

# Software-QS-Tag

## Qualitätsrezepte vom Küchenprofi

Andreas Berger  
RATIONAL

Thomas Pettinger  
CQSE





# Andreas Berger



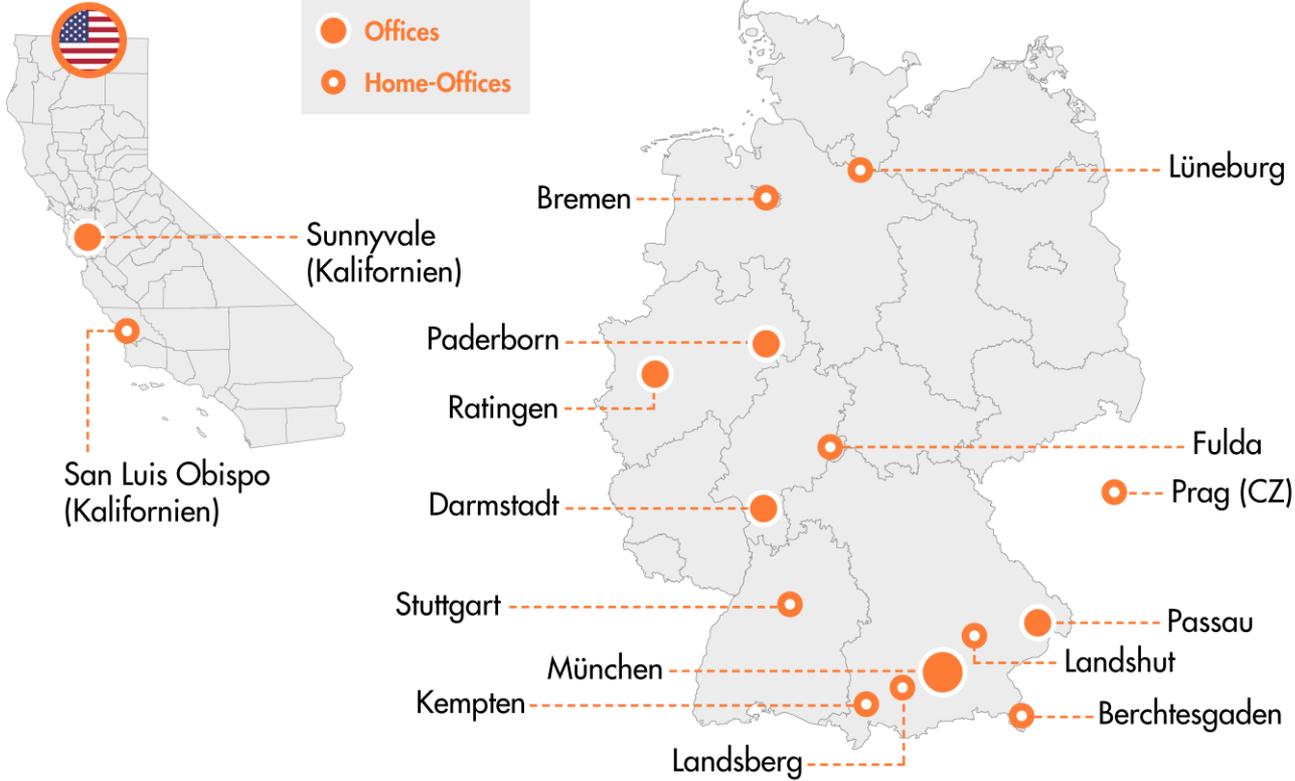
Dip.Inf. (FH) FH-Rosenheim

Erfahrung im elektronischen Bezahlverkehr,  
Medizintechnik und Garsystemen

Bei RATIONAL seit 2012

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

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# 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

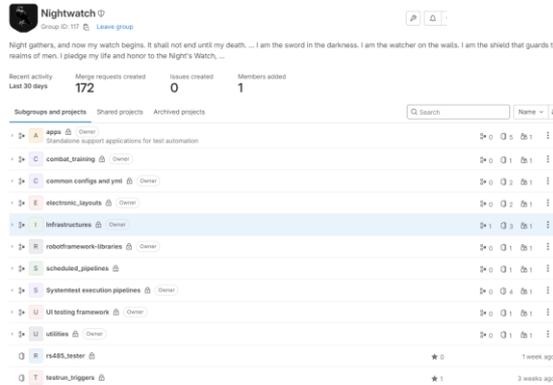
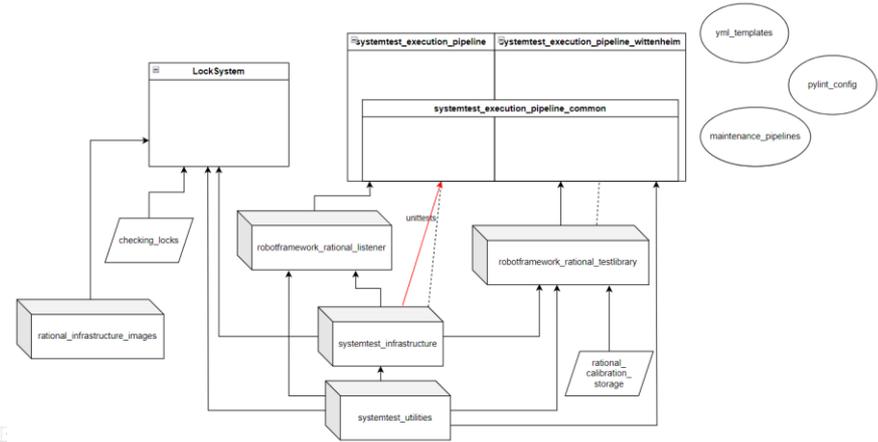
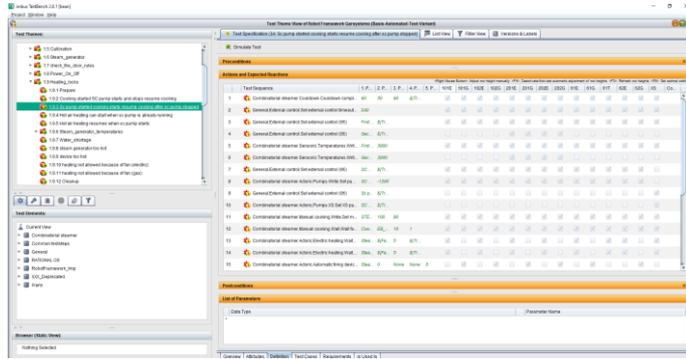
## › Küche

