Code Talks

Как количество тестов производительности переходит в качество

Ночь ...

Ночь

вдруг просыпается нагрузочник со словами: "Отчет не отправил!"

Автотесты

Автотесты

производительности.

Автотесты

производительности,

которых много

Автотесты

производительности,

которых много

и это хорошо

Смирнов Вячеслав

Ускоряю miro.com

Развиваю @qa_load

План

1. В чем проблема тестирования производительности?
2. Как понять результат теста за секунду?
3. Как понять **сотню** результатов тестов за минуту?
4. Что дает Allure читателю?
5. Что дает **JUnit** писателю?
6. Почему больше тестов — лучше?
7. Какие есть **примеры**?

Code Talks

1 В чем проблема тестирования производительности?

Просто ли написать тесты производительности?

Непростые

тесты

Просто ли понять отчет по производительности?

Непростые тесты

и

непростые результаты

Непростые тесты

и

непростые результаты

Code Talks

2 Как понять результат теста за секунду?

Простейший результат теста:

 хорошо

 плохо

Простейший результат теста:

 хорошо

 плохо

 не получилось проверить

Результат набора тестов:

✅ 15

✅ 10 🛑 5

🛑 15

⚠️ 15

Результат набора тестов:

✅ 15 — все хорошо

✅ 10 🛑 5

🛑 15

⚠️ 15

Результат набора тестов:

✅ 15

✅ 10 🛑 5 — кое-что сломалось

🛑 15

⚠️ 15

Результат набора тестов:

✅ 15

✅ 10 🛑 5

🛑 15 — все плохо

⚠️ 15

Результат набора тестов:

✅ 15

✅ 10 🛑 5

🛑 15

⚠️ 15 — не удалось проверить

Code Talks

3 Как понять сотню результатов тестов за минуту?

Что с API?

API	Version 1.2.3	Version 1.2.4
GET /users	✅80	✅80
POST /project	✅60	✅60
GET /project	✅60	✅52 🛑8
GET /account	✅50	✅50

Сбой GET /project для версии 1.2.4

API	Version 1.2.3	Version 1.2.4
GET /users	✅80	✅80
POST /project	✅60	✅60
GET /project	✅60	✅52 🛑8
GET /account	✅50	✅50

Что не так с GET /project?

API	Payload	Version 1.2.3	Version 1.2.4
GET /project	?fields=id	✅15	✅15
GET /project	?fields=name	✅15	✅15
GET /project	?fields=items	✅15	✅7 🛑8
GET /project	?fields=permissions	✅15	✅15

Поле items замедлилось в 1.2.4

API	Payload	Version 1.2.3	Version 1.2.4
GET /project	?fields=id	✅15	✅15
GET /project	?fields=name	✅15	✅15
GET /project	?fields=items	✅15	✅7 🛑8
GET /project	?fields=permissions	✅15	✅15

Аналитический отчет или сводная таблица позволяют быстро оценить

4 Что дает Allure читателю?

Organize tests

As described in Improving navigation in your test report, Allure supports multiple ways to organize tests into hierarchical structures. Allure JUnit 5 provides functions to assign the

To specify a test's location in the behavior-based hierarchy:

Annotations API | Runtime API

```
import io.qameta.allure.Epic;
import io.qameta.allure.Feature;
import io.qameta.allure.Story;
import org.junit.jupiter.api.Test;

class TestMyWebsite {

    @Test
    @Epic("Web interface")
    @Feature("Essential features")
    @Story("Authentication")
    void testAuthentication() {
        // ...
    }
}
```

To specify a test's location in the suite-based hierarchy:

java

```
import io.qameta.allure.Allure;
import org.junit.jupiter.api.Test;

class TestMyWebsite {

    @Test
    void testAuthentication() {
        Allure.label("parentSuite", "Tests for web interface");
```

Organize tests

As described in Improving navigation in your test report, Allure supports multiple ways to organize tests into hierarchical structures. Allure JUnit 5 provides functions to assign the

https://allurereport.org/docs/junit5/#organize-tests

Behavior: Epic / Feature / Story

To specify a test's location in the behavior-based hierarchy:

```java
import io.qameta.allure.Epic;
import io.qameta.allure.Feature;
import io.qameta.allure.Story;
import org.junit.jupiter.api.Test;

class TestMyWebsite {

    @Test
    @Epic("Web interface")
    @Feature("Essential features")
    @Story("Authentication")
    void testAuthentication() {
        // ...
    }
}
```

To specify a test's location in the suite-based hierarchy:

```java
import io.qameta.allure.Allure;
import org.junit.jupiter.api.Test;

class TestMyWebsite {

    @Test
    void testAuthentication() {
        Allure.label("parentSuite", "Tests for web interface");
```

https://allurereport.org/docs/junit5/#organize-tests

Behavior: Epic / Feature / Story

Annotations API

Organize tests

As described in Improving navigation in your test report, Allure supports multiple ways to organize tests into hierarchical structures. Allure JUnit 5 provides functions to assign the

