WaterMe

Ein GTA-Group Projekt

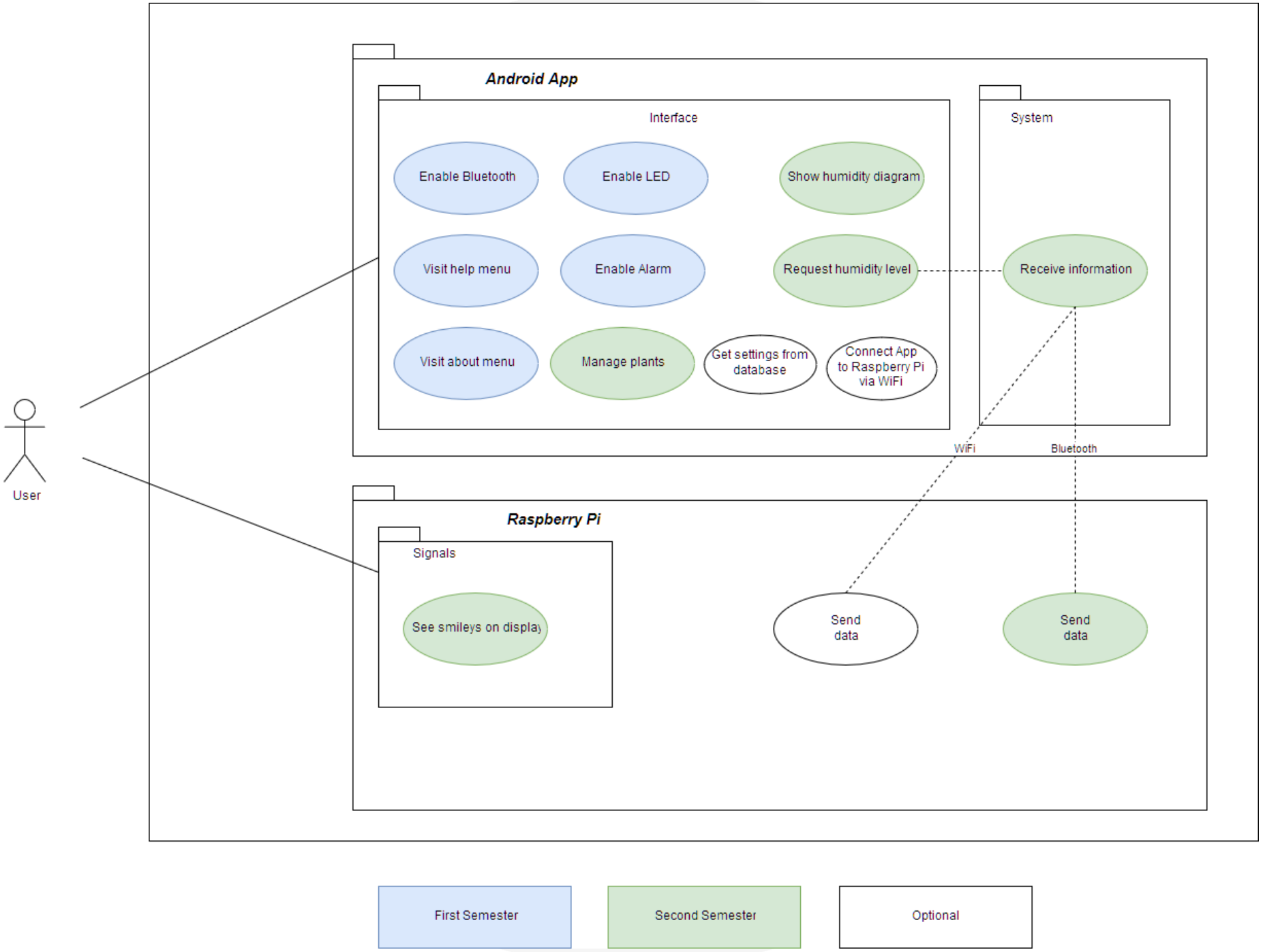
Projekt Idee

Ohne WaterMe

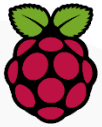
Mit WaterMe

Agenda

1. Produktperspektive
2. Software Requirements Specifications
3. Projekt Methodik
4. Projekt Management
5. Kostenschätzung (FP)
6. Risk Management
7. Architektur
8. Tests
9. Metrics
10. Patterns
11. Demo


Android App
Interface
Enable Bluetooth
Enable LED
Show humidity diagram
Visit help menu
Enable Alarm
Request humidity level
Visit about menu
Manage plants
Get settings from database
Connect App to Raspberry Pi via WiFi
System
Receive information
WiFi
Bluetooth
User
Raspberry Pi
Signals
See smileys on displa
Send data
Send data
First Semester
Second Semester
Optional

2. Software Requirements Specifications

- Android 
- Raspberry Pi 
- Kommunikation: Bluetooth
- IDE: Android Studio 

- Version-Control: GitHub 
- Programmiersprachen: Java, Python 

- Tools: ObjectAid (Eclipse), Espresso, Jira, Gantter, Wordpress, GIMP, Visio, Trello

