AutomationSTAR
MÜNCHEN 17-18 OKT. 2022

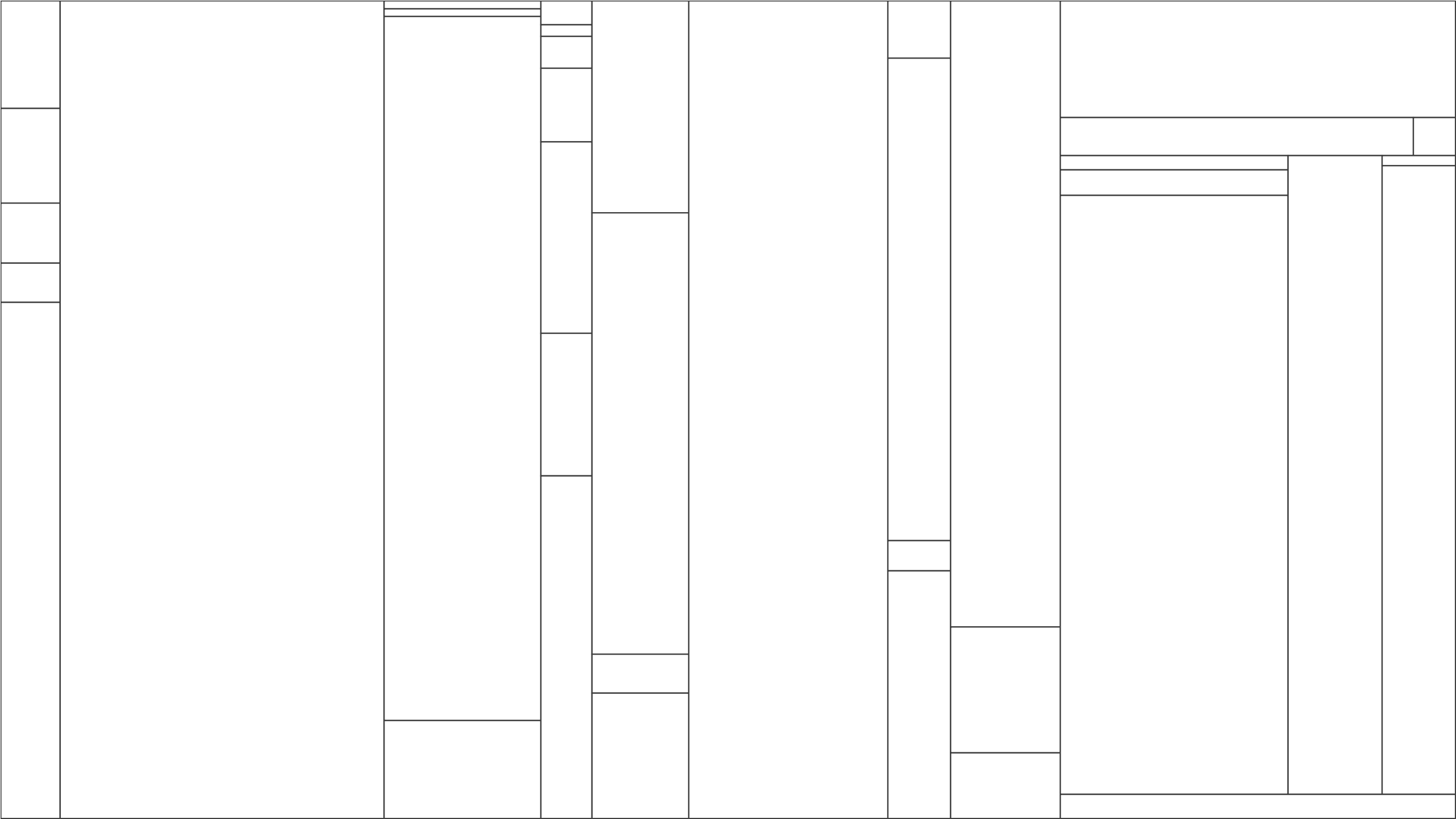
VORTRAG

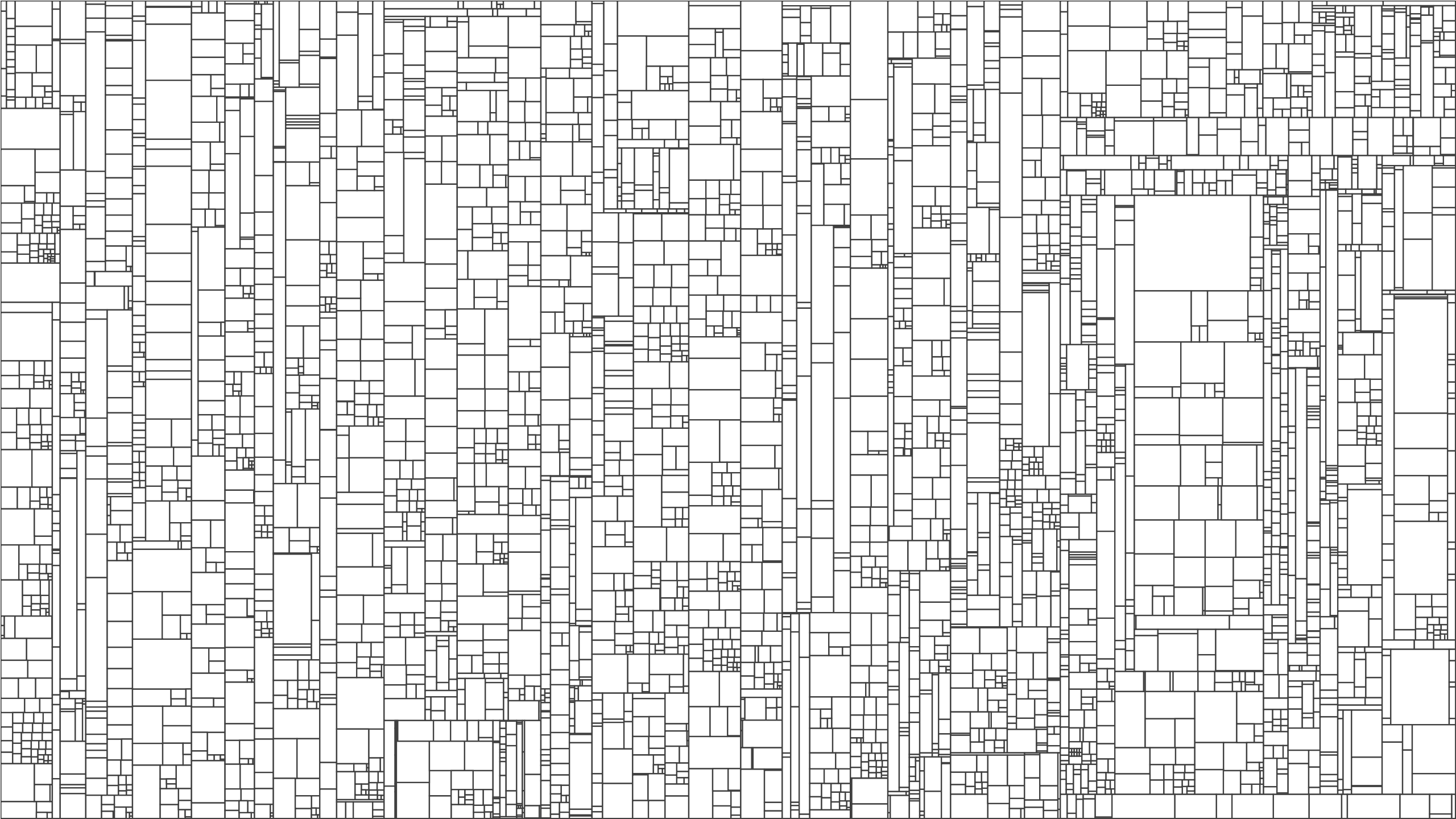
# Schnelles Feedback trotz langsamer Tests:

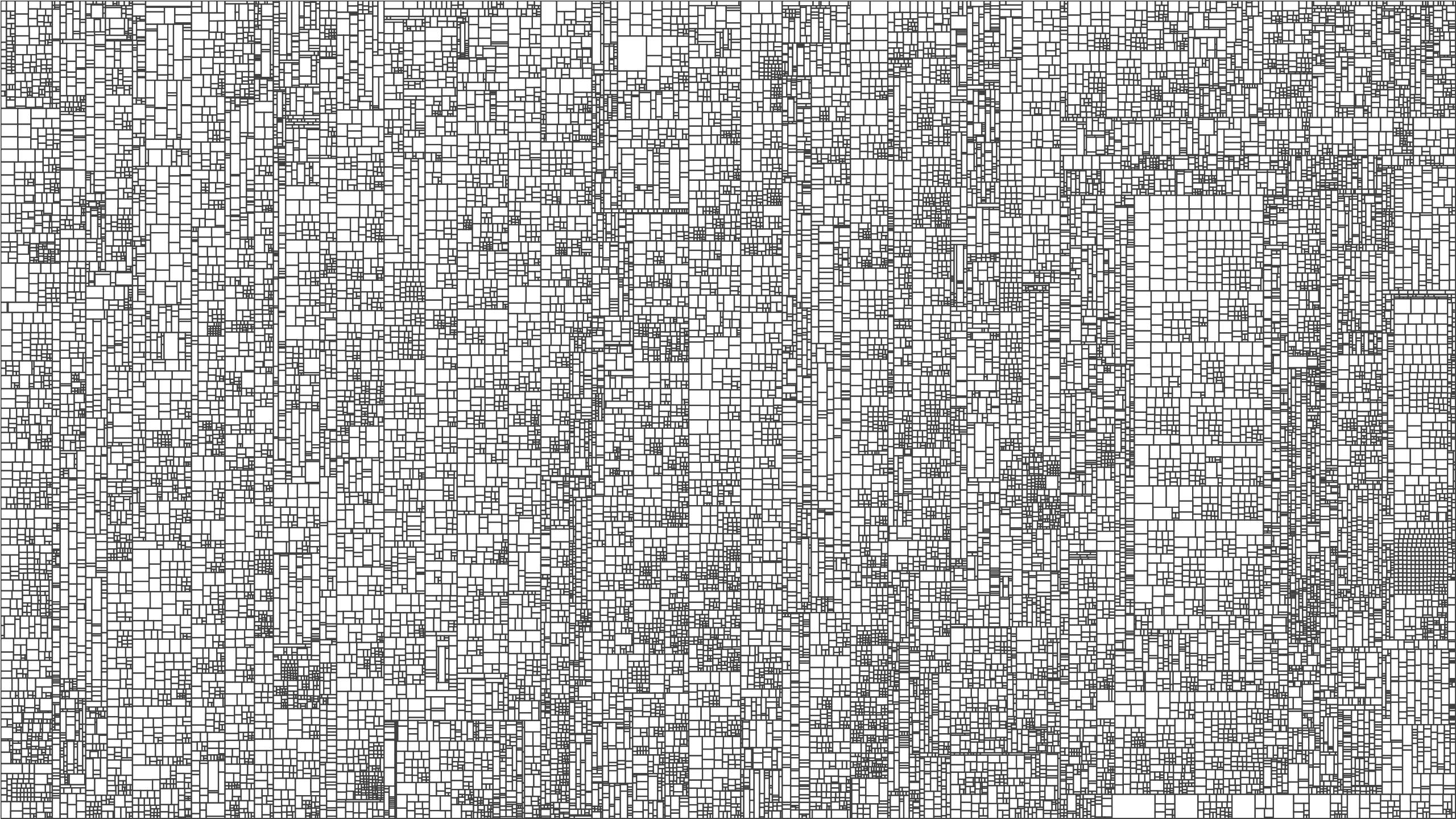
## Test-Impact-Analyse und Pareto-Optimierung für historisch gewachsene Test-Suites