To specify a test's location in the behavior-based hierarchy:

```java
import io.qameta.allure.Epic;
import io.qameta.allure.Feature;
import io.qameta.allure.Story;
import org.junit.jupiter.api.Test;

class TestMyWebsite {

    @Test
    @Epic("Web interface")
    @Feature("Essential features")
    @Story("Authentication")
    void testAuthentication() {
        // ...
    }
}
```

To specify a test's location in the suite-based hierarchy:

```java
import io.qameta.allure.Allure;
import org.junit.jupiter.api.Test;

class TestMyWebsite {

    @Test
    void testAuthentication() {
        Allure.label("parentSuite", "Tests for web interface");
```

https://allurereport.org/docs/junit5/#organize-tests

Behavior: Epic / Feature / Story

Annotations API

```
@Epic("Web interface")
@Feature("Essential features")
@Story("Authentication")
```

Organize tests

As described in Improving navigation in your test report, Allure supports multiple ways to organize tests into hierarchical structures. Allure JUnit 5 provides functions to assign the relevant fields to tests either by adding annotations or "dynamically" (same as for the metadata fields).

To specify a test's location in the behavior-based hierarchy:

Annotations API | Runtime API

```
import io.qameta.allure.Epic;
import io.qameta.allure.Feature;
import io.qameta.allure.Story;
import org.junit.jupiter.api.Test;

class TestMyWebsite {

    @Test
    @Epic("Web interface")
    @Feature("Essential features")
    @Story("Authentication")
    void testAuthentication() {
        // ...
    }
}
```

To specify a test's location in the suite-based hierarchy:

java

```
import io.qameta.allure.Allure;
import org.junit.jupiter.api.Test;

class TestMyWebsite {

    @Test
    void testAuthentication() {
        Allure.label("parentSuite", "Tests for web interface");
```

Organize tests

As described in Improving navigation in your test report, Allure supports multiple ways to organize tests into hierarchical structures. Allure JUnit 5 provides functions to assign the

https://allurereport.org/docs/junit5/#organize-tests

To specify a test's location in the behavior-based hierarchy:

Annotations API | Runtime API

```
import io.qameta.allure.Allure;
import org.junit.jupiter.api.Test;

class TestMyWebsite {

    @Test
    void testAuthentication() {
        Allure.epic("Web interface");
        Allure.feature("Essential features");
        Allure.story("Authentication");
        // ...
    }
}
```

To specify a test's location in the suite-based hierarchy:

java

```
import io.qameta.allure.Allure;
import org.junit.jupiter.api.Test;

class TestMyWebsite {

    @Test
    void testAuthentication() {
        Allure.label("parentSuite" "Tests for web interface");
        Allure.suite("Tests for essential features");
        Allure.label("subSuite", "Tests for authentication");
```

On this page

Organize tests

As described in Improving navigation in your test report, Allure supports multiple ways to organize tests into hierarchical structures. Allure JUnit 5 provides functions to assign the

https://allurereport.org/docs/junit5/#organize-tests

Behavior: Epic / Feature / Story

To specify a test's location in the behavior-based hierarchy:

```java
import io.qameta.allure.Allure;
import org.junit.jupiter.api.Test;

class TestMyWebsite {

    @Test
    void testAuthentication() {
        Allure.epic("Web interface");
        Allure.feature("Essential features");
        Allure.story("Authentication");
        // ...
    }
}
```

To specify a test's location in the suite-based hierarchy:

```java
import io.qameta.allure.Allure;
import org.junit.jupiter.api.Test;

class TestMyWebsite {

    @Test
    void testAuthentication() {
        Allure.label("parentSuite" "Tests for web interface");
        Allure.suite("Tests for essential features");
        Allure.label("subSuite", "Tests for authentication");
```

https://allurereport.org/docs/junit5/#organize-tests

Behavior: Epic / Feature / Story

Runtime API

Introduction

Install & Upgrade

Guides

Integrations

Codeception
CodeceptJS
Cucumber.js
Cucumber-JVM
Cucumber.rb
Cypress
Jasmine
JBehave
Jest
JUnit 4
JUnit 5
Getting started
Configuration
Reference
Mocha

Organize tests

As described in Improving navigation in your test report, Allure supports multiple ways to organize tests into hierarchical structures. Allure JUnit 5 provides functions to assign the

To specify a test's location in the behavior-based hierarchy:

```java
import io.qameta.allure.Allure;
import org.junit.jupiter.api.Test;

class TestMyWebsite {

    @Test
    void testAuthentication() {
        Allure.epic("Web interface");
        Allure.feature("Essential features");
        Allure.story("Authentication");
        // ...
    }
}
```

To specify a test's location in the suite-based hierarchy:

```java
import io.qameta.allure.Allure;
import org.junit.jupiter.api.Test;

class TestMyWebsite {

    @Test
    void testAuthentication() {
        Allure.label("parentSuite" "Tests for web interface");
        Allure.suite("Tests for essential features");
        Allure.label("subSuite", "Tests for authentication");
```

On this page

Setting up
Specifying Allure Results ...
Run tests
Generate a report
Writing tests
Specify description, links ...
Organize tests
Divide a test into steps
Describe parametrized te...
Attach screenshots and o...
Select tests via a test pla...
Environment information

https://allurereport.org/docs/junit5/#organize-tests

Behavior: Epic / Feature / Story

Runtime API

```
Allure.epic("Web interface");
Allure.feature("Essential features");
Allure.story("Authentication");
```

Organize tests

As described in Improving navigation in your test report, Allure supports multiple ways to organize tests into hierarchical structures. Allure JUnit 5 provides functions to assign the relevant fields to tests either by adding annotations or "dynamically" (same as for the metadata fields).