- 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

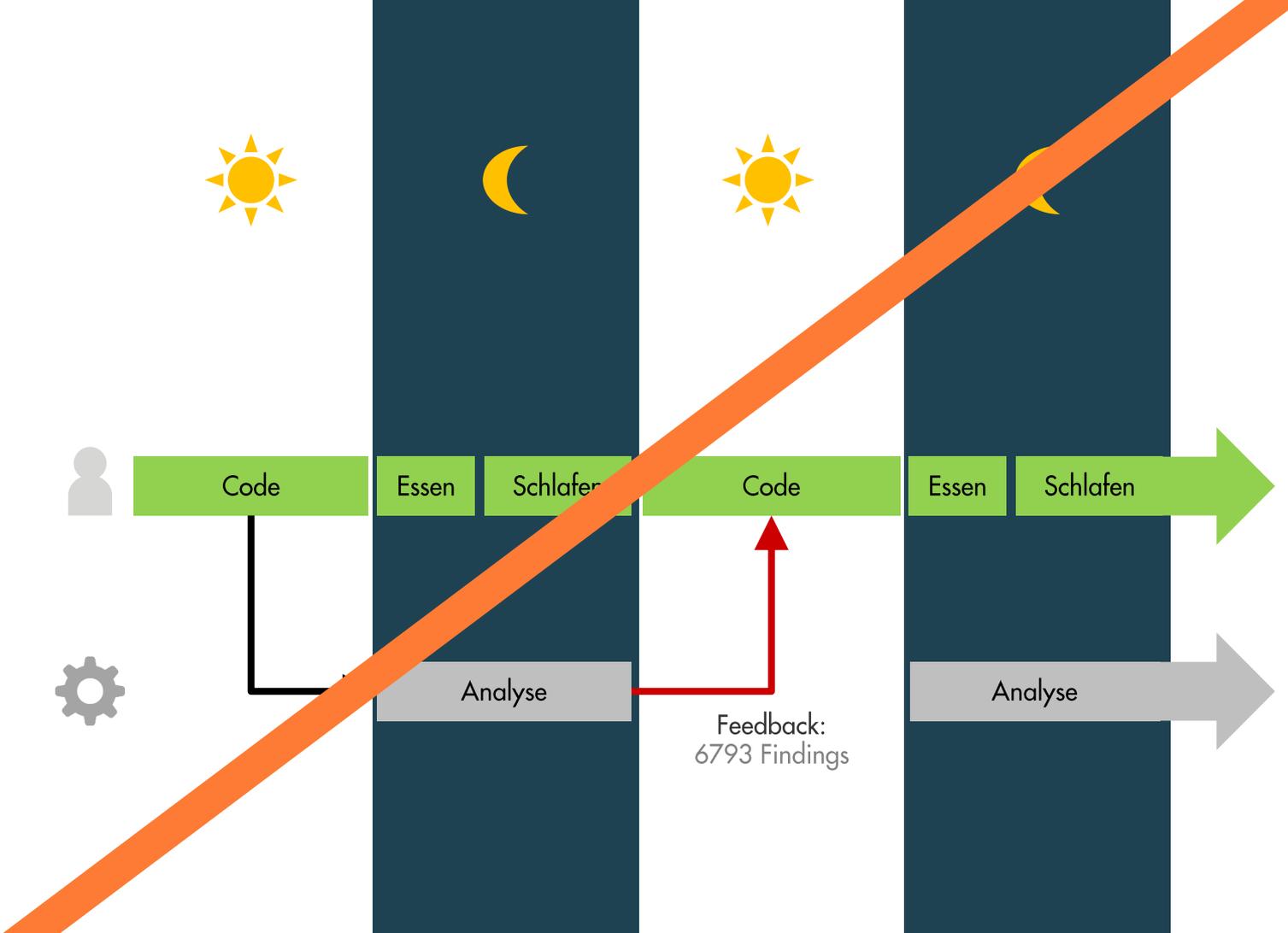
Alle Zutaten haben Verfallsdatum

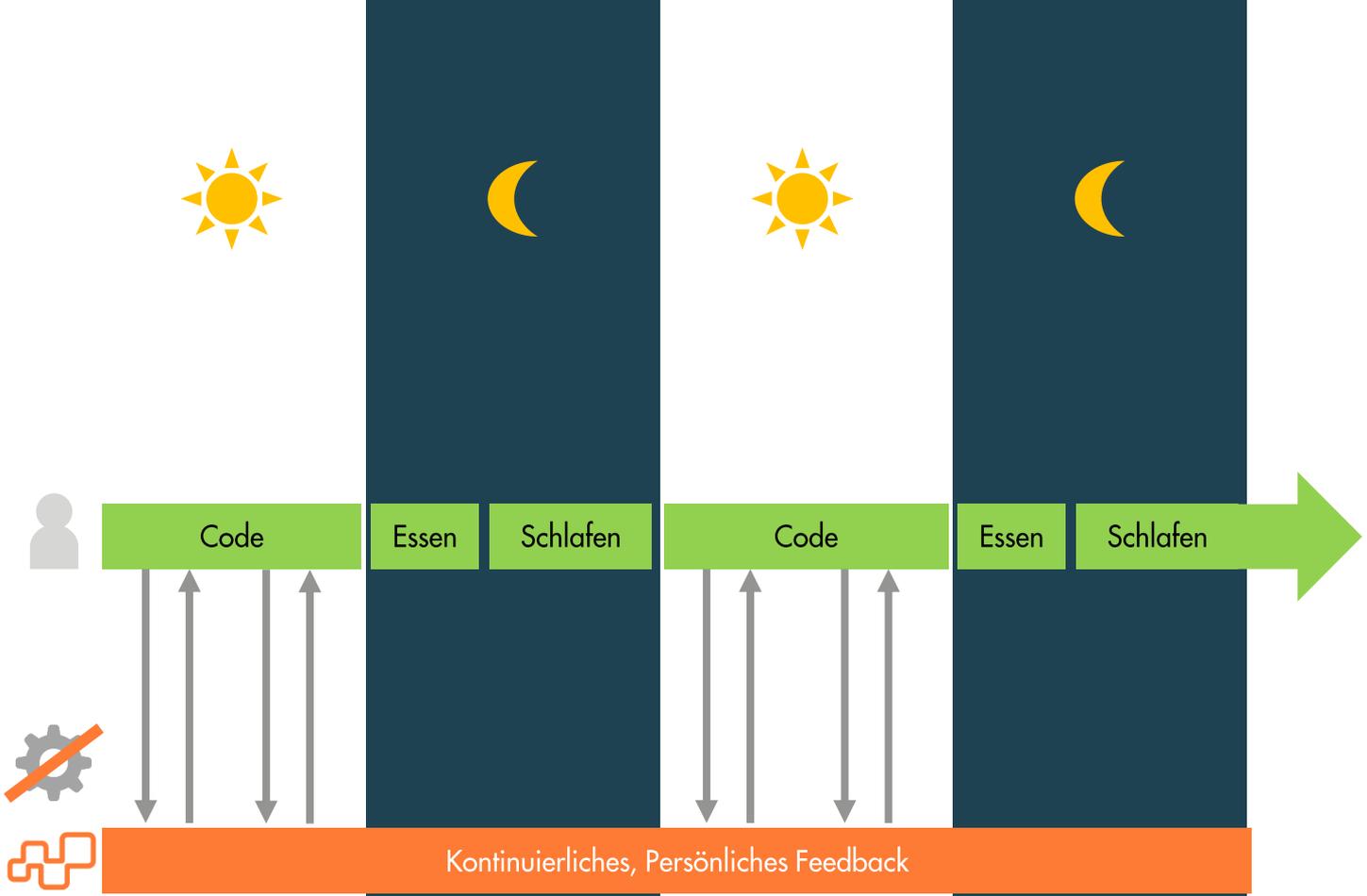
- › Statische Codeanalyse
- › Peer Reviews
- › Continuous Integration
- › Test-Gap-Analyse

