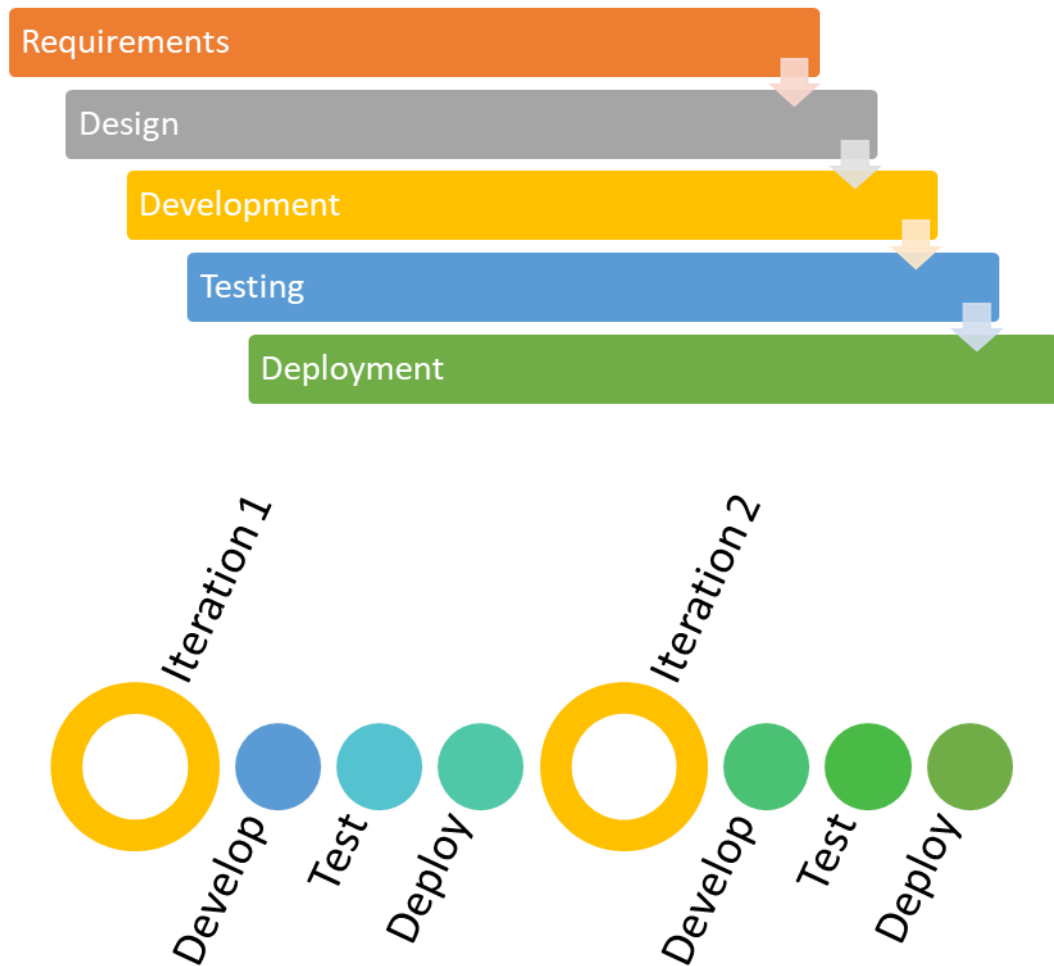
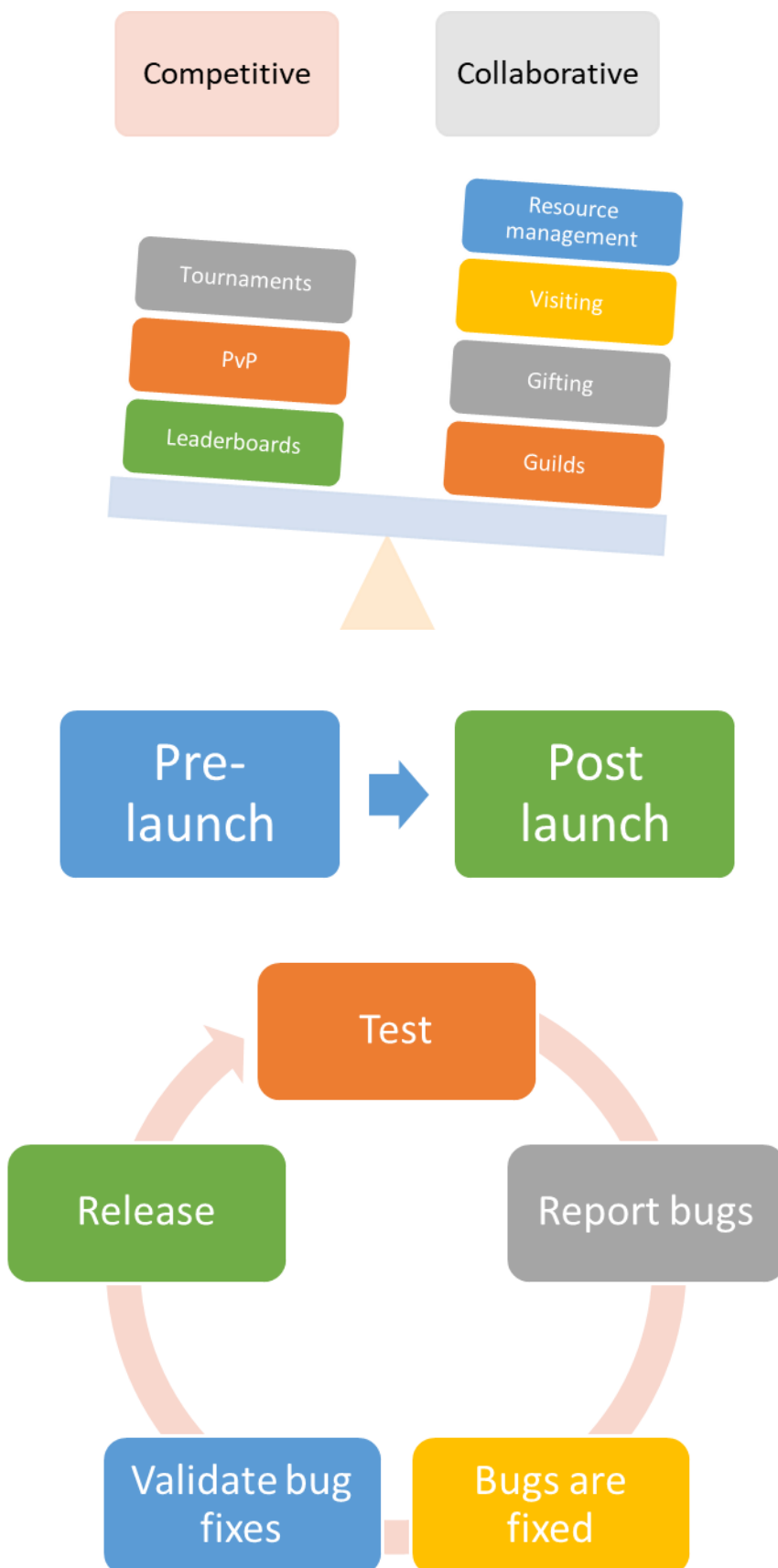
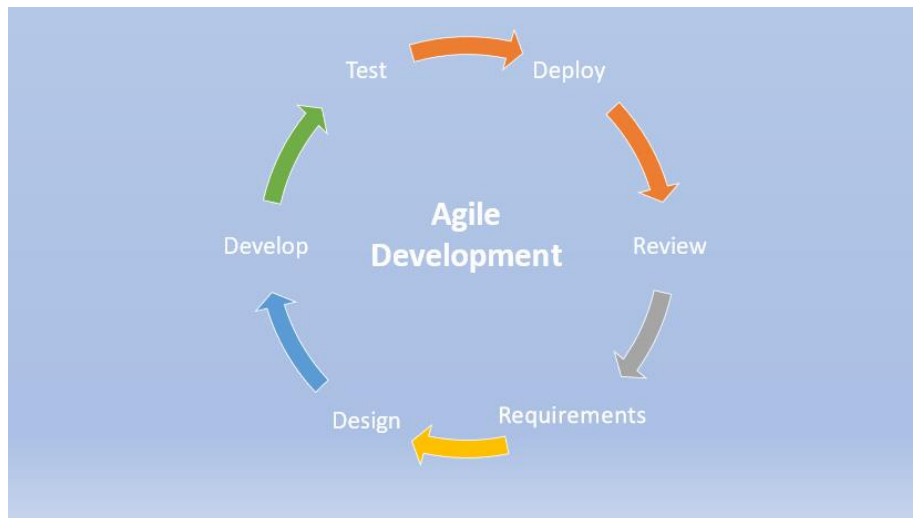
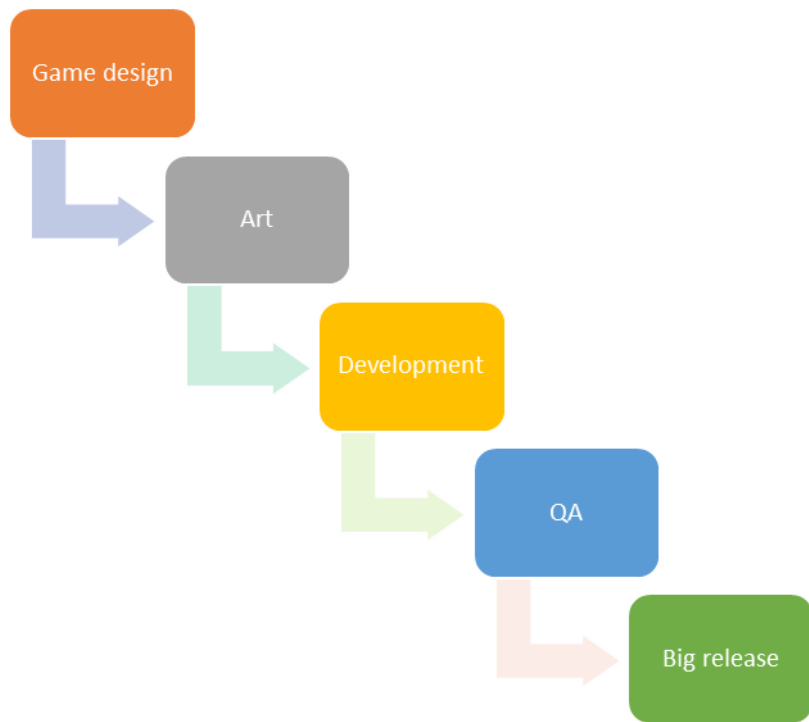


