

Did we Test the Right Things? Test Gap Analysis in Practice

Tuesday, Oct. 17th

11:10 – 11:35

Room 0.94 & 0.95

Dr. Elmar Jürgens

About Me

Research

- Clone Detection, Test-Gap-Analysis, ...
- PC Member of MSR, ICPC, ICSE, ...

Practice

- Co-Founder
- Quality Control

„Gesellschaft für Informatik“

- Junior-Fellow
- Transfer between Research & Practice



**WINCOR
NIXDORF**

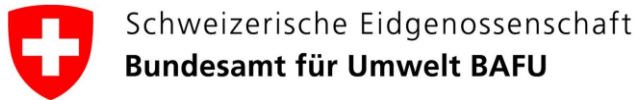


KUKA

CLAAS



ABB



SIEMENS



B/S/H/



THALES

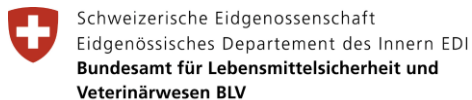


Zwick / Roell

FUJITSU



Audi



LV 1871



ENGEL

SW/M

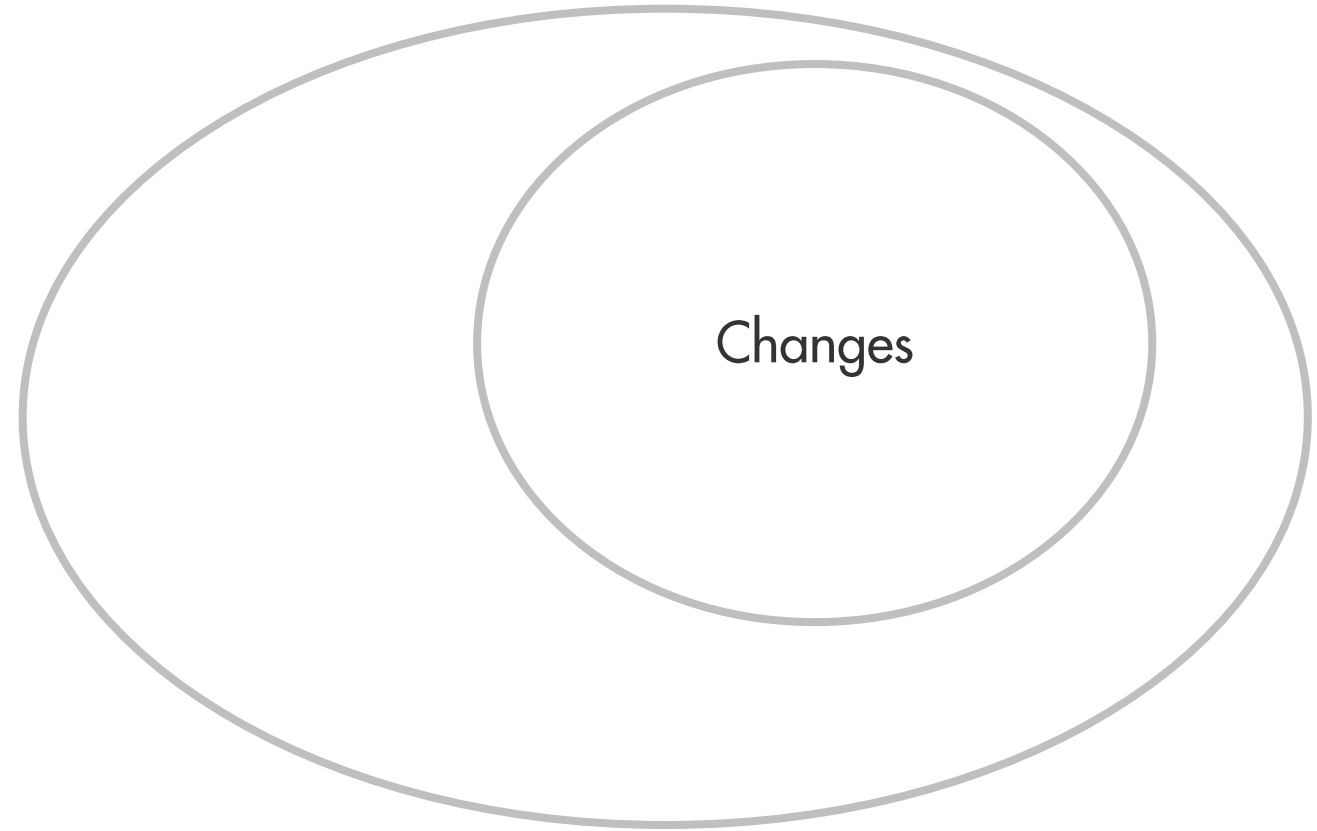


medatixx



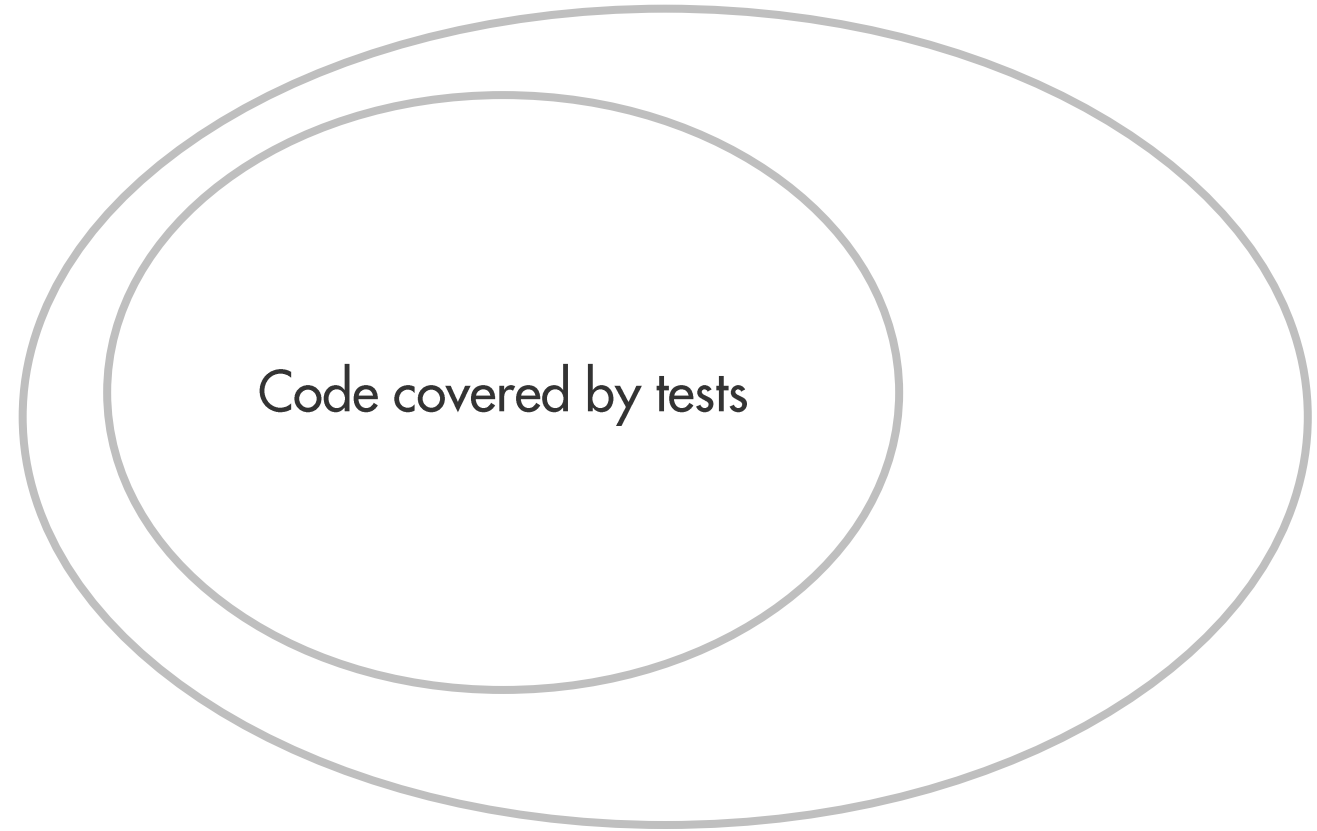
How many changes are untested?

