

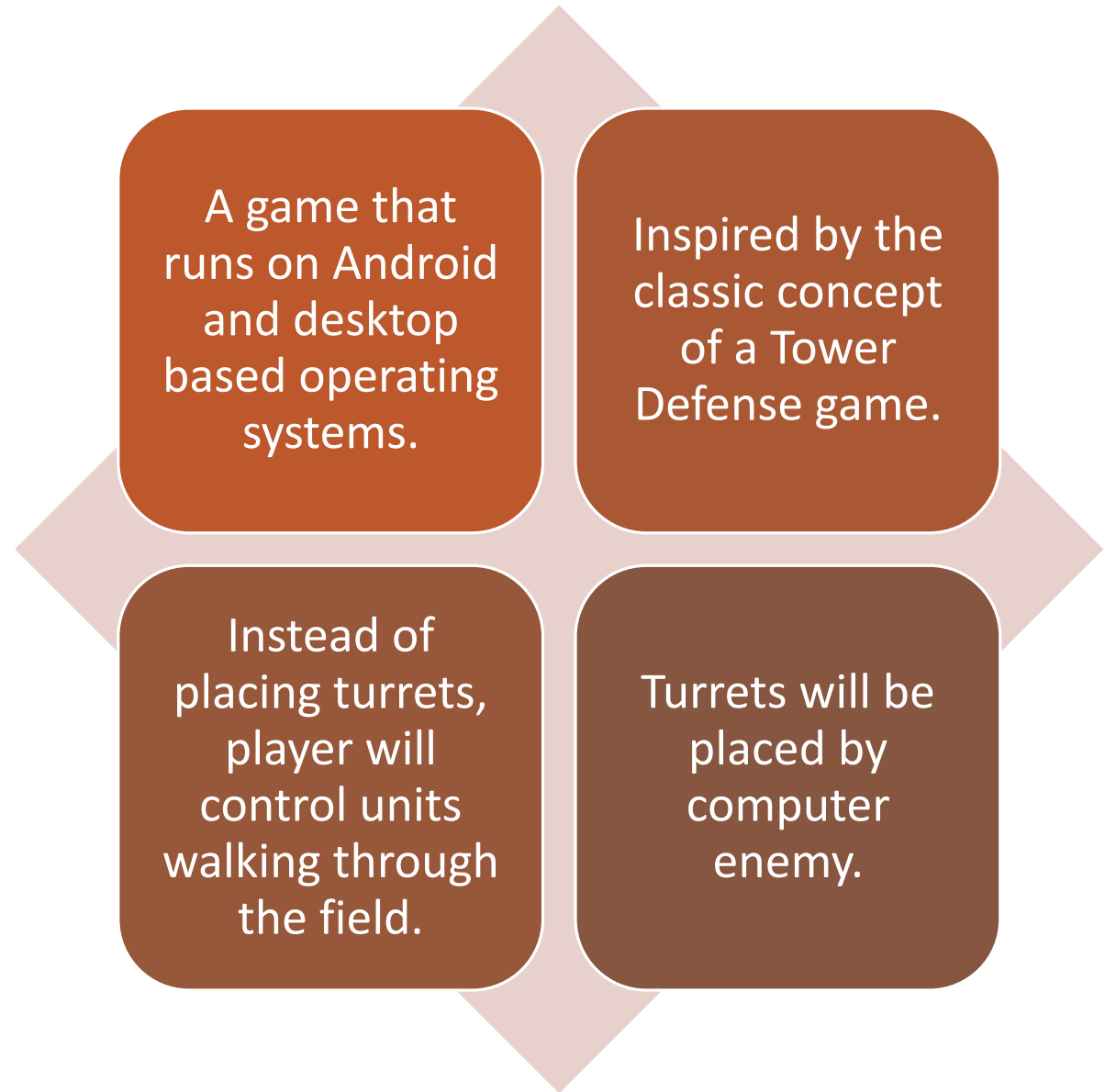
A Kellogg's cereal box for 'Code Crunch!' featuring four men. The box is orange and white. The Kellogg's logo is at the top. The word 'Original' is on the left. The men are smiling and looking at a small box held by one of them. The text 'Code Crunch!' is prominently displayed in a stylized font. A '9g' label is visible in the bottom right corner.

Tower Attack

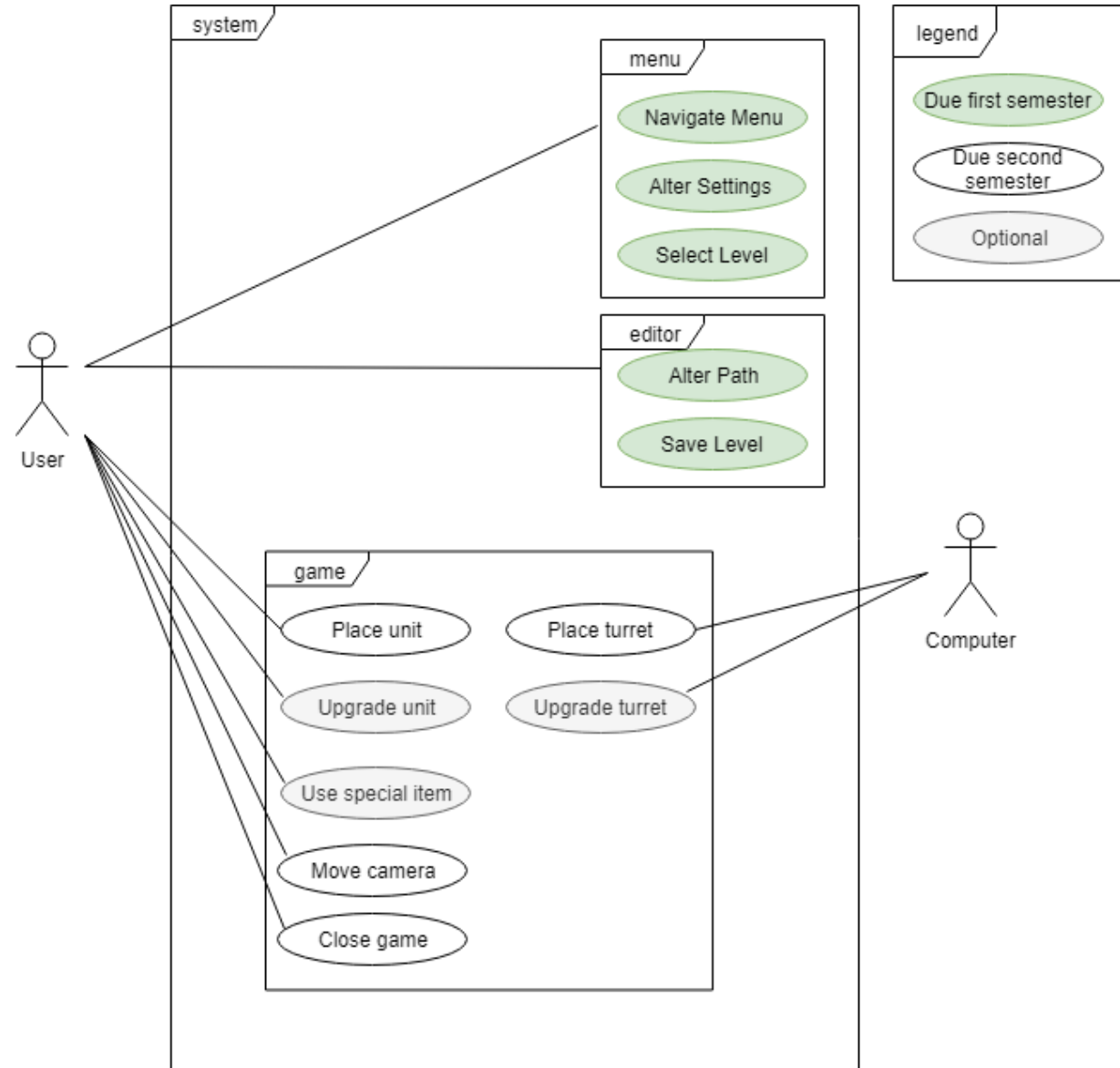
BY CODECRUNCH

The Task

Vision



Use Cases



Project Management

RUP (Rational Unified Process) Roles:



