

Haben wir das Richtige getestet? Oh Nein!

Erfahrungen mit Test-Gap-Analyse in der Praxis

Dr. Elmar Jürgens
Dr. Dennis Pagano

Bugzilla - Bug List

Home | New | Browse | Search | Search [?] | Reports | Preferences | Administration | Help | Log out juergens@in.tum.de

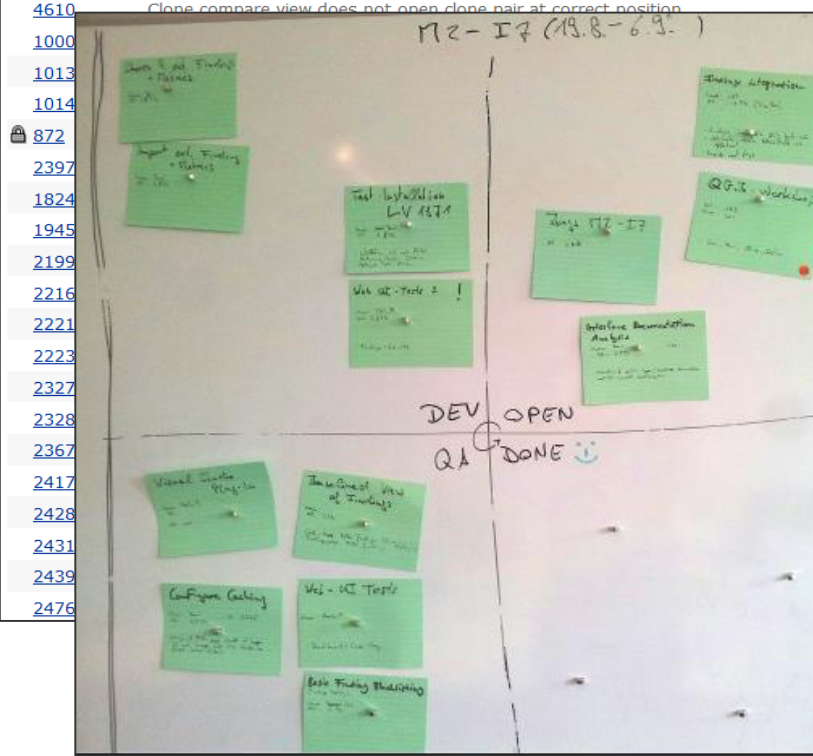
Wed Aug 28 2013 11:45:48 CEST
[quip?](#)

[Hide Search Description](#)

Status: UNCONFIRMED, NEW, ASSIGNED, REOPENED Product: clone Component: clone

83 bugs found.

- [ID ▲](#) [Summary](#)
- [3382](#) [Remove old filtering framework](#)
- [4608](#) [Improve progress monitoring for clone detection](#)
- [3613](#) [Make MetricOverview more flexible w.r.t. to database table names](#)
- [3811](#) [Incorrect offset reported by two-phased scanners](#)



ConQAT

Übersicht Aktivität Roadmap Tickets Neues Ticket Projektarchiv Konfiguration

Tickets

Filter

Status offen ▾

Optionen

Anwenden Zurücksetzen Speichern

#	Tracker	Status	Priorität	Them
<input type="checkbox"/> 5489	corrective	New	Normal	Cannot install ConQAT from update site on Kepler
<input type="checkbox"/> 5488	adaptive	New	Normal	Should be able to view "own" findings
<input type="checkbox"/> 5487	uncategorized	Assigned	Normal	Upload/Change of user image broken
<input type="checkbox"/> 5486	uncategorized	New	Normal	Allow for branded dists
<input type="checkbox"/> 5485	perfective	New	Normal	Enable hiding of individual findings in the IDE (e.g. after they are resolved)
<input type="checkbox"/> 5484	corrective	New	High	Visual Studio crashes after editing on findings
<input type="checkbox"/> 5483	uncategorized	Yellow	Normal	Cleanup com.teamscale.ide.prefs
<input type="checkbox"/> 5482	uncategorized	New	Normal	Filter structural clones
<input type="checkbox"/> 5481	adaptive	New	Normal	Integrate Sharepoint Analysis in MR Dashboard
<input type="checkbox"/> 5480	uncategorized	New	Normal	Teamscale connection preference page not working in Eclipse 4.3 on Mac
<input type="checkbox"/> 5479	preventive	Red	Normal	Benchmarking and selection of storage systems
<input type="checkbox"/> 5478	uncategorized	Yellow	Normal	Usability: "Open in Web Browser" should use the browser from preferences
<input type="checkbox"/> 5477	corrective	New	Normal	Fix refresh problem when setting a dashboard as default
<input type="checkbox"/> 5475	perfective	Assigned	Normal	Create UI test for "show history" in code perspective
<input type="checkbox"/> 5474	adaptive	Assigned	Normal	Enable mapping of baseline to head resources when packages are split
<input type="checkbox"/> 5473	perfective	Red	Urgent	Connection problems using svn+ssh
<input type="checkbox"/> 5472	perfective	Accepted	Normal	Display baselines in charts (as small vertical lines)
<input type="checkbox"/> 5471	perfective	Accepted	Normal	Support selection of explicit baseline for filtering
<input type="checkbox"/> 5470	perfective	Accepted	Normal	Service documentation shall also provide more detailed documentation on q
<input type="checkbox"/> 5469	perfective	Accepted	Normal	Adding/removing metrics to chart widget changes colors of other metrics
<input type="checkbox"/> 5468	perfective	Accepted	Normal	Simple metric widget shall support explicit baseline for delta value calculation
<input type="checkbox"/> 5467	corrective	Accepted	High	The delta not found in the store!
<input type="checkbox"/> 5466	corrective	Accepted	Normal	Problems when tracking TODOs which have changed line breaks

Wed Aug 28 2013 11:45:48 CEST

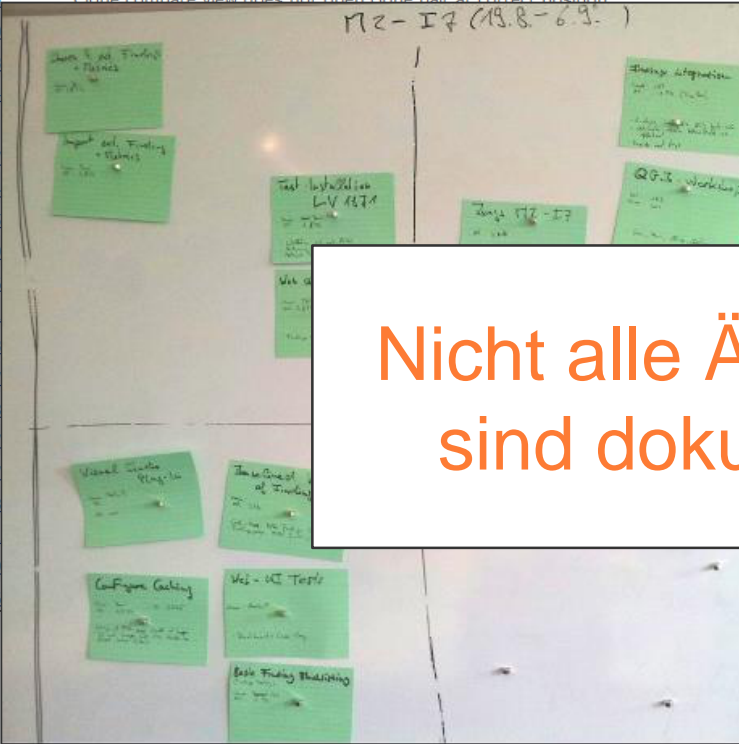
[quip?](#)

[Hide Search Description](#)

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3382	Remove old filtering framework
4608	Improve progress monitoring for clone detection
3613	Make MetricOverview more flexible w.r.t. to database table names
3811	Incorrect offset reported by two-phased scanners
4610	Clone compare view does not open clone pair at correct position
1000	
1013	
1014	
872	
2397	
1824	
1945	
2199	
2216	
2221	
2223	
2327	
2328	
2367	
2417	
2428	
2431	
2439	
2476	



Nicht alle Änderungen sind dokumentiert!

ConQAT

Übersicht Aktivität Roadmap **Tickets** Neues Ticket Projektarchiv Konfiguration

Tickets

Filter

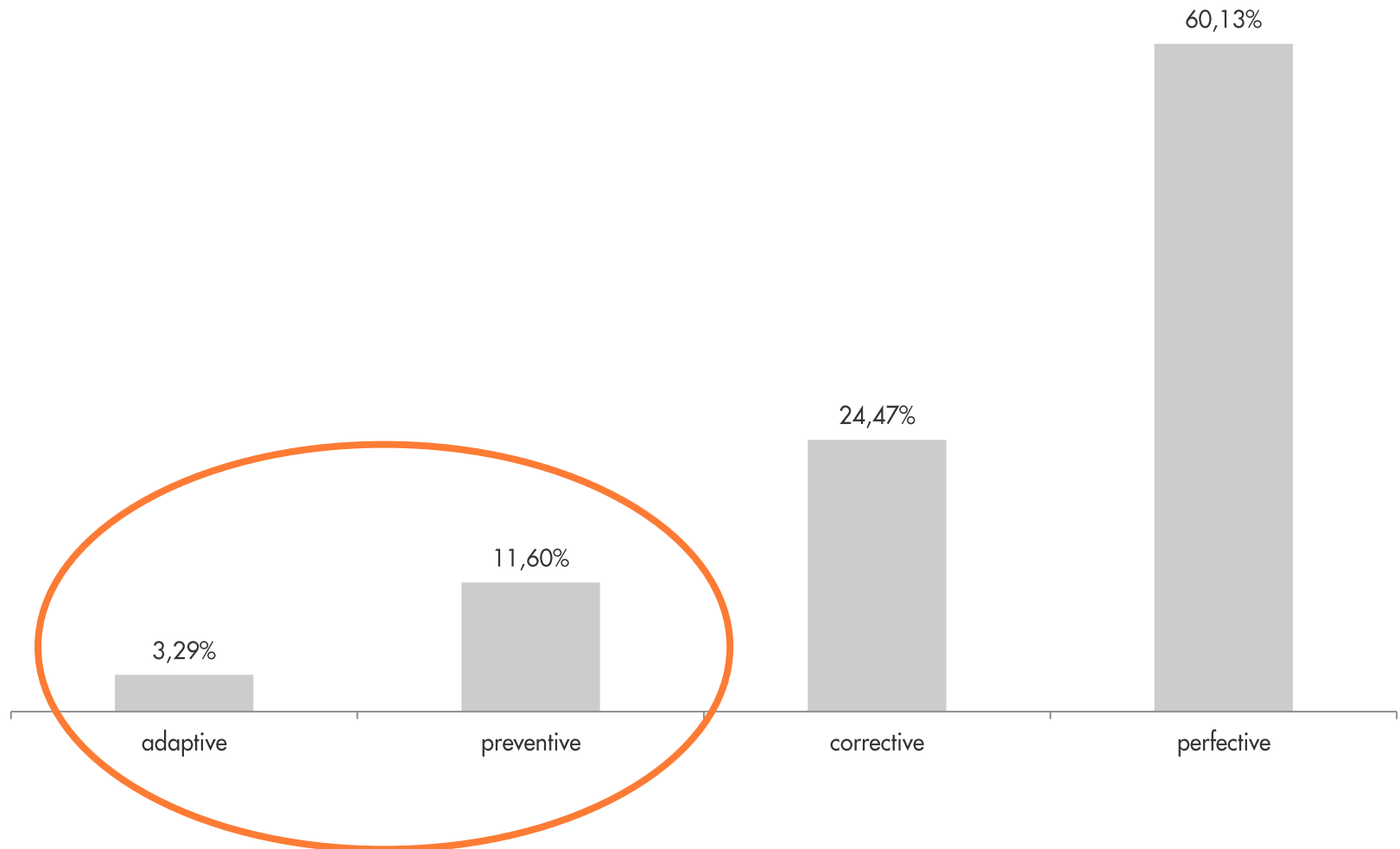
Status offen ▾

Optionen

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CRs in ConQAT



Auf Basis von ca. 2000 CRs aus dem ConQAT Bugzilla

Wieviele Änderungen sind ungetestet?

Studie: C# System @ Munich Re

Release A: 5 Iterationen (2 Monate)

- 15% Methoden neu/geändert, 8% ungetestet

Release B: 10 Iterationen (4 Monate)

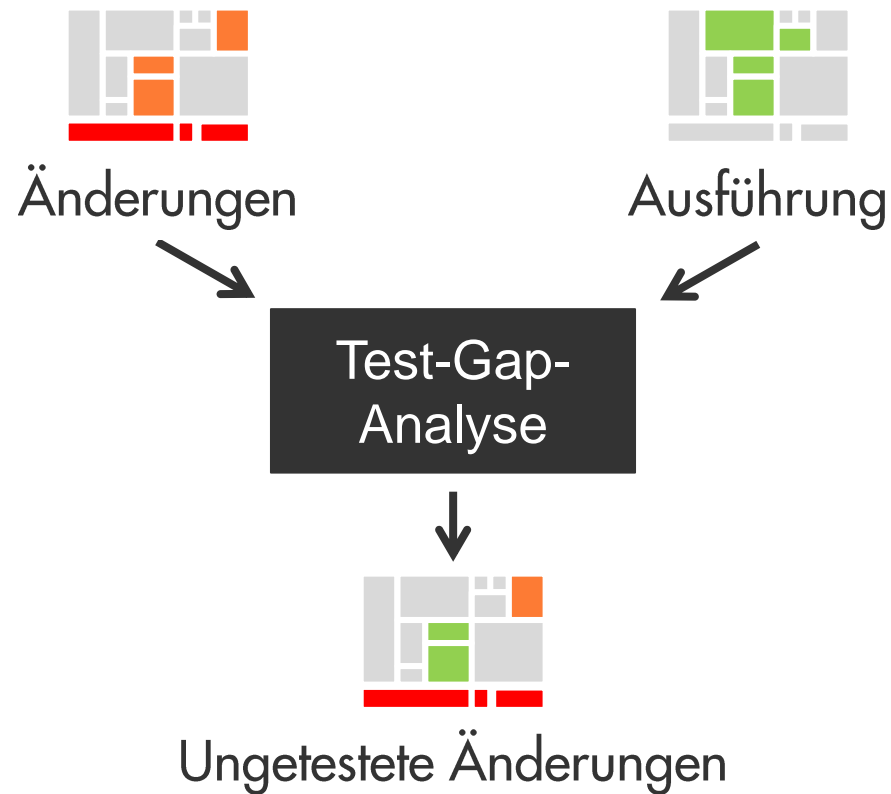
- 15% Methoden neu/geändert, 9% ungetestet

