

# Self-Healing et Usage-centric Testing

Présenté par Bruno LEGEARD

# A propos

06.12.22 • Sophia Antipolis

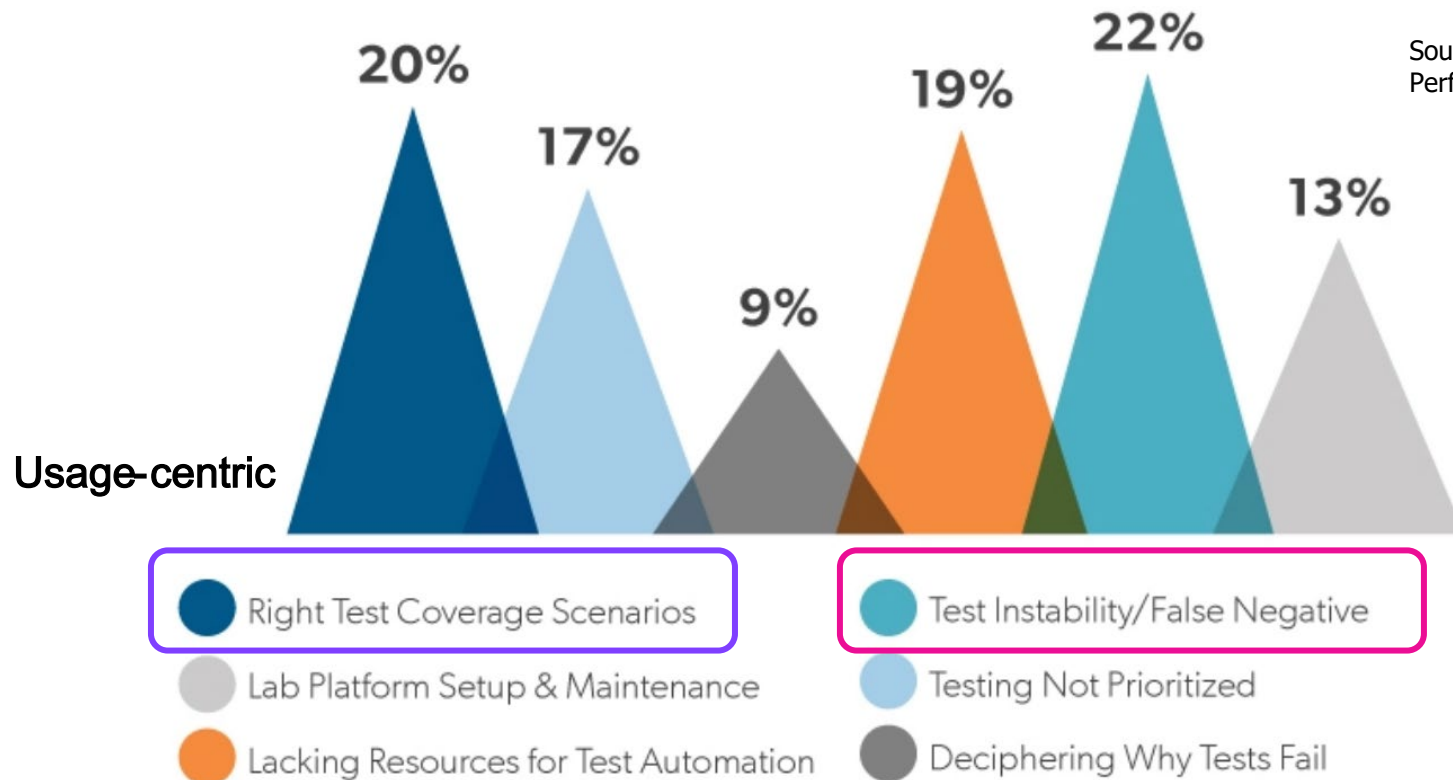
Telecom  
Valley

Soirée du  
<Test Logiciel>

- Introduction - Enjeux de l'automatisation et nouvelles approches
- Self-Healing
- Usage-centric Testing
- Discussion/Conclusion