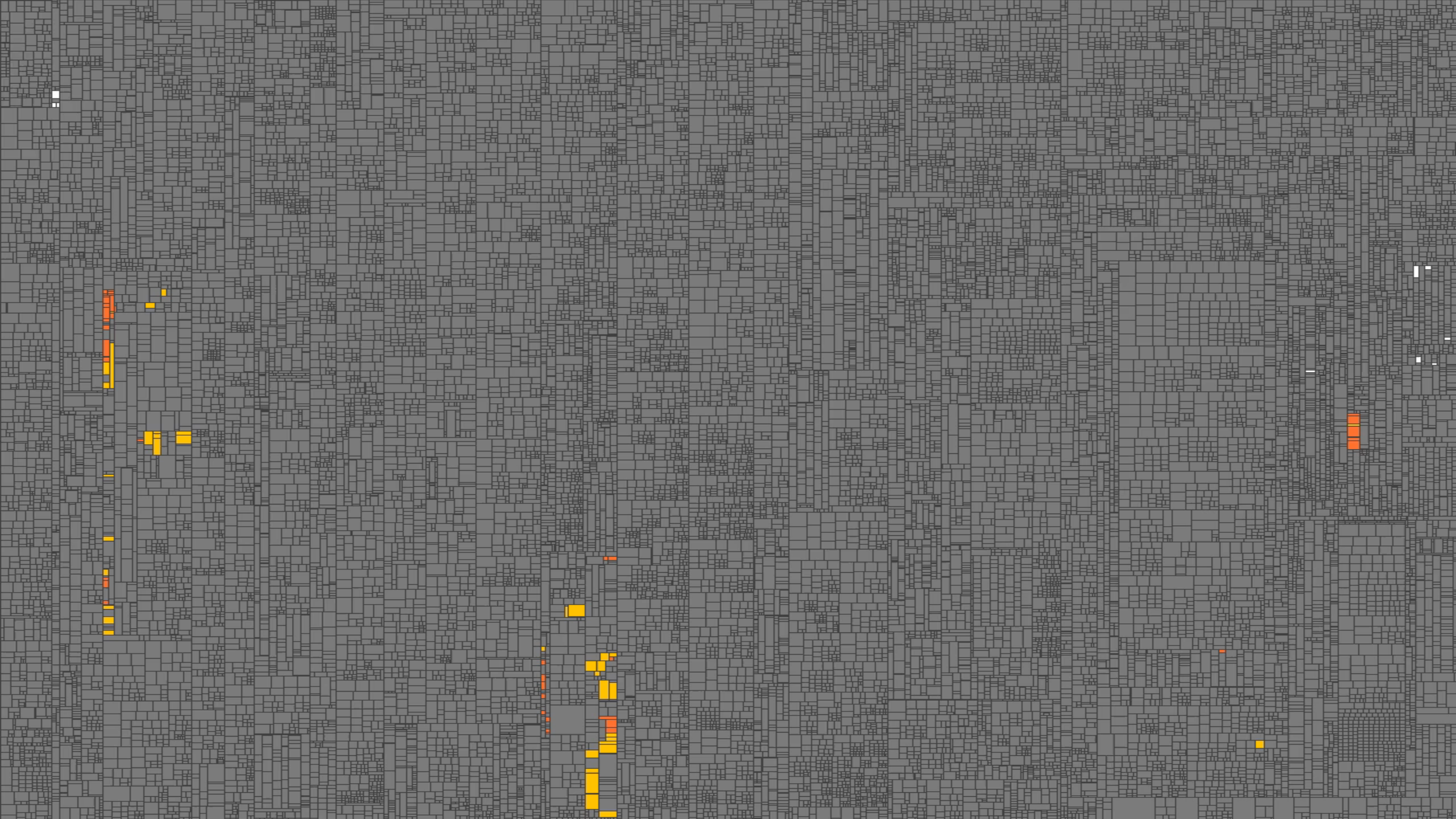
**Dr. Elmar Juergens**

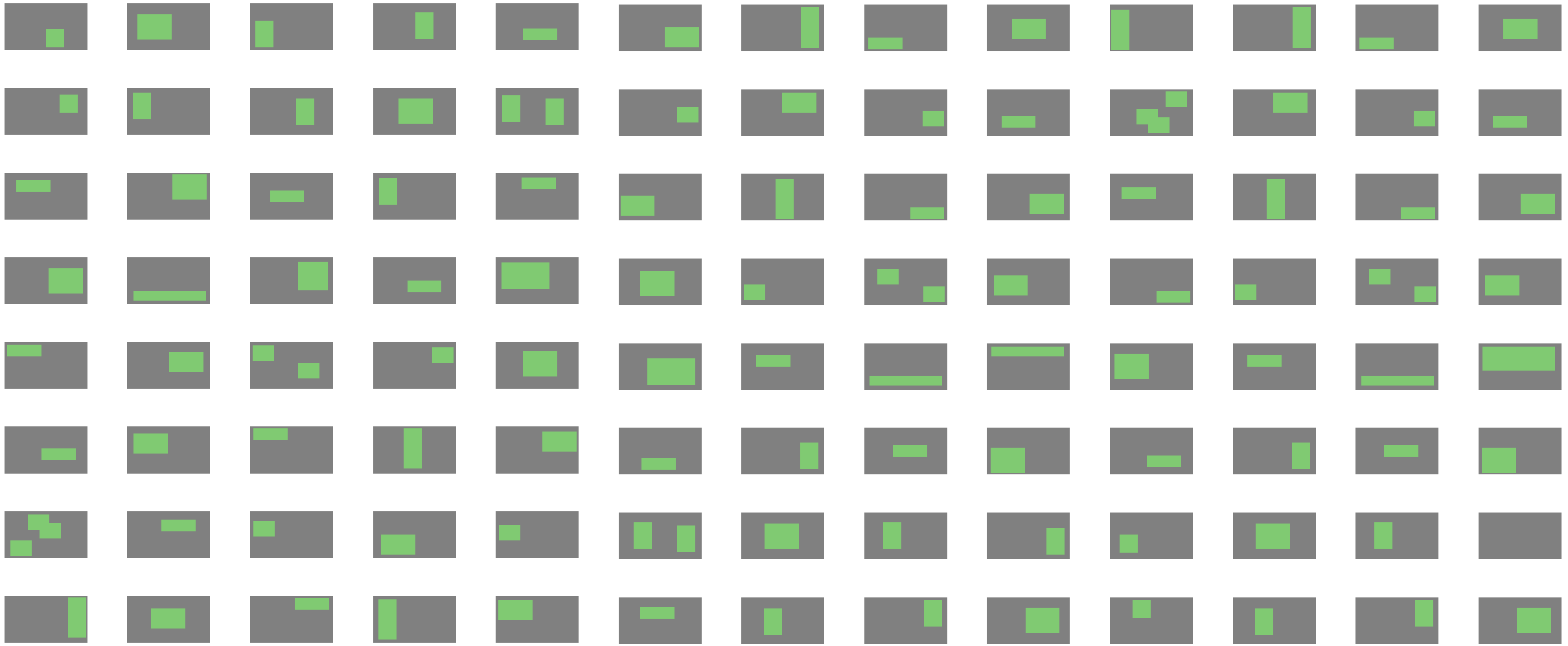
**CQSE**, Deutschland



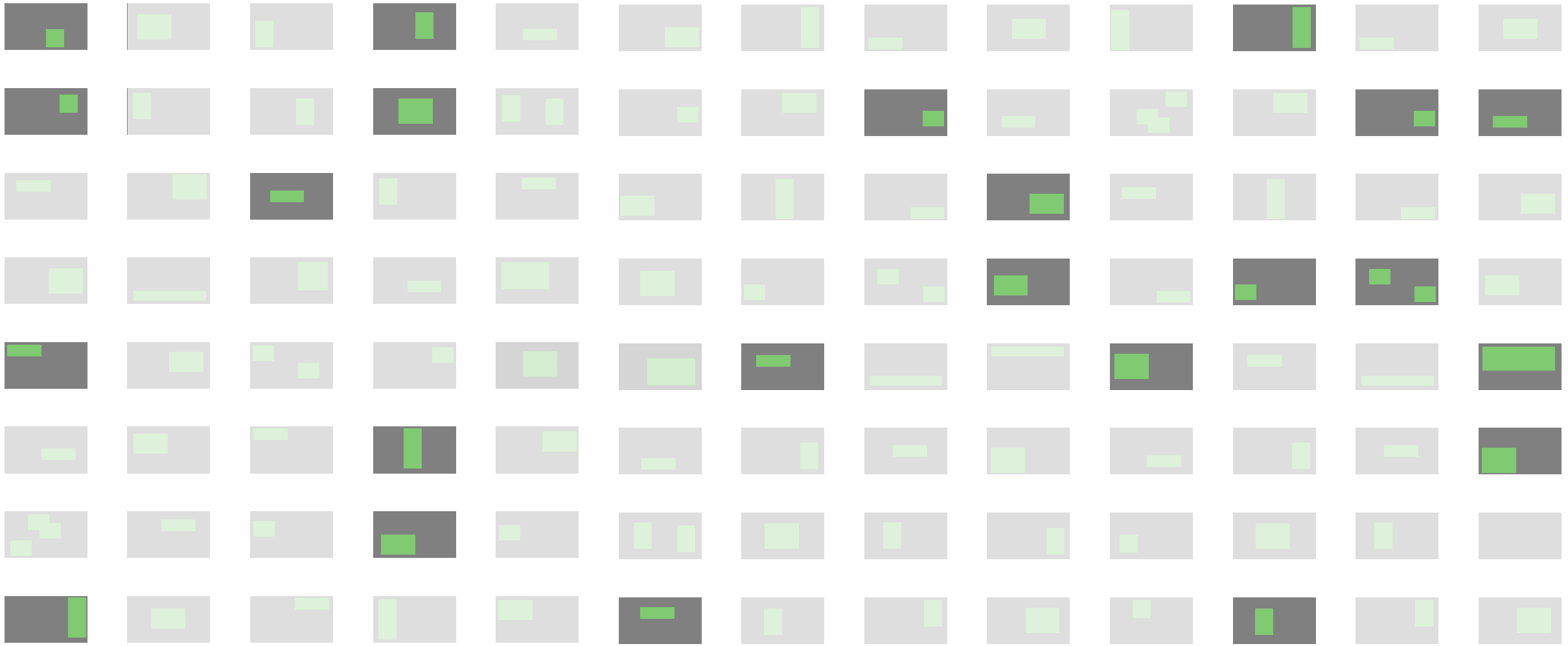




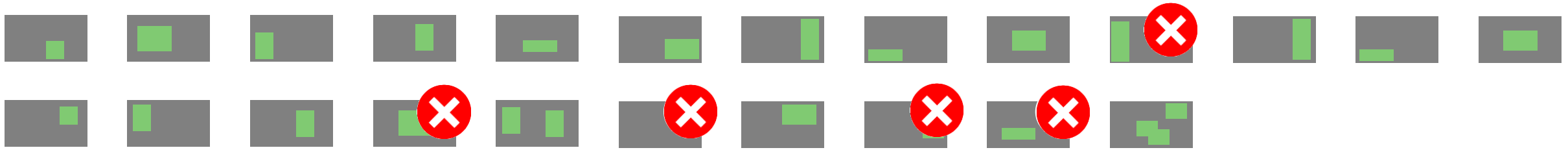




# Schritt 1: Selektion betroffener Testfälle

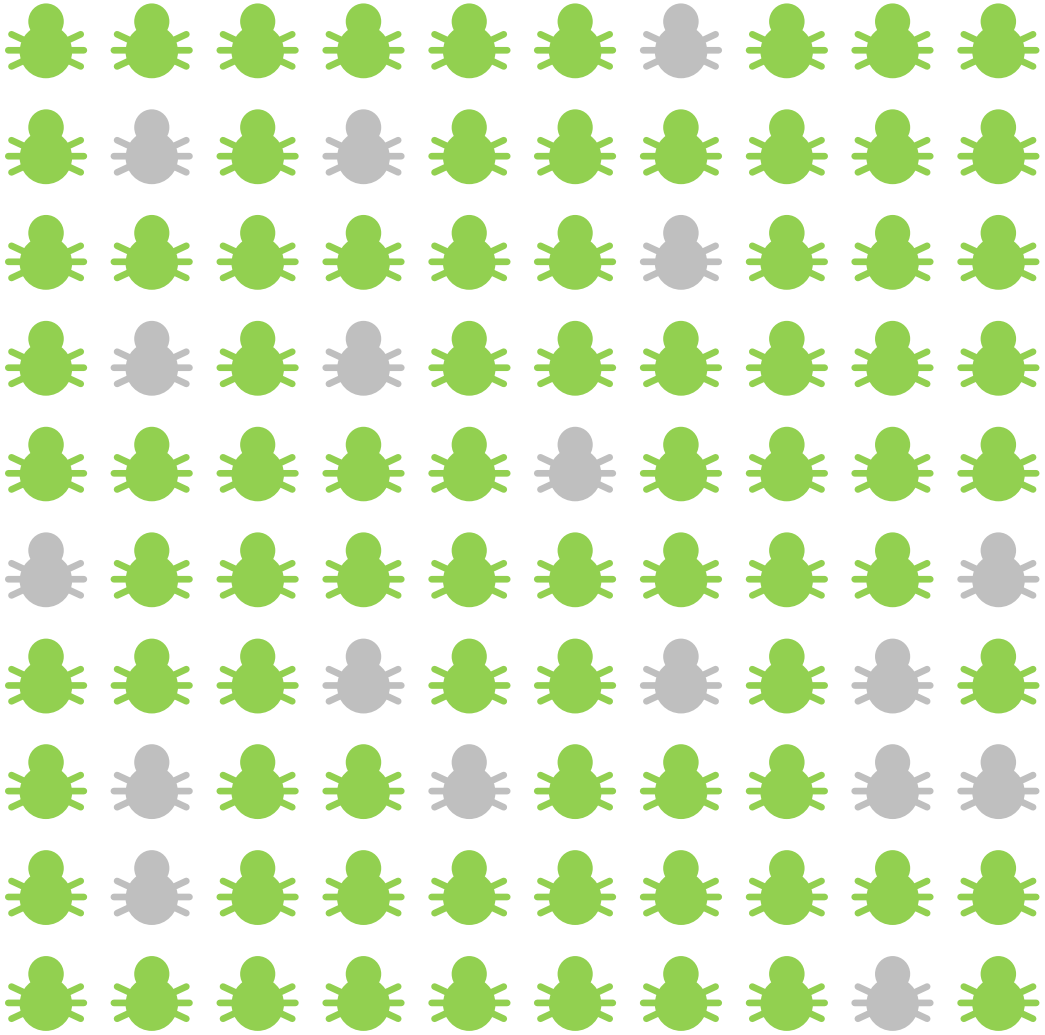