3. Projekt Methodik

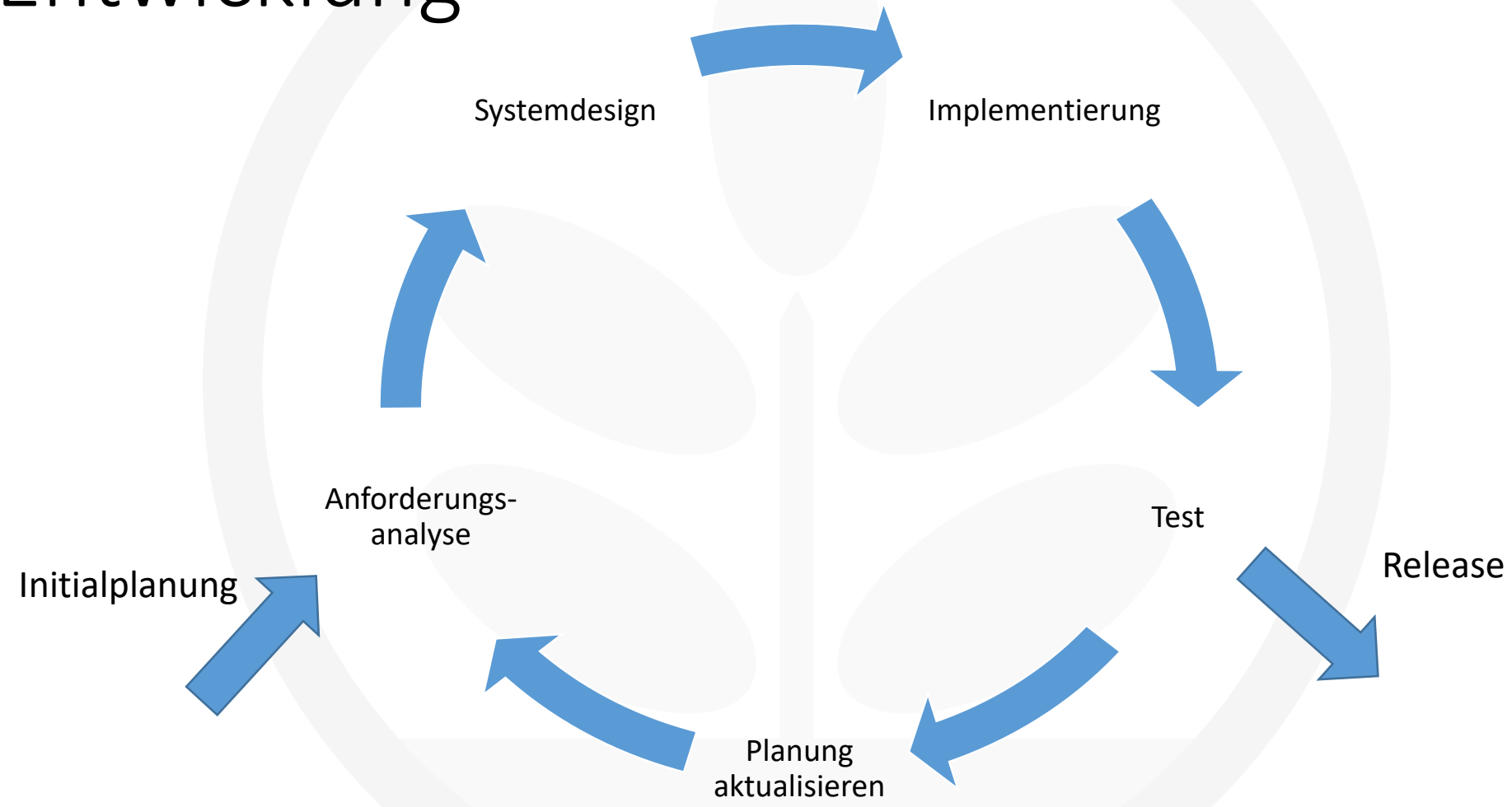
- Agile Softwareentwicklung
  + Reaktiv & Flexibel
  + Schnelle Verfügbarkeit

  Im Vordergrund:
  - Zufriedenstellung
  - Zusammenarbeit mit Kunde
  - K.I.S.S.
  - Funktionsfähigkeit

  Paarprogrammierung (Effektiver Code)

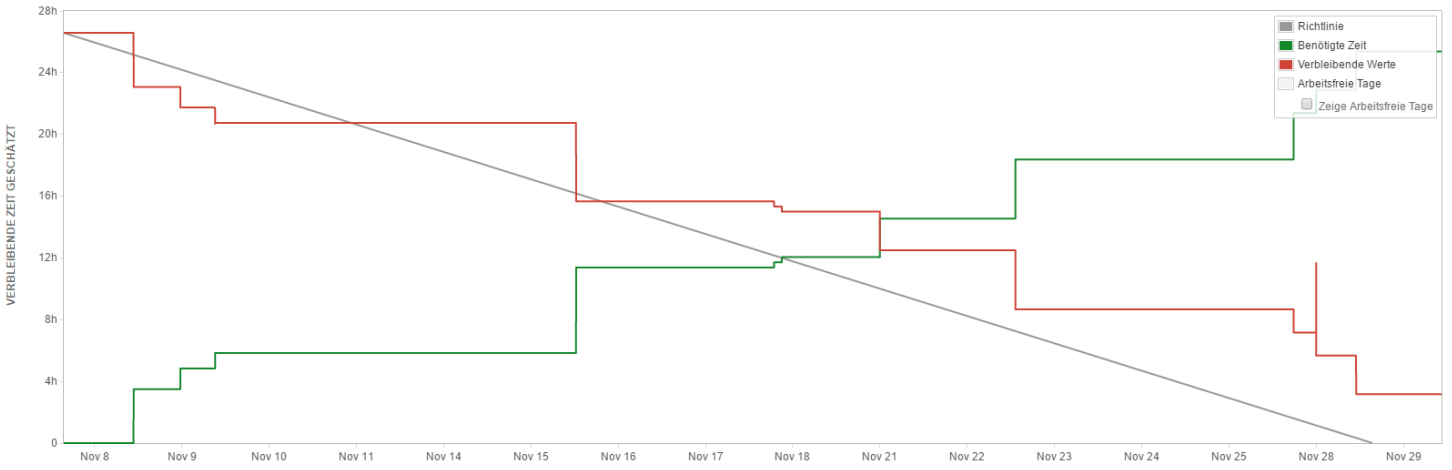
Iterative Entwicklung

Vorteile der agilen Methodik
Lernen aus Erfahrungen des laufenden Projektes
Weiterentwickeln, was wichtig



Scrumming on Jira

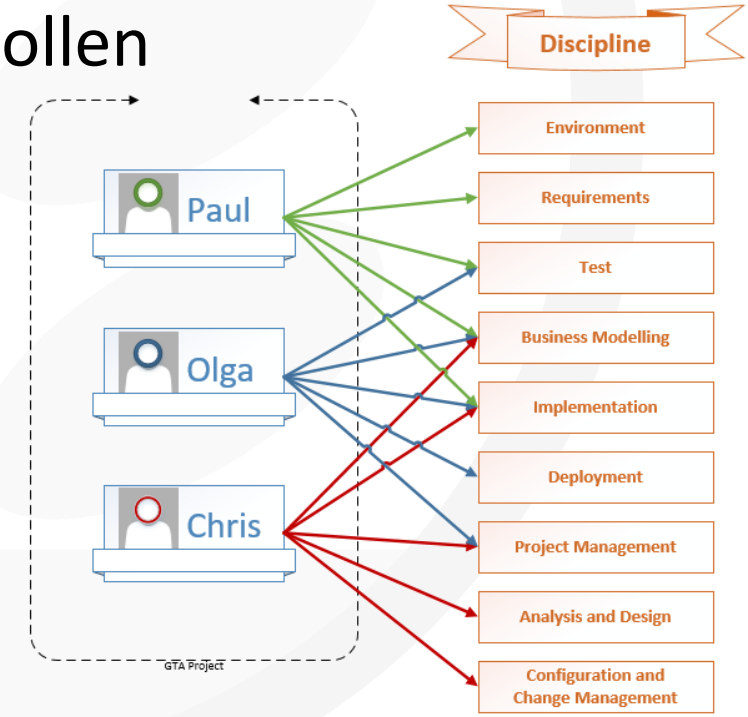
- Selbstorganisiertes Team
- Scrum-Master definiert Sprints
- Kunde definiert & priorisiert Anforderungen
- Entwicklungszyklen (Sprints) 1-4 Wochen