# Wer überwacht den Qualitätskoch

Alle Zutaten haben Verfallsdatum

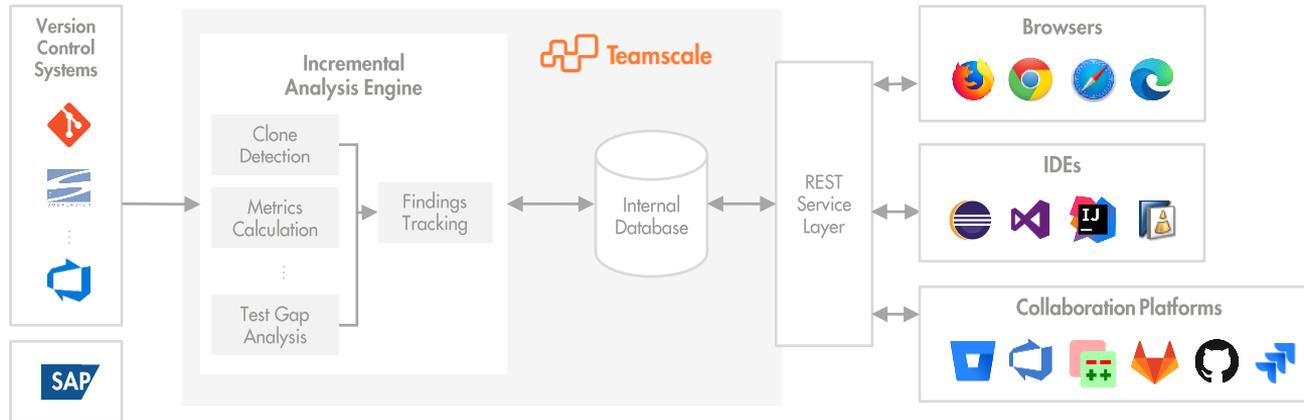
- › **Statische Codeanalyse**
- › Peer Reviews
- › Continuous Integration
- › Test-Gap-Analyse





# Wer überwacht den Qualitätskoch

## Statische Codeanalyse



# Wer überwacht den Qualitätskoch

## Statische Codeanalyse

	<b>External analysis data upload (Pylint analysis)</b> by Technical User as revision EA-PESWXXT-9565_Remove_remaining_deprecated_keywords_from_RTL@1701958007021 in <a href="#">PESWXXT-9565_Remove_remaining_deprecated_keywords_from_RTL</a> (external analysis) Files: 1 affected Findings: 	Dec 07 2023 15:06
	<b>Unic Test Coverage (Unit Tests)</b> by Technical User as revision EA-PESWXXT-9565_Remove_remaining_deprecated_keywords_from_RTL@1701958007020 in <a href="#">PESWXXT-9565_Remove_remaining_deprecated_keywords_from_RTL</a> (external analysis) Files: 5 affected	Dec 07 2023 15:06
	<b>PESWXXT-9565: do not remove</b> by Martina Pongratz as revision 84257e74 in <a href="#">PESWXXT-9565_Remove_remaining_deprecated_keywords_from_RTL</a> (repository) Issue: PESWXXT-9565: remove deprecated keywords from RTL	Dec 07 2023 15:06
	<b>External analysis data upload (Pylint analysis)</b> by Technical User as revision EA-PESWXXT-9565_Remove_remaining_deprecated_keywords_from_RTL@1701956638021 in <a href="#">PESWXXT-9565_Remove_remaining_deprecated_keywords_from_RTL</a> (external analysis)	Dec 07 2023 14:43
	<b>External analysis data upload (Pylint analysis)</b> by Technical User as revision EA-PESWXXT-9565_Remove_remaining_deprecated_keywords_from_RTL@1701956638020 in <a href="#">PESWXXT-9565_Remove_remaining_deprecated_keywords_from_RTL</a> (external analysis) Files: 5 affected Findings: 	Dec 07 2023 14:43
	<b>PESWXXT-9565: Remove remaining deprecated stuff from RTL</b> by Martina Pongratz as revision f53e0560 in <a href="#">PESWXXT-9565_Remove_remaining_deprecated_keywords_from_RTL</a> (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 [📄](#) (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
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