Feldfehlerwahrscheinlichkeit 5x höher für unget. Änderungen

Agenda

1. Test-Gap-Analyse
2. Einsatz in verschiedenen Test-Szenarien

Anatomie Test-Gap-Analyse



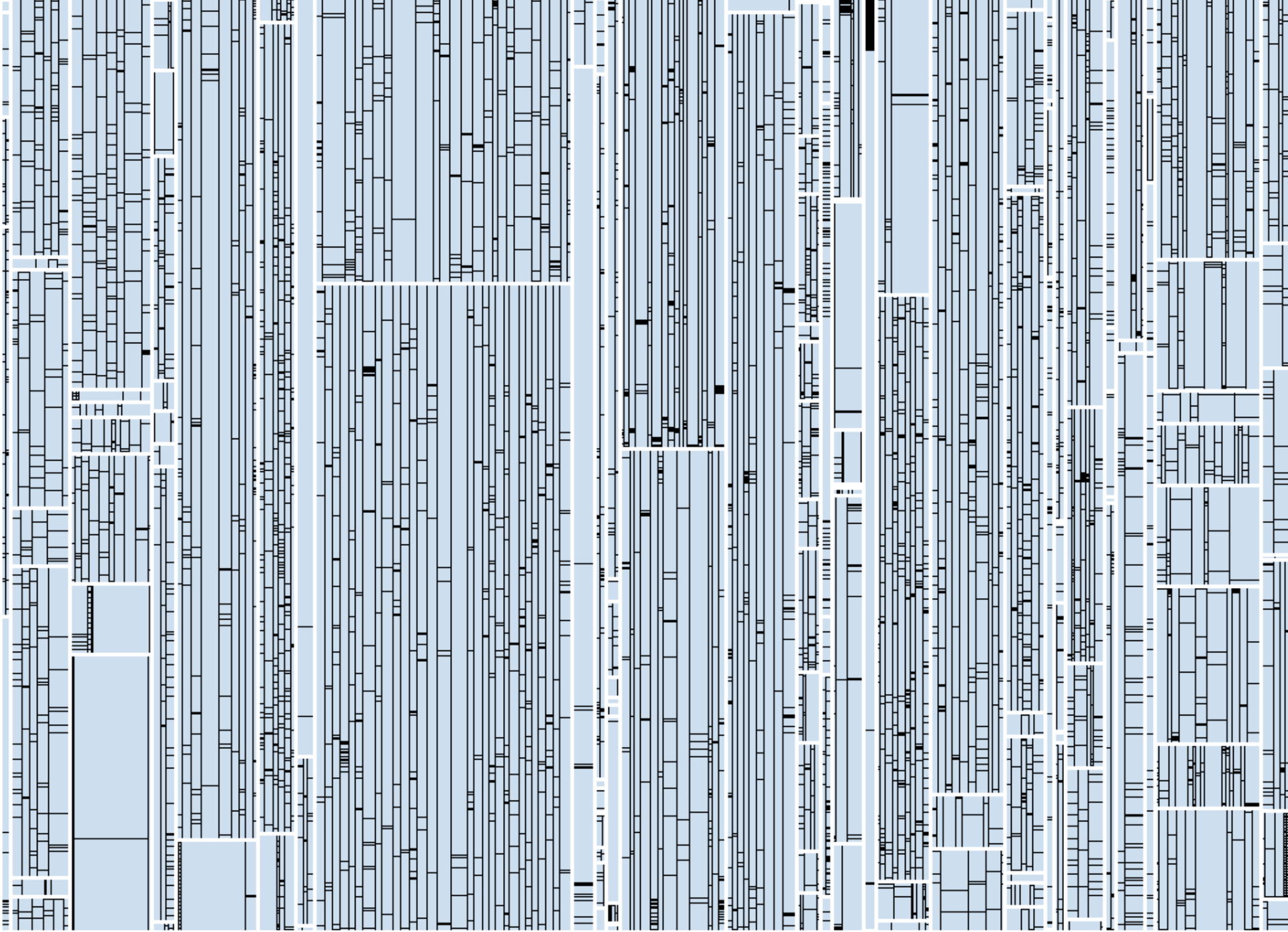
GUI.Dialogs

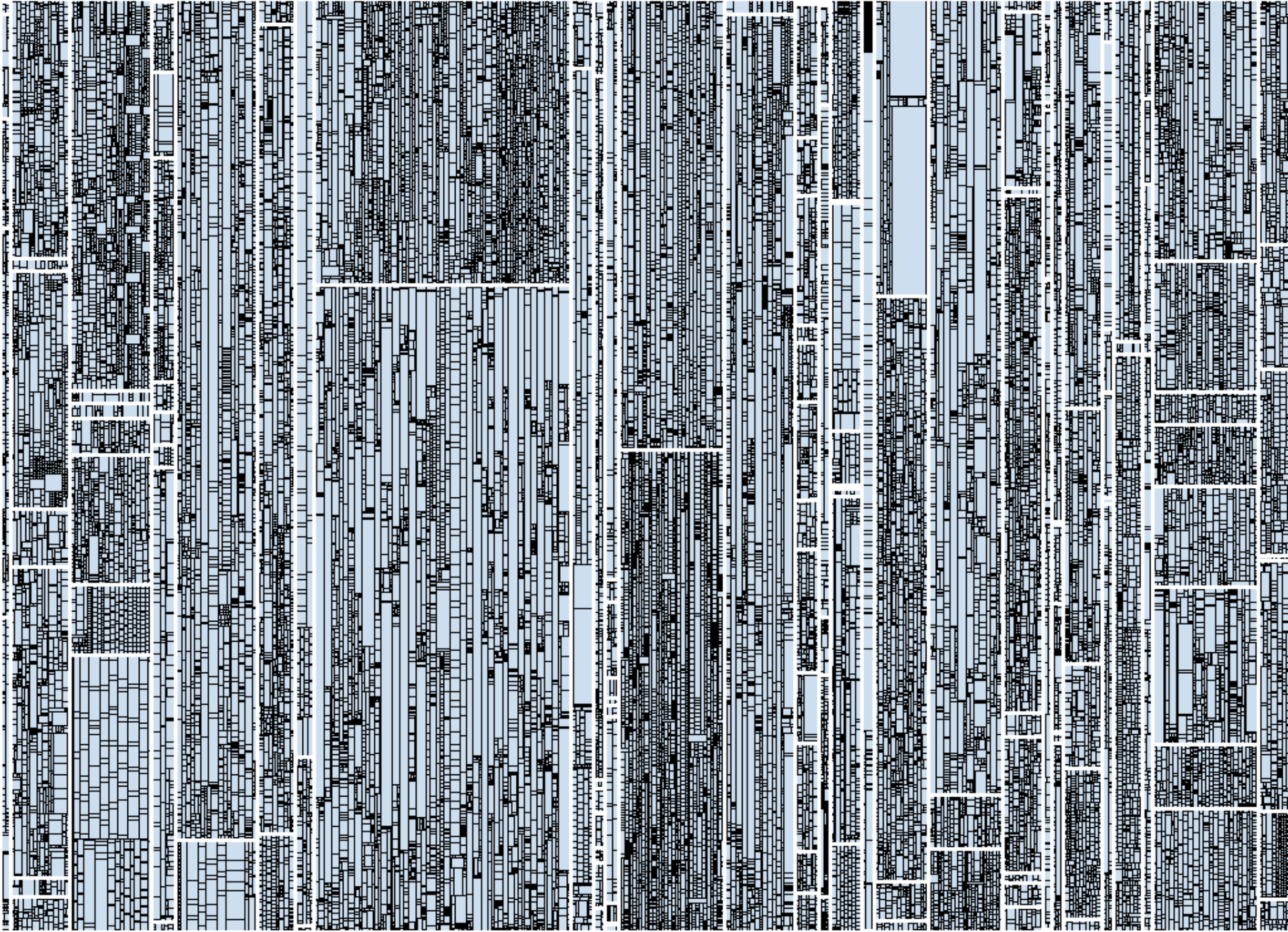
UI Controls

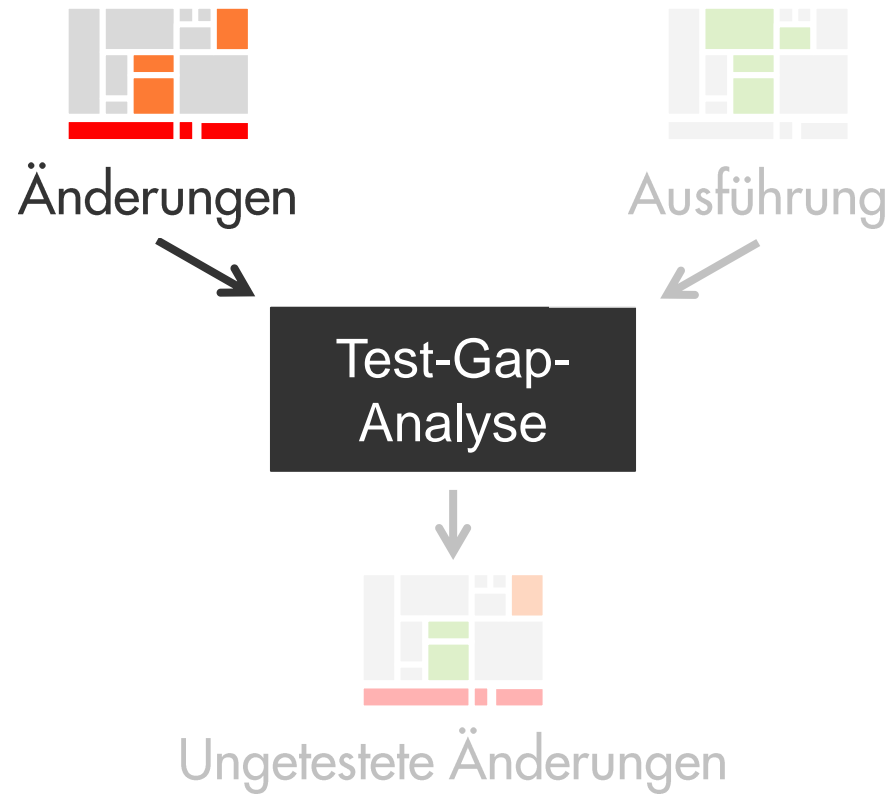
GUI.Base

Authentication

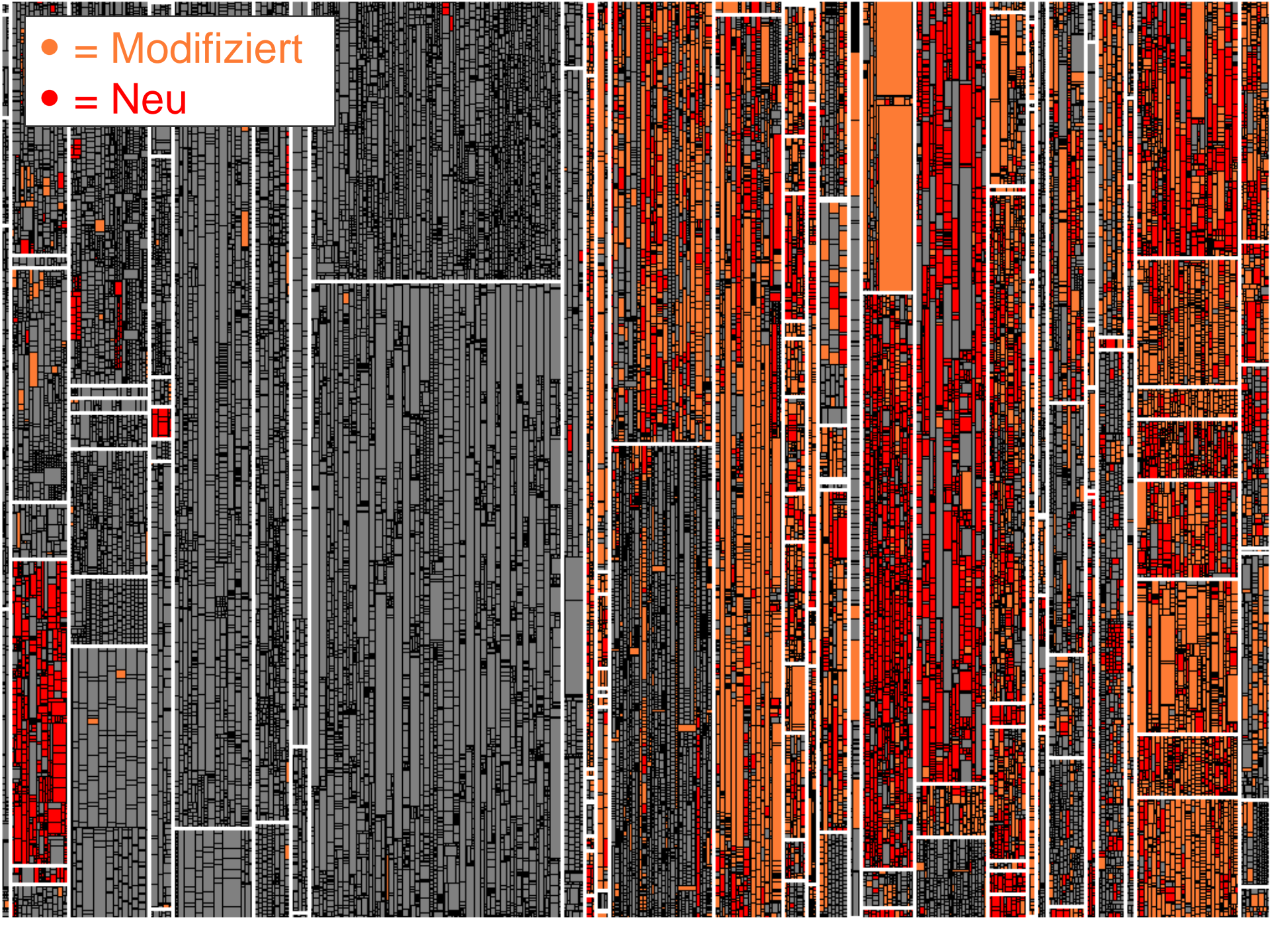
**Data
Validation**

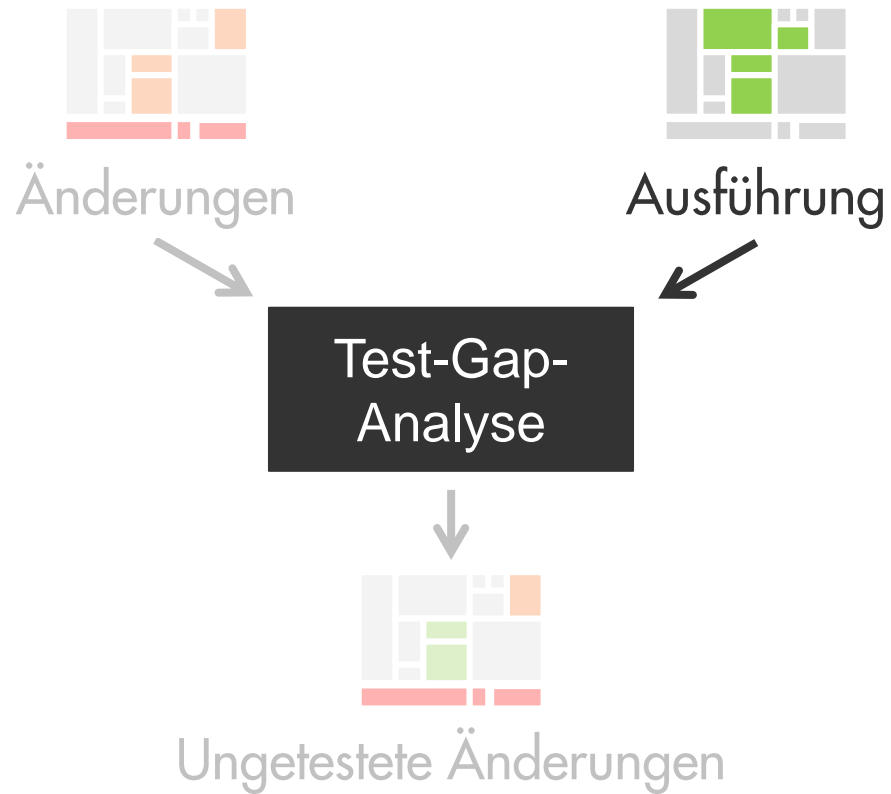




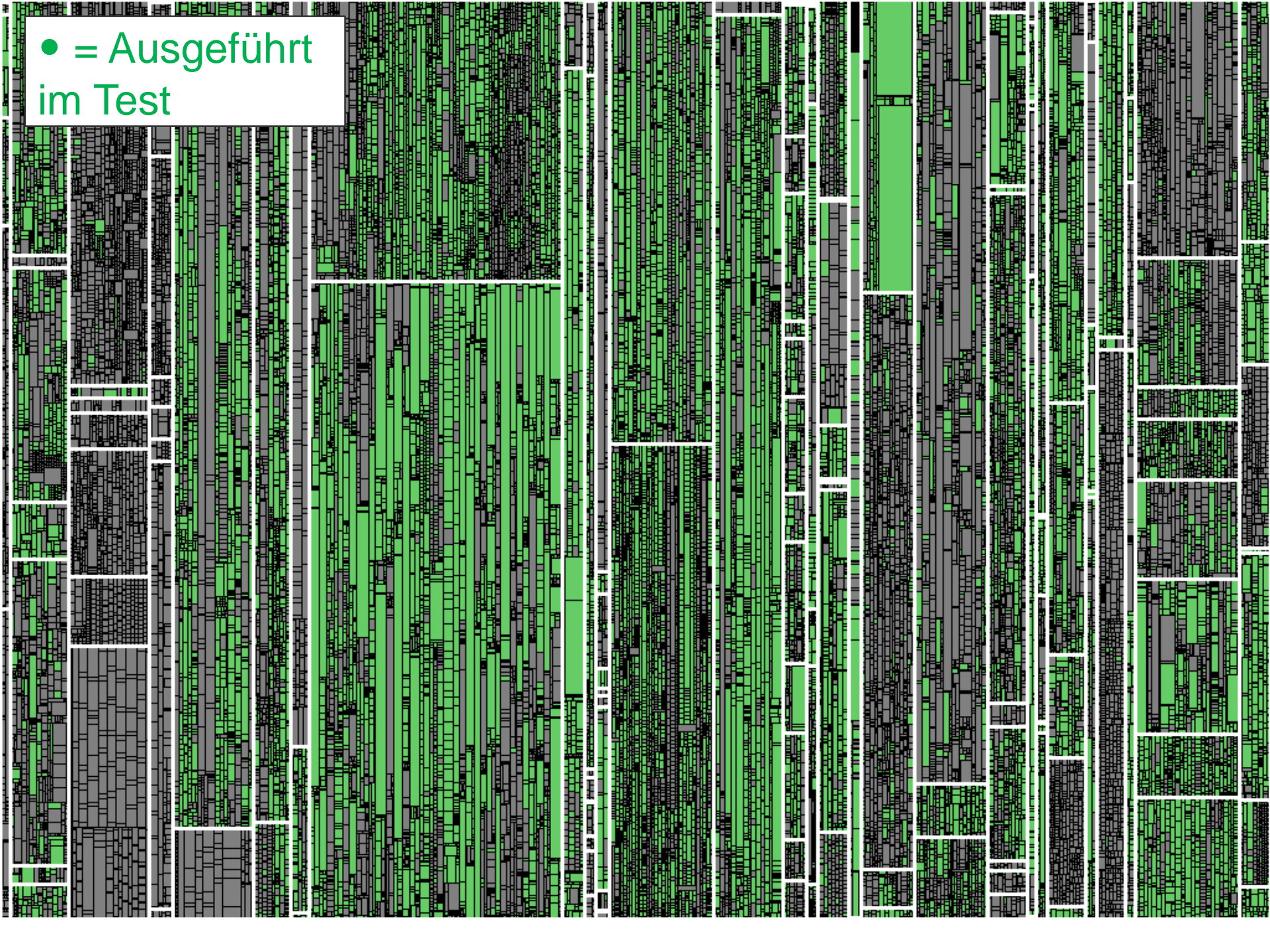


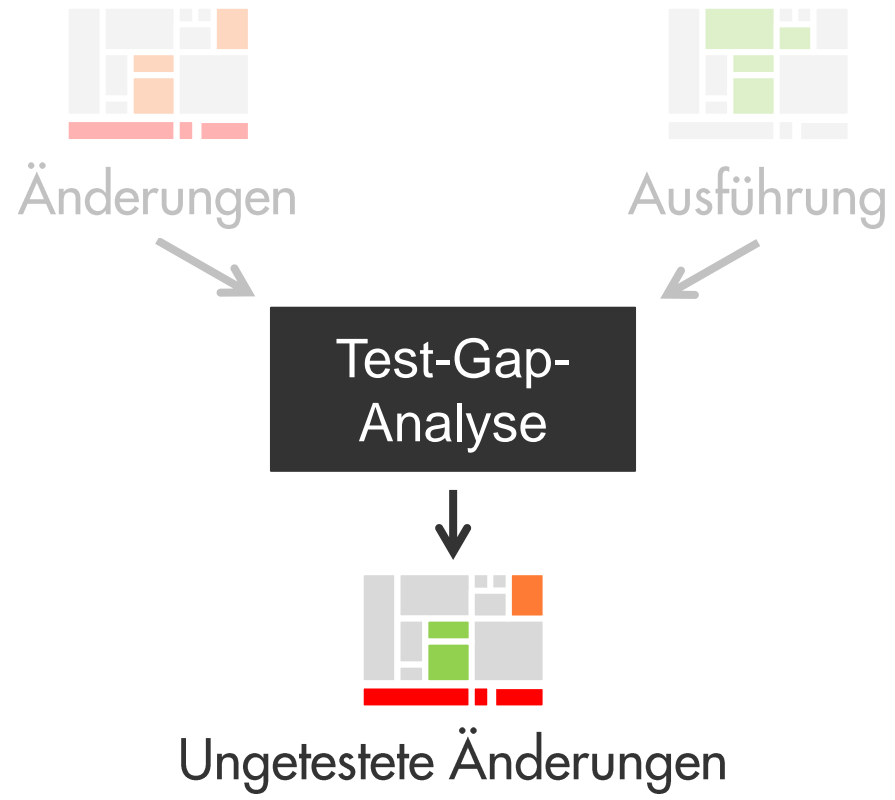
- = Modifiziert
- = Neu



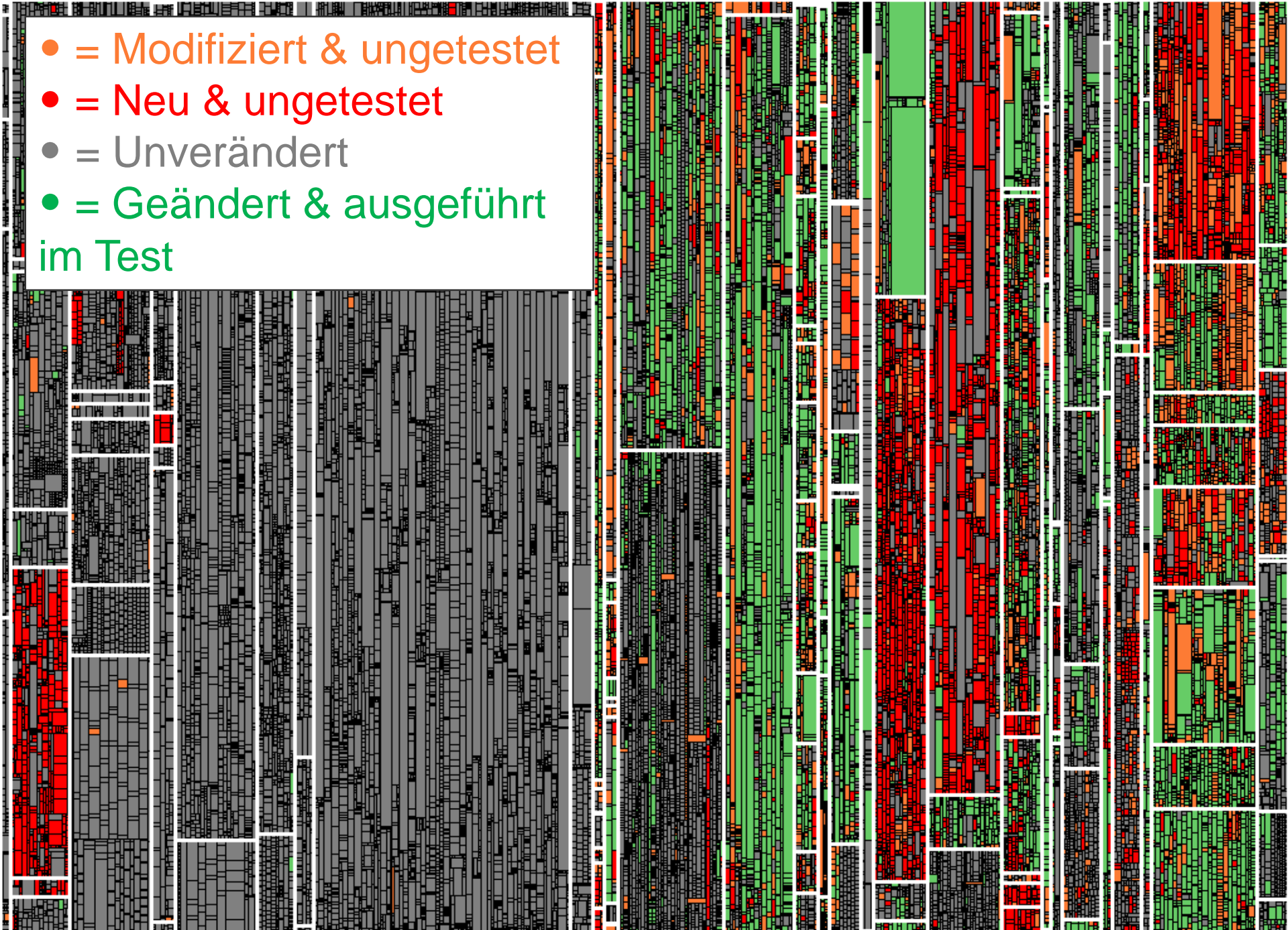


● = Ausgeführt
im Test

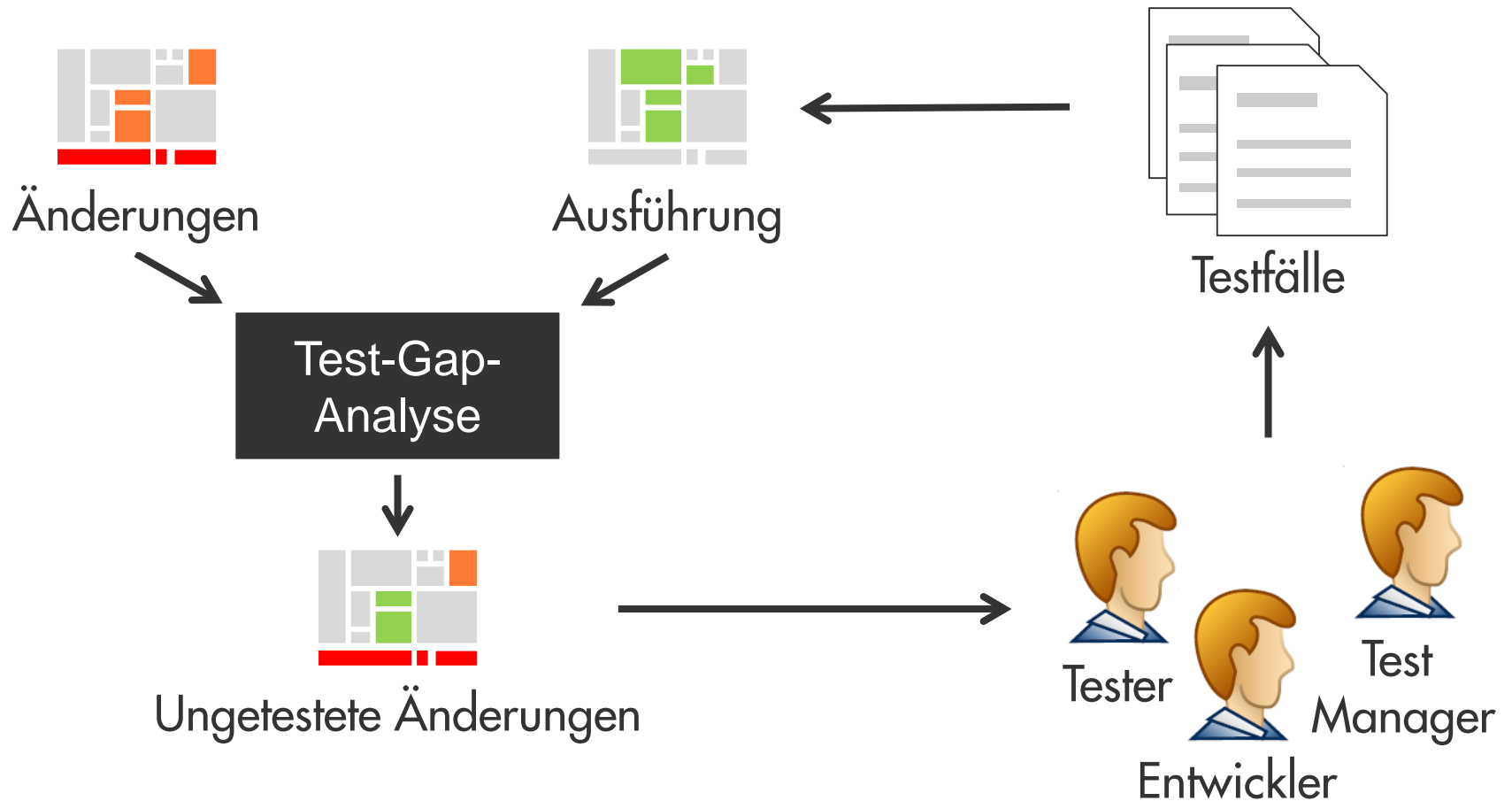




- = Modifiziert & ungetestet
- = Neu & ungetestet
- = Unverändert
- = Geändert & ausgeführt im Test



Einsatz im Testprozess



A thick orange diagonal line runs from the bottom-left corner to the top-right corner of the image, passing through the text.

100% Change Coverage



100% Change Coverage → 0 Fehler

Verschiedene Umgebungen

conQAI
Wed May 28 08:59:31

Overview
Test Gap Analysis
Changed Methods
Executed Methods
Test Gaps
Details
Debug
Traces
Snapshots
Related Dashboards
all
Dev
Test
UAT
KPIs
Charts
Execution
Test State
Info
Log
Config
Execution Time
Version

Test Gap Analysis

Changed Methods
Executed Methods
Test Gaps
Details

General Information

Environment: test
System: JES
Reference Version: 20131113.044.4.2.0
Header Version: 20131113.044.4.2.0
Final Test Run: 20140520.02.0.101.4
Label Test Run: 20140520.02.0.101.4

Machine Overview

Machine	# Execs	# Failed	Created	Updated
Host000001	0	0	2014-05-28 16:59:11	
20131113.044.4.2.0	0	0	2014-05-28 16:59:11	
20131026.070.6.2.101.9	1	1	2013-10-08 11:05:04	
20131113.044.4.2.101.4	1	1	2013-11-11 13:09:09	
20131113.044.4.2.101.4	1	1	2013-11-11 16:45:15	
20131113.044.4.2.101.5	1	1	2014-01-30 10:05:59	
20131113.044.4.2.101.6	1	1	2013-12-10 09:49:18	
20140102.003.0.2.101.7	1	1	2014-01-02 07:25:44	
20140102.003.0.2.101.8	1	1	2014-01-02 07:25:44	
20140110.009.0.2.101.9	1	1	2014-01-10 07:51:09	

Test

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Wed May 28 08:59:31

Overview
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Test Gap Analysis

Changed Methods
Executed Methods
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Details

General Information

Environment: dev
System: JES
Reference Version: 20131113.044.4.2.0
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Label Test Run: 20140520.02.0.101.4

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20140110.009.0.2.101.9	1	1	2014-01-10 07:51:09	

Dev

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Wed May 28 08:59:31

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Test State
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Test Gap Analysis

Changed Methods
Executed Methods
Test Gaps
Details

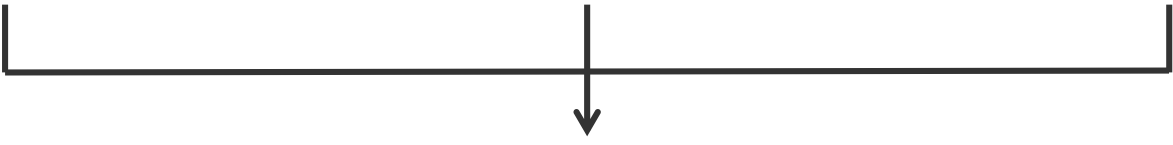
General Information

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System: JES
Reference Version: 20131113.044.4.2.0
Header Version: 20131113.044.4.2.0
Final Test Run: 20140520.02.0.101.4
Label Test Run: 20140520.02.0.101.4

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UAT



conQAI
Wed May 28 08:59:31

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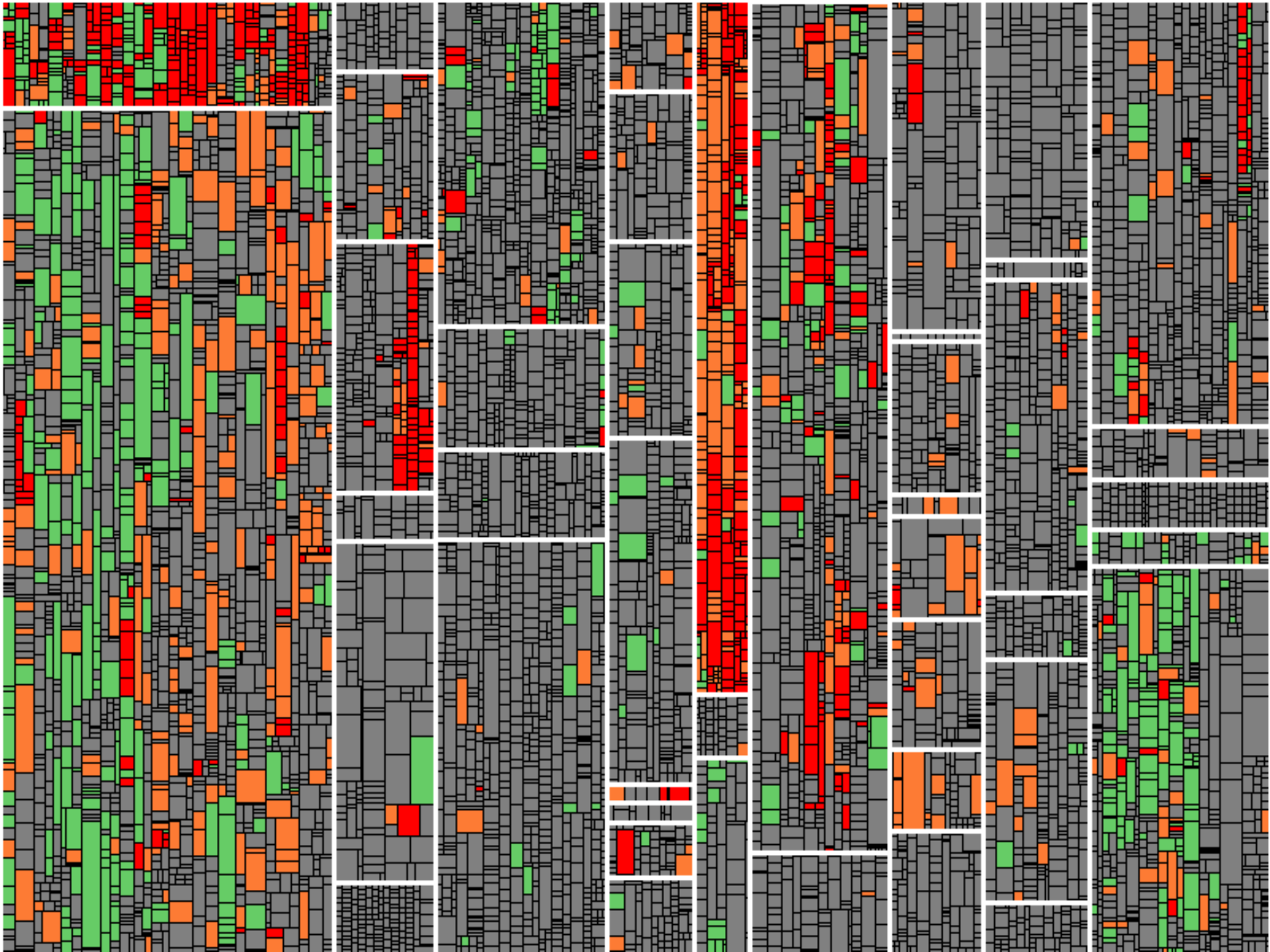
General Information

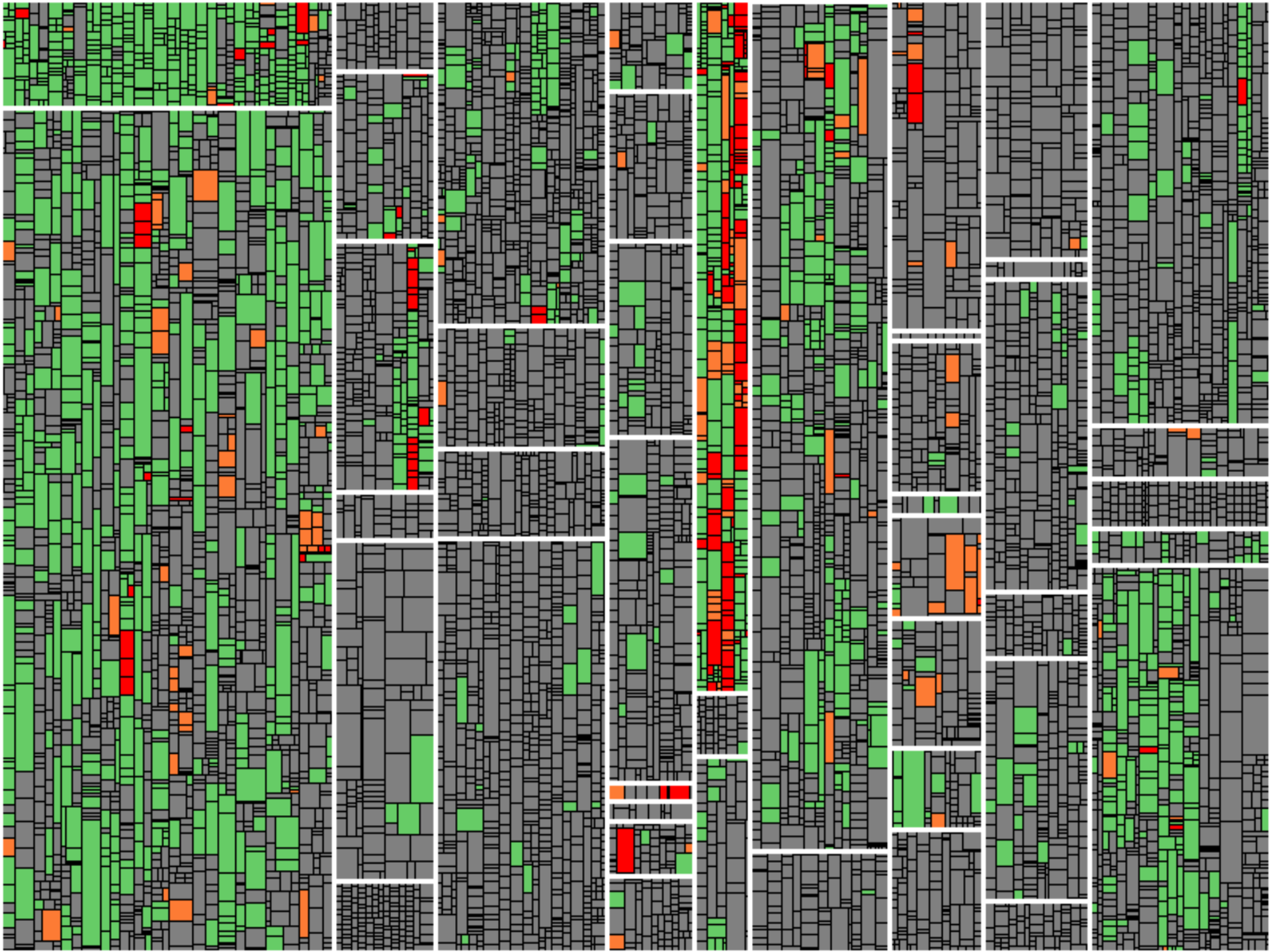
Environment: all
System: JES
Reference Version: 20131113.044.4.2.0
Header Version: 20131113.044.4.2.0
Final Test Run: 20140520.02.0.101.4
Label Test Run: 20140520.02.0.101.4