# Testing Challenges

Source : [State of Test Automation 2022 - Perforce](#)



# Self-Healing

# Résultats de test erronés

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**72% résultats de tests erronés**

**33%** Problèmes sur de maintenance du code de test (réf.objets graphiques, flaky tests)

**23%** Erreurs dans les données de test

**16%** Problème d'environnement de test

**28%** Anomalies détectées !

## Self-Healing :

- cible les problèmes de fragilité de localisation d'objets graphiques dans le code des tests automatisés
- répare cette localisation cassée de façon automatique ou semi-automatique

Source : <https://www.stickyminds.com/article/test-automation-matures-so-do-false-positives>

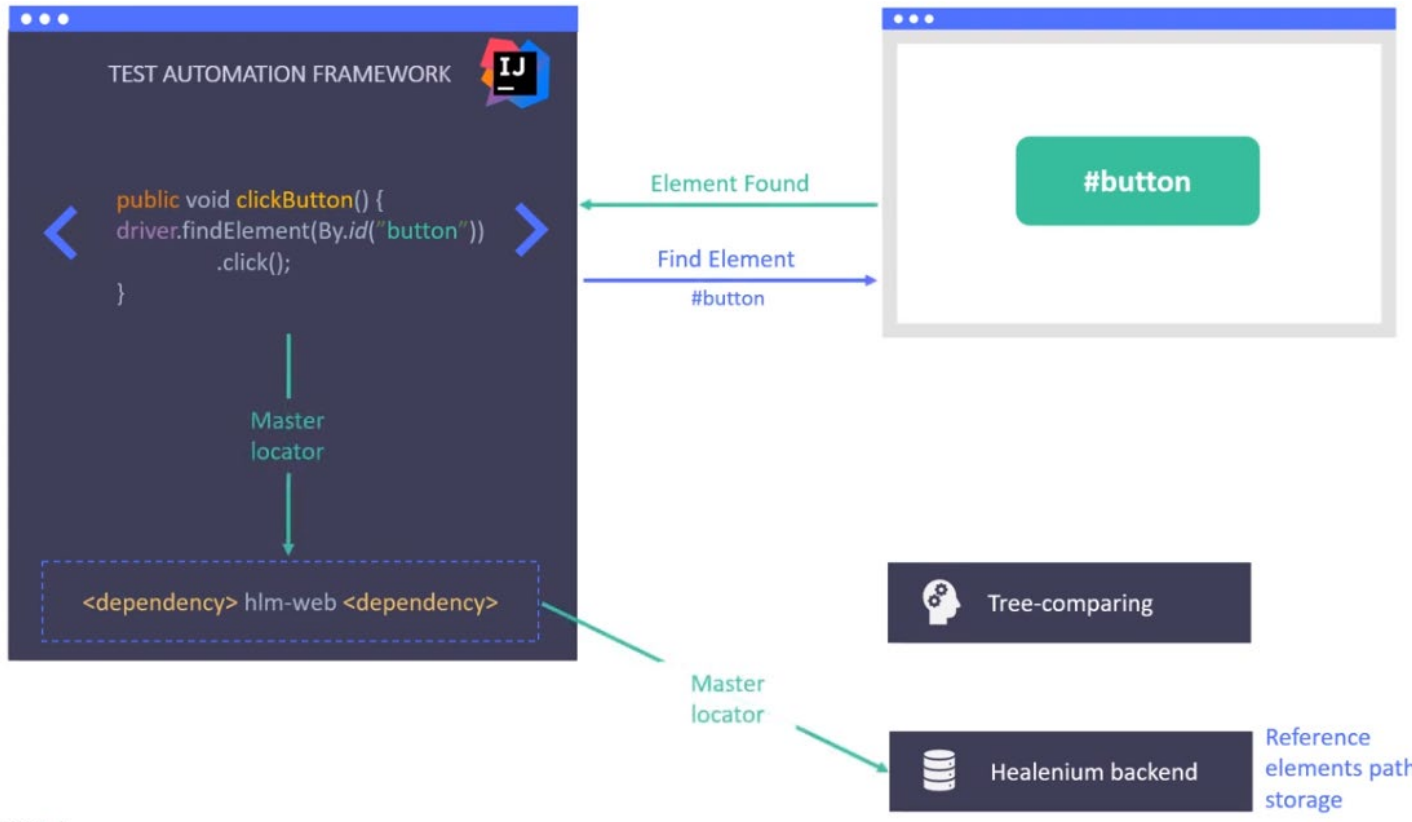
By Wolfgang Platz - July 29, 2020

# Exemple Self-Healing - Healenium

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Source :



