CI: BUILD PROCESS & AUTOMATED TESTING OF UI5 APPS

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UI5con

learn.explore.connect.

Why Continuous Integration?

The Application

Highly complex

Many developers working simultaneously

openui5-sample-app

github.com/SAP/openui5-sample-app

Workflows

New change:

| Developer | → | Commit | → | Push to master |

Problem:
Any code can be submitted to master

New release:

| Manual Build & Deploy |

Problem:
Manual build and deployment process

Problem I: Any code can be submitted to master

What needs to be done?

4 items left

- [ ] Code that breaks the application and/or tests
- [ ] Code violating style conventions
- [ ] Untested code
- [ ] Code that is not reviewed by another developer

Problem I: Any code can be submitted to master

What needs to be done?	

3 items left
✓ ~~Code that breaks the application and/or tests~~
☐ Code violating style conventions
☐ Untested code
☐ Code that is not reviewed by another developer

➡️ Execute unit- and integration tests

🛑 **If anything fails: Block merge into master**

Problem I: Any code can be submitted to master

What needs to be done?

2 items left

- [x] ~~Code that breaks the application and/or tests~~
- [x] ~~Code violating style conventions~~
- [ ] Untested code
- [ ] Code that is not reviewed by another developer

➡️ Execute unit- and integration tests

➡️ Run a linter

🛑 **If anything fails: Block merge into master**

Problem I: Any code can be submitted to master

What needs to be done?	

1 item left

- ☑ ~~Code that breaks the application and/or tests~~
- ☑ ~~Code violating style conventions~~
- ☑ ~~Untested code~~
- ☐ Code that is not reviewed by another developer

➡ Execute unit- and integration tests

➡ Run a linter

➡ Check code coverage

🛑 **If anything fails: Block merge into master**

Problem I: Any code can be submitted to master

What needs to be done?

0 items left

- ☑ ~~Code that breaks the application and/or tests~~
- ☑ ~~Code violating style conventions~~
- ☑ ~~Untested code~~
- ☑ ~~Code that is not reviewed by another developer~~

➡ Execute unit- and integration tests

➡ Run a linter

➡ Check code coverage

➡ Enforce code reviews

🛑 **If anything fails: Block merge into master**

Problem II: Manual build and deployment process

Whenever the master is stable:

Build and deploy the application
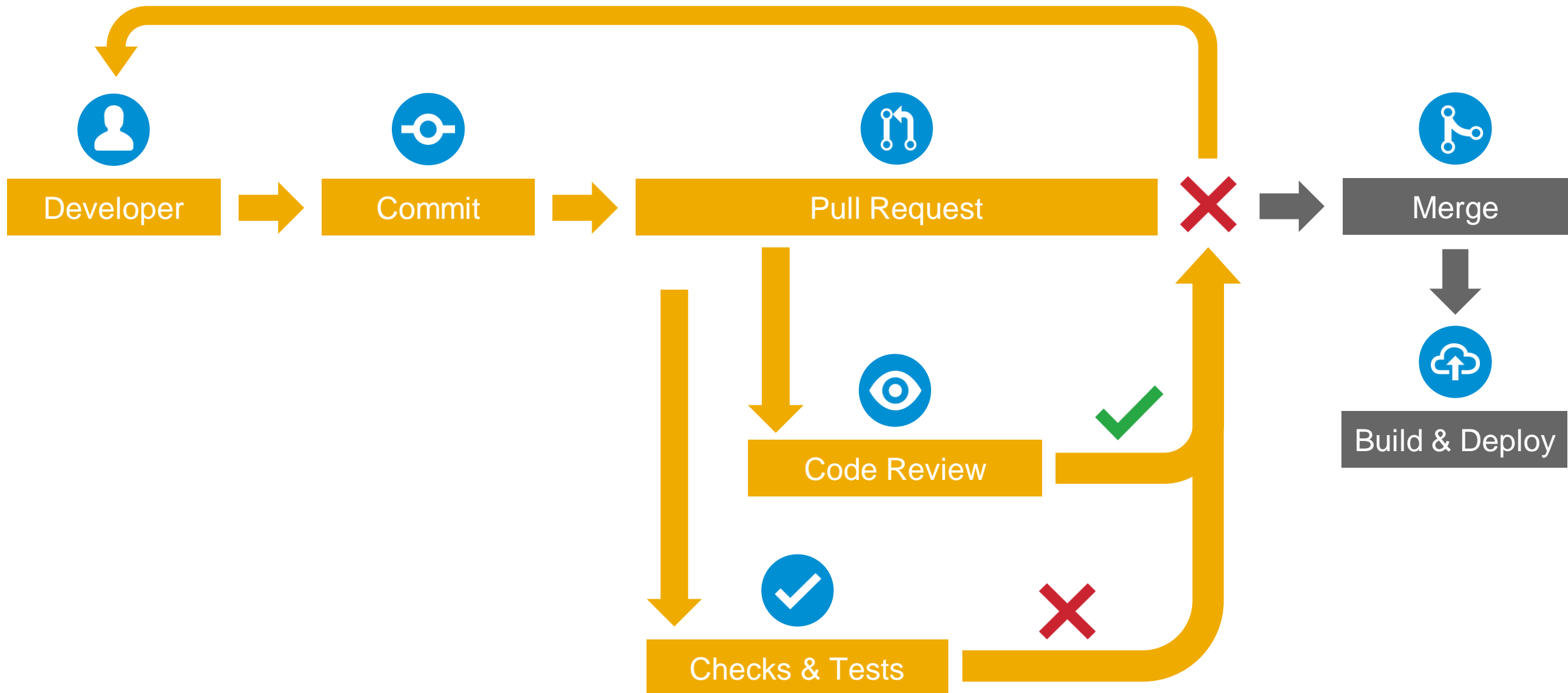
What needs to be done?