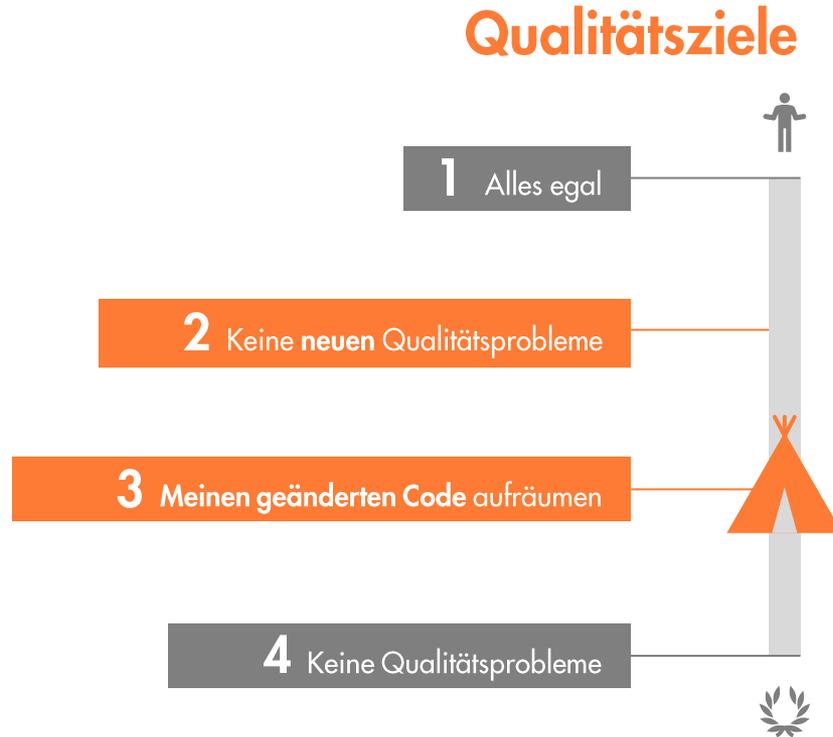
Message ^	Location	Finding Group and Type
Interface comment missing	src/RationalTest.../remaining_cooking_time.py:58-66	Documentation > Comment Completeness > Interface c...

^ 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



# 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
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<a href="#">src/RationalTestLibrary/steps/device_under_test/internal_routines.py</a>	changed
<a href="#">src/RationalTestLibrary/steps/device_under_test/periphery.py</a>	changed

^ Findings 0 1 2 3

^ 0 1 New Findings

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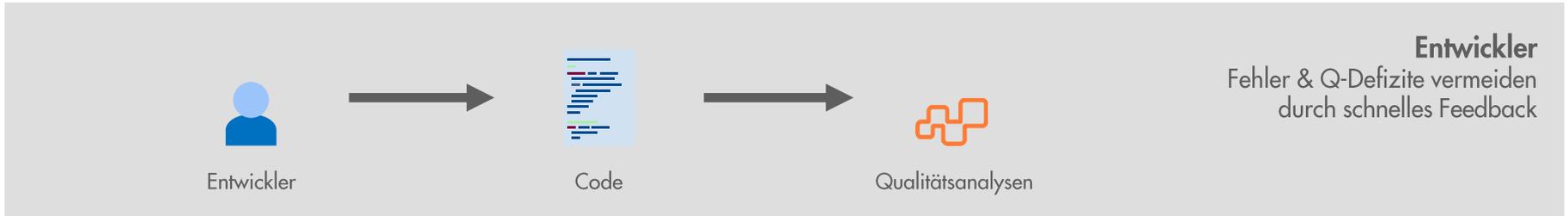
**2** Keine neuen Qualitätsprobleme

**3** Meinen geänderten Code aufräumen



# Wer überwacht den Qualitätskoch

## Statische Codeanalyse



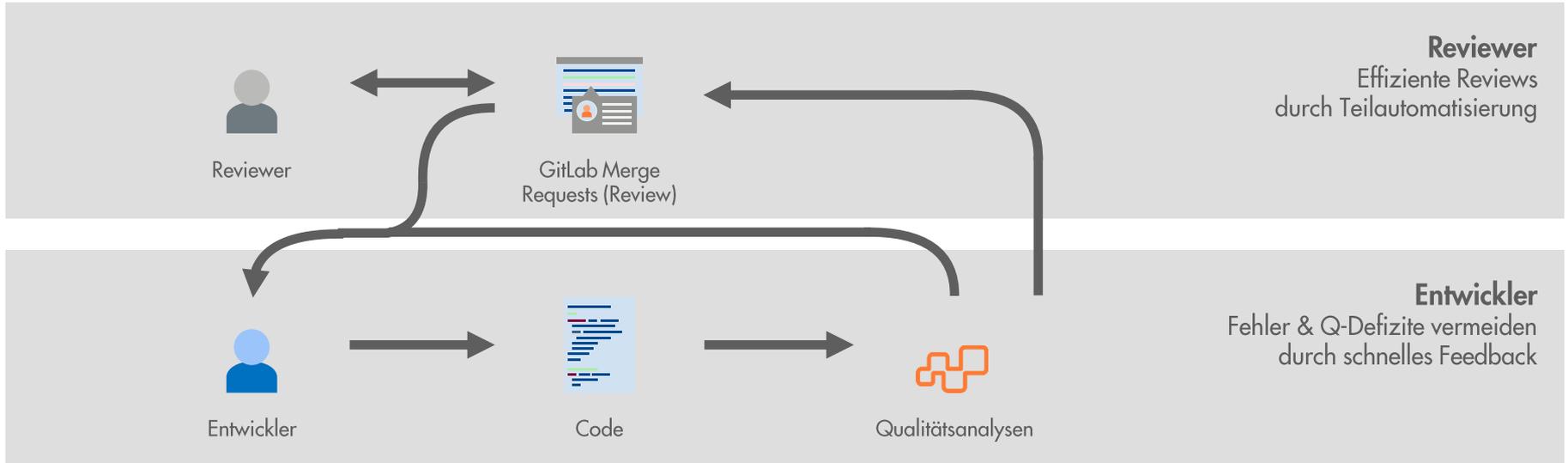
# Wer überwacht den Qualitätskoch

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\_rema... 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 4fb0bf9f 19 hours ago

8 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.  
Reply... Unresolve thread

# Wer überwacht den Qualitätskoch

## Peer Reviews

**PESWXXT-9758: Replaced hard power fail in NTP tests**

Merged Rantovic Nemanja (RANE) requested to merge PESWXXT-9758\_ntp\_replacc\_h into master 1 month ago

Overview (3) Commits (2) Pipelines (5) Changes (9)

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

Solves: PESWXXT-9758

Edited 1 month ago by Gittab Technical User

0 0

Merge train pipeline #74714 passed Merge train pipeline passed for @f97f71a 1 month ago

Approved by

Merged by Rantovic Nemanja (RANE) 1 month ago Revert Cherry-pick

Merge details

- Changes merged into master with [db10a53](#).
- Deleted the source branch.
- Auto-merge enabled

Activity All activity 1s

- Rantovic Nemanja (RANE) requested review from @ponm and @hoet 1 month ago
- Rantovic Nemanja (RANE) assigned to @rane 1 month ago
- Gittab 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