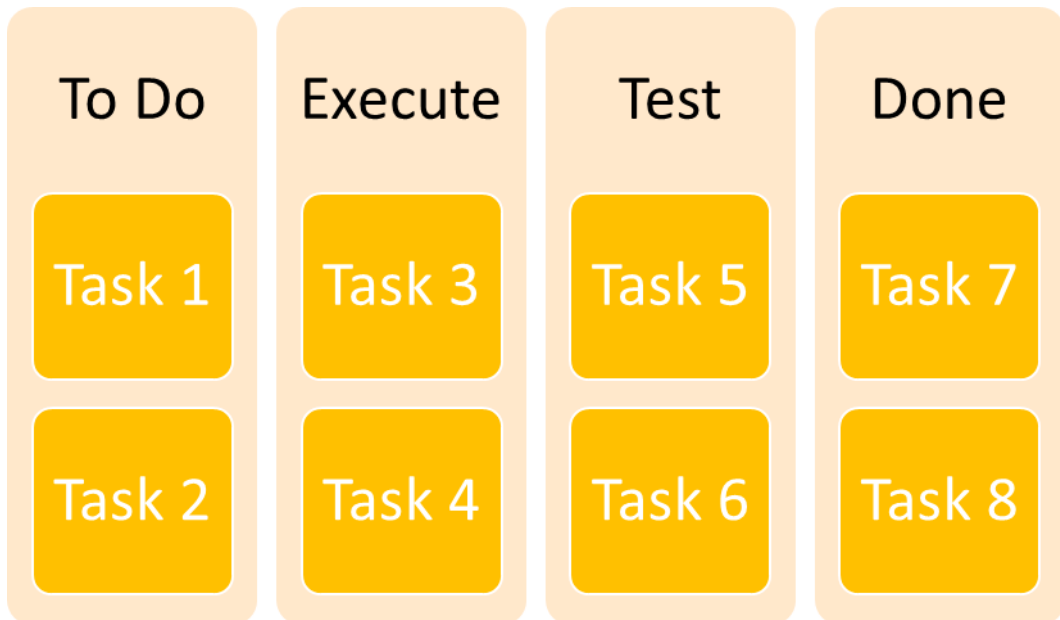
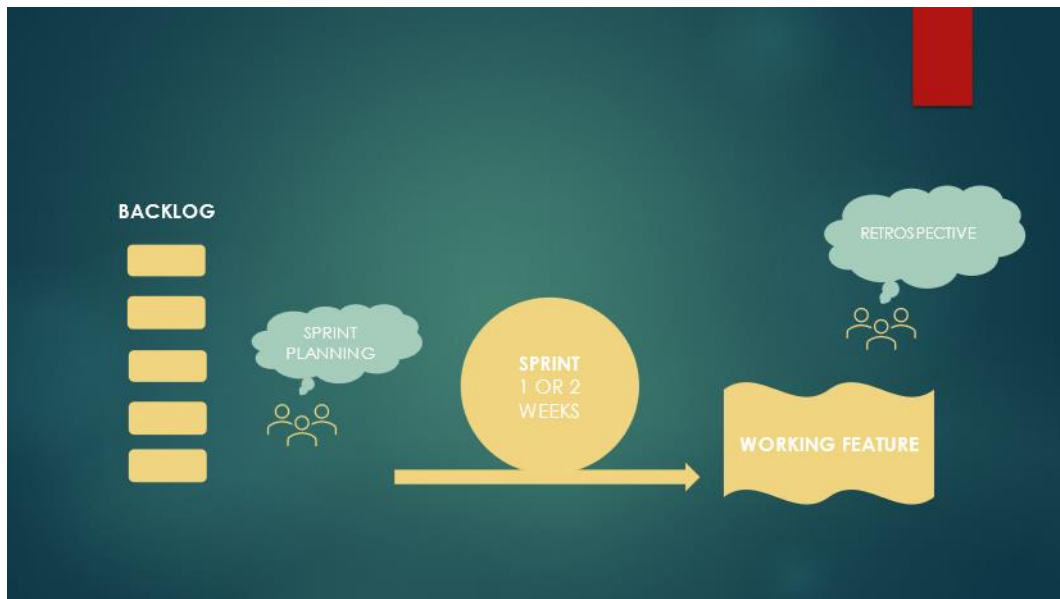
## Chapter 01: Setting the Stage – Introduction to QA for Modern Games