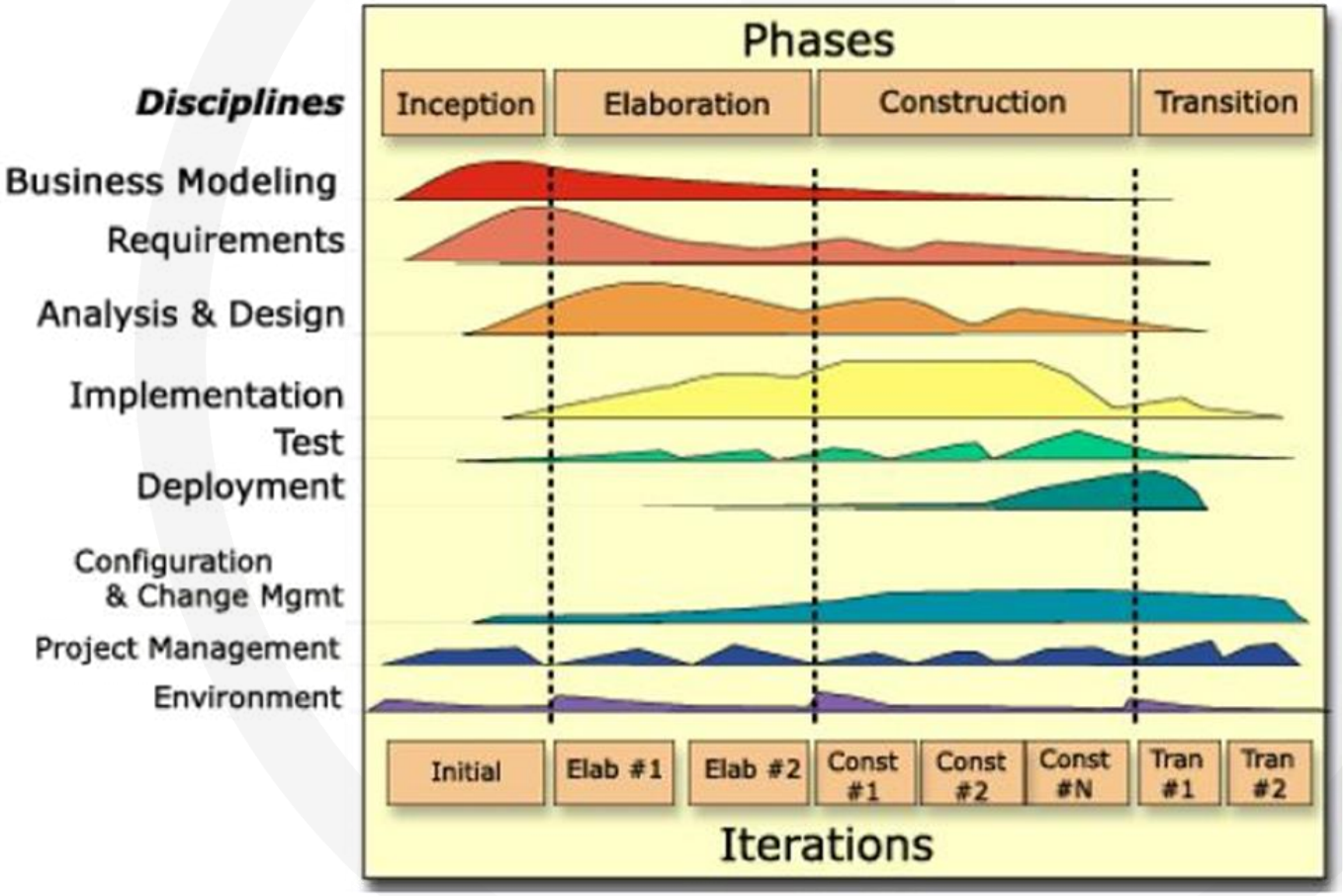
Projekt Management

Rational Unified Process (RUP)