Study: C# System @ Munich Re



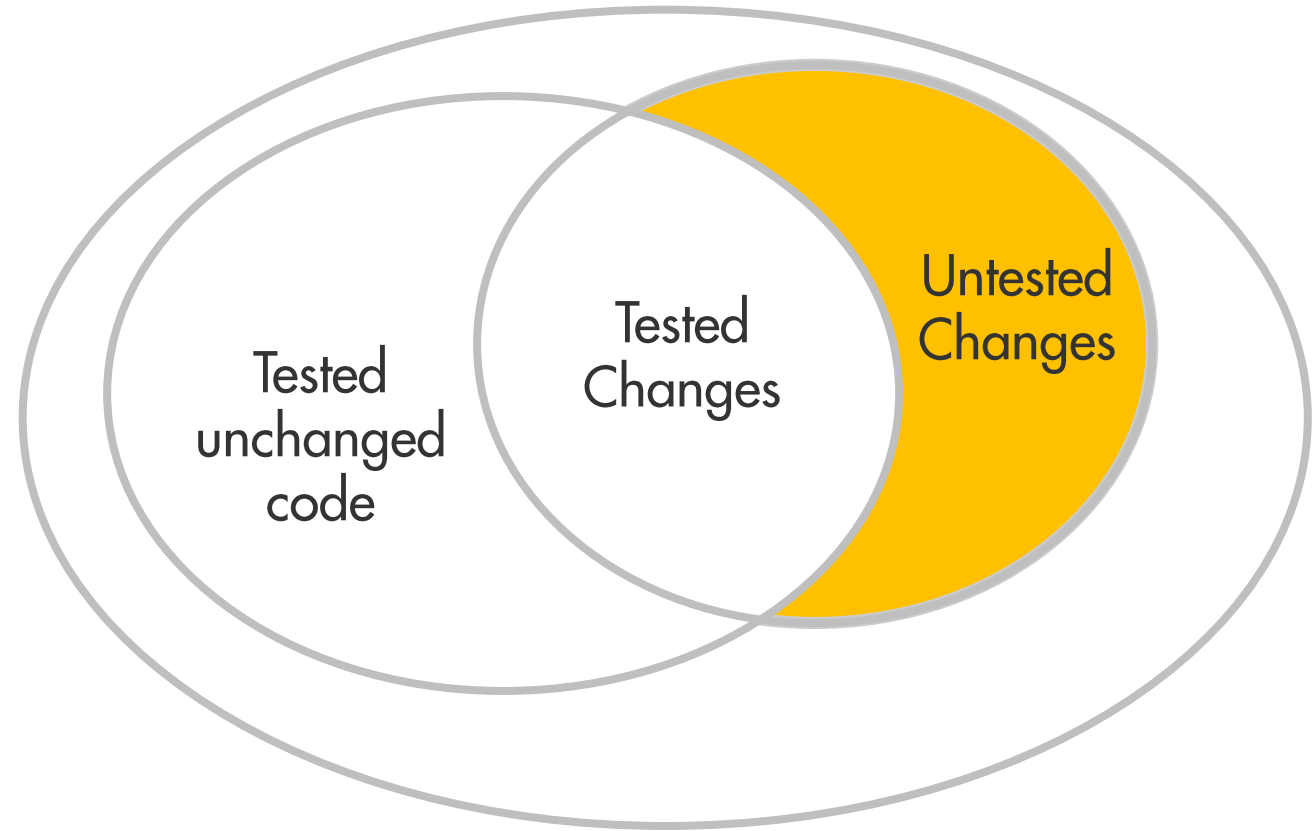
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Study: C# System @ Munich Re

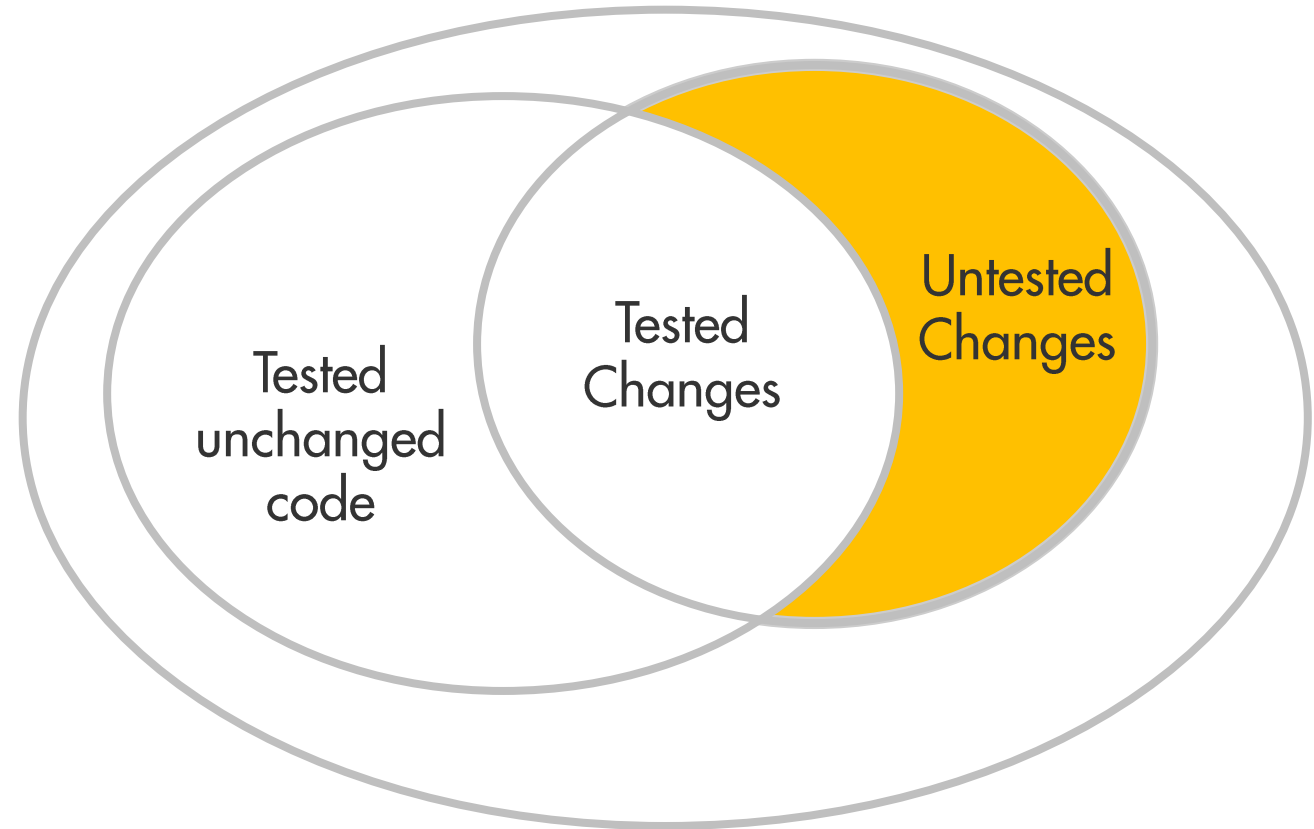


How many changes are untested?

