Automated cross-platform testing

May 2017

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Agenda

Introduction

Test recording or test coding

Return on Investment with case study

Coded tests Page Object Pattern

with Demo

Cross-Platform testing

with Demo

Q&A

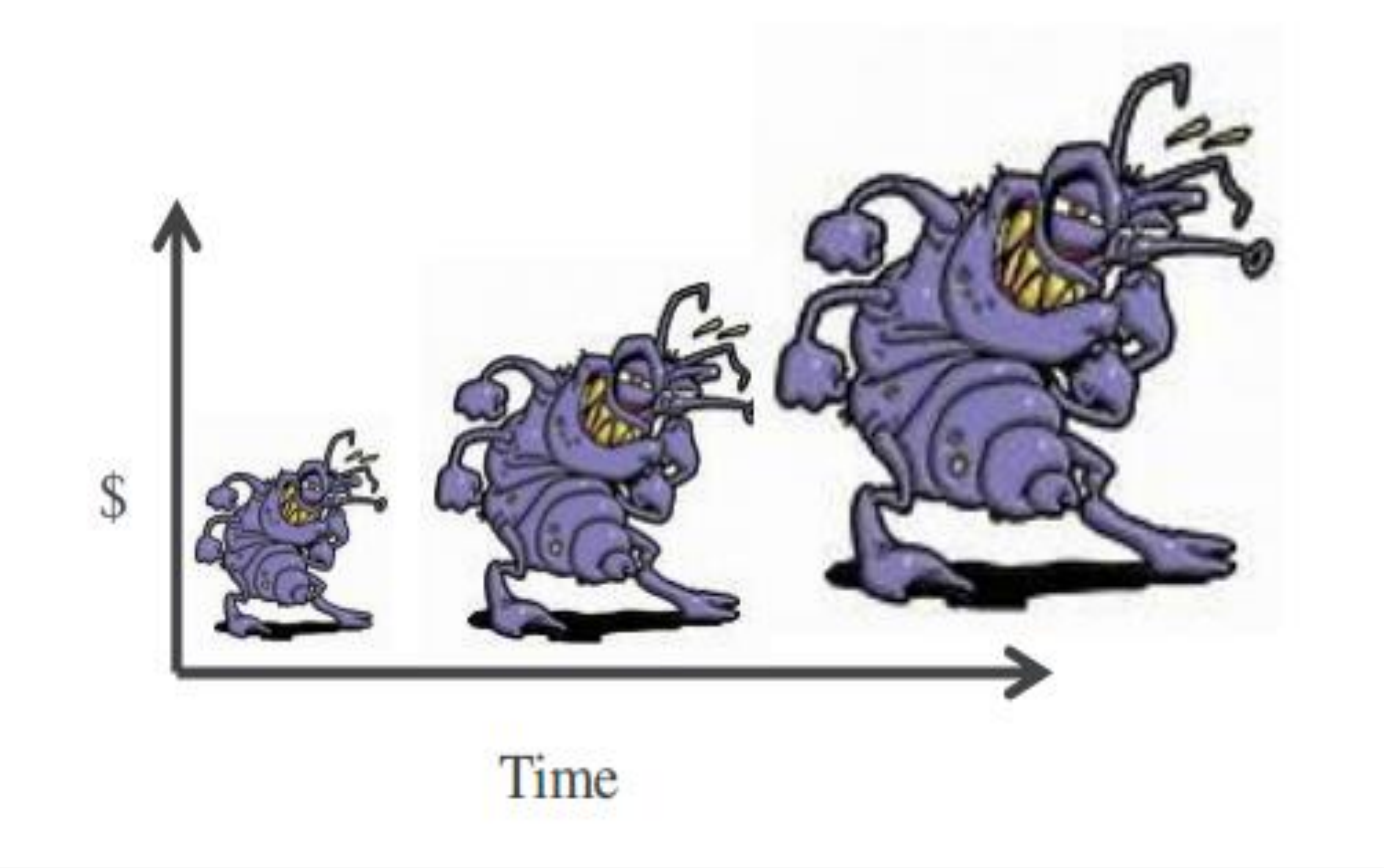
Test Automation

> “
>
> Automation does not do what testers used to do, unless one ignores most things a tester really does. Automated testing is useful for extending the reach of the testers work, not to replace it.”