1 item left

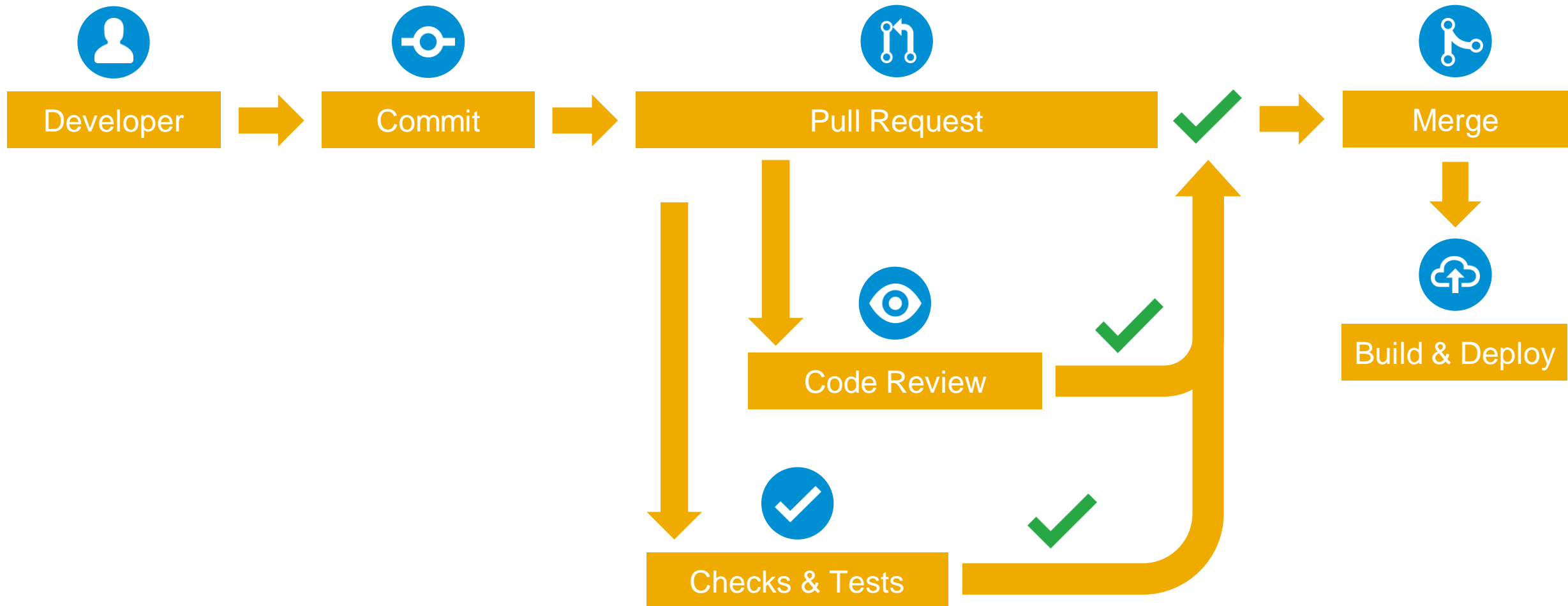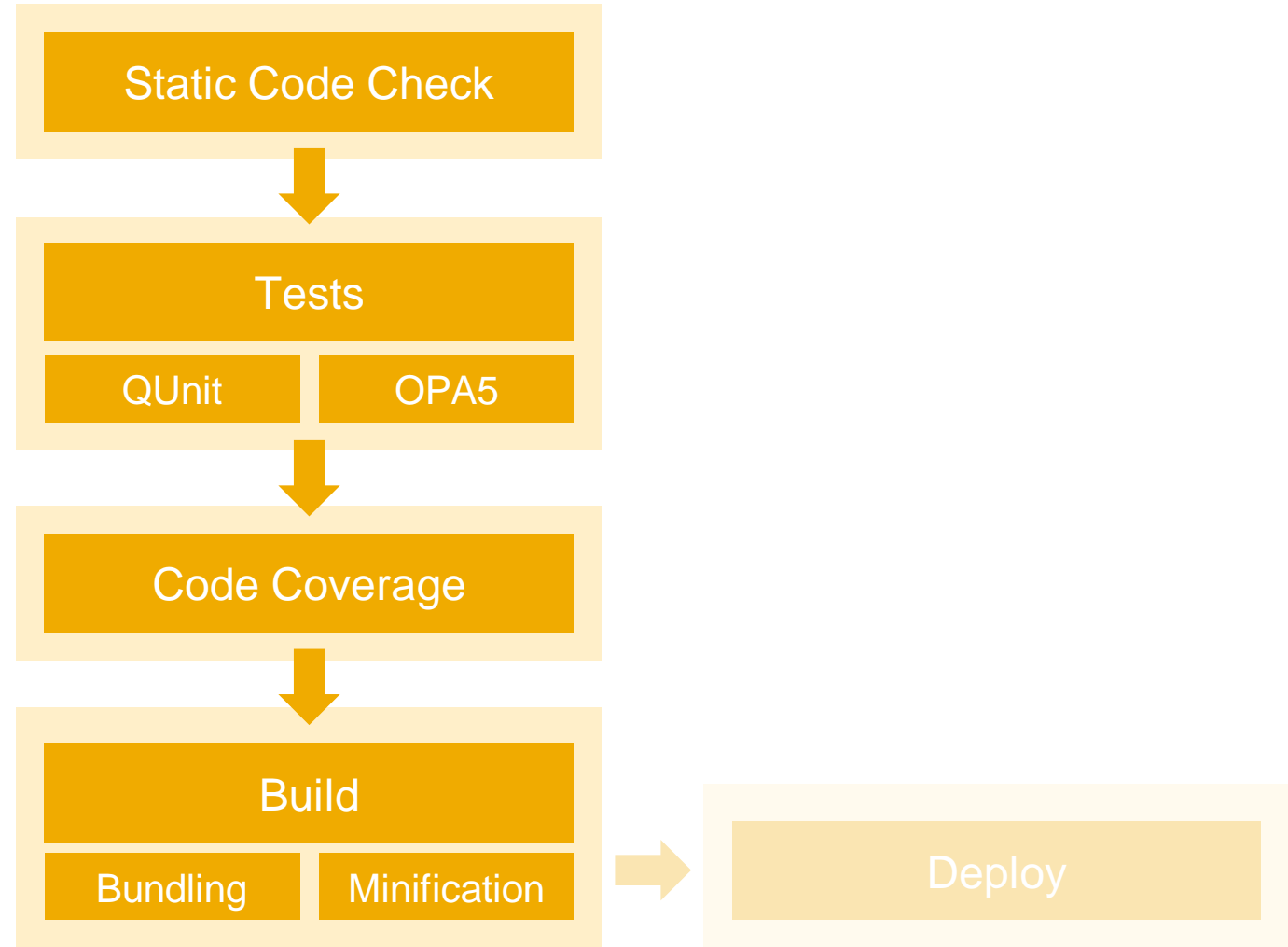| ✔	~~Build the app~~
☐	Deploy the app

