

Qualitätsrezepte vom Küchenprofi

Wie RATIONAL seine Systemtest-
Infrastruktur qualitätssichert

RATIONAL

CQSE



Andreas Berger (RATIONAL)
Thomas Pettinger (CQSE)

Andreas Berger

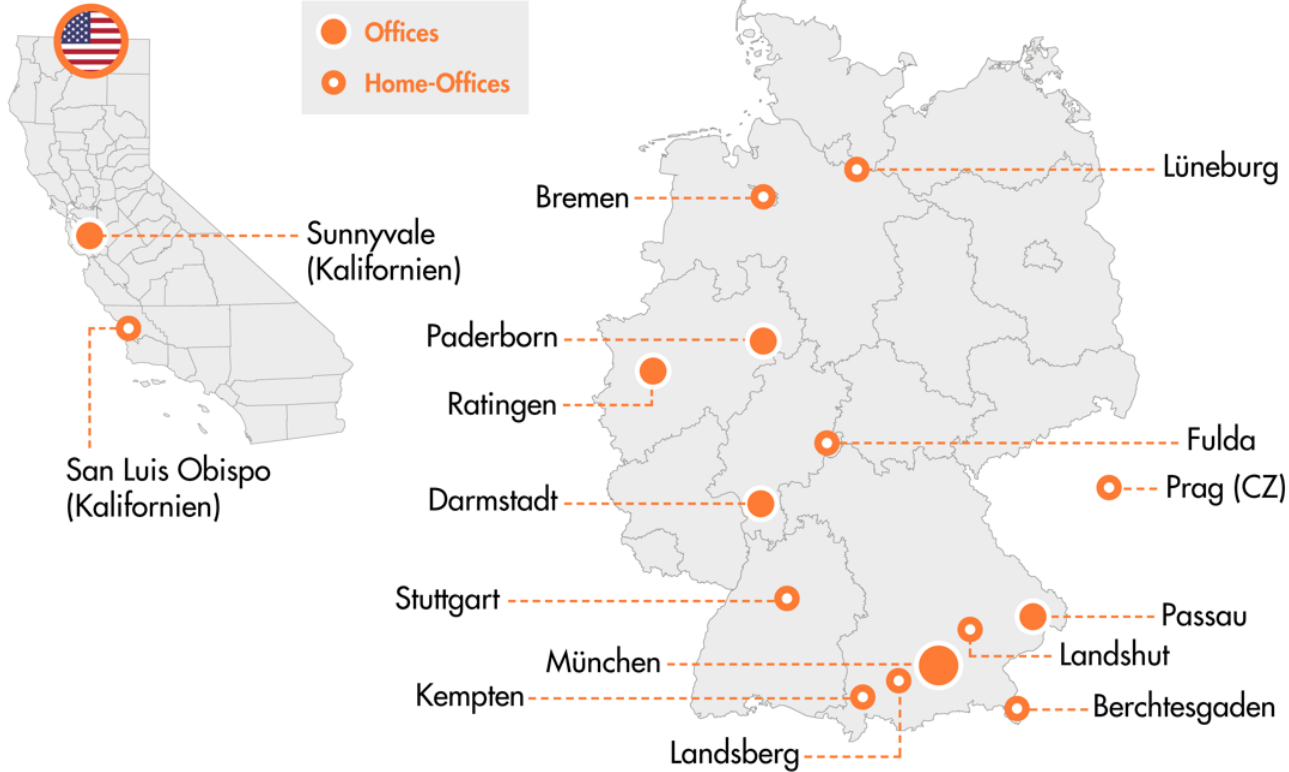


Dip.Inf. (FH) FH-Rosenheim

Erfahrung im elektronischen Bezahlverkehr,
Medizintechnik und Garsystemen

Bei RATIONAL seit 2012

- Embedded SW-Entwicklung
- SW-Architektur
- Teamleiter Systemtest



Thomas Pettinger



M.Sc. Informatik an der TU München

Bei der CQSE seit 2017 für meine Masterarbeit

Vollzeit bei der CQSE seit 2018

- Continuous Quality Control @ Munich Re
- Seit Mai 2019 im „Test Intelligence Team“
- Unterstützung von Rational bei der Qualitätssicherung

Bestellung: „Einmal SW-Qualitätssicherung bitte“

Qualitätsgaststätte 12/2017

› Gäste

- ~700 KLOC in C++
- 13 Gerätetypen
- ~500 SW relevante HW-Kombinationen
- ~180 HW/SW-Entwickler

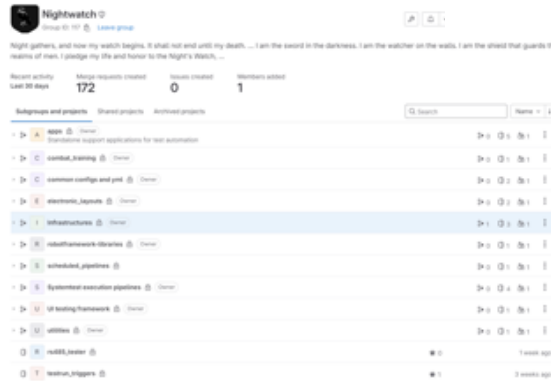
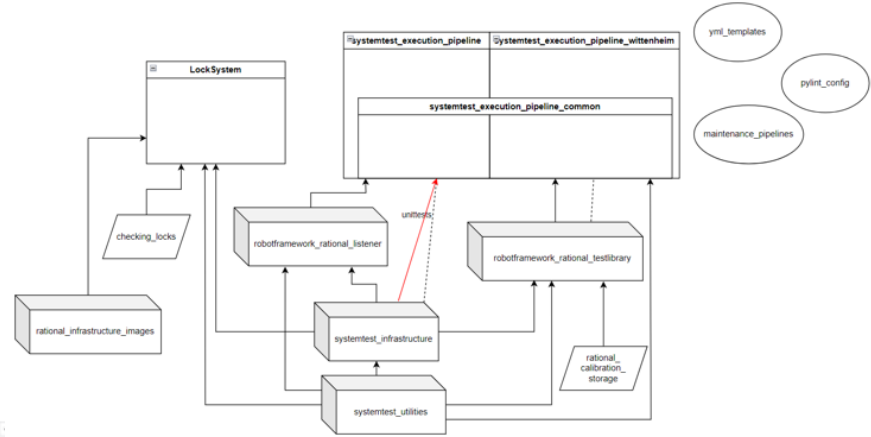
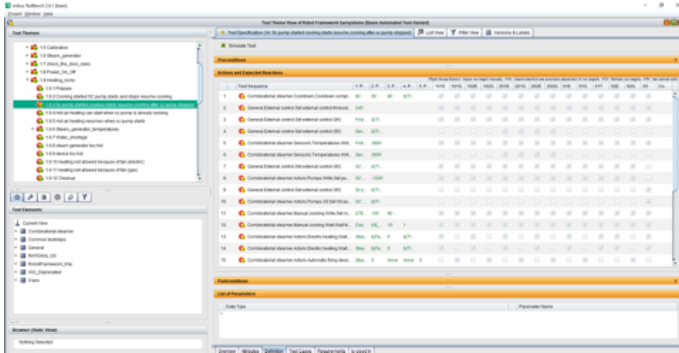
› Küche