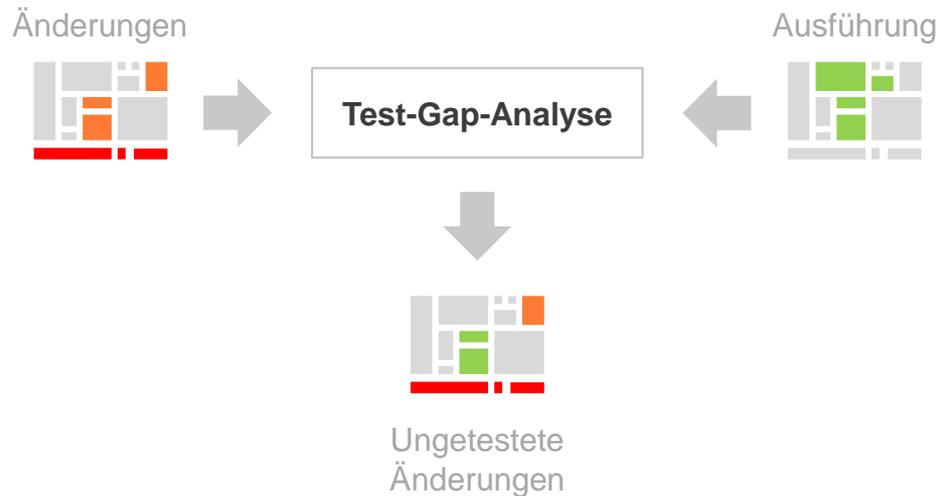
# Wer überwacht den Qualitätskoch

Alle Zutaten haben Verfallsdatum

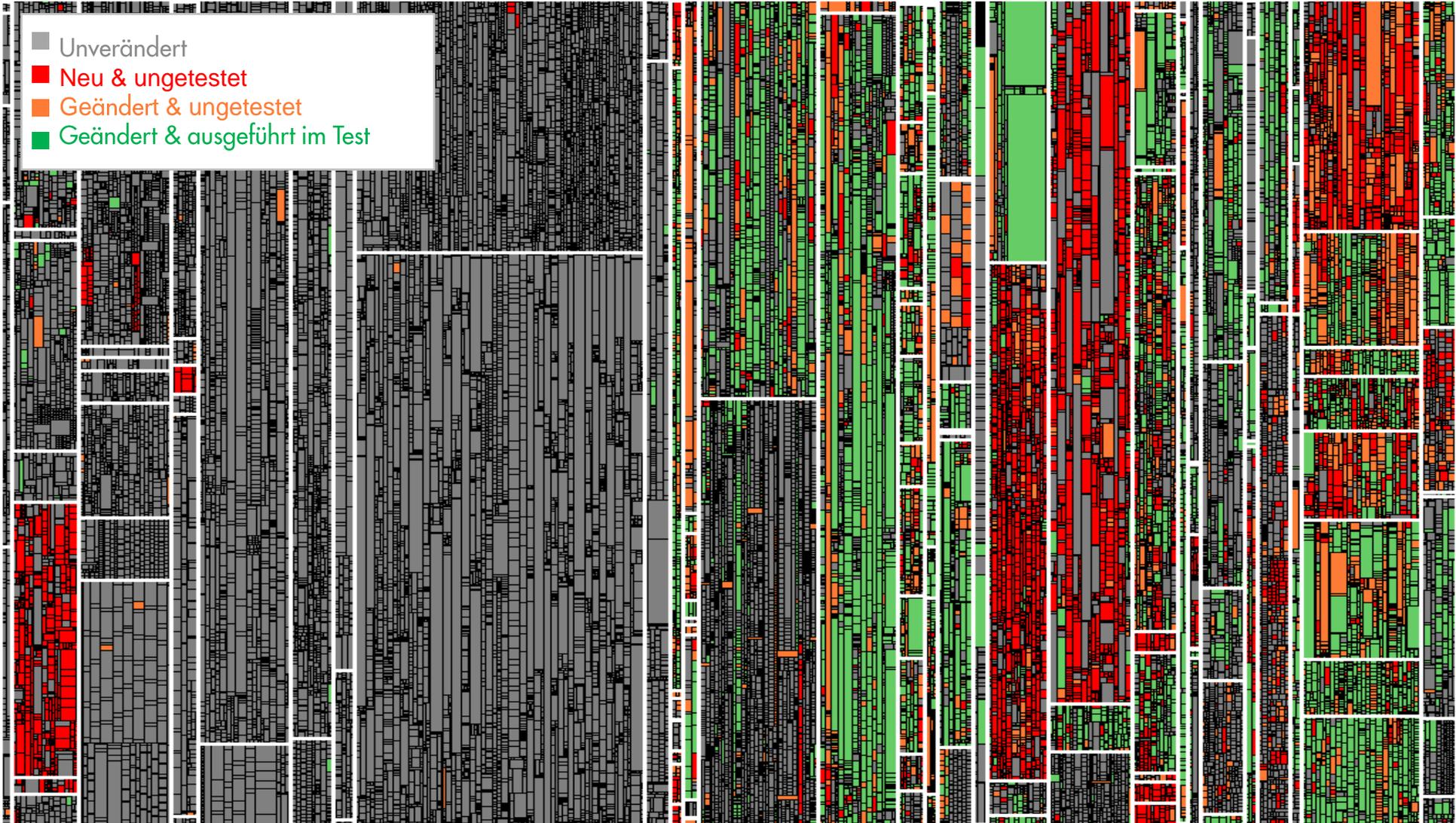
- › Statische Codeanalyse
- › Peer Reviews
- › Continuous Integration
- › **Test-Gap-Analyse**