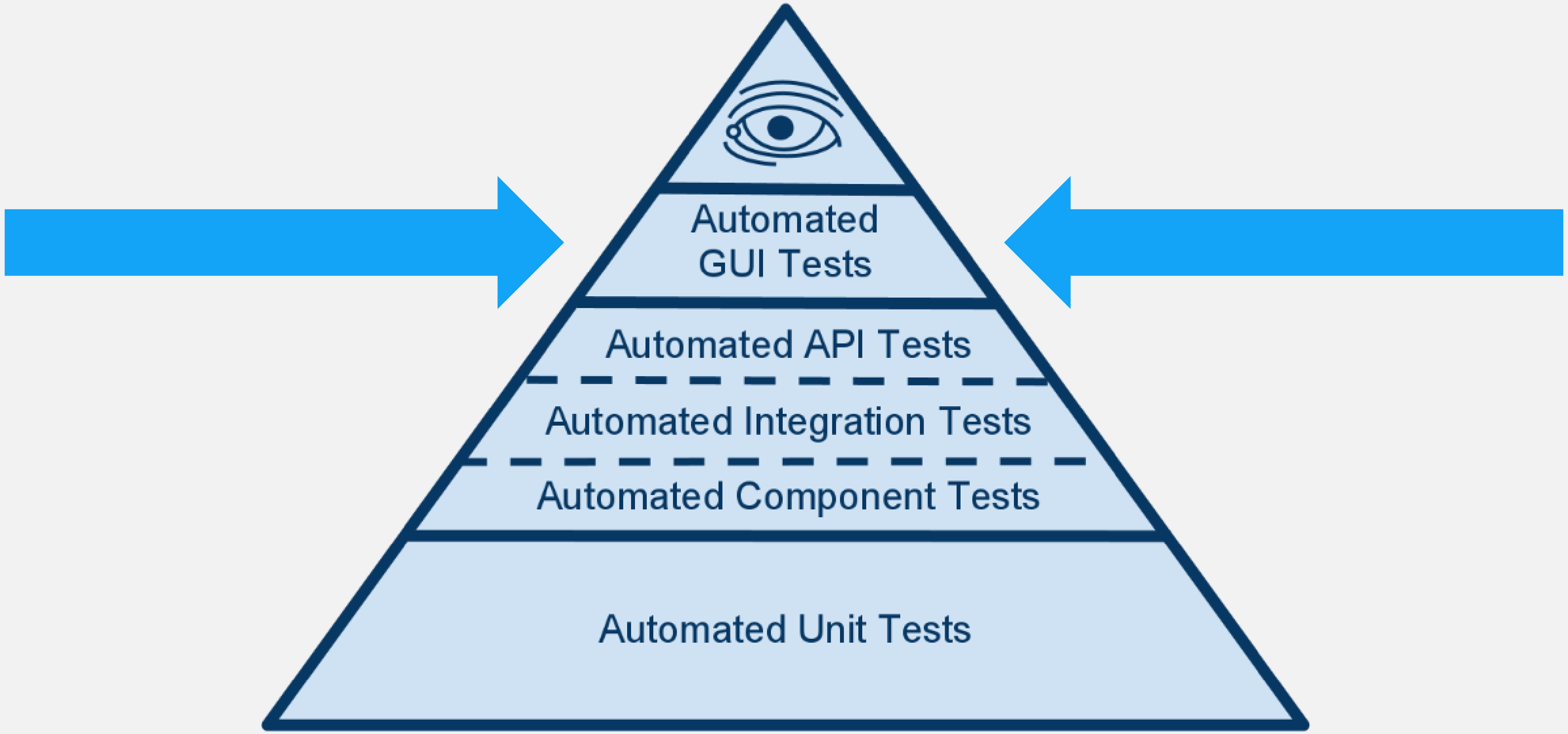
James Bach

1:10:100

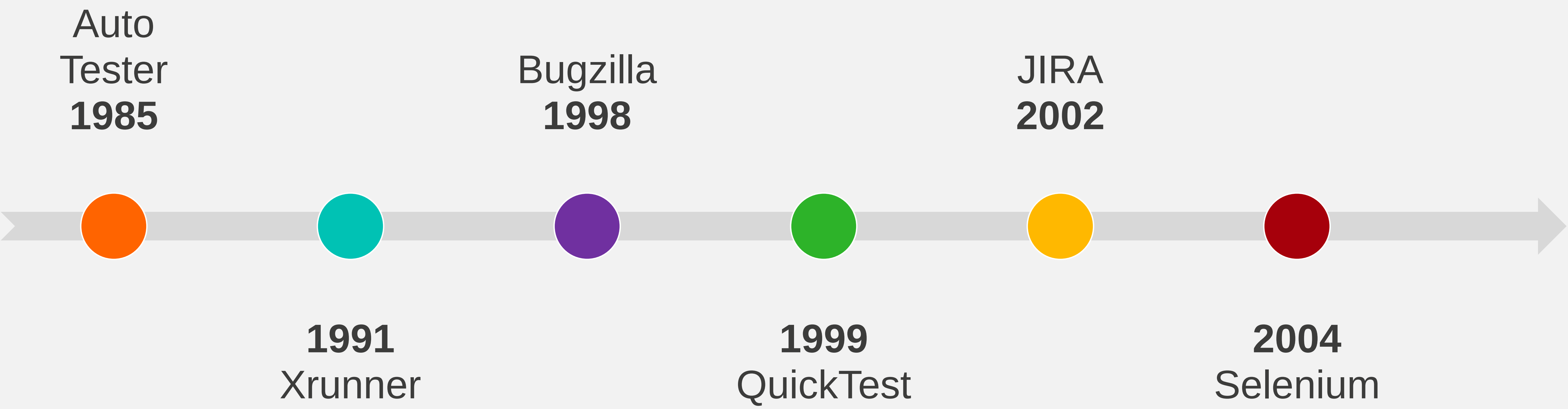
"1:10:100" rule. A defect that costs $1 to fix in requirements or design costs $10 to fix in a traditional test phase and $100 to fix after the product goes into production (live) use.