To specify a test's location in the behavior-based hierarchy:

Annotations API | Runtime API

```
import io.qameta.allure.Allure;
import org.junit.jupiter.api.Test;

class TestMyWebsite {

    @Test
    void testAuthentication() {
        Allure.epic("Web interface");
        Allure.feature("Essential features");
        Allure.story("Authentication");
        // ...
    }
}
```

To specify a test's location in the suite-based hierarchy:

java

```
import io.qameta.allure.Allure;
import org.junit.jupiter.api.Test;

class TestMyWebsite {

    @Test
    void testAuthentication() {
        Allure.label("parentSuite" "Tests for web interface");
        Allure.suite("Tests for essential features");
        Allure.label("subSuite", "Tests for authentication");
```

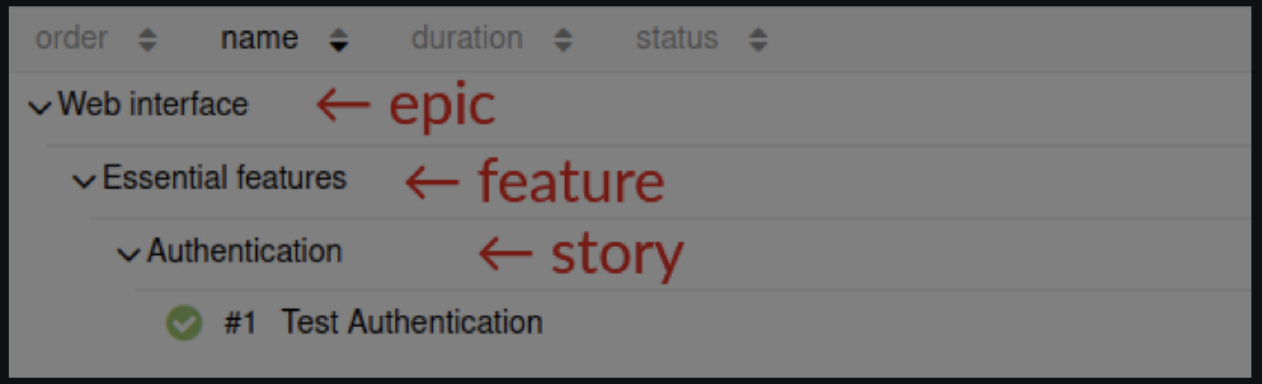
https://allurereport.org/docs/gettingstarted-navigation/#behavior-based-hierarchy

e's features

hat the team

aims to develop and test, and a feature is described as a set of user stories that describe how the software is expected to behave in different scenarios.

Allure adapters for all test frameworks provide ways to indicate a test's epic, feature and user story. If a test framework lets the author define some of these terms natively, e.g., in its own language-agnostic file format, then Allure tries its best to incorporate the provided data into the generated tree structure. See the specific Allure adapter's documentation for more details.



