# BDD with Cucumber

Workshop Workbook

Opener

You have 5 minutes to find 2 people from other table groups and interview them. Write down their answers to the following two questions:

- How does practicing BDD provide increased customer value for a team?
- What is the key skill a team needs to learn to apply BDD well?

Return to your table group and each share what you learned in your interviews.

As a table group, identify several common themes in your interviewee responses and together create a mind map summarizing them.

Exploration and Discovery
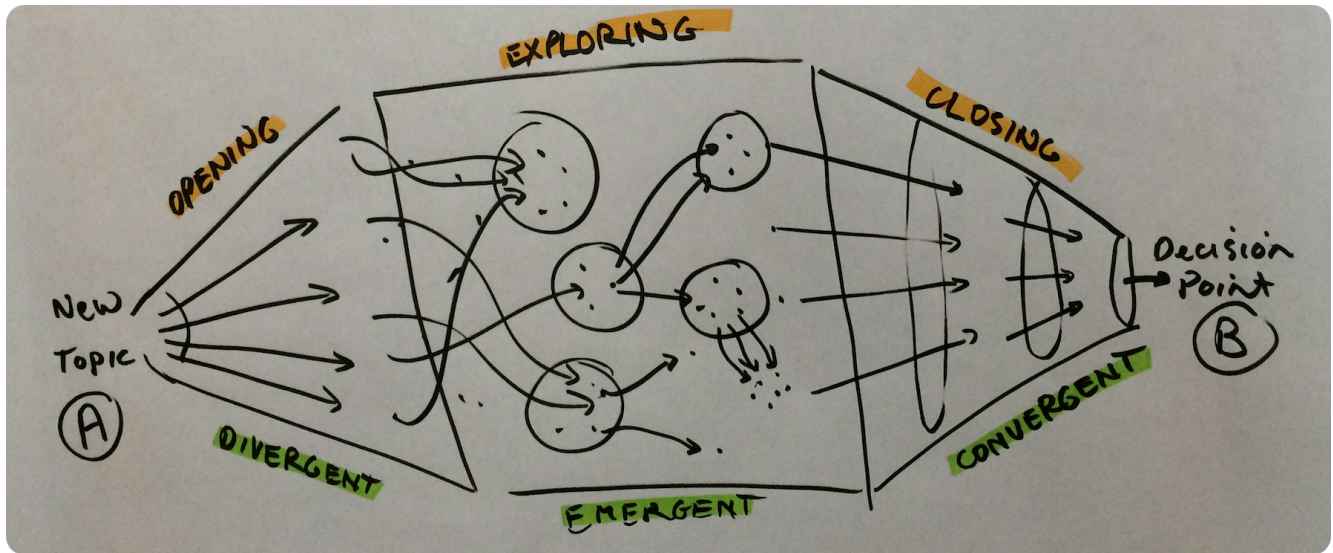
Capture the higher-level diagram of BDD flow given in the workshop below:

Review

In what ways does BDD incorporate exploration and discovery? Which area is most significant to you?

Exercise 1 – UXD with UI Mockups

DENVER PUBLIC LIBRARY

| DPL HOME | CATALOG | SEARCH ▾ | MY ACCOUNT ▾ | EBOOKS | DIDN'T FIND IT? | HELP ▾ |

My Account ▾

RAYNER, PAUL A

:: **$1.45 owed on your account**

My Account
Items Out (1)
Holds
Fines & Fees ($1.45)
Saved Searches
SIGN OUT

My Lists ▾

Saved Title Lists
Create new saved list...

Name:	RAYNER, PAUL A
Library Card Number:	******1884
Username:	paulrayner
Registered at:	Bear Valley
Card type:	Regular
Date of original registration:	2/27/2004
Expiration date :	12/31/2092

🛈 – more information

Fines & Fees

✔ i	Transaction Date	Type	Reason	Title	Amount	Balance
🛈	1/24/2015	Charge	Overdue Item	The study of counterpoint from Johann Joseph Fux's Gradus ad parnassum	$0.40	$0.40
🛈	1/24/2015	Charge	Overdue Item	Collective genius : the art and practice of leading innovation	$0.40	$0.40
🛈	1/24/2015	Charge	Overdue Item	Creativity, Inc. : overcoming the unseen forces that stand in the way of true inspiration	$0.40	$0.40
🛈	10/19/2013	Charge	Overdue Item	[DELETED] A wizard of earthsea	$0.25	$0.25

Charges: $1.45 Deposits: $0.00 Credits: $0.00

The library wants provide its patrons with the ability to pay their library fees online via credit card. The current Fine & Fees screen is shown above.

Using the draft mockup for Bob below as a starting example, hand-sketch several rough UI mockups for the most important steps of the fee payment process.

| DPL HOME | CATALOG | SEARCH | MY ACCOUNT | EBOOKS | DIDN'T FIND IT? | HELP |

New text for account deactivation. Seems a little verbose....

MY ACCOUNT
My Account
Items Out (23)
Holds
Fines & Fees ($13.05)

Saved Searches
Sign Out

| Name: | WILLIAMS, BOB |
| Library Card Number: | ***********1234 |

...

Your account has been deactivated due to unpaid fines. Pay fines below to unblock your card. You cannot check out or renew materials if you have fines or fees totaling $5 or more, your library account is in "collections" or you have an incorrect address and/or telephone number on your library record.