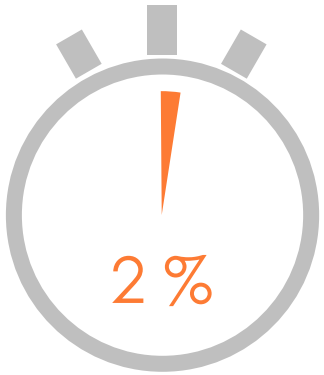
# Schritt 2: Priorisierung selektierter Testfälle



# Schritt 2: Priorisierung selektierter Testfälle


80 %



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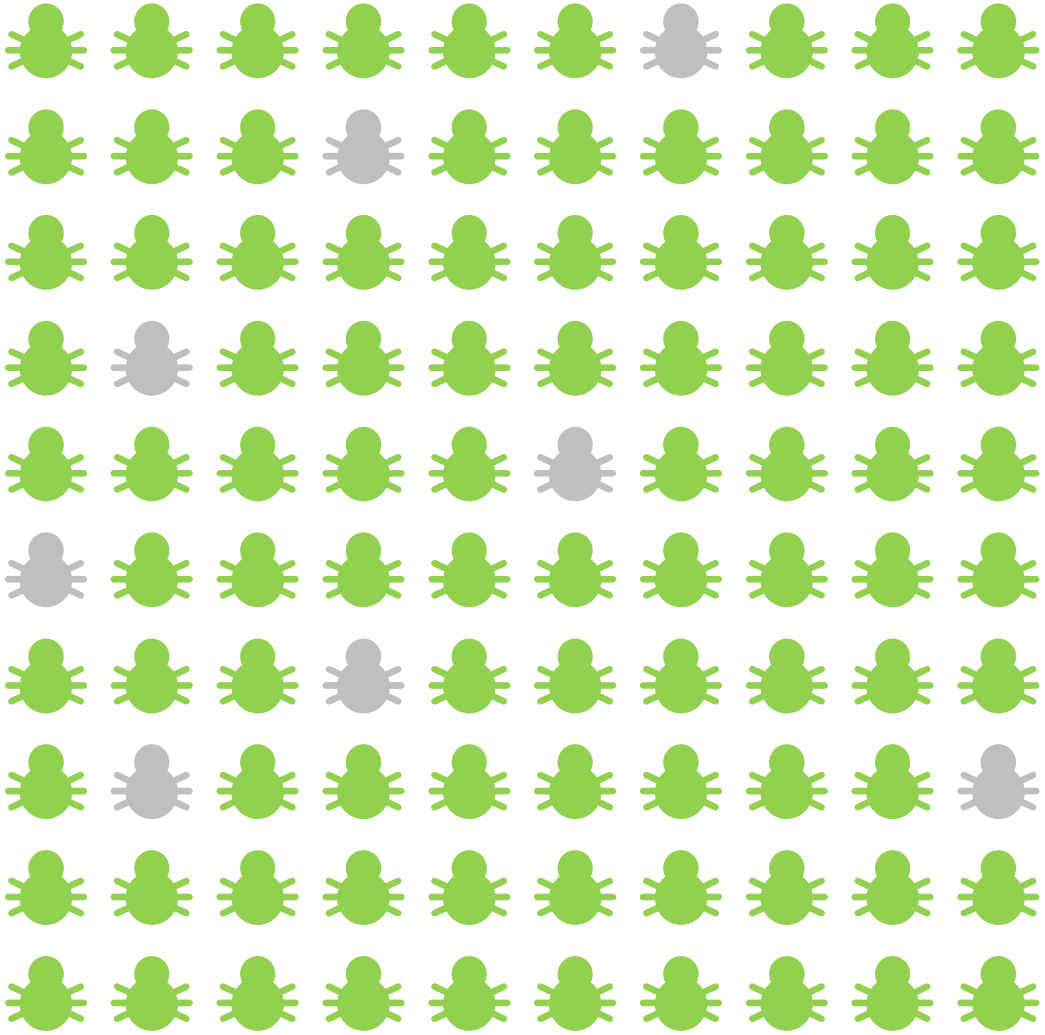
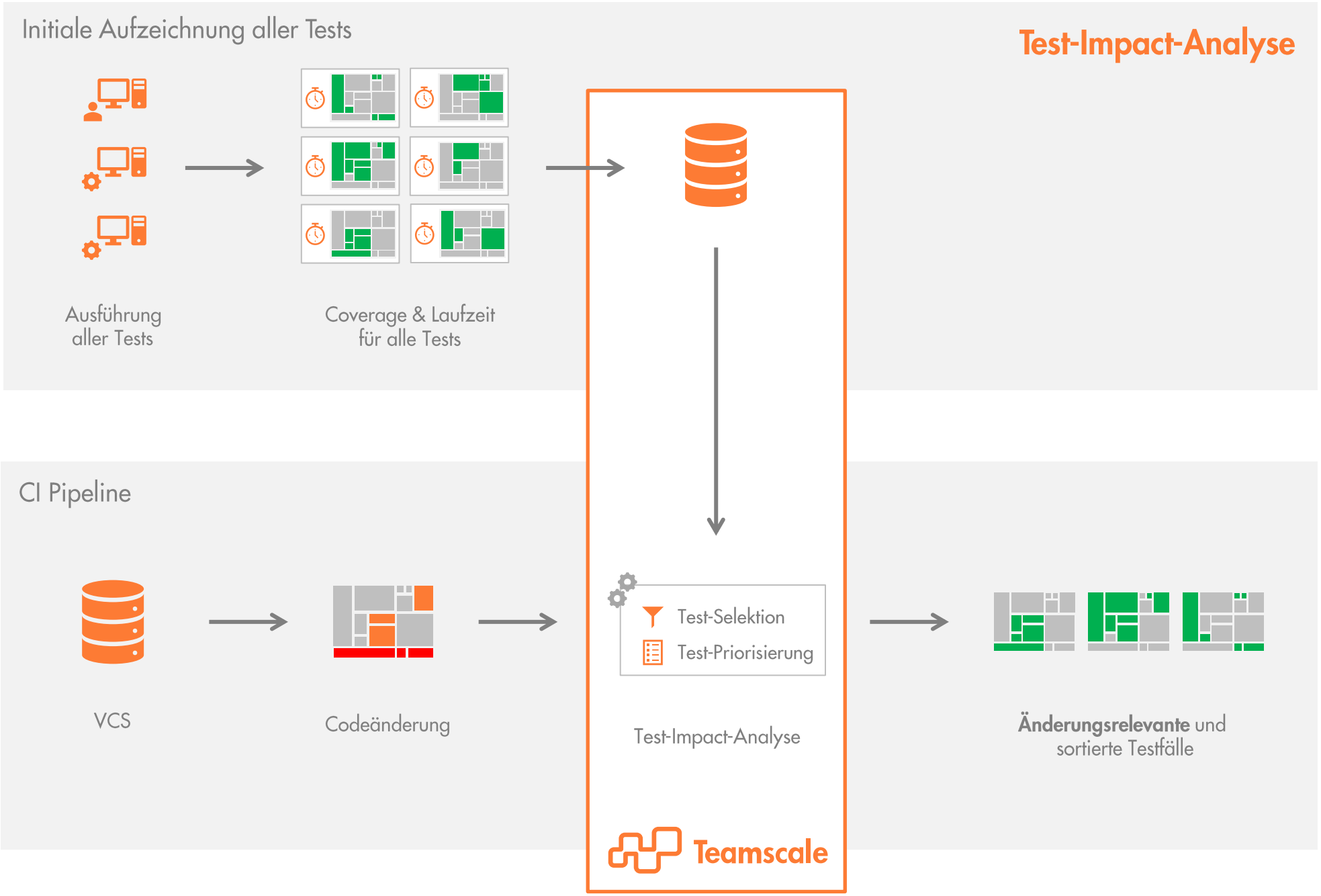
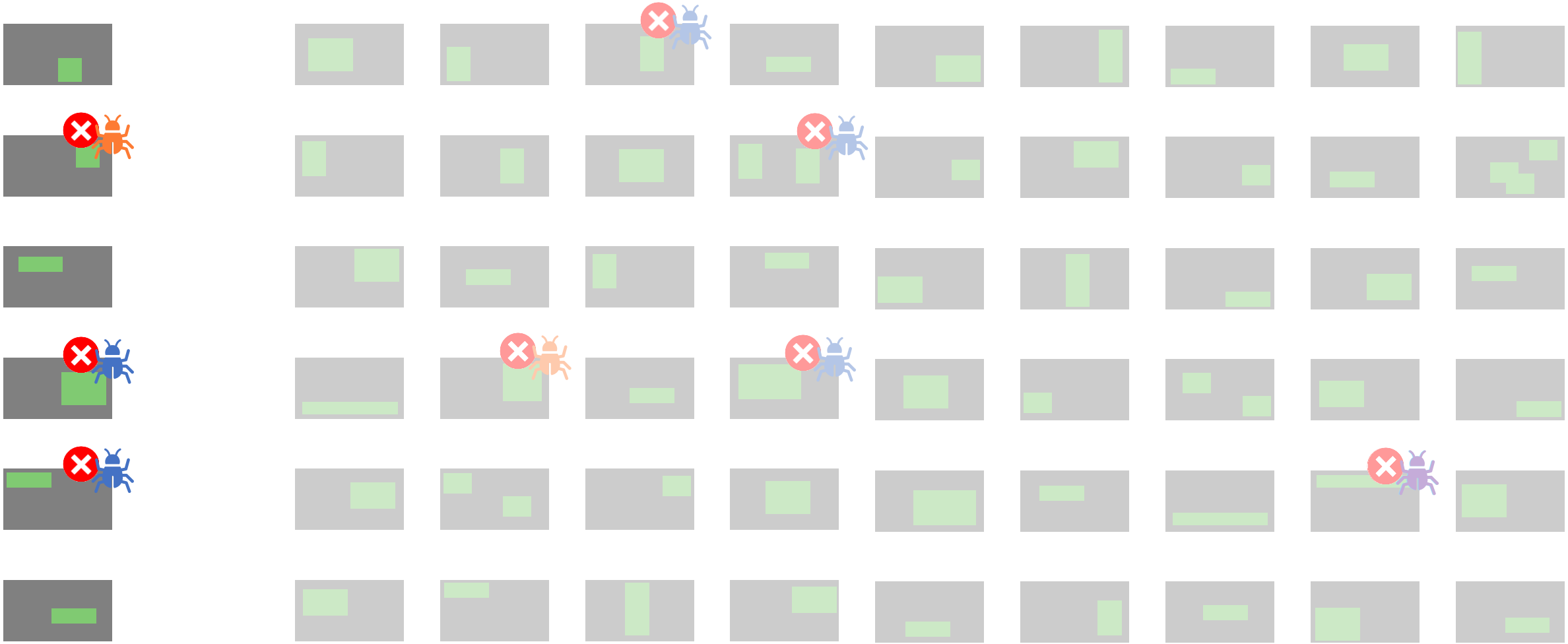