Поля по умолчанию

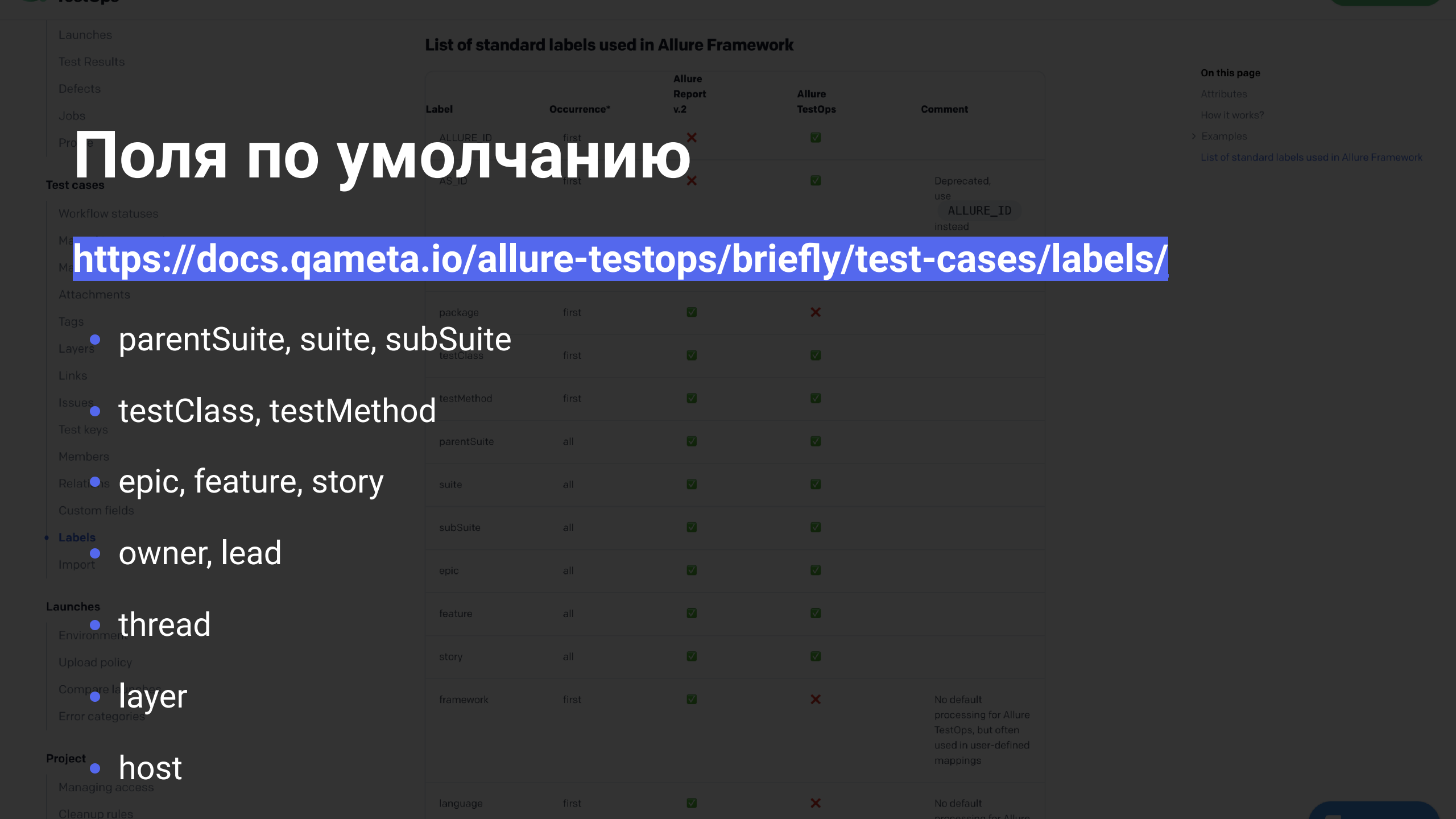
https://docs.qameta.io/allure-testops/briefly/test-cases/labels/

- parentSuite, suite, subSuite
- testClass, testMethod
- epic, feature, story
- owner, lead
- thread
- layer
- host

Поля по умолчанию

https://docs.qameta.io/allure-testops/briefly/test-cases/labels/

- parentSuite, suite, subSuite
- testClass, testMethod
- epic, feature, story
- owner, lead
- thread
- layer
- host



Задать можно любые метки (label)

Задать можно service (сервис)

- `Allure.label("service", "API");`

endpoint (метод сервиса)

```
   Allure.label("service",  "API");
★  Allure.label("endpoint", "GET /projects");
```

payload (параметры метода сервиса)

```
Allure.label("service",  "API");
Allure.label("endpoint", "GET /projects");
Allure.label("payload",  "fields=item");
```

dataset (тестовые данные)

```
Allure.label("service",  "API");
Allure.label("endpoint", "GET /projects");
Allure.label("payload",  "fields=item");
Allure.label("dataset",  "enterprise 10000 users");
```

version (версию сервиса)

```
   Allure.label("service",  "API");
   Allure.label("endpoint", "GET /projects");
   Allure.label("payload",  "fields=item");
   Allure.label("dataset",  "enterprise 10000 users");
★  Allure.label("version",  getServerVersion());
```

environment (тестируемое окружение)

```
Allure.label("service",  "API");
Allure.label("endpoint", "GET /projects");
Allure.label("payload",  "fields=item");
Allure.label("dataset",  "enterprise 10000 users");
Allure.label("version",  getServerVersion());
Allure.label("environment",    "production");
```

server-location (параметры окружения)

```
Allure.label("service",  "API");
Allure.label("endpoint", "GET /projects");
Allure.label("payload",  "fields=item");
Allure.label("dataset",  "enterprise 10000 users");
Allure.label("version",  getServerVersion());
Allure.label("environment",     "production");
★ Allure.label("server-location", "USA");
```

client-location (параметры клиента)

```
Allure.label("service",  "API");
Allure.label("endpoint", "GET /projects");
Allure.label("payload",  "fields=item");
Allure.label("dataset",  "enterprise 10000 users");
Allure.label("version",  getServerVersion());
Allure.label("environment",     "production");
Allure.label("server-location", "USA");
Allure.label("client-location", "Europe");
```

Задать можно любые метки (label)

```
Allure.label("service",  "API");
Allure.label("endpoint", "GET /projects");
Allure.label("payload",  "fields=item");
Allure.label("dataset",  "enterprise 10000 users");
Allure.label("version",  getServerVersion());
Allure.label("environment",     "production");
Allure.label("server-location", "USA");
Allure.label("client-location", "Europe");
```

★ ...