Fines & Fees

Info	Transaction Date	Type	Reason	Title	Amount	Balance
i	1/24/2015	Charge	Overdue Item	The study of counterpoint from Johann Joseph Fux's Gradus ad parnassum	$4.40	$4.40
i	1/24/2015	Charge	Overdue Item	Collective genius : the art and practice of leading innovation	$2.40	$2.40
i	1/24/2015	Charge	Overdue Item	Creativity, Inc. : overcoming the unseen forces that stand in the way of true inspiration	$2.40	$2.40
i	10/28/2014	Charge	Overdue Item	The Cucumber Book: Behaviour-Driven Development for Testers and Developers	$0.40	$0.40
i	11/2/2014	Charge	Overdue Item	Lean UX: Applying Lean Principles to Improve User Experience	$0.40	$0.40
i	9/8/2014	Charge	Overdue Item	Domain-driven Design: Tackling Complexity in the Heart of Software	$0.80	$0.80
i	10/19/2013	Charge	Overdue Item	[DELETED] A wizard of earthsea	$2.25	$2.25

Charges: $13.05 Deposits: $0.00 Credits: $0.00

New button for online fine payment.

Pay All Fines & Fees

Review

Did creating the mockups together help uncover assumptions and knowledge gaps for your group? In what ways did this UXD work help?

Exercise 2 – Being Attentive to Language

One of the developers on your team came up with the following initial Cucumber scenario:

```
Feature: Process fee payment using FP service

        Scenario: Submit to FP credit card payment service
                When I send a payment request to FP
                Then I should see a successful response
                And I should see an empty list of fines and fees
                And I should see "Charges: $0.00  Deposits: $0.00  Credits: $0.00"
                And I should not see "Library card blocked"
```

Your team all discussed it together and came up with the following revised Cucumber scenario:

```
Feature: Library patron account deactivation and reinstatement following full fee payment

        Library card accounts are considered "deactivated" and "reinstated" but library
        patron cards are considered "blocked" because they cannot check out or renew
        materials. The Bob persona applies here because Bob travels a lot and likes
        to use the library website as much as possible.

        # Uses 3rd party service (FP), covered elsewhere by integration tests
        Scenario: Reinstate deactivated account
                Given Bob owes $13.05 in unpaid fees and fines on his library account
                When Bob pays the full amount
                Then there should be no fines and fees
                And Charges, Deposits and Credits should each be $0.00
                And Bob's library card should be unblocked
```

Compare the two sample scenarios. What things in the first sample are too specific? What things are too general?

Underline any business domain terminology in the second sample. How does introducing this shared language help clarify the intent?

Review

Come up with a review question for your exercise partner from this exercise on being attentive to language and write it below. Then quiz them.

Exercise 3 – Exploring the Domain with Event Storming

Grab a flipchart sheet. Write "Bob the library patron – prefers online to in-person" on a yellow sticky note. Write "Library card unblocked" on a green sticky note and place it on the right side of a flipchart sheet. Write "Full amount paid" on another green sticky note and place it to the left of the first sticky. Then write "$13.05 owed in unpaid fees and fines" on another green sticky note and place it to the left of the second sticky.

Working backwards, create a green sticky note for each significant event that happened in the past that led to this amount being owed.

If you get stuck, ask clarifying questions such as:

- "What is a good example of that...?"
- "What do you mean by...?"
- "What circumstances would cause ... to happen?"
- "What was the path that led us here?"
- "What else could cause this to happen?"
- "Are there other potential outcomes?"
- "What are the implications of ...?"
- "What might lead someone to do/need ...?"
- "Is there a better way to do ...? What might that be?"

Don't get bogged down in details, try to go broad rather than deep.

Write any questions you have on pink sticky notes and stick them to the flip chart too.

Review

How might mapping out events in this way help a team develop a shared understanding of their business domain and systems?

Exercise 4 – Expanding to Commands, UI Mockups and more Examples

The library feels that too many library patrons end up paying fines, and wants to find ways to help patrons return materials on time and avoid fines. On your event storming area, write on a blue sticky note "Notify library patron about unpaid fines" and on another blue sticky note "Notify library patron about blocked card." Figure out what events on your flipchart might result in these commands and place the blue sticky notes accordingly.

Here is the current user account preferences form for notifications:

Create a UI mockup(s) and brainstorm acceptance test(s) for the library patron to be able to choose when to be notified about fees and fines. *Make sure you are talking about specific examples.*

Review

What was your key takeaway from integrating the results your event storming with UXD mockups and specification by example?

Summary

In BDD with Cucumber there tends to be a cycle of discovery, then formalization. This cycle may happen at the feature, scenario or step level.

With discovery and exploration:

- **Focus first on learning and understanding.** Use whatever combination of techniques help create shared learning and understanding.

- This is brainstorming, so build on each others' ideas

- Make sure the right people are in the room, to capture the diverse perspectives from various team members.

- Sketch on a flipchart sheets, whiteboard and/or sticky notes where possible to keep the conversation moving quickly and promote learning.

- Conversations and examples are primary at this point, so don't be bound to the Gherkin syntax or formatting.

With formalization:

- Conform the text of the feature file to the Gherkin syntax.

- Often better to have one or two people do the bulk of the formalization as a (separate) refinement exercise.

- A team will likely learn new things in the process of implementing the first few scenarios that feed back into more conversations.

Review

Circle what you think are the three most important statements above. Why did you choose these?

Closing Review

Create a mind map below that shows your aha's from today's workshop. Include:

- things you learned,
- new insights you want to remember,
- cool things you heard other people say, and
- things you want to experiment with based on what you experienced today.

Once you have your mindmap, find someone from a different table group and share what you each created.

About Virtual Genius

We help software teams succeed with agile development, with customer-focused design at the center of everything the team does. This involves a holistic design approach that incorporates principles and practices from design thinking, domain-driven design (DDD), agile engineering practices, lean user-experience design (UXD) and behavior-driven development (BDD).

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