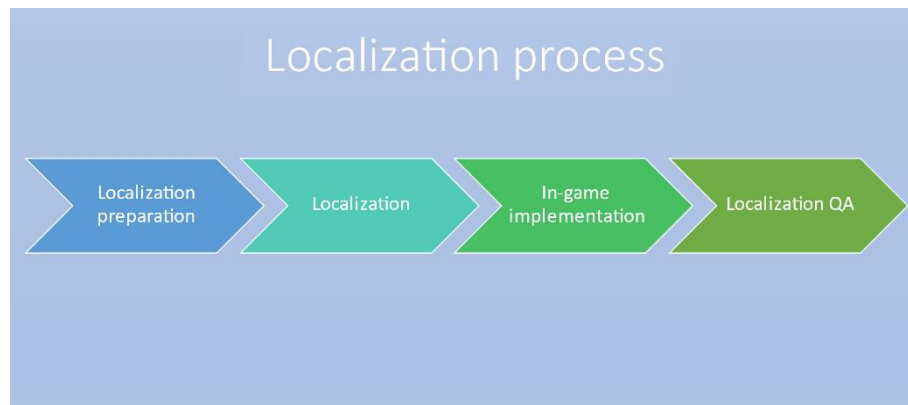
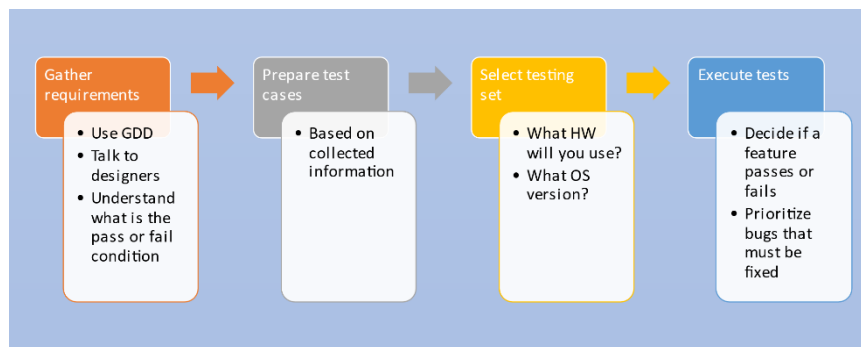
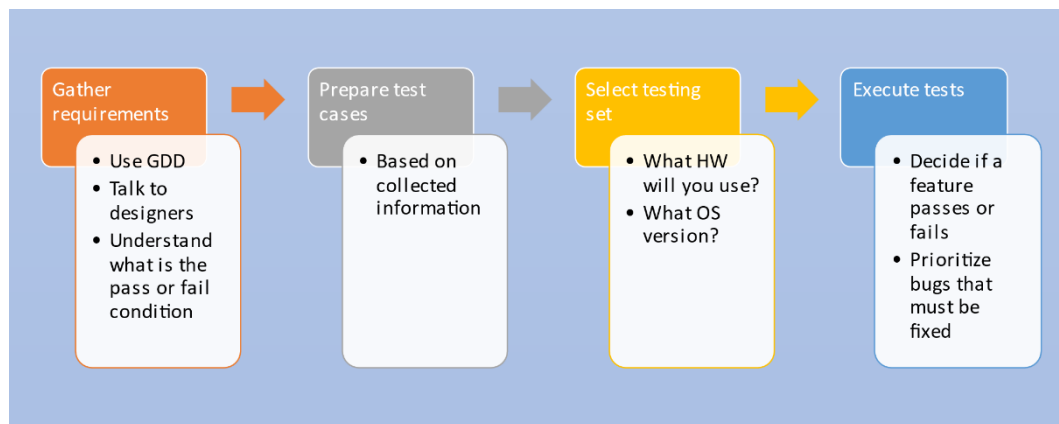
## Chapter 02: All Engines Go – The Basics of Game QA







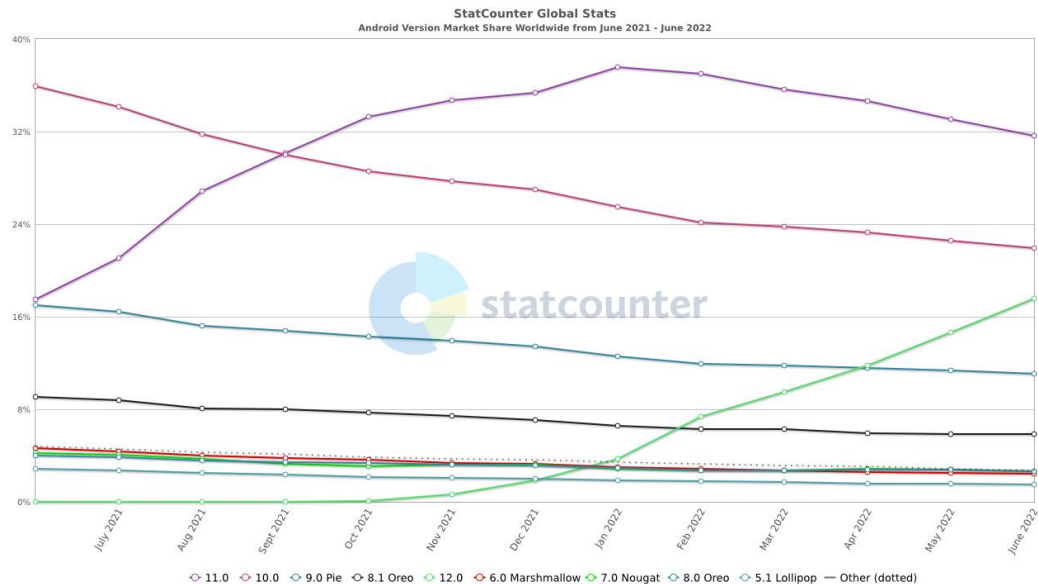
## Chapter 03: A Deeper Look – Types of Testing in Games



## Localization process



## Chapter 04: Deeper Look – Testing on Various Gaming Platforms – Mobile, PC, and Console



### GAMING CONSOLES

#### SONY PLAYSTATION

- Currently in 5<sup>th</sup> generation
- 3 major regional offices (SIEE, SIEA, SIEJ)
- Technical requirement checklist (TRC)

#### MICROSOFT XBOX

- Currently in 4<sup>th</sup> generation
- TCR/XR = set of requirements that needs to be met
- 3 different ways to publish on Xbox

#### NINTENDO

- Longest running platform
- LotCheck = set of requirements that needs to be met

## CONSOLE GAME PRODUCTION MILESTONES

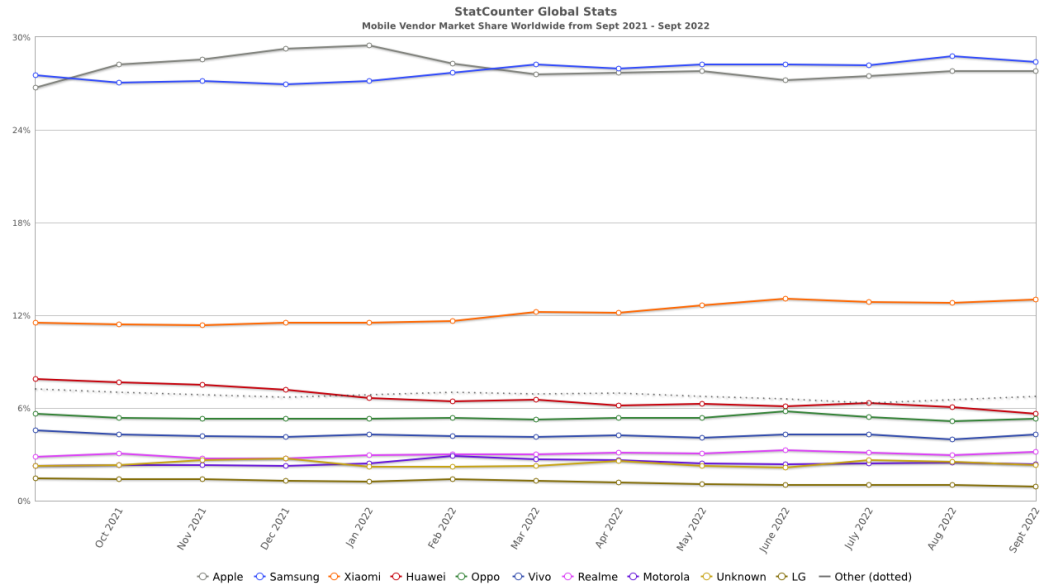


## BROWSER TESTING

MAC	PC	OTHER
<ul style="list-style-type: none"><li>• Safari</li><li>• Chrome</li></ul>	<ul style="list-style-type: none"><li>• Chrome</li><li>• Firefox</li><li>• MS Edge</li></ul>	<ul style="list-style-type: none"><li>• Firefox</li><li>• Chrome</li><li>• Opera</li><li>• Vivaldi</li></ul>