- 0 LOC
- 0 HW
- 1 leeres Büro
- 1 einsamer Entwickler
- Kein geplantes Budget



Langzeitkochen

Weiche Zutaten



Langzeitkochen

Harte Zutaten



Köche

Team Nightwatch



By Felix Völk (one of the 3 founding members of team Nightwatch)

Wer überwacht den Qualitätskoch

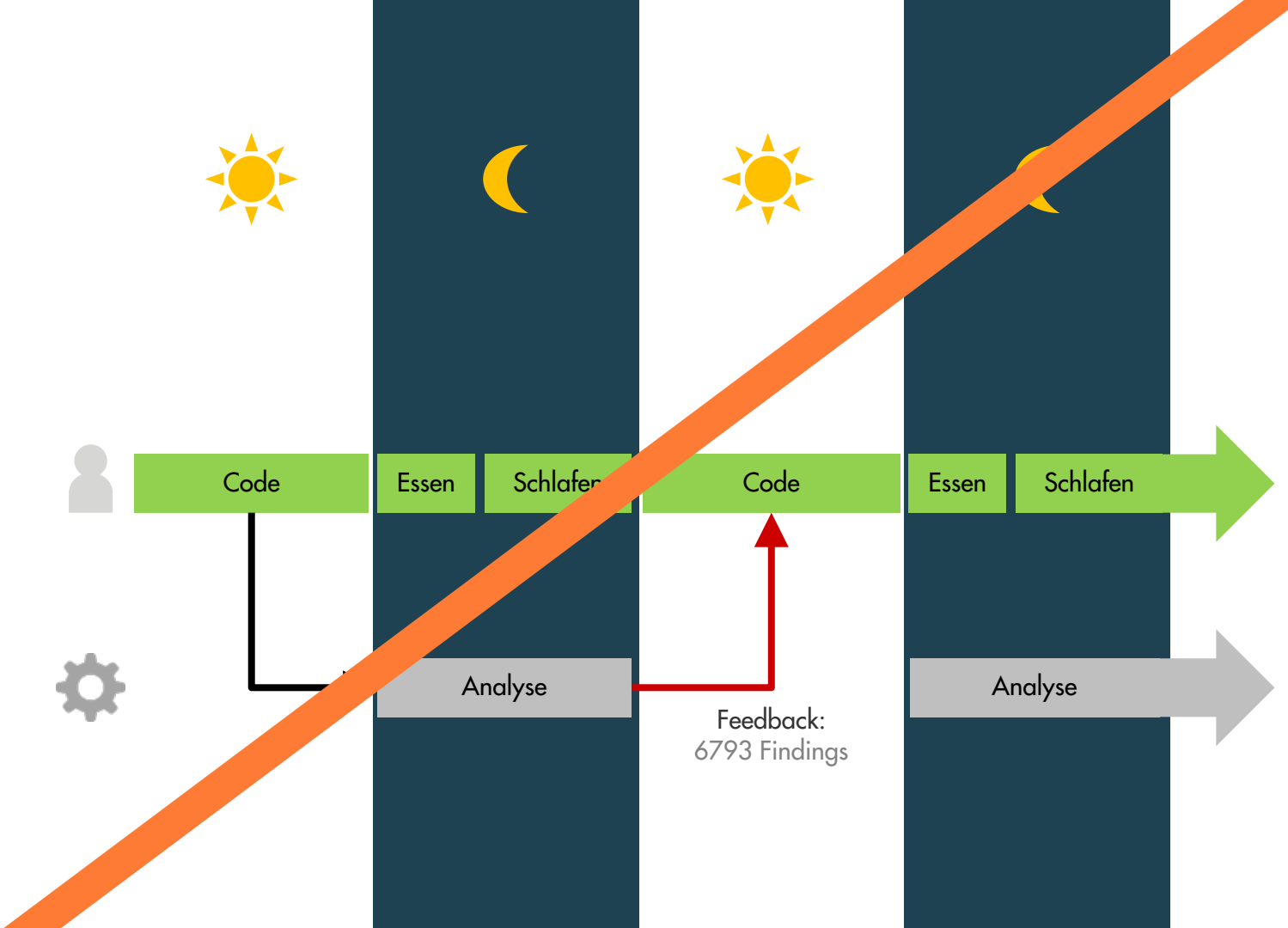
Alle Zutaten haben Verfallsdatum

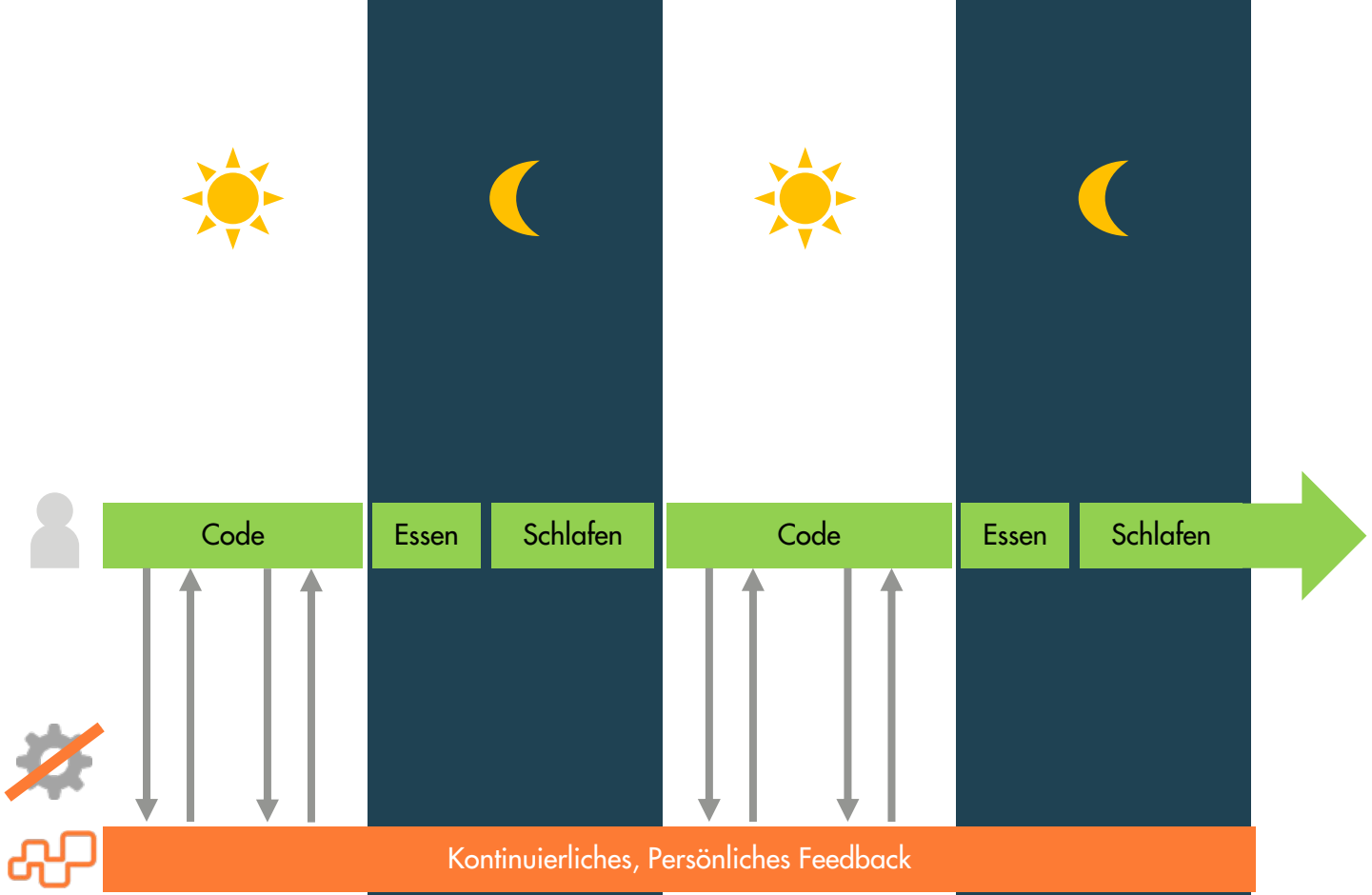
- › Statische Codeanalyse
- › Peer Reviews
- › Continuous Integration
- › Test-Gap-Analyse

Wer überwacht den Qualitätskoch

Alle Zutaten haben Verfallsdatum

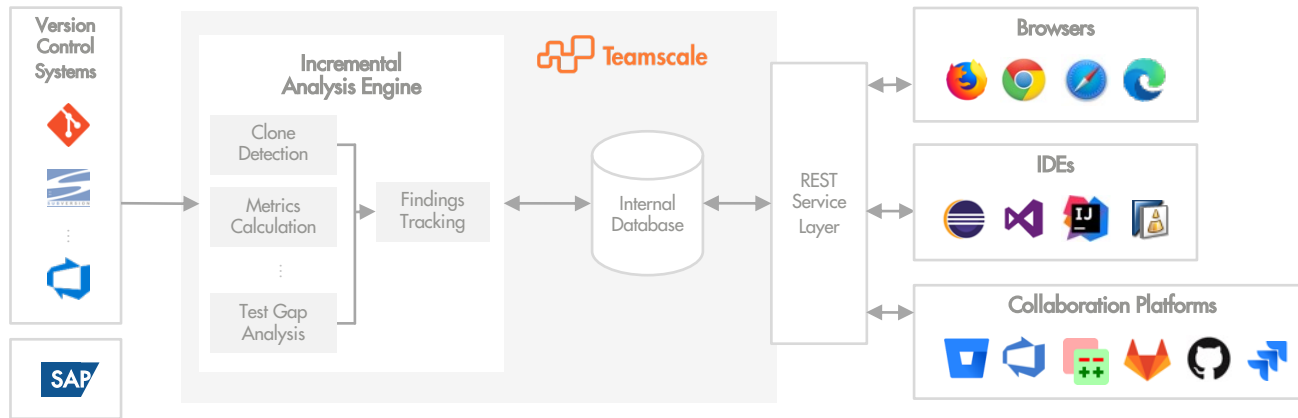
- › **Statische Codeanalyse**
- › Peer Reviews
- › Continuous Integration
- › Test-Gap-Analyse














Wer überwacht den Qualitätskoch

Statische Codeanalyse



Wer überwacht den Qualitätskoch

Statische Codeanalyse

	External analysis data upload (Pylint analysis) by Technical User as revision EA-PESWXXT-9565_Remove_remaining_deprecated_keywords_from_RTL@1701958007021 in PESWXXT-9565_Remove_remaining_deprecated_keywords_from_RTL (external analysis) Files: 1 affected Findings: 	Dec 07 2023 15:06
