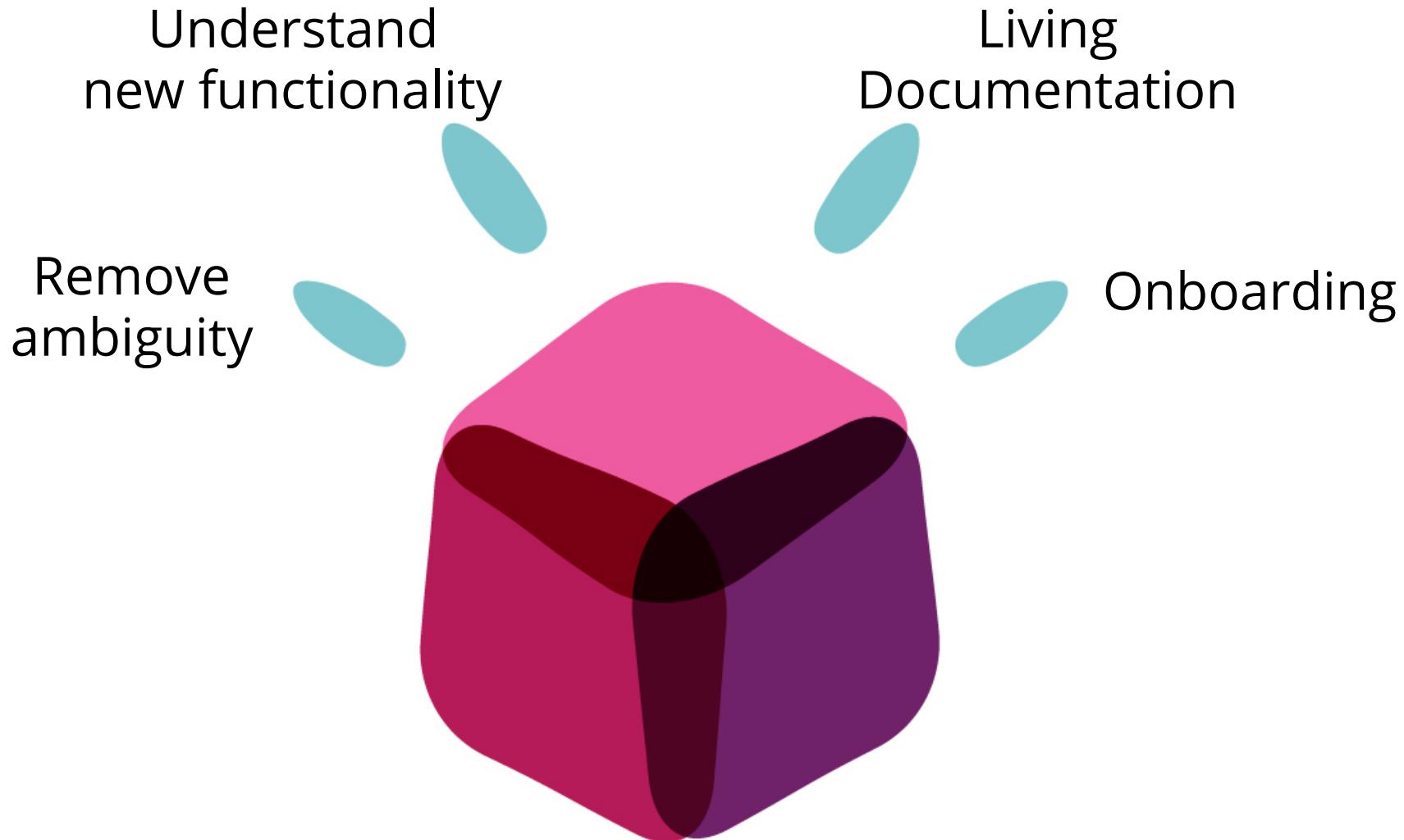
# BDT VALUE PROPOSITION ...

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# BDT VALUE PROPOSITION ...

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# THANK YOU

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@BagmarAnand

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