CI Workflow
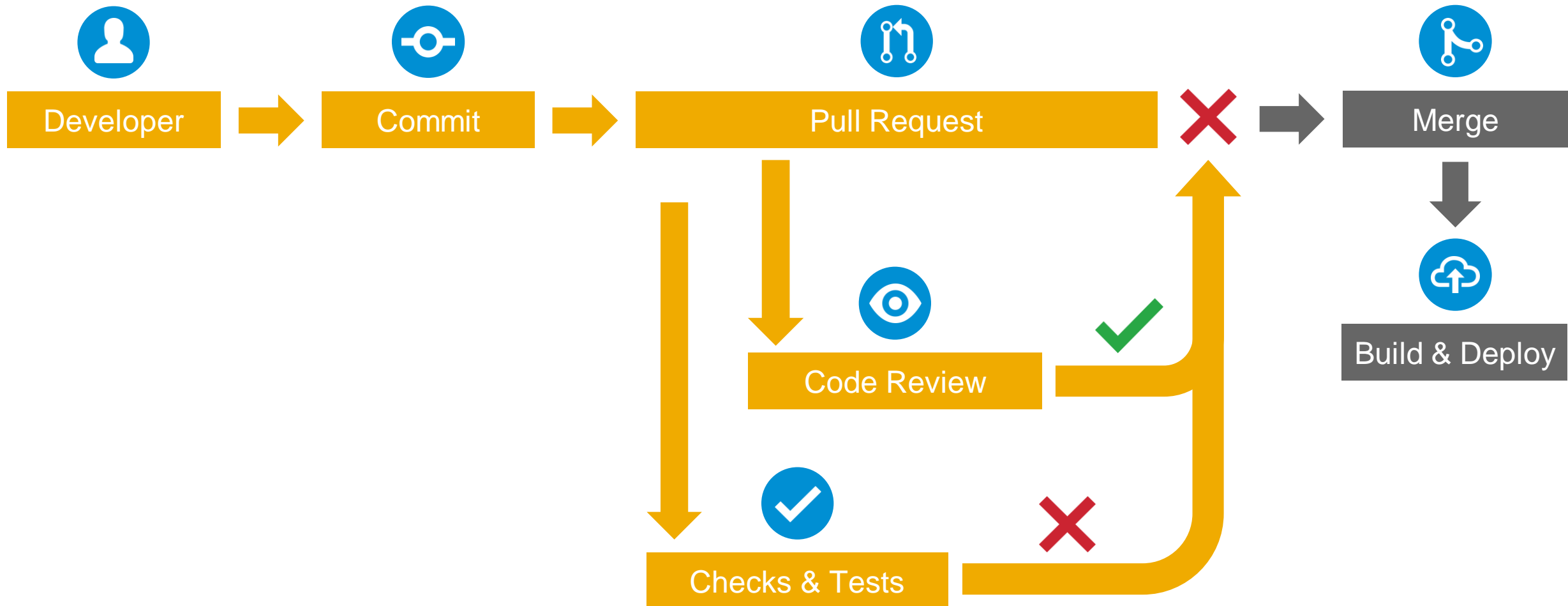
CI Workflow