	Unit Test Coverage (Unit Tests) by Technical User as revision EA-PESWXXT-9565_Remove_remaining_deprecated_keywords_from_RTL@1701958007020 in PESWXXT-9565_Remove_remaining_deprecated_keywords_from_RTL (external analysis) Files: 5 affected	Dec 07 2023 15:06
	PESWXXT-9565: do not remove by Martina Pongratz as revision 84257e74 in PESWXXT-9565_Remove_remaining_deprecated_keywords_from_RTL (repository) Issue: PESWXXT-9565: remove deprecated keywords from RTL	Dec 07 2023 15:06
	External analysis data upload (Pylint analysis) by Technical User as revision EA-PESWXXT-9565_Remove_remaining_deprecated_keywords_from_RTL@1701956638021 in PESWXXT-9565_Remove_remaining_deprecated_keywords_from_RTL (external analysis)	Dec 07 2023 14:43
	External analysis data upload (Pylint analysis) by Technical User as revision EA-PESWXXT-9565_Remove_remaining_deprecated_keywords_from_RTL@1701956638020 in PESWXXT-9565_Remove_remaining_deprecated_keywords_from_RTL (external analysis) Files: 5 affected Findings: 	Dec 07 2023 14:43
	PESWXXT-9565: Remove remaining deprecated stuff from RTL by Martina Pongratz as revision f53e0560 in PESWXXT-9565_Remove_remaining_deprecated_keywords_from_RTL (repository) Files: 4 changed Issue: PESWXXT-9565: remove deprecated keywords from RTL Findings: 	Dec 07 2023 14:43