Study: C# System @ Munich Re

Release A:

15% Code modified,
>50% **untested**



How many changes are untested?

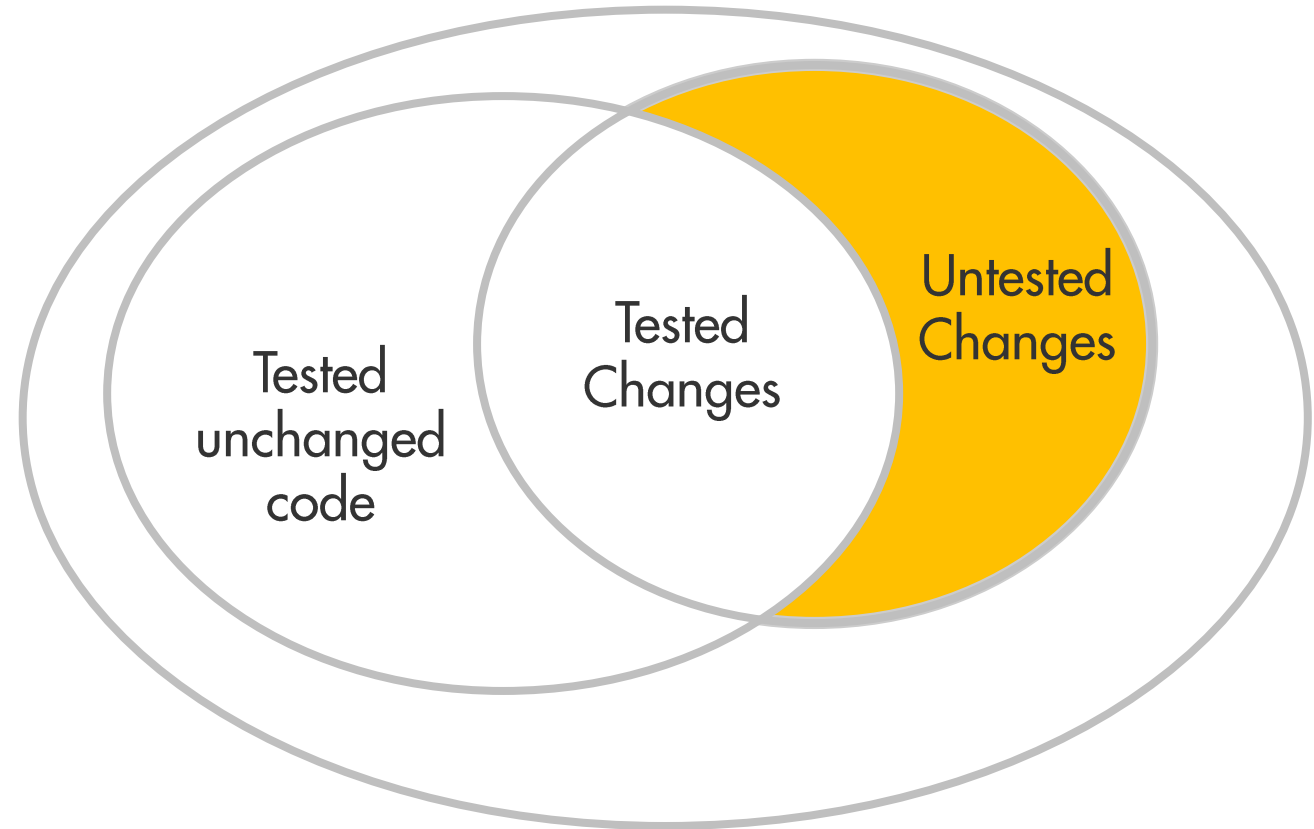
Study: C# System @ Munich Re

Release A:

15% Code modified,
>50% untested

Release B:

15% Code modified,
>60% untested



How many changes are untested?

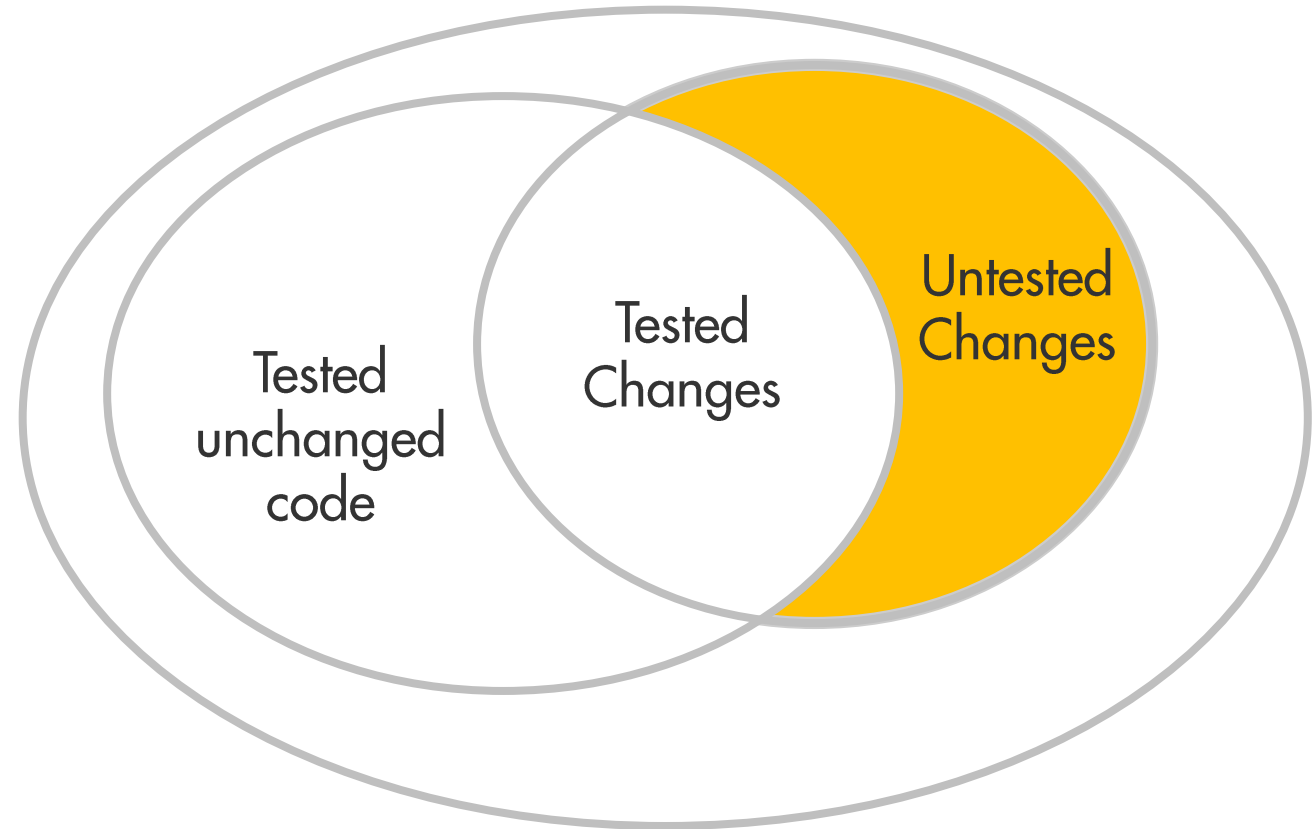
Study: C# System @ Munich Re

Release A:

15% Code modified,
>50% untested

Release B:

15% Code modified,
>60% untested



Field fault probability 5x higher for untested changes

Changes



Test-Gap-Analysis

Execution



Untested
Changes

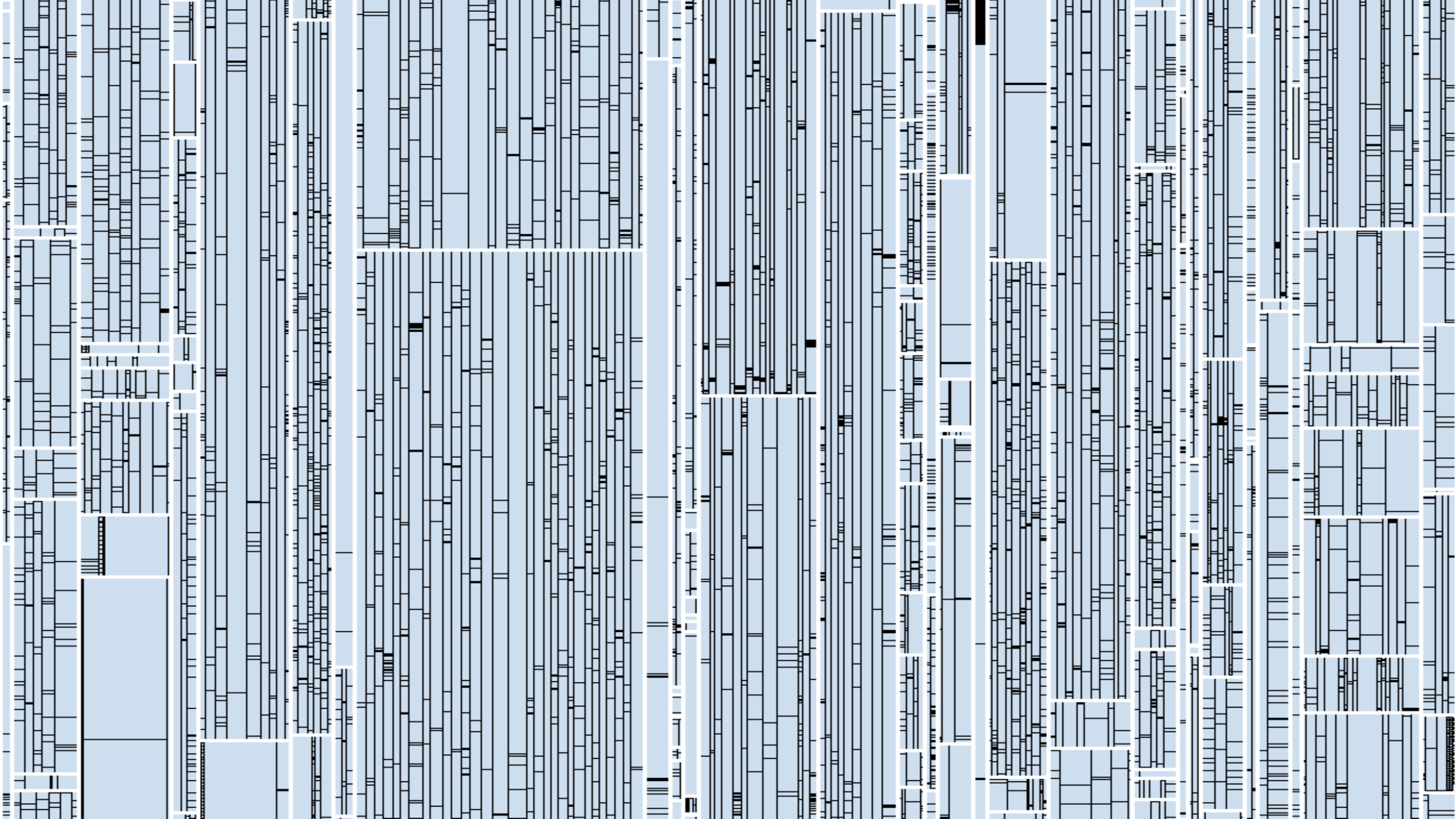
GUI.Dialogs

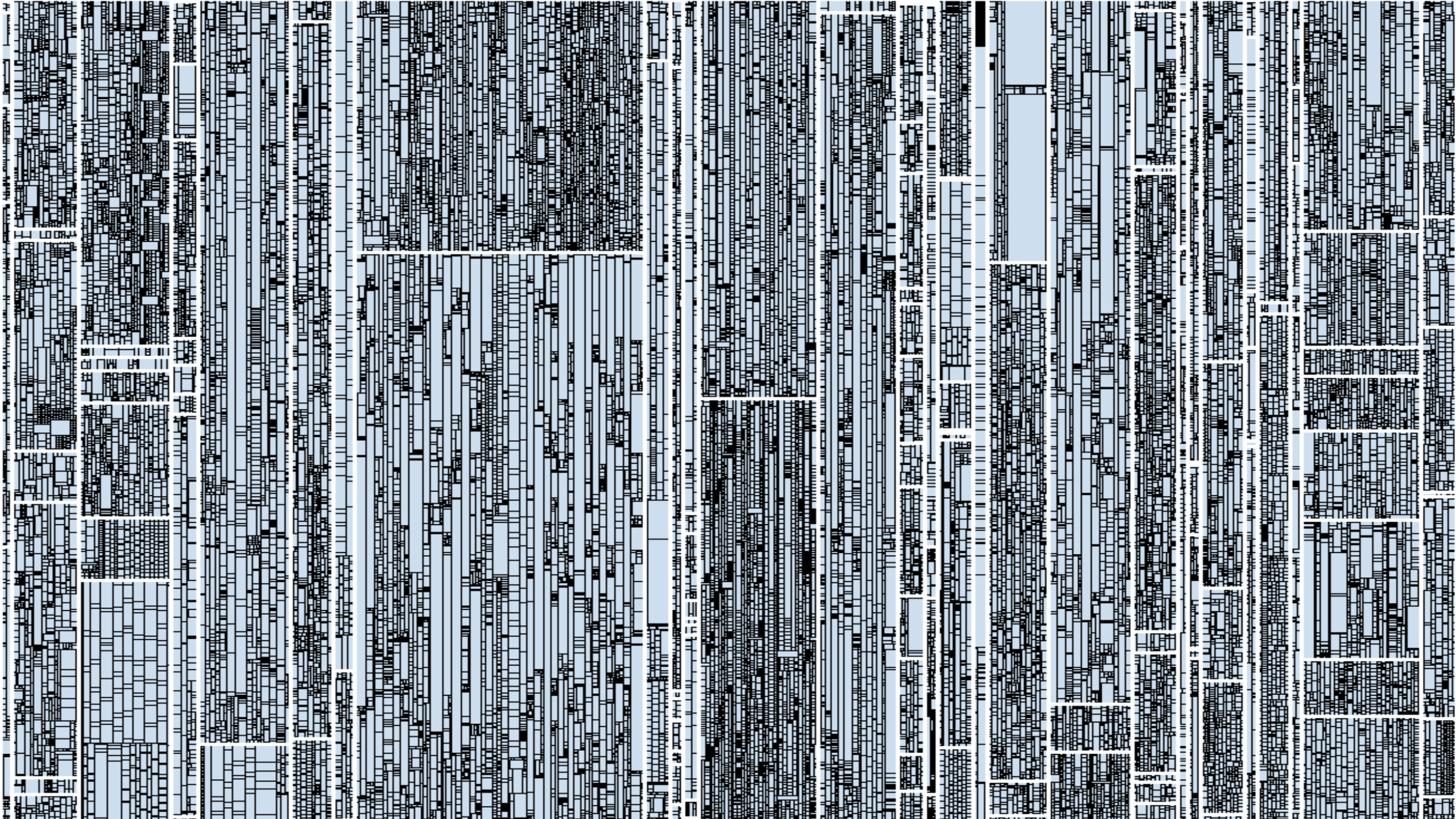
Authentication

UI Controls

GUI.Base

Data