# Wer überwacht den Qualitätskoch

## Test-Gap-Analyse

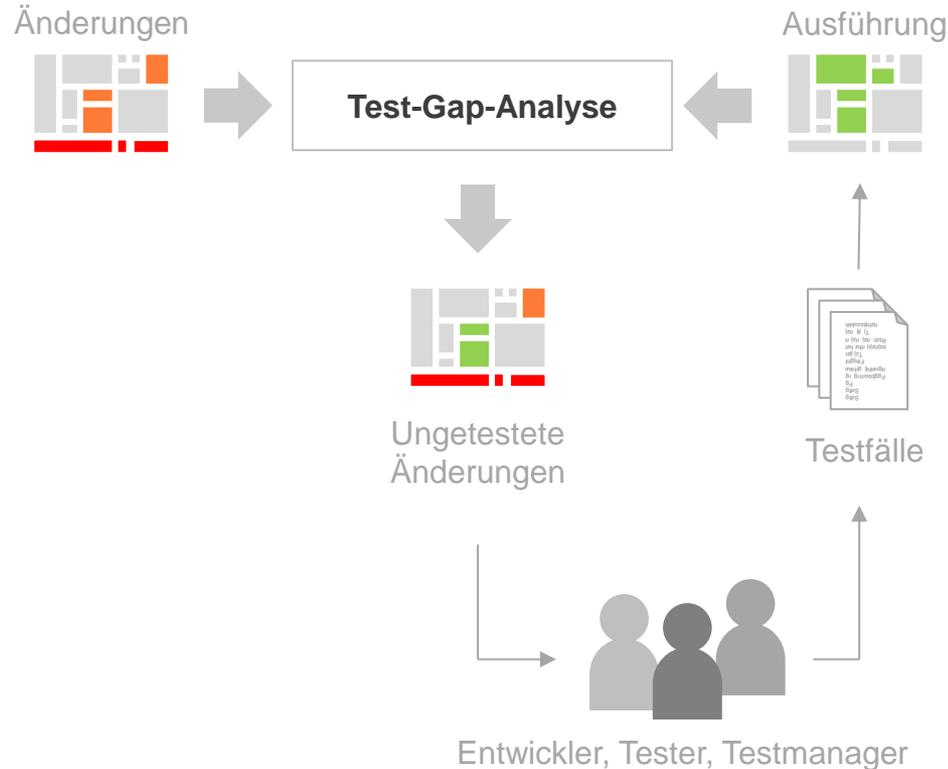


- Unverändert
- Neu & ungetestet
- Geändert & ungetestet
- Geändert & ausgeführt im Test



# 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



**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

- Pongratz Martina (PONM) assigned to [@ponm](#) 1 week ago
- Pongratz Martina (PONM) added 2 commits 1 week ago
  - [0316cbff](#) - PESWXXT-10286: only for testing
  - [e4f98a62](#) - PESWXXT-10286: remove hash, split path and tc id[Compare with previous version](#)