<https://healenium.io/>

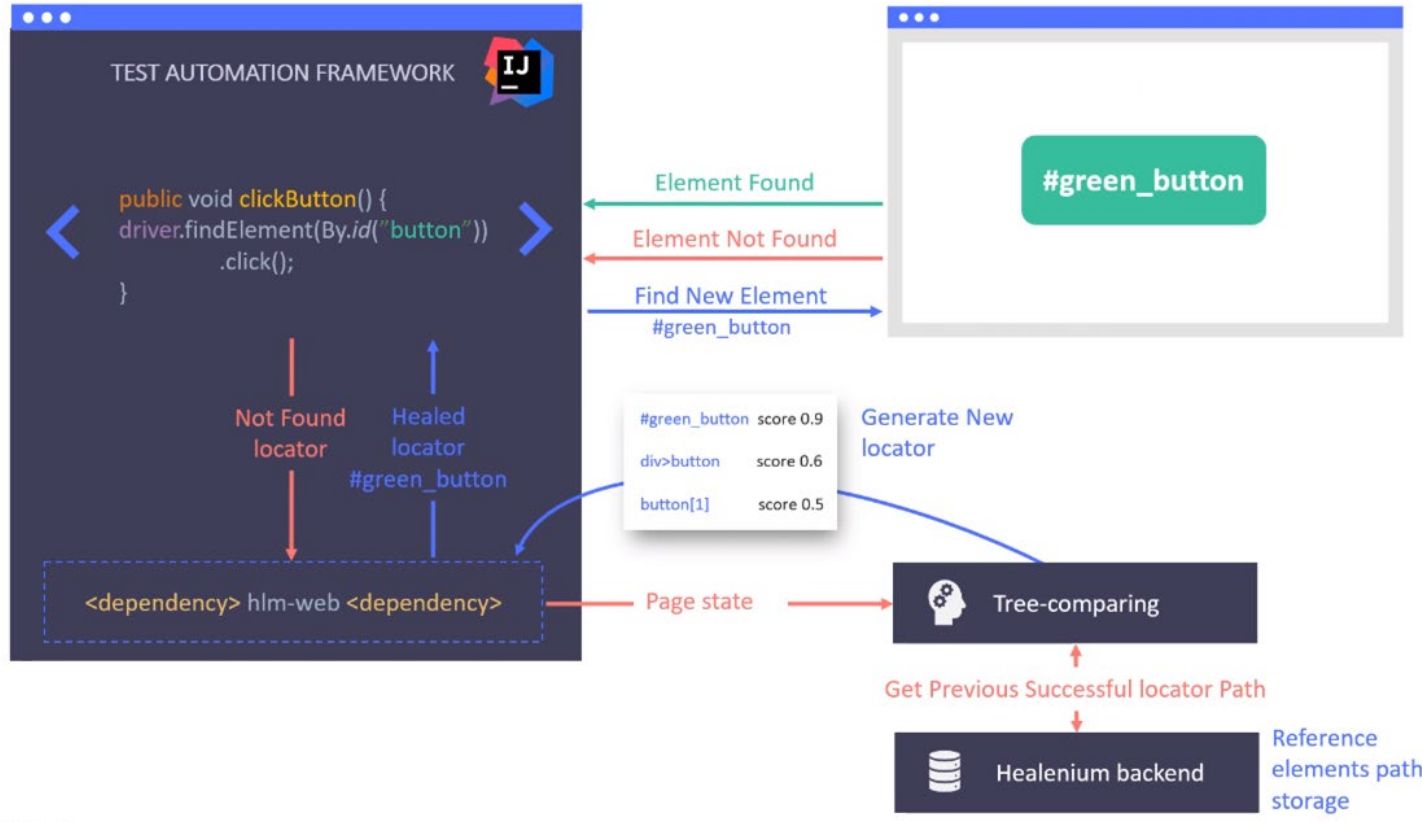
gravity

# Exemple Self-Healing - Healenium

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Source :   
<https://healenium.io/>


