



# Seven Steps to Less Stress in Application Development and Maintenance

The Behavior-Driven Development Approach  
to Efficient, Effective Development Sprints

2020 Internship Showcase

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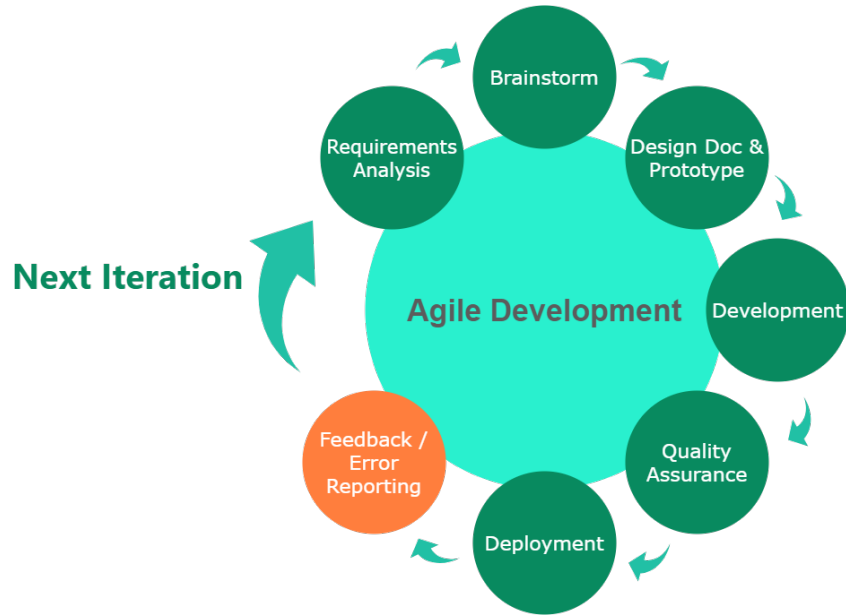




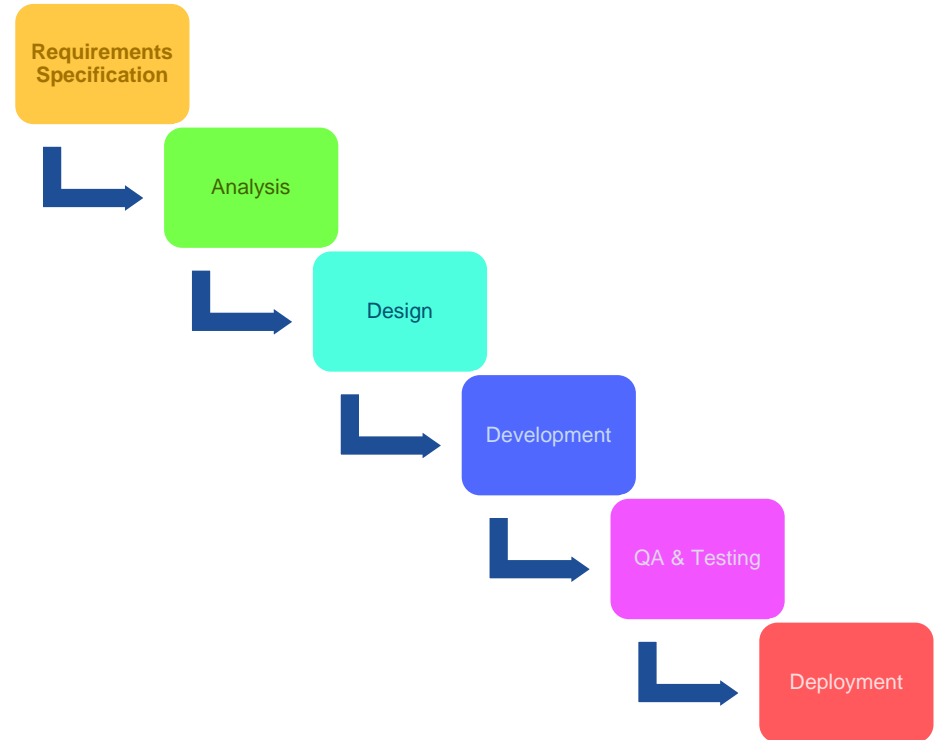
# What is Quality Assurance?