# Chapter 05: It Must Be Hardware: Testing Hardware in Modern Game QA



DEVICE	PROCESSORS	GPU	DISPLAY	SCREEN RATIO	MEMORY	ANDROID OS
<b>Samsung Galaxy S22 Ultra</b>	Octa-core (1x2.8 GHz CortexX2 & 3x2.50 GHz Cortex-A710 & 4x1.8 GHz Cortex A510) - Europe	Xclipse 920 Europe	Dynamic AMOLED 2X, 120Hz, HDR10+, 1750 nits (peak), 6.8 inches, 114.5 cm <sup>2</sup> (~90.0% screer-to-body ratio), 1440 x 3080 pixels	19.5 : 9	512GB 12GB RAM	Android 12
<b>Google Pixel 6 Pro</b>	Octa-core (2x2.80 GHz CortexX1 & 2x2.25 GHz Cortex-A76 & 4x1.80 GHz Cortex-A55)	MaliG78 MP20	LTPO AMOLED, 120Hz, HDR10+, 6.7 inches, 110.6 cm <sup>2</sup> (~88.9% screen-to-body ratio) 1440 x 3120 pixels	19.5 : 9	128GB 12GB RAM	Android 12
<b>Oppo Find X5 Pro</b>	Octa-core (1x3.00 GHz CortexX2 & 3x2.50 GHz Cortex-A710 4x1.80 GHz Cortex-A510) - Global	Adreno 730	LTPO2 AMOLED, 1B colors, 120Hz, HDR10+, BT.2020, 500 nits (typ), 800 nits (HBM), 6.7 inches, 108.4 cm <sup>2</sup> (~89.6% screen-to-body ratio), 1440 x 3216 pixels	20 : 9	256GB 12GB RAM	Android 12

## Chapter 06: Friend or Foe – Test Cases

TEST CASES ARE USEFUL 	TEST CASES ARE NOT USEFUL 
Onboarding new team members	When testing team is senior
Working with outsourced testers	When test cases require heavy maintenance
Working with a new game	When they are used as only measure of testers efficiency
When we need to split work among multiple testers	Can prevent testers from using their initiative
Estimating test coverage	When they stop producing bugs/testing fatigue

Test Case Id						
A	B	C	D	E	F	G
Test Case Id	Test cases	Description	Expected Result	Result	Version Number	Comments
V0.6_1_01	Loading	1. Install the build 2. Launch the build	Game Screen should be visible.	Pass		
V0.6_2_01	Game Launch	1. Install the build 2. Launch the build	Game should be launched with all correct scenes	Fail		<a href="http://youtrack.bo">http://youtrack.bo</a>
V0.6_3_01	Art	1. Load the game 2. Observe all the cities, Resources and factories	Game should display all cities, Resources and factories	Pass		
V0.6_4_01	Tutorial	1. Load the game 2. Observe the tutorial text.	Tutorial text should be displayed correctly in the speech bubble	Pass		
V0.6_4_02	Tutorial	1. Load the game 2. Observe the tutorial text.	Check the tutorial text is spelled correctly	Pass		
V0.6_4_03	Tutorial	1. Load the game 2. Tap on the tutorial text to proceed 3. Arrow points at Apple request at city Seven rivers	The Camera should zoom in at City seven rivers. And Green arrow should point correctly at Apple request.	Pass		
V0.6_4_04	Tutorial	1. Load the game 2. Tap on the tutorial text to proceed 3. Tap on the arrow that points at Apple request at city Seven rivers	Yellow arrow should point at the facility Apple Orchard and blue spiral animation is visible at city seven rivers	Pass		
V0.6_4_05	Tutorial	1. Load the game 2. Tap on the tutorial text and request at city to proceed 3. Tap on the arrow that points at Apple Orchard facility	Truck moves from Apple Orchard to Seven Rivers delivering the Apples.	Pass		
V0.6_4_06	Tutorial	1. Load the game 2. Tap on the tutorial text and request at city to proceed 3. Tap on the arrow that points at Apple Orchard facility 4. Truck delivers apples	Request completed icon is displayed at the city. Arrow points at the request complete icon	Pass		
V0.6_4_07			Rewards animation is observed Tutorial text is displayed and tap to proceed to further			



### Characteristics of great test cases

Reusable

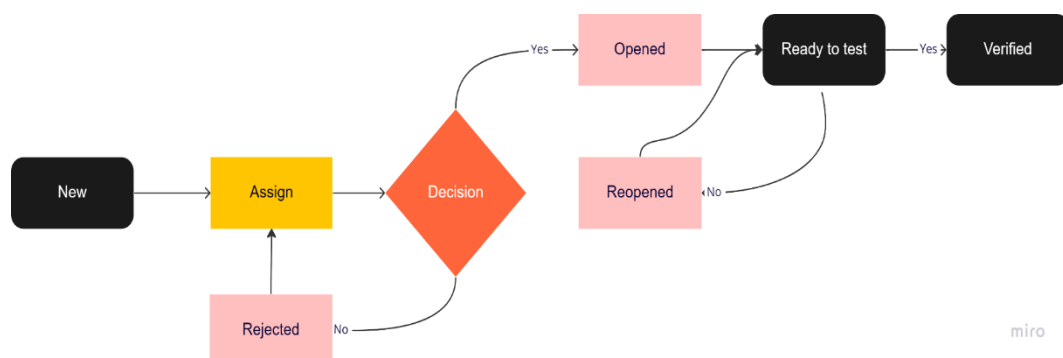
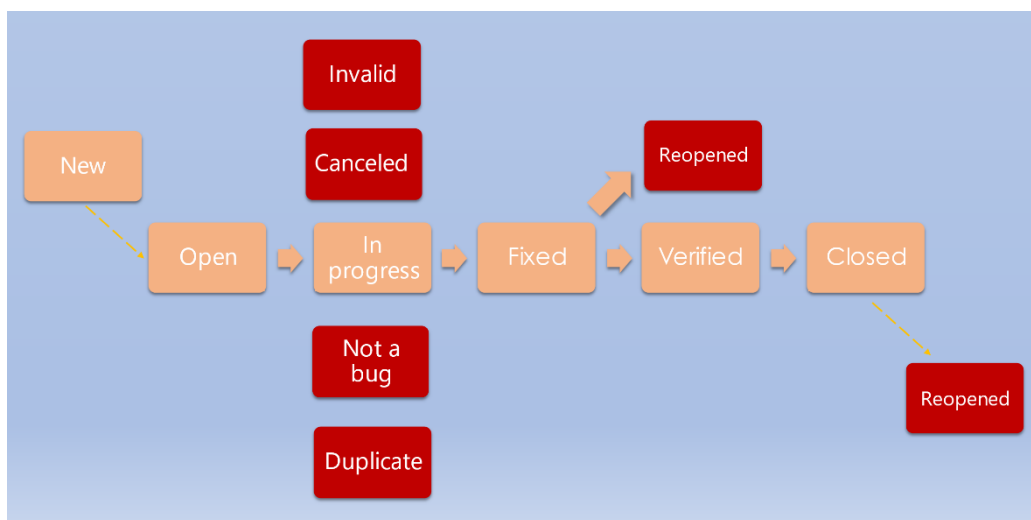
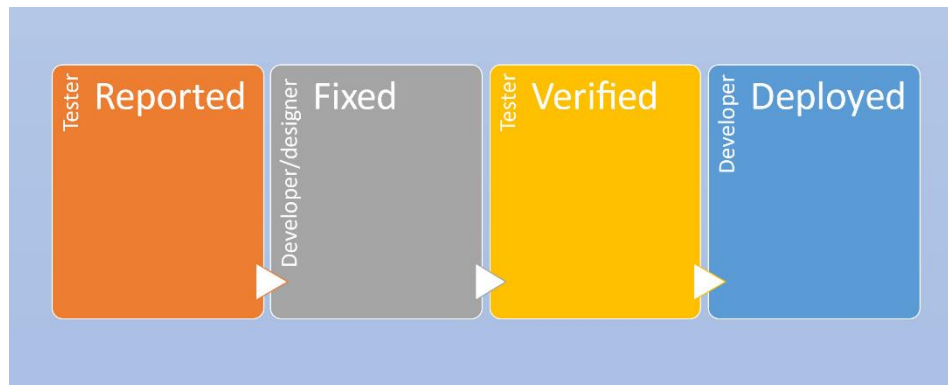
Clear &  
concise