gravity

# Exemple Self-Healing - Healenium

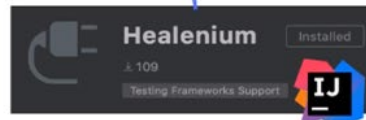
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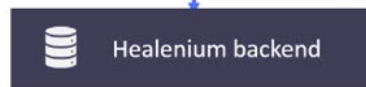
Soirée du  
<Test Logiciel>

```
TEST AUTOMATION FRAMEWORK   
  
< public void clickButton() {  
  driver.findElement(  
    By.css("#green_button")).click();  
  }  
>  
  
<dependency> hlm-web <dependency>
```

Perform code updates  
*#green\_button score 0.9*



Look for healed  
locators



Reference  
elements path  
storage

Source :



<https://healenium.io/>

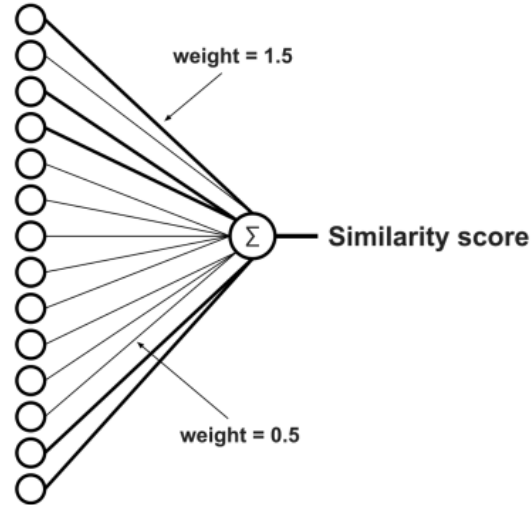




# Principes du self-healing : localisateurs multiples

Plusieurs sources d'identification des objets graphiques :

- Tag, Class, Name, Id, HRef
- Absolute XPath, ID relative XPath
- Location(x,y)
- Area(width / height)
- Shape(width / height)
- Visible text, Neighbor Texts
- Web element Image screenshot



*M. Nass, E. Alegroth, R. Feldt, M. Leotta, and F. Ricca, "Similarity-based web element localization for robust test automation", accepted to ACM TOSEM 2022-10-18. <https://arxiv.org/pdf/2208.00677.pdf>*

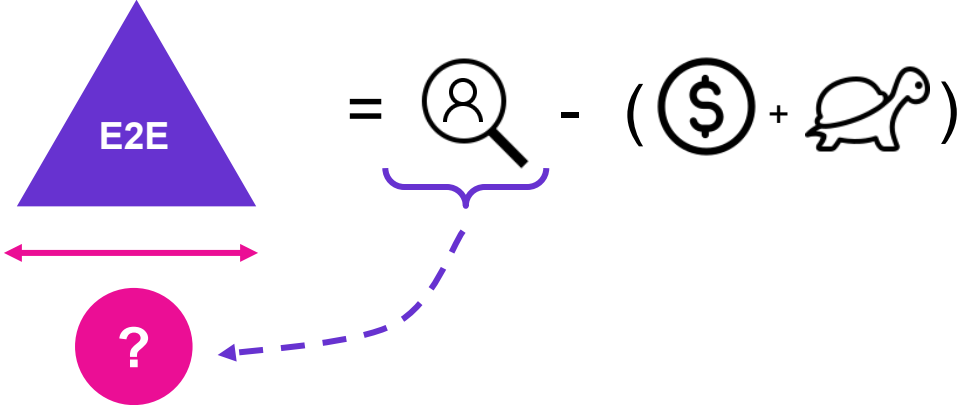
# Self-Healing : une commodité des outils d'automatisation