# The Tale of Two Cycles



## Waterfall Development



# 7 steps to less stress: Behavior-Driven Development





## Perks of BDD

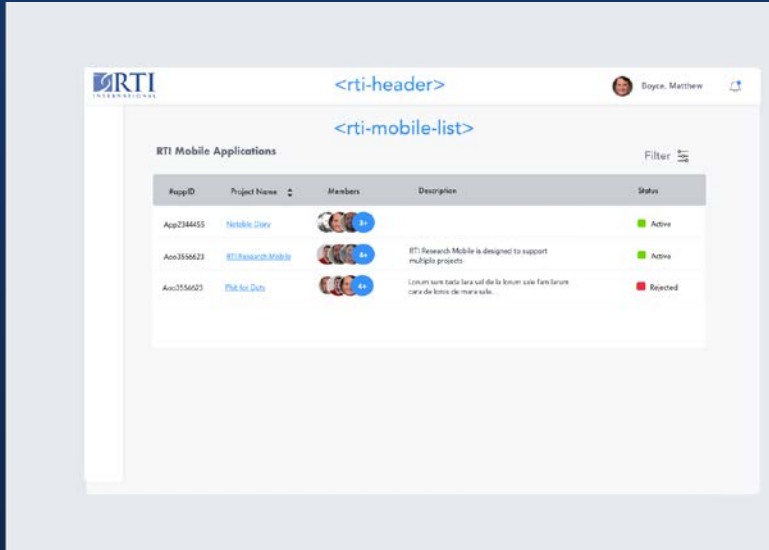
- Shared understanding across key stakeholder teams
- Ubiquitous language
- Eliminates requirements defects
- Flexible, clean infrastructure
- Test-Driven development
- Maintainable software
- Money saved by debugging early

# Real-World Usage: Mobile Developer Dashboard

Feature: Users will use the mobile list to view the projects that they have, it is the homepage of application  
The mobile list is "snapshot" of all the mobile app projects a user is currently involved in

## PHASE 1 FEATURES:

- Sections: Proj name, Members, Description, Status, Business unit, Project cost
- "No active projects" display if there aren't any projects in user's dashboard
- "Error 500" if there's issues with API Server
- "More details" view opens when project is clicked
- Add Project
- Add Members



```
1 import { Given, Then, When, Scenario } from "cucumber";
2 import { async, ComponentFixture, TestBed } from "@angular/core/testing";
3 import { DashboardContainerComponent } from "../../src/client/app/dashboard/dashboard-container/dashboard-container.component";
4 import { browser, element, by } from "protractor";
5
6 // Scenario: A Project Manager navigates to add project page
7 Given("A Project Manager is in the application", function () {
8   | return `pending`;
9 });
10
11 When("User goes to New Project page", function () {
12   | return `pending`;
13 });
14
15 Then("The Add Project page opens", function () {
16   | return `pending`;
17 });
18
19 // Scenario: A Project Manager adds new project
20 Given("A Project Manager is in Add Project page", function () {
21   | return `pending`;
22 });
23
24 Given("User fills out all required fields correctly", function () {
25   | return `pending`;
26 });
27
28 When("User adds project", function () {
29   | return `pending`;
30 });
31
```

## Background:

Given an active RTI employee

Scenario: An employee logs in with valid credentials

```
Given User was not logged into the application
When User inputs valid credentials
Then Application opens to Mobile List view
```

Scenario: An employee logs in with invalid credentials

```
Given User was not logged into the application
When User inputs invalid credentials
Then Application prompts user for valid credentials
```

Scenario: An employee navigates to site after previously logging in

```
Given User is not in application
And User previously logged into application
When User navigates to the application
Then Application opens to Mobile List view
```

# Acknowledgments

- Marcus Lofton
- Becky Johnson
- Lee Whitbeck
- Sarian Turner
- University Collaborations
- RTI International

# Further Reading

- [Introducing BDD](#)
- [Beginner's guide to BDD](#)
- [Behavior-Driven Development From Scratch](#)
- [Cost of Quality](#)





# Thank you

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