Project Manager: Janis



Process Engineer: Falko



Software Architect: Janis



Designer: Nirjan, Kai

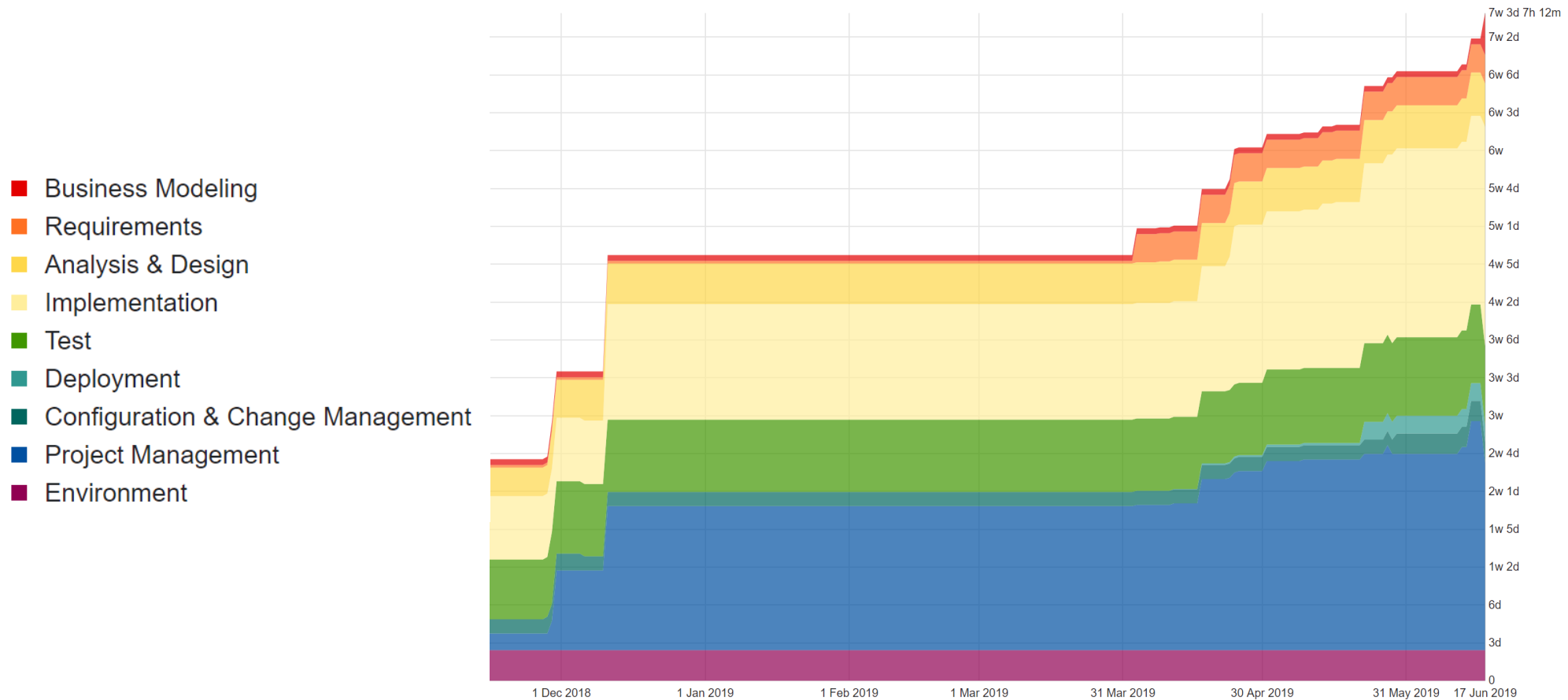


Tool Specialist: Falko



Test Manager / Designer: Kai

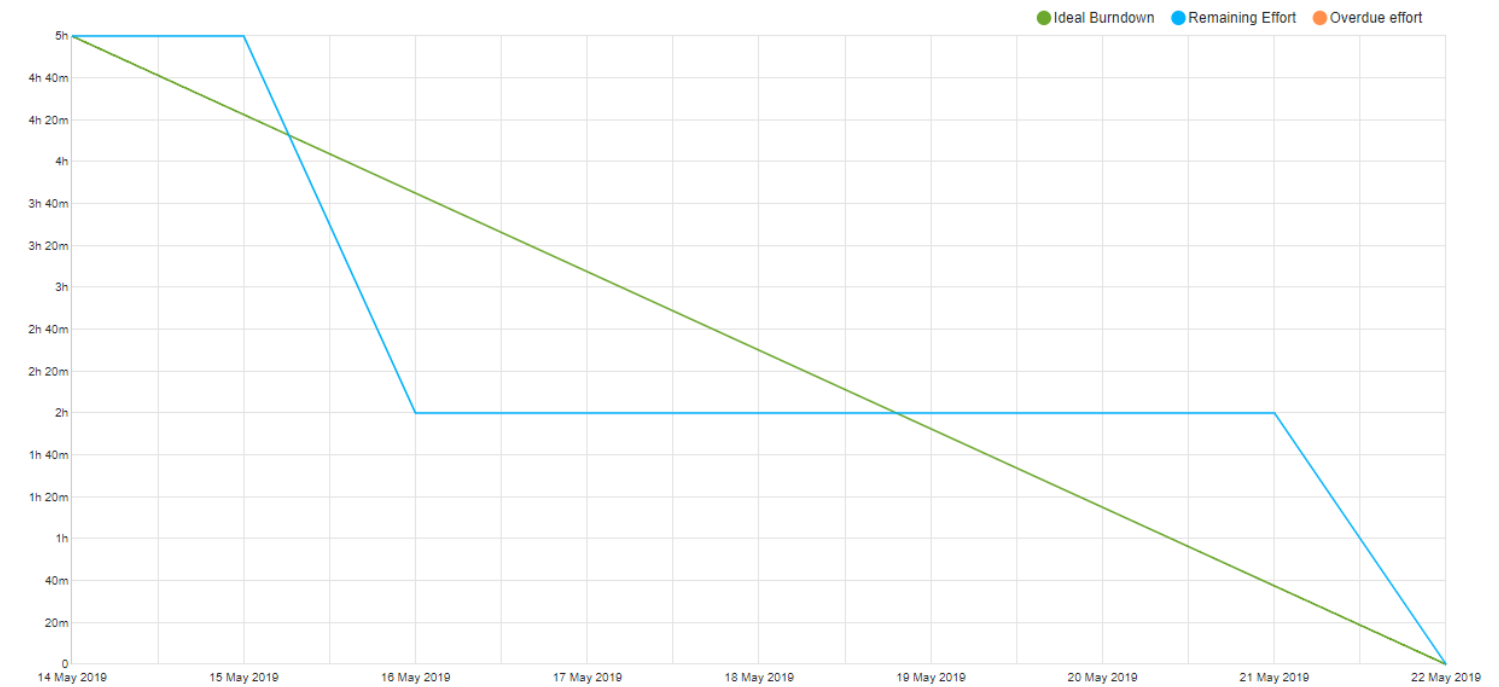
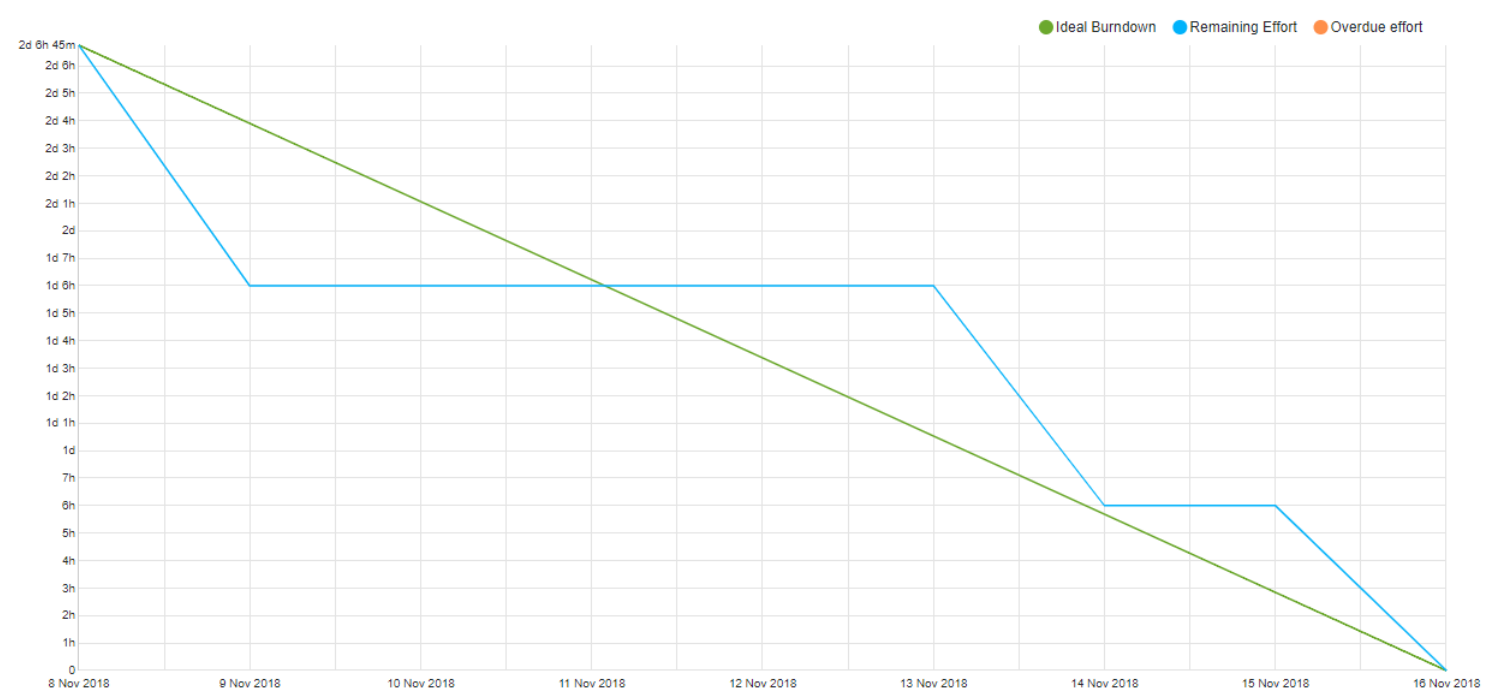
Cumulative RUP

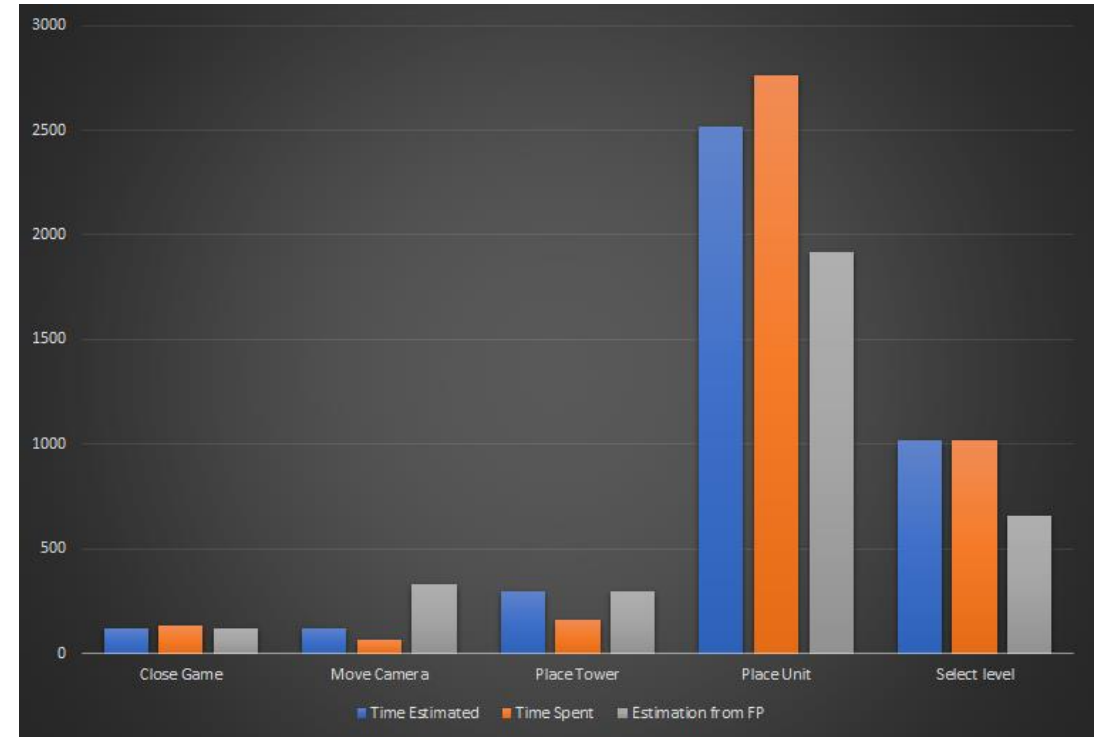
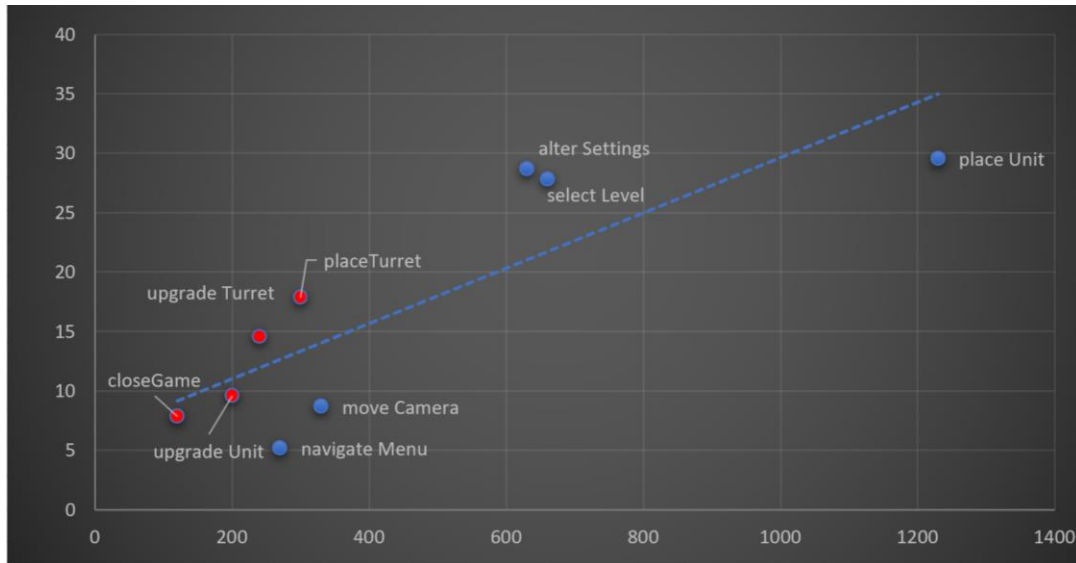