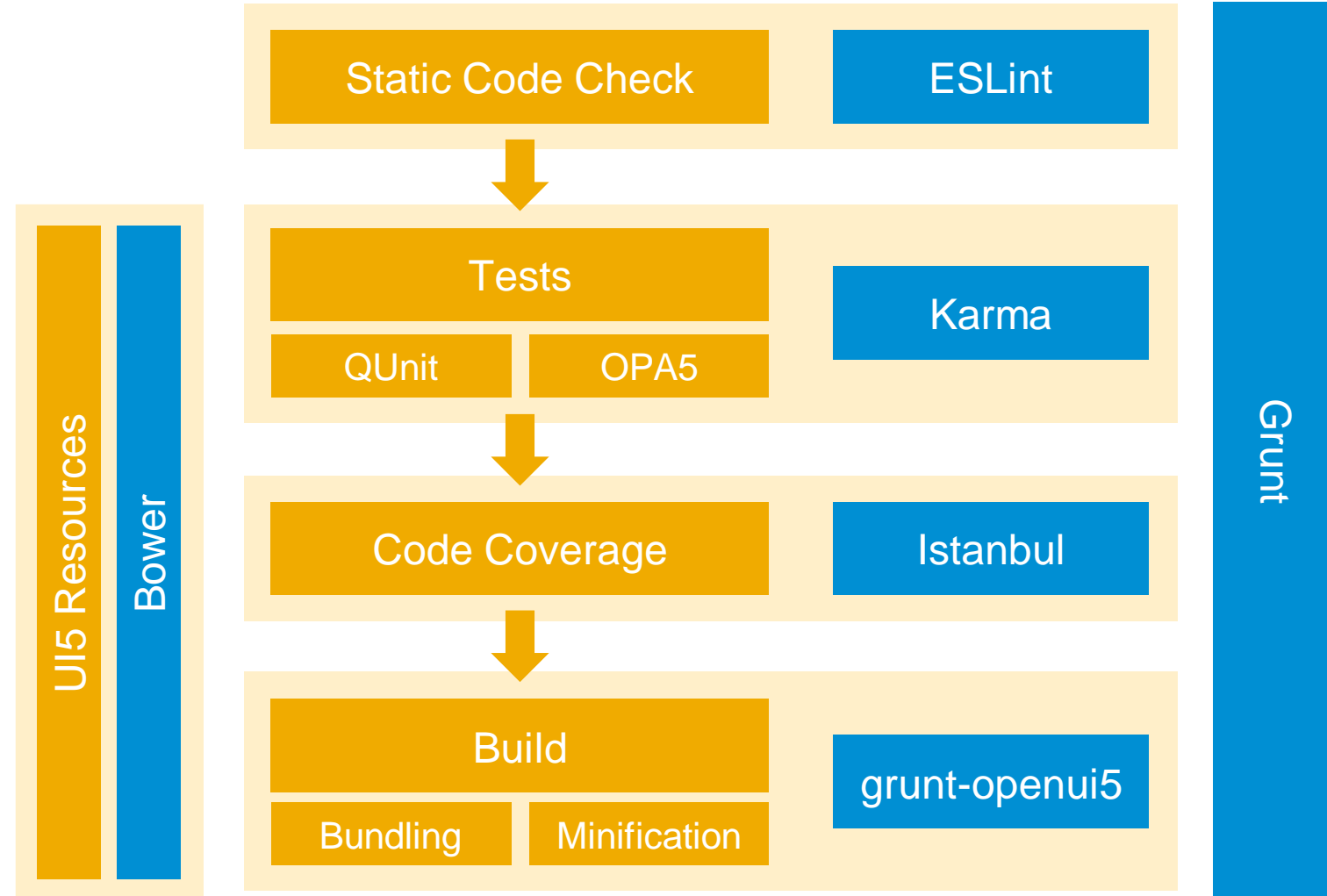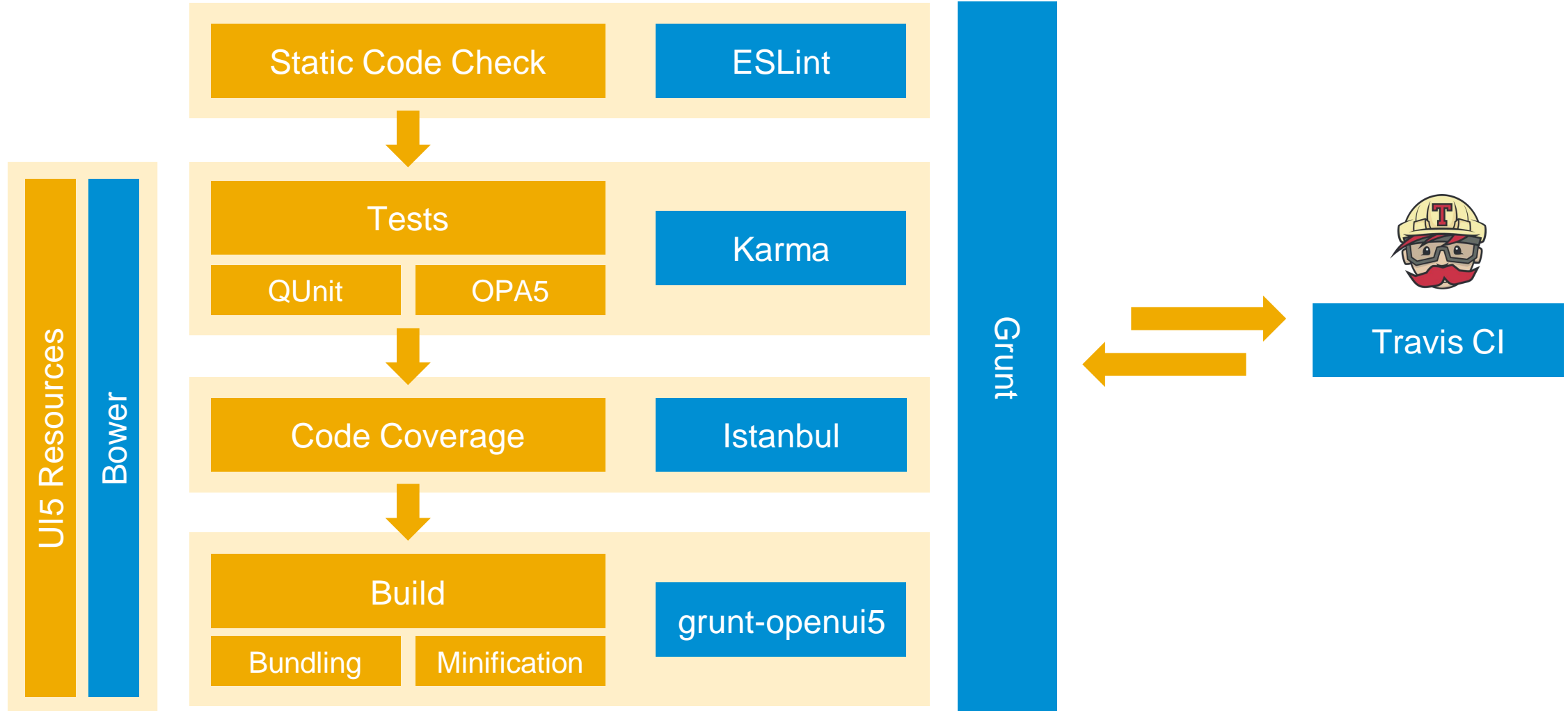# CI Workflow