Initiale Aufzeichnung aller Tests
Test-Impact-Analyse
Ausführung aller Tests
Coverage & Laufzeit für alle Tests
CI Pipeline
VCS
Codeänderung
Test-Selektion
Test-Priorisierung
Test-Impact-Analyse
Teamscale
Änderungsrelevante und sortierte Testfälle

# Geht das auch einfacher?

# Pareto-Optimierung



# Warum gibt es hier Optimierungspotential?

Picture1.png - Pixelitor 4.2.3

File Edit Layer Select Image Color Filter View Help

Sample Only the Active Layer/Mask

Untitled1 × Picture1.png ×

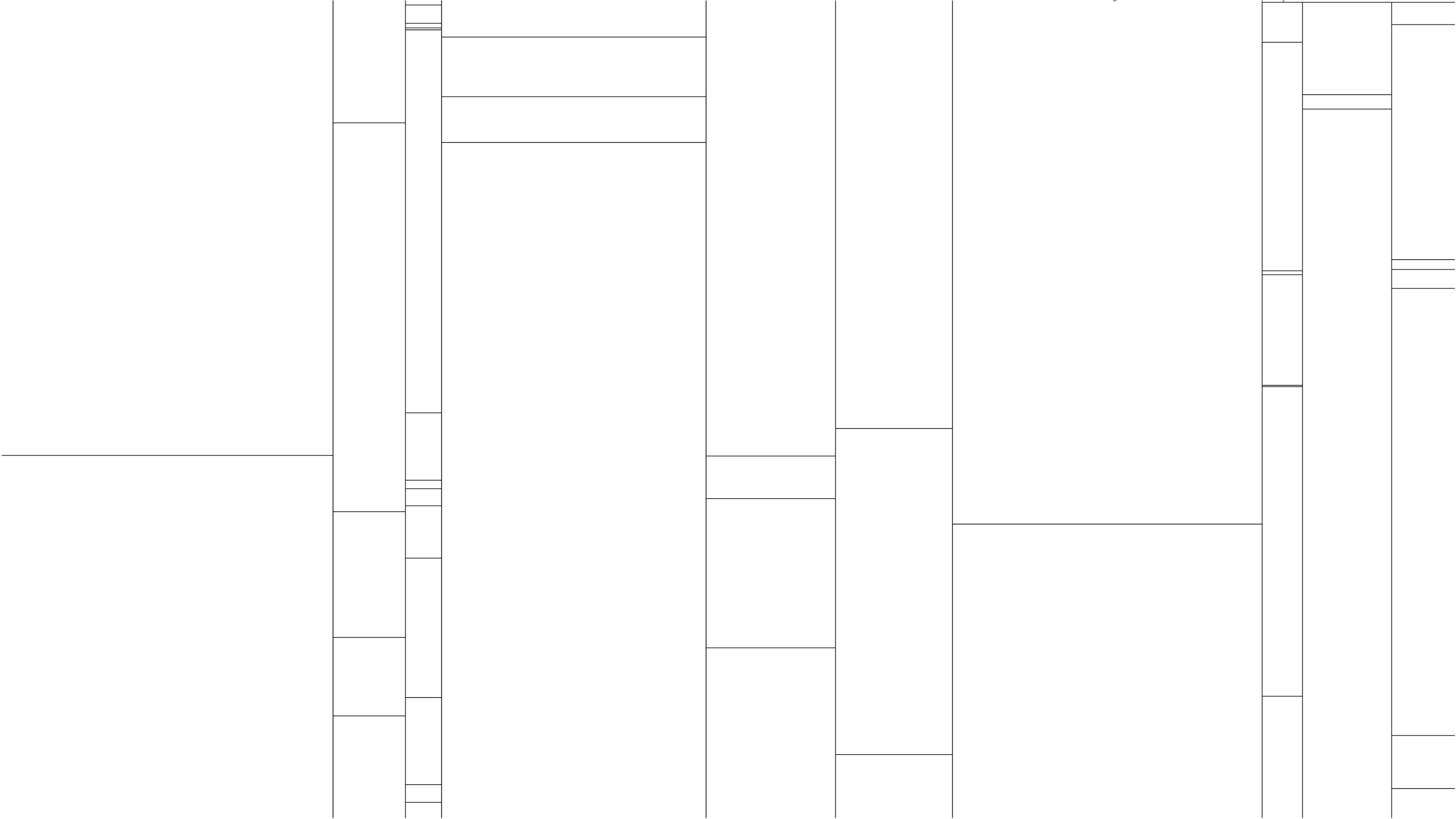

Layers

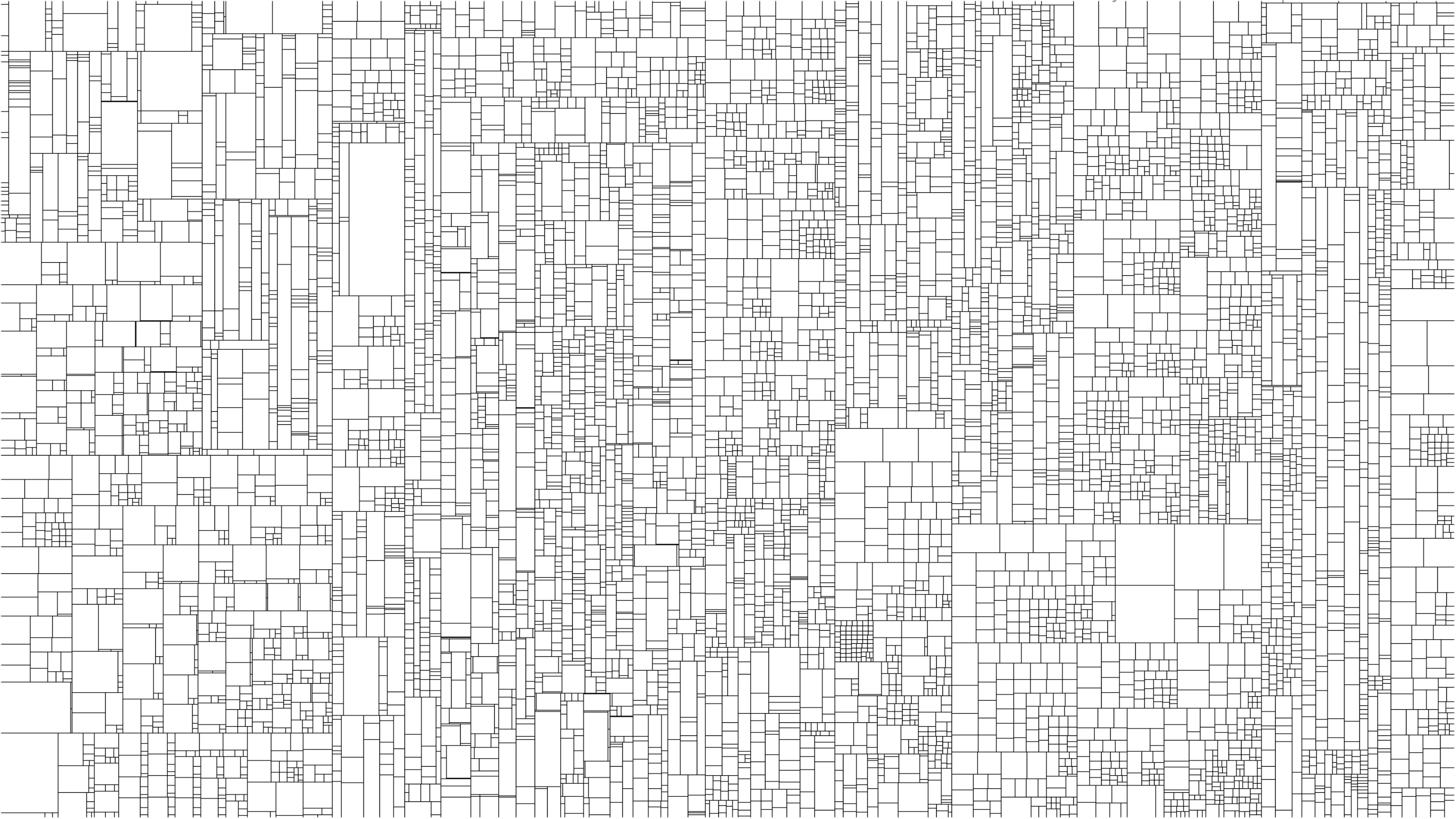
Opacity: 100 % Normal

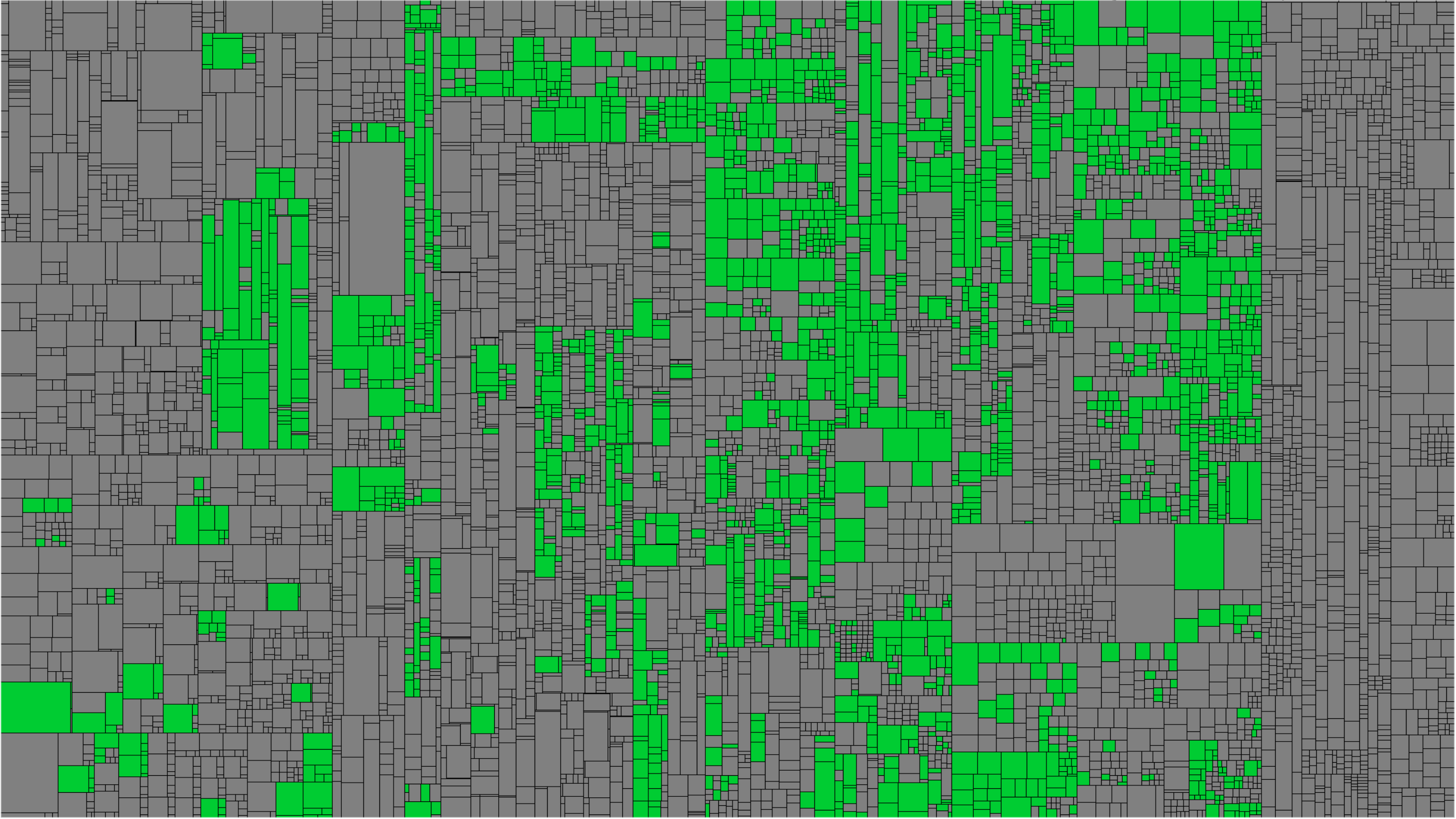
layer 1

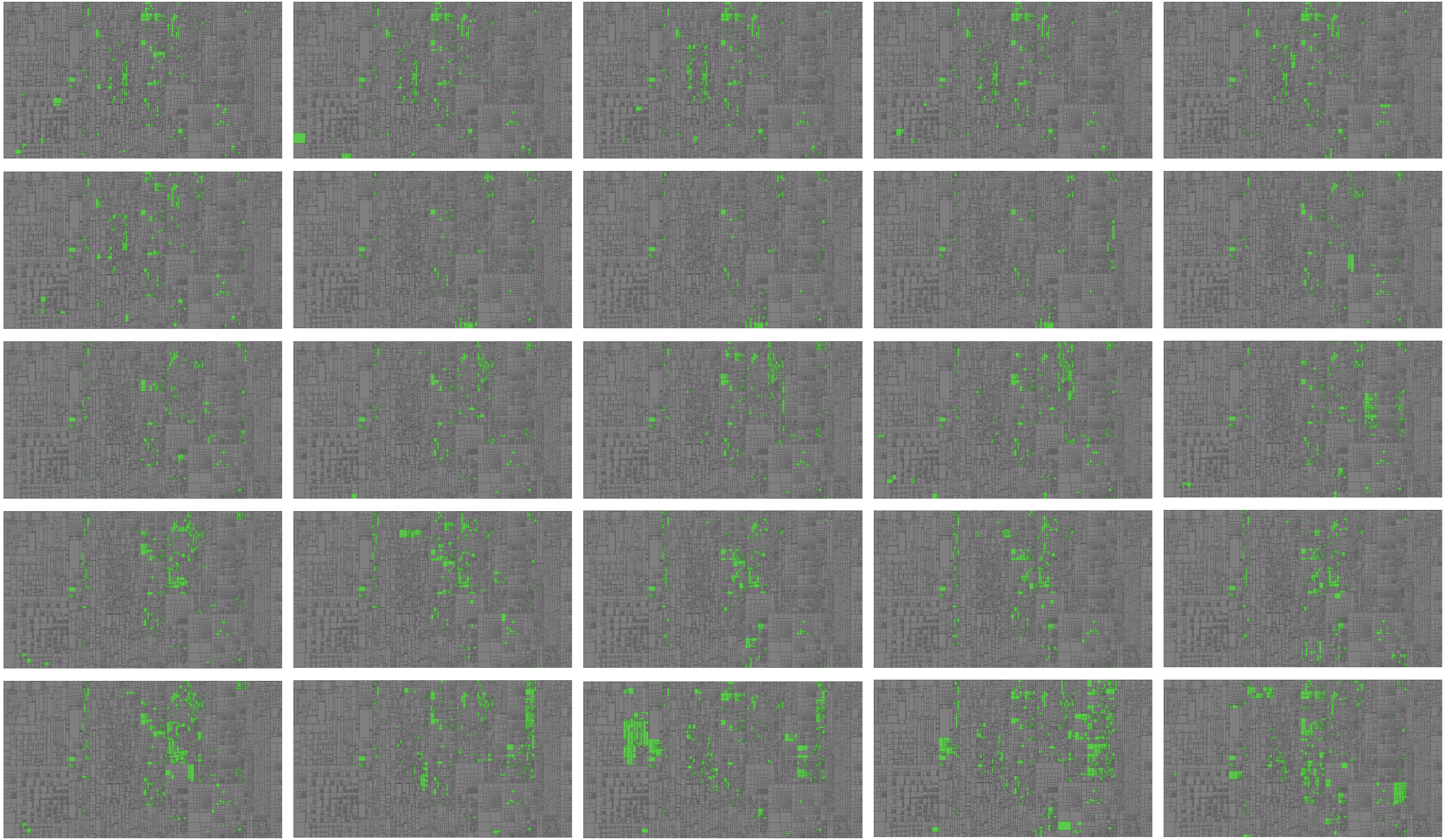
Picture1.png was opened.