- Vorgehensmodell zur Softwareentwicklung
- Aufteilung der Aufgaben in Rollen

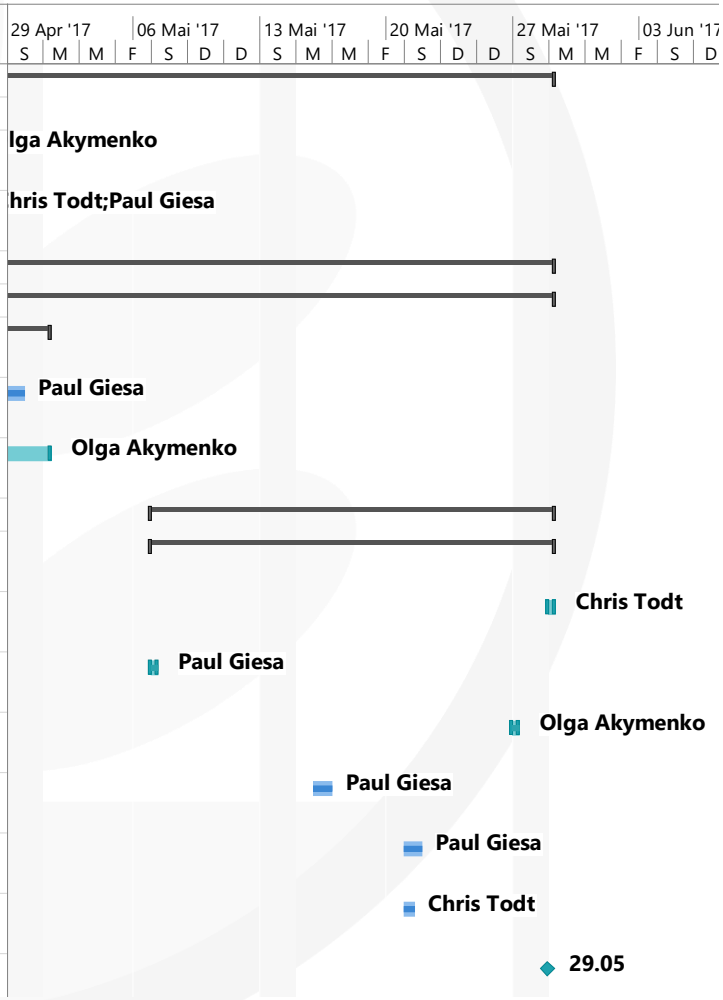


Projekt Management

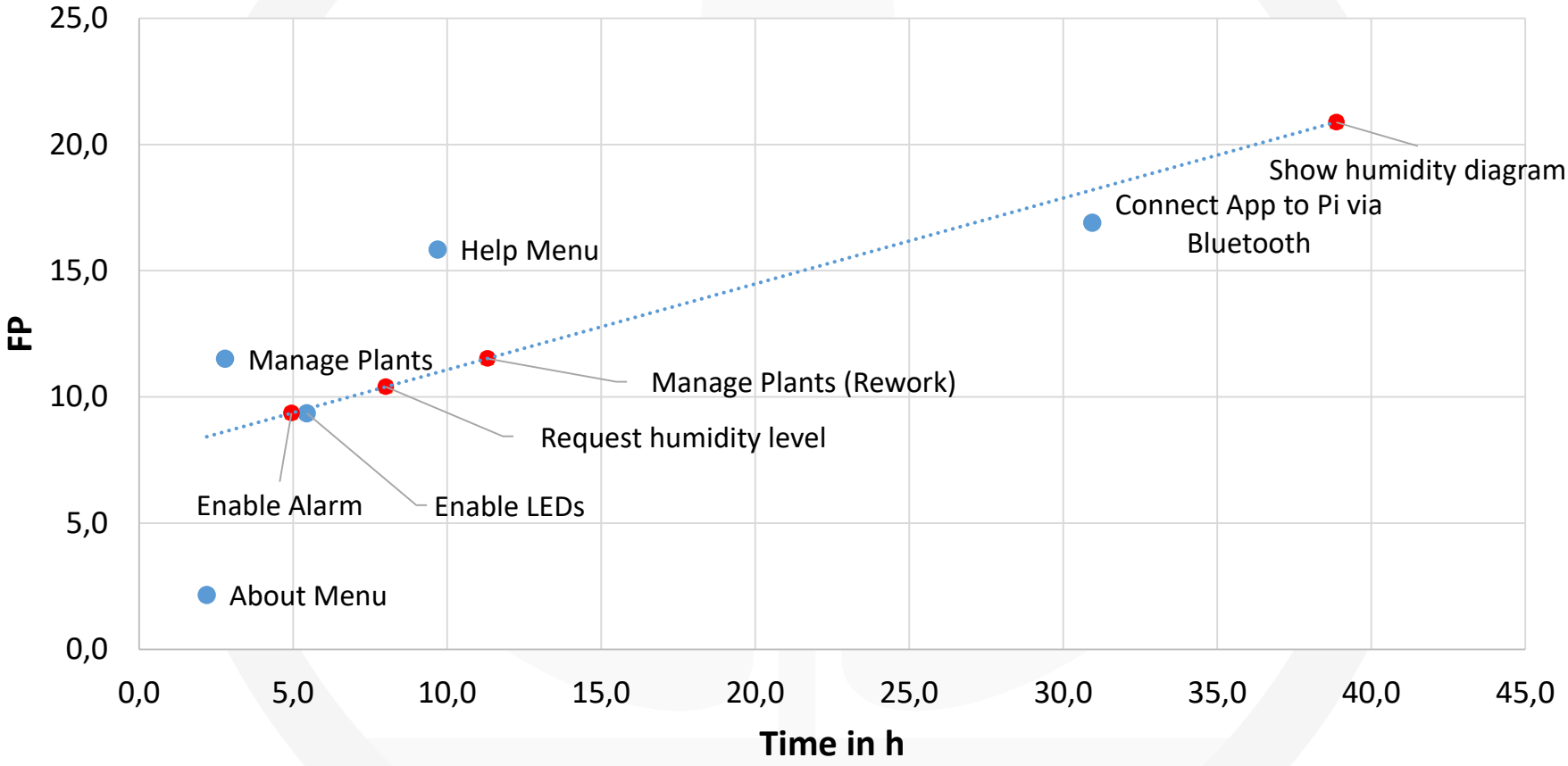


GANTT

Nr.	Vorgangs	Vorgangsname	Dauer	Anfang	Ende
85		**Construction #1**	**22,06 Tage**	**Don 27.04.17**	**Mon 29.05.17**
86		**Project Management**	**0,75 Tage**	**Don 27.04.17**	**Don 27.04.17**
87		weekly peer review	3 Std.	Don 27.04.17	Don 27.04.17
88		weekly homework	6 Std.	Don 27.04.17	Don 27.04.17
89		**Implementation**	**20,06 Tage**	**Sam 29.04.17**	**Mon 29.05.17**
90		**Software**	**20,06 Tage**	**Sam 29.04.17**	**Mon 29.05.17**
91		**Pi**	**0,41 Tage**	**Sam 29.04.17**	**Mon 01.05.17**
92		store data on pi	8 Std.	Sam 29.04.17	Sam 29.04.17
93		Implement Enable Alarm	11,3 Std.	Sam 29.04.17	Mon 01.05.17
94		**App**	**15,06 Tage**	**Son 07.05.17**	**Mon 29.05.17**
95		**Layout**	**15,06 Tage**	**Son 07.05.17**	**Mon 29.05.17**
96		Manage plants	0,5 Std.	Mon 29.05.17	Mon 29.05.17
97		Request humidity lev	1 Std.	Son 07.05.17	Son 07.05.17
98		Humidity diagram	1 Std.	Sam 27.05.17	Sam 27.05.17
99		Implement Request Hun	8 Std.	Die 16.05.17	Die 16.05.17
100		Implement Humidity dia	8 Std.	Son 21.05.17	Son 21.05.17
101		Implement plant menu (	5 Std.	Son 21.05.17	Son 21.05.17
102		Meilenstein	0 Tage	Mon 29.05.17	Mon 29.05.17



Kostenschätzung (FP)



Kostenschätzung (FP)