Scrumming

Sprint for each week

Example of burndown from week 6 and 18





Function Points

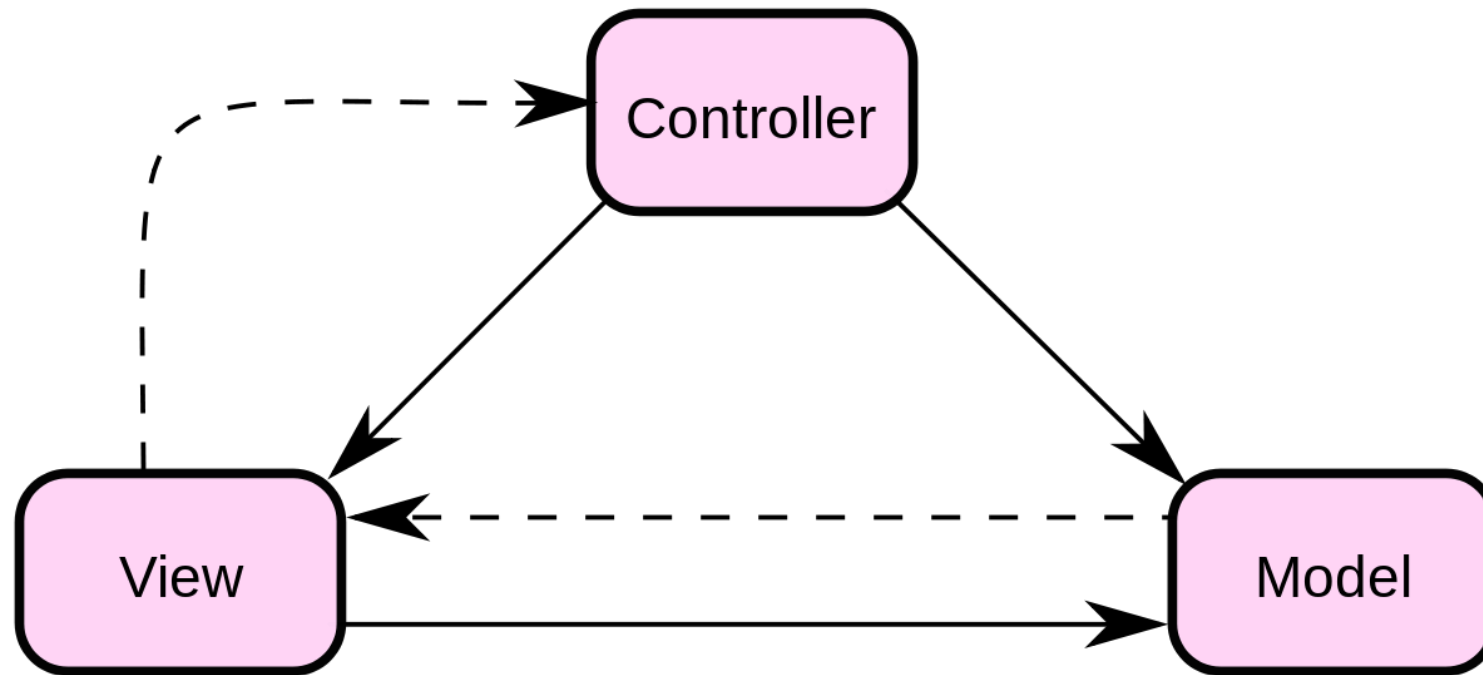
TO ESTIMATE OUR TIME

Technical Ability



Demo

Architecture



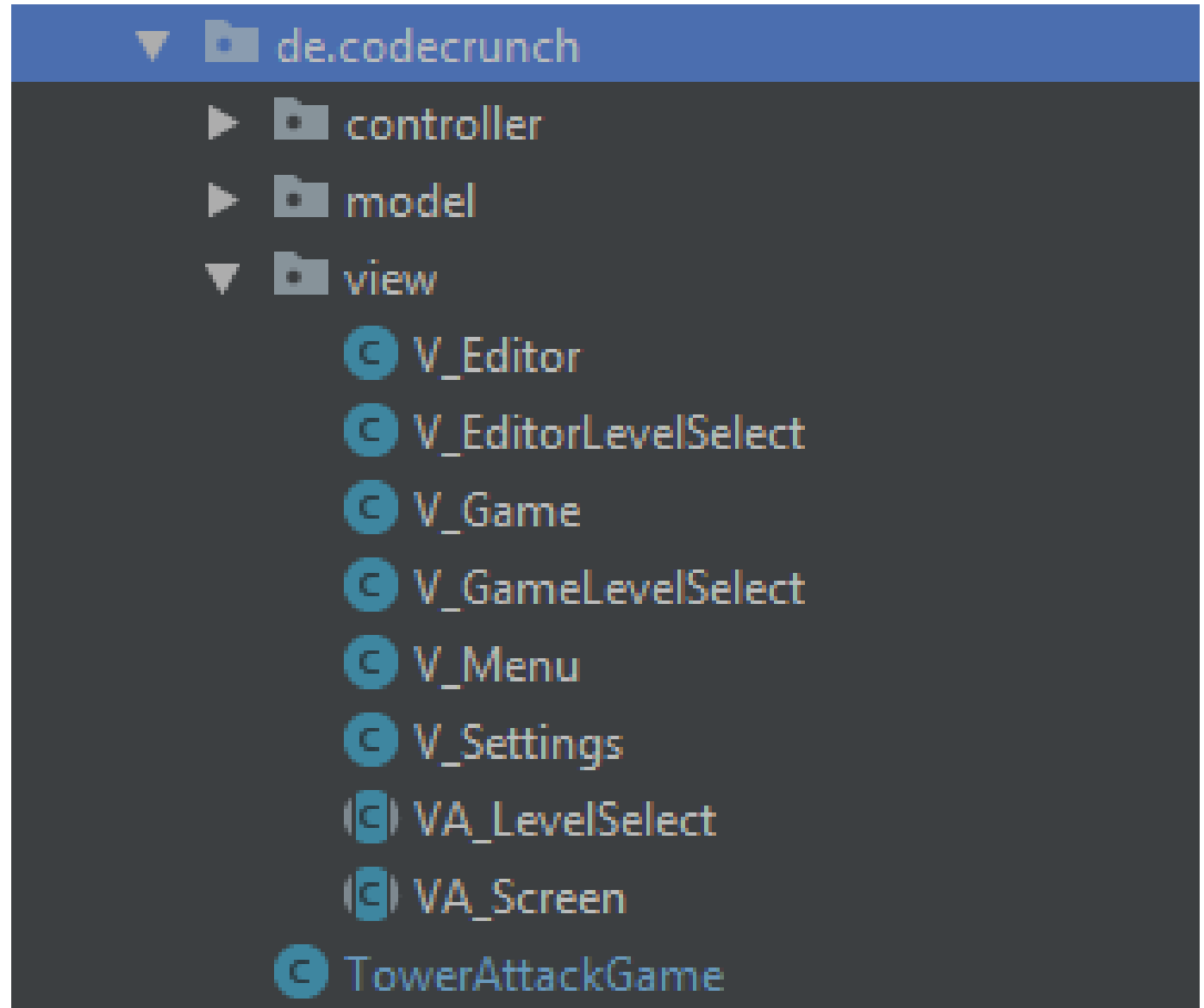
Project Structure

- Uses a 3D game framework called LibGDX
- Modeled after the MVC architecture (See quality assurance)
- The whole game is managed by the main class "TowerAttackGame"
- All classes start with a letter that indicates what part of the MVC

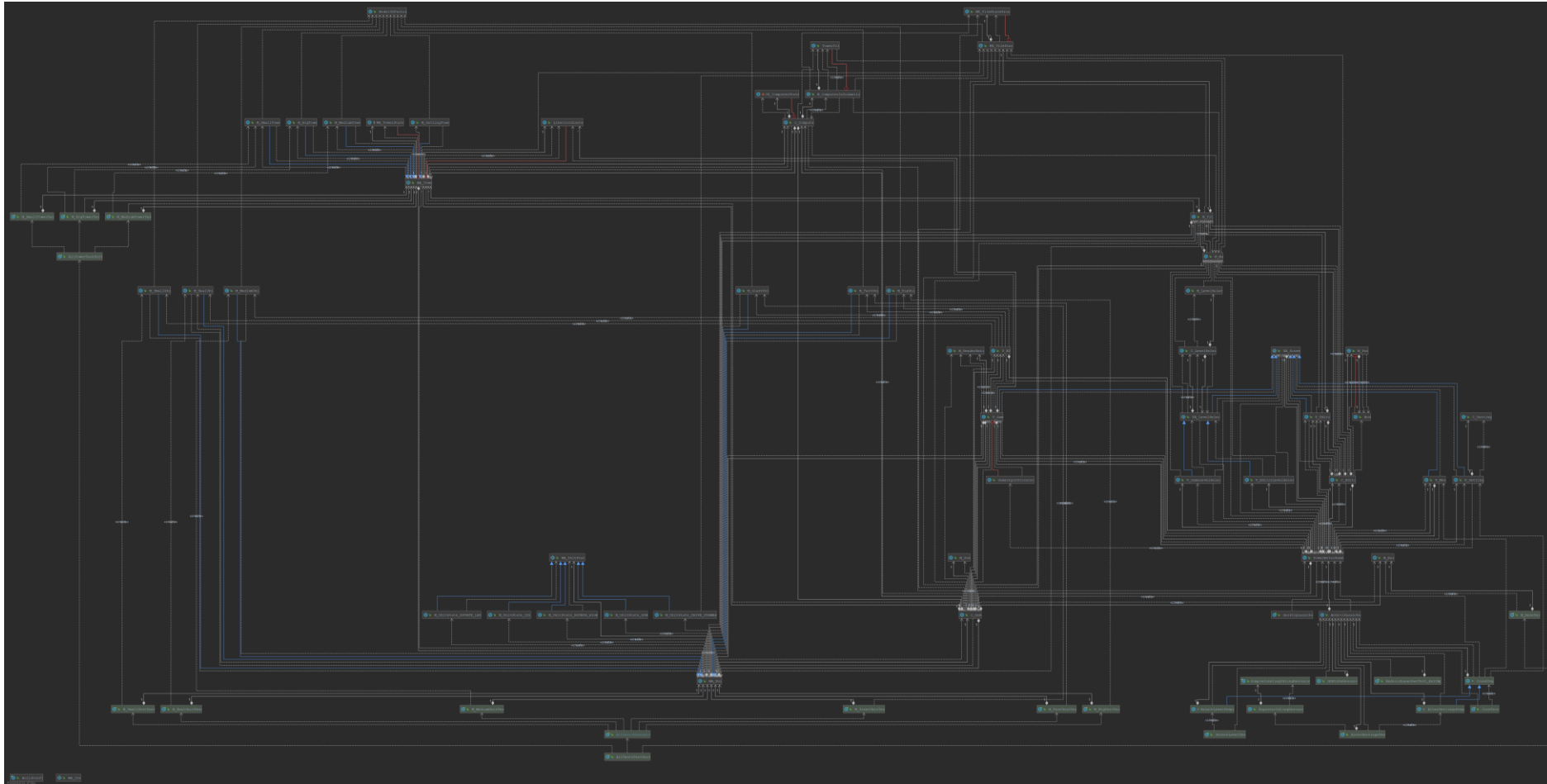
it represents

Legend:

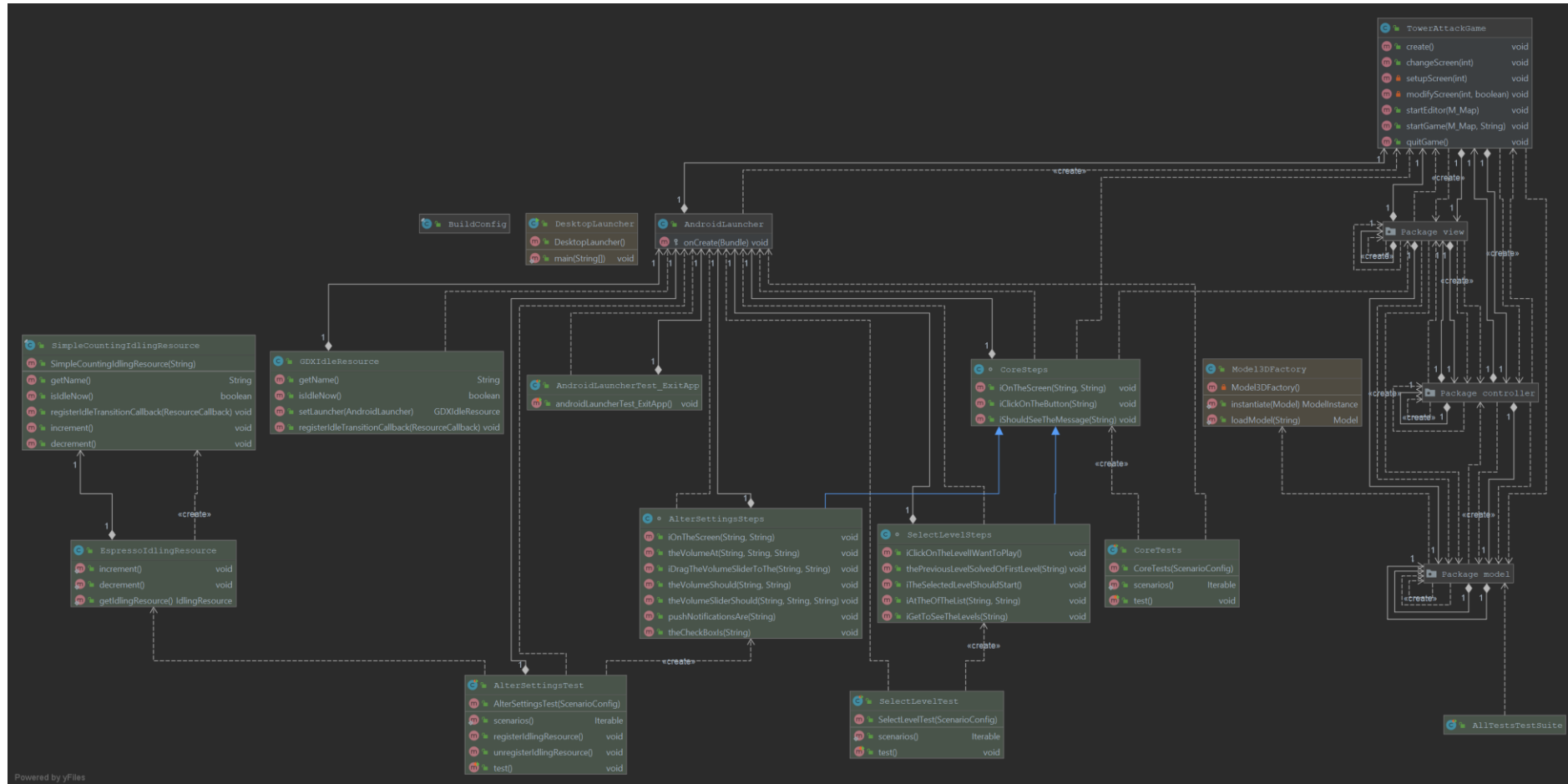
- M_ : Model
- V_ : View
- C_ : Controller
- MA_ & VA_ & CA_ : Abstract classes
- ME_ & VE_ & CE_ : Enum classes