Test Automation Pyramid



History of GUI Test Automation Tools



Auto Tester **1985**

1991 Xrunner

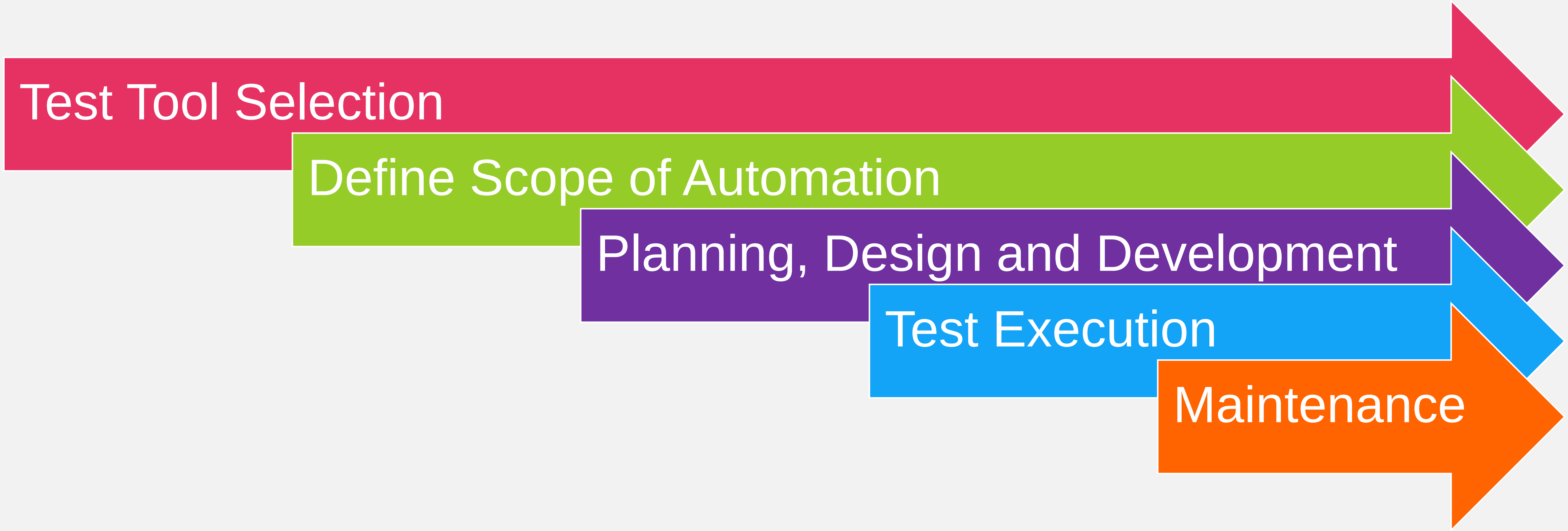
Bugzilla **1998**

1999 QuickTest

JIRA **2002**

2004 Selenium

Introduction to Test Automation



Test Tool Selection

Define Scope of Automation

Planning, Design and Development

Test Execution

Maintenance

Test Recording and Test Coding

hp
Unified Functional Testing (UFT)

TestComplete
by SMARTBEAR

Se

● REC

TestingWhiz
Code Less, Test More

</>

sahi pro

MICRO FOCUS®

Telerik
Test Studio

Ranorex®

Test recording

+

- Saves time
- No need to design the structure
- Immediate feedback on quality
- Everybody can use it

−

- Unstable
- One change to GUI will block multiple scripts
- Hard to maintain
- One platform only
- Vendor dependancy

Test coding – Page Object Pattern

+

- Resistant to GUI changes
- Easy to create iterations of tests
- Possibility to use same tests across platforms
- Easy to maintain

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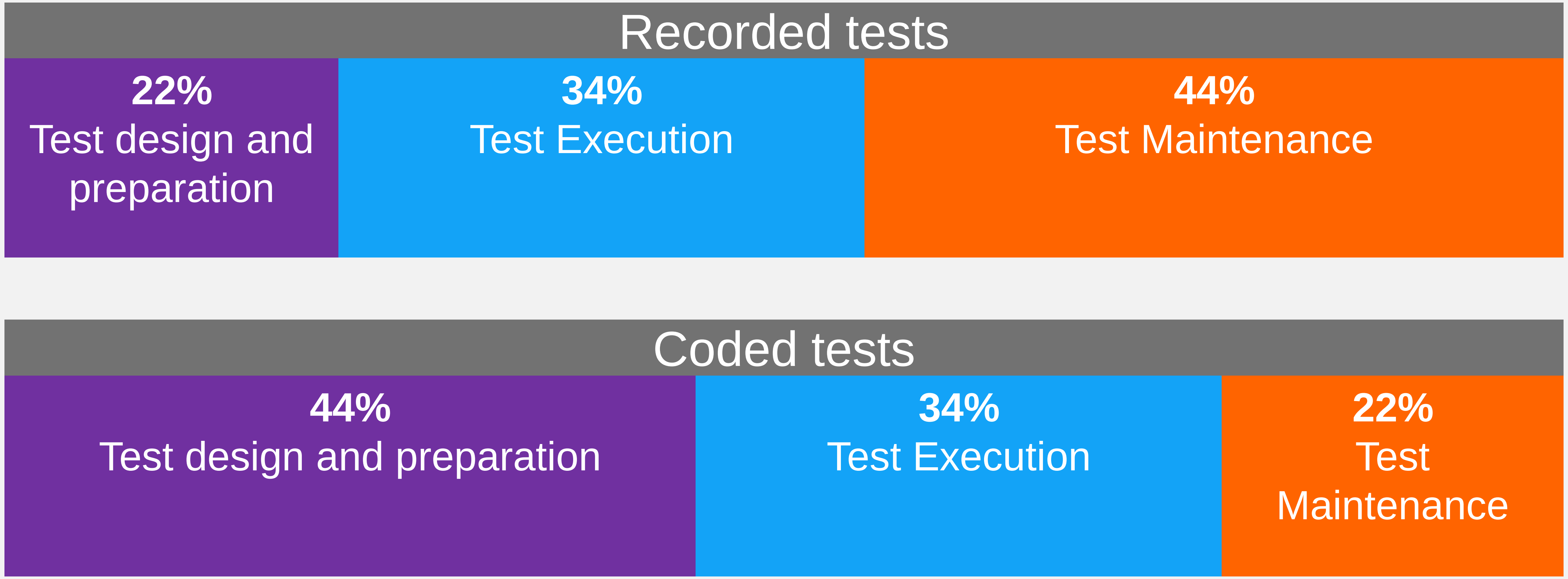
- Steep learning curve
- Should be well thought and designed first
- Takes time and effort to develop
- Problems with certain GUI elements