Значения могут быть константами в Annotation API

```
@Endpoint("GET /projects");
```

Значения могут быть константами в Runtime API

```
Allure.label("endpoint", "GET /projects");
```

Значения могут быть функциями

в Runtime API

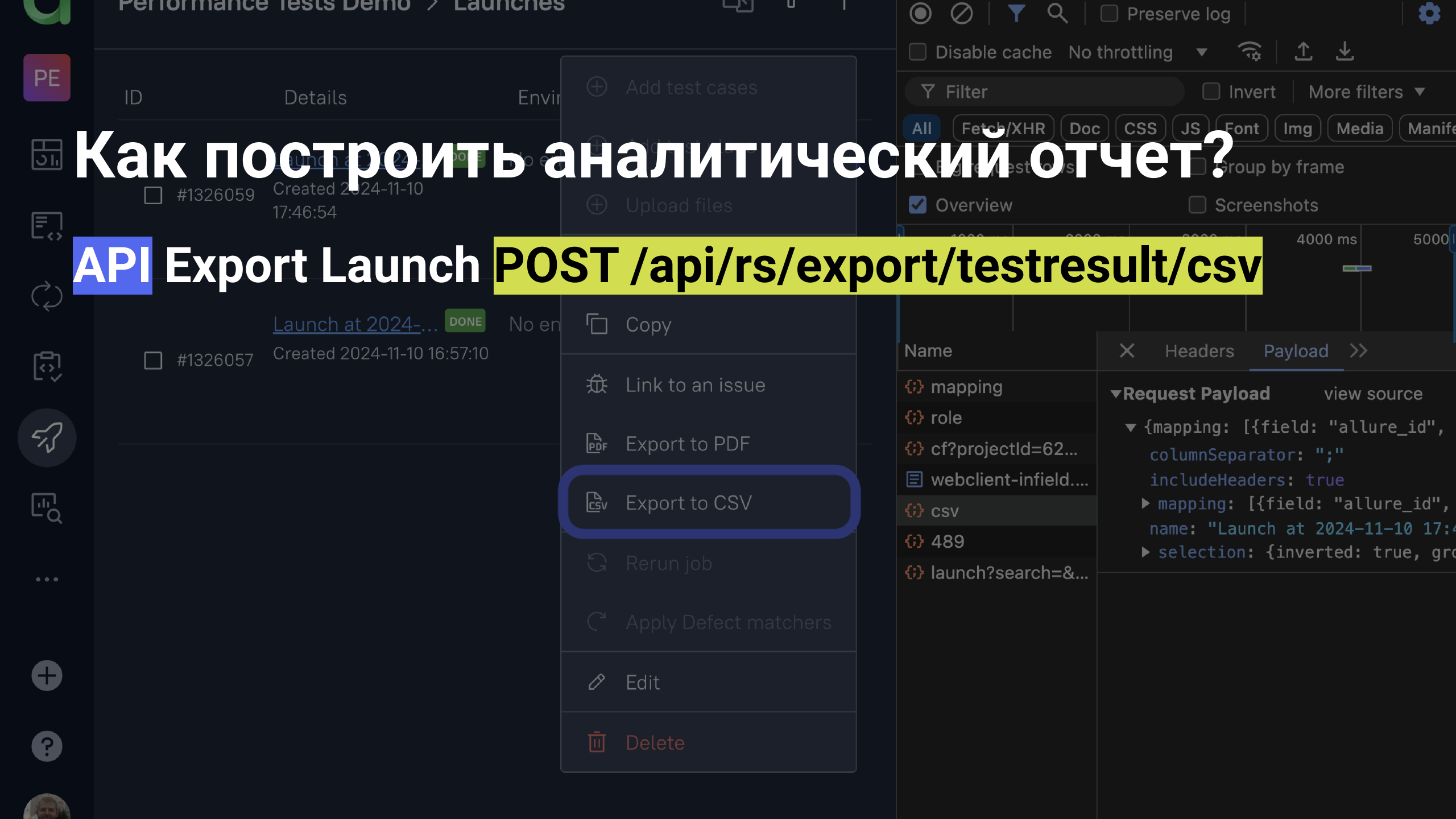
```
Allure.label("version",  getServerVersion());
```

Как построить аналитический отчет?

API	Payload	Version 1.2.3	Version 1.2.4
GET /project	?fields=id	✅15	✅15
GET /project	?fields=name	✅15	✅15
GET /project	?fields=items	✅15	✅7 🛑8
GET /project	?fields=permissions	✅15	✅15