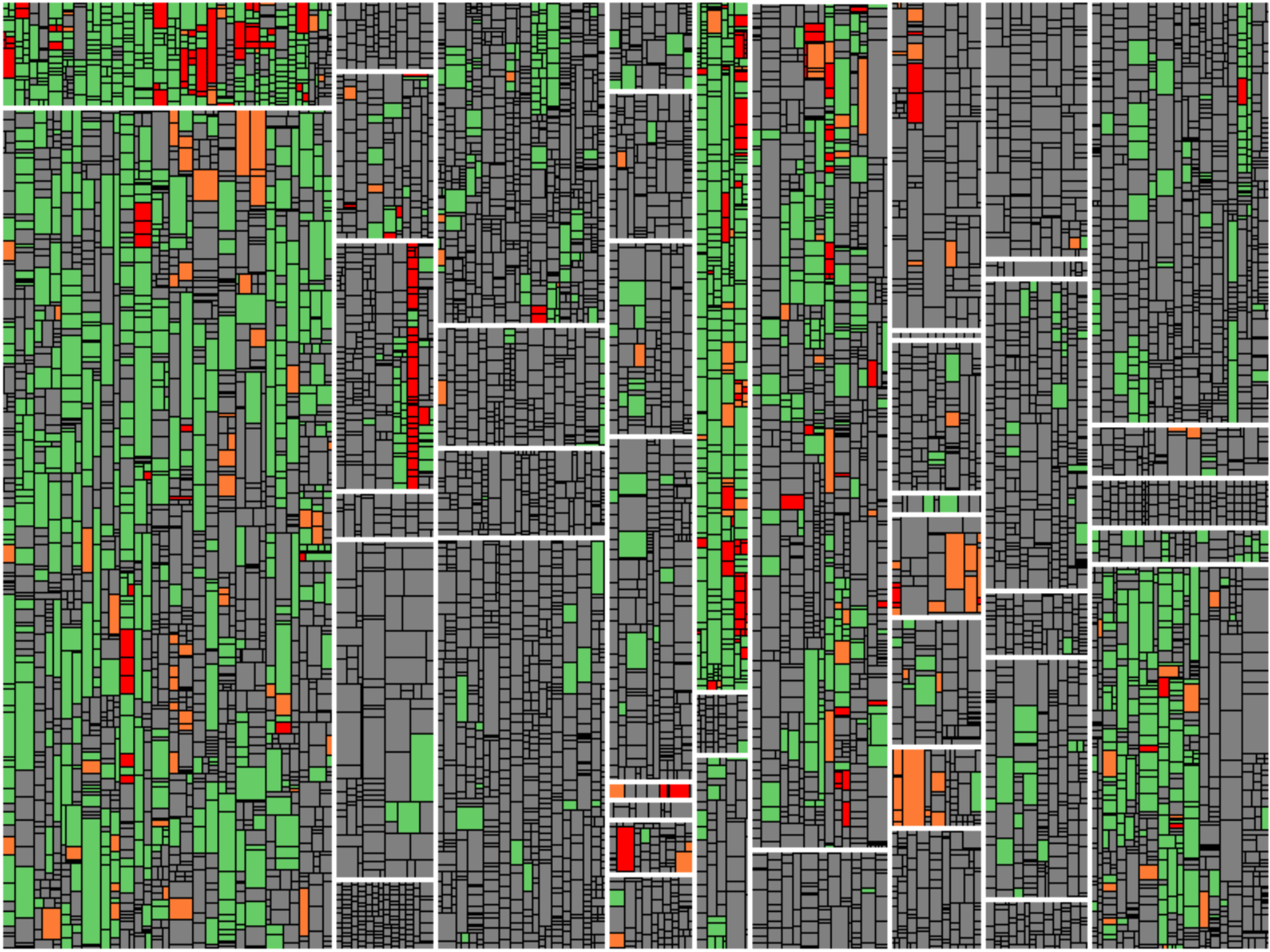
Machine Overview

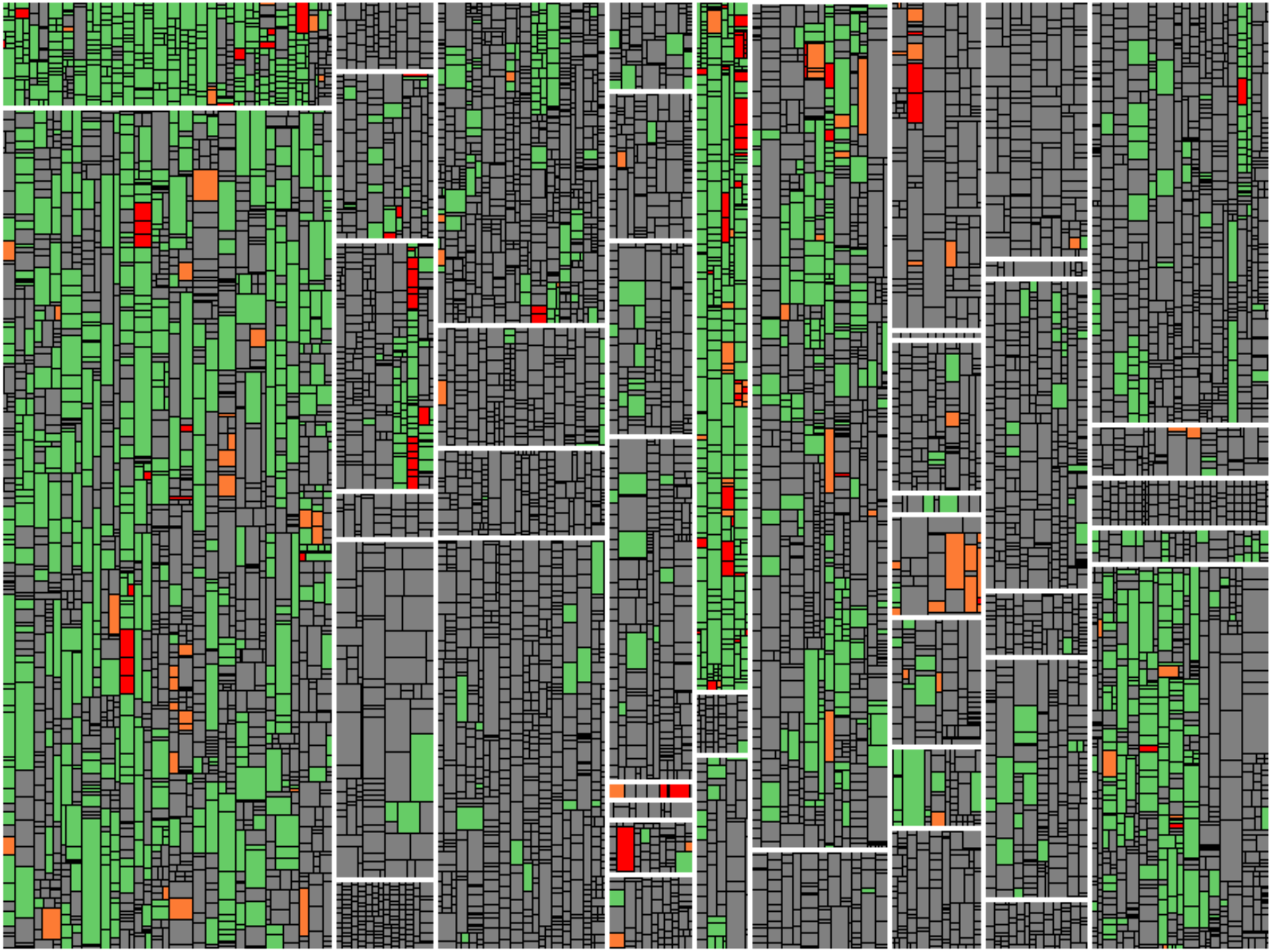
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20140110.009.0.2.101.9	1	1	2014-01-10 07:51:09	

All









Interaktive Dashboards mit Teamscale

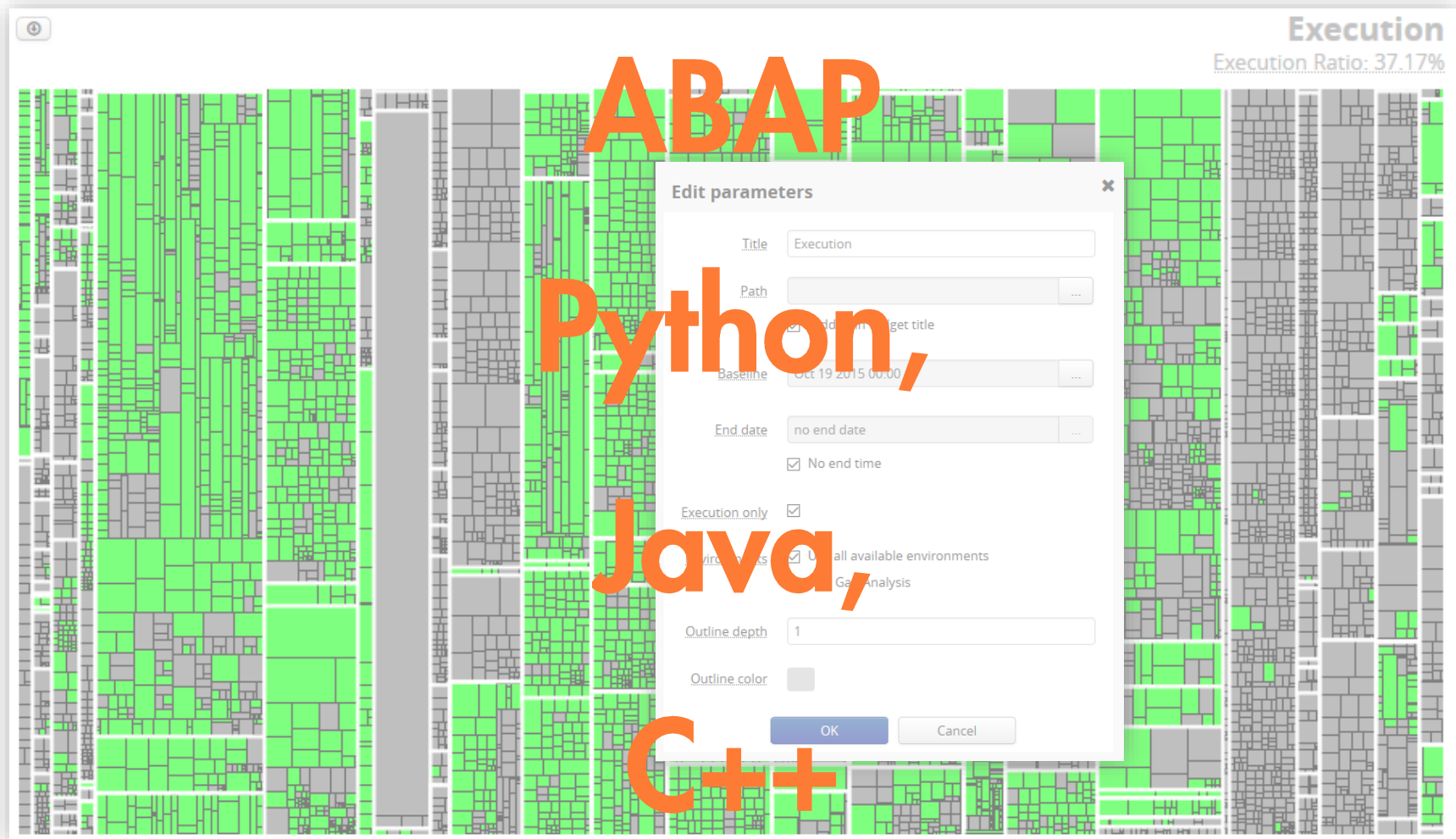
C#

ABAP

Python

Java

C++



Agenda

1. Test-Gap-Analyse
2. **Einsatz in verschiedenen Test-Szenarien**

Test-Arten

Hotfix-Test

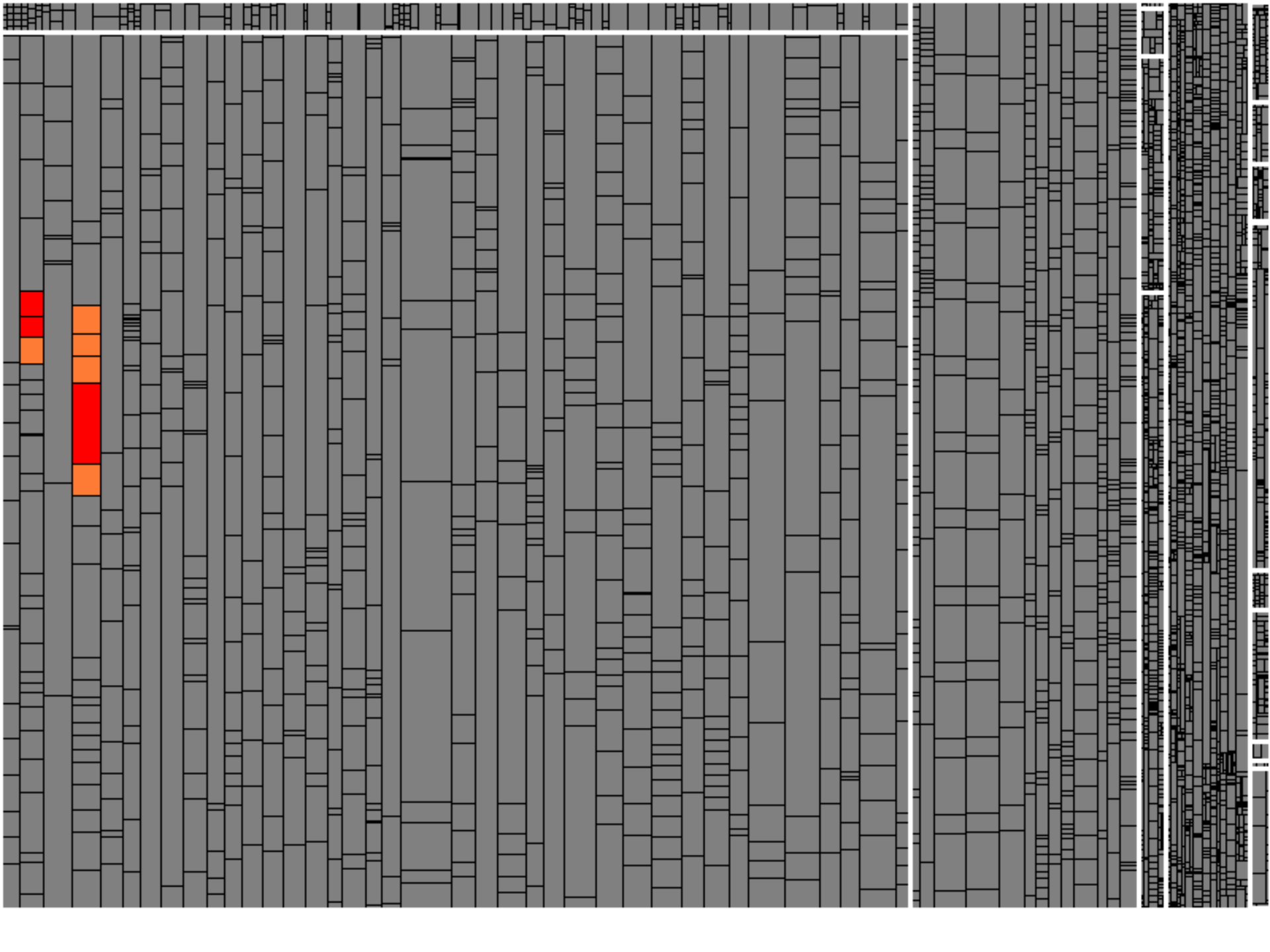
- On-Demand, wenig Zeit
- Getestet werden nur Änderungen des Hotfix

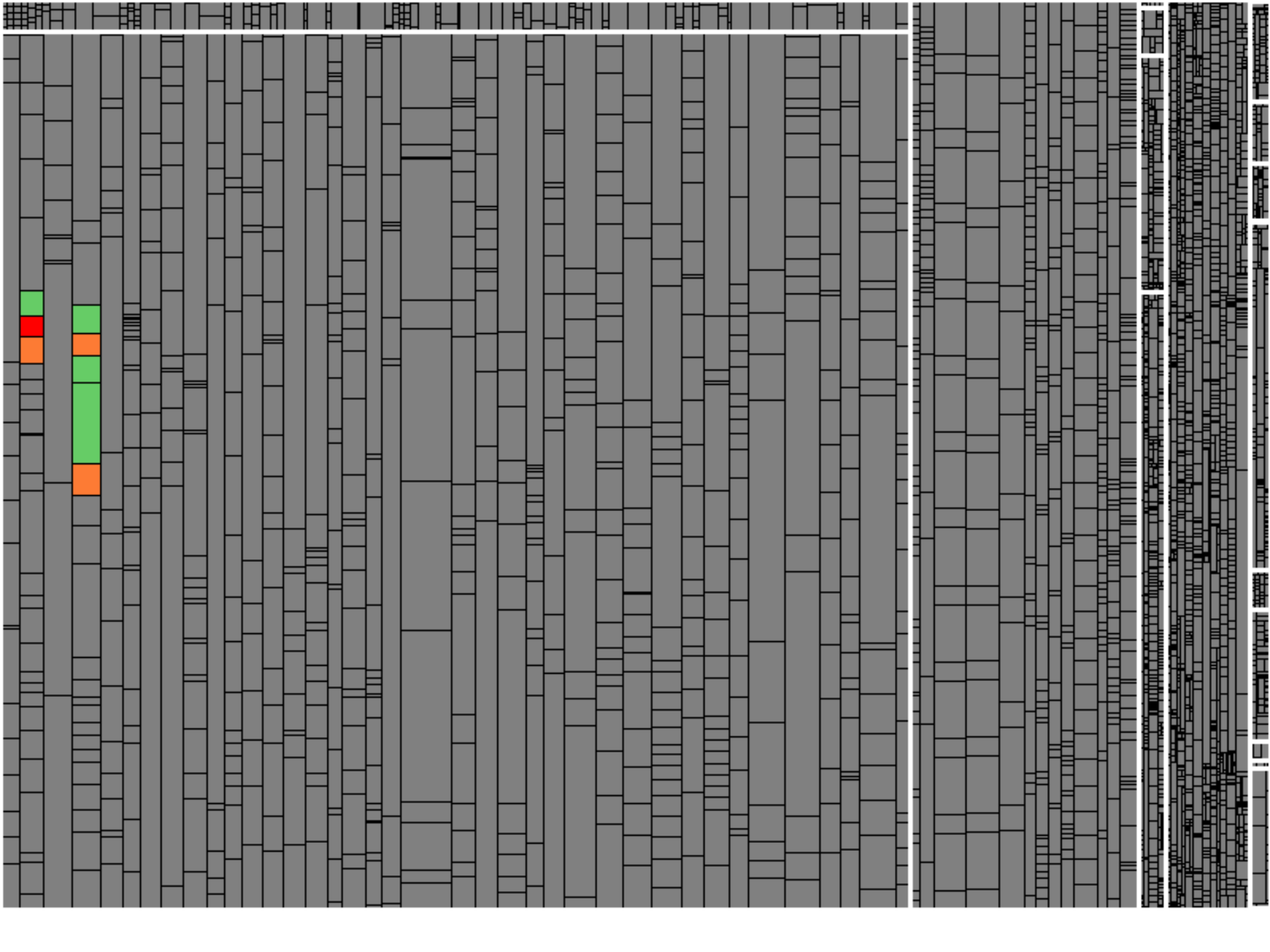
Release-Test

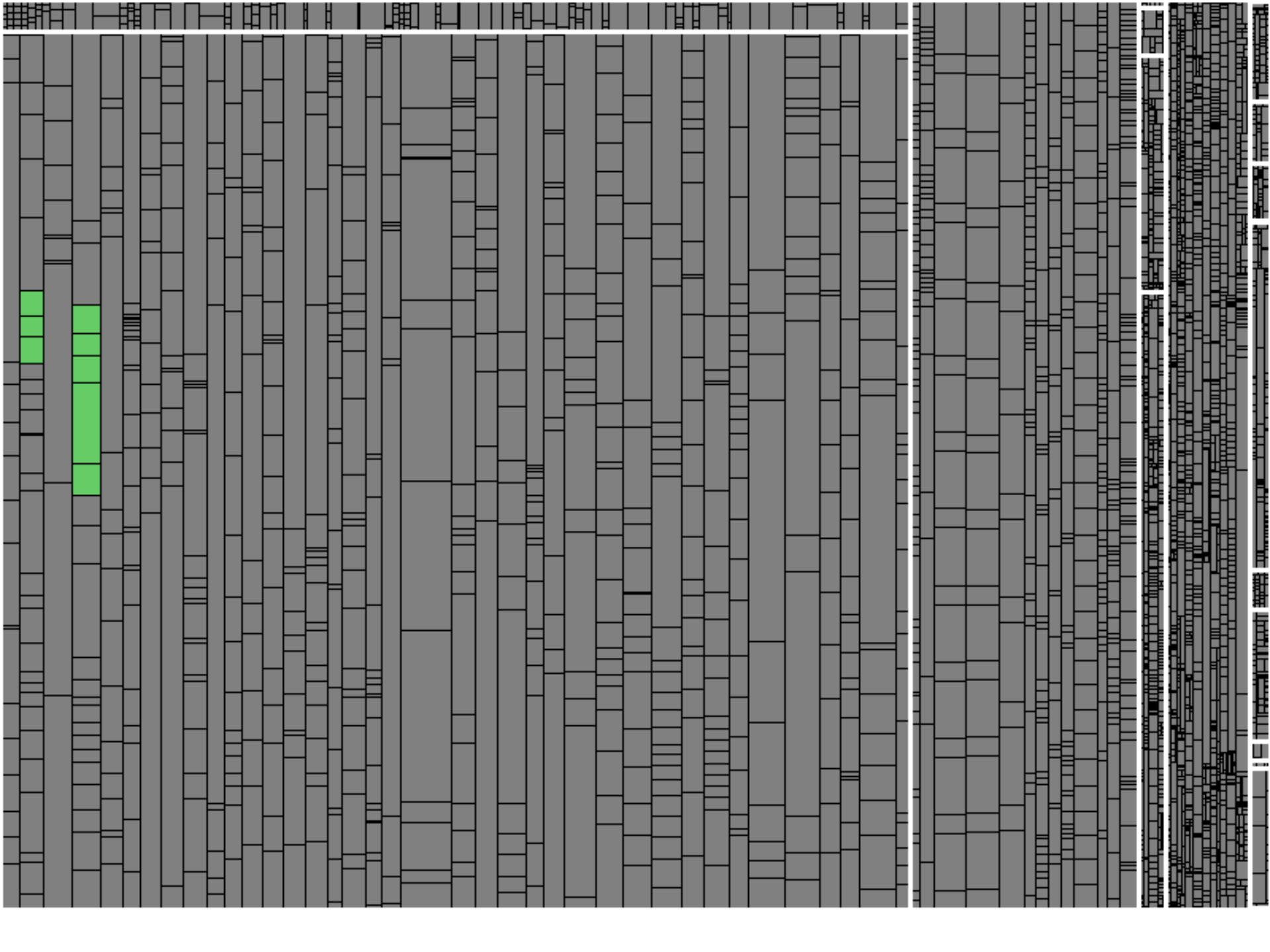
- Nur vor Release, Dauer mehrere Wochen
- Getestet werden alle Änderungen seit letztem Release

Iterations-Test

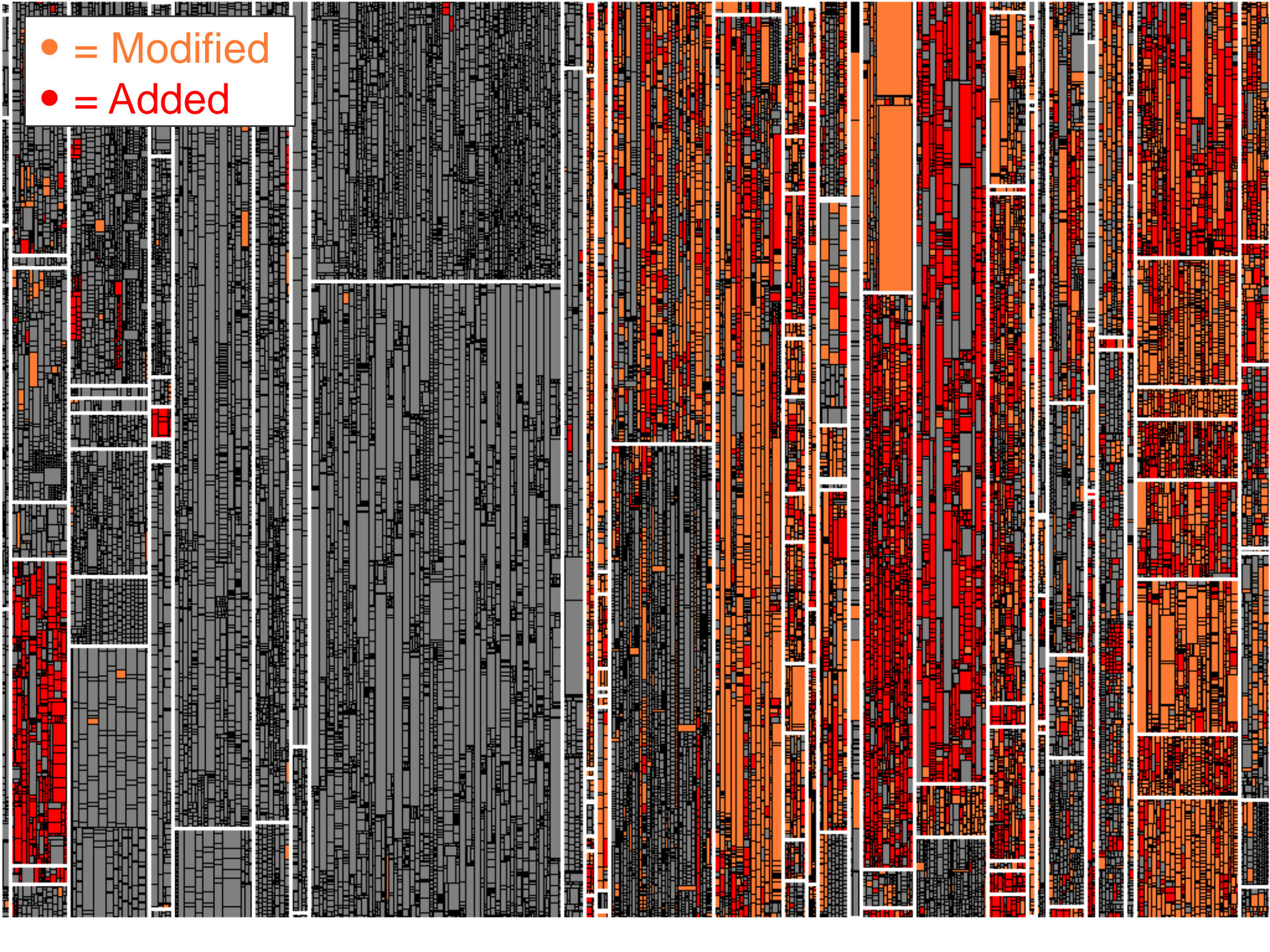
- Entwicklungsbegleitend, kontinuierlich, Iterationsdauer (2-4 Wochen)
- Getestet werden Änderungen aus der Iteration