Effort Comparison



Recorded tests

22%
Test design and preparation

34%
Test Execution

44%
Test Maintenance

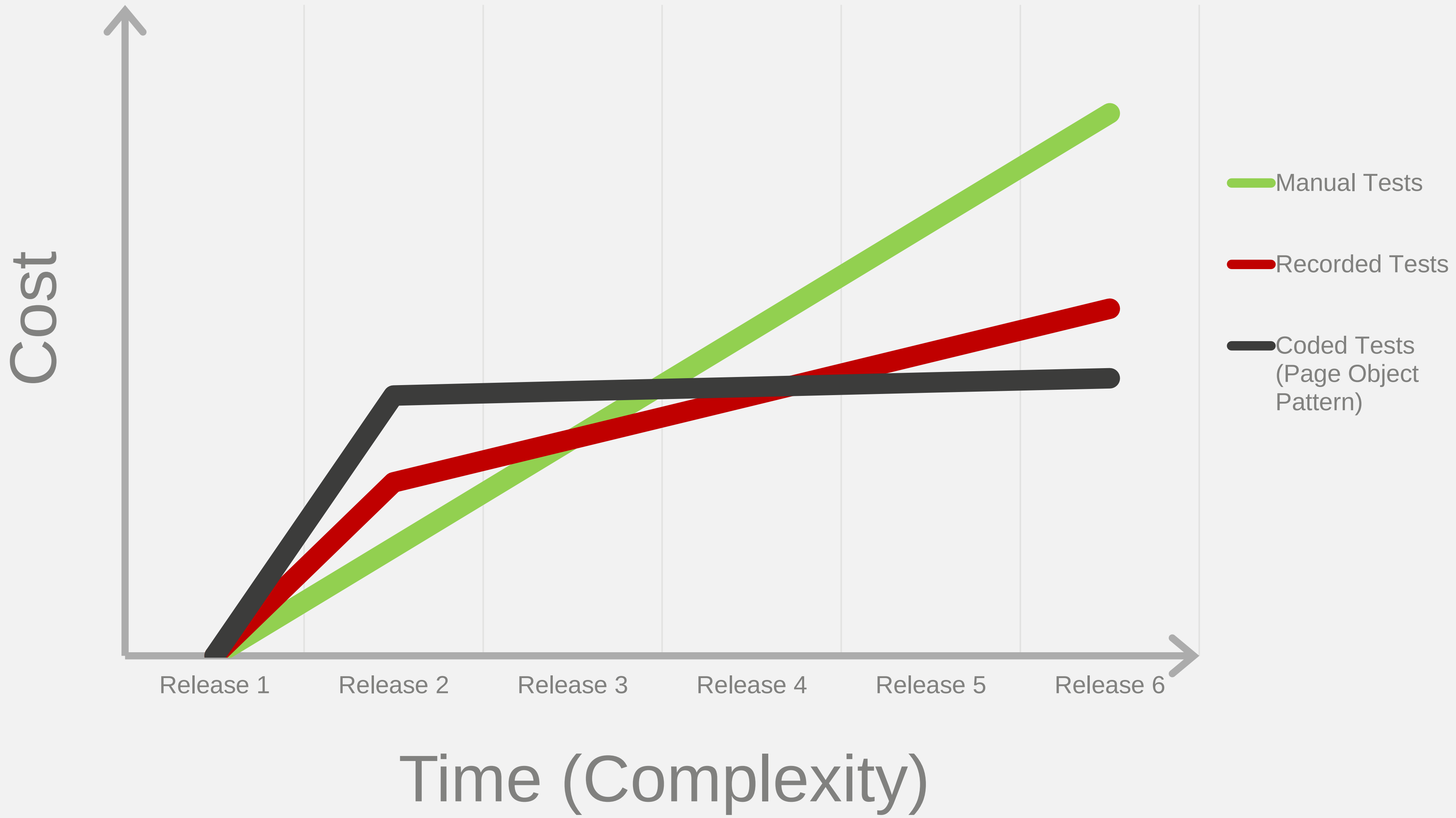
Coded tests

44%
Test design and preparation

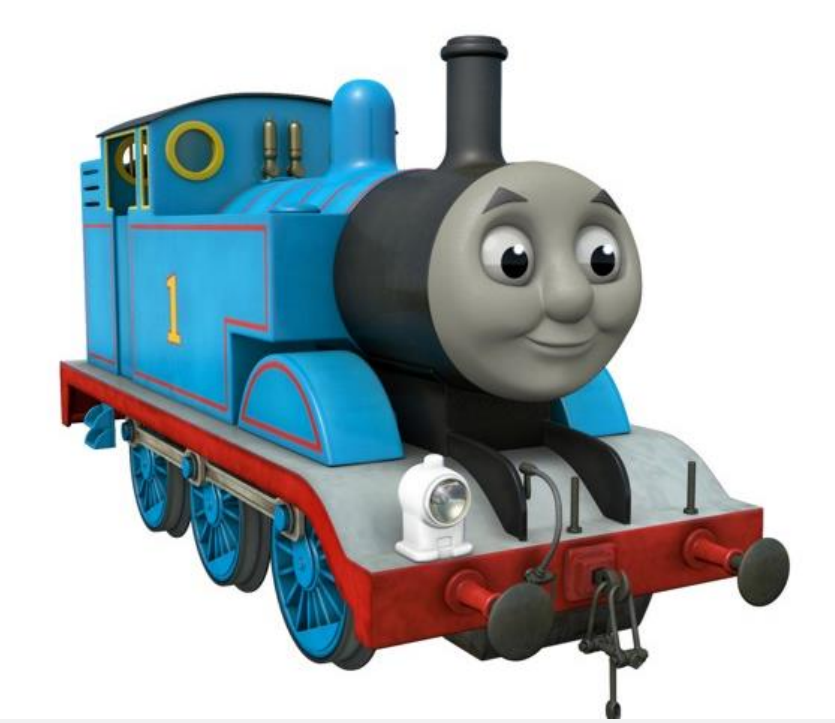
34%
Test Execution