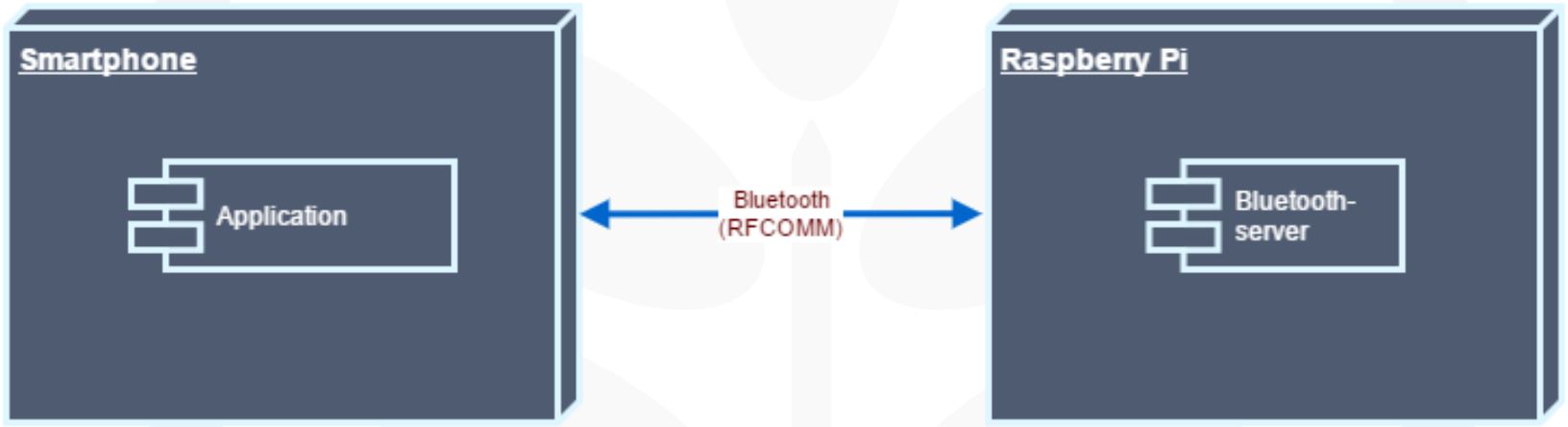
Use Cases	Berechnete Zeit	Tatsächliche Zeit
Show Humidity diagram	38,9	20,0
Request Humidity Level	8,0	9,0
Enable Alarm	11,3	5,0
Manage Plants	5,0	18,0

Risk Management

Identified	Prob of occurance	Damage	Mitigation strategy	Person in charge	Risk factor
trouble implementing feature	80%	3-7	read documention/ ask for help	Paul & Chris	2,4-5,6
Hardware breaks (e. g. Raspberry, sensor)	40%	1-10	replacement Hardware	Chris	0,4-4
bad time manangement	40%	8	detailed planning	Olga	3,2
bad communication	30%	7	communicate	Olga	2,1
chosing wrong software tools	5%	8	inform well about software features	Paul	0,4
Illness of team member (> 1 week)	5%	7	eat apples	all	0,35