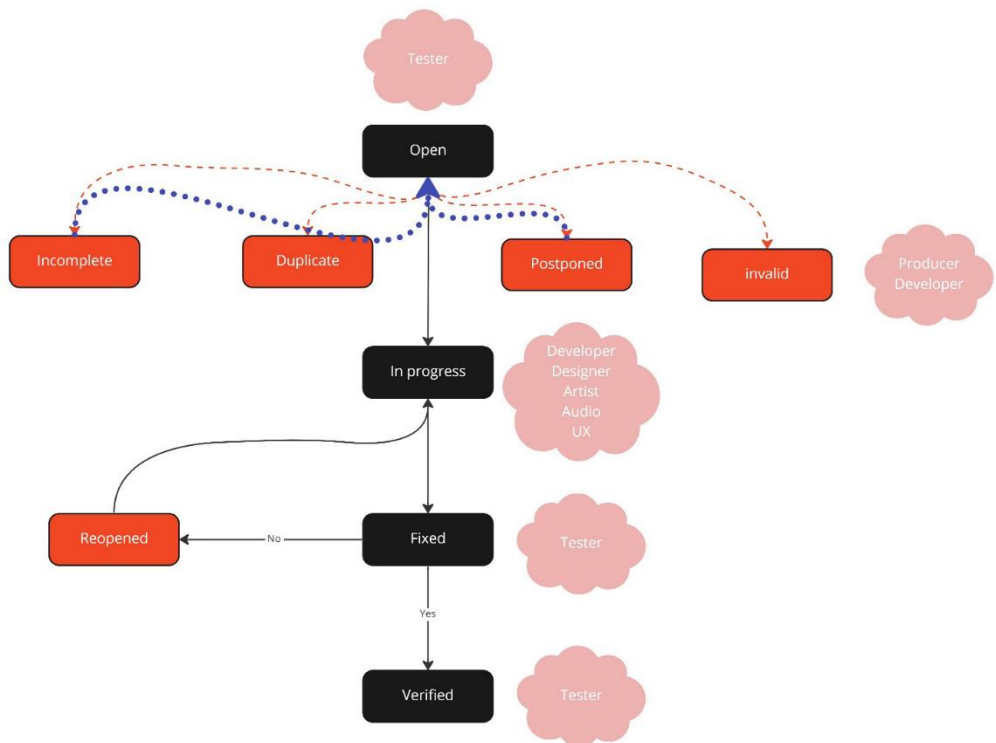
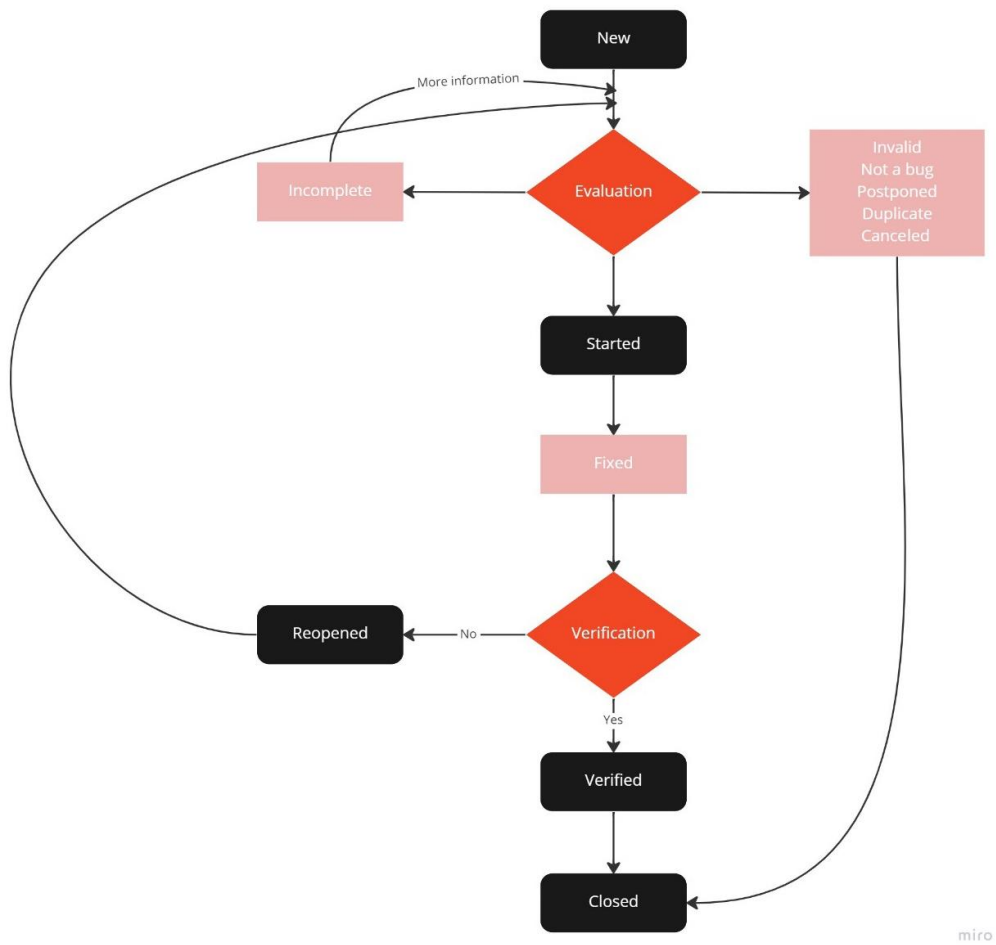
Focused

Produces  
bugs

Relevant

## Chapter 07: It Works on My Machine: Bug Flow





TO DO	IN PROGRESS				DEPLOY
	DESIGN	ART	DEVELOP	TEST	
FEATURES					
BUGS					

# Chapter 08: I Thought I Fixed That: How to Write Efficient Bug Reports

The screenshot shows a bug report interface for a project named 'TEST'. The bug title is 'NF\_iOS\_Level: level 31 doesn't start'. The interface includes a left sidebar with navigation options like 'Roadmap', 'Board', and 'Code'. The main content area contains fields for 'Description', 'Preconditions', 'Steps to reproduce', 'Expected result', 'Actual result', 'Repro rate', 'Version found', 'Environment', and 'Priority'. The right sidebar shows 'To Do', 'Pinned fields', 'Details' (including Assignee, Labels, Reporter), and a 'Quickstart' button.

Projects / TEST / Add epic / TEST-1

## NF\_iOS\_Level: level 31 doesn't start

Attach Add a child issue Link issue

**Description**  
**Preconditions:** reach level 31

**Steps to reproduce:**

1. Tap on the level 31 on the map
2. Wait for level to start

**Expected result:** level 31 starts  
**Actual result:** game crashes  
**Repro rate:** 5/5

Version found TEST

**Environment**  
iPhone 12, iOS 15

Priority High

Add a comment...  
Pro tip: press **M** to comment

**To Do**

**Pinned fields**

Click on the ☆ next to a field label to start pinning.

**Details**

**Assignee**  
Unassigned  
[Assign to me](#)

**Labels**  
None

**Reporter**  
NF Nikolina Finska

Created 28 seconds ago  
Updated 28 seconds ago  
[Configure](#)

[Quickstart](#)

The screenshot shows a 'New issue' form with a 'Summary' field, a 'Description (optional)' field, and a file upload area. The right sidebar contains fields for 'Status' (Open), 'Assignee' (Unassigned), 'Due date' (Unscheduled), 'Tags' (Not set), 'Parent issues' (Not set), 'Boards' (Not set), 'Checklists' (Not set), and 'Priority' (3 Normal (default)).