Wer überwacht den Qualitätskoch

Statische Codeanalyse

MP PESWXXT-9565: Remove remaining deprecated stuff from RTL Dec 07 2023 14:43

by Martina Pongratz as revision fs3e0560 [🔗](#) [📄](#) [📁](#) In [🔗](#) PESWXXT-9565_Remove_remaining_deprecated_keywords_from_RTL (repository)

Issue: PESWXXT-9565: remove deprecated keywords from RTL Erledigt

^ Affected files 4 Show impacted tests

Path	Change type
src/RationalTestLibrary/steps/actoric_sensoric_access/calibration/calibration.py	changed
src/RationalTestLibrary/steps/actoric_sensoric_access/garwelt_data/remaining_cooking_time.py	changed
src/RationalTestLibrary/steps/device_under_test/internal_routines.py	changed
src/RationalTestLibrary/steps/device_under_test/periphery.py	changed

^ Findings 0 1 3

^ 0 1 New Findings

Message ^	Location	Finding Group and Type
Interface comment missing	src/RationalTest.../remaining_cooking_time.py:58-66	Documentation > Comment Completeness > Interface c...

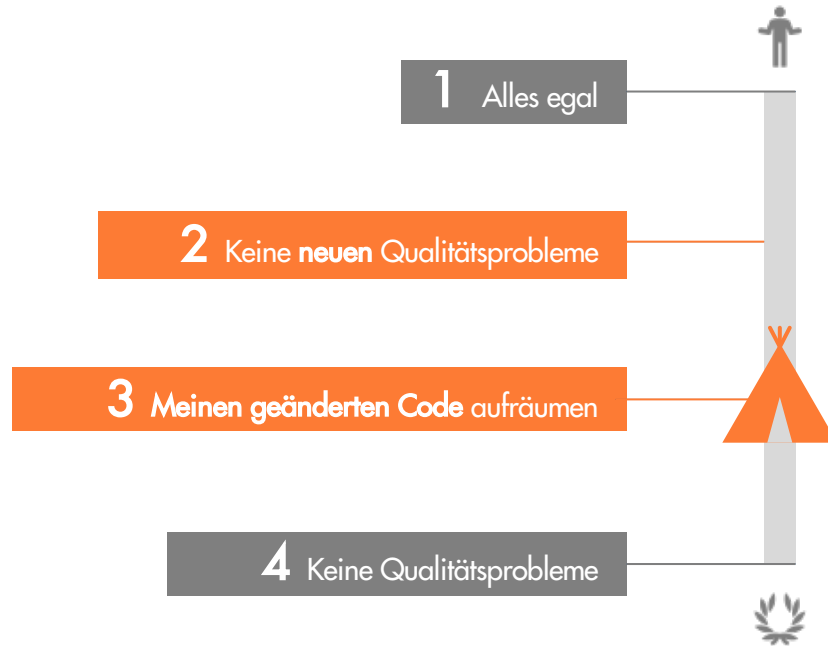
^ 0 3 Old Findings in Changed Code

Message ^	Location	Finding Group and Type
Interface comment missing	src/RationalTestLibrary/st... /internal_routines.py:48	Documentation > Comment Completeness > Interface c...
Interface comment missing	src/RationalTestLibrary/st... /internal_routines.py:63	Documentation > Comment Completeness > Interface c...
Too many local variables (17/15)	src/RationalTestLib.../remaining_cooking_time.py:58	Code Anomalies > Bad Practice > Too Many Locals (R0914)

Statische Codeanalyse

Wer überwacht den Qualitätskoch

Qualitätsziele



Wer überwacht den Qualitätskoch

Statische Codeanalyse

MP PESWXXT-9565: Remove remaining deprecated stuff from RTL Dec 07 2023
14:43

by Martina Pongratz as revision f53e0560 [🔗](#) in [PESWXXT-9565_Remove_remaining_deprecated_keywords_from_RTL](#) (repository1)

Issue: PESWXXT-9565: remove deprecated keywords from RTL Erledigt

^ Affected files 4 Show impacted tests

Path	Change type
src/RationalTestLibrary/steps/actoric_sensoric_access/calibration/calibration.py	changed
src/RationalTestLibrary/steps/actoric_sensoric_access/garwelt_data/remaining_cooking_time.py	changed
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src/RationalTestLibrary/steps/device_under_test/periphery.py	changed

^ Findings 0 1 2 3

^ 0 1 New Findings


Message ^	Location	Finding Group and Type
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^ 0 2 3 Old Findings in Changed Code

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Interface comment missing	src/RationalTestLibrary/st... /internal_routines.py:48	Documentation > Comment Completeness > Interface c...
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Too many local variables (17/15)	src/RationalTestLib.../remaining_cooking_time.py:58	Code Anomalies > Bad Practice > Too Many Locals (R0914)