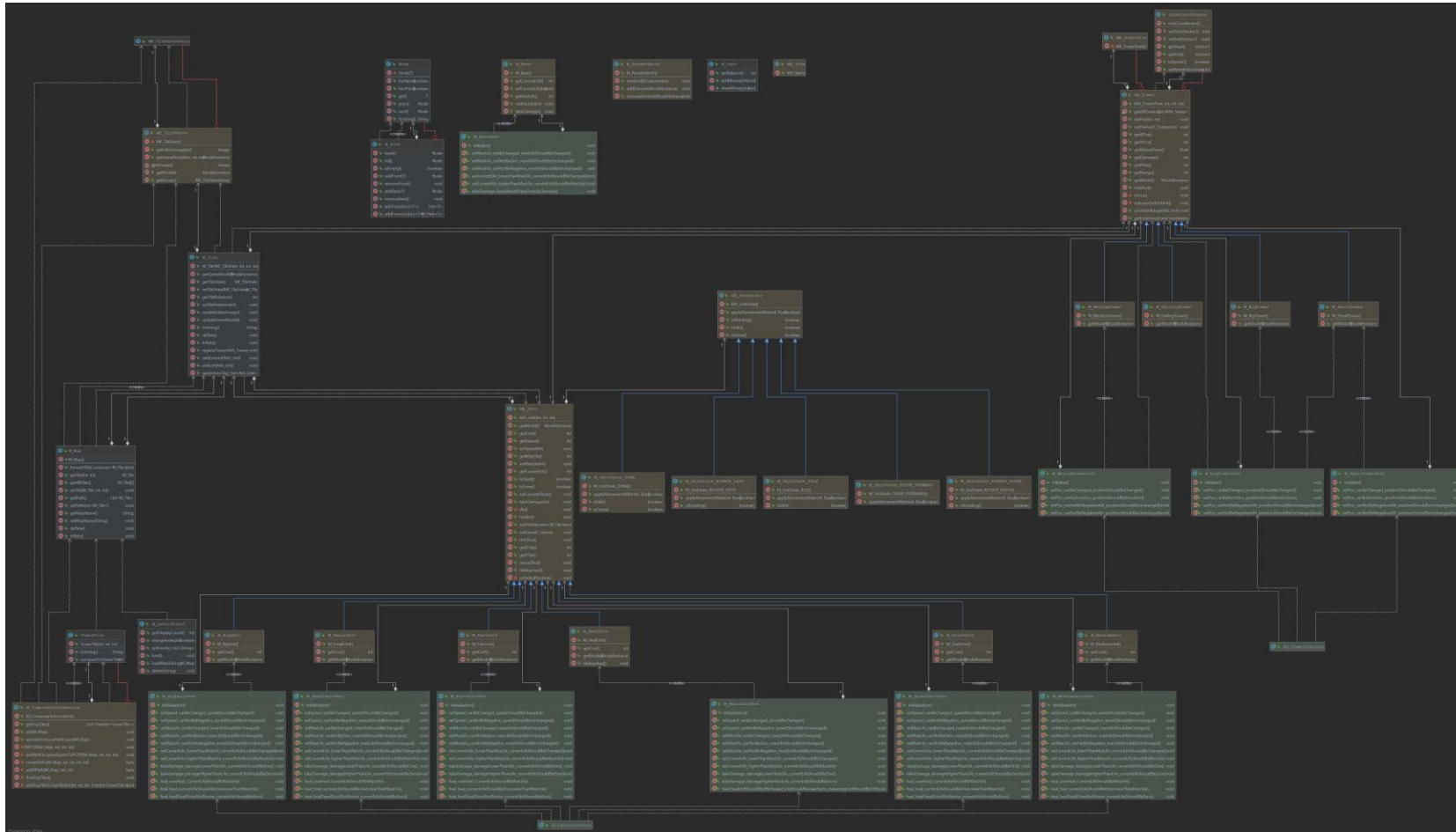
Our Class Diagramm



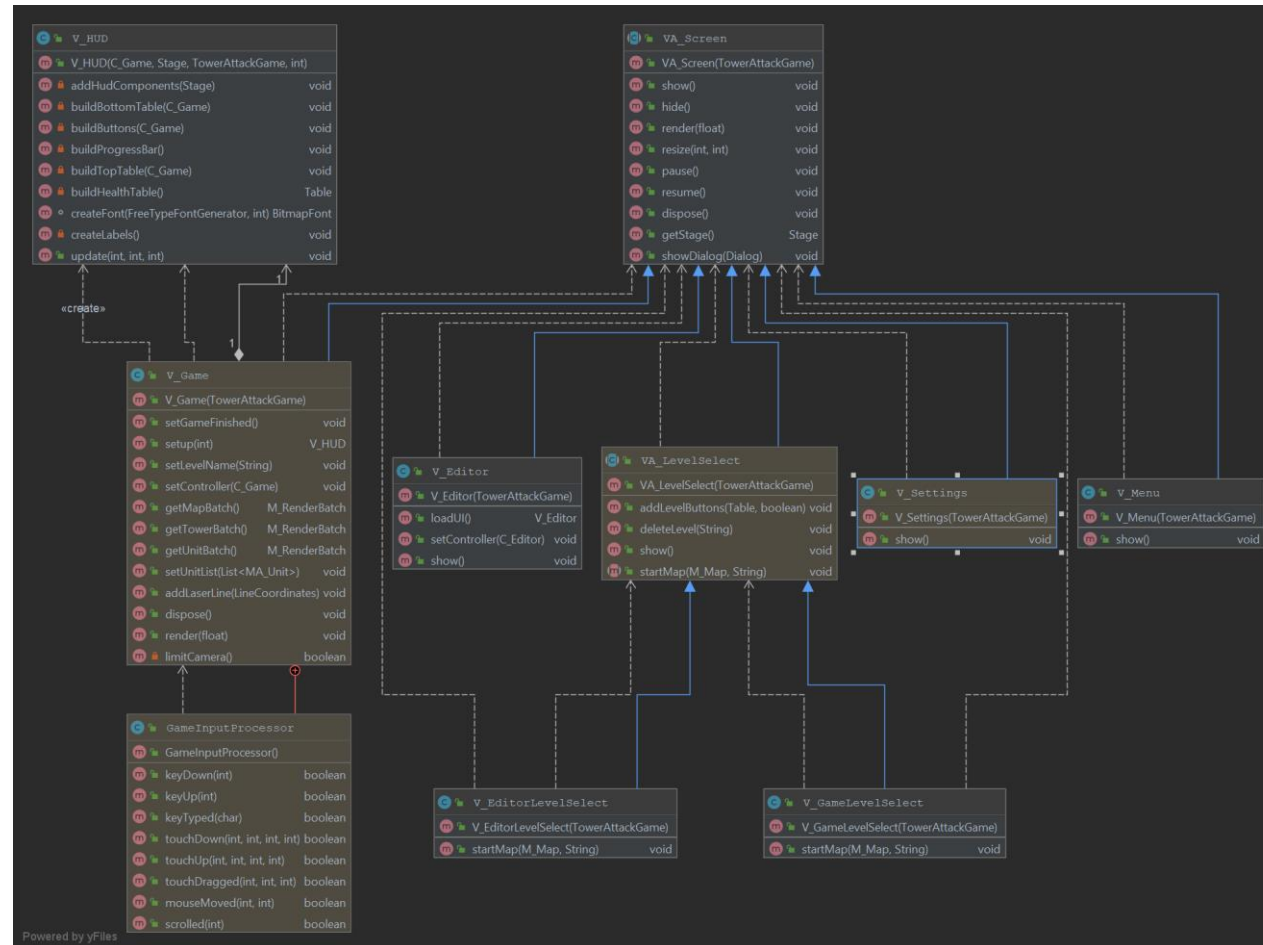
Our Class Diagramm - collapsed



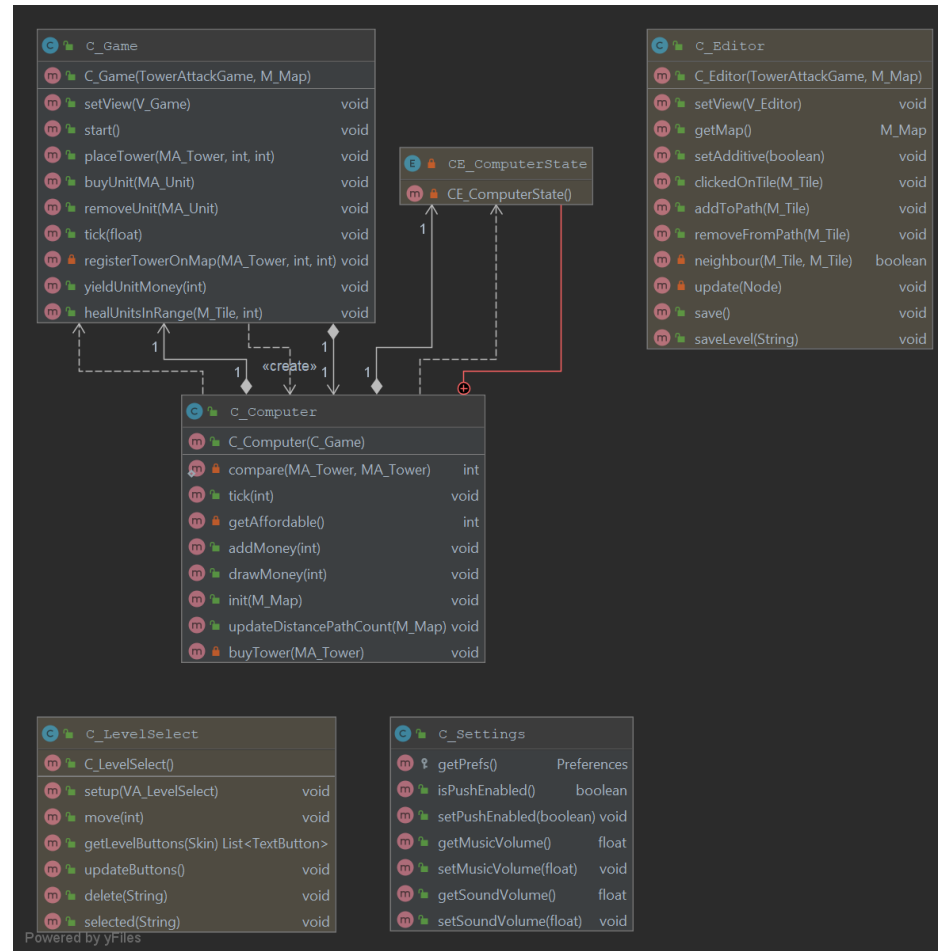
Our Class Diagramm - model



Our Class Diagramm - view



Our Class Diagramm - controller



A solid orange vertical bar on the left side of the slide.

Quality

Quality



Architecture



Automation

Youtrack/github integration

Automatic project updates

Automated testing

Tool Stack



Communication



Development

JUnit
cucumber

Testing

sonarcloud



Metrics



Project Management

 **GitHub**

Version Control



Travis CI

Continuous Integration



we structured our work
doing scrum



use youtrack as pm tool

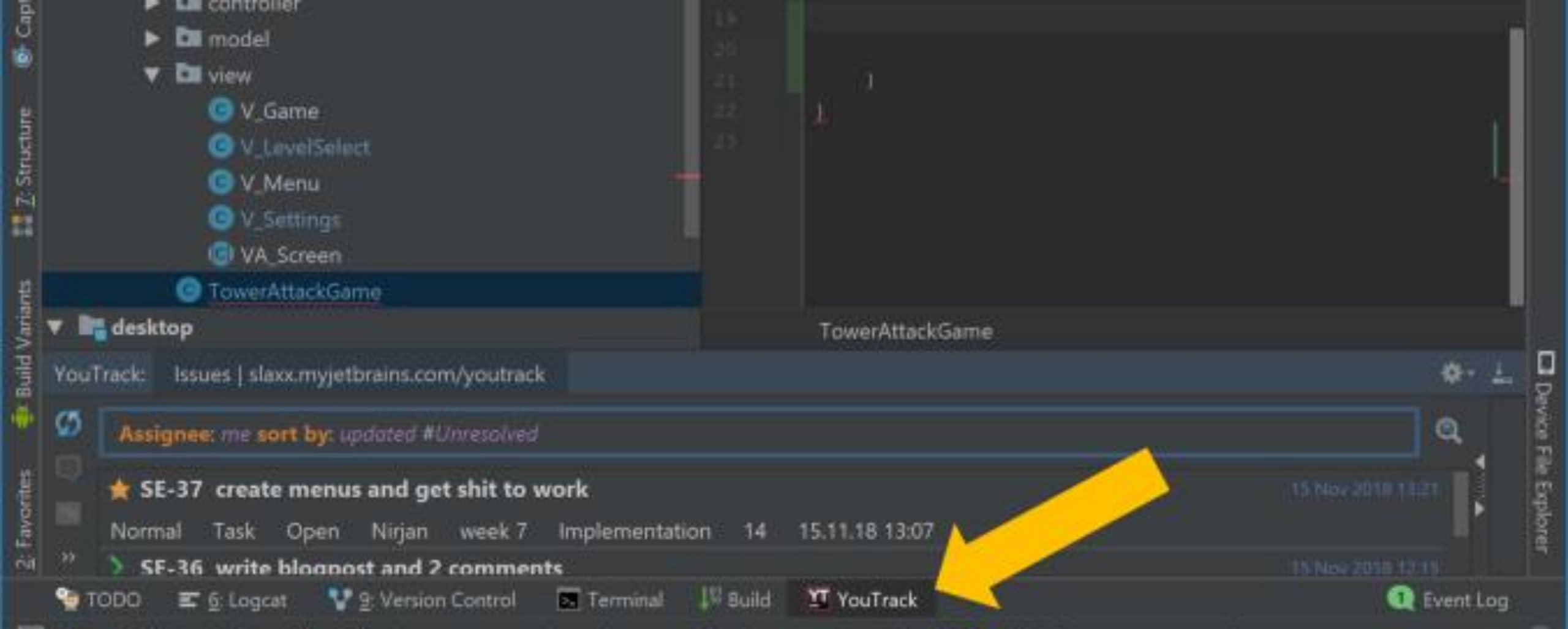


integrate youtrack with
our IDE



integrate youtrack with
github

Automation - Youtrack/Github/IDE



Youtrack integration in Android Studio

[Issues](#) | ▾[Dashboards](#)[Agile Boards](#)[Reports](#)[Projects](#)

Projects > tinfb4se > Edit Project

[General](#)[Access](#)[Team](#)[Fields](#)**[VCS](#)**[Notification Templates](#)[Build Server Integration](#)[Time Tracking](#)[W](#)[+ New VCS Integration ▾](#)

Repository

☐ **GitHub** github.com

tinfb4se

G

ht

Pr

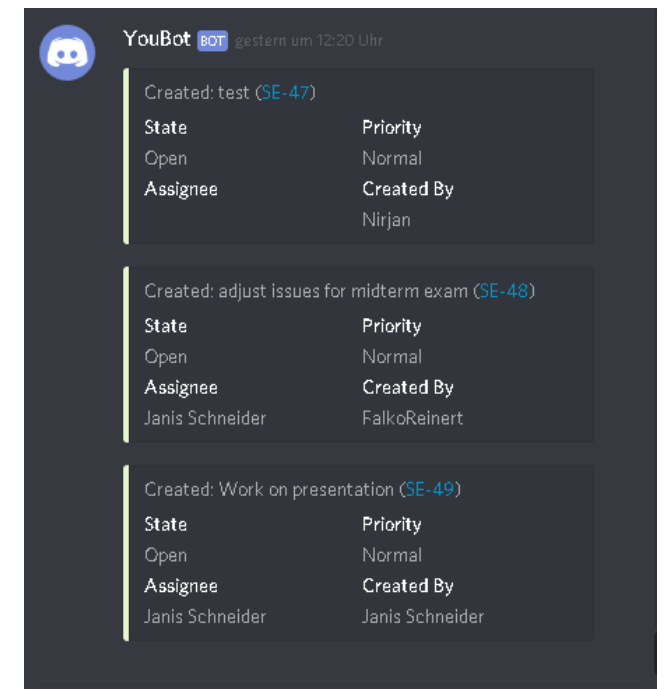
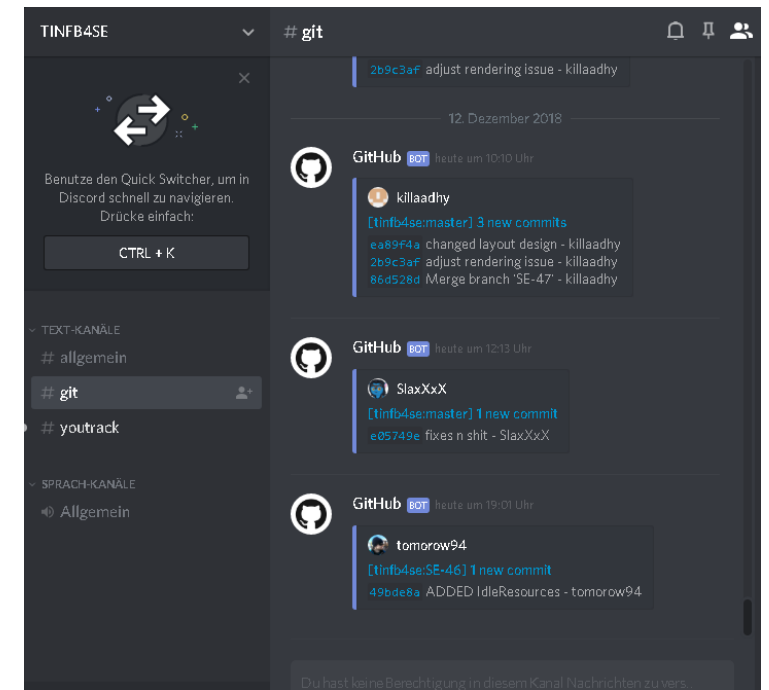