New issue in [redacted]

Summary

Description (optional)

Click to browse or drag files here

Cancel ? Create

**Status**  
Open

**Assignee**  
Unassigned

**Due date**  
Unscheduled

**Tags**  
Not set

**Parent issues**  
Not set

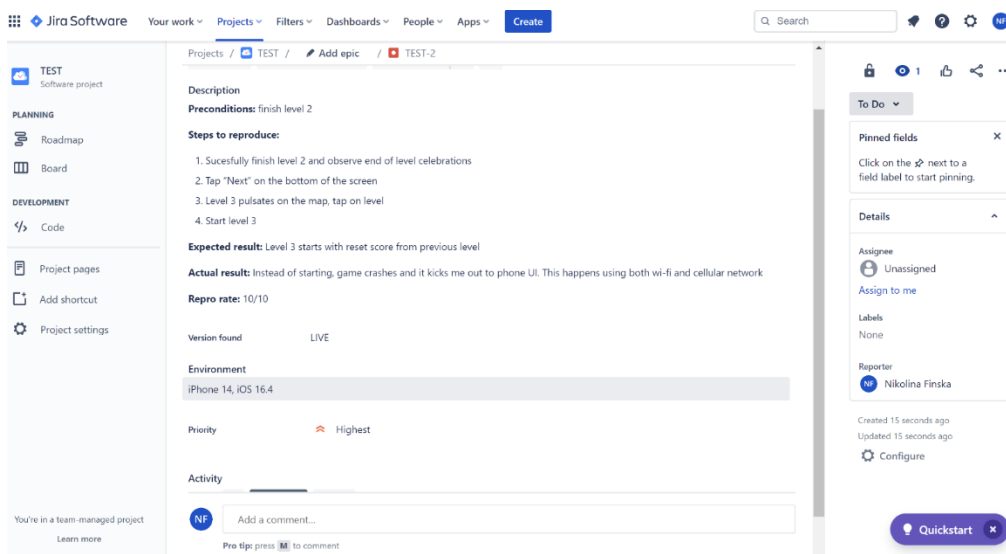
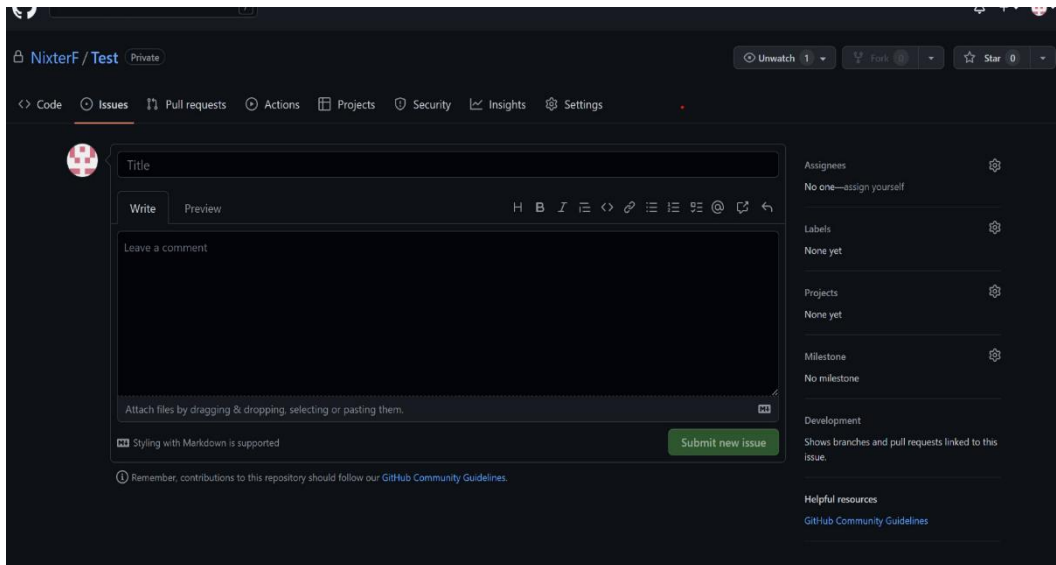
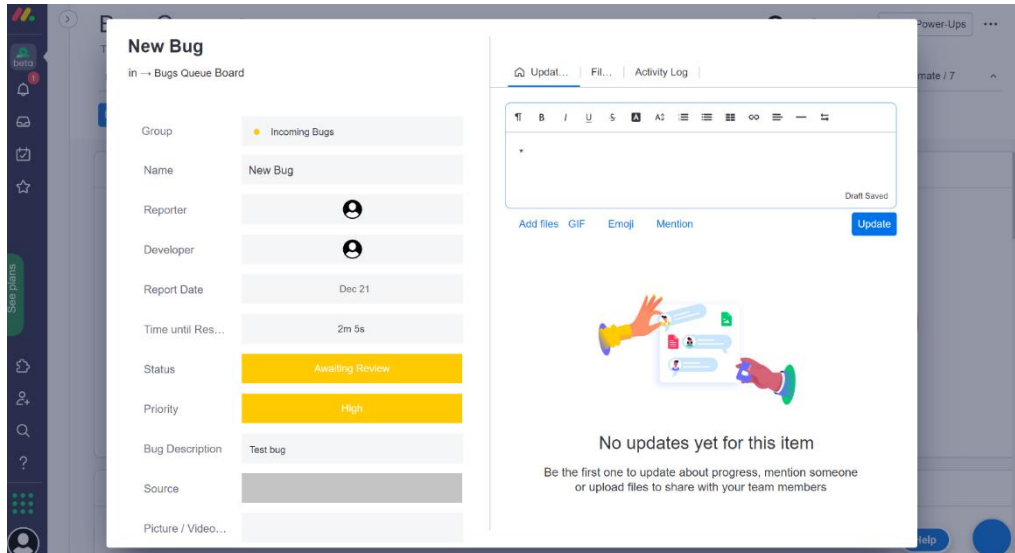
**Boards**  
Not set

**Checklists**  
Not set

**Priority**  
3 Normal (default)

© Manage custom fields





Jira Software

Your work

Projects

Filters

Dashboards

People

Apps

Create

Q Search

TEST

Software project

PLANNING

Roadmap

Board

DEVELOPMENT

Code

Project pages

Add shortcut

Project settings

You're in a team-managed project

Learn more

Projects / TEST / Add epic / TEST-3

URGENT: Level 3 is fail!!!

Attach

Add a child issue

Link issue

Description

Preconditions: download the game, then install the game. You MUST finish tutorial first! Finish level 1 and check if success. Finish level 2.

Steps to reproduce: see above

Level 3 doesn't work! Game just crashes! Must fix

Version found

TEST

Environment

iPhone

Priority

Highest

Activity

Show: All Comments History

Newest first

NF

Add a comment...

Pro tip: press **M** to comment

To Do

Pinned fields

Click on the next to a field label to start pinning.