The Pipeline

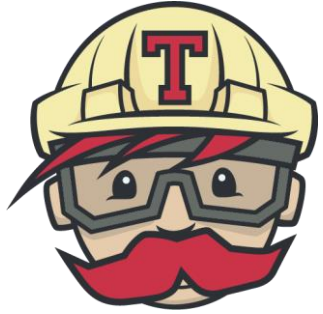# Pipeline
Abstract

Pipeline
Tools

Pipeline
Tools

Travis CI

Continuous Integration Service for GitHub projects

Free for Open Source projects

Easy to configure with .travis.yml in your project

SAP / openui5-sample-app   build unknown

Current   Branches   Build History   Pull Requests   More options

✓ **master** Continuous Integration enablement   -o- #3 passed   ↻ Restart build

- Add Karma test runner (including Istanbul code coverage)   Ran for 1 min 6 sec
- Restructure and adopt tests according to UI5 best practices   42 minutes ago
- Add additional tests

Commit b2298ee
Compare 15db9d9..b2298ee
Branch master

MB Merlin Beutlberger authored   MB Merlin Beutlberger committed

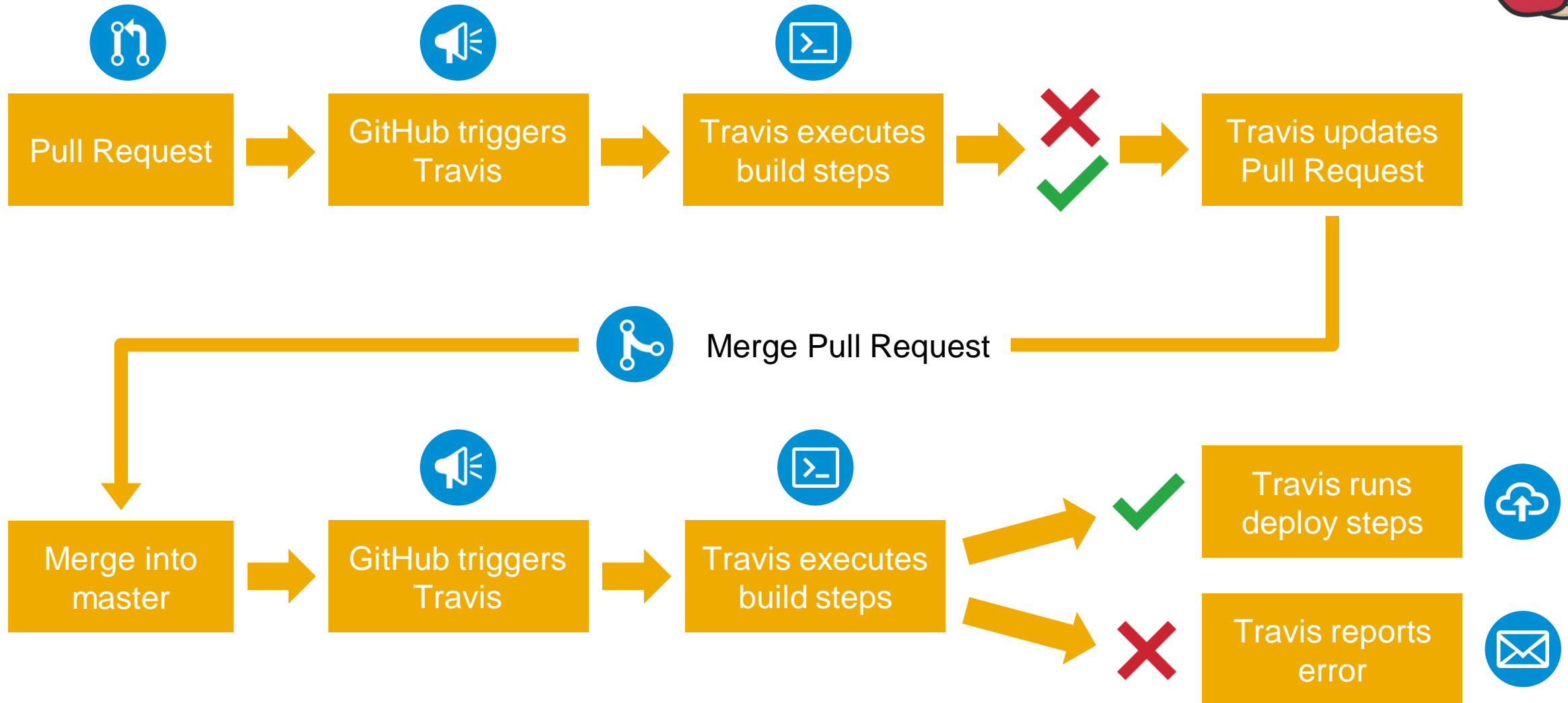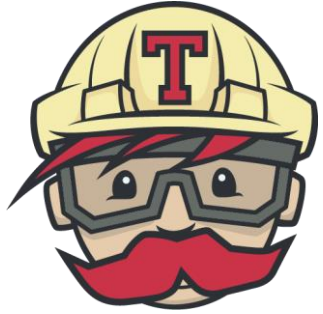Job log   View config

Remove log   Raw log

1 W: http://us-central1.gce.archive.ubuntu.com/ubuntu/dists/precise-updates/InRelease: Signature by key 630239CC130E1A7FD81A27B140976EAF437D05B5 uses weak digest algorithm (SHA1)

Travis CI
Workflow

GitHub +

Pull Request → GitHub triggers Travis → Travis executes build steps → ❌ ✅ → Travis updates Pull Request

Merge Pull Request

Merge into master → GitHub triggers Travis → Travis executes build steps → ✅ Travis runs deploy steps

❌ Travis reports error

Travis CI
.travis.yml

```
language: node_js

node_js:
  - 'stable'

install:
  - <custom install commands>