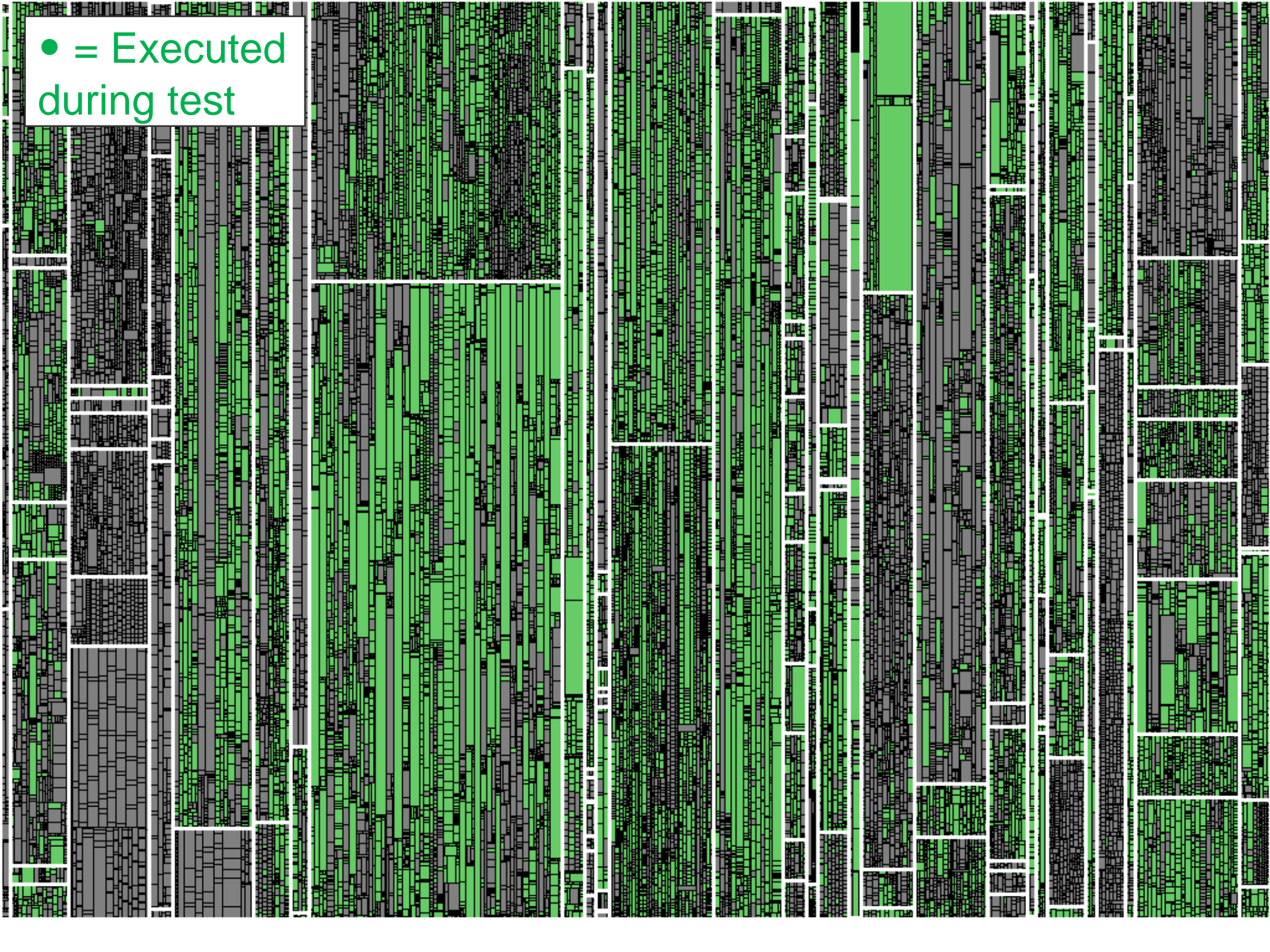




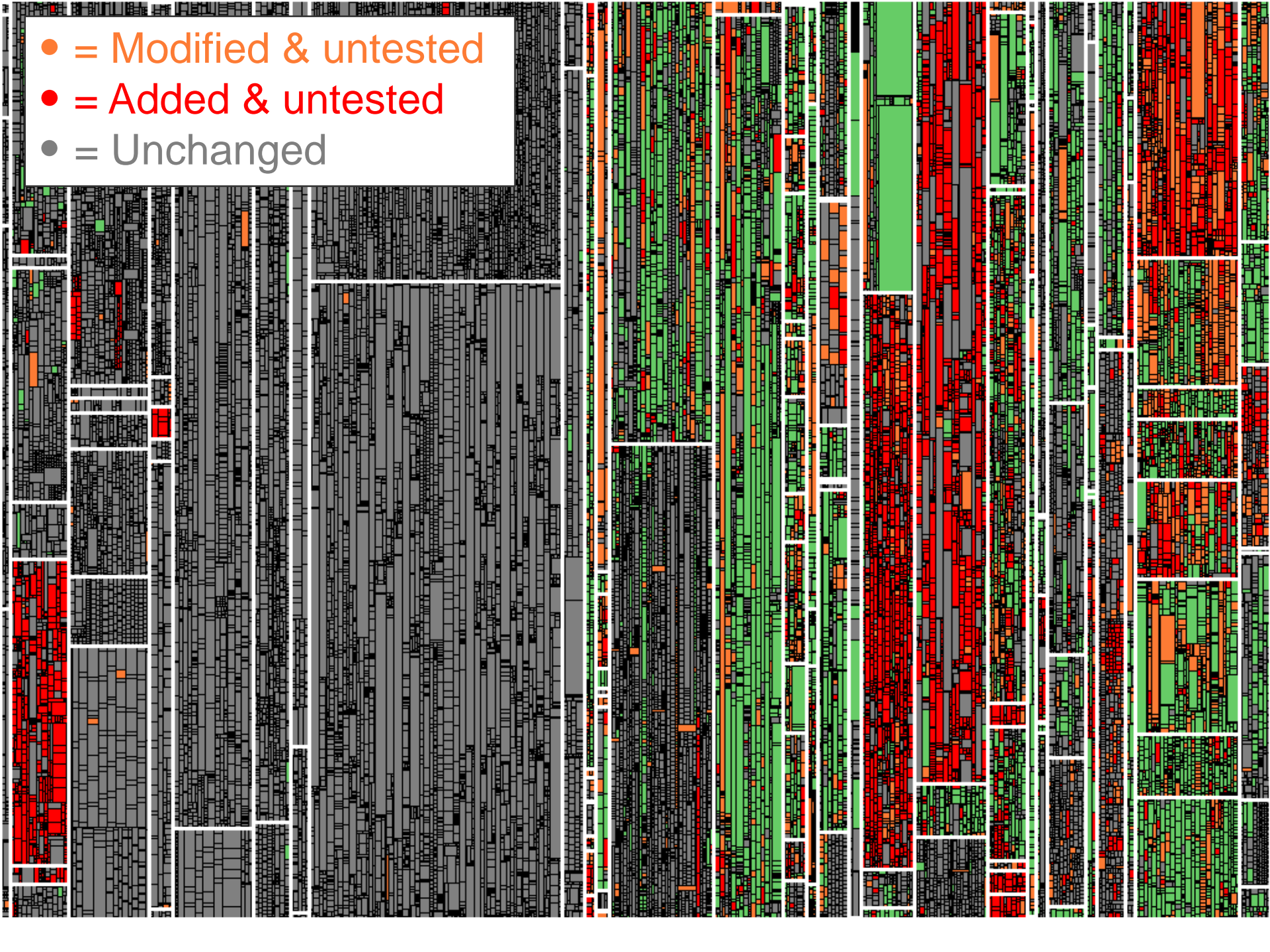
- = Modified
- = Added



● = Executed during test



- = Modified & untested
- = Added & untested
- = Unchanged

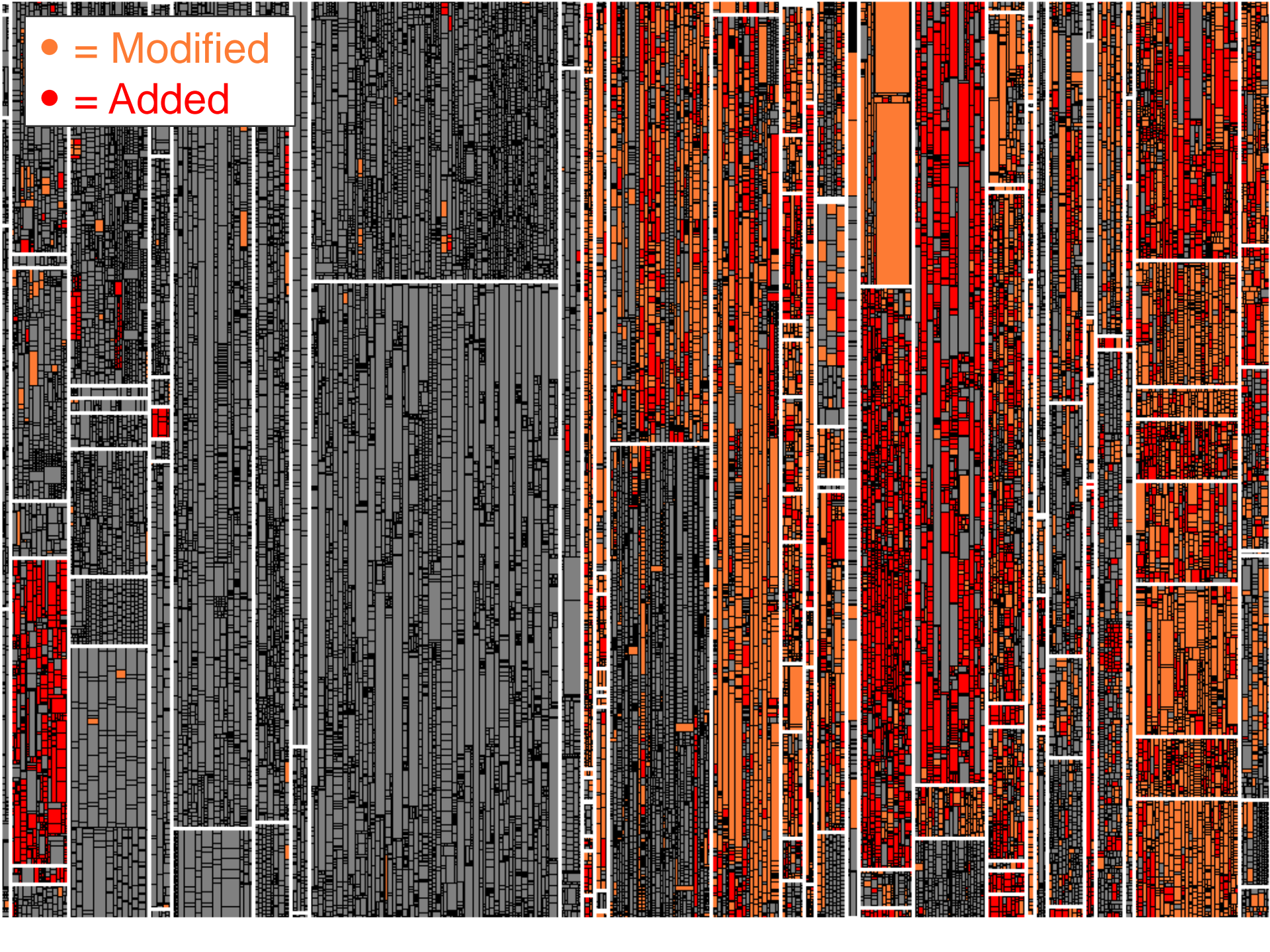


Einsatz bei explorativem Test

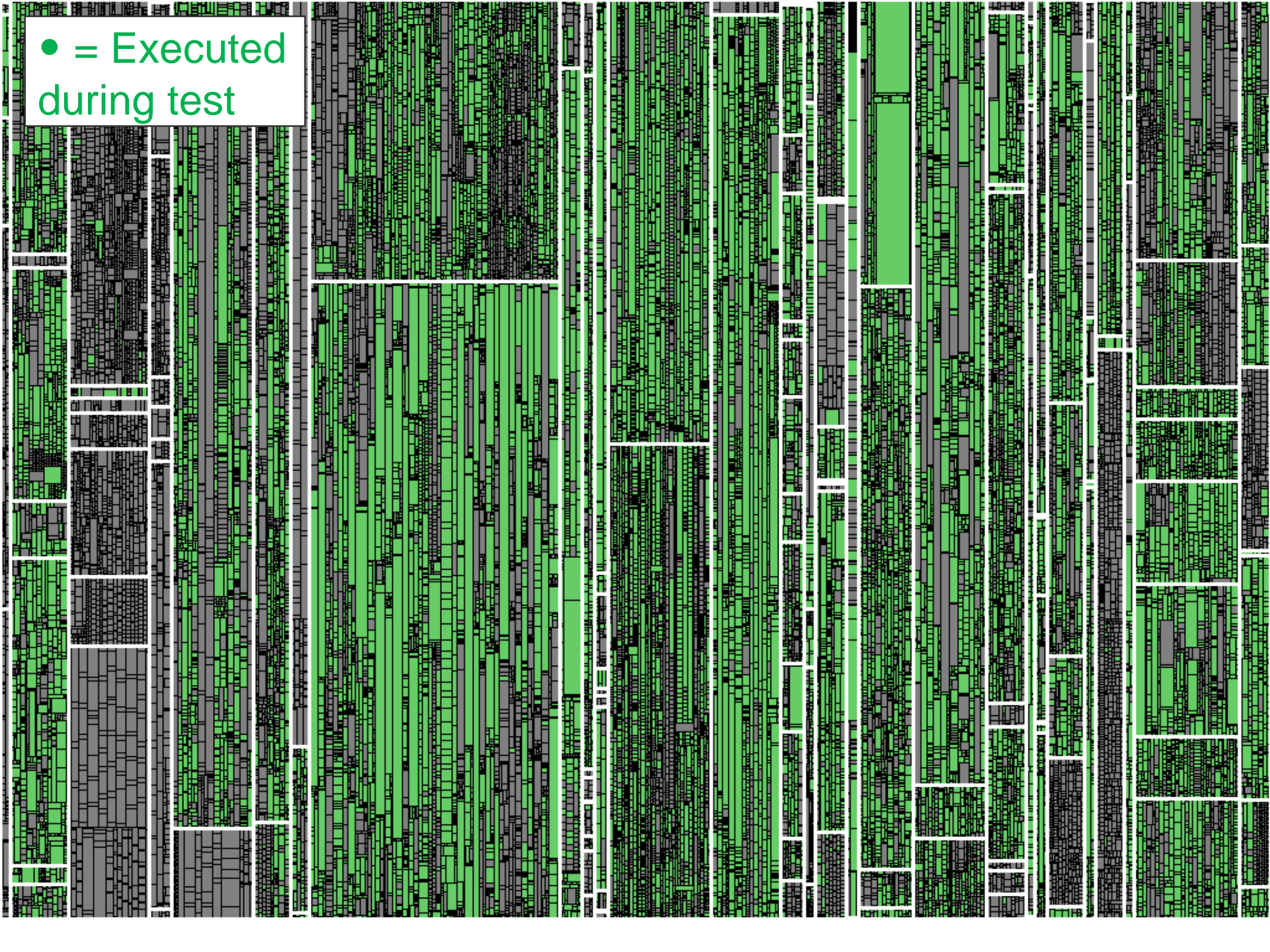
- 23 Tester
 - Requirement Engineers
 - Fachbereich
 - Endanwender
- Zeitraum 2 Wochen
- 307 Test-Sessions
- 8 Versionen des Systems



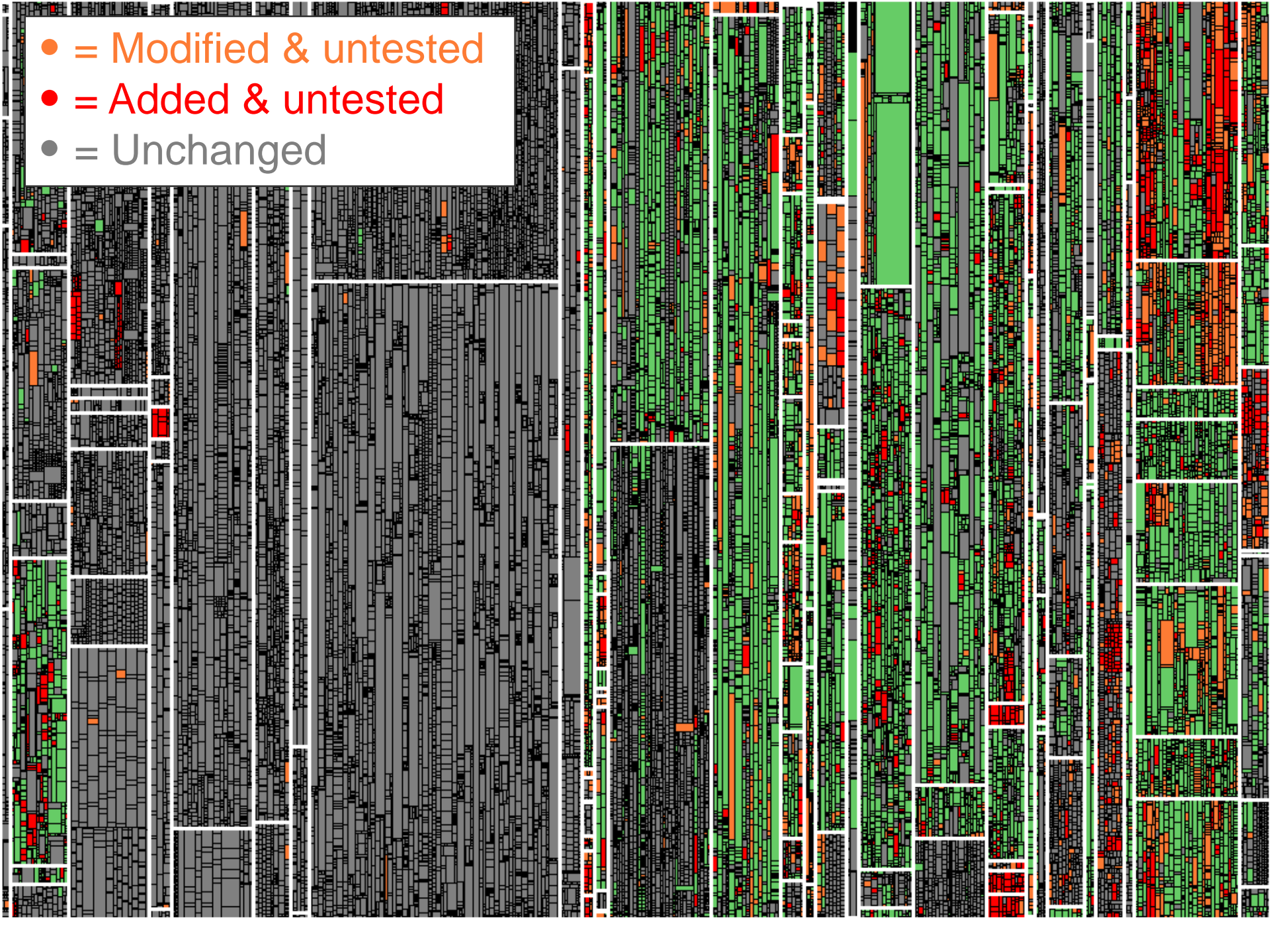
- = Modified
- = Added



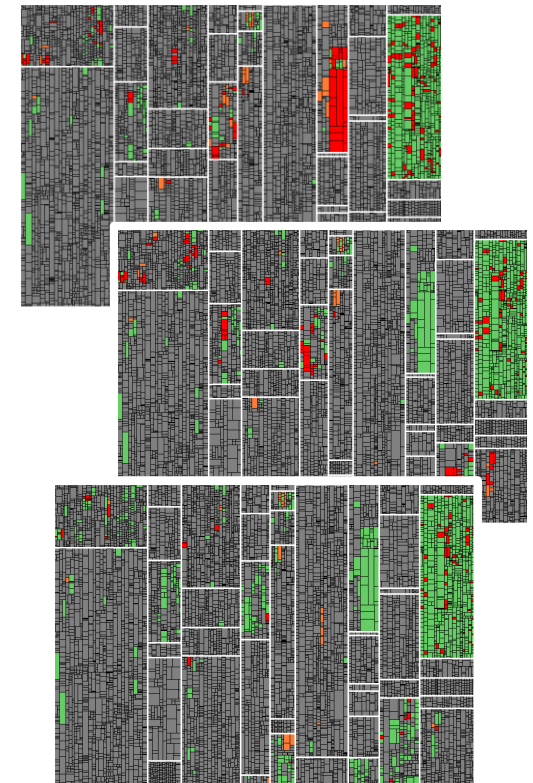
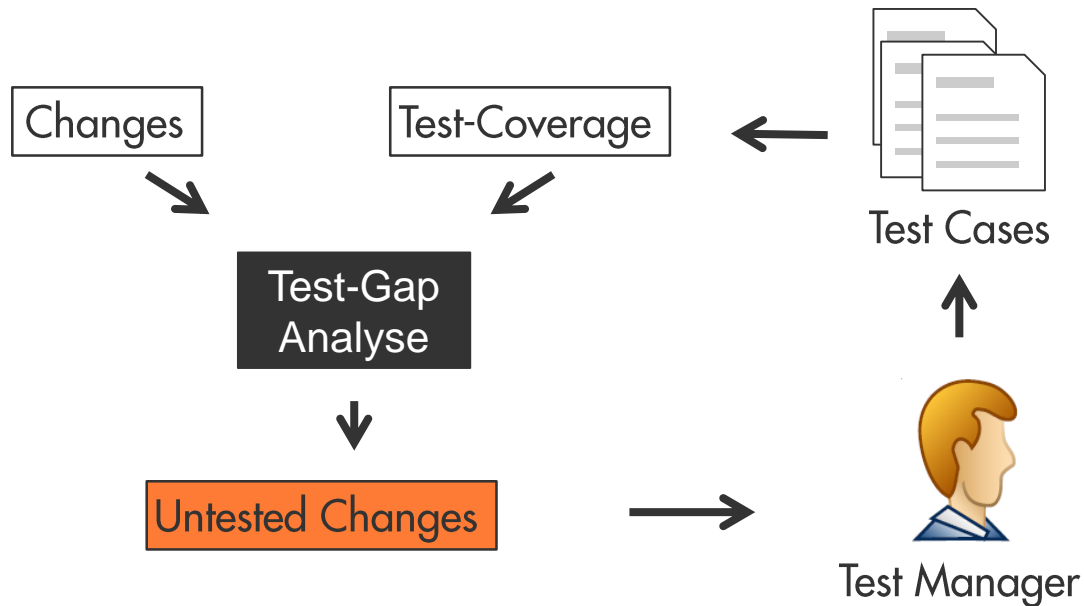
● = Executed during test