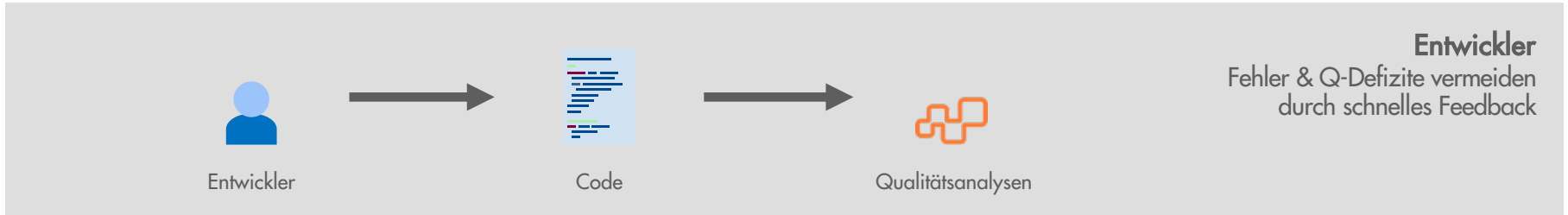
2 Keine neuen Qualitätsprobleme

3 Meinen geänderten Code aufräumen



Wer überwacht den Qualitätskoch

Statische Codeanalyse



Entwickler
Fehler & Q-Defizite vermeiden
durch schnelles Feedback

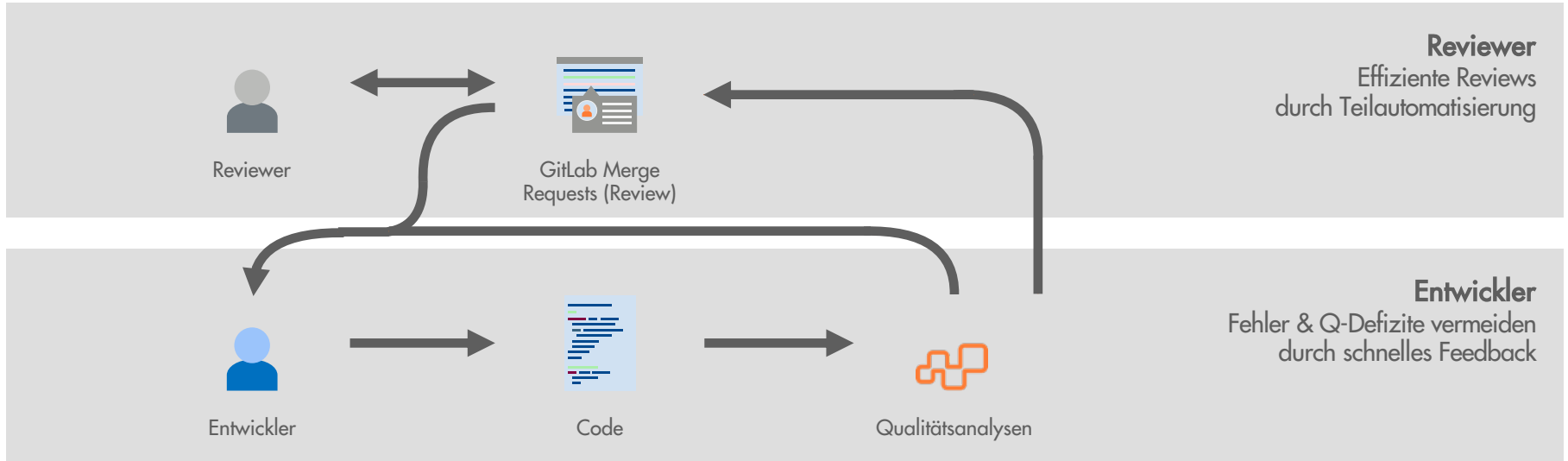
Wer überwacht den Qualitätskoch

Alle Zutaten haben Verfallsdatum

- › Statische Codeanalyse
- › **Peer Reviews**
- › Continuous Integration
- › Test-Gap-Analyse

Wer überwacht den Qualitätskoch

Peer Reviews



Wer überwacht den Qualitätskoch

Peer Reviews

PESWXXT-9565: Remove remaining deprecated keywords from rtl

Open Pongratz Martina (PONM) requested to merge PESWXXT-9565_Remove_renaIn... into PESWXXT-9423_new_RTL_17_0_0 20 hours ago

Overview **3** Commits **4** Pipelines **5** Changes **17**

Teamscale Findings: **3** **3** **1** 0 Test Gaps (0%)

Edited 19 hours ago by Gitlab Technical User

0 0

Merged result pipeline #72791 passed

Merged result pipeline passed for 4fb0f9f 19 hours ago

Approve Requires 1 approval from eligible users.

Test summary: no changed test results, 876 total tests [Full report](#)

Merge blocked: all required approvals must be given.

Merge details

- The source branch is [8 commits behind](#) the target branch.
- 4 commits and 1 merge commit will be added to PESWXXT-9423_new_RTL_17_0_0.
- Source branch will be deleted.

Activity All activity

- Pongratz Martina (PONM) assigned to [@ponm](#) 20 hours ago
- Gitlab Technical User @gitlab_tech_user · 20 hours ago Maintainer
Resolved 19 hours ago by Pongratz Martina (PONM)
The package version has not been incremented. Please edit pyproject.toml or version.txt.

Wer überwacht den Qualitätskoch

Peer Reviews

PESWXXT-9758: Replaced hard power fail in NTP tests

Merged | Rantovic Nemanja (RANE) requested to merge PESWXXT-9758 into master 1 month ago

Overview (3) | Commits (2) | Pipelines (5) | Changes (3)

Testscale | Findings: unchanged | 0 Test Cases (0%) | No files known to Testscale affected

Solves: PESWXXT-9758

Edited 1 month ago by Gitlab Technical User

0 | 0 | 0

Merge train pipeline #74714 passed

Merge train pipeline passed for @RANE 1 month ago

Approved by

Merged by Rantovic Nemanja (RANE) 1 month ago

Revert | Cherry-pick

Merge details

- Changes merged into master with @100d1
- Deleted the source branch.
- Auto-merge enabled

Activity

All activity | 1s

- Rantovic Nemanja (RANE) requested review from @poni and @hoet 1 month ago
- Rantovic Nemanja (RANE) assigned to @rane 1 month ago
- Gitlab Technical User changed the description 1 month ago | Compare with previous version

Hoefler Tobias (HOET) @hoet - 1 month ago

Developer

@rane: With which reason do we turn off at the end of the test? Just asking because I think the unit can stay on at the end of the test.

Edited 1 month ago by Hoefler Tobias (HOET)

Rantovic Nemanja (RANE) @rane - 1 month ago

Author | Developer

@hoet: The main reason is that we are actually doing the same in all other tests. But I think you are right, we could turn the device once and let it on in all other tests. This way we could reduce the test run time.

Edited 1 month ago by Rantovic Nemanja (RANE)

Hoefler Tobias (HOET) @hoet - 1 month ago

Developer

@rane: So what we discussed in a architecture round that we only turn the devices on at the beginning of the test because so they can suite runs independently. But the turn off we could remove. Just bring the device in the state it was before the test.