script:
  - <custom build commands>
```

Any command that can be executed locally, Travis can execute as well

Travis CI

.travis.yml

Language defaults

```
language: node_js
```

```
node_js:
  - 'stable'
```

```
install:
  - <custom install commands>
script:
  - <custom build commands>
```

```
install:
  - npm install
script:
  - npm test
```

Any command that can be executed locally, Travis can execute as well

ESLint
Static Code Checks

JavaScript Linter

Widely adopted

Helps you enforce code conventions

```
📁 /SAPDevelop/SAP/openui5-sample-app — ⌘2

❯ eslint webapp


/SAPDevelop/SAP/openui5-sample-app/webapp/controller/App.controller.js
   15:8   error   'oView' is defined but never used   no-unused-vars


✖ 1 problem (1 error, 0 warnings)
```

Grunt
Task Runner

Based on Node.js

Lets you orchestrate and automate various tasks

6.000+ plugins for linting, testing, building and more

```
openui5-sample-app: grunt watch — ⌘2

❯ grunt watch
Running "openui5_connect:src" (openui5_connect) task

Running "connect:src" (connect) task
Started connect web server on http://localhost:8080

Running "karma:watch" (karma) task
29 06 2017 17:26:22.699:WARN [karma]: No captured browser, open http://loca
lhost:9876/
29 06 2017 17:26:22.704:INFO [karma]: Karma v1.7.0 server started at http:/
/0.0.0.0:9876/
29 06 2017 17:26:22.705:INFO [launcher]: Launching browser Chrome with unli
mited concurrency
```