Validation



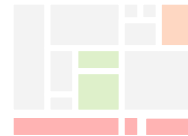


Changes



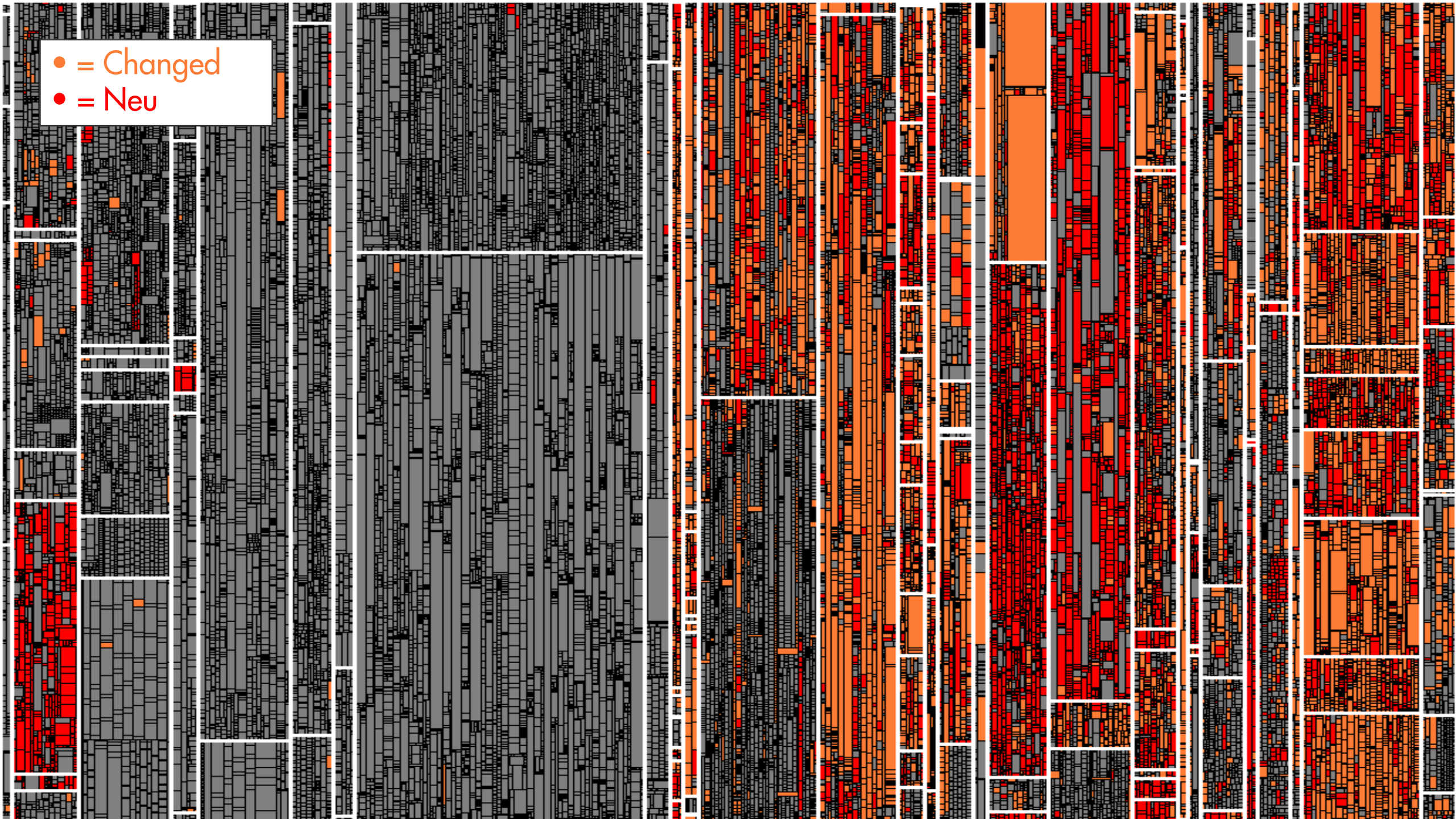
Test-Gap-Analysis

Execution

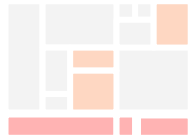


Untested
Changes

- = Changed
- = Neu

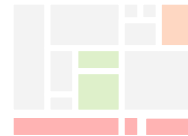


Changes



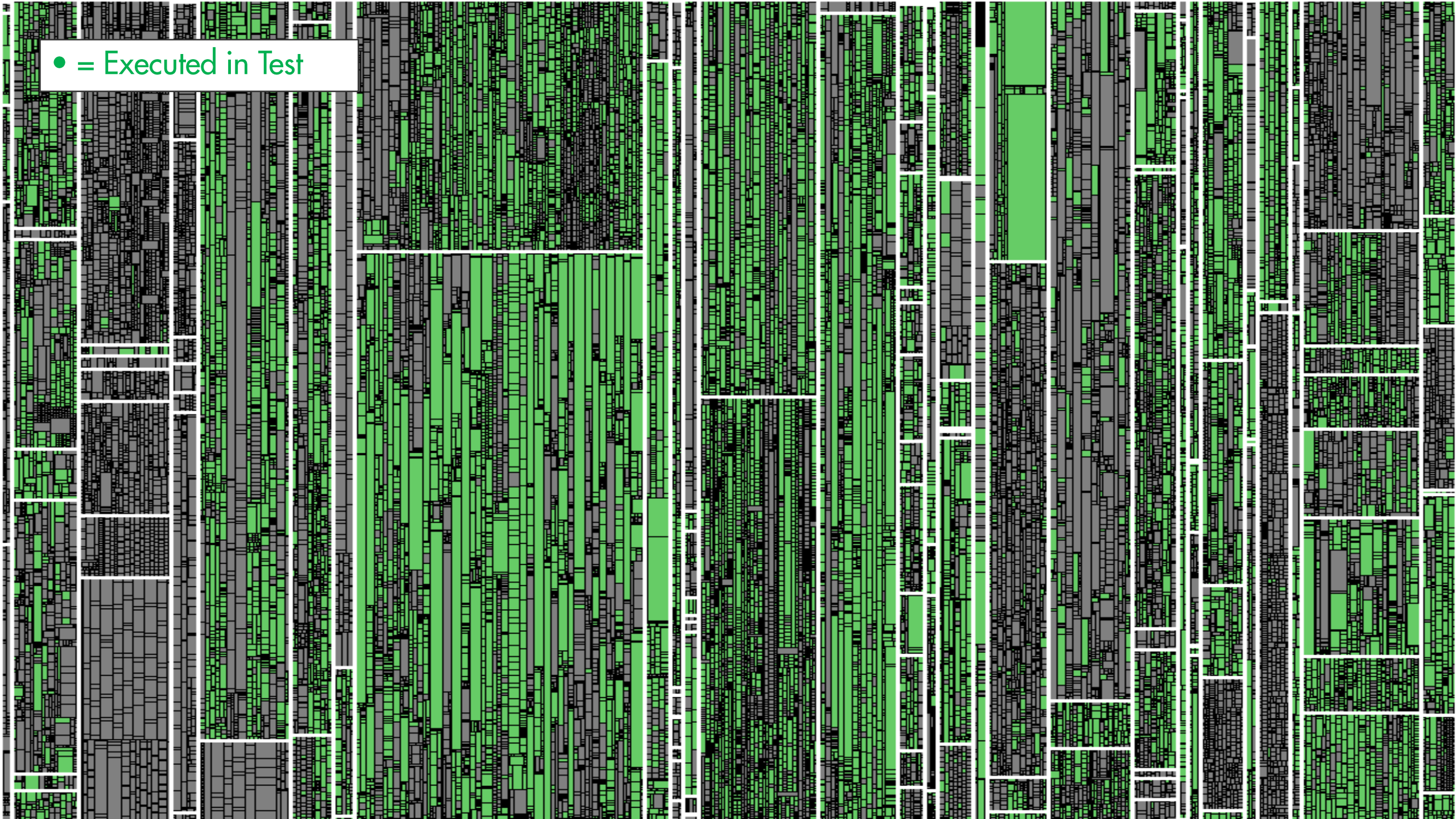
Test-Gap-Analysis