Le self-healing pour les objets graphiques est en train de devenir une fonction standard des outils d'automatisation sur IH/M :

- **Cerberus Testing** : <https://cerberus-testing.com/blog/when-to-use-self-healing-in-test-automation-2/>
- **Katalon self-healing** : <https://katalon.com/resources-center/blog/self-healing-object-locator>
- **SmartBear TestComplete self-healing** : <https://support.smartbear.com/testcomplete/docs/testing-with/running/self-healing-tests.html#about-self-healing-run-mode>
- **Healenium** : <https://healenium.io/page13125029.html> (self-healing add-on à Selenium webdriver)
- ....

# Target the **right** tests with Usage-centric Testing

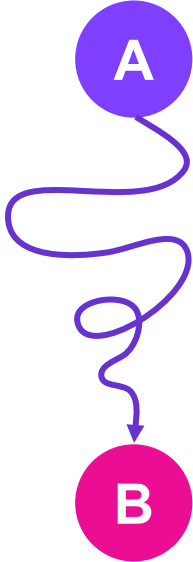
# Target the right tests



# Usage-centric Testing: Theory VS Reality

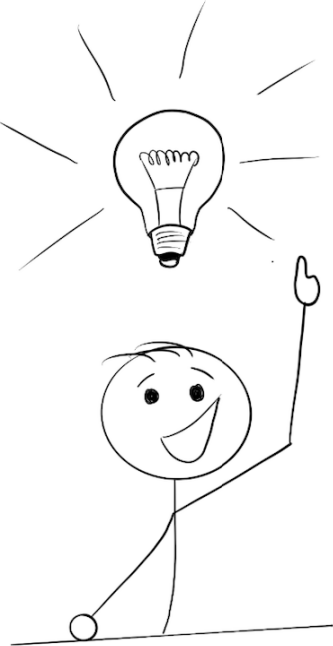


Theory

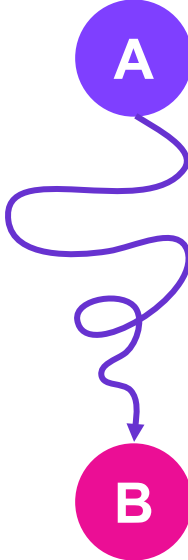
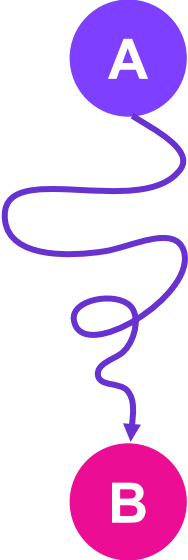


Reality

# Usage-centric Testing: Test = Reality



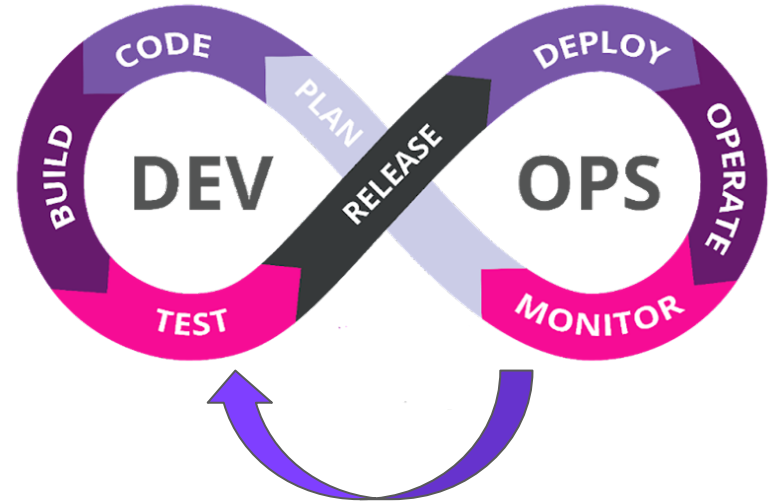
Test



Reality

# Usage-centric Testing

- Agile & DevOps approach
- Based on usage in production
- Strengthen automated testing  
→ s hift right