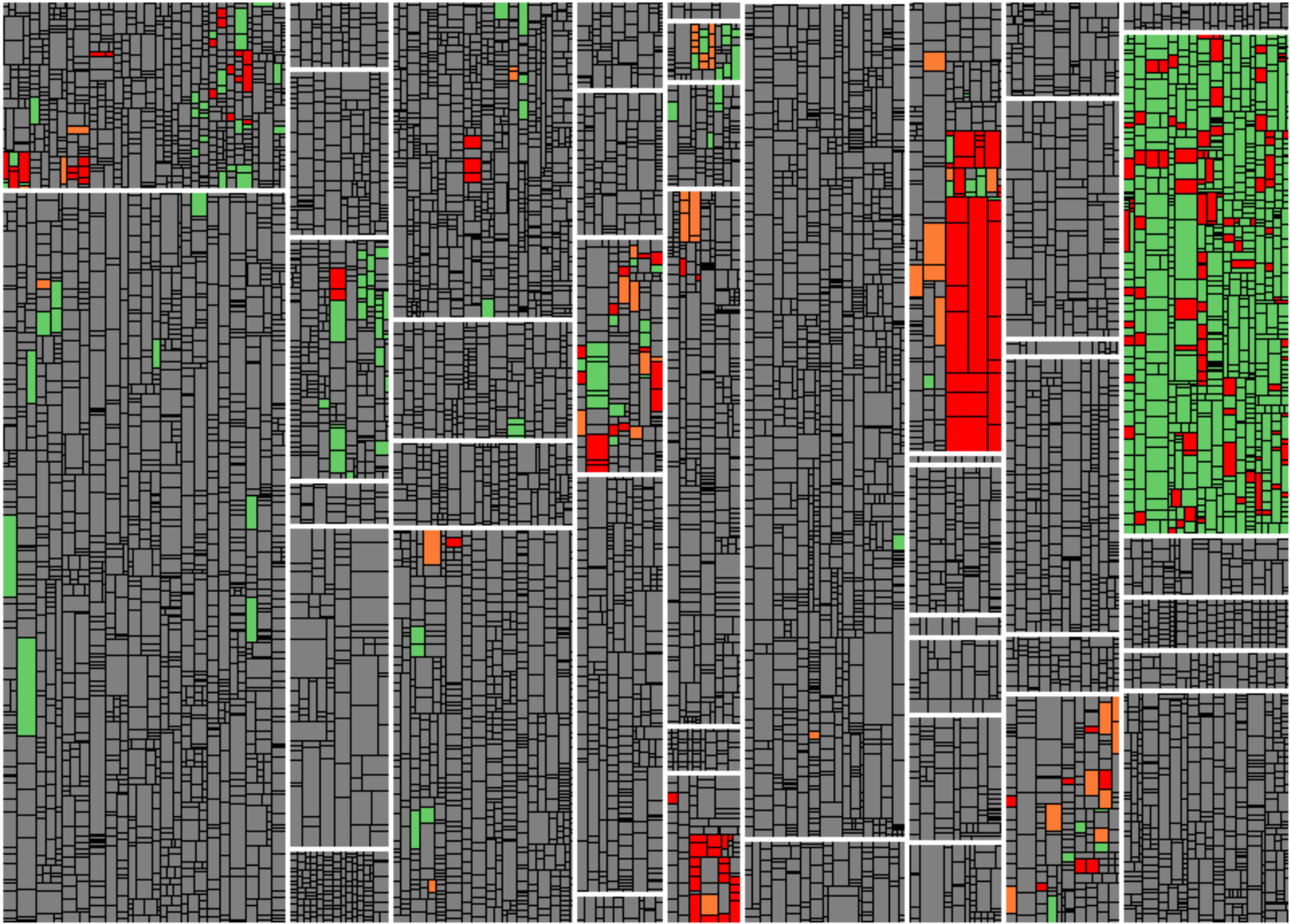


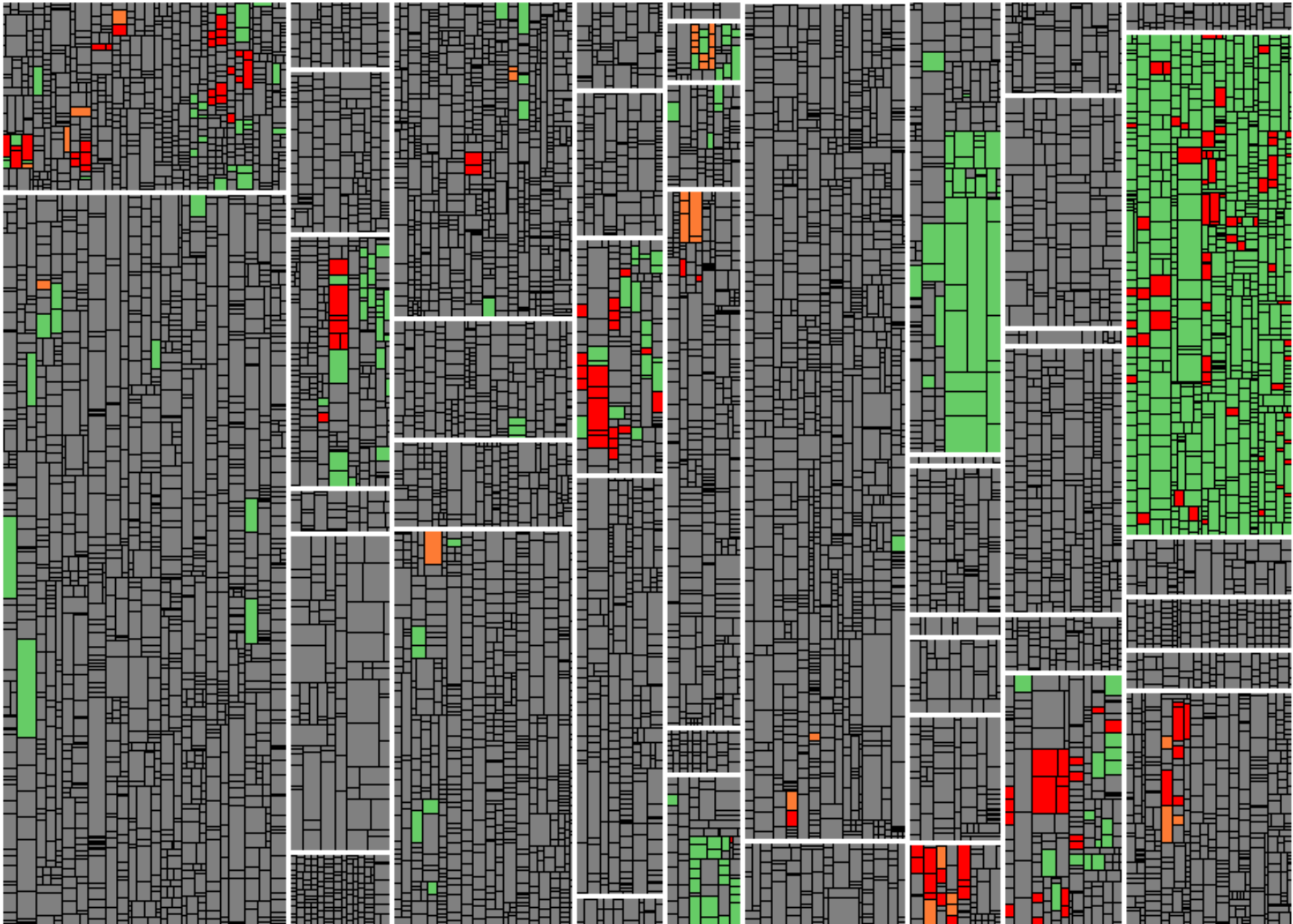
- = Modified & untested
- = Added & untested
- = Unchanged

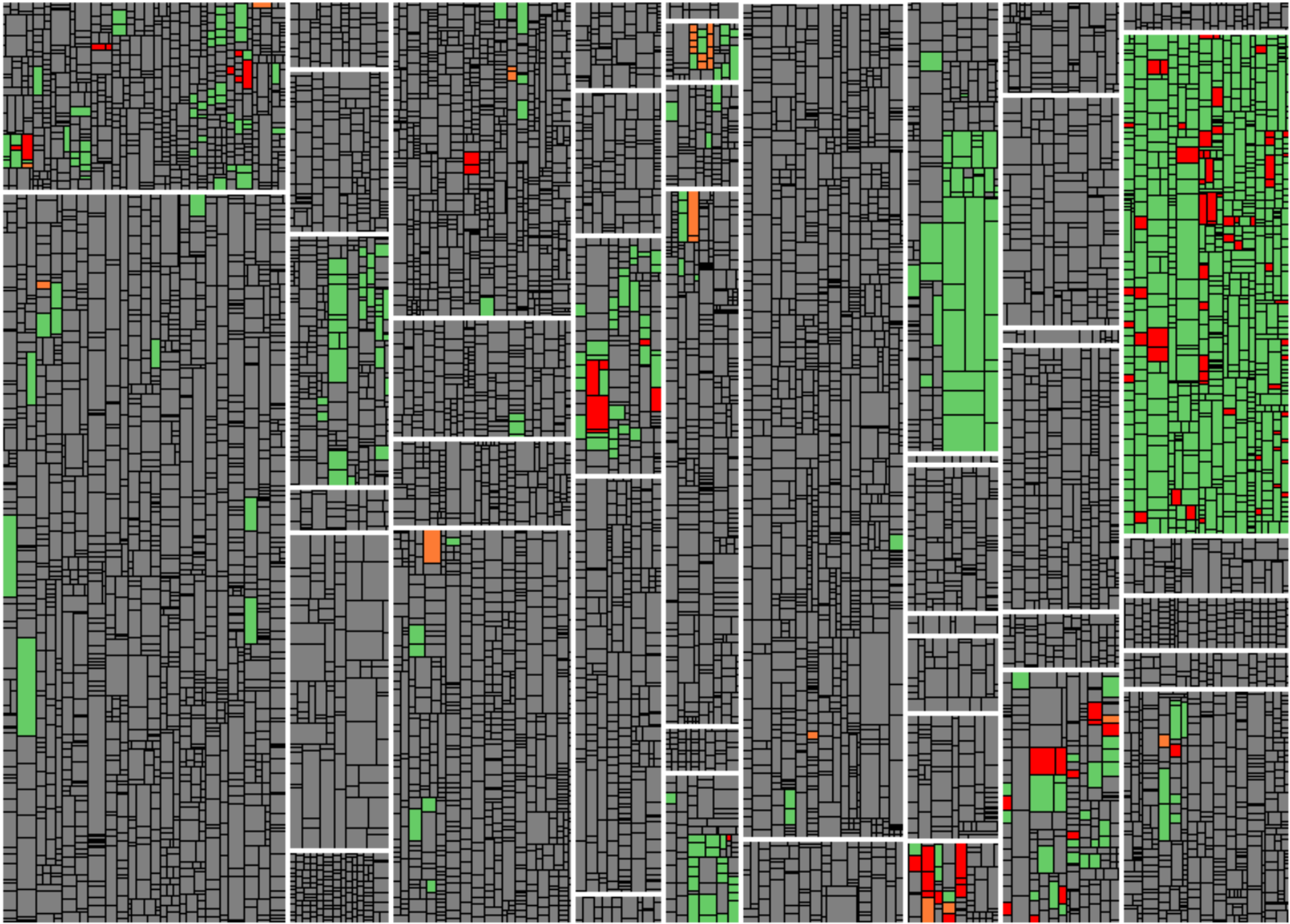


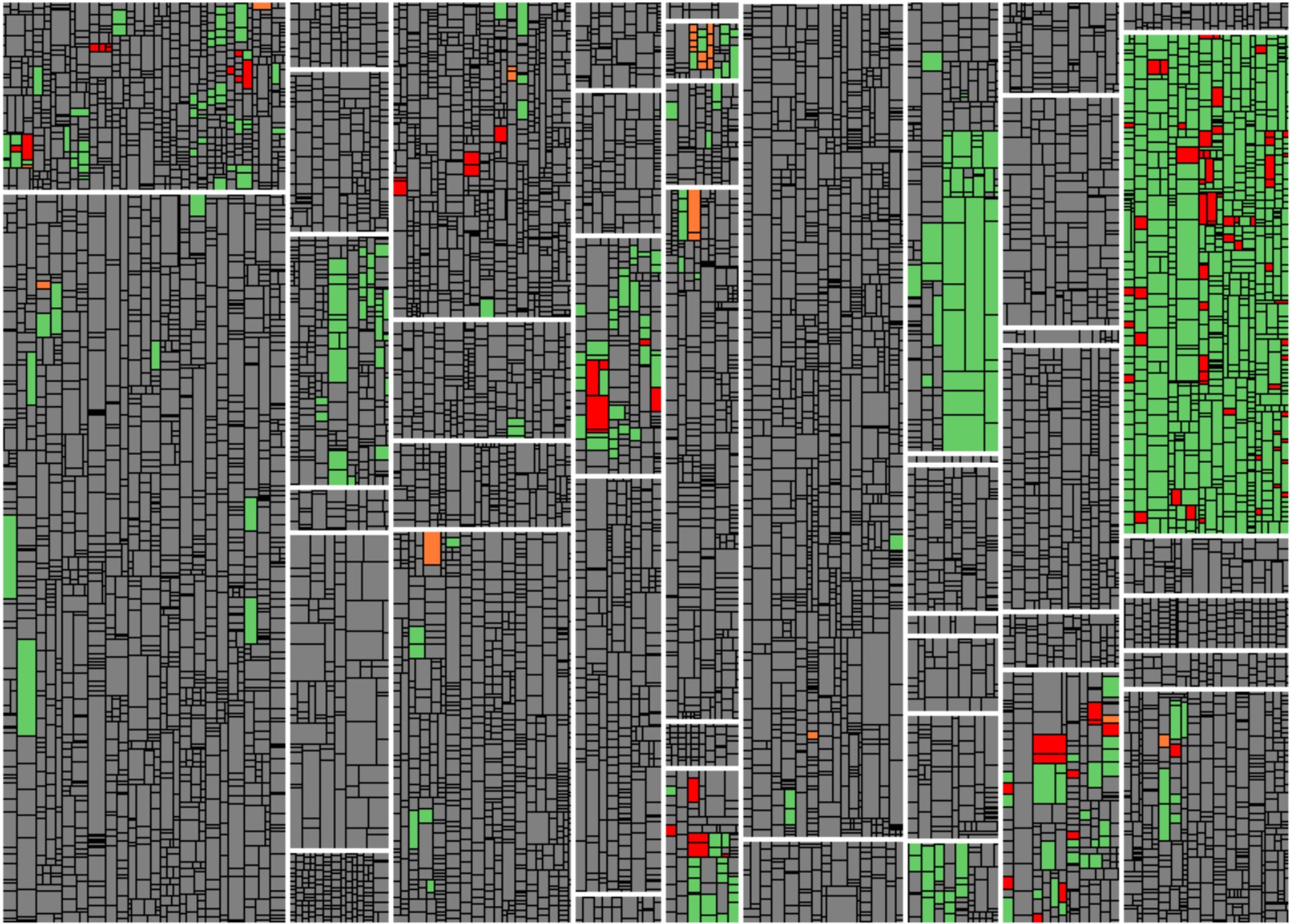
Einsatz im Testprozess: Beispiel (2)

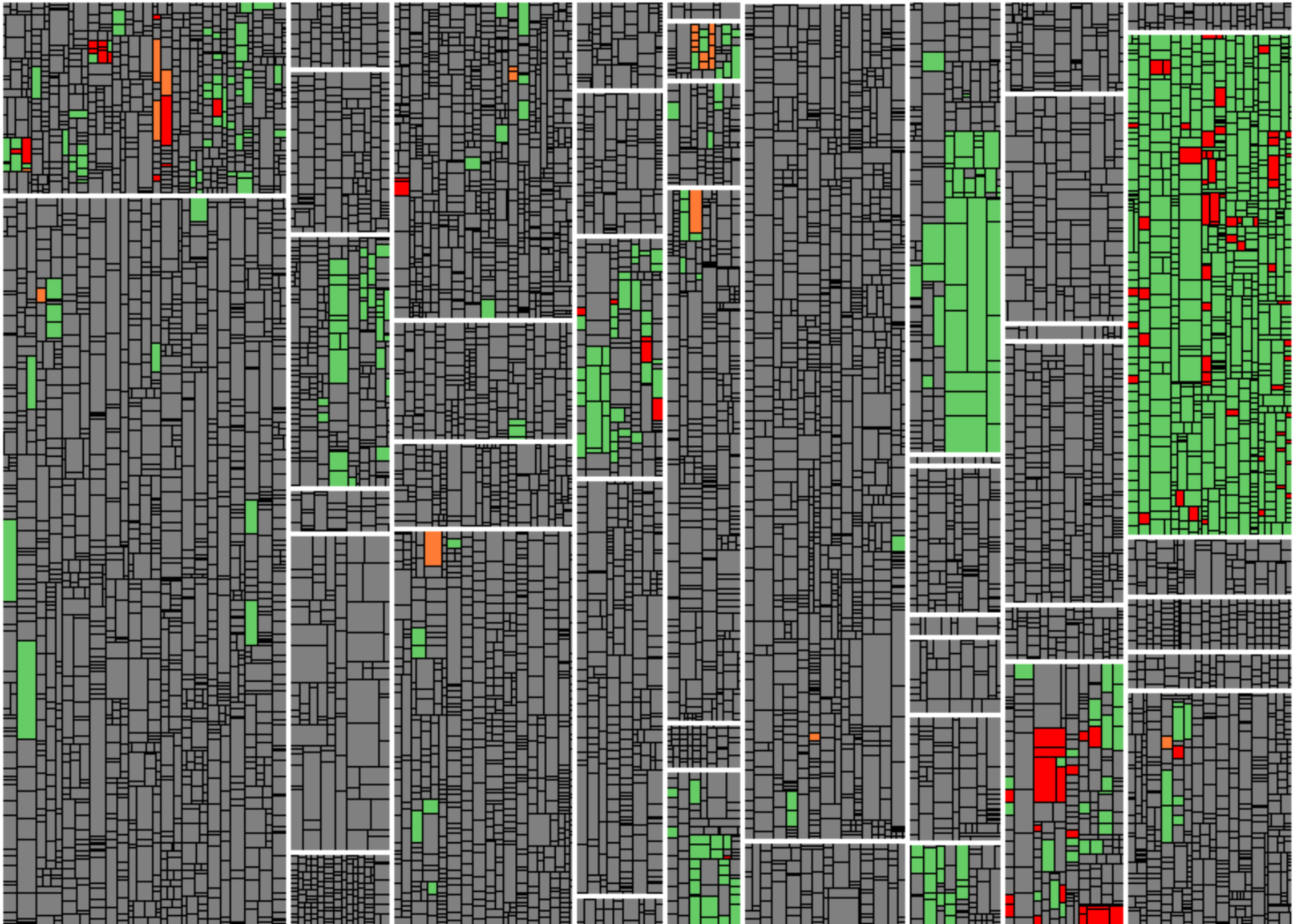


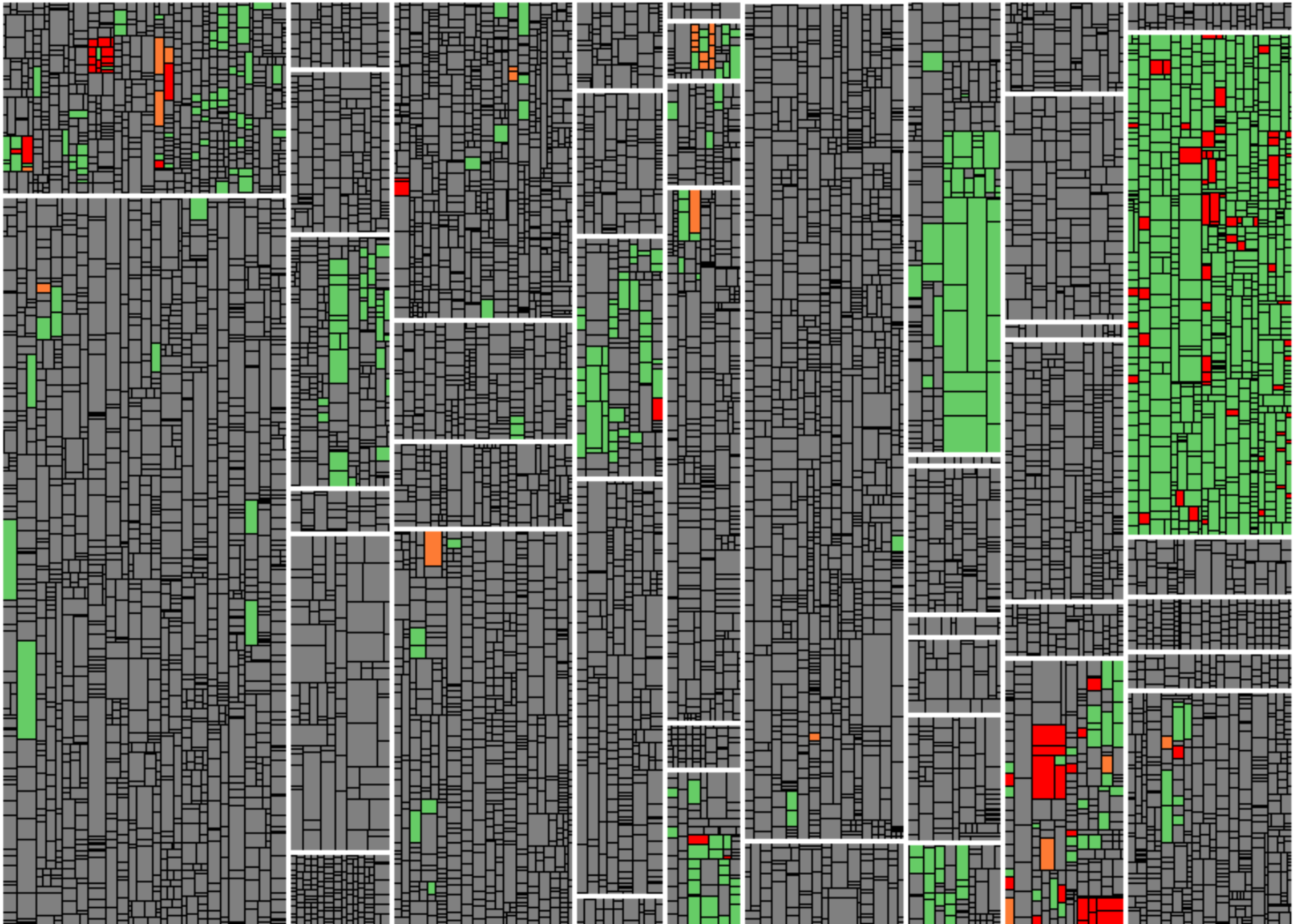


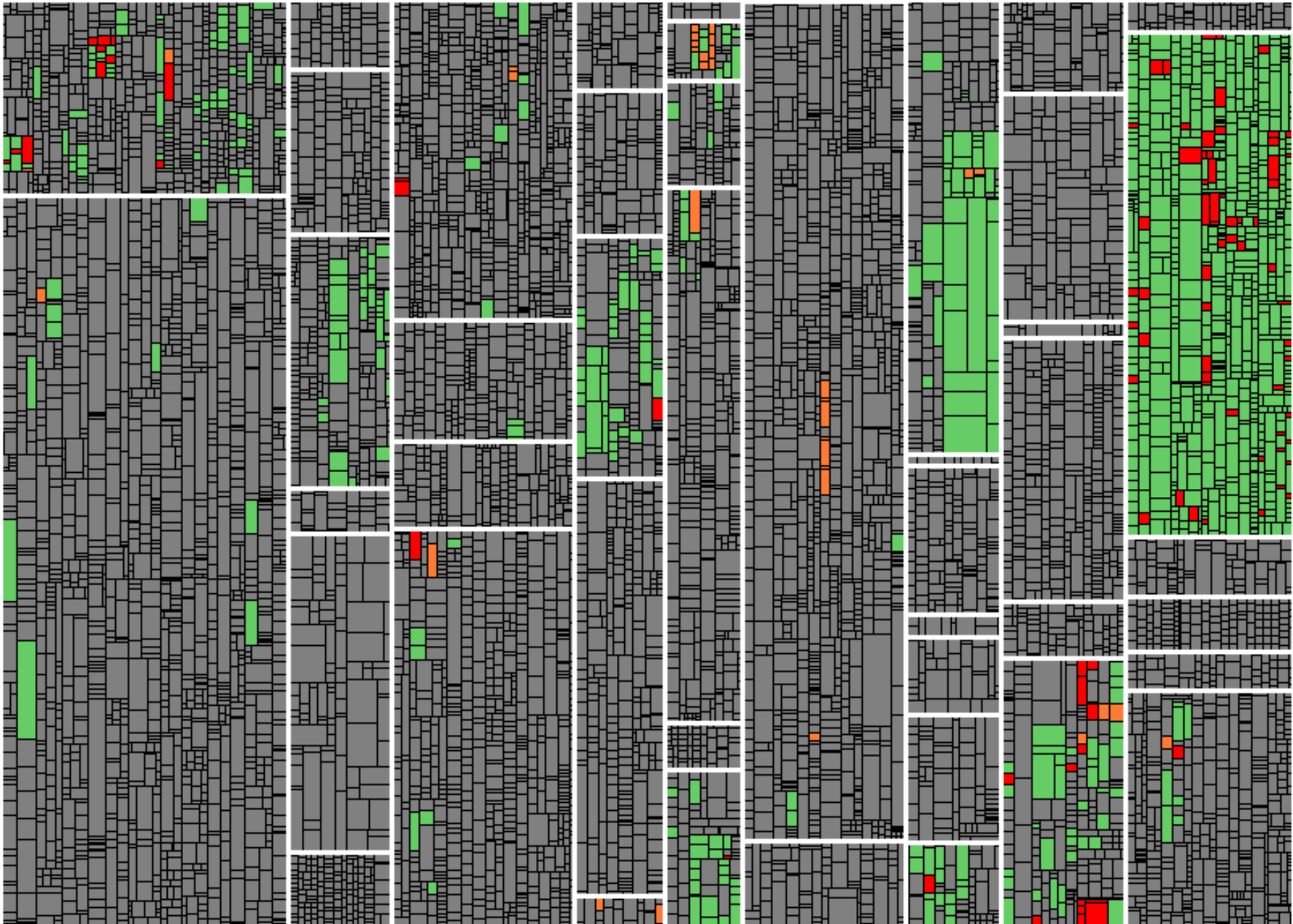


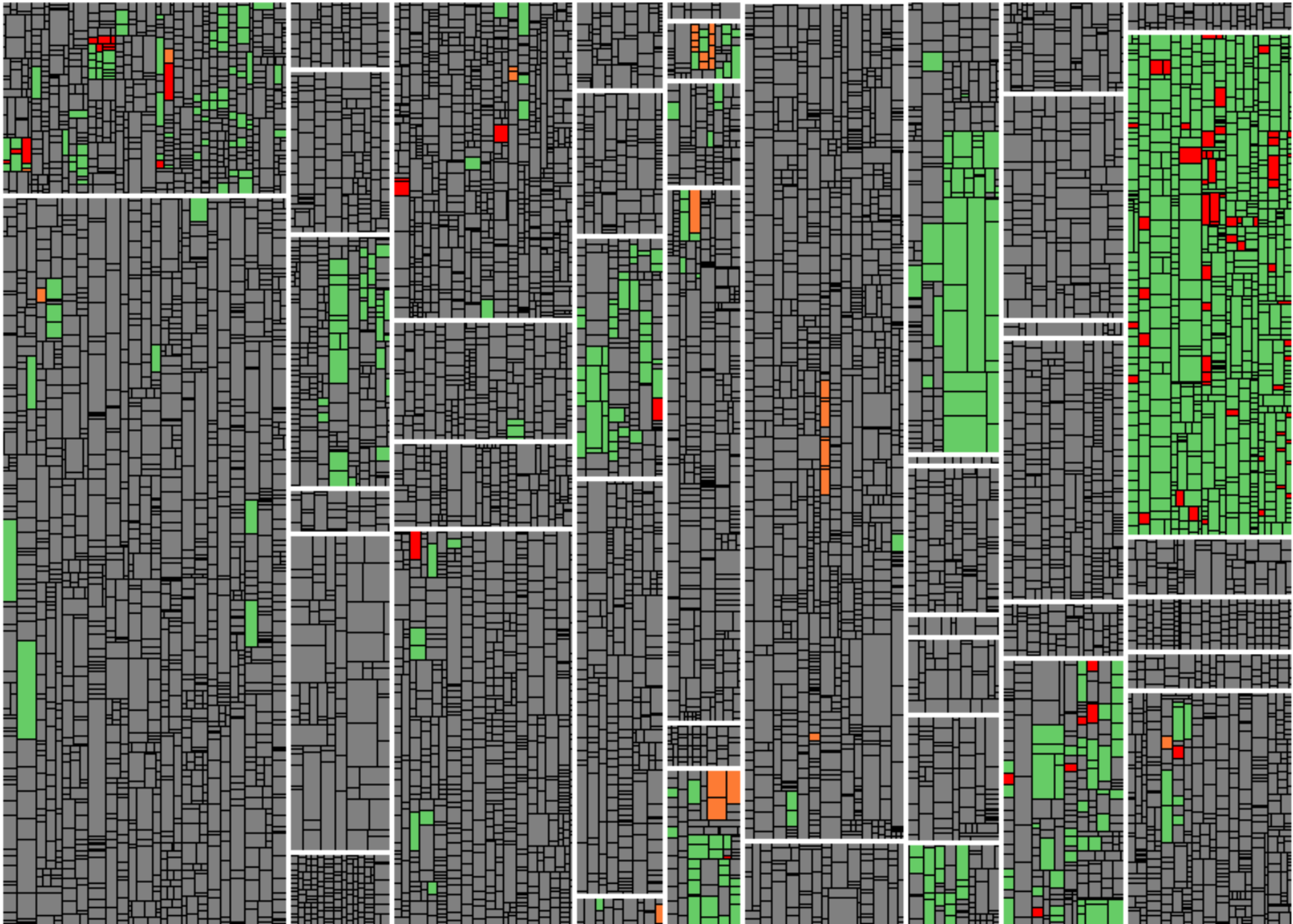




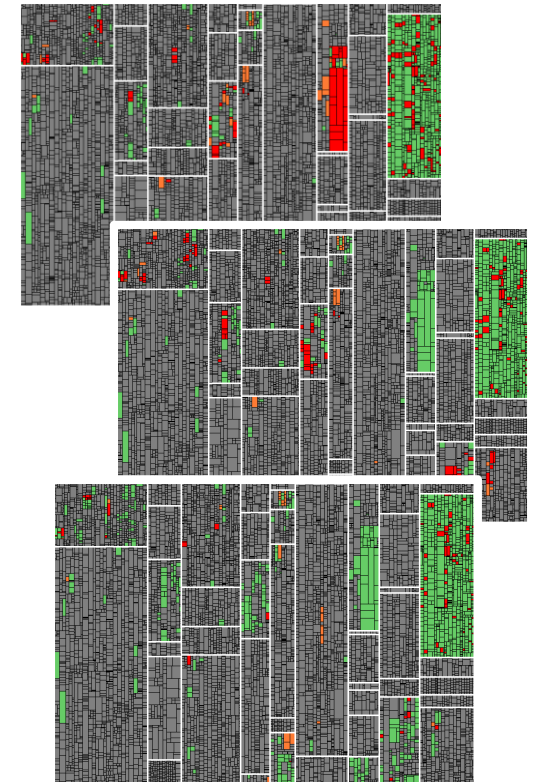
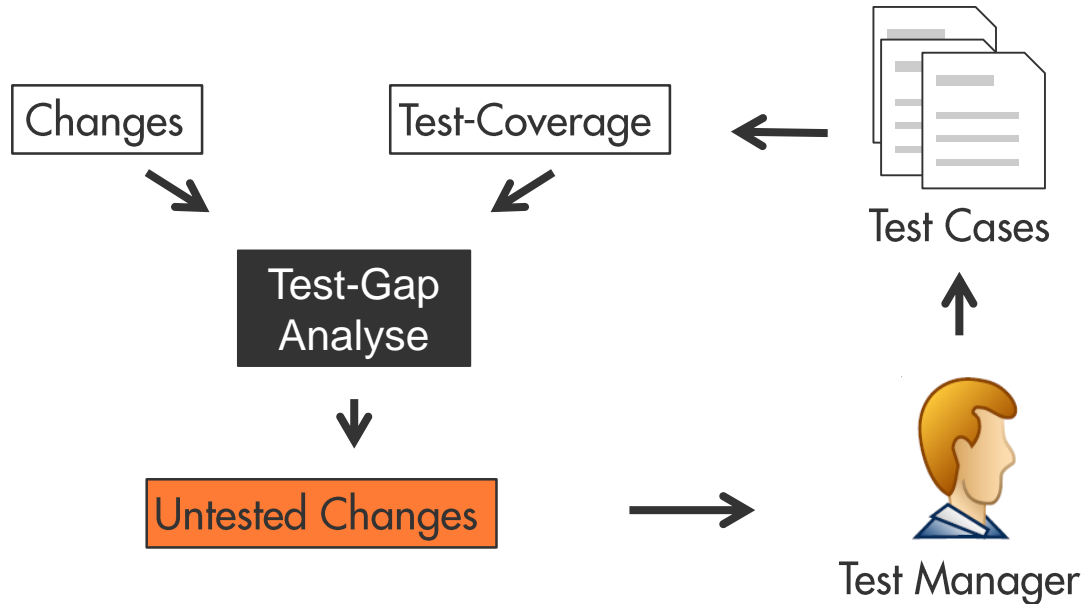