Execution



Untested
Changes

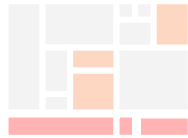
● = Executed in Test



• = Executed in Test

Manual & automated Tests

Changes



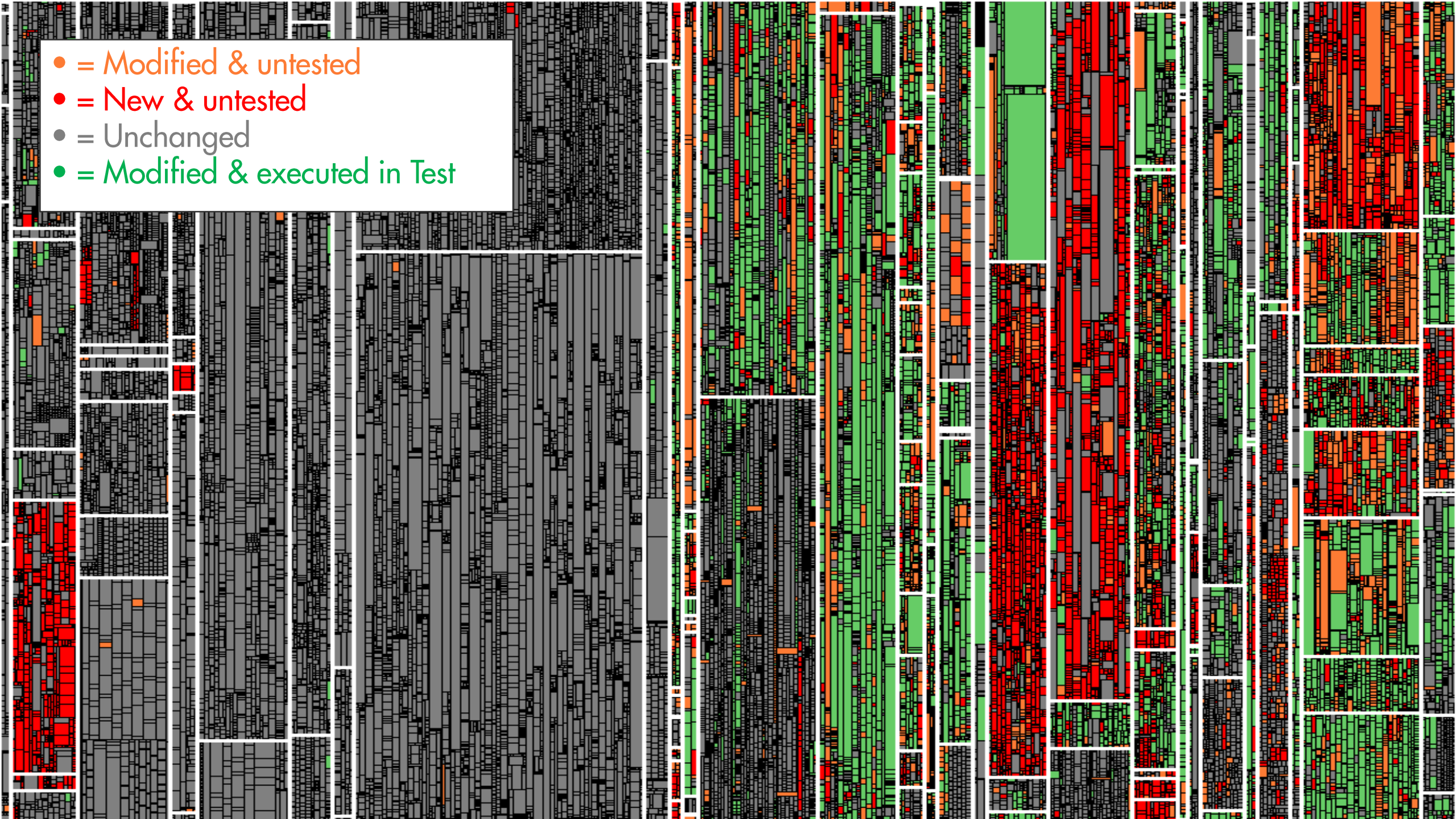
Test-Gap-Analysis

Execution



Untested
Changes

- = Modified & untested
- = New & untested
- = Unchanged
- = Modified & executed in Test