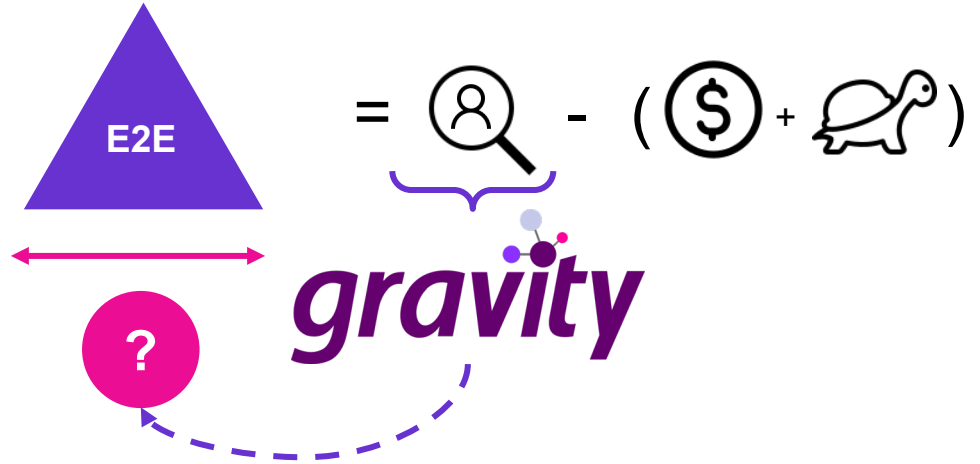


# gravity

Helps Agile & DevOps teams to deliver high-quality software **faster**, by enabling them **select** and **design** end-to-end tests according to **HOW** their users truly interact with their web application

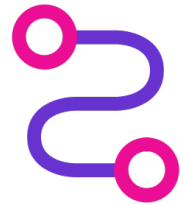
We call it a **Usage-centric Testing** platform







Collect usage  
data



Browse user  
sessions



Evaluate test  
coverage



Generate test  
scripts

### Production



**Gravity**  
Data collector 

### Qualification



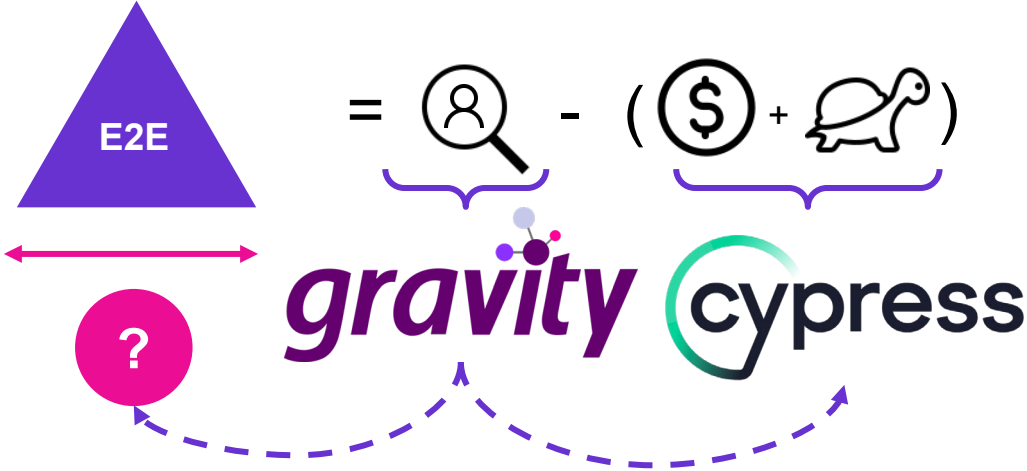
**Gravity**  
Data collector 





Demonstration

# Gravity + Cypress



# Thanks for watching!

Try Gravity for free at <https://gravity-testing.com>

Contact us :

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The Gravity logo, featuring the word 'gravity' in a white, lowercase, sans-serif font. Above the 'i' in 'gravity' is a small white icon of a molecule or network structure with three nodes and connecting lines.