22%
Test Maintenance

Cost comparison



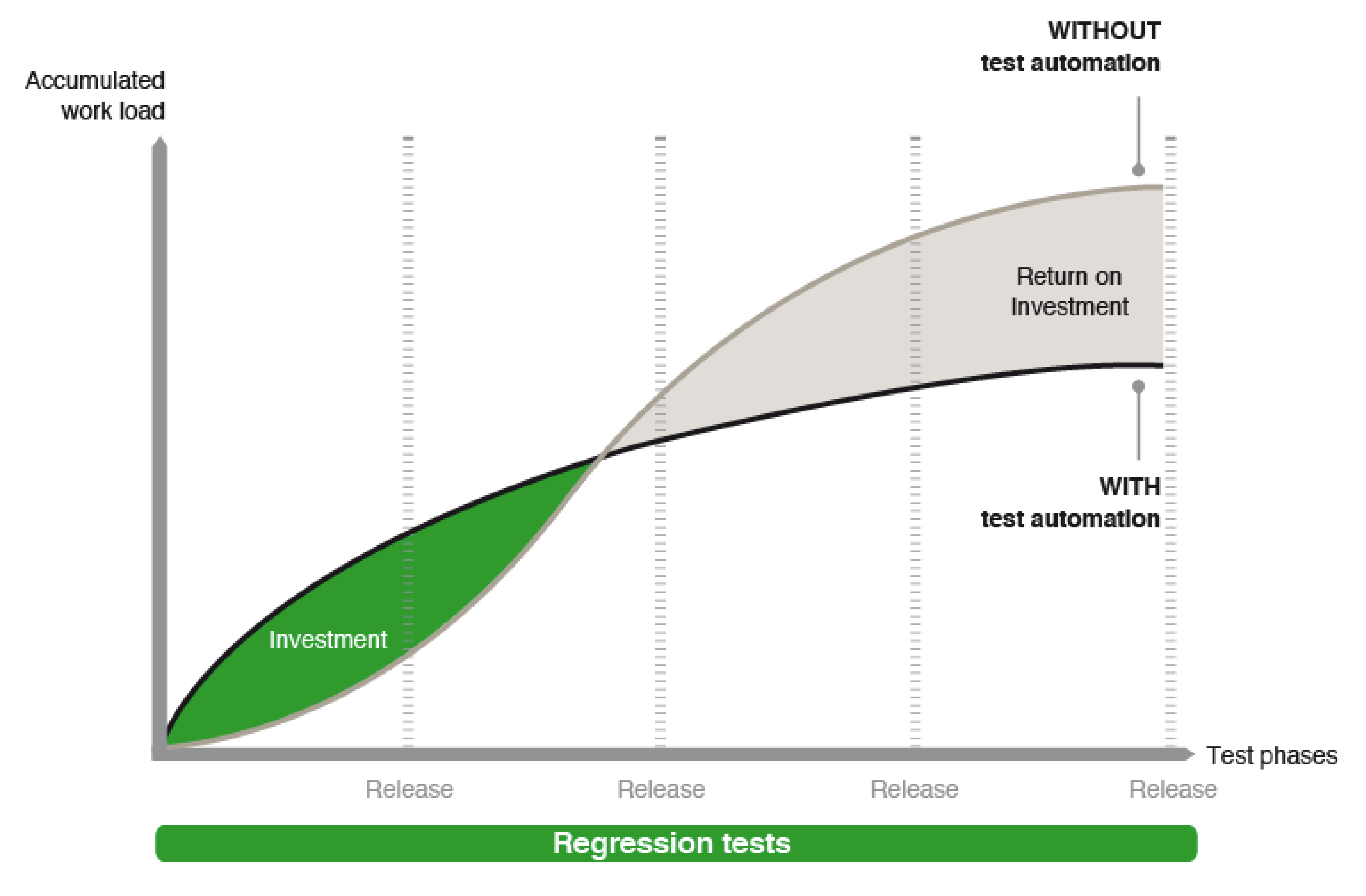
Summary

Manual testing	Recorded tests	Coded tests
		

Return on investment

$$ROI = \frac{Gain\ from\ Investment - Cost\ of\ Investment}{Cost\ of\ Investment}\ \mathrm{x}\ 100$$