Details

Assignee

Unassigned

Assign to me

Labels

None

Reporter

NF Nikolina Finska

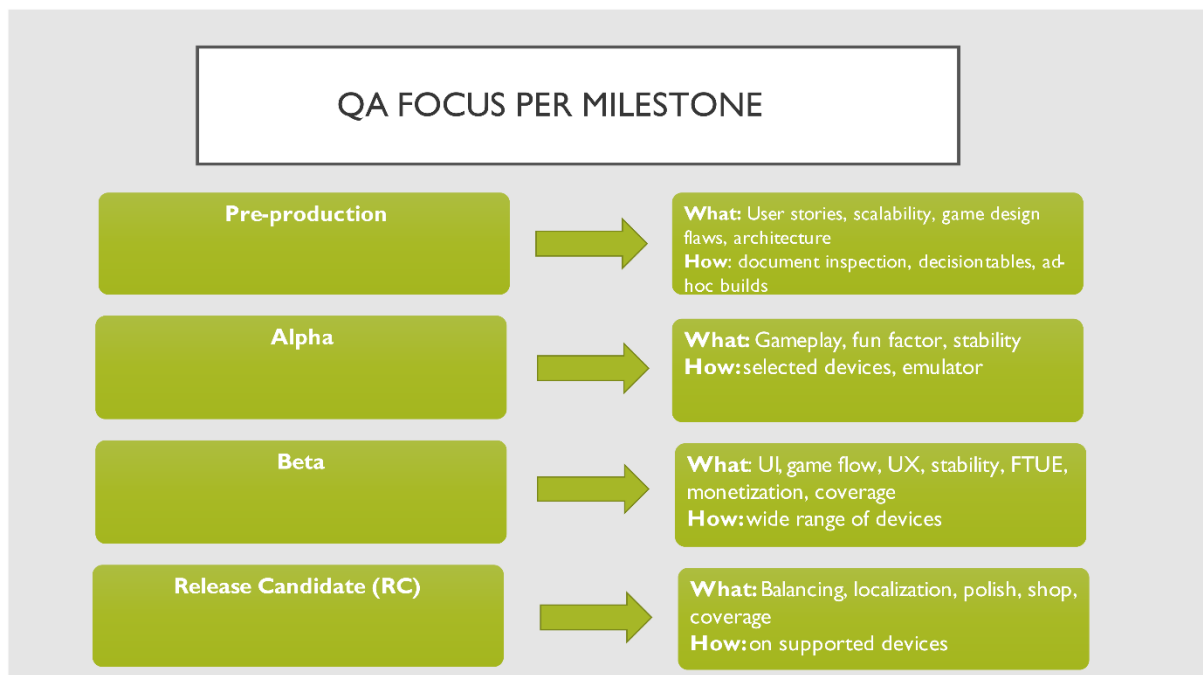
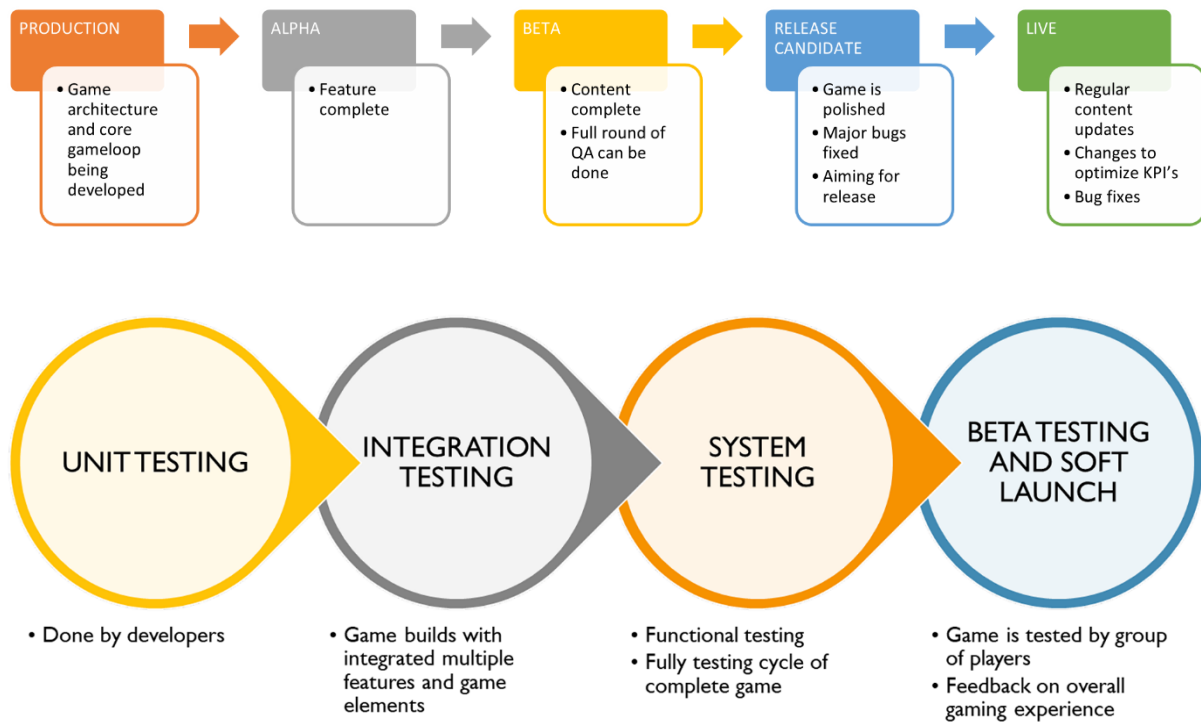
Created 22 seconds ago