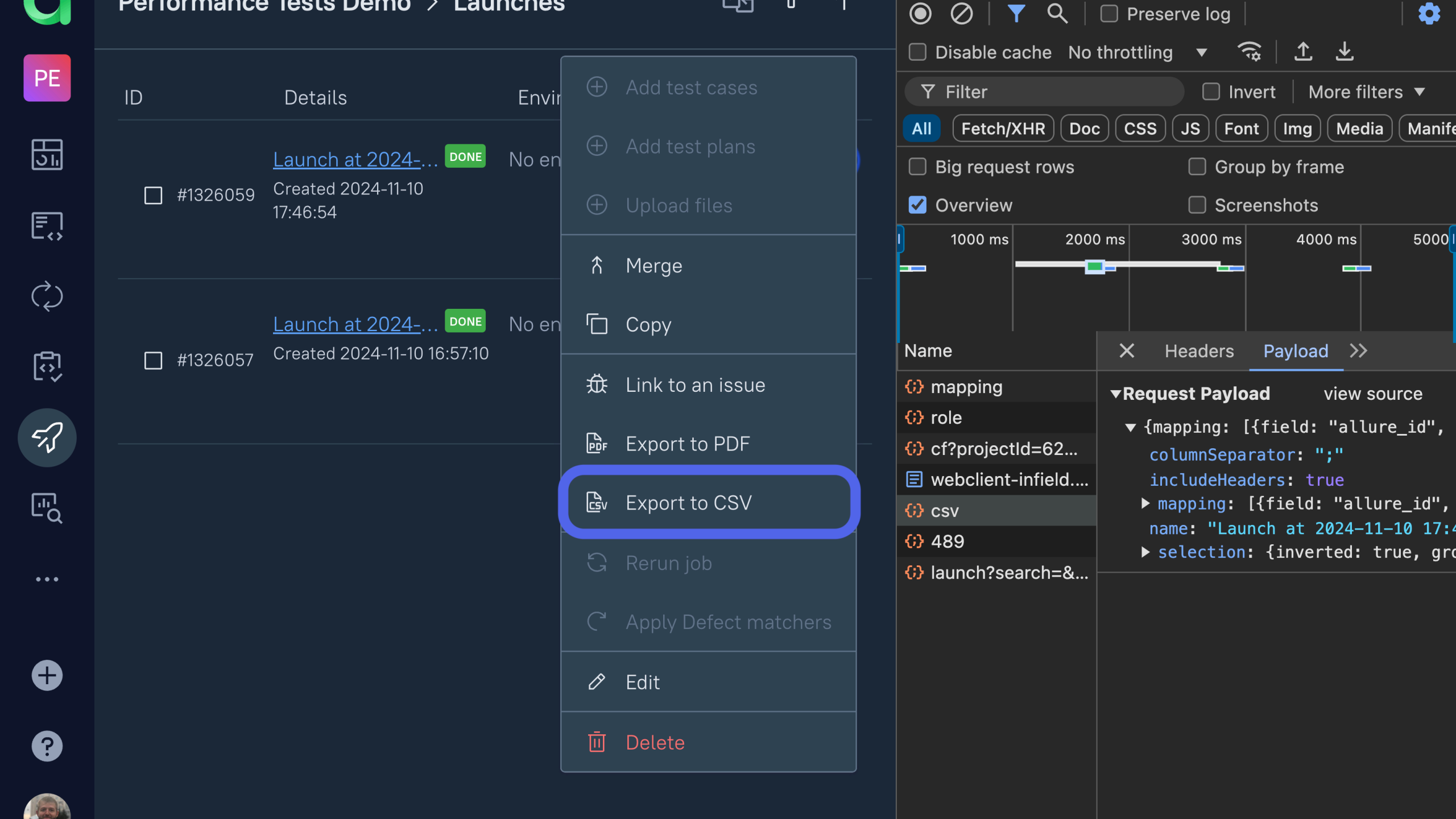
Как построить аналитический отчет?