Return on investment



Case 1

8 Cycles

5 Test cases

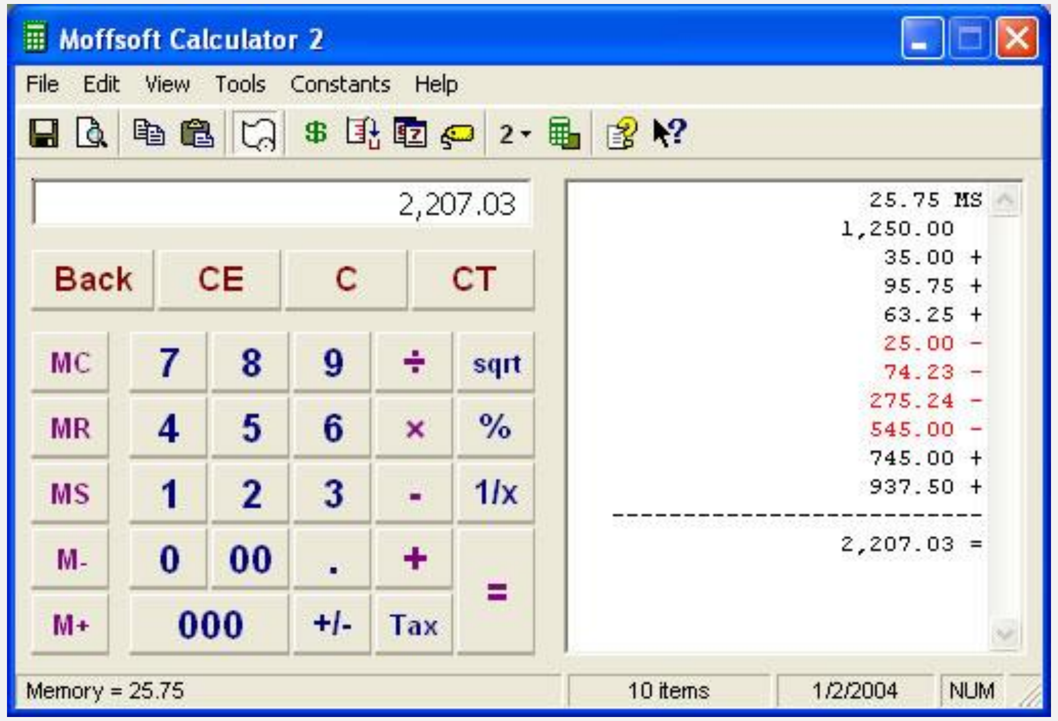
10 min to test manually each test

15 min to record each test

60 min to code each tests

0 min maintenance of recorded

0 min maintenance of coded



2,207.03

```
                  25.75 MS
              1,250.00
                 35.00 +
                 95.75 +
                 63.25 +
                 25.00 -
                 74.23 -
                275.24 -
                545.00 -
                745.00 +
                937.50 +
  ---------------------------
              2,207.03 =
```

Memory = 25.75 | 10 items | 1/2/2004 | NUM

Recorded tests ROI:

$$\frac{400-(75+0)}{75+0} x100 = 433.33\%$$

Coded tests ROI (Page Object Pattern):

$$\frac{400-(300+0)}{300+0} x100 = 25\%$$

Case 2

8 Cycles

35 Test cases

10 min to test manually each test

15 min to record each test

25 min to code each tests

30 min maintenance of recorded

5 min maintenance of coded

Sales
Inventory
Management
Purchasing
Customers
Vender
Intergration
ERP
Internet/sms
LAN/WAN
CRM
Accounting
HR
Payroll