Zoom: 100% Fit 100%

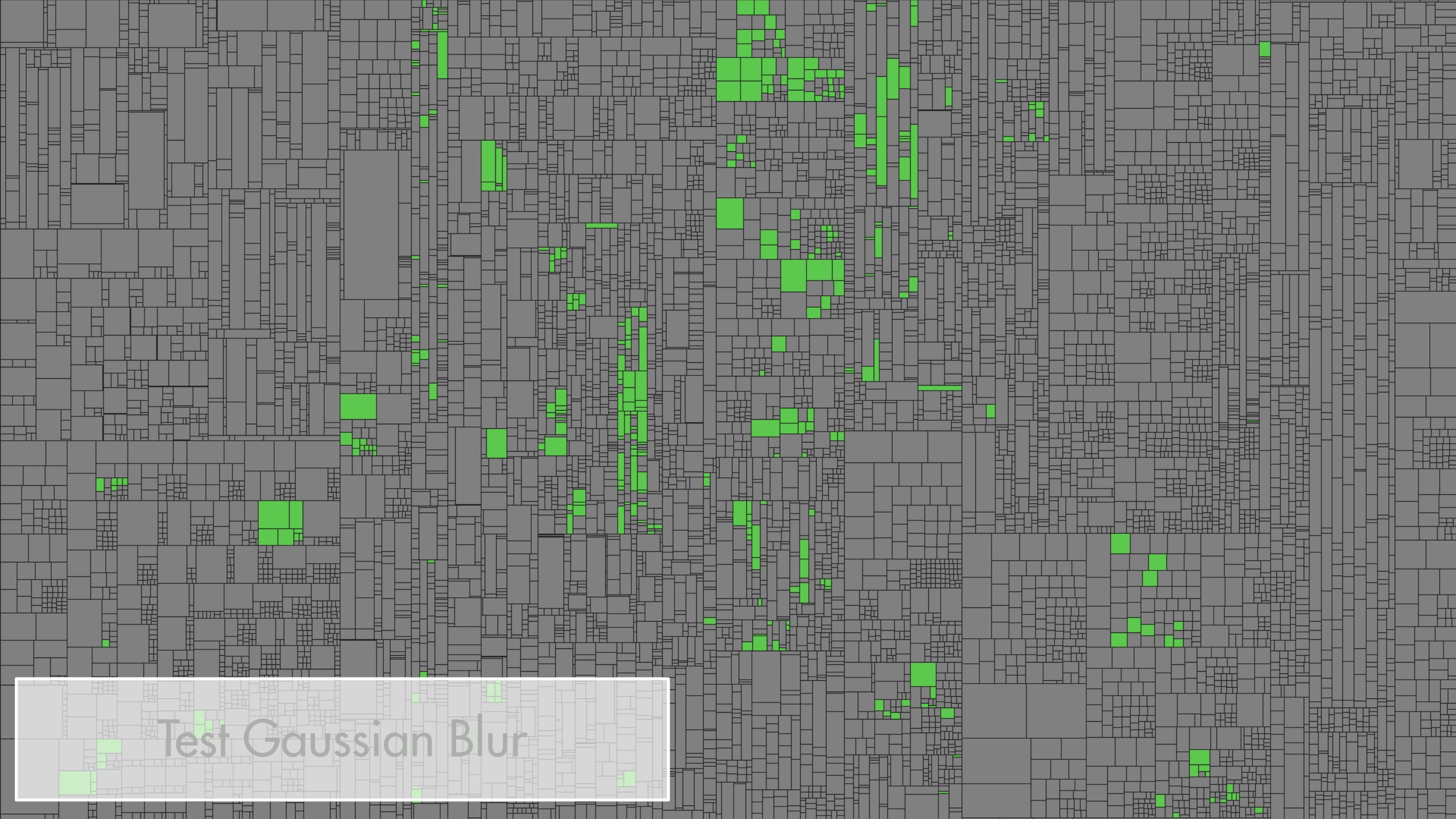


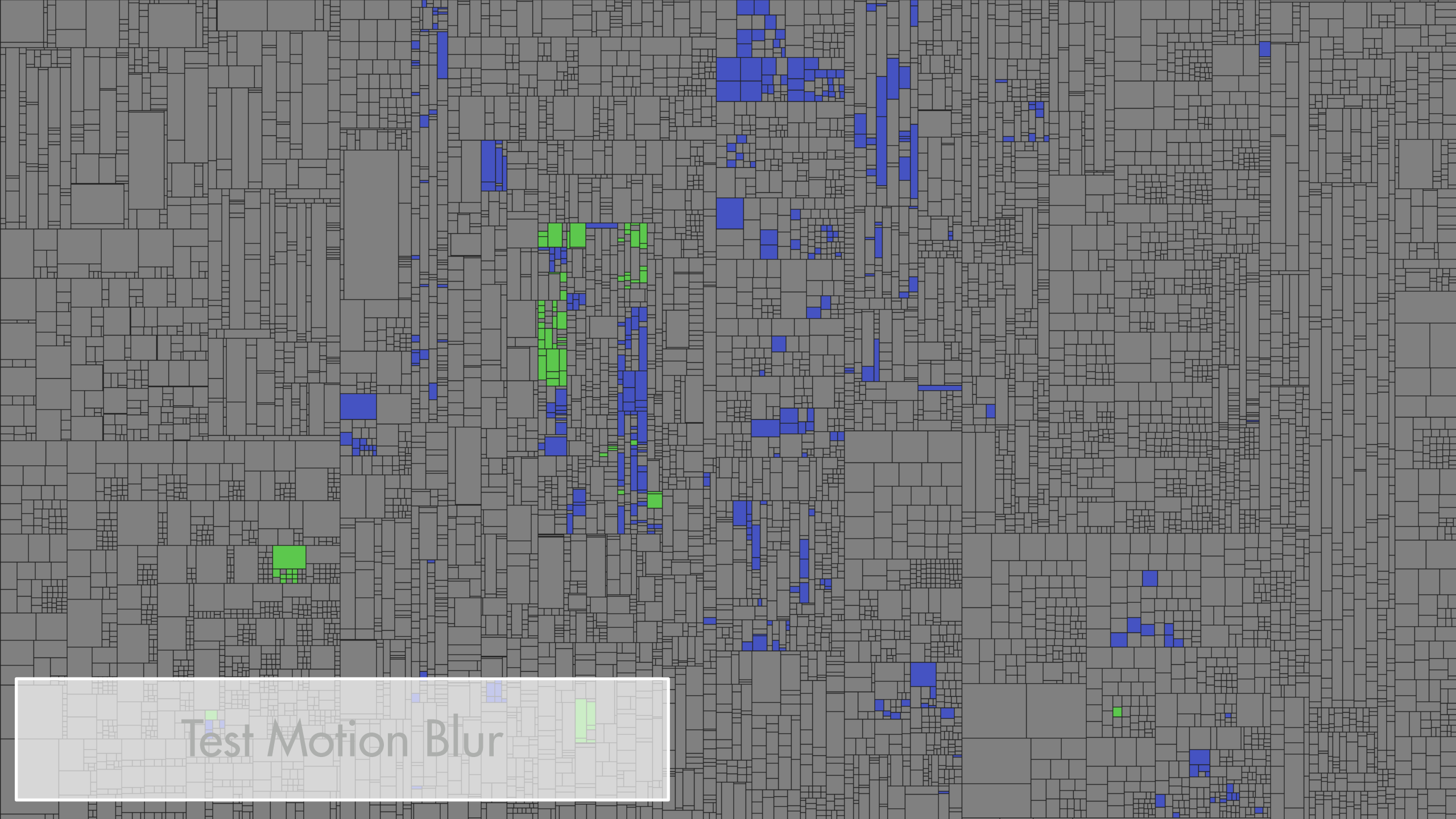


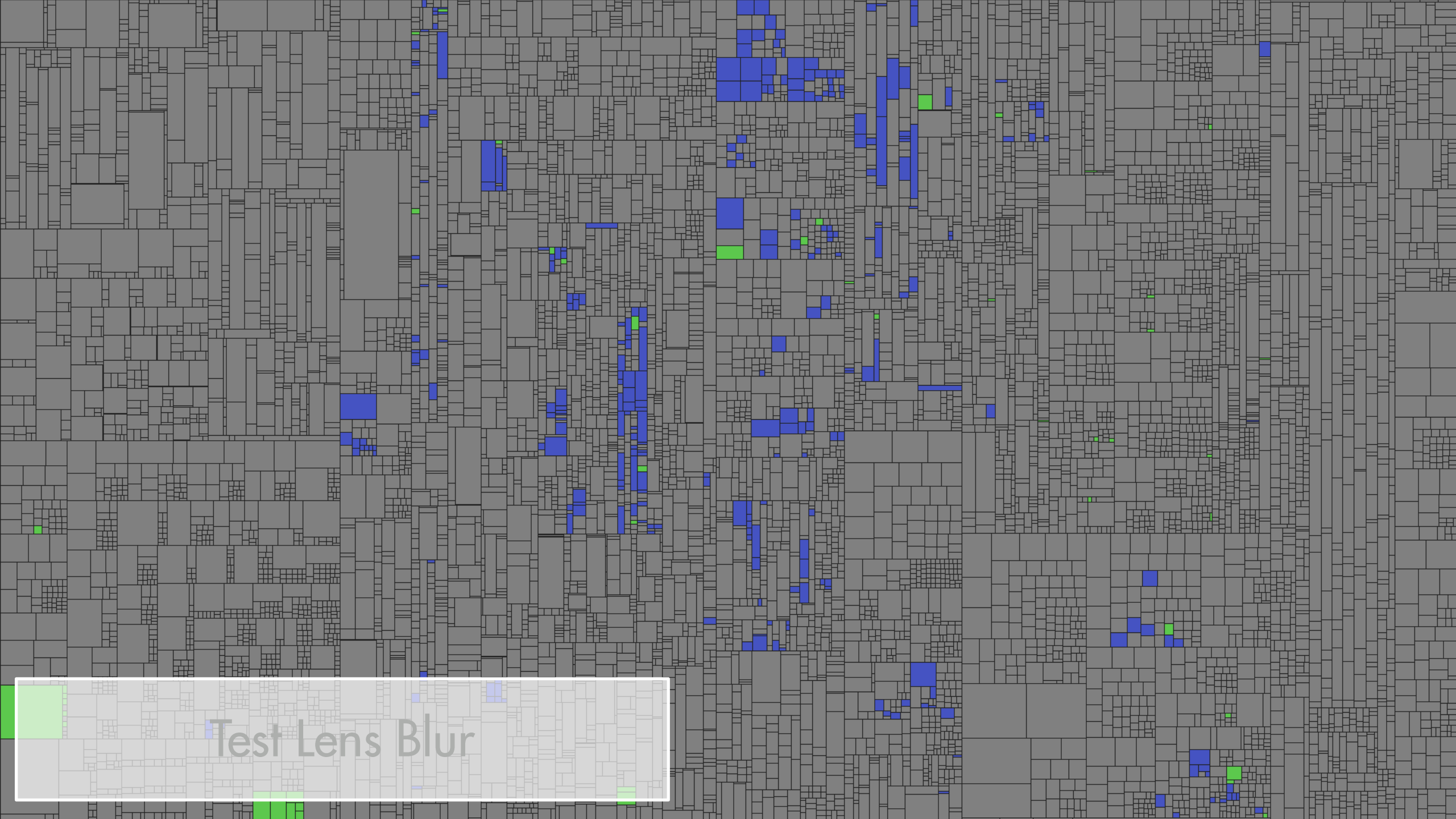