Wer überwacht den Qualitätskoch

Alle Zutaten haben Verfallsdatum

- › Statische Codeanalyse
- › Peer Reviews
- › **Continuous Integration**
- › Test-Gap-Analyse

Wer überwacht den Qualitätskoch

Continuous Integration



Pictures by bing COPILOT

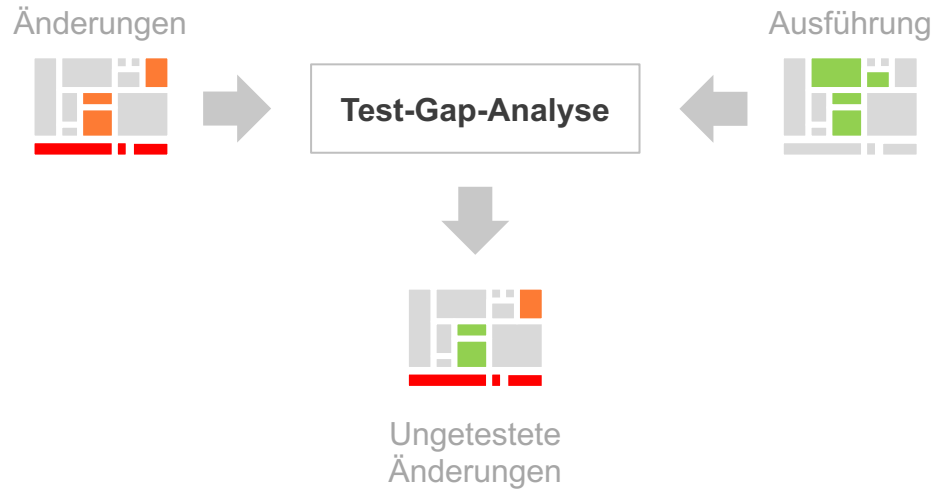
Wer überwacht den Qualitätskoch

Alle Zutaten haben Verfallsdatum

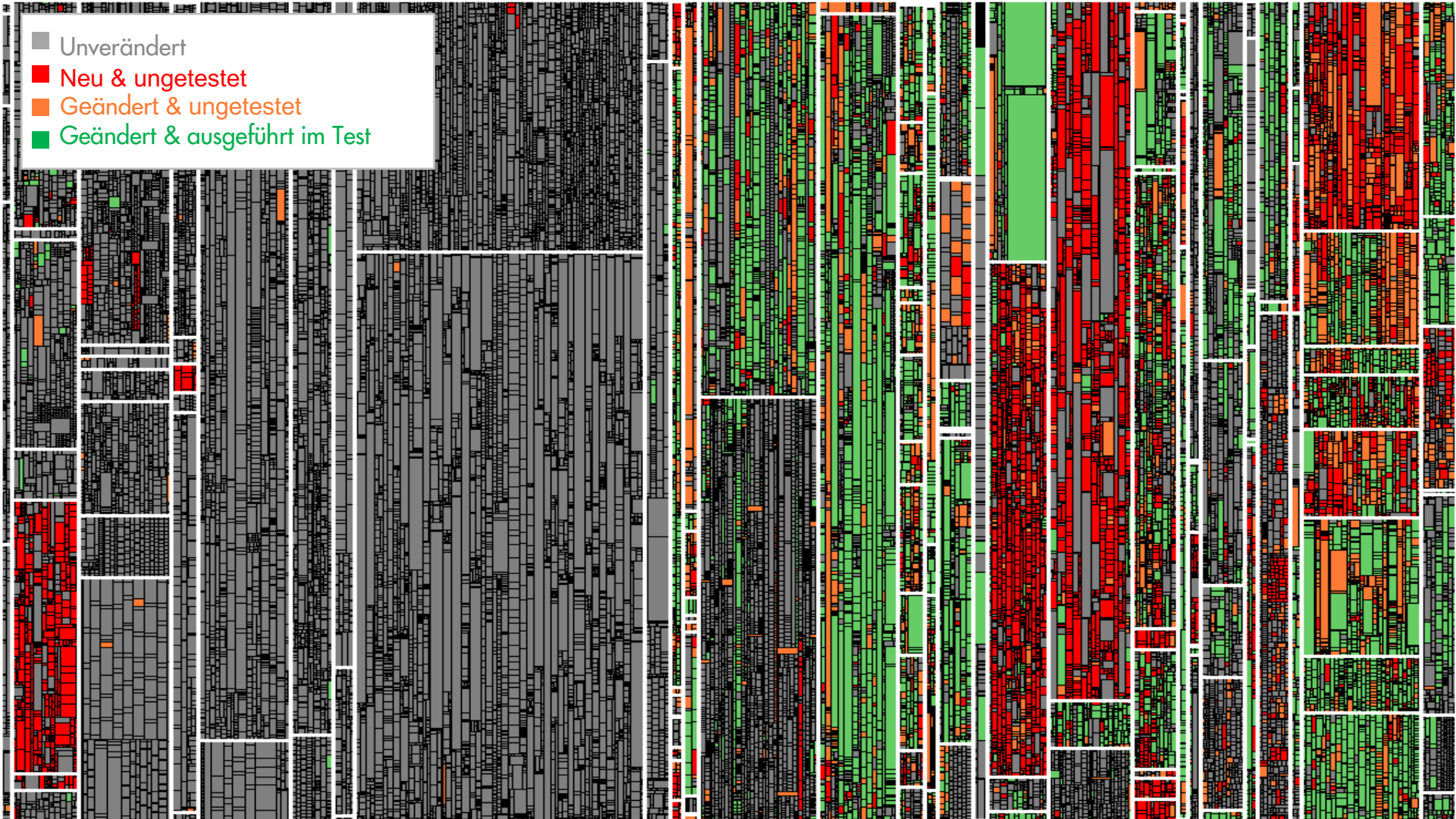
- › Statische Codeanalyse
- › Peer Reviews
- › Continuous Integration
- › **Test-Gap-Analyse**