Karma
Test Runner

Browser independent (Chrome, Firefox, Internet Explorer, …)

Headless execution (Chrome, PhantomJS 2)

Can run QUnit and OPA5 tests

Watch mode

Returns with error code when tests fail

github.com/SAP/karma-openui5
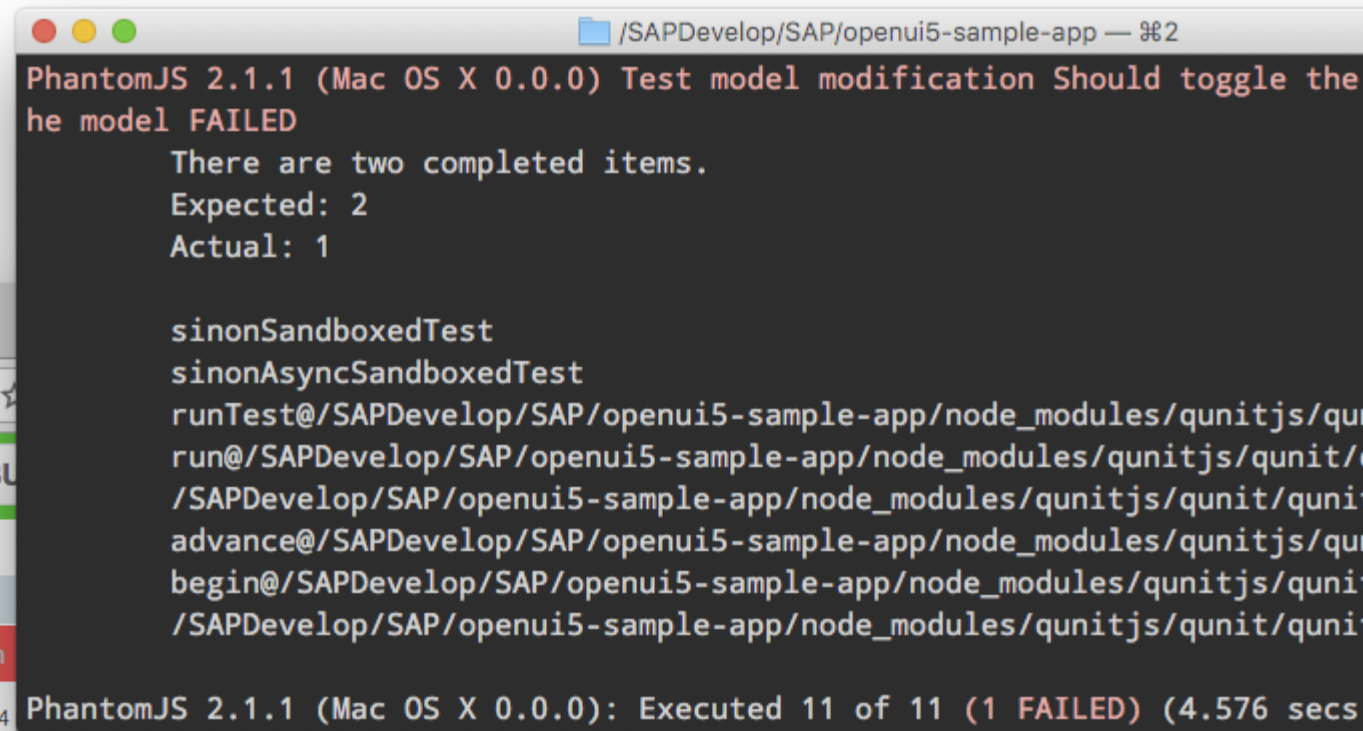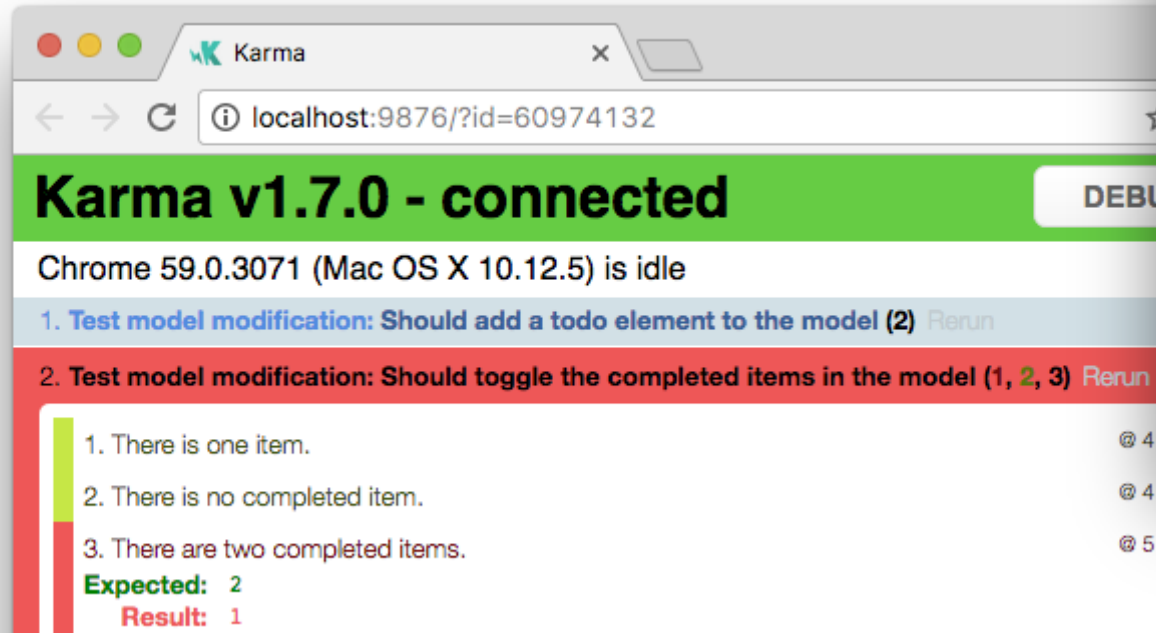
Istanbul
Code Coverage