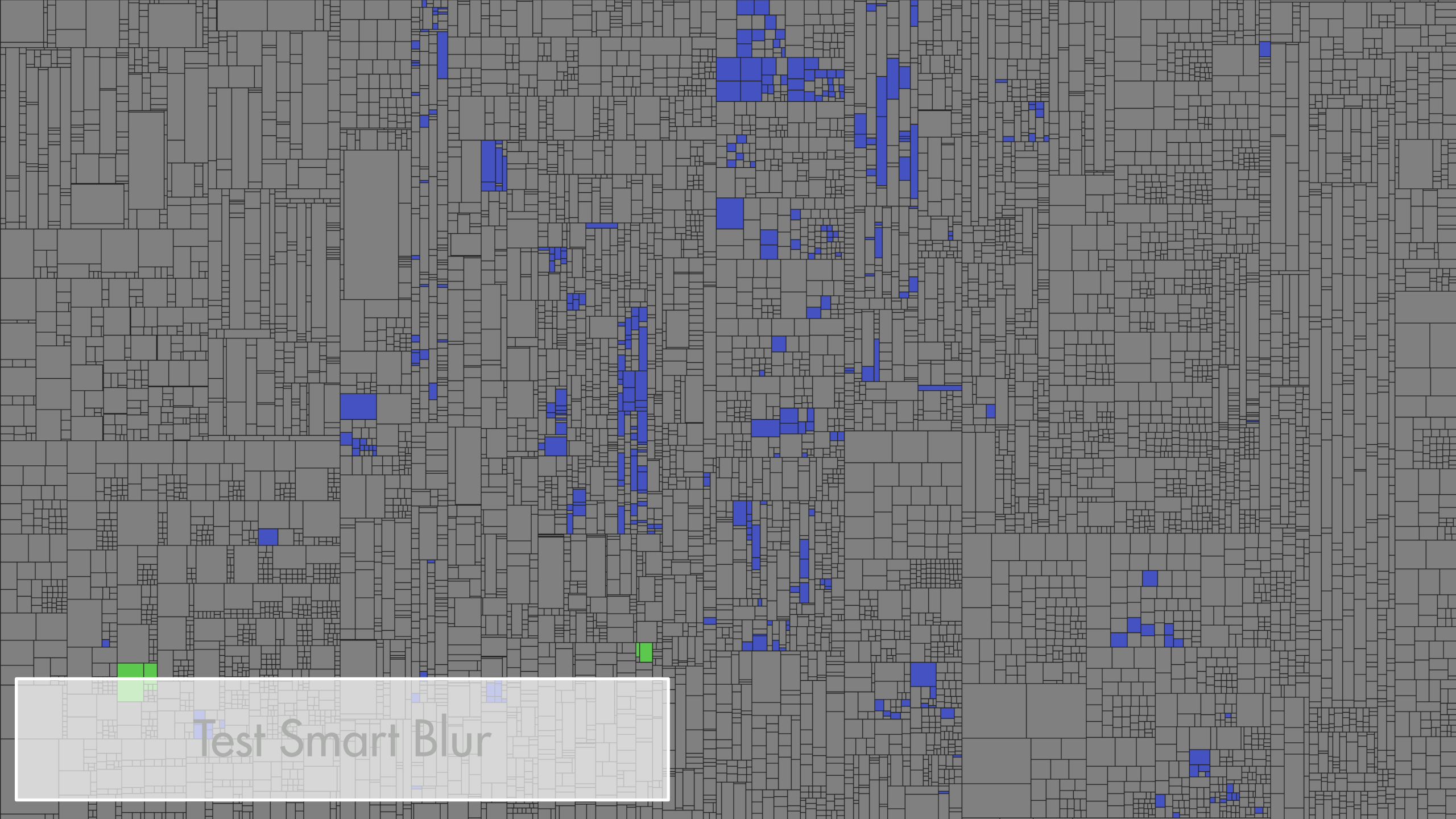


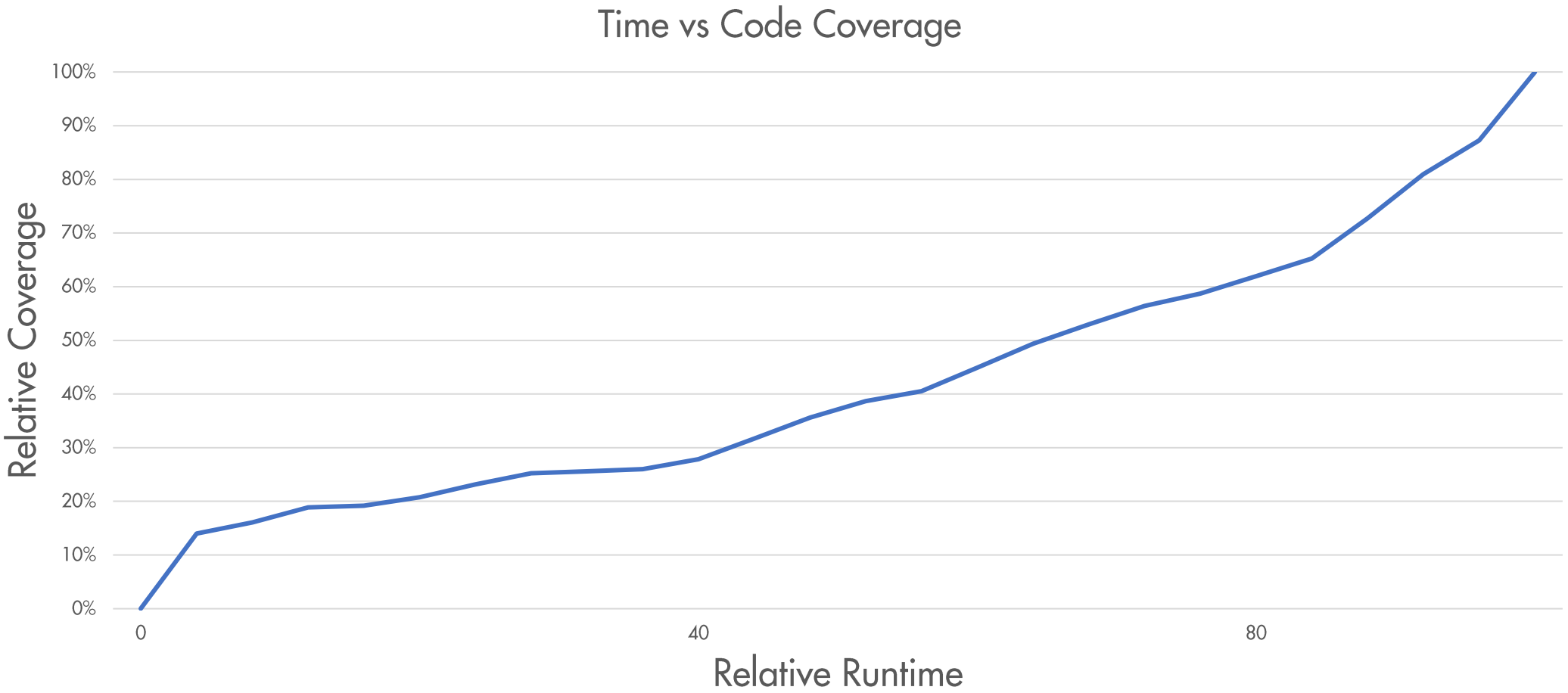
# Welchen Einfluss hat die Reihenfolge der Ausführung von Software Tests?