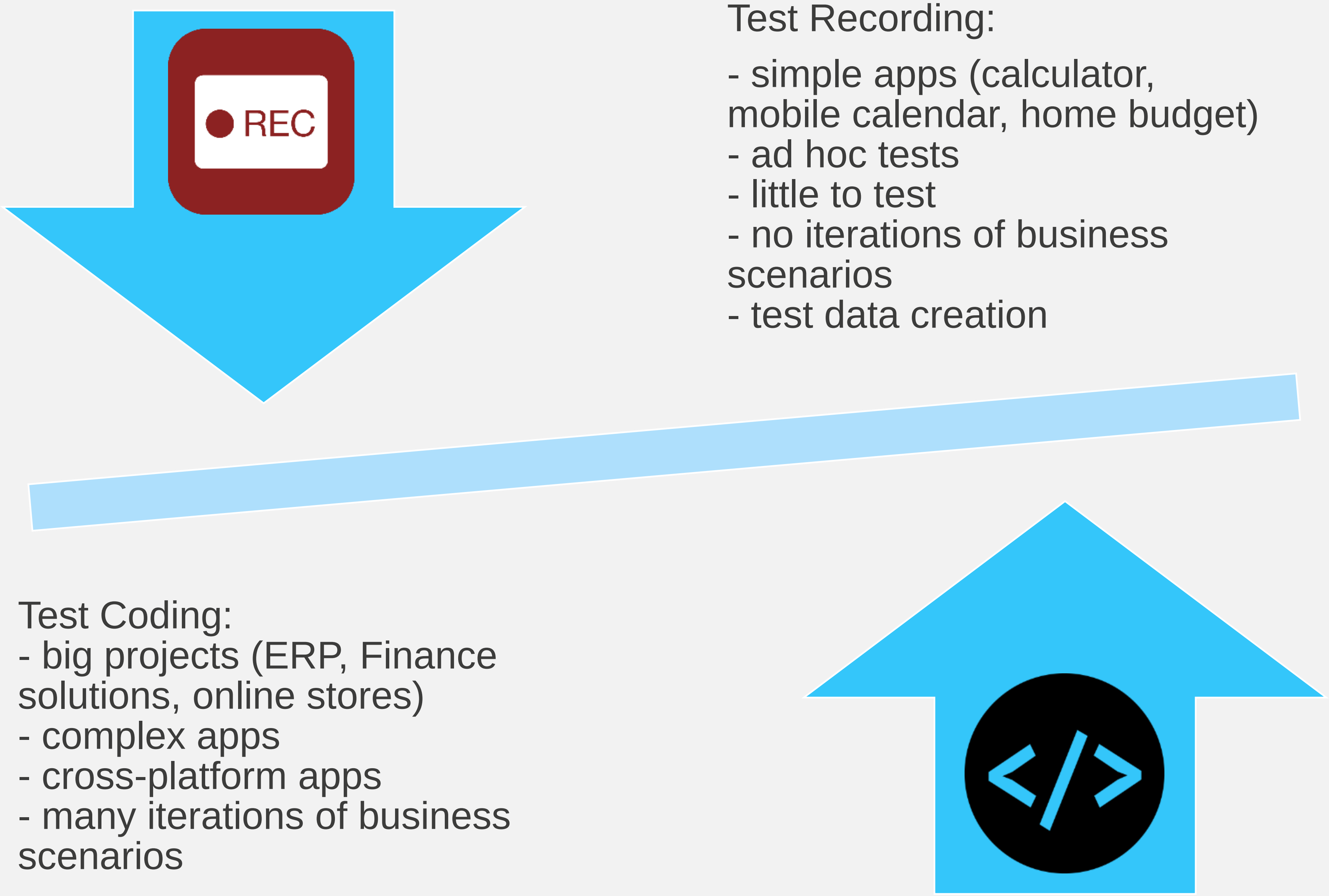
Recorded tests ROI:

$$\frac{2800-(525+1225)}{525+1225} x100 = 60\%$$

Coded tests ROI (Page Object Pattern):

$$\frac{2800-(875+175)}{875+175} x100 = 167\%$$

Which to use?



Test Recording:

- simple apps (calculator, mobile calendar, home budget)
- ad hoc tests
- little to test
- no iterations of business scenarios
- test data creation

Test Coding:
- big projects (ERP, Finance solutions, online stores)
- complex apps
- cross-platform apps
- many iterations of business scenarios

Test Recording or Test Coding - Summary

Not all of tester's tasks can be automated

What kind of software are we testing? Do we only maintain it or is it still being developed?

There are a lot of tools, find which one suits your needs the most

Test Recording – low effort at the start, high in maintenance

Test Coding – big effort at the start, pays off in maintenance

Test Recording and Test Coding can be used simultaneously

Agenda

Introduction

Test recording or test coding (Page Object Pattern)