Youtrack integration in Github

Discord feed

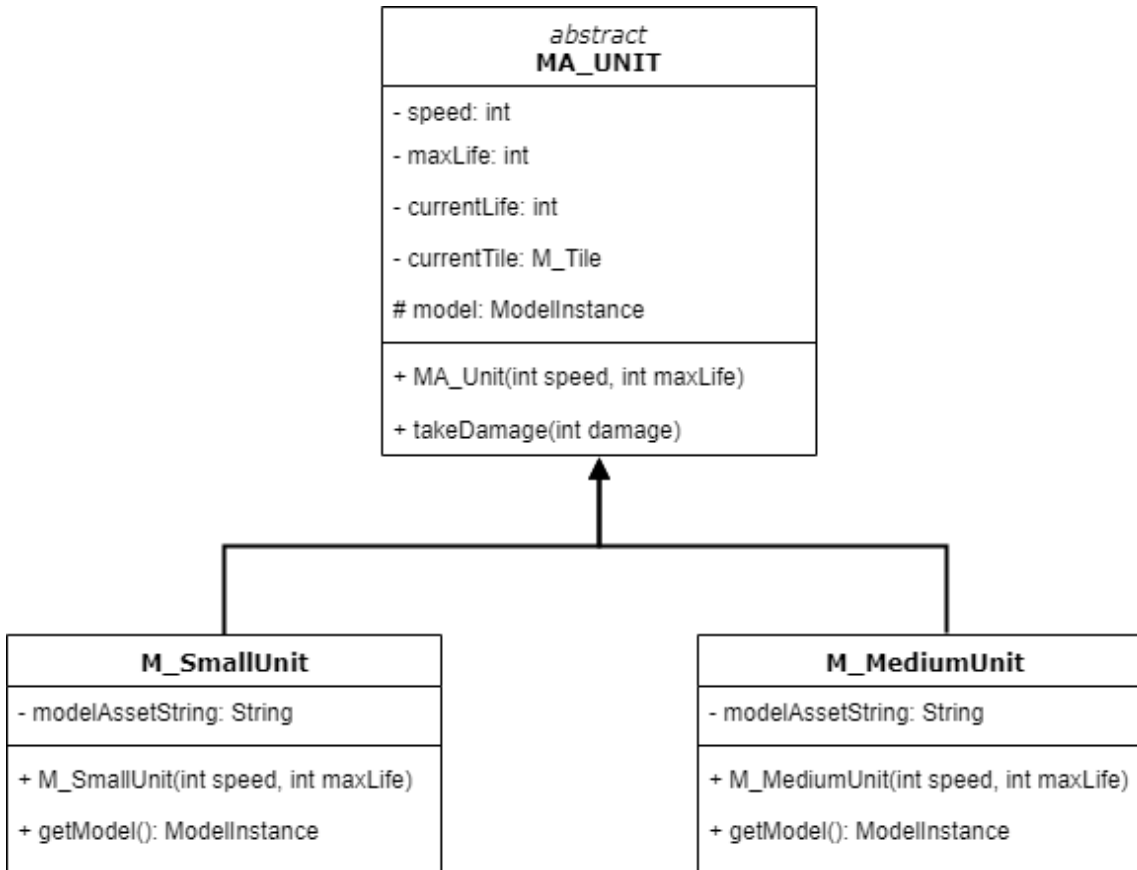
Bots post updates in a specific channel in Discord

- GIT
 - Who?
 - What?
 - Where?
 - When?
- YouTrack
 - New Tasks
 - Completed Tasks

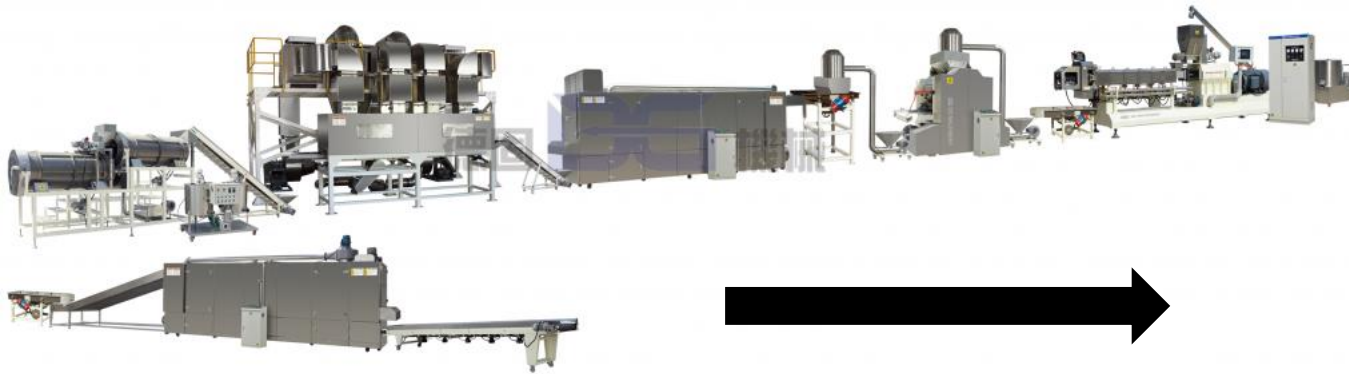


Design Pattern

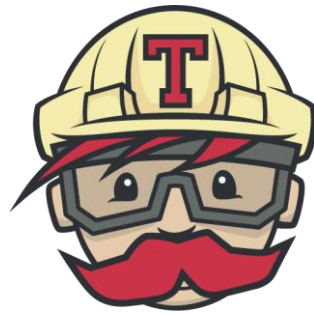
TEMPLATE METHOD PATTERN



Pipelining at CodeCrunch



Travis CI



-
- open-source software for continuous integration
 - developed by 2011, released by August 2013
 - Concept: builds software in the cloud using predetermined configuration
 - Configuration is provided with a „travis.yml“ file
 - the file is located in the root directory of the software, which is to be build
 - Supports most of the popular programming languages used today (java, python, C++, etc.)

Travis.yml

```
language: android
sudo: false
android:
  components:
    - android-28
    - build-tools-28.0.3
    - android-22
    - sys-img-armeabi-v7a-android-22
addons:
  sonarcloud:
    organization: slaxxxx-github
    token:
      secure: 07330331709bf2b98e256c455067a8bf0d1ba5af
script:
- echo "starting script"
- "./gradlew clean build"
- sonar-scanner
```

Build-Results

 SlaxXxX / tinfb4se  build passing

[Current](#) [Branches](#) [Build History](#) [Pull Requests](#) > [Build #28](#)

More options



✓ **master** Update sonar-project.properties

🔗 Commit [e757b70](#)

🔗 Branch [master](#)

 CClavius

 </> Android

 #28 passed


🕒 Ran for 5 min 17 sec

📅 about 19 hours ago




🔄 Restart build

„sonar-project.properties“ file

Branch: master ▾ [tinfb4se](#) / sonar-project.properties Find file Copy path

 OrangeFreitag Update sonar-project.properties e757b70 21 hours ago

1 contributor

16 lines (11 sloc) | 330 Bytes Raw Blame History   

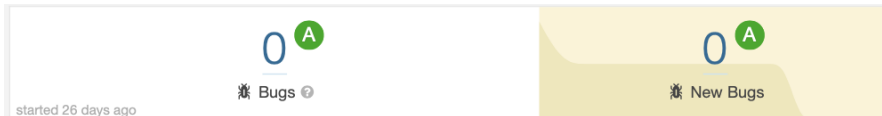
```
1 # Required metadata
2 sonar.projectKey=SlaxXxX_tinfb4se
3 sonar.projectName=tinfb4se
4 sonar.projectVersion=1.0
5
6 # Comma-separated paths to directories with sources (required)
7 sonar.sources=core
8
9 # Language
10 sonar.language=java
11
12 sonar.java.binaries=core/build/classes/java/main
13
14 # Encoding of the source files
15 sonar.sourceEncoding=UTF-8
```





Analysis Results as of 13.06.2019

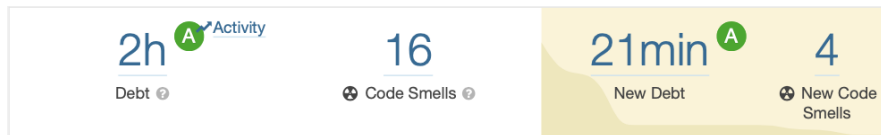
Reliability



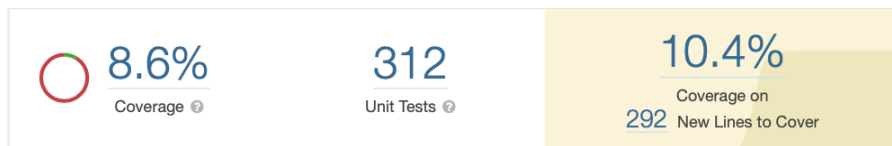
Security



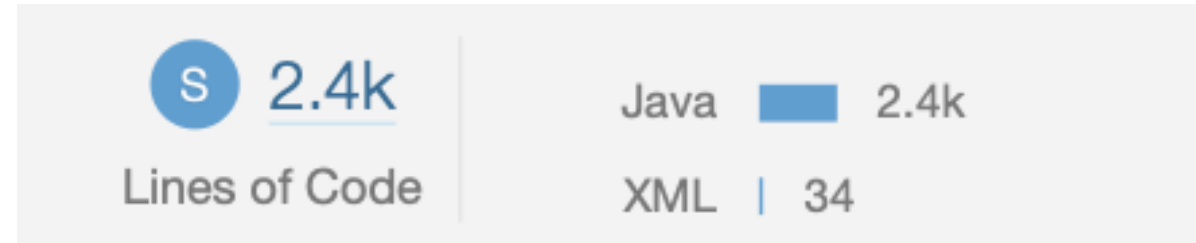
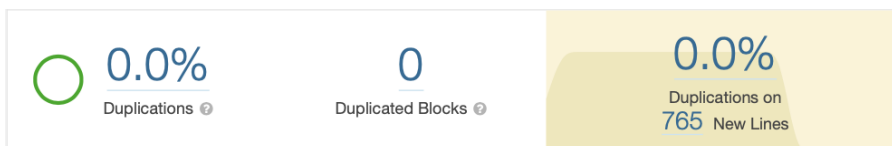
Maintainability



Coverage



Duplications



Tower Attack

Our Project for the Software Engineering class at DHBW Karlsruhe.