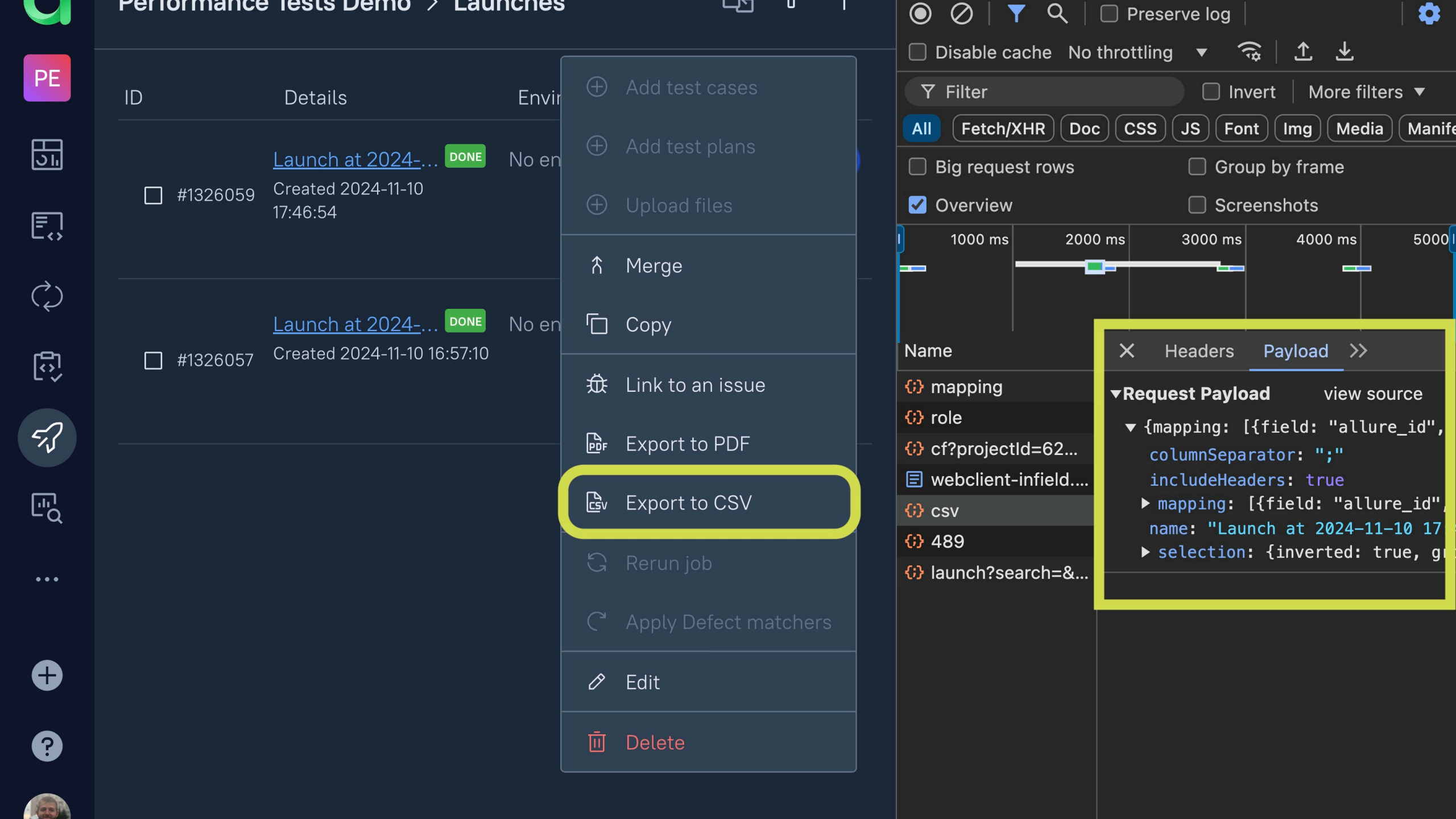
API Export Launch POST /api/rs/export/testresult/csv