**Assignee**  
 Pongratz

**0 Reviewers**  
None - assign

**Labels**  
None

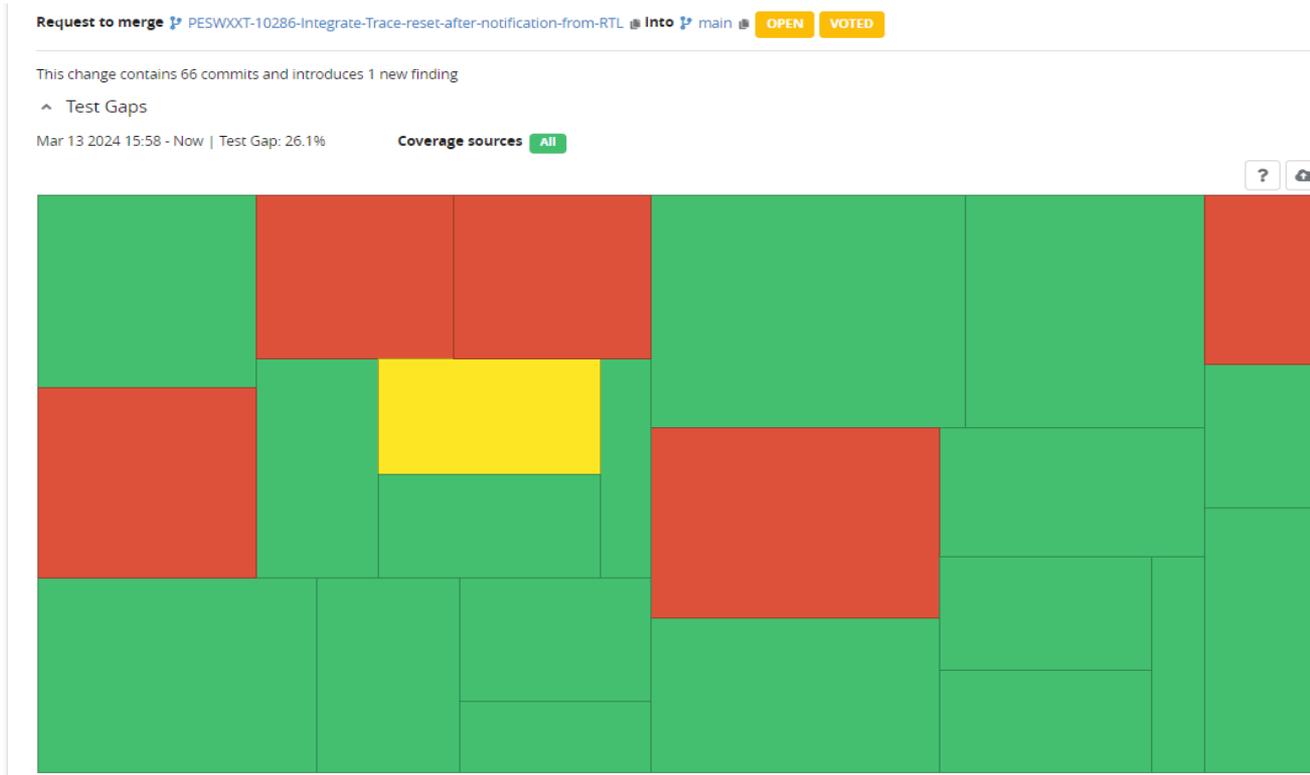
**Milestone**  
None

**Time tracking**  
No estimate c

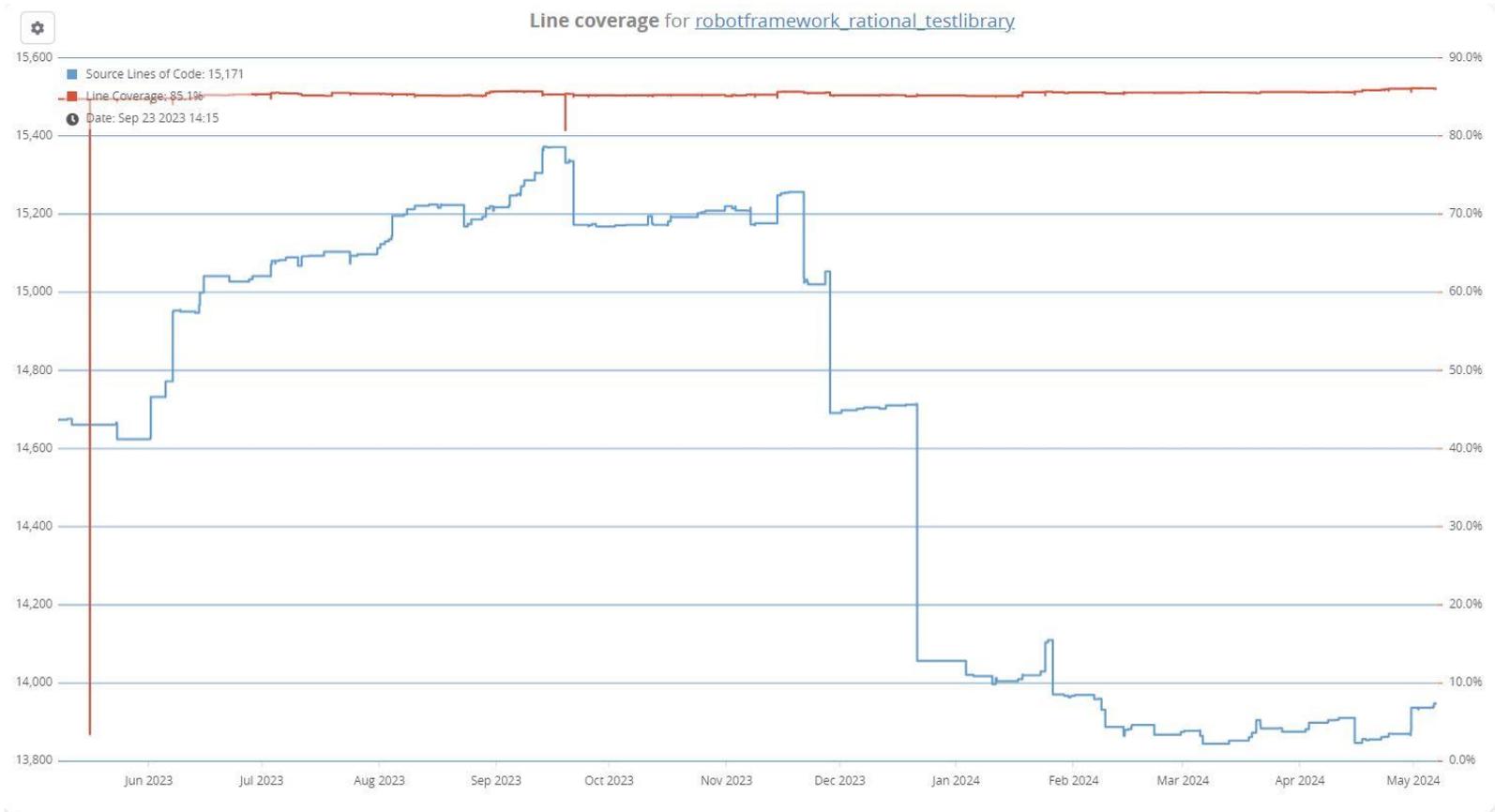
**2 Participant:**

# Wer überwacht den Qualitätskoch

## Test-Gap-Analyse

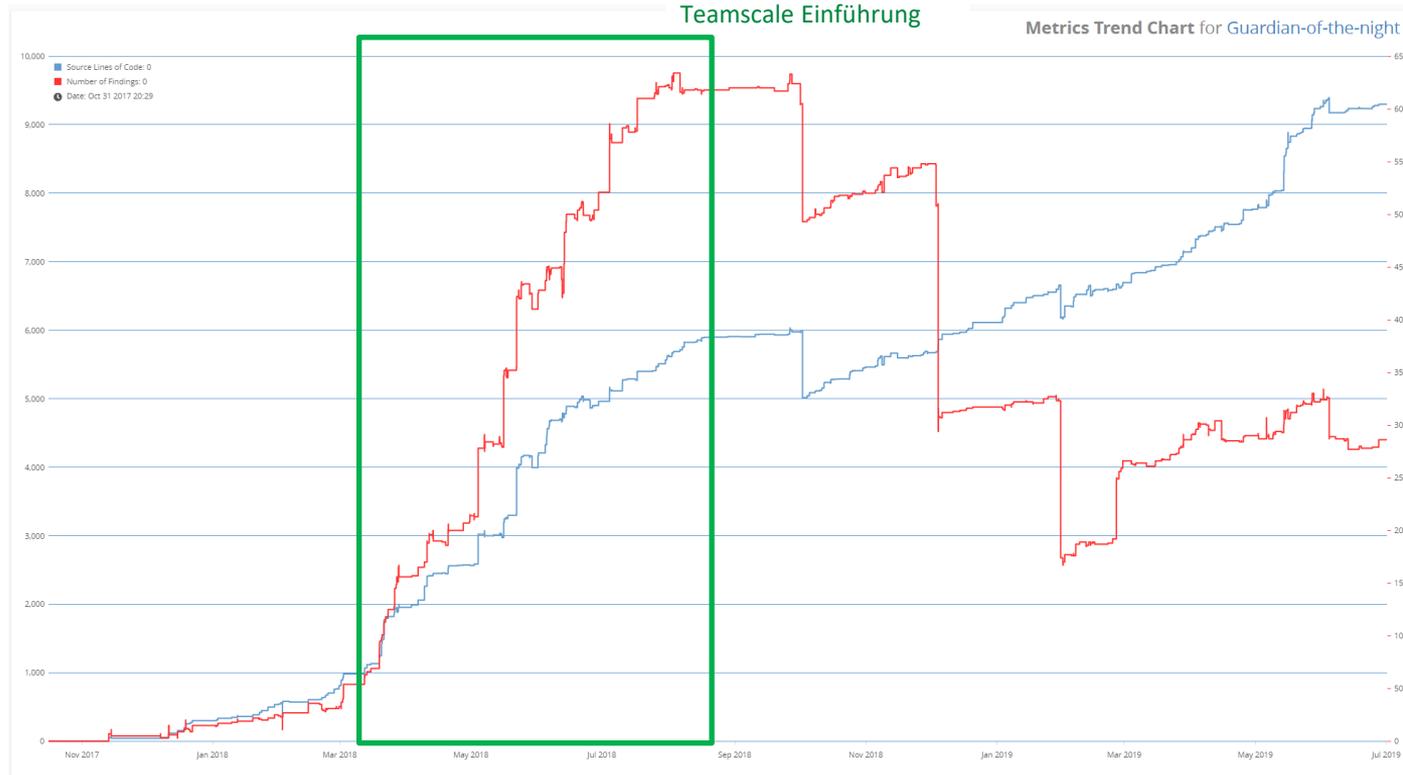


# Line coverage



# Giftige Zutat oder Verfeinerung

## Interpretation historischer Daten



# Wenn die Größe wichtig ist

## Methodenlänge

Findings

1

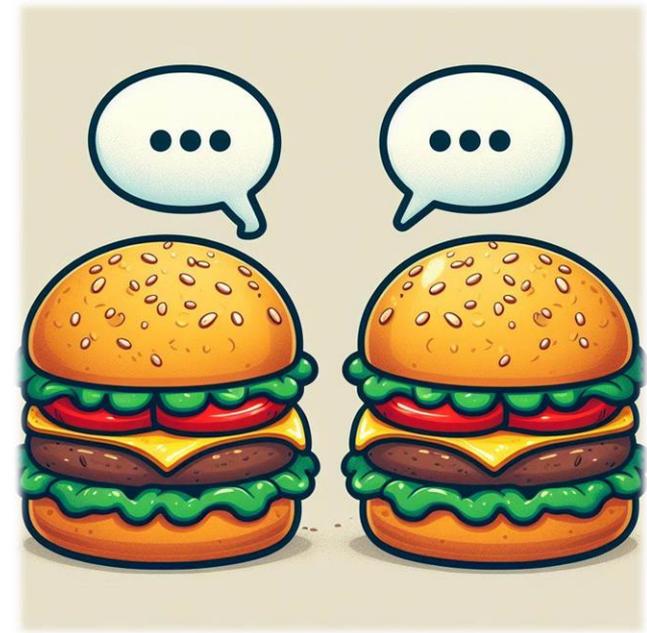


Picture by bing COPILOT

Findings

1

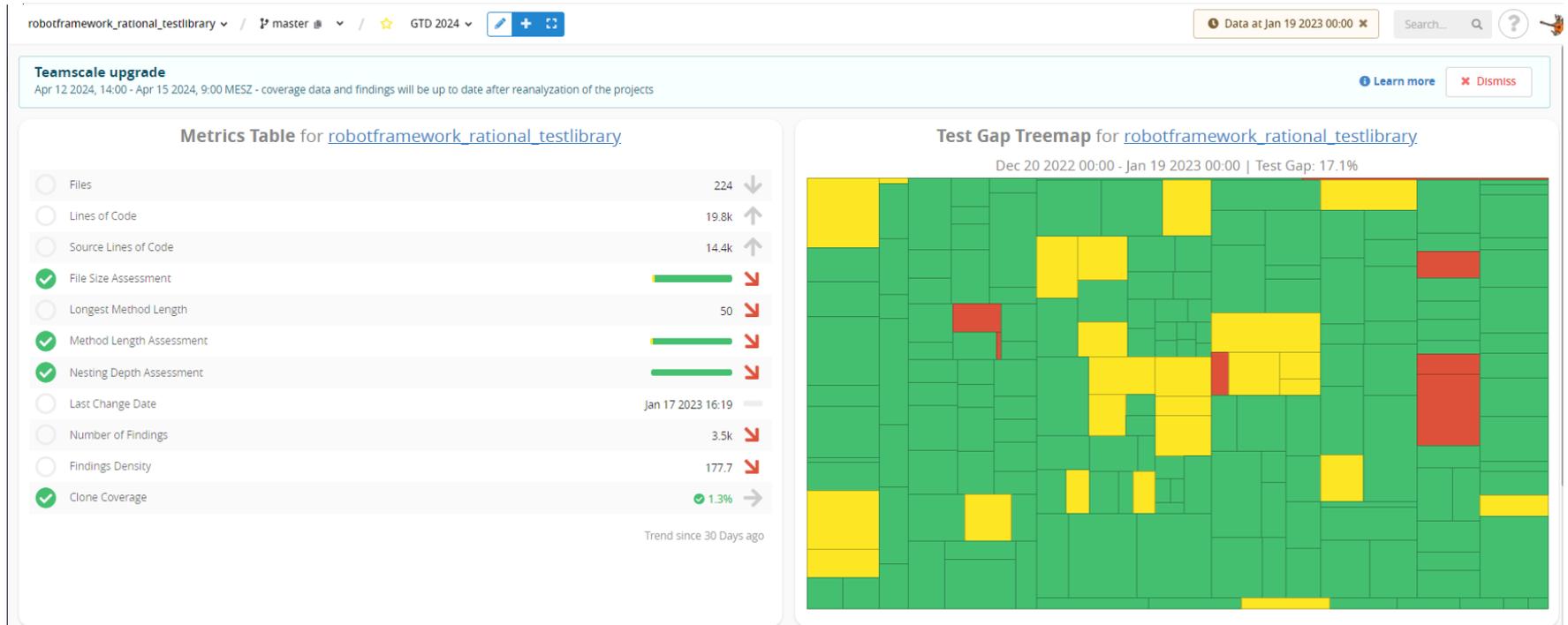