A twisted Tower Defense Game where you actually send out Units to the field that features a unique abstract artstyle.



Risk Management

TOP 3

- Sickness
- Framework limitations
- Compatibility with old phones

Automated testing

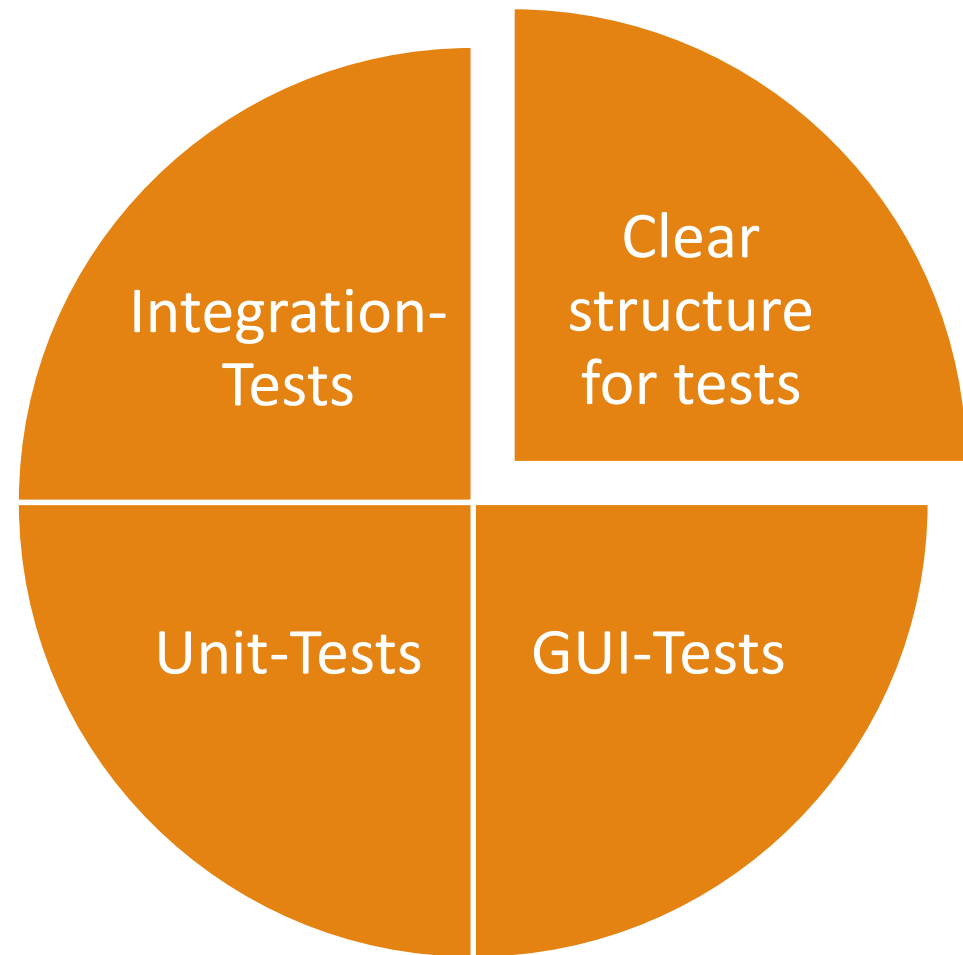
- Feature-files of our Use-Cases
→ understandably for everyone
- Defined steps in a step file
- Test that executes these steps
- Running JUnit with every build process

```
selectLevel.feature x alterSettings.feature x
1 Feature: Select level
2
3 Scenario: Level selection aborted
4   Given I am on the 'select level' screen
5   When I click on the 'back' button
6   Then I should get on the 'main menu' screen
7
8 Scenario: Level selection successful
9   Given I am on the 'select level' screen
10  When I click on the level I want to play
11  And I solved the previous level or it is the first level
12  Then I the selected level should start
13
14 Scenario: Level selection unsuccessful
15   Given I am on the 'select level' screen
16   When I click on the level I want to play
17   And I did not solve the previous level
18   Then I should see the 'level needs to be unlocked' message
19   And I stay at the 'select level' screen
20
21 Scenario: Level selection navigate up successful
22   Given I am on the 'select level' screen
23   And I am not at the top of the List
24   When I click on the upper arrow
25   Then I stay on the 'select level' screen
26   And I get to see levels with a lower number
27
28 Scenario: Level selection navigate up unsuccessful
29   Given I am on the 'select level' screen
30   And I am at the top of the List
31   When I click on the upper arrow
32   Then I get to see the 'select level' screen
33   And I get to see the same levels
34
35 Scenario: Level selection navigate down successful
36   Given I am on the 'select level' screen
37   And I am not at the bottom of the List
38   When I click on the lower arrow
39   Then I stay on the 'select level' screen
40   And I get to see levels with a higher number
41
42 Scenario: Level selection navigate down unsuccessful
43   Given I am on the 'select level' screen
44   And I am at the bottom of the List
45   When I click on the lower arrow
46   Then I get to see the 'select level' screen
47   And I get to see the same levels
```

Run: AllTestsTestSuite x

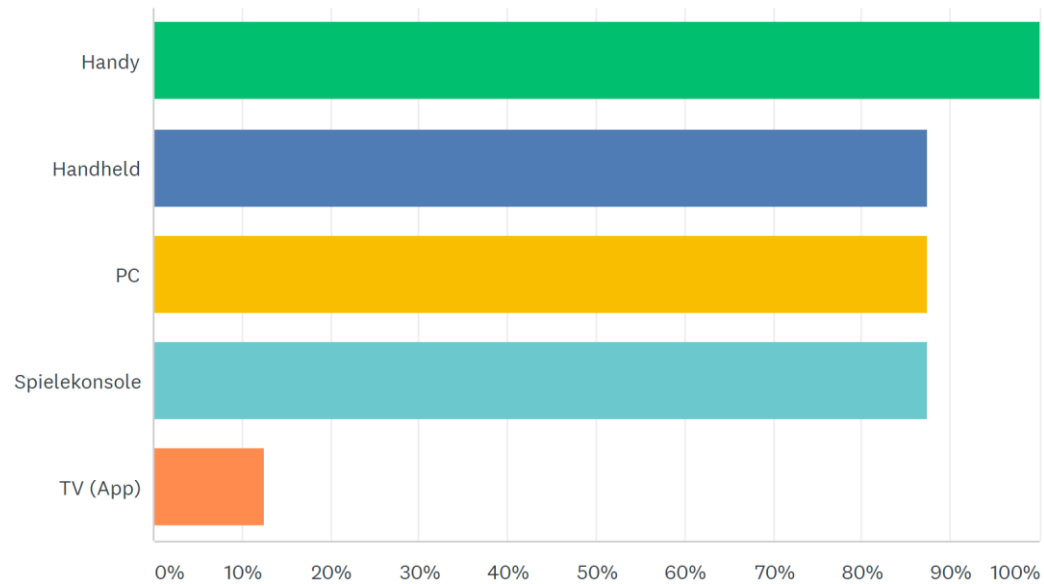
▶	✓	AllTestsTestSuite (de.codecrunch)	56 ms
▼	✓	AllTowerTestSuite	25 ms
▶	✓	M_BigTowerTest	25 ms
▶	✓	M_MediumTowerTest	0 ms
▶	✓	M_SmallTowerTest	0 ms
▼	✓	AllUnitsTestSuite	31 ms
▼	✓	M_BigUnitTest	29 ms
	✓	heal_heal_currentLifeShouldBeOneLowerThanMaxLife	0 ms
	✓	heal_healDeadDoesNotRevive_currentLifeShouldBeZero	0 ms
	✓	heal_overheal_CurrentLifeShouldBeMaxLife	0 ms
	✓	setCurrentLife_higherThanMaxLife_currentLifeShouldBeMaxLife	0 ms
	✓	setCurrentLife_lowerThanMaxLife_currentLifeShouldBeChanged	29 ms
	✓	setMaxLife_canBeChanged_maxLifeShouldBeChanged	0 ms
	✓	setMaxLife_canNotBeNegative_maxLifeShouldBeUnchanged	0 ms
	✓	setMaxLife_canNotBeZero_maxLifeShouldBeUnchanged	0 ms
	✓	setSpeed_canBeChanged_speedShouldBeChanged	0 ms
	✓	setSpeed_canNotBeNegative_speedShouldBeUnchanged	0 ms
	✓	takeDamage_damageHigherThanLife_currentLifeShouldBeZero	0 ms
	✓	takeDamage_damageLowerThanLife_currentLifeShouldBeOne	0 ms
▶	✓	M_FastUnitTest	0 ms
▶	✓	M_GiantUnitTest	0 ms
▶	✓	M_HealUnitTest	0 ms
▶	✓	M_MediumUnitTest	1 ms
▶	✓	M_SmallUnitTest	1 ms
▼	✓	M_BaseTest	0 ms
	✓	setCurrentLife_higherThanMaxLife_currentLifeShouldBeMaxLife	0 ms
	✓	setCurrentLife_lowerThanMaxLife_currentLifeShouldBeChanged	0 ms
	✓	setMaxLife_canBeChanged_maxLifeShouldBeChanged	0 ms
	✓	setMaxLife_canNotBeNegative_maxLifeShouldBeUnchanged	0 ms
	✓	setMaxLife_canNotBeZero_maxLifeShouldBeUnchanged	0 ms
	✓	takeDamage_baseShouldTakeOneLifeDamage	0 ms