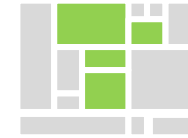


Modifications



Test-Gap-Analyse

Execution



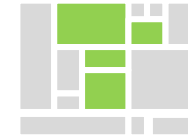
Untested
Changes

Modifications



Test-Gap-Analyse

Execution



Untested
Changes



Tester, Testmanager, Developer

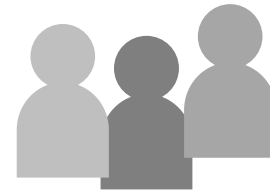
Modifications



Test-Gap-Analyse

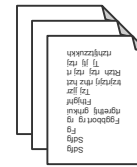


Untested Changes



Tester, Testmanager, Developer

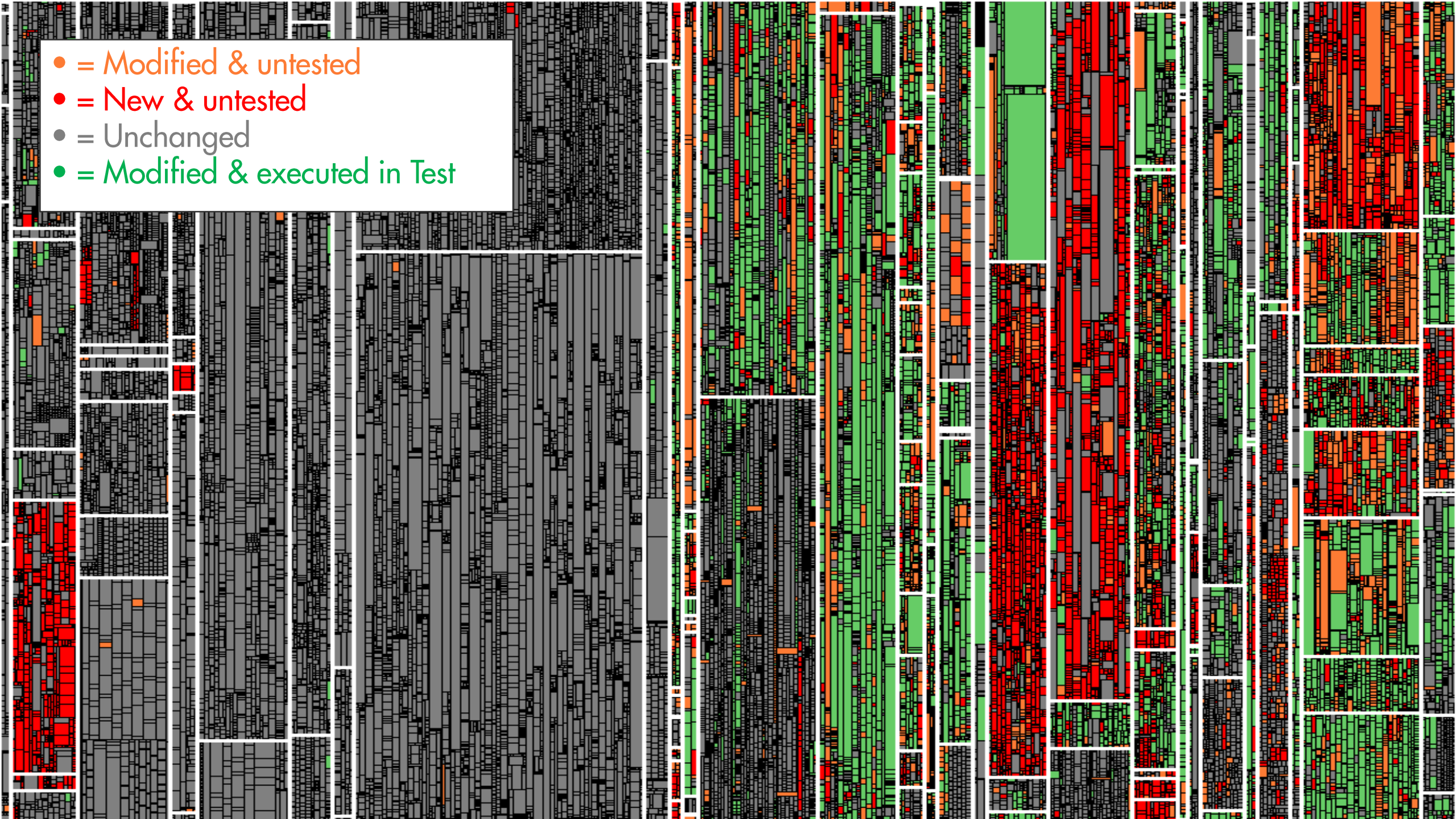
Execution



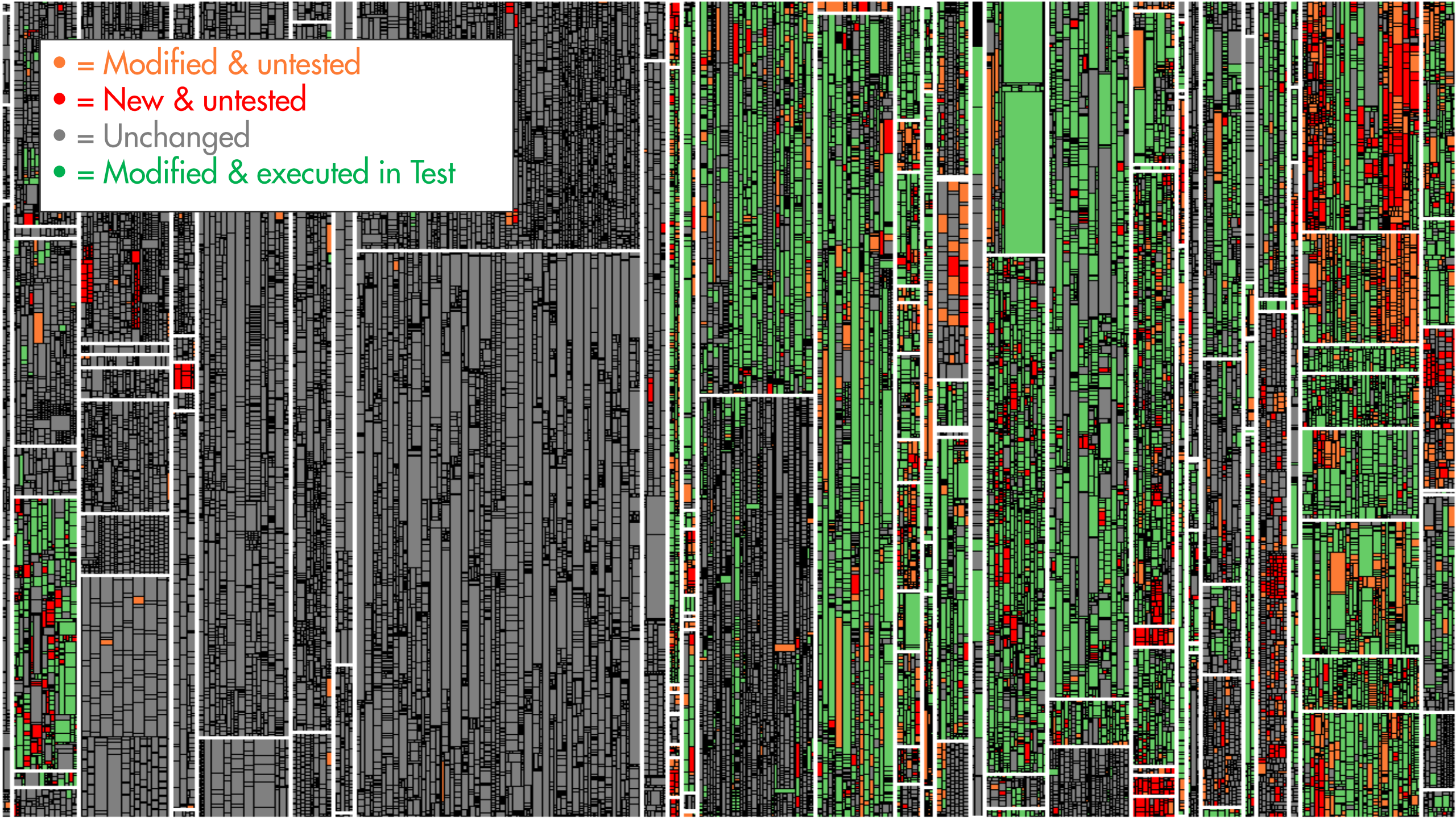
Test Cases

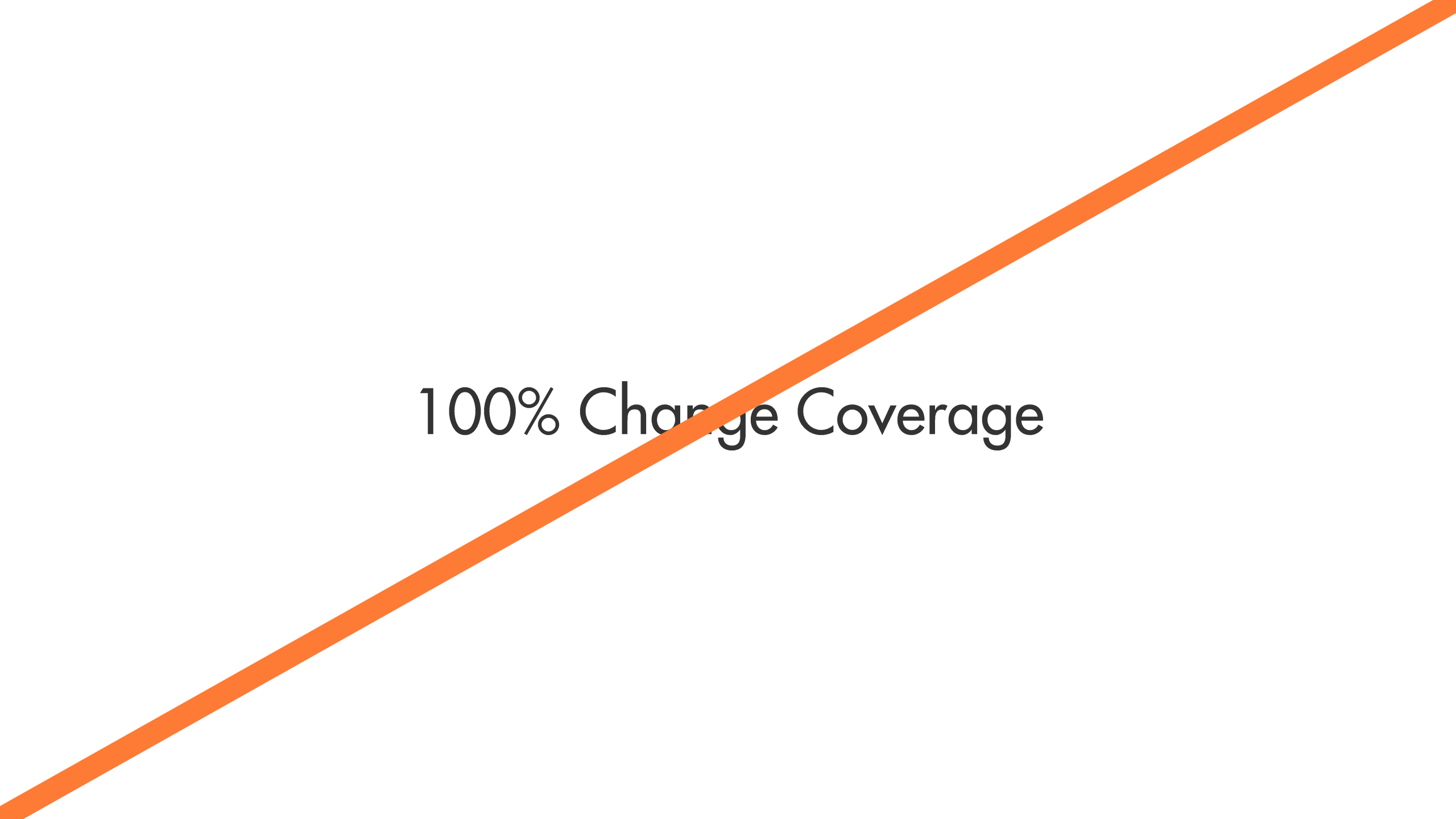


- = Modified & untested
- = New & untested
- = Unchanged
- = Modified & executed in Test

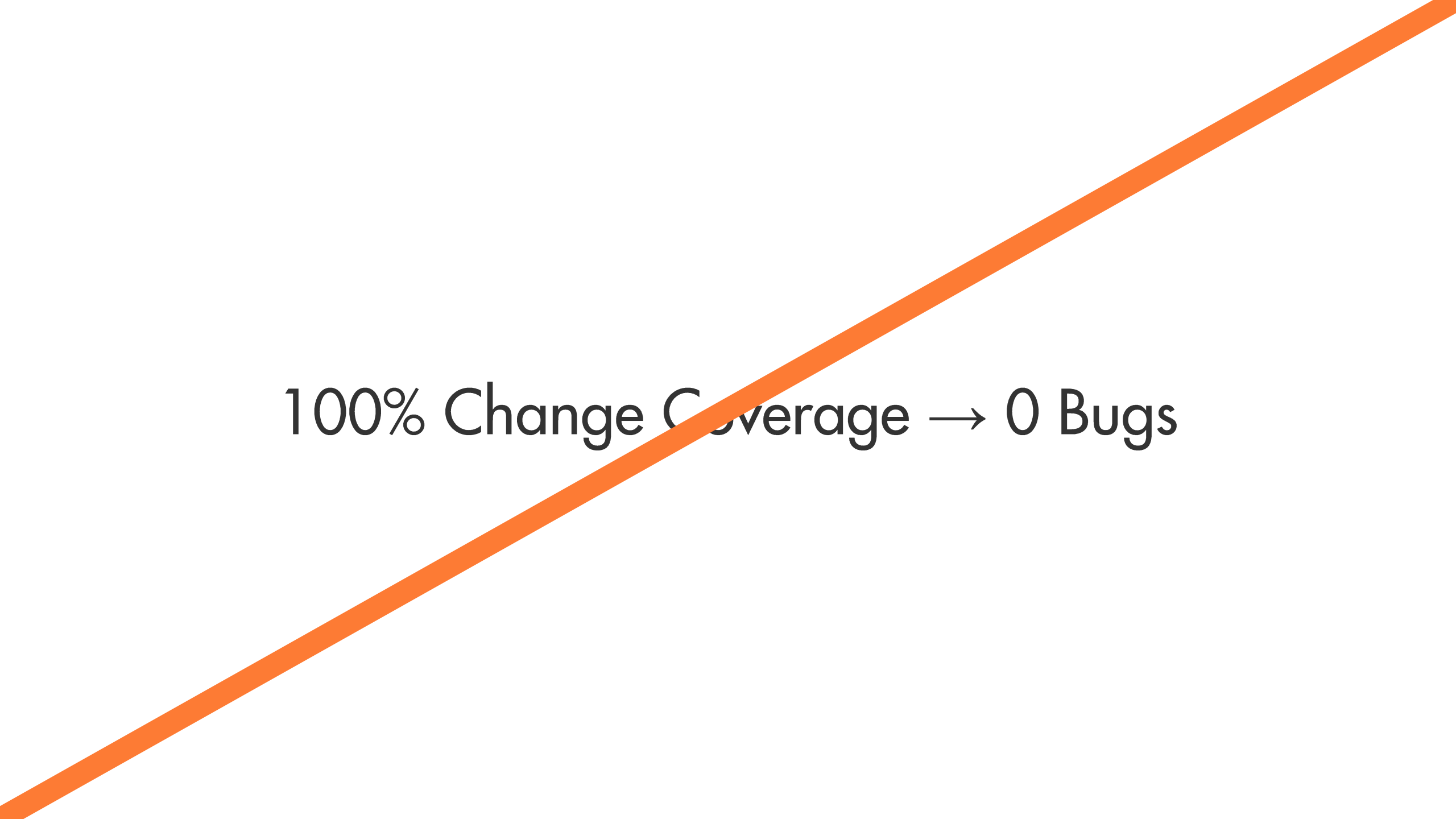


- = Modified & untested
- = New & untested
- = Unchanged
- = Modified & executed in Test





100% Change Coverage



100% Change Coverage → 0 Bugs