1



Picture by bing COPILOT

# Wenn der Wächter schläft

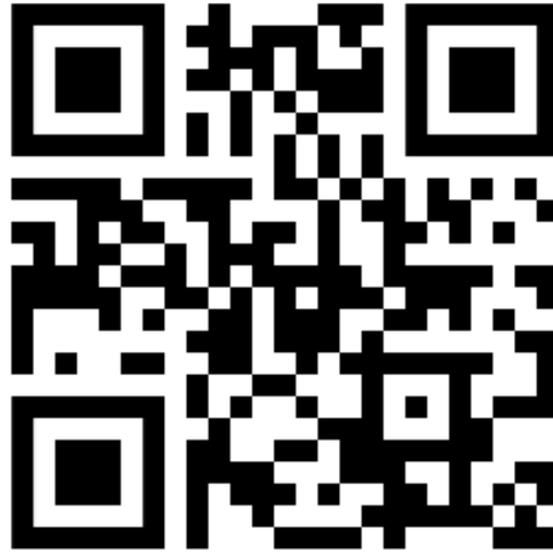
## Reicht Gewohnheit?



# 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  
[tmscl.me/qstag\\_rational](https://tmscl.me/qstag_rational)

## CQSE Workshop

### Continuous Quality Control

Qualität trotz immer kürzerer Releasezyklen

Aufzeichnungen ansehen  
[tmscl.me/cqc-qs-24](https://tmscl.me/cqc-qs-24)



## CQSE Workshop

### Test Gap Analysis

Ungetestete Änderungen im Quelltext aufdecken

Aufzeichnungen ansehen  
[tmscl.me/tga-qs-24](https://tmscl.me/tga-qs-24)





CQSE