Updated 22 seconds ago

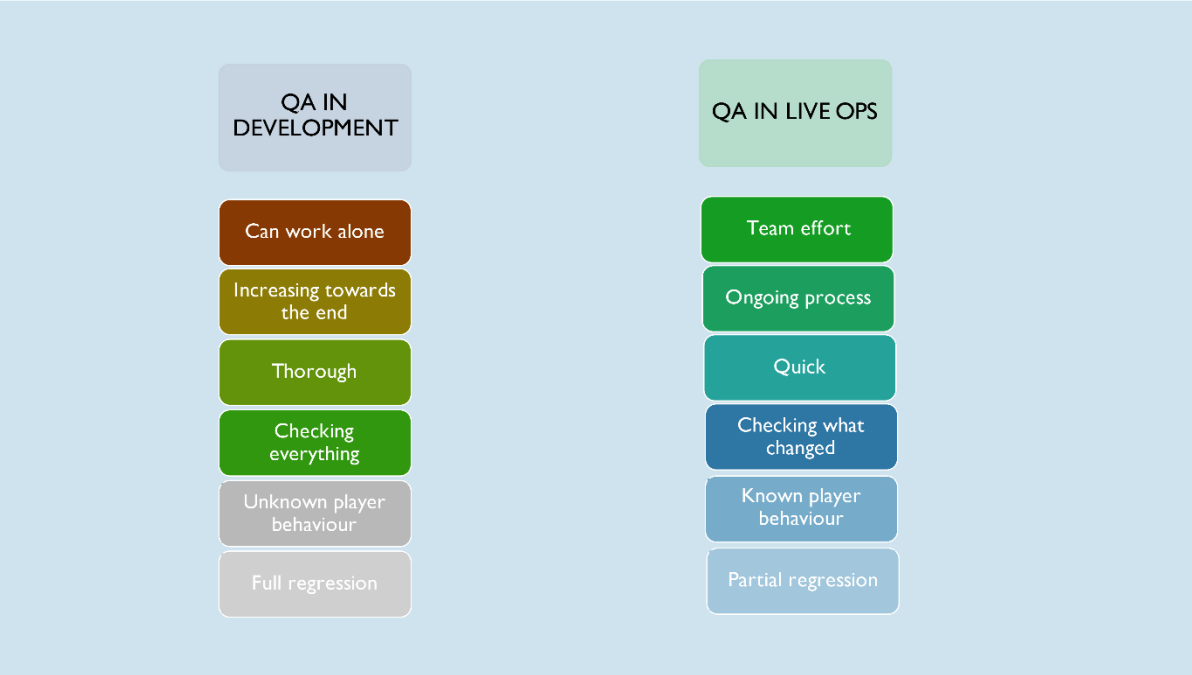
Configure

Quickstart

## Chapter 09: It Works, but It Hasn't Been Tested: Testing Approach

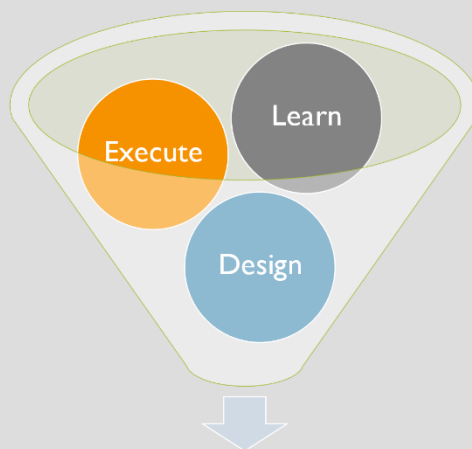
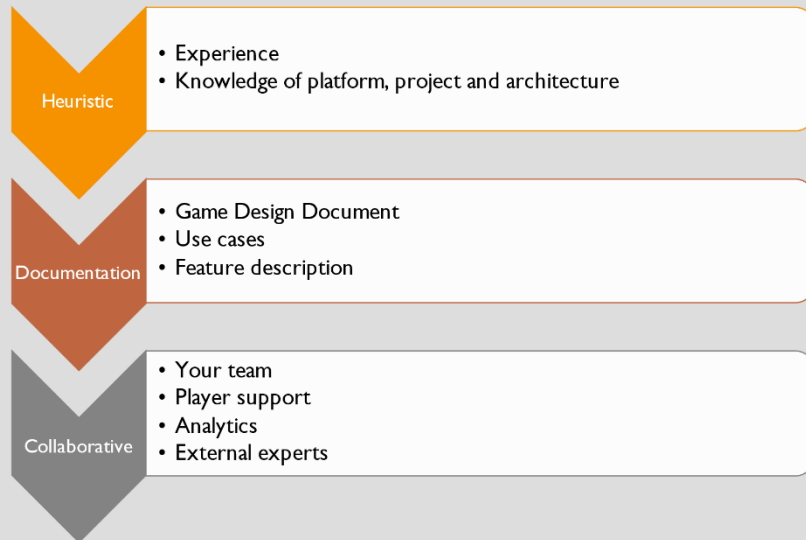


CASUAL GAMER	CORE GAMER
Short gaming sessions, up to 5 minutes	Longer sessions, 30 minutes or more
Plays for fun, to kill time	Passionate about game, dedicated to skilling up
Solo play or light multiplayer (like leaderboards)	In game community, multiplayer preference
Infrequent player, might be days between sessions	Sometimes plays multiple times per day
Looking for fun, relaxation, and completion	Looking for competition, excitement and, challenge
Doesn't buy specific or high-end HW just for gaming	Will purchase HW for optimized gaming, early adopter



## Chapter 10: Eat, Sleep, Test, Repeat: Test Methodology

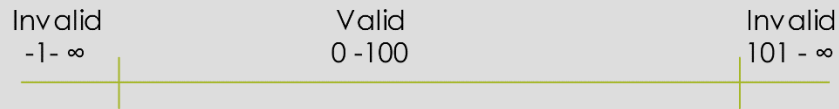
### RISK IDENTIFICATION PROCESS



Exploratory testing

## EQUIVALENCE PARTITIONING EXAMPLE

Gun ammunition example



## BOUNDARY VALUE ANALYSIS

Gun ammunition example



CONDITION	ACTION	OUTCOME
Player enters active combat	Pulls out weapon	NPC attacks
Player runs out of ammo	Tries to shoot	Need more ammo! Message triggers
Player is in a safe zone	Pulls out weapon	Safe zone rules trigger and weapon is turned back to inventory
Player is in active dialogue	Pulls out weapon	NPC pulls their weapon and dialogue is stopped.

CONDITION	ACTION	OUTCOME
Player enters active combat	Pulls out weapon	NPC attacks
Player runs out of ammo	Tries to shoot	Need more ammo! Message triggers
Player is in a safe zone	Pulls out weapon	Safe zone rules trigger and weapon is turned back to inventory
Player is in active dialogue	Pulls out weapon	NPC pulls their weapon and dialogue is stopped

## Chapter 11: Are You on the Right Version? Live Ops and QA

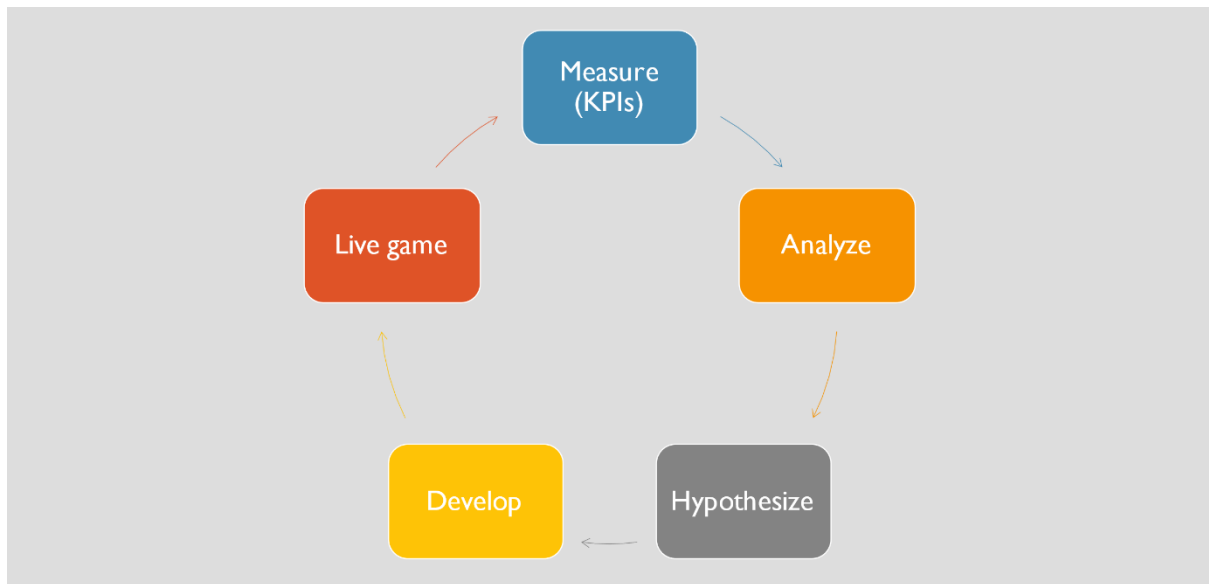
### PREMIUM GAMES HIGH LEVEL DEVELOPMENT CYCLE



### F2P MOBILE GAME DEVELOPMENT CYCLE



Content updates	Feature updates	Live bugs	Other updates
<ul style="list-style-type: none"><li>• Regularly updated new content</li><li>• Usually every 2 or 4 weeks</li><li>• New levels, character packs, cards, game areas etc.</li><li>• New events</li></ul>	<ul style="list-style-type: none"><li>• New features that add a different dimension to the game</li><li>• Upgrading existing features with new elements</li></ul>	<ul style="list-style-type: none"><li>• Fixing bugs found in the live game</li></ul>	<ul style="list-style-type: none"><li>• Mandatory technical updates</li><li>• Engine updates</li><li>• Platform requested updates</li><li>• Support for new devices and OS versions</li></ul>





## Chapter 12: Beyond Testing – Introduction to Test Management

Testing hours total:	30	
Android testers:	2	
iOS testers:	2	
<b>Model</b>	<b>Platform</b>	<b>Version</b>
iPhone X	iOS	11.1
Galaxy S7	Android	7.0
Oukitel K10000	Android	6.0
<b>Bugs Found</b>		
Priority	Amount	
Highest	1	
High	2	
Medium	3	
Low	4	
Lowest	5	
Build(s)		
Android	1.33.7	
iOS	1.33.7	

FUNCTION	POINT	SIMPLE 1	AVERAGE 3	COMPLEX 5	TOTAL POINTS
CHAT	5	X	3	X	15
GUILDS	10	X	X	5	50
FUNCTION TOTAL	X	X	X	X	<b>65</b>
ESTIMATE DEFINED BY POINT (IN HOURS)					2.25h
TOTAL EFFORT (PERSON HOURS)					<b>146.25h</b>

## Chapter 13: There Are No BUGS Without U – QA and the Game Team