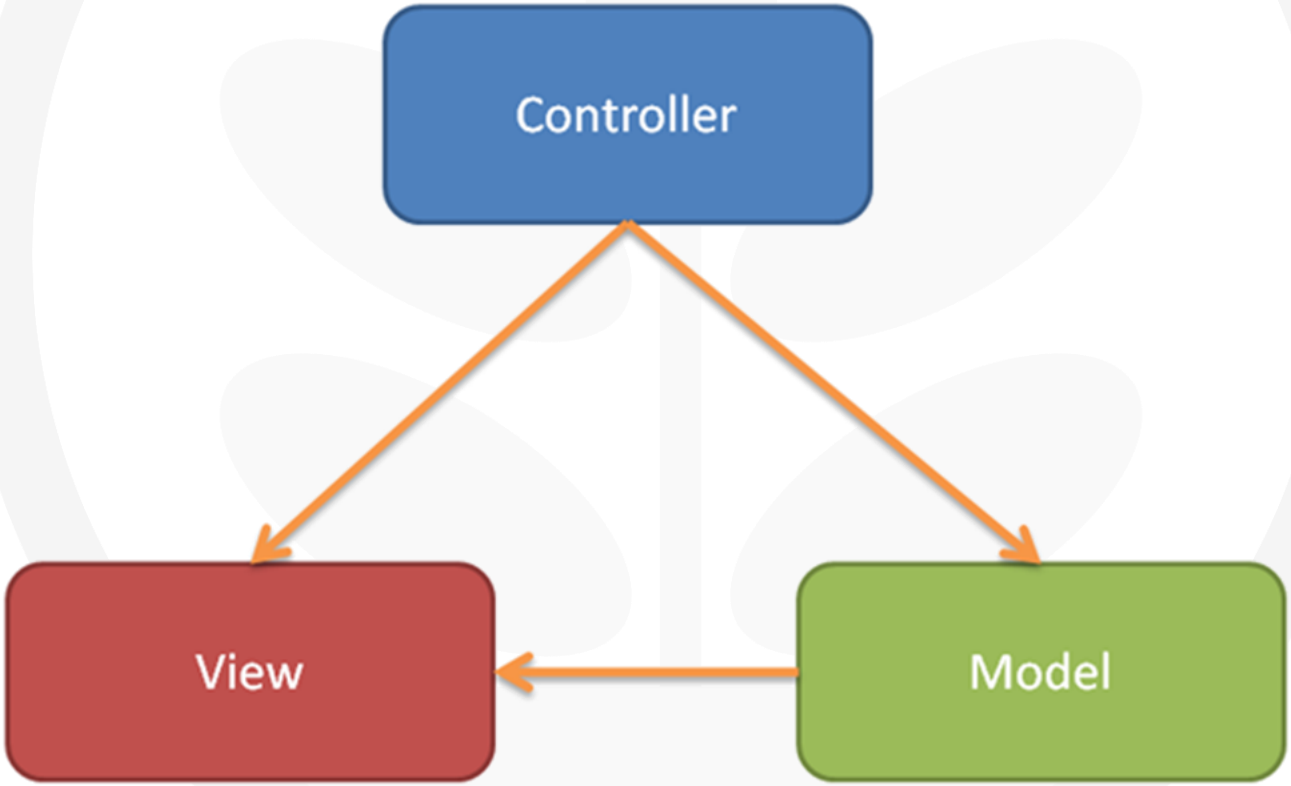
Architecture

Deployment View

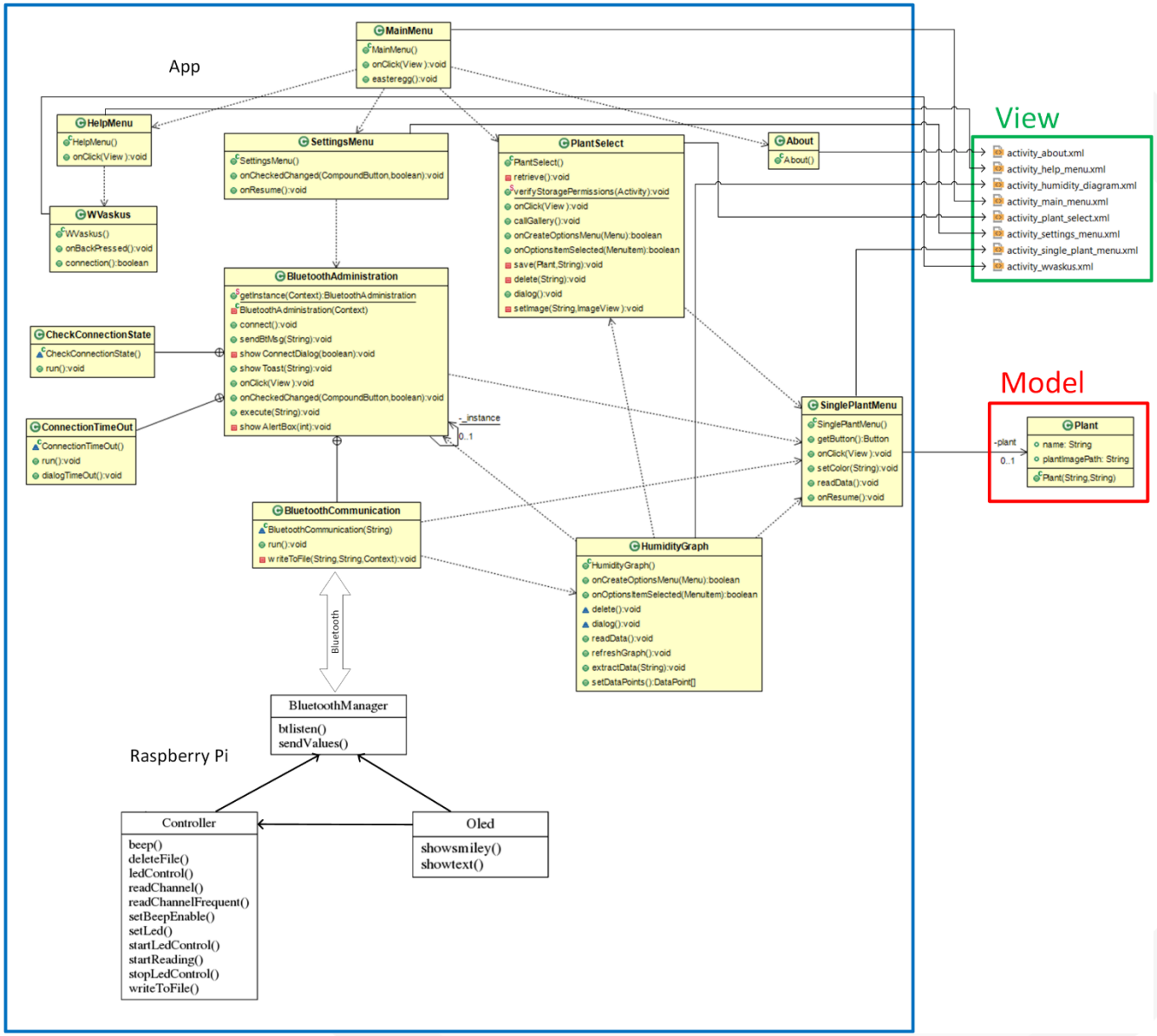


Architecture

Model-View-Controller (MVC)



Controller


App
MainMenu
MainMenu()
onClick(View):void
easteregg():void
HelpMenu
HelpMenu()
onClick(View):void
SettingsMenu
SettingsMenu()
onCheckedChanged(CompoundButton,boolean):void
onResume():void
PlantSelect
PlantSelect()
retrieve():void
verifyStoragePermissions(Activity):void
onClick(View):void
callGallery():void
onCreateOptionsMenu(Menu):boolean
onOptionsItemSelected(MenuItem):boolean
save(Plant,String):void
delete(String):void
dialog():void
setImage(String,ImageView):void
About
About()
WVaskus
WVaskus()
onBackPressed():void
connection():boolean
BluetoothAdministration
getInstance(Context):BluetoothAdministration
BluetoothAdministration(Context)
connect():void
sendBtMsg(String):void
showConnectDialog(boolean):void
showToast(String):void
onClick(View):void
onCheckedChanged(CompoundButton,boolean):void
execute(String):void
showAlertBox(int):void
-_instance
0..1
CheckConnectionState
CheckConnectionState()
run():void
ConnectionTimeOut
ConnectionTimeOut()
run():void
dialogTimeOut():void
BluetoothCommunication
BluetoothCommunication(String)
run():void
writeToFile(String,String,Context):void
Bluetooth
SinglePlantMenu
SinglePlantMenu()
getButton():Button
onClick(View):void
setColor(String):void
readData():void
onResume():void
HumidityGraph
HumidityGraph()
onCreateOptionsMenu(Menu):boolean
onOptionsItemSelected(MenuItem):boolean
delete():void
dialog():void
readData():void
refreshGraph():void
extractData(String):void
setDataPoints():DataPoint[]
BluetoothManager
btlisten()
sendValues()
Raspberry Pi
Controller
beep()
deleteFile()
ledControl()
readChannel()
readChannelFrequent()
setBeepEnable()
setLed()
startLedControl()
startReading()
stopLedControl()
writeToFile()
Oled
showsmiley()
showtext()
View
activity_about.xml
activity_help_menu.xml
activity_humidity_diagram.xml
activity_main_menu.xml
activity_plant_select.xml
activity_settings_menu.xml
activity_single_plant_menu.xml
activity_wvaskus.xml
Model
Plant
name: String
plantImagePath: String
Plant(String,String)
-plant
0..1

Testing mit Espresso

Warum testen?

- Vermeidung unerwarteter Ergebnisse
- Funktionsfähige Benutzeroberfläche

Warum Espresso?