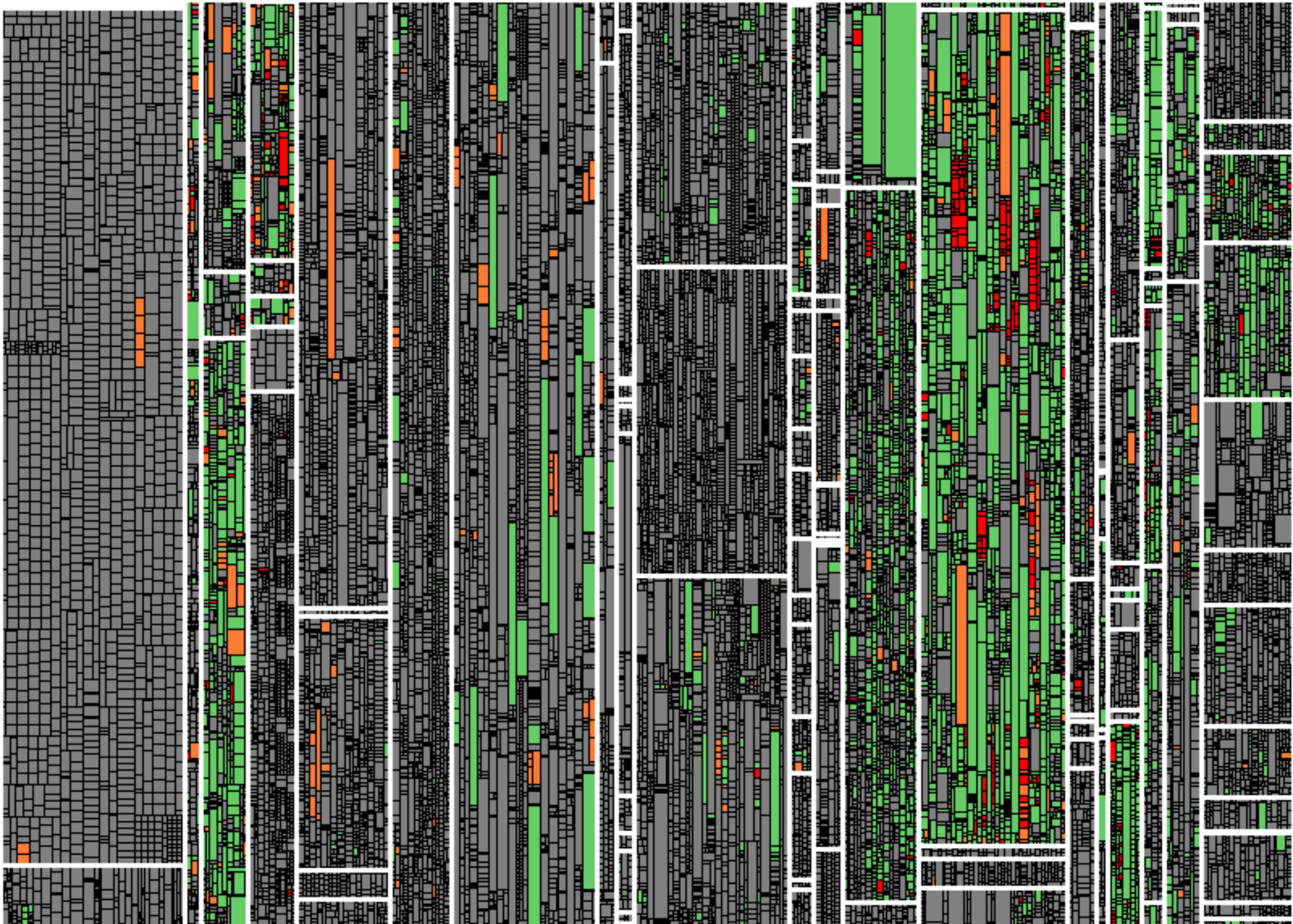


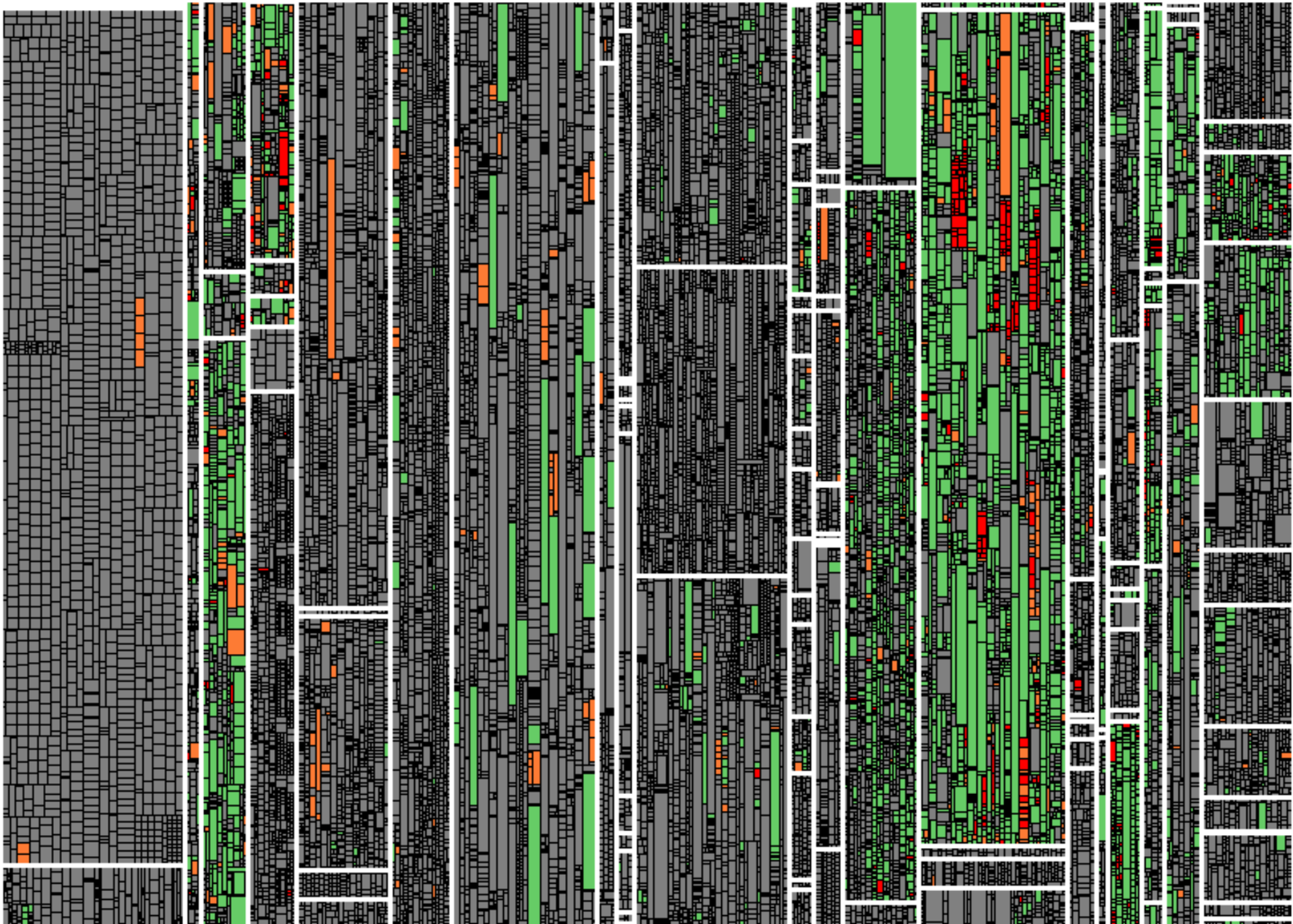


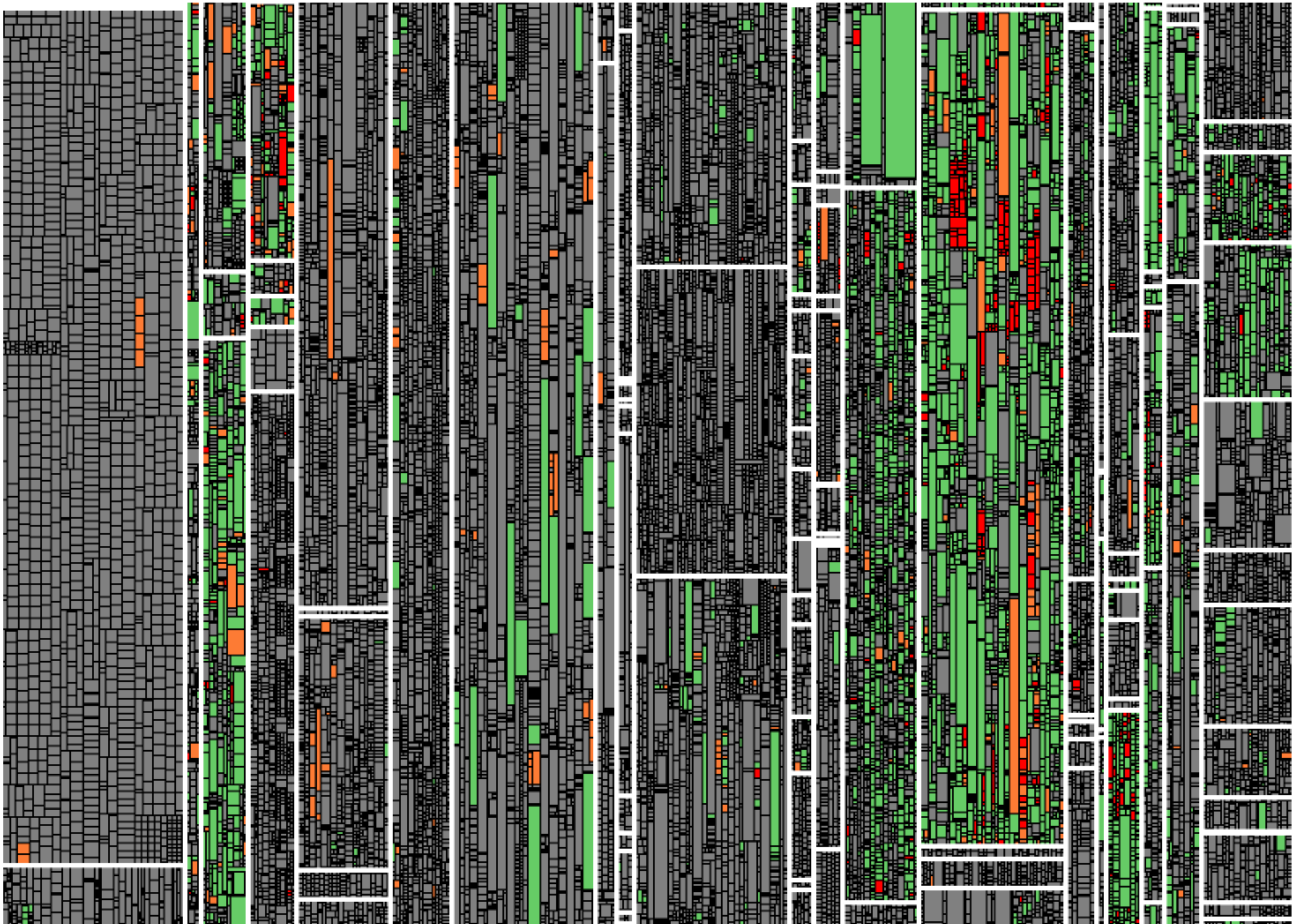


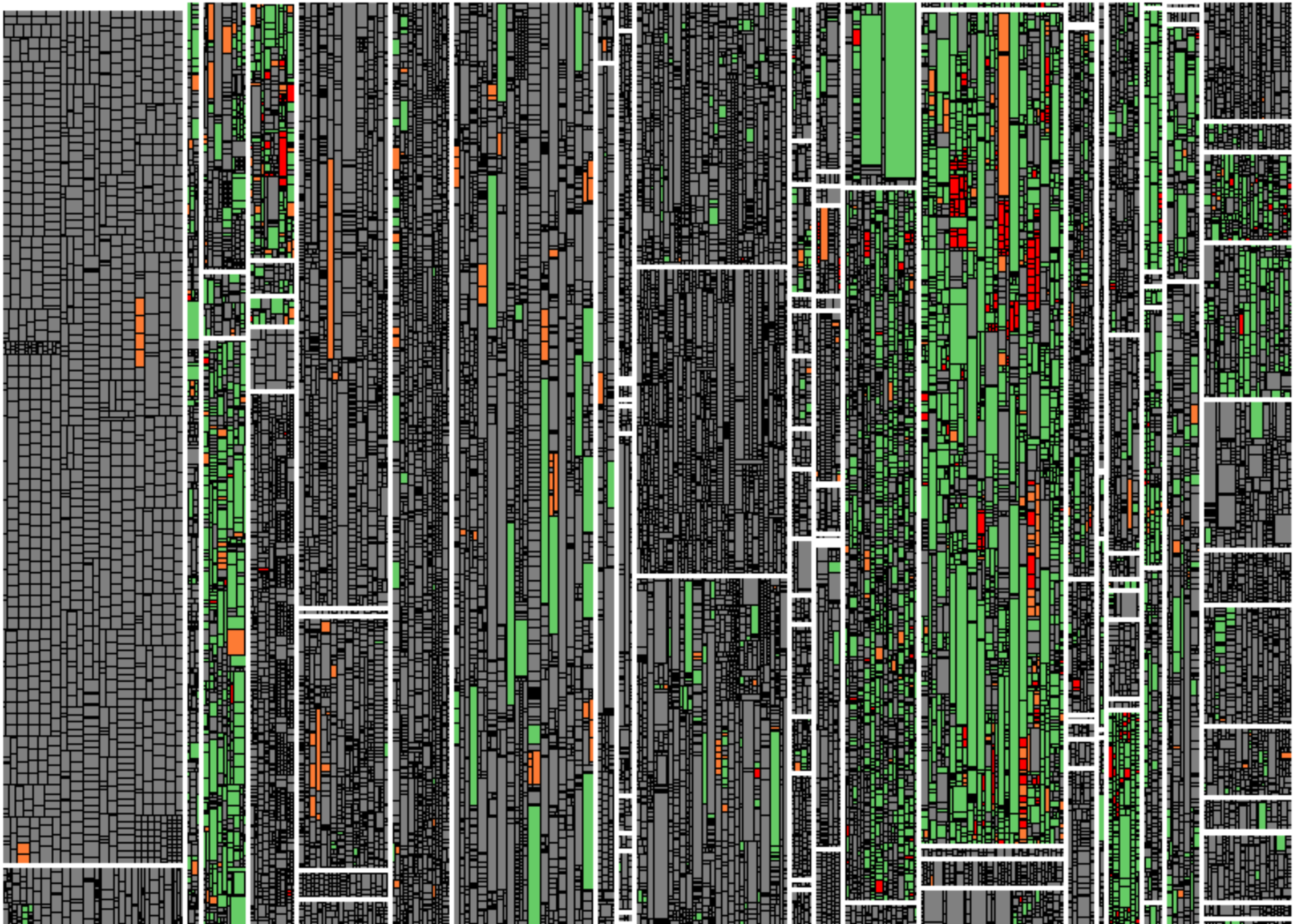
Einsatz im Release-Test: Beispiel (3)