Test Gaussian Blur

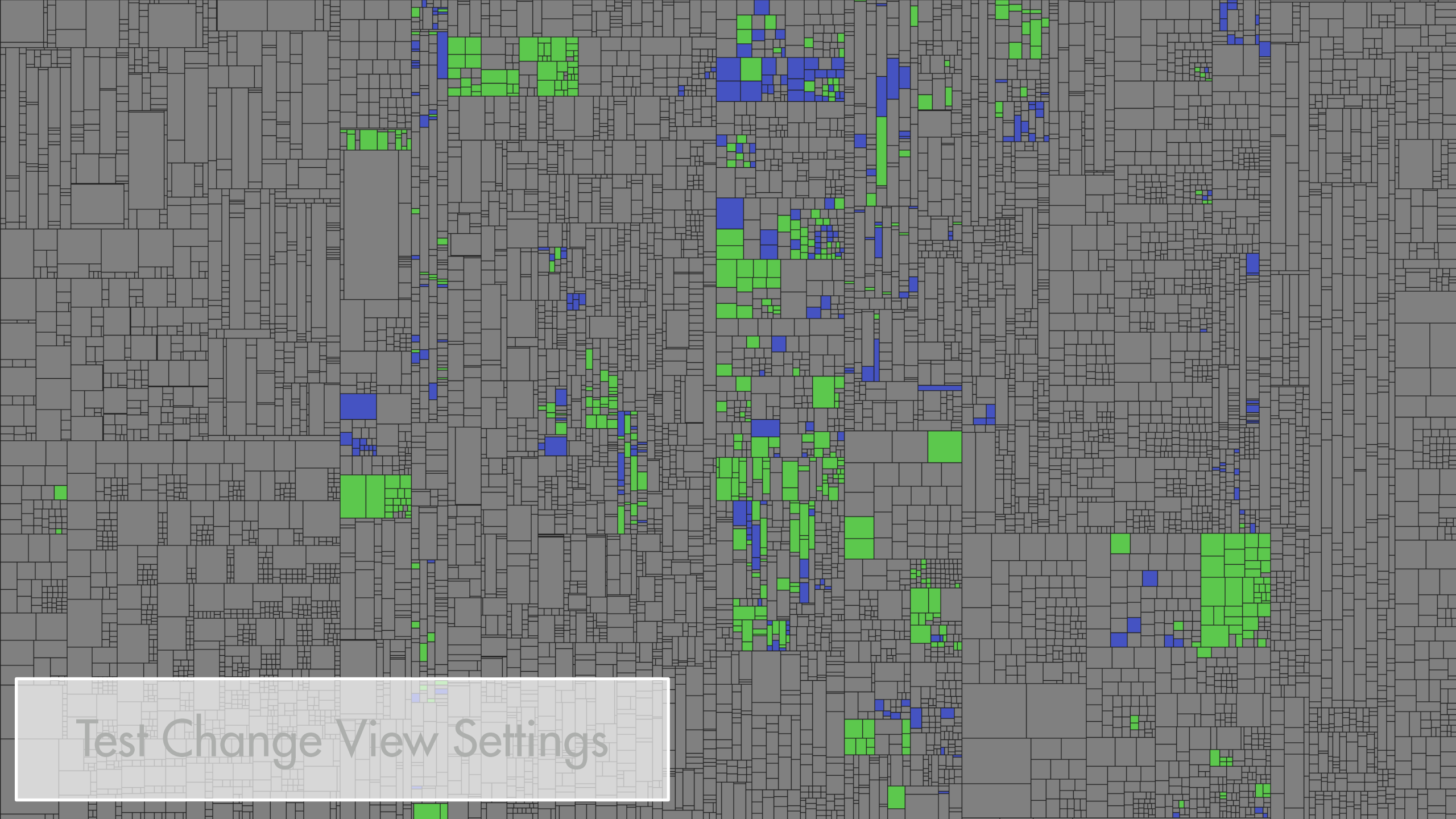

Test Motion Blur

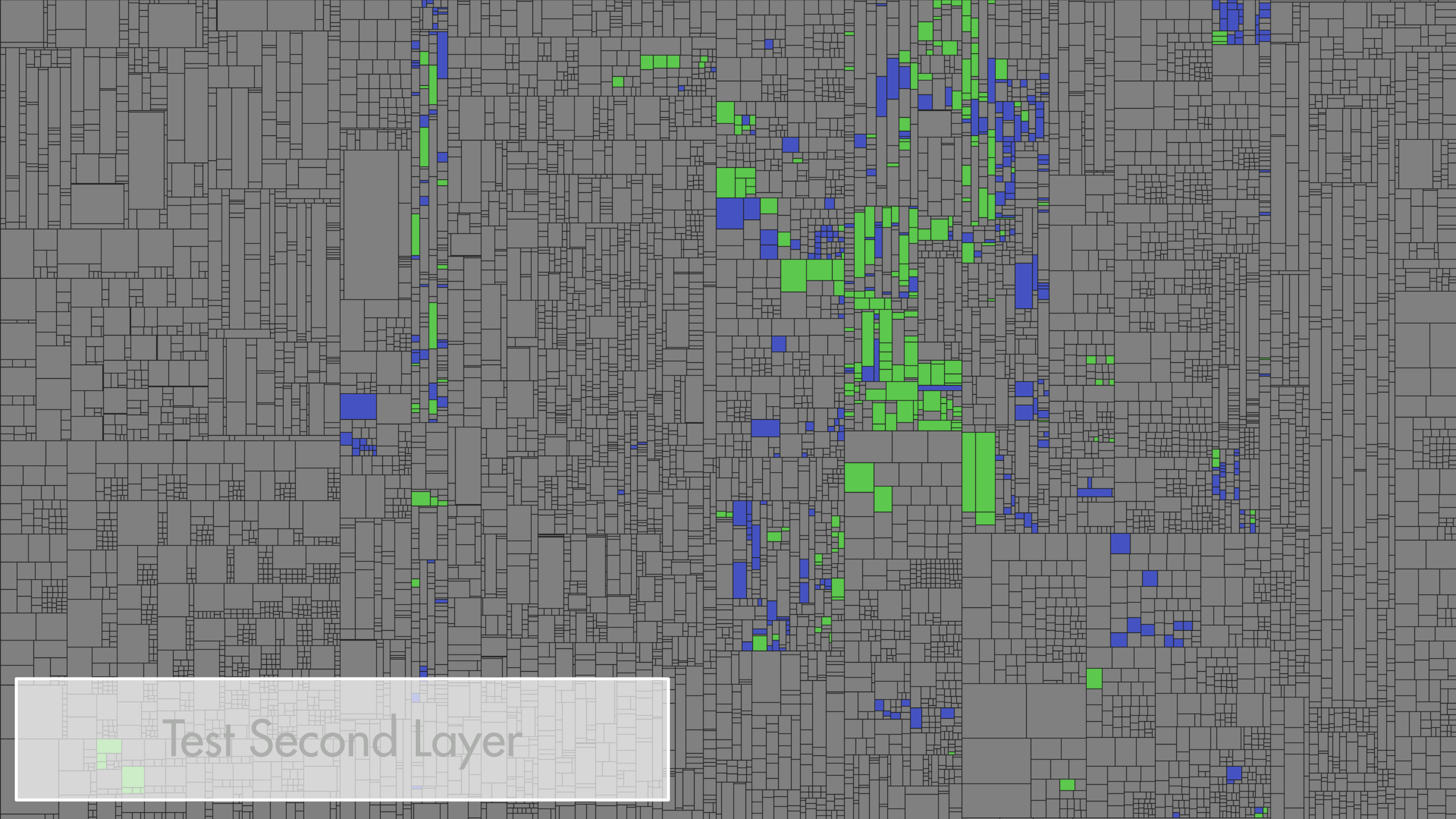

Test Lens Blur

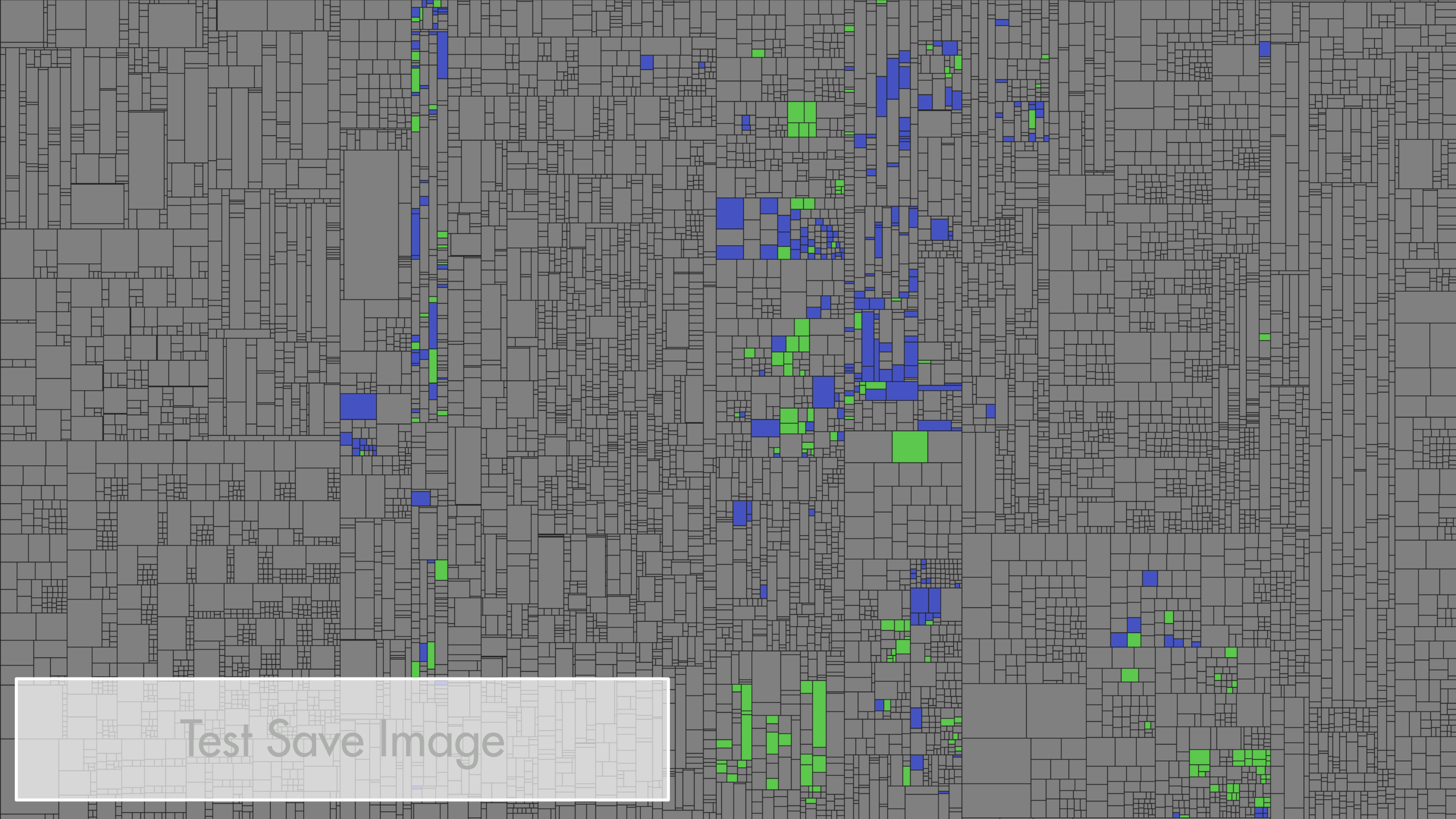

Test Smart Blur

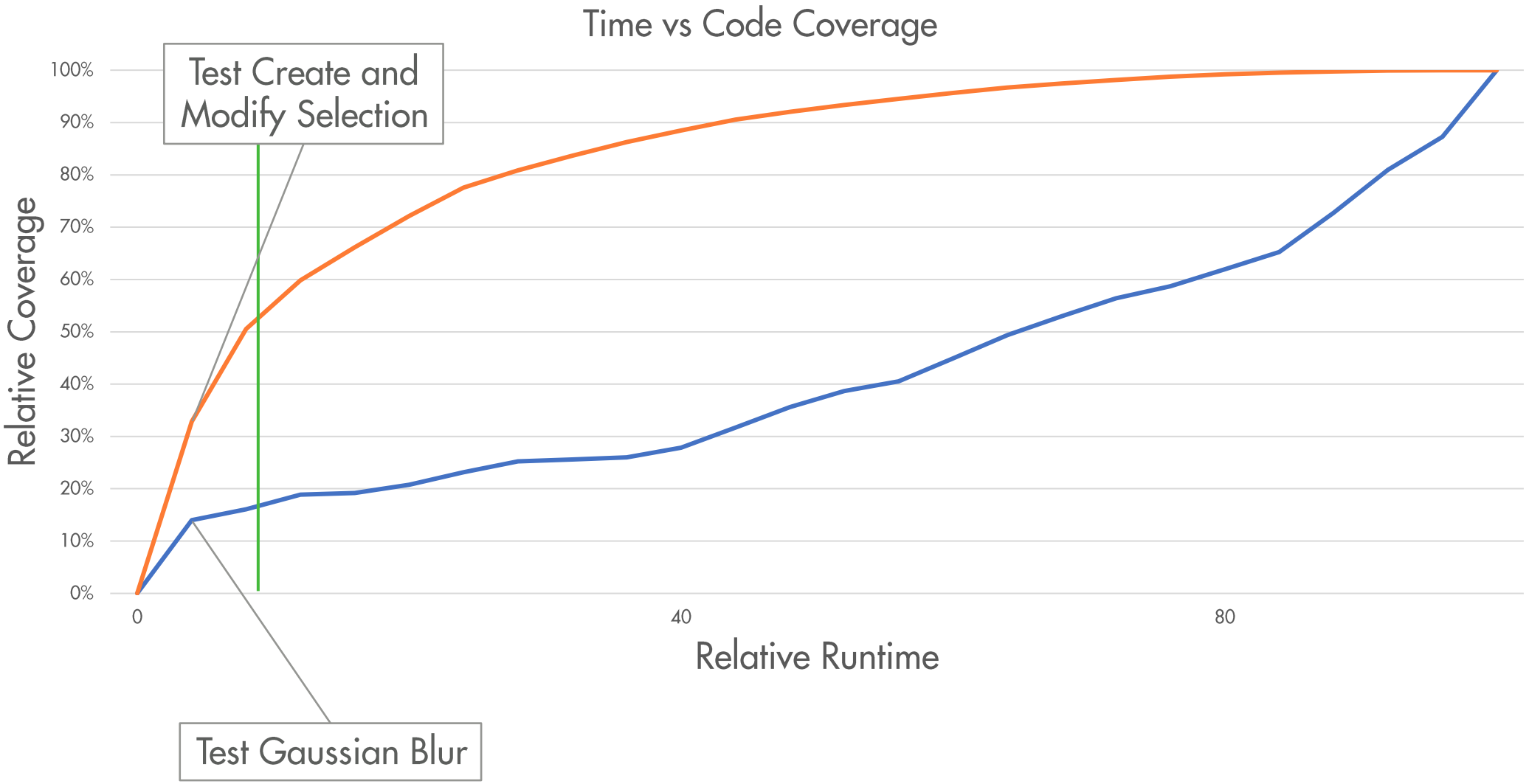

Time vs Code Coverage
Relative Coverage
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
0
40
80
Relative Runtime