- in Android Studio integriert
- Einfach zu bedienen
- Record Funktion

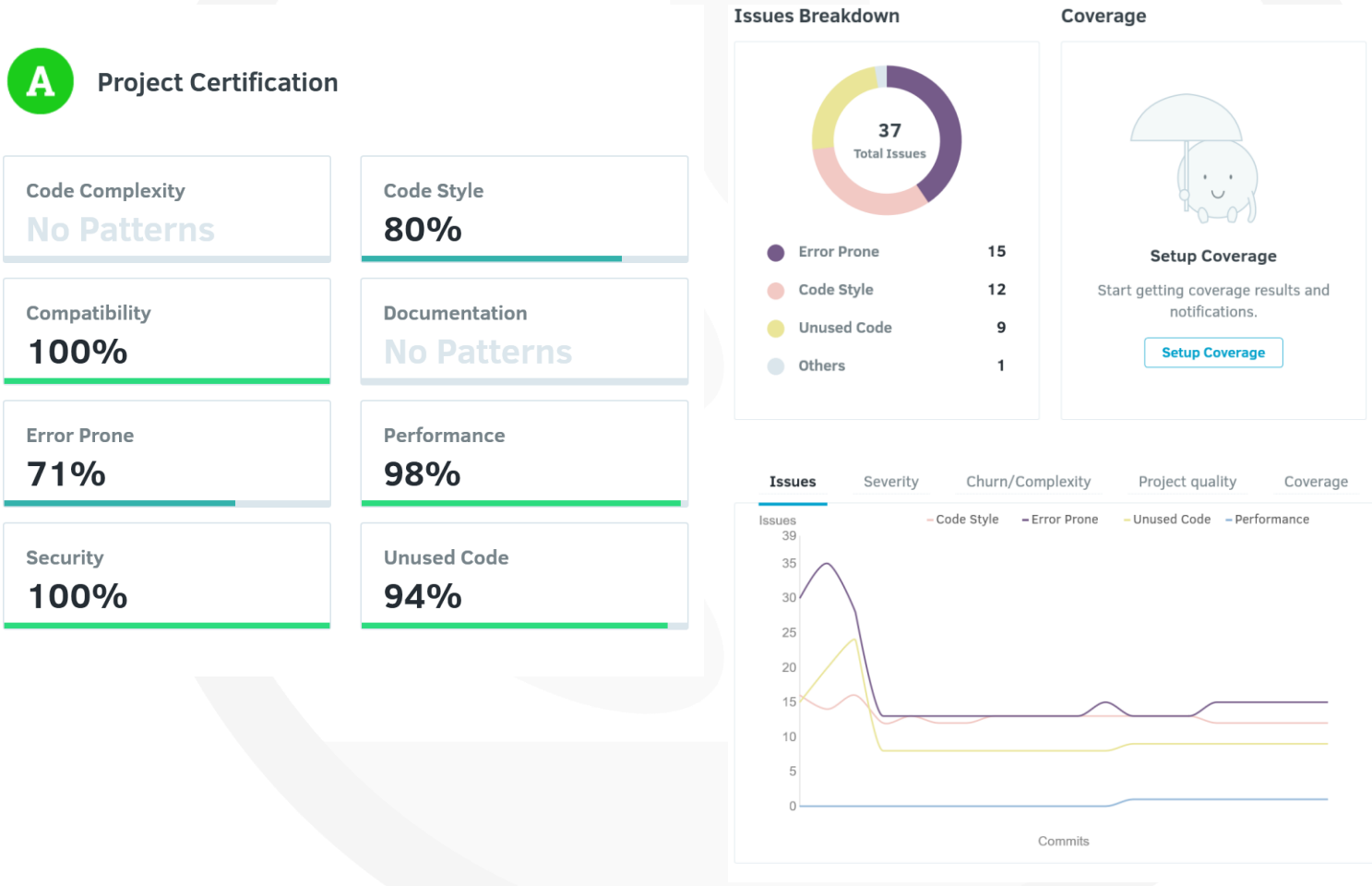
Tests in 'com.project.gta.demo': 8 total, 8 passed

1 m 38 s

Collapse | Expand

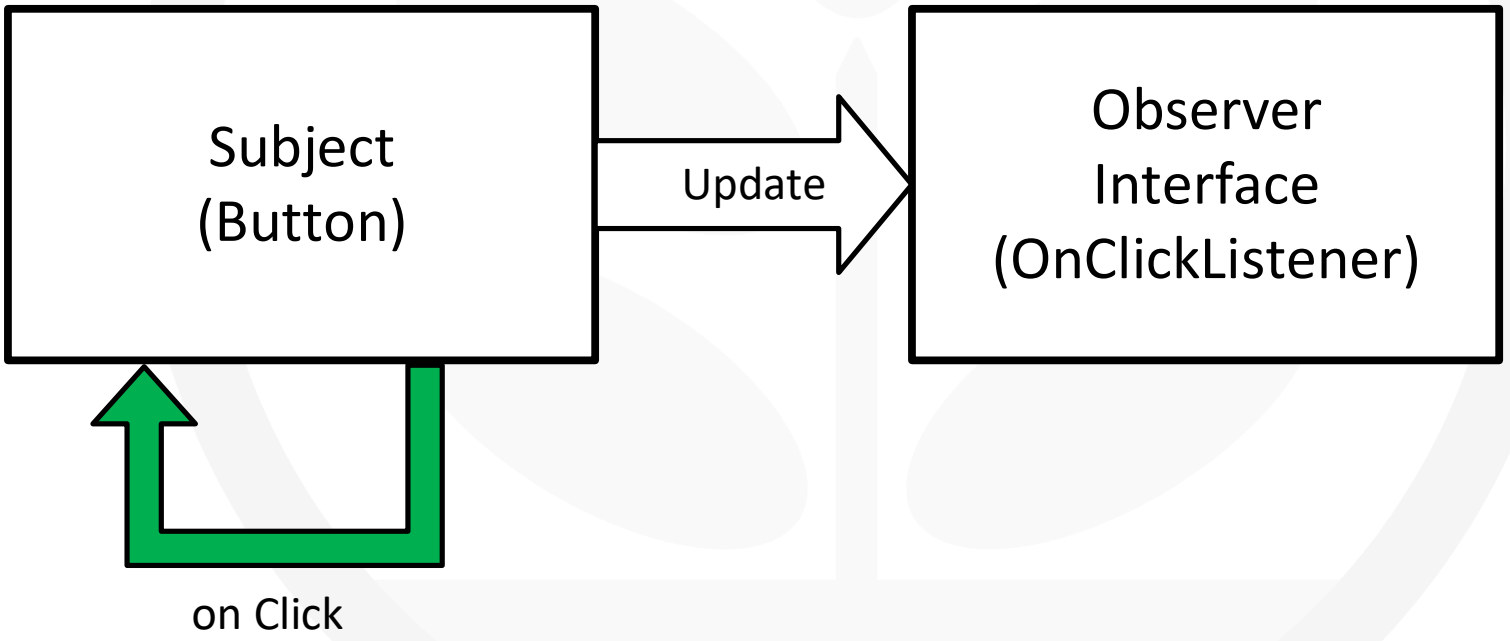
com.project.gta.demo.UCEnableA		6.70 s
uCEnableBluetooth	passed	6.70 s
com.project.gta.demo.UCEnableAlarm		16.35 s
uCEnableAlarm	passed	16.35 s
com.project.gta.demo.UCEnableLED		1.99 s
uCEnableLED	passed	1.99 s
com.project.gta.demo.UCManagePlants		35.67 s
uCManagePlants	passed	35.67 s
com.project.gta.demo.UCRequesthumidity		6.83 s
uCRequesthumidity	passed	6.83 s
com.project.gta.demo.UCShowHumidityDiagram		23.25 s
uCShowHumidityDiagram	passed	23.25 s
com.project.gta.demo.UCVisitAboutMenu		1.03 s
uCVisitAboutMenu	passed	1.03 s
com.project.gta.demo.UCVisitHelpMenu		6.19 s
uCVisitHelpMenu	passed	6.19 s