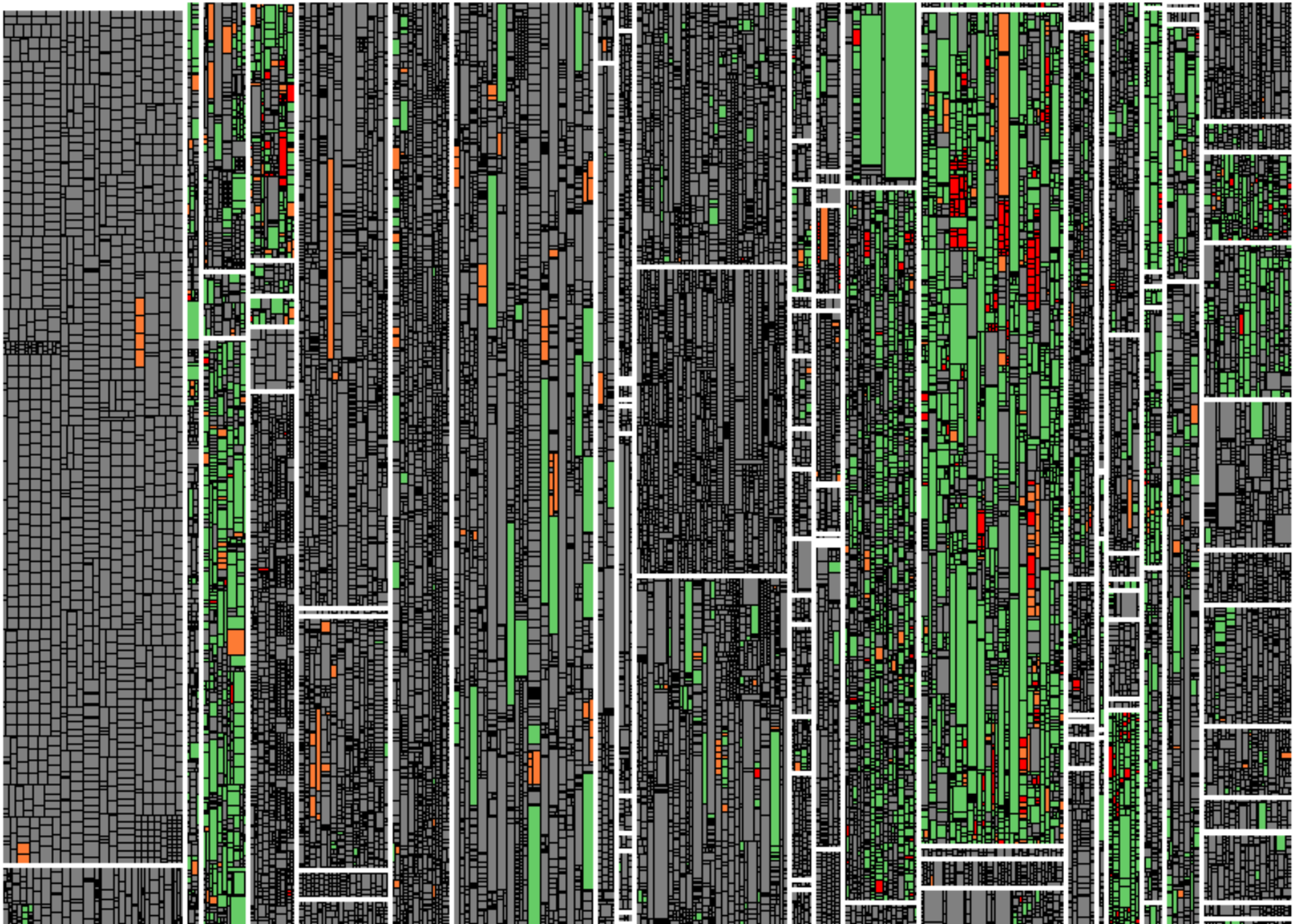


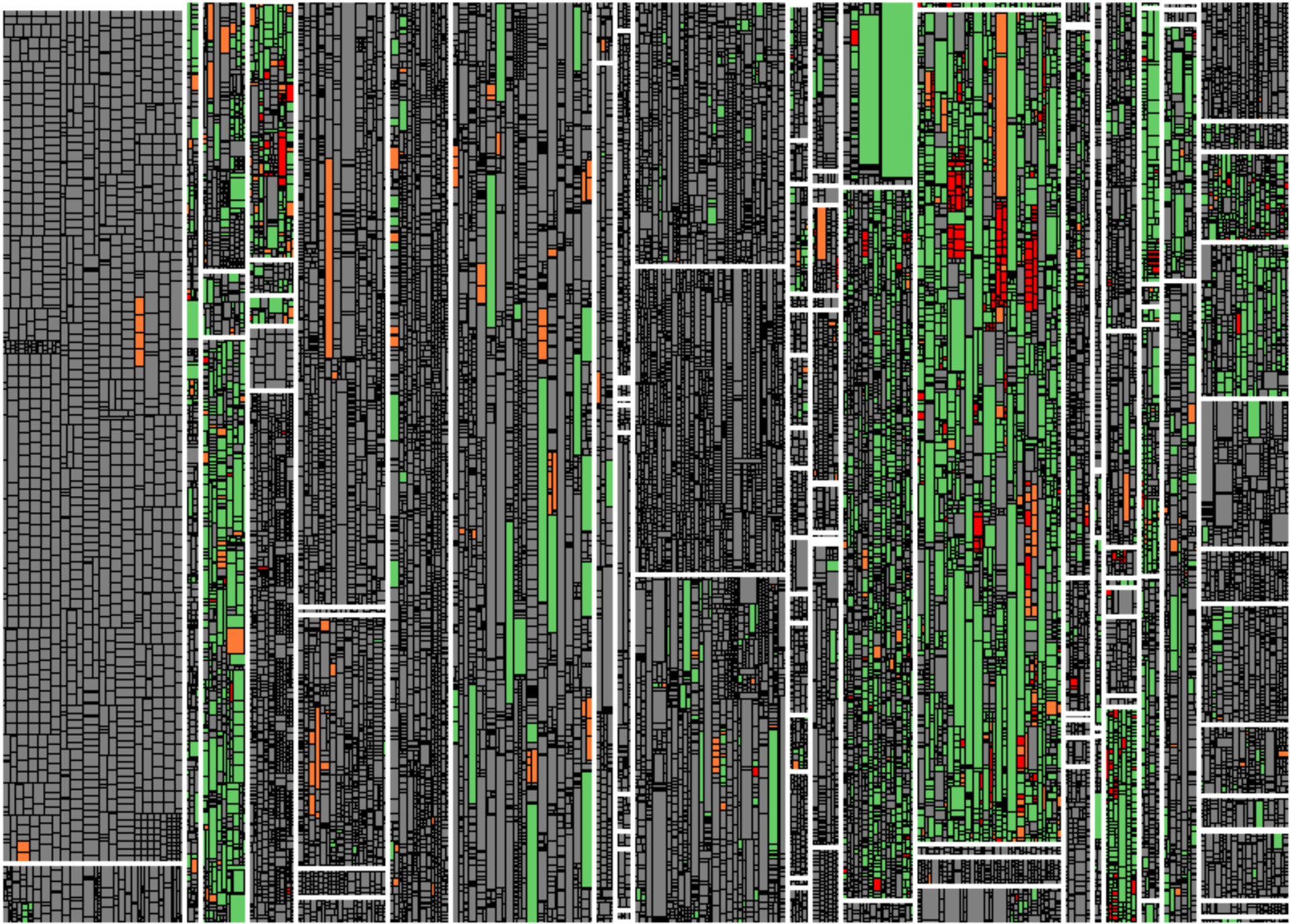


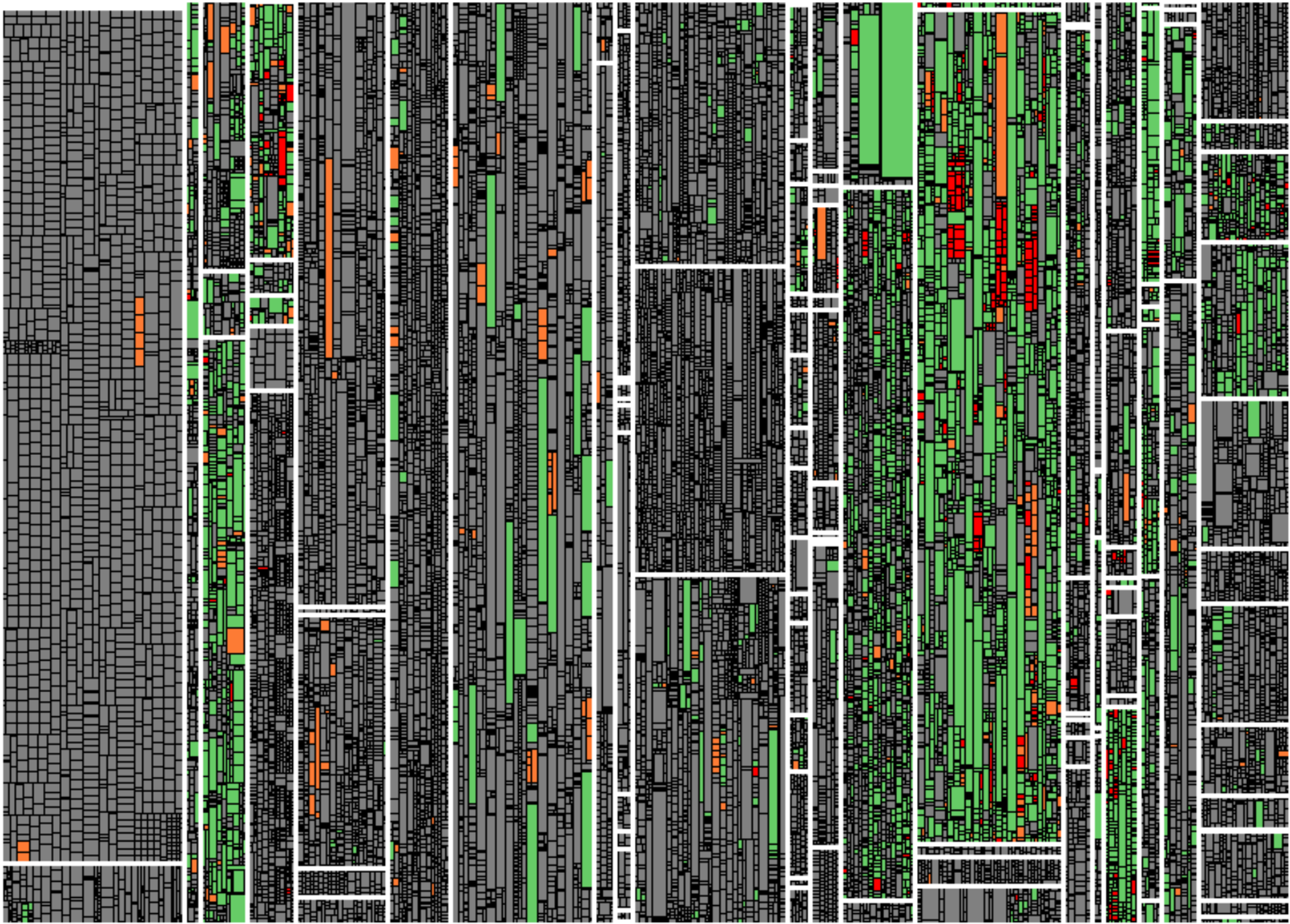


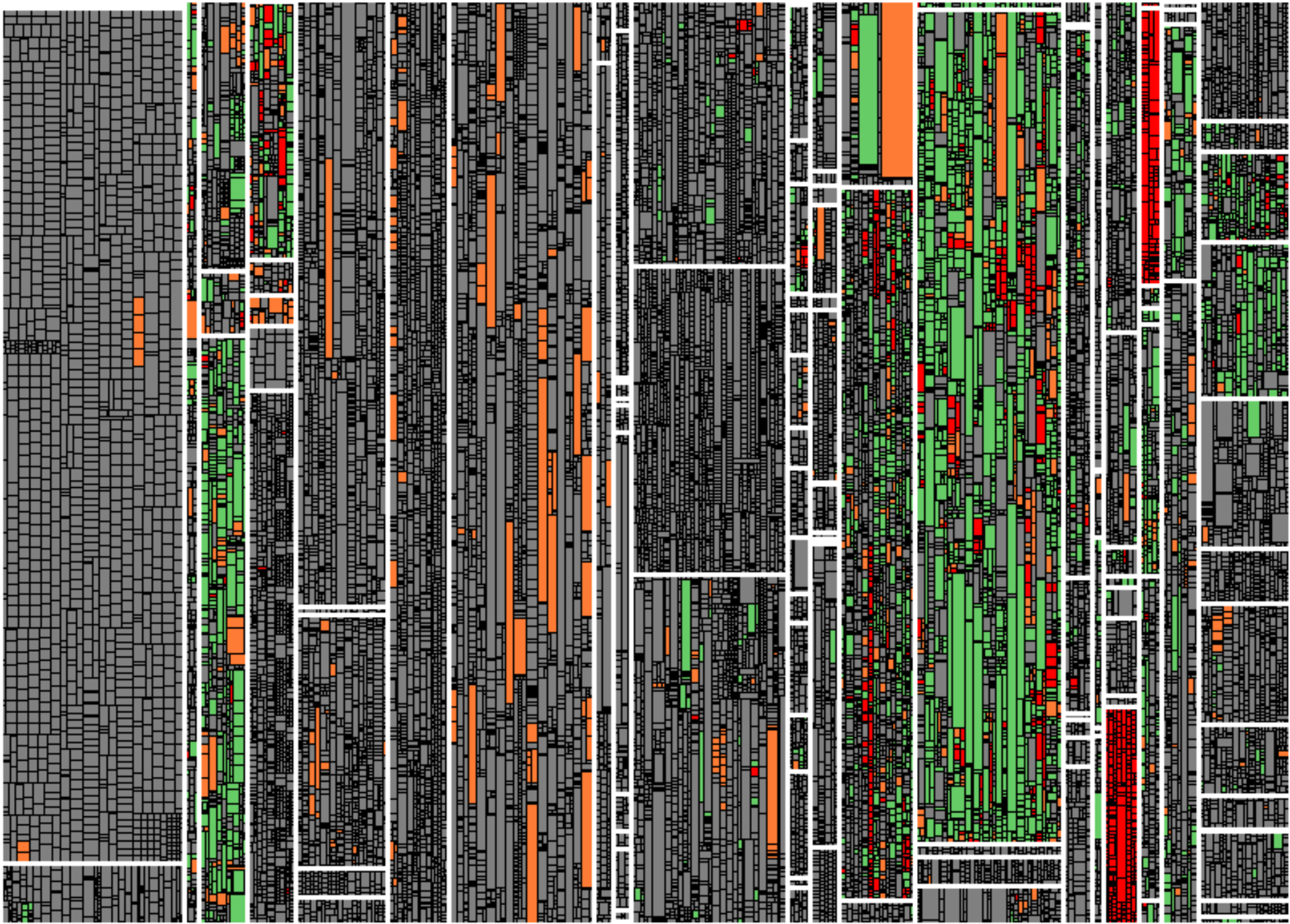


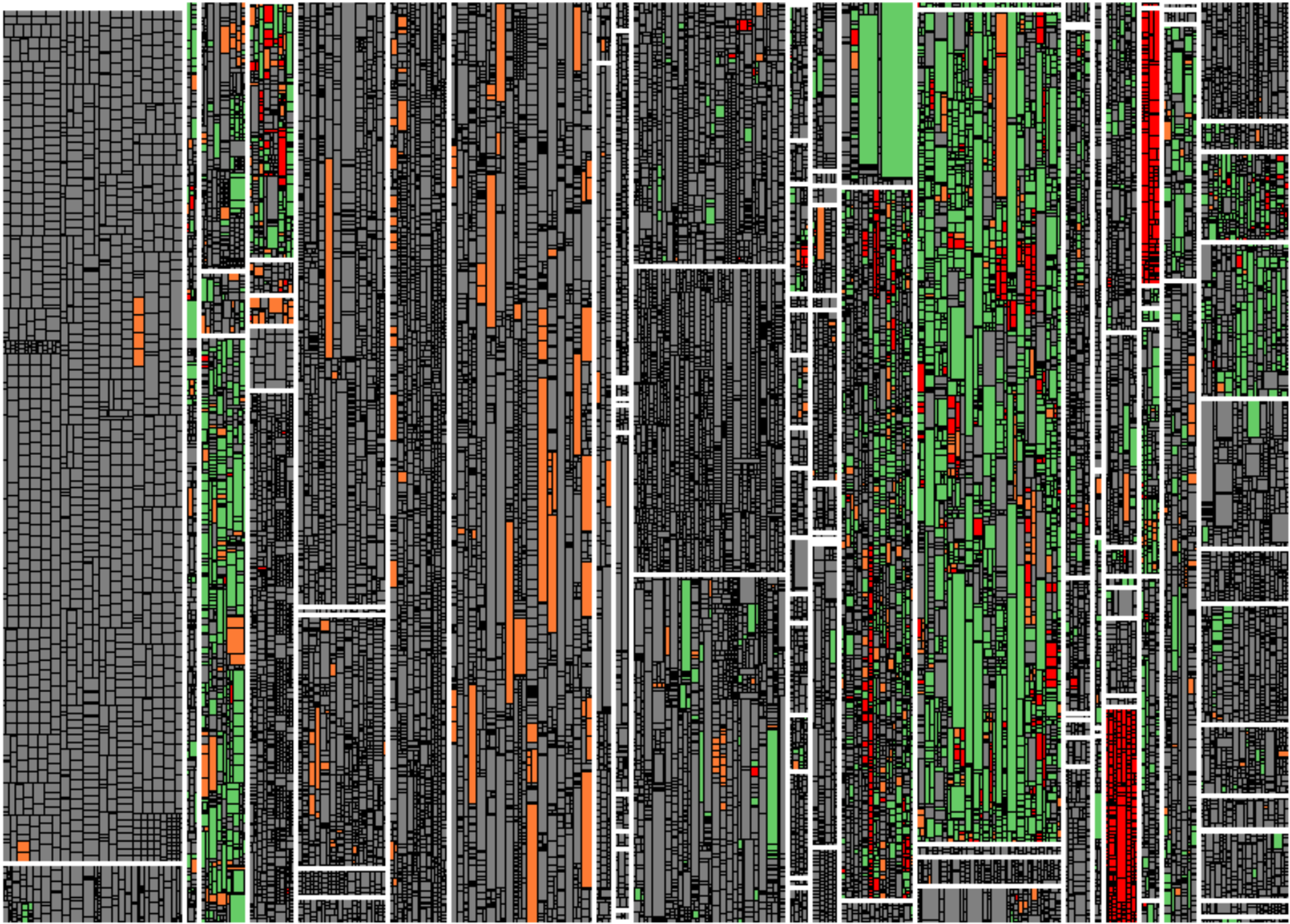


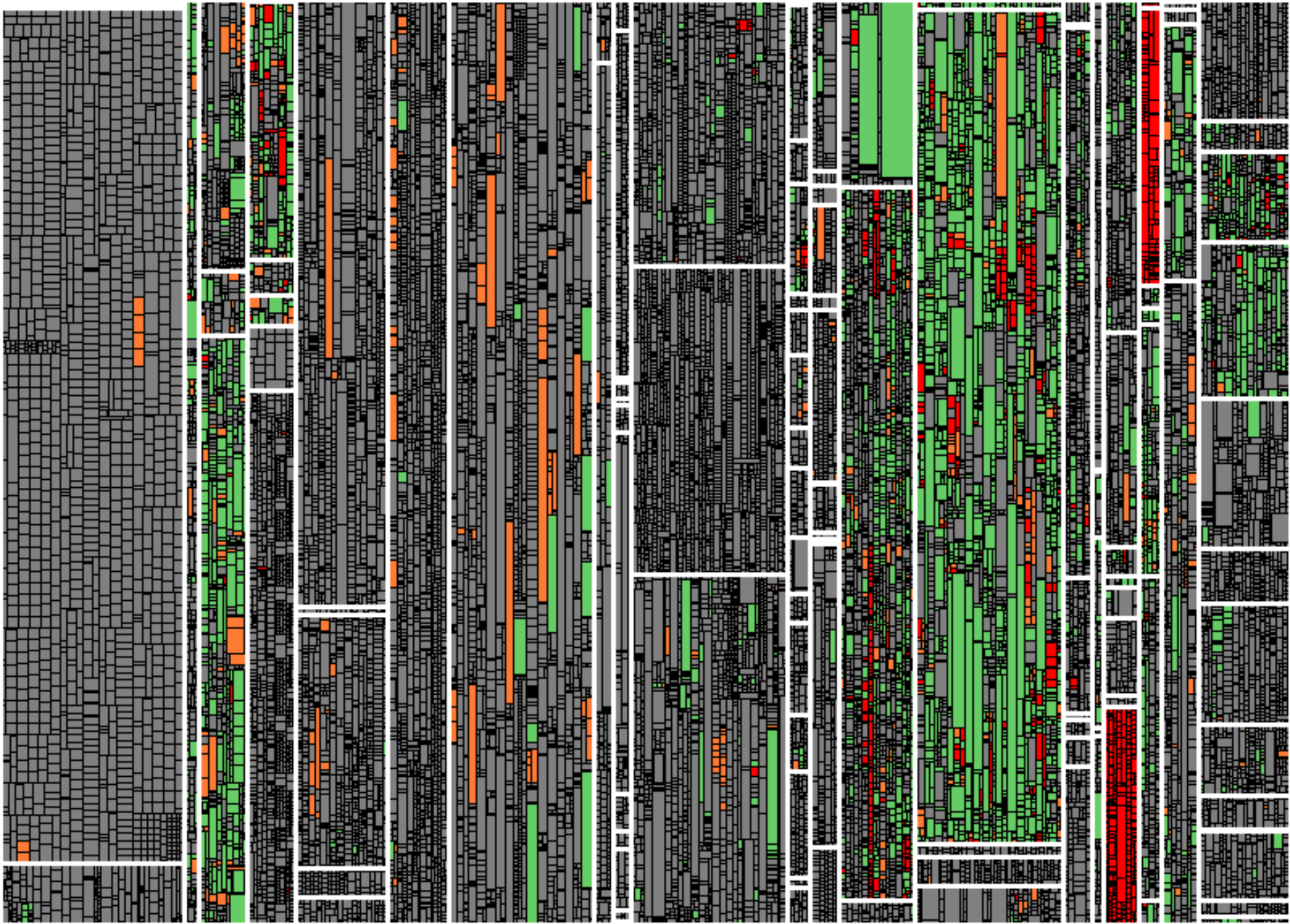


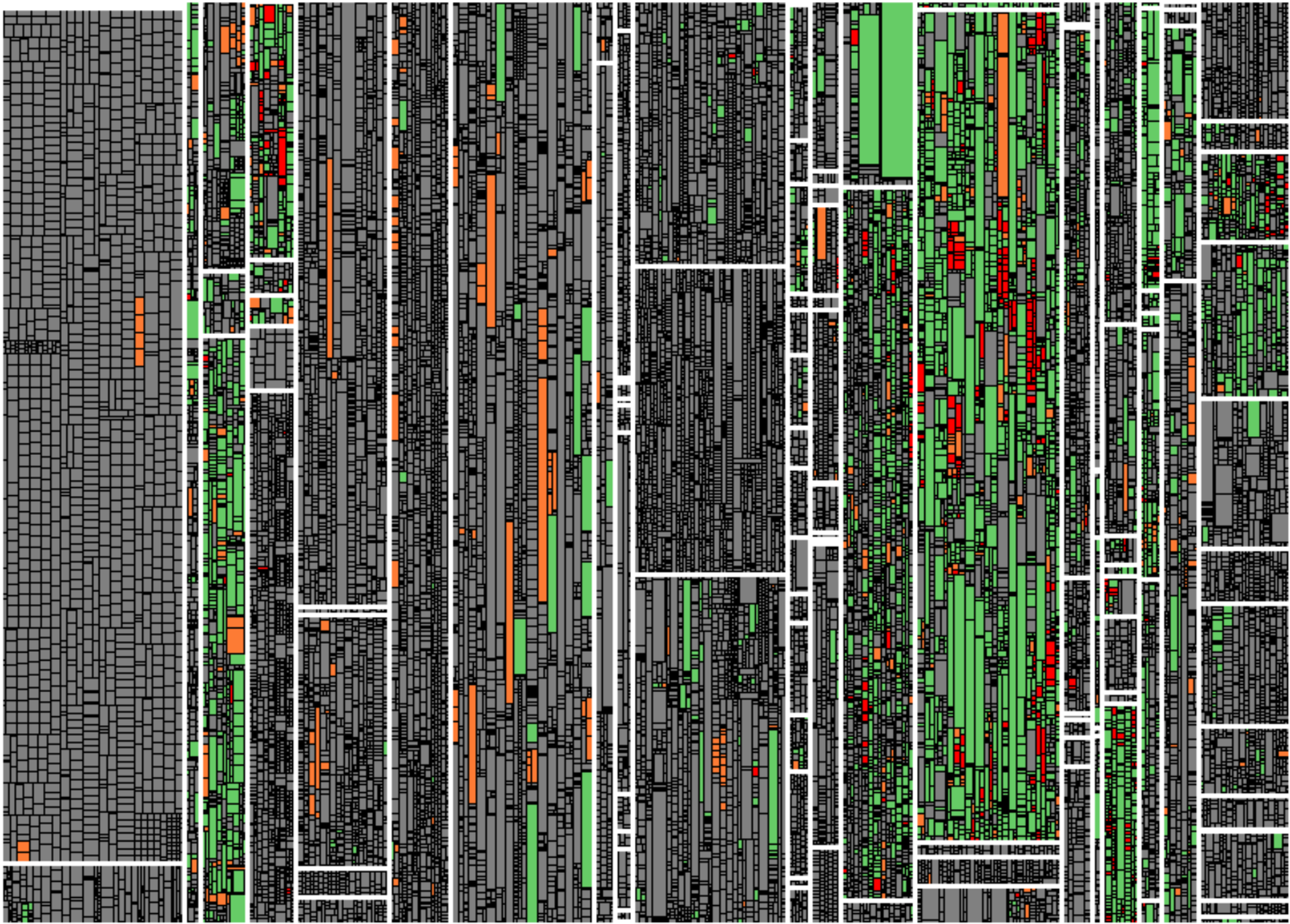


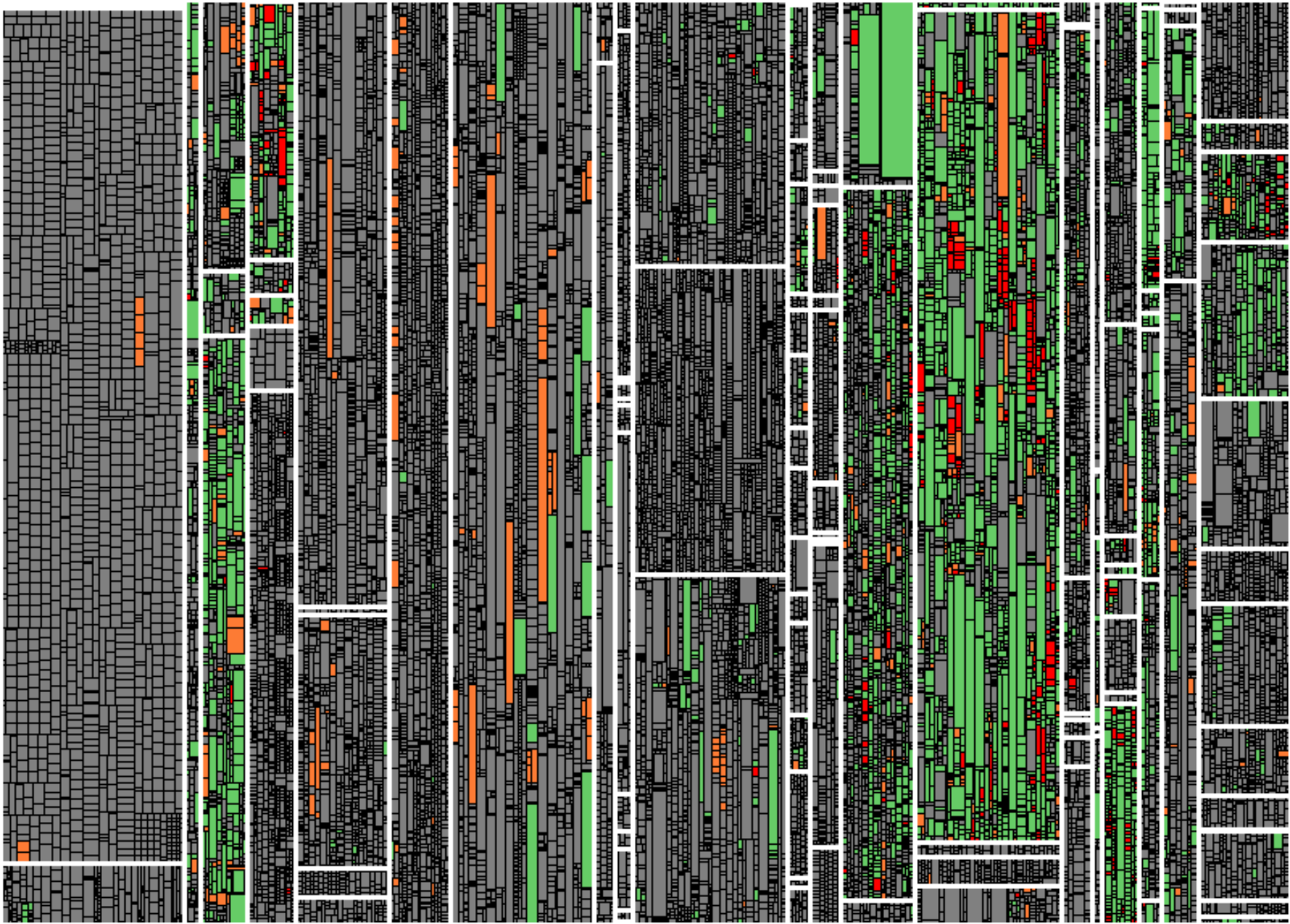


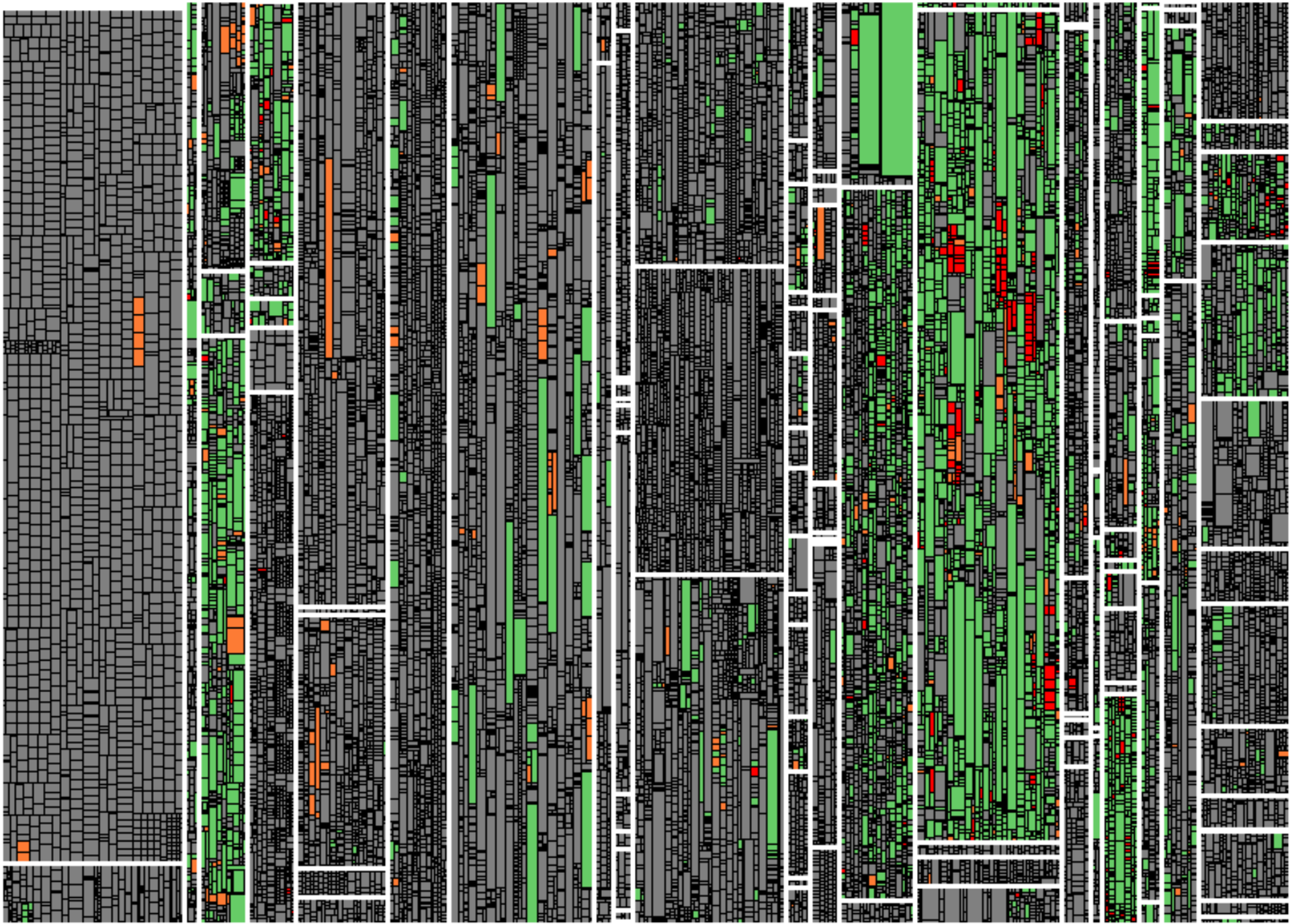


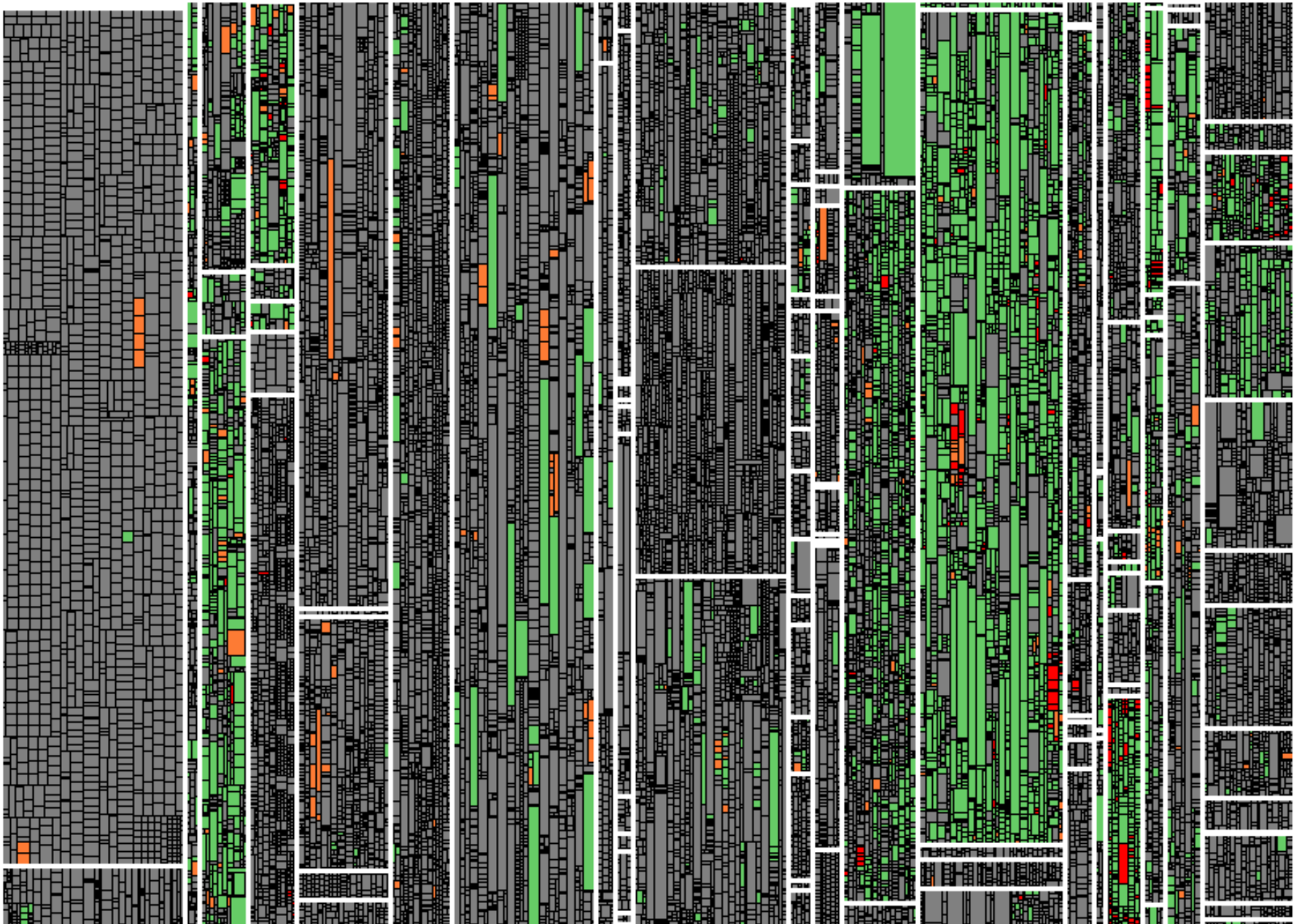


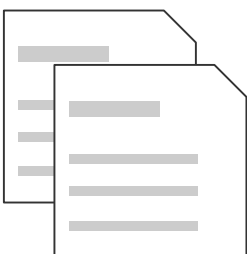
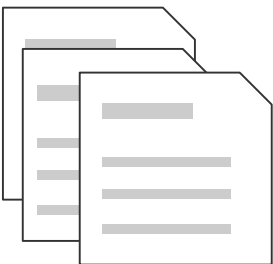
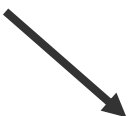
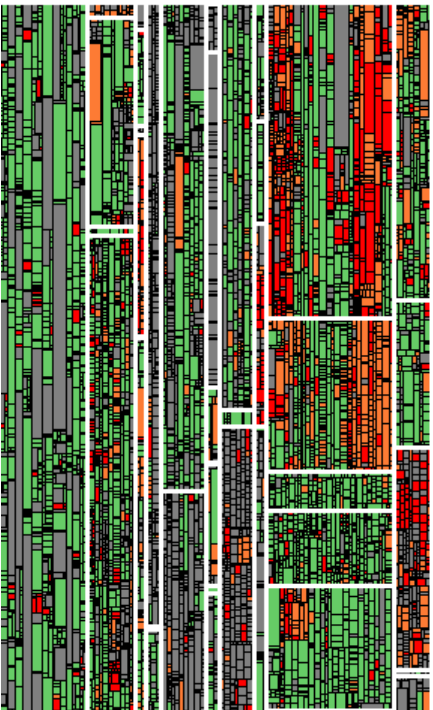