Return on Investment with case study

Coded tests Page Object Pattern

with Demo

Cross-Platform testing

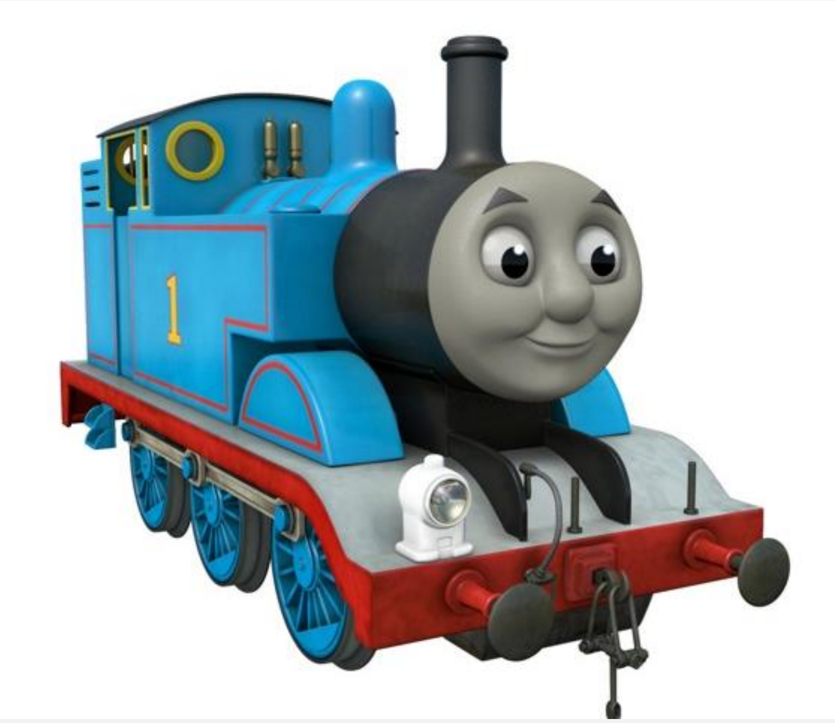
with Demo

Q&A

Coded tests

Manual testing

Recorded tests



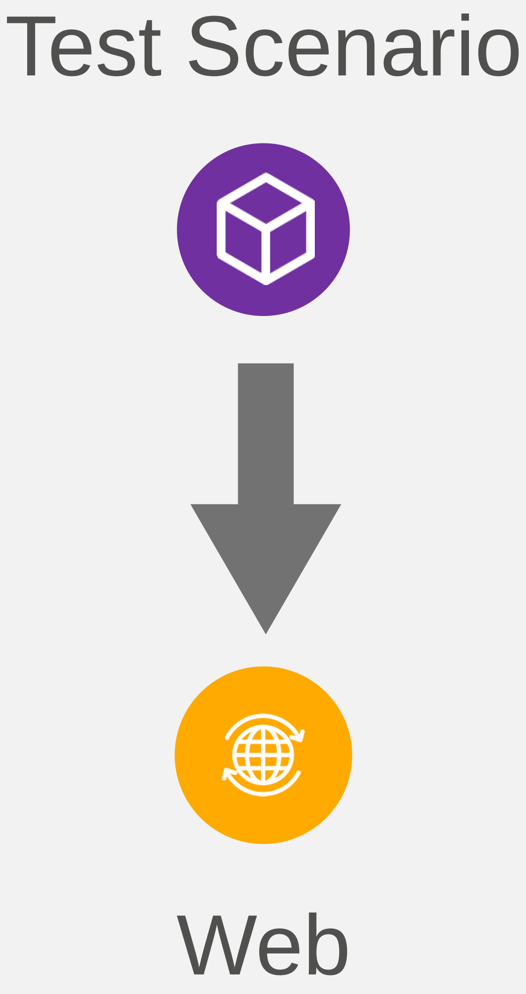
Coded tests

Coded tests

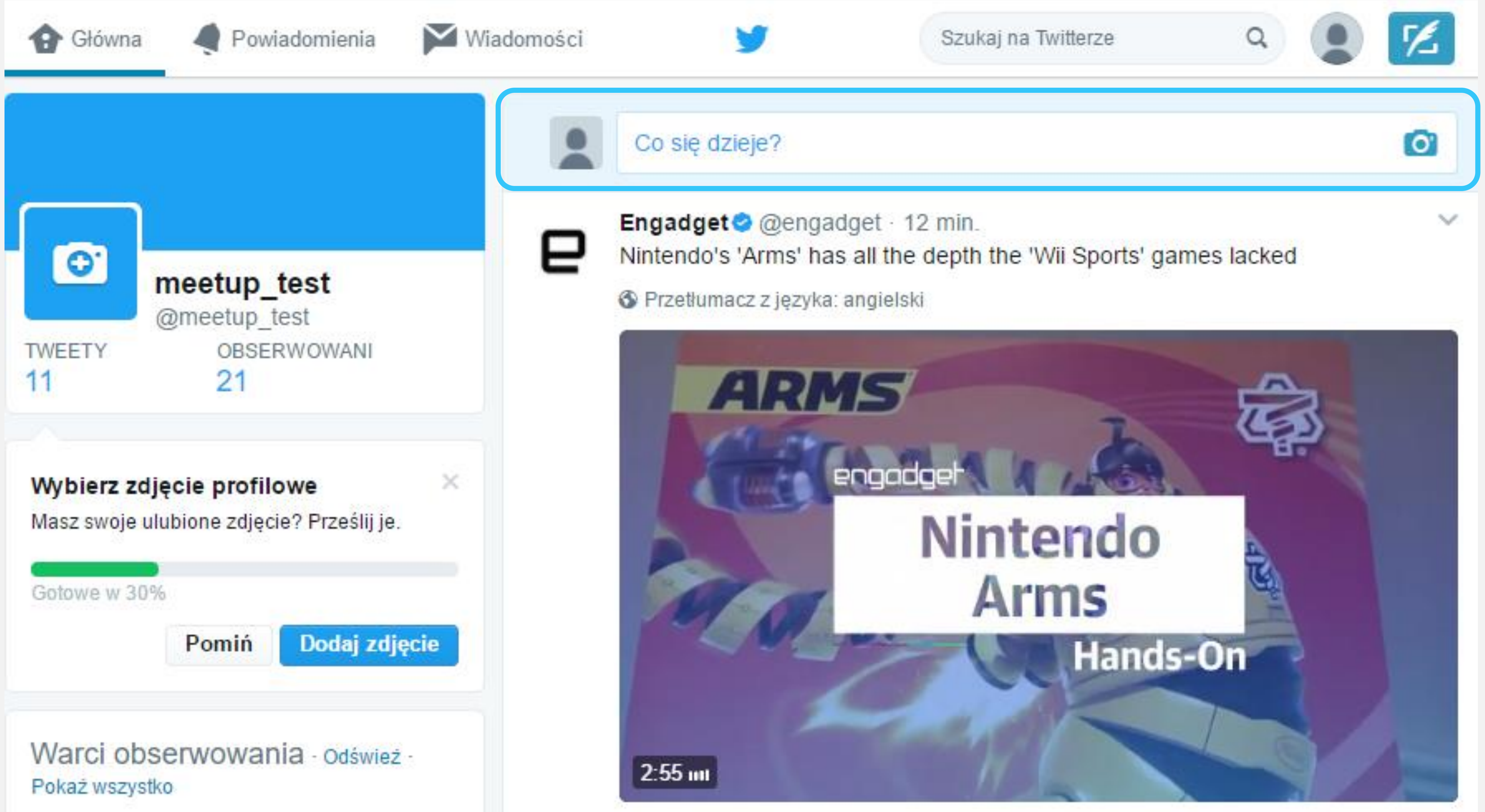
TGV

Slow train