Metrics

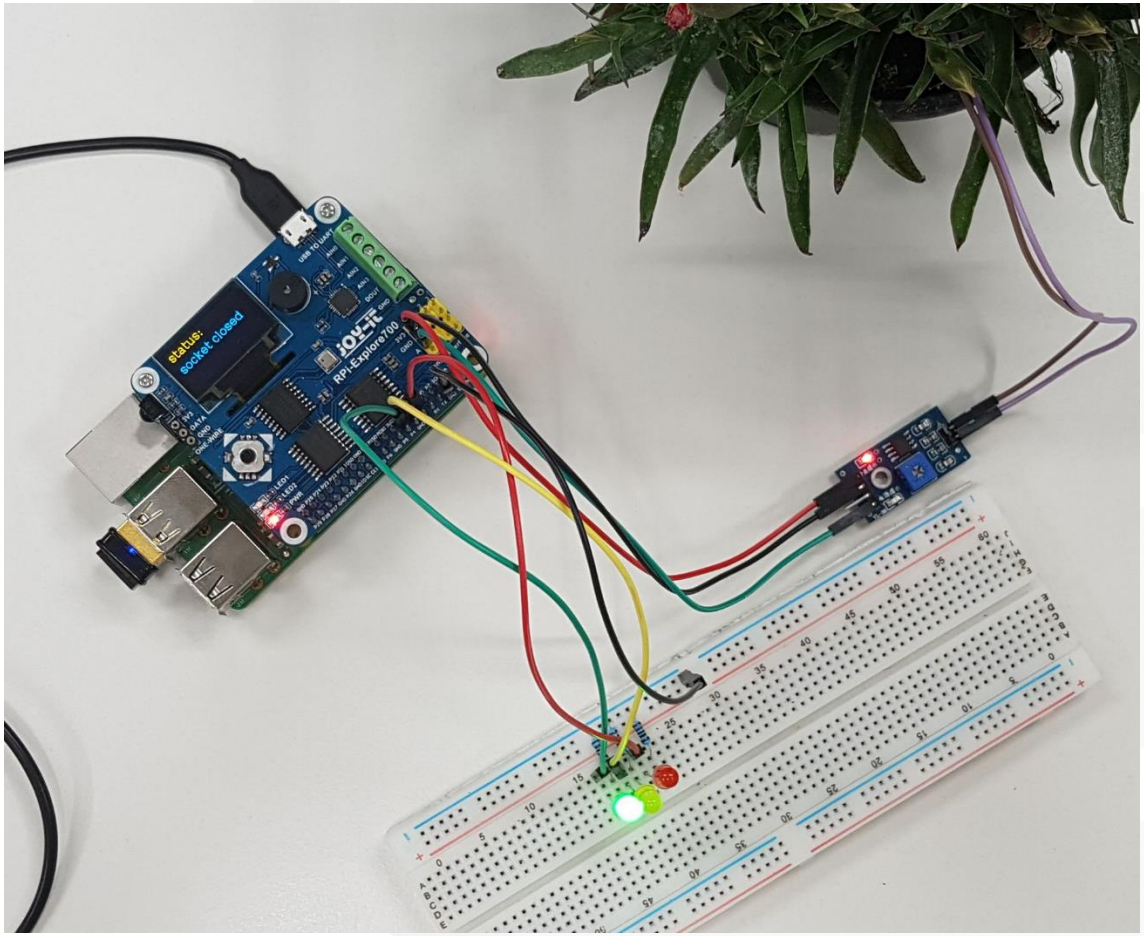

A
Project Certification
Code Complexity
No Patterns
Code Style
80%
Compatibility
100%
Documentation
No Patterns
Error Prone
71%
Performance
98%
Security
100%
Unused Code
94%
Issues Breakdown
37
Total Issues
Error Prone 15
Code Style 12
Unused Code 9
Others 1
Coverage
Setup Coverage
Start getting coverage results and notifications.
Setup Coverage
Issues
Severity
Churn/Complexity
Project quality
Coverage
Issues
Code Style
Error Prone
Unused Code
Performance
39
35
30
25
20
15
10
5
0
Commits

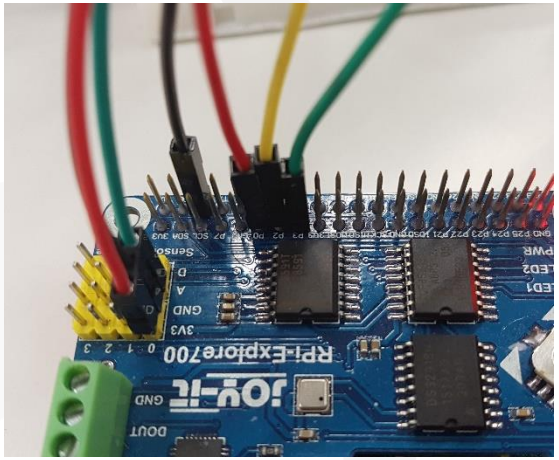
Patterns

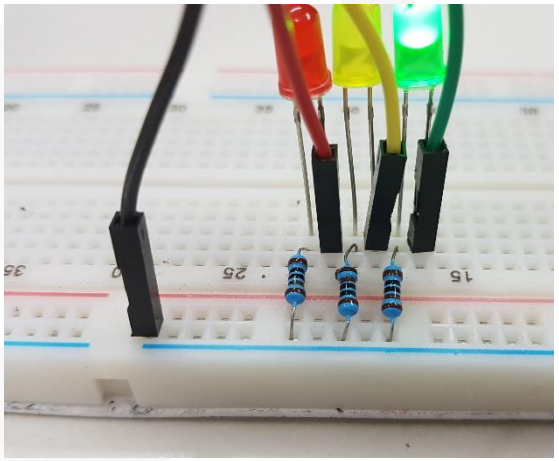
Observer Pattern:



Aufbau







Demo