Automated Testing

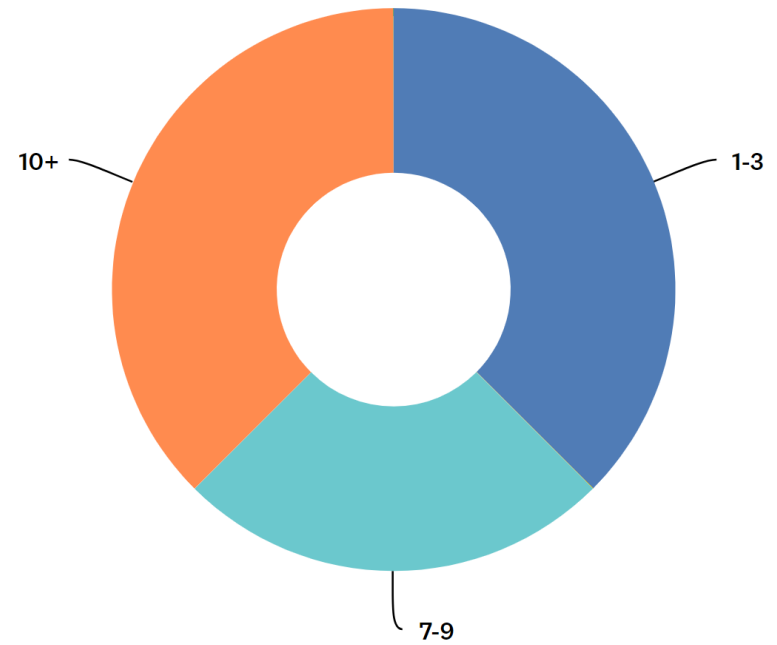


UAT - Survey

PLATFORMS USED FOR VIDEOGAMES

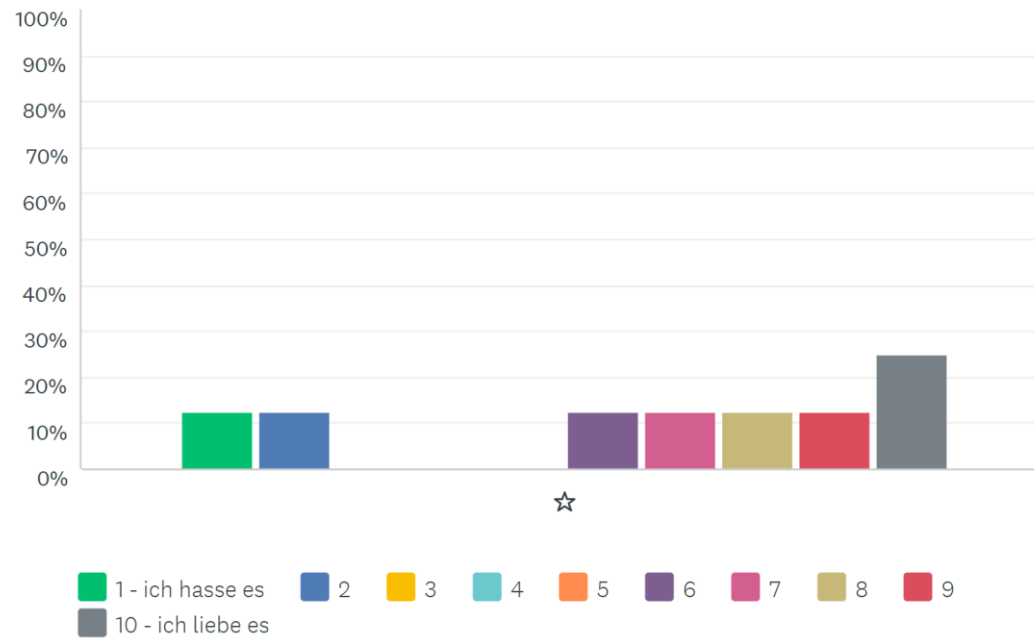


DIFFERENT TD-GAMES PLAYED

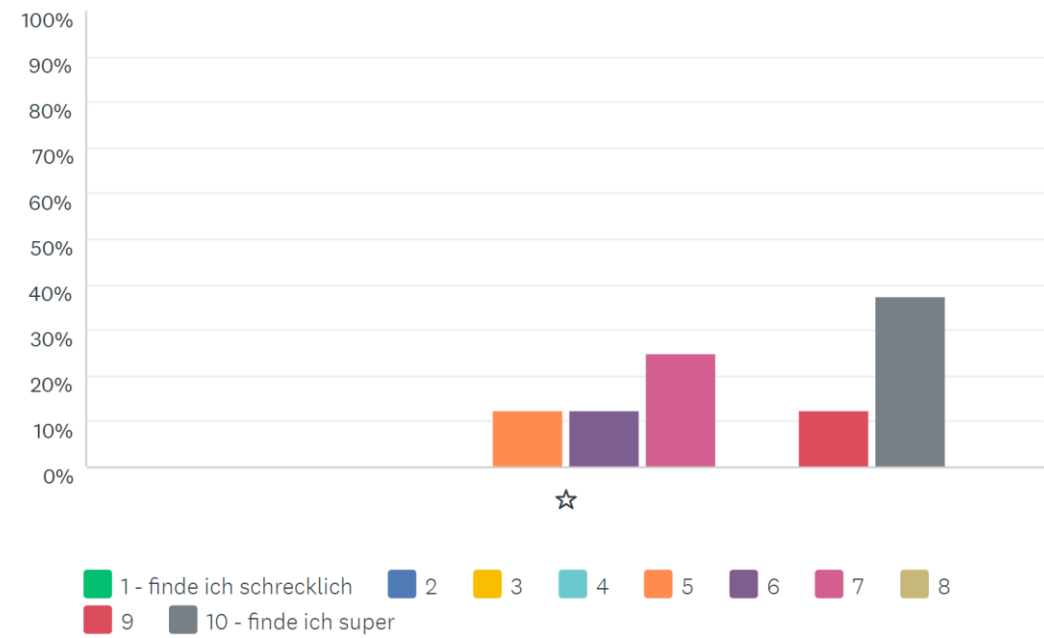


UAT - Survey

POPULARITY TD-GENRE

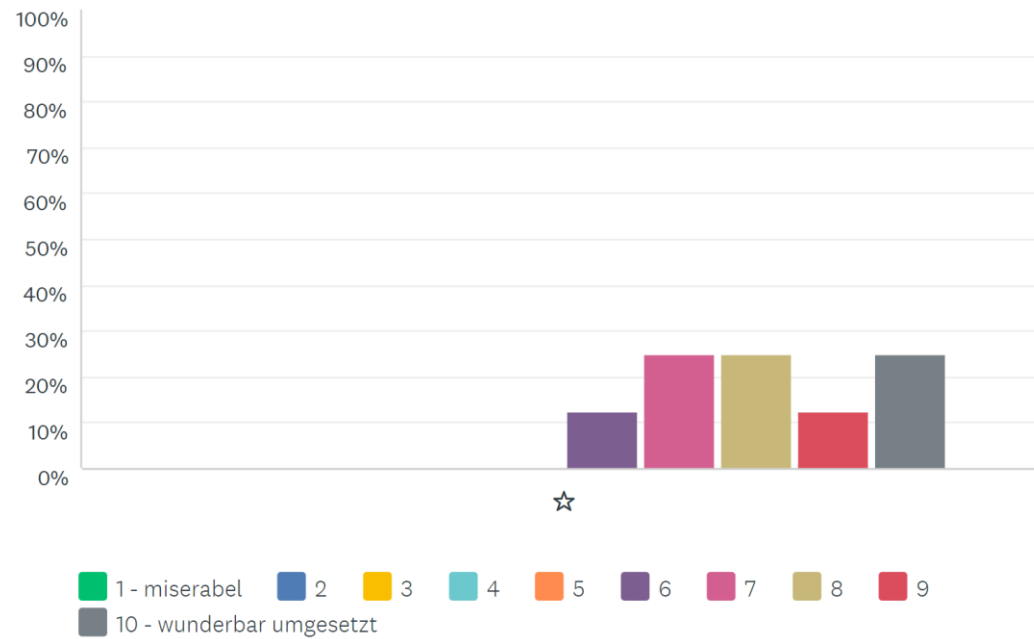


POPULARITY REVERSE TD-IDEA

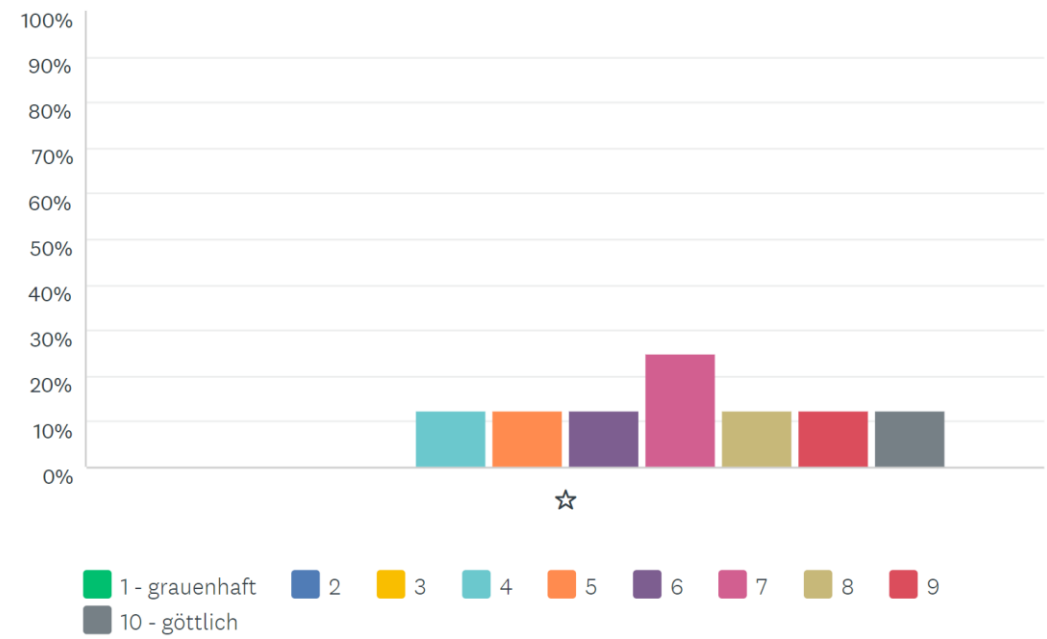


UAT - Survey

MAP EDITOR

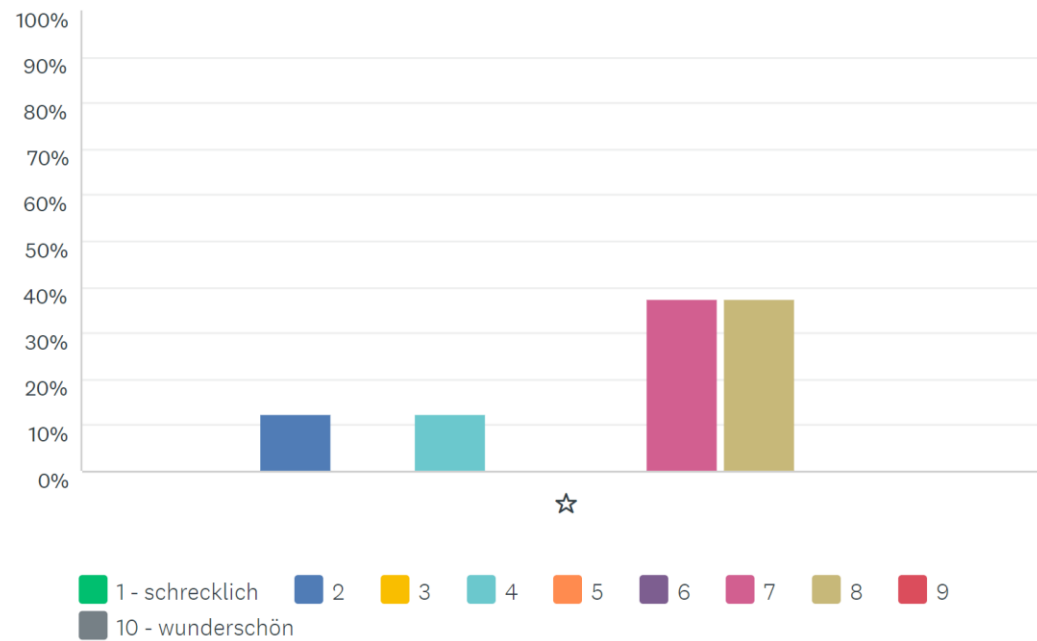


GAME



UAT - Survey

DESIGN



APP-STORE RATING