Wer überwacht den Qualitätskoch

Test-Gap-Analyse

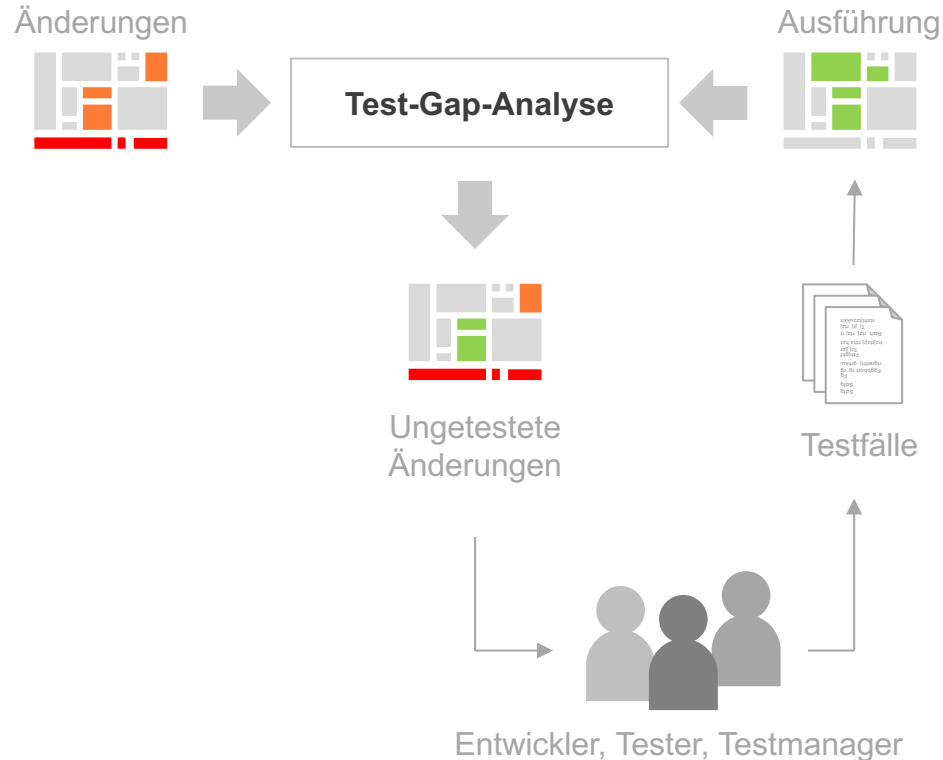


- Unverändert
- Neu & ungetestet
- Geändert & ungetestet
- Geändert & ausgeführt im Test



Wer überwacht den Qualitätskoch

Test-Gap-Analyse




Wer überwacht den Qualitätskoch

Test-Gap-Analyse




Draft: PESWXXT-6367: Handling trace_notification in case of Powerfail/ basis stop





[Open](#) Pongratz Martina (PONM) requested to merge [PESWXXT-10286-Integrate-Tr...](#) into [main](#) 1 week ago


Overview [3](#) Commits [32](#) Pipelines [29](#) Changes [7](#) 1 unresolved thread


 Teamscale **Findings** [1](#) **6 Test Gaps (26%)**


Edited 1 day ago by Gitlab Technical User

 0  0 

 **Merged result pipeline #81095 passed**   
Merged result pipeline passed for [b4538938](#) 23 hours ago

 **Approve** Requires 1 approval from eligible users and Nightwatch.

 **Test summary: no changed test results, 29 total tests** [Full report](#)

 **Merge blocked:** all required approvals must be given.

Merge details

- 32 commits and 1 merge commit will be added to main.
- Source branch will be deleted.

Activity All activity [v](#) [f](#)

- Pongratz Martina (PONM) assigned to [@ponm](#) 1 week ago
- Pongratz Martina (PONM) added 2 commits 1 week ago
 - [6316cbff](#) - PESWXXT-10286: only for testing
 - [e4f98a62](#) - PESWXXT-10286: remove hash, split path and tc id[Compare with previous version](#)