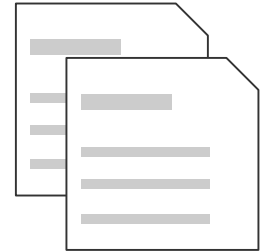
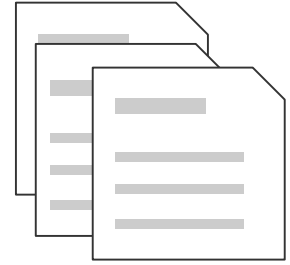
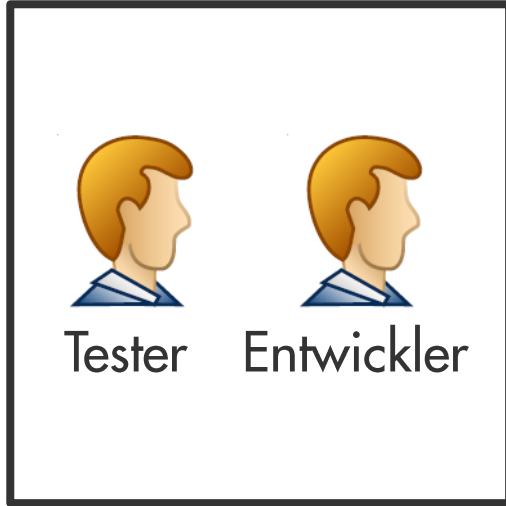
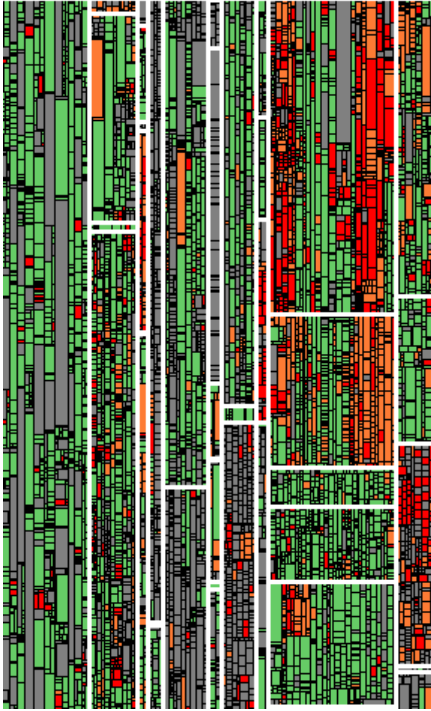










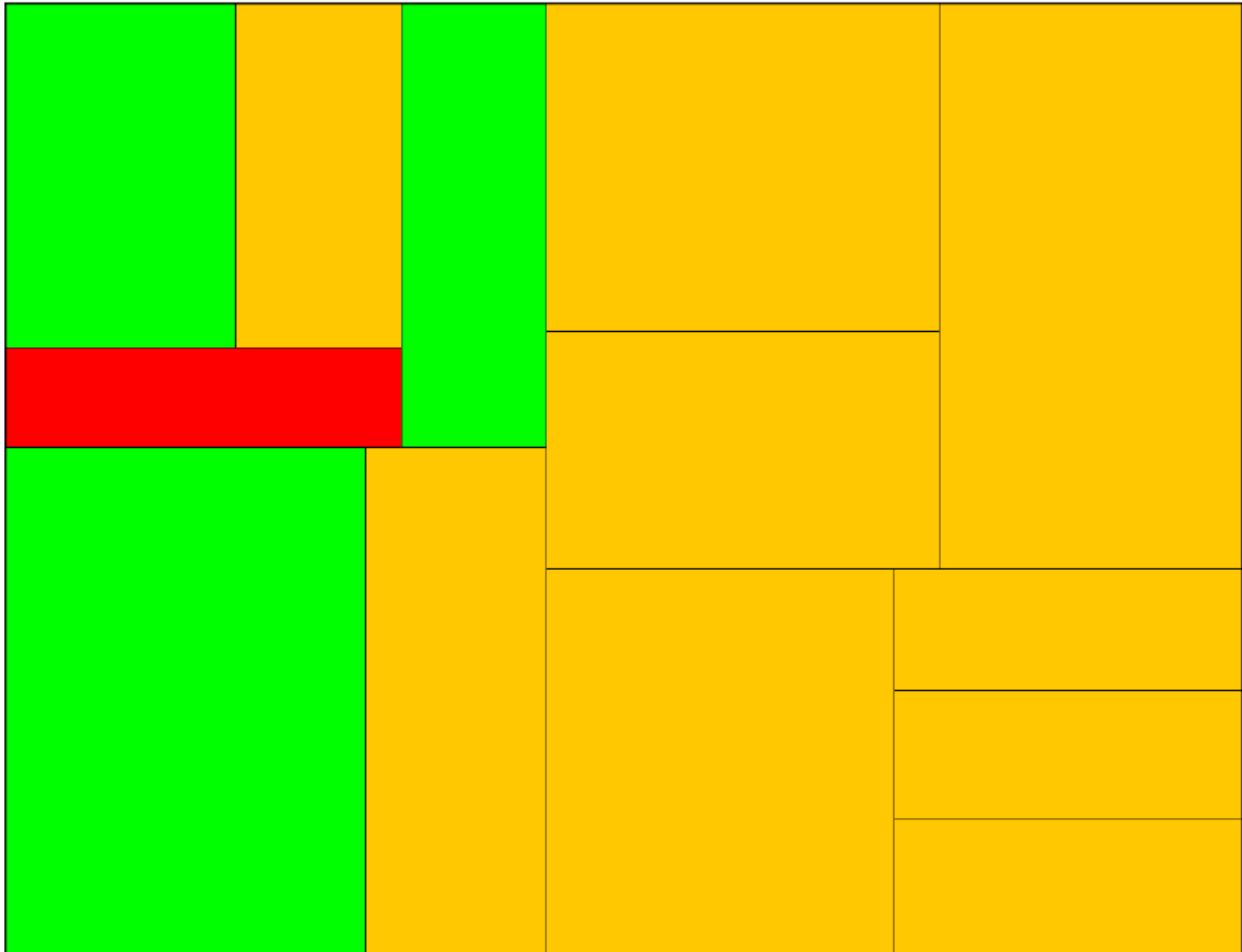


Feature Coverage

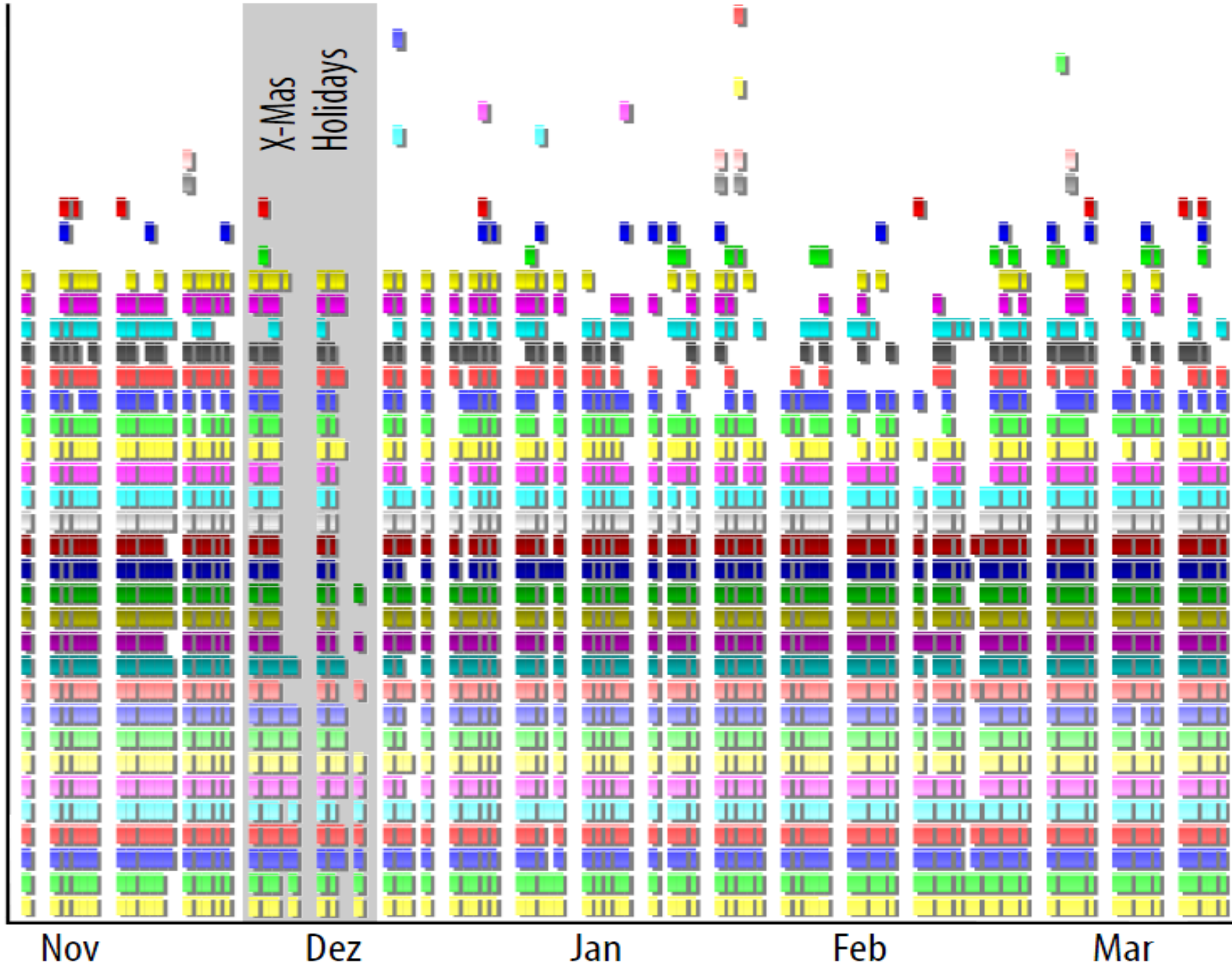
Revision	Acti...	Author	Date	Message
24178		veihelm...	Montag, 25. April 2016 13:55:07	CR#7707: GREEN-RATING Closure compiler warning fixes
24177		veihelm...	Montag, 25. April 2016 13:42:41	CR#7707: GREEN-RATING Closure comment fix
24176		kinnen	Montag, 25. April 2016 13:30:14	CR#9702: GREEN
24175		kinnen	Montag, 25. April 2016 13:28:40	CR#9593: GREEN
24170		streitel	Montag, 25. April 2016 13:02:55	CR#9684: YELLOW fixing compiler warning
24169		streitel	Montag, 25. April 2016 11:43:53	CR#9684: YELLOW
24168		streitel	Montag, 25. April 2016 11:37:10	CR#9684: GREEN with Andi
24167		pawelka	Montag, 25. April 2016 11:28:47	CR#7707: fixing checkType warnings
24166		kinnen	Montag, 25. April 2016 09:15:58	Merged 2.0.x -> trunk
24165		haas	Freitag, 22. April 2016 18:27:50	CR#9697: YELLOW: Fix UI test (by using a new test case). Fix issue with Assume nodes in GFCs (they have no tok...
24163		baumeis...	Freitag, 22. April 2016 17:32:30	CR#9399: RED, incorporated review comment.
24162		goeb	Freitag, 22. April 2016 17:21:26	CR#9622: adjust handling of commit timestamps
24159		baumeis...	Freitag, 22. April 2016 17:08:18	CR#9399: GREEN, incorporated review comment.
24158		pawelka	Freitag, 22. April 2016 17:06:18	CR#0: Fixing architecture assessing if [ENTF] is clicked even if no element was deleted.
24157		pawelka	Freitag, 22. April 2016 17:05:01	CR#7707: fixing type check warning
24152		chasapis	Freitag, 22. April 2016 16:35:39	CR#9731: set minimum value for number input 0, because number of days cannot be negative.
24149		baumeis...	Freitag, 22. April 2016 15:49:19	CR#8487: YELLOW, incorporated review comments.
24148		haas	Freitag, 22. April 2016 15:40:30	CR#9697: RED: Temporarily disable refactoring suggestions in UI tests
24147		haas	Freitag, 22. April 2016 14:29:05	CR#9697: YELLOW: Improve data flow analysis for refactoring suggestions: * FOR, FOR EACH and WHILE loops (...)
24146		haas	Freitag, 22. April 2016 14:22:48	CR#9697: YELLOW: Only consider candidates that have statements (i.e. not only META shallow entities, which occ...
24144		ashutoshb	Freitag, 22. April 2016 12:51:47	CR#9090: fixed the GUI-test.
24143		chasapis	Freitag, 22. April 2016 12:01:28	CR#8022: fixed nesting depth issue
24142		baumeis...	Freitag, 22. April 2016 11:57:54	CR#8487: YELLOW, incorporated review comments.
24141		baumeis...	Freitag, 22. April 2016 11:53:47	CR#8487: YELLOW, incorporated review comments.
24140		chasapis	Freitag, 22. April 2016 11:44:35	CR#8022: added functionality to all widgets that use a SingleMetricParameter, so that when the user edits the par...
24138		baumeis...	Freitag, 22. April 2016 11:37:24	CR#8487: YELLOW, renamed metric rules editor.
24137		baumeis...	Freitag, 22. April 2016 11:36:31	CR#8609: YELLOW, fix build.
24136		baumeis...	Freitag, 22. April 2016 11:18:17	CR#8609: YELLOW, added new notification utils method.
24135		gibtner	Freitag, 22. April 2016 11:03:51	CR#9364: changed status of files to YELLOW
24134		gibtner	Freitag, 22. April 2016 10:49:59	CR#9364: CommitTrackingService: - corrected comment - refactored: extracted methods
24133		baumeis...	Freitag, 22. April 2016 09:55:00	CR#8609: YELLOW, renamed tempalte parameters.

Test Gap Treemap for pinta

Showing issue 10296 Test Gap: 76.92%

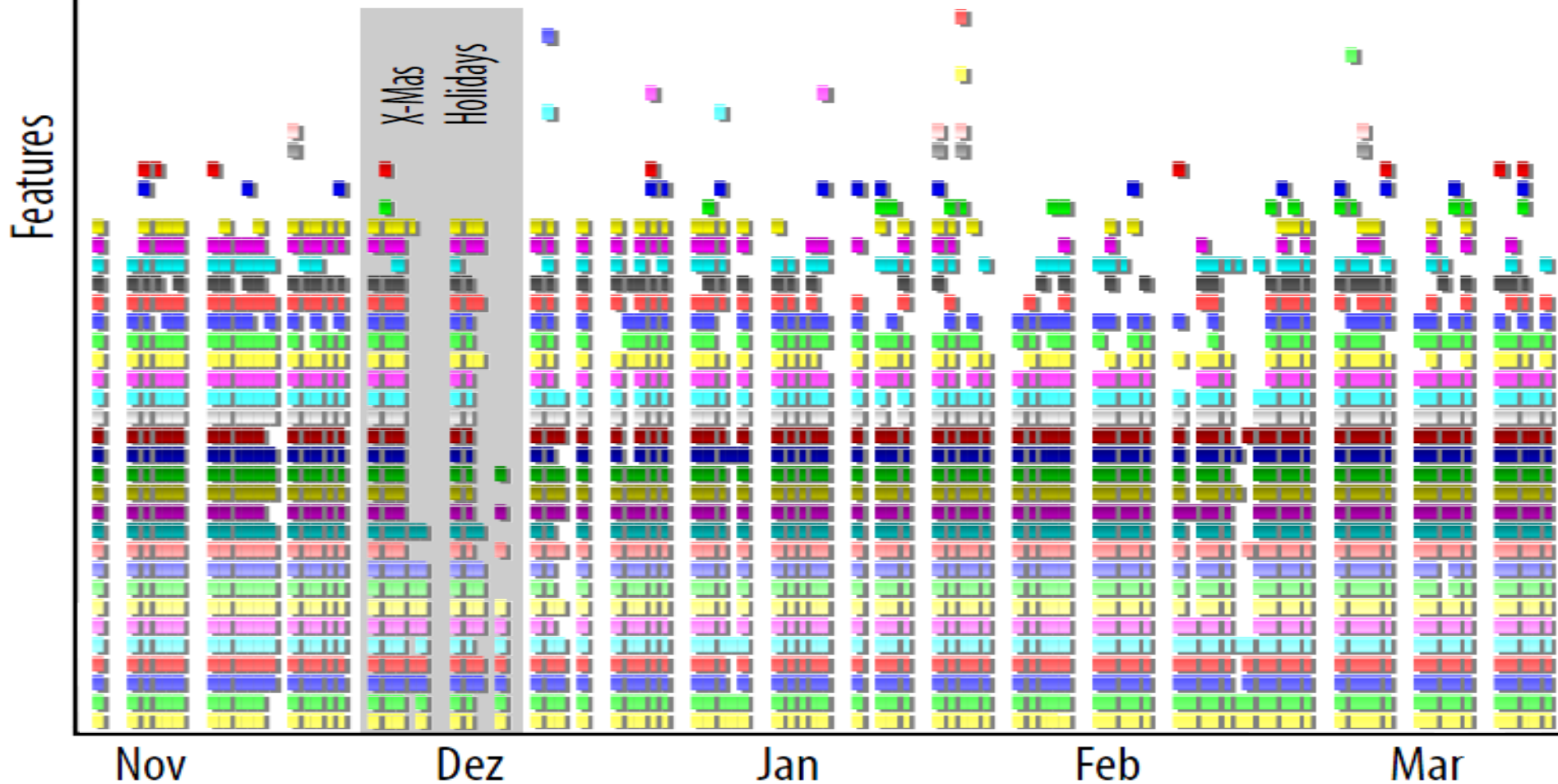


Features



28% Features ungenutzt (15/53)

- 11 unerwartet



Wie sag ichs meinen Kollegen?

Mit Vorträgen über Softwarequalität sind wir regelmäßig auf Industriekonferenzen oder Kunden-internen Workshops vertreten.



Impulsvorträge

Gerne kommen wir auch zu Ihnen ins Haus, beispielsweise für interne Konferenzen oder Workshops. Unsere Themen reichen von Qualitätsanalysen über Qualitätscontrolling bis hin zu Testcontrolling oder der Einführung von Reviews. Oder aber Sie schlagen uns ein Thema Ihrer Wahl vor.

DAS ANGEBOT

- 🕒 60-90 MIN VORTRAG
- 💬 SOFTWAREQUALITÄT ALS THEMA
- 📍 BEI IHNEN IM HAUS
- € NUR UNSERE ANREISEKOSTEN
- 📅 TERMIN NACH VEREINBARUNG

[IMPULSVORTRAG ANFRAGEN](#)

<https://www.cqse.eu/en/blog>

Bridge your Test Gaps with Teamscale

Posted on 04/27/2016 by Dr. Dennis Pagano

Many companies employ sophisticated testing processes, but still bugs find their way into production. Often they hide among the subset of changes that were not tested. Actually, we found that untested changes are five times more error prone than the rest of the system.



The screenshot shows the Teamscale dashboard interface. The main area displays a treemap visualization titled "Test Gaps for pinta" with a "Test Gap: 77.78%" indicator. The treemap consists of numerous small rectangular blocks, some colored red, yellow, and green, representing different components and their test coverage. To the right of the treemap is a sidebar titled "Editing Test Gaps Pinta" which contains a list of visualization options: Label, Numeric Metric Value, Assessment Pie Chart, Metrics Table, Metrics Bar Chart, Metric Distribution Table, Metric Distribution Pie Chart, Metrics Hotspot Table, Metrics Change Table, Findings Summary Table, Findings Summary Bar Chart, Findings Churn, Metrics Trend Chart, Assessment Trend Chart, Treemap, Test Gap Treemap, Test Gap Trend Chart, Code City, and Metric File Distribution. At the bottom of the sidebar are "Save", "Save as", and "Cancel" buttons.

To avoid code to be conscious of a short quick reference. Pre-Obviously, to use please contact. Test. Test G. tested. test ga.

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Testing Changes in SAP BW Applications

Posted on 04/29/2015 by Dr. Andreas Göb

As my colleague Fabian explained a few weeks ago, a combination of change detection and execution logging can substantially increase transparency regarding which recent changes of a software system have actually been covered by the testing process. I will not repeat all the details of the Test Gap Analysis approach here, but instead just summarize the core idea: Untested new or changed (informative) elements. Therefore it makes sense to use those changed but untested areas.

Several times
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Analysis in

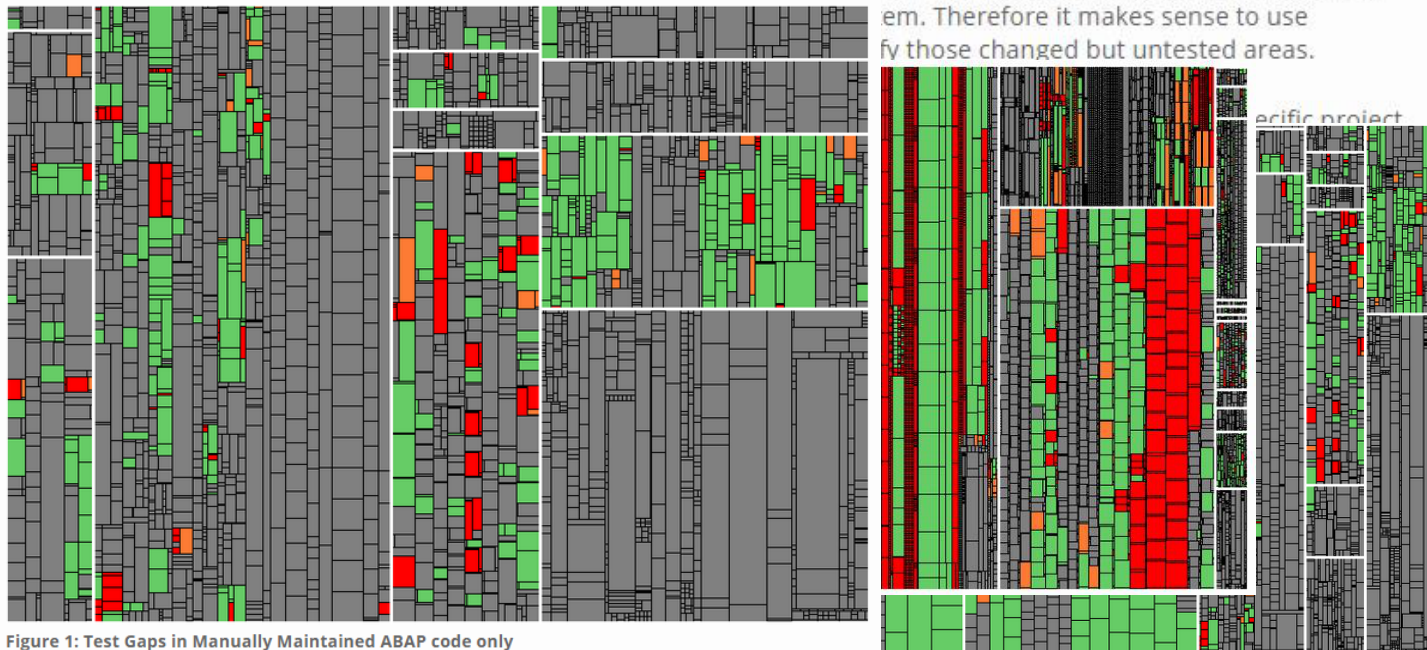


Figure 1: Test Gaps in Manually Maintained ABAP code only



Fazit

Änderungen am Code sind guter Fehlerprädiktor.

Test-Gap-Analyse macht Änderungen und Testaktivitäten transparenter und ermöglicht es *ungewollt* ungetestete Änderungen zu vermeiden.

Wir unterstützen gerne bei der Evaluierung und Einführung.

Kontakt

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