Easy to integrate into Karma via **karma-coverage**

Offers terminal, HTML and other outputs

grunt-openui5
Server and Build Tools

OpenUI5

Local development server

Preload bundling

Theme build

Demo: Continuous Integration in Action

Outlook: UI5 evolution build tooling

Node.js and npm
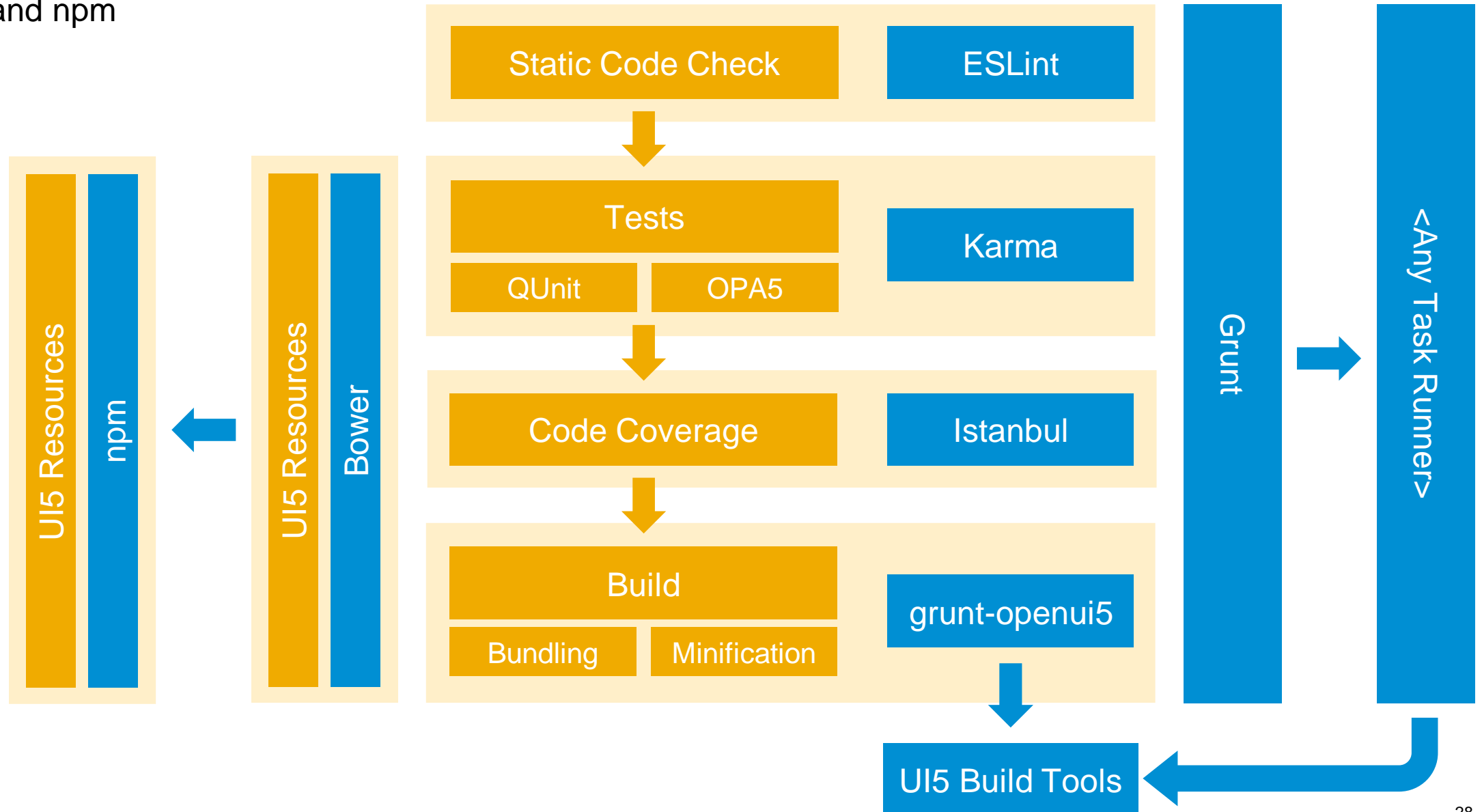
Thank you.

Contact information:

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@RandomByte

Find the application at:
https://github.com/SAP/openui5-sample-app

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You are welcome to give feedback for this session

in the UI5con Event App