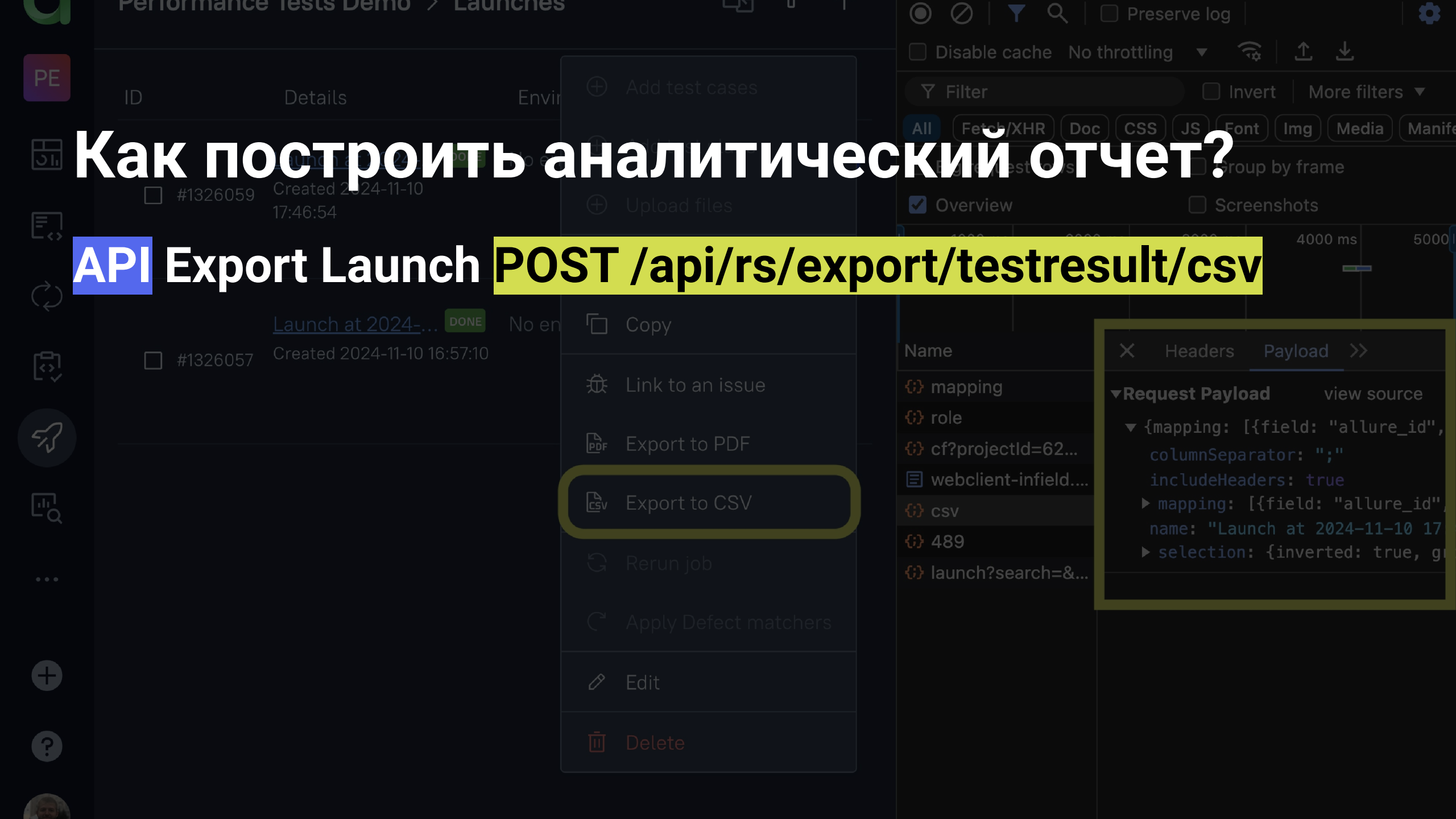


Как построить аналитический отчет?

API Export Launch POST /api/rs/export/testresult/csv


Performance Tests Demo > Launches
ID
Details
Envir
Launch at 2024-...
DONE
No en
#1326059
Created 2024-11-10 17:46:54
Launch at 2024-...
DONE
No en
#1326057
Created 2024-11-10 16:57:10
Add test cases
Add test plans
Upload files
Merge
Copy
Link to an issue
Export to PDF
Export to CSV
Rerun job
Apply Defect matchers
Edit
Delete
Preserve log
Disable cache
No throttling
Filter
Invert
More filters
All
Fetch/XHR
Doc
CSS
JS
Font
Img
Media
Big request rows
Group by frame
Overview
Screenshots
1000 ms
2000 ms
3000 ms
4000 ms
5000
Name
Headers
Payload
mapping
role
cf?projectId=62...
webclient-infield....
csv
489
launch?search=&...
Request Payload
view source
{mapping: [{field: "allure_id",
columnSeparator: ";"
includeHeaders: true
mapping: [{field: "allure_id",
name: "Launch at 2024-11-10 17:
selection: {inverted: true, gro


Performance Tests Demo
Launches
ID
Details
Envir
Launch at 2024-...
DONE
No en
Created 2024-11-10 17:46:54
#1326059
Launch at 2024-...
DONE
No en
Created 2024-11-10 16:57:10
#1326057
Add test cases
Add test plans
Upload files
Merge
Copy
Link to an issue
Export to PDF
Export to CSV
Rerun job
Apply Defect matchers
Edit
Delete
Preserve log
Disable cache
No throttling
Filter
Invert
More filters
All
Fetch/XHR
Doc
CSS
JS
Font
Img
Media
Big request rows
Group by frame
Overview
Screenshots
1000 ms
2000 ms
3000 ms
4000 ms
5000
Name
mapping
role
cf?projectId=62...
webclient-infield....
csv
489
launch?search=&...
Headers
Payload
Request Payload
view source
{mapping: [{field: "allure_id",
columnSeparator: ";"
includeHeaders: true
mapping: [{field: "allure_id"
name: "Launch at 2024-11-10 17
selection: {inverted: true, gr



Как построить аналитический отчет?

API Export Launch POST /api/rs/export/testresult/csv

Как построить аналитический отчет?

API Export Launch POST /api/rs/export/testresult/csv

CSV загружается в InfluxDB / VictoriaMetrics / ...

Как построить аналитический отчет?

API Export Launch POST /api/rs/export/testresult/csv

CSV загружается в InfluxDB / VictoriaMetrics / ...

Grafana строит аналитический отчет

Как построить аналитический отчет?

API Export Launch POST /api/rs/export/testresult/csv

CSV загружается в InfluxDB / VictoriaMetrics / ...

Grafana строит аналитический отчет

Grafana показывает детали

Как построить аналитический отчет?

API Export Launch POST /api/rs/export/testresult/csv

CSV загружается в InfluxDB / VictoriaMetrics / ...

Grafana строит аналитический отчет

Grafana показывает детали

Анализ обычного отчета: от 2-х часов

Анализ обычного отчета: от 2-х часов

Анализ аналитики: от 10-минут

Анализ обычного отчета: от 2-х часов

Анализ аналитики: от 10-минут

Аналитика выгодна уже с 12-го теста

Allure TestOps и Grafana дают читателю скорость анализа

А также ...

А также ...

легко привязать дефект или задачу к результату теста производительности

А также ...

легко привязать дефект или задачу к результату теста производительности

А также ...

легко привязать дефект или задачу к результату теста производительности

и сделать mute такому тесту

Читатели не игнорируют тесты производительности

Читатели ~~не~~ игнорируют тесты производительности более осознанно, используя беклог задач

Code Talks

5 Что дает JUnit писателю?

Code Talks

5 Что дает JUnit писателю?

Code Talks

6 Почему больше тестов — лучше?

7 Какие есть примеры?

Code Talks