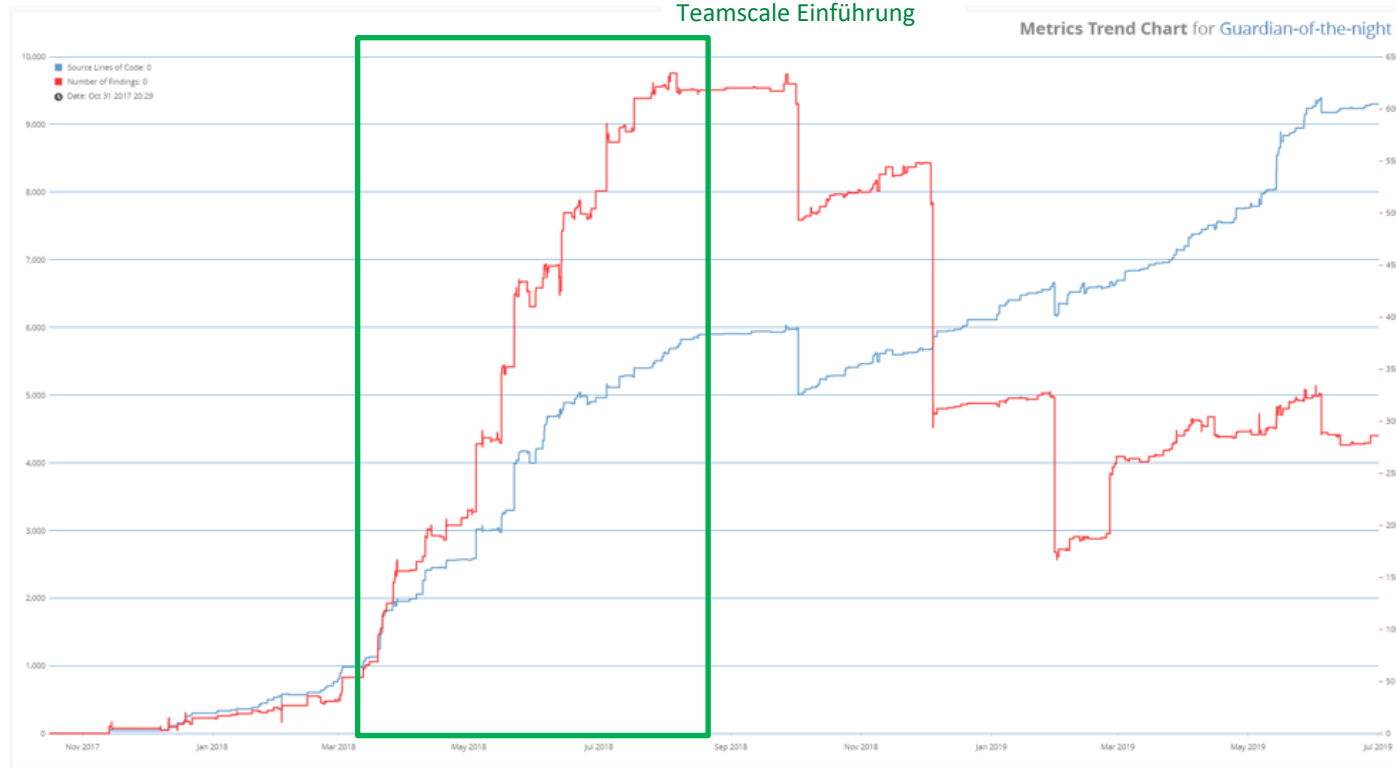
Wer überwacht den Qualitätskoch

Test-Gap-Analyse



Giftige Zutat oder Verfeinerung

Interpretation historischer Daten



Wenn die Größe wichtig ist

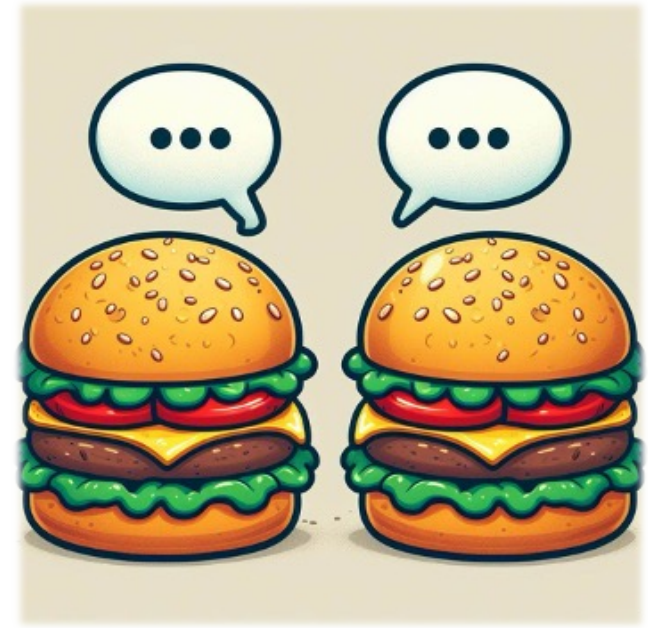
Methodenlänge

Findings ! 1



Picture by bing COPILOT

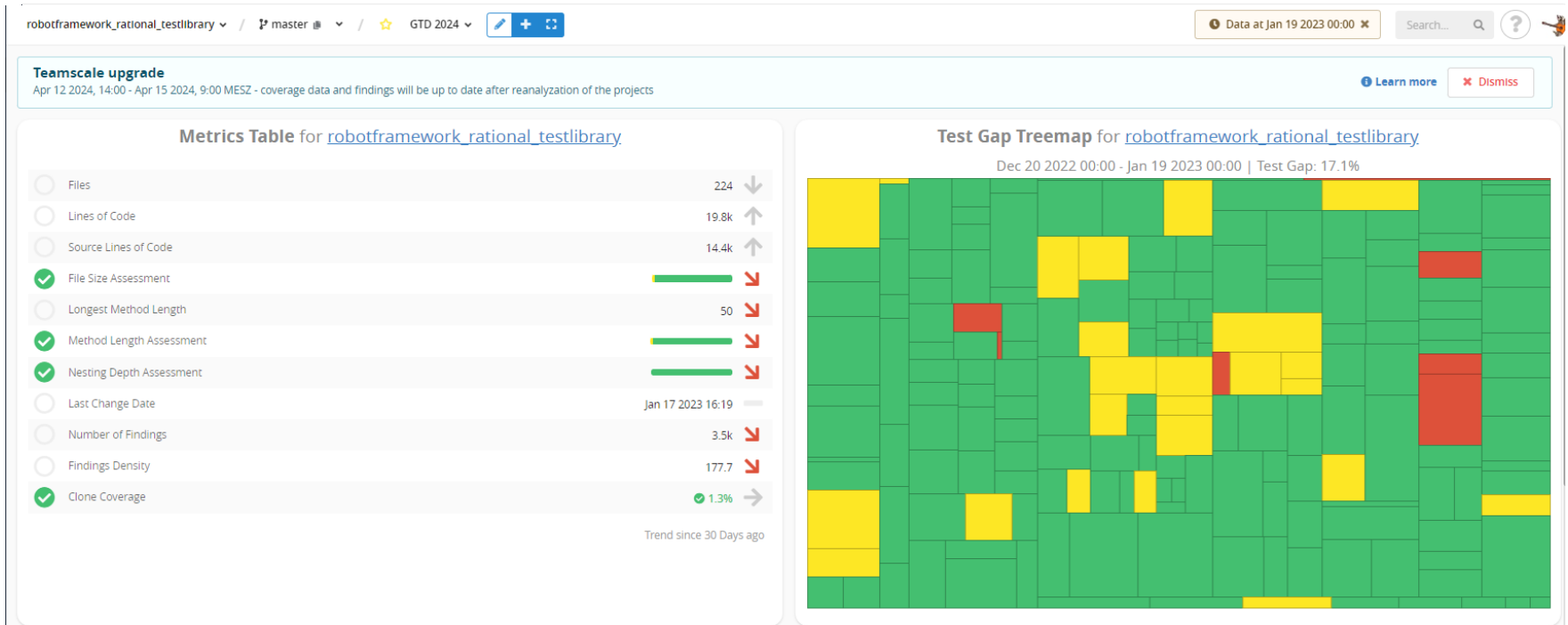
Findings ! 1 ✓ 1



Picture by bing COPILOT

Wenn der Wächter schläft

Reicht Gewohnheit?



Verkostung

Fazit und Ausblick

- › Fazit: Projekt war erfolgreich
 - Konnten Stärke während Bauteilknappheit voll ausspielen
 - Schnelles Feedback
 - Reduktion manueller Tests

- › Ausblick
 - Schnelleres Feedback durch änderungsbasierte Testauswahlverfahren
 - Interne Teams in Testdesign und Testpflege aktiv einbinden
 - Wissensstreuung bzgl. SW-Testmethodiken und Grenzen der Automatisierung



Vortragsfolien



Feedback



CQSE