Test Create and Modify
Selection


Test Change View Settings


Test Second Layer


Test Save Image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100%
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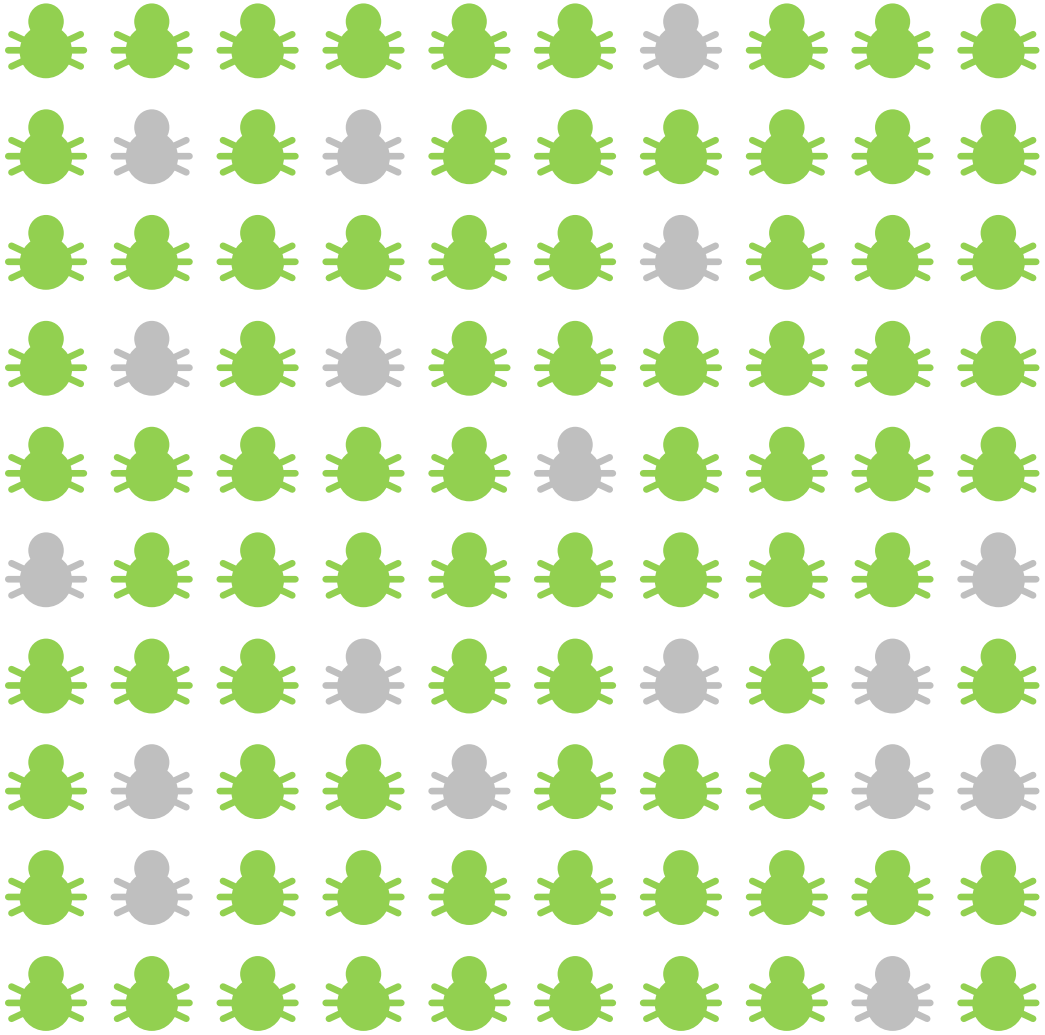
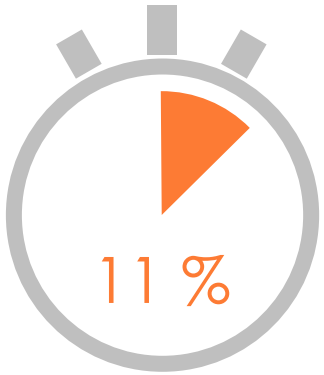
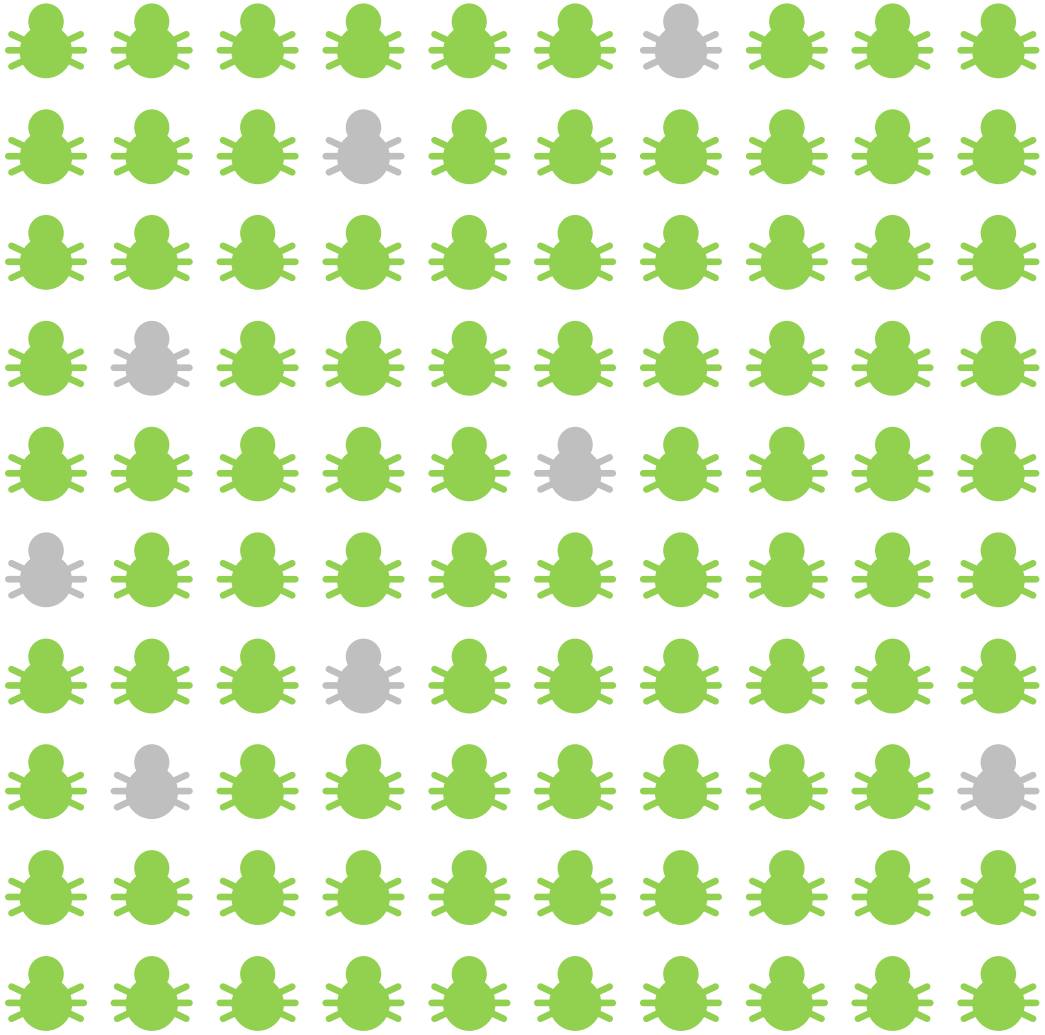
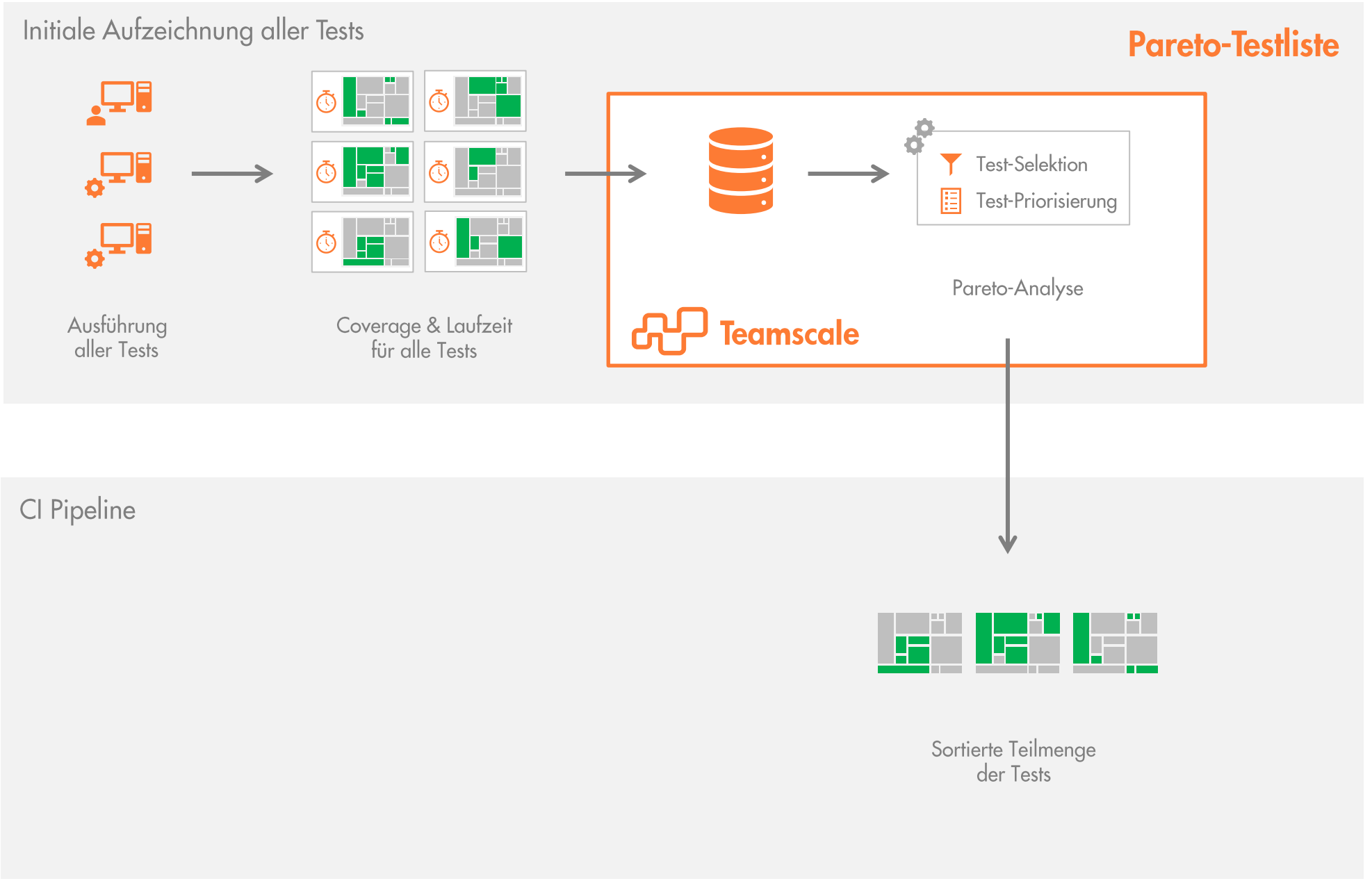
80 %






90 %

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Pareto-Testliste
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Coverage & Laufzeit
für alle Tests
Test-Selektion
Test-Priorisierung
Pareto-Analyse
Teamscale
CI Pipeline
Sortierte Teilmenge
der Tests

## Test-Impact-Analyse

Tests werden für jeden Lauf **passend zu Änderungen** ausgewählt

90% der Mutanten in 2% der Zeit

Erfordert kontinuierliche Messung der Coverage und Integration der Test-Auswahl in die CI / Testautomatisierung.

**Stärkere Beschleunigung des Feedbacks (bei höherem Aufwand)**

## Pareto-Optimierung

Tests werden **unabhängig von Änderungen** ausgewählt

90% der Mutanten in 11% der Zeit

Einmalige Messung der Coverage reicht aus.

**Viel geringerer Aufwand**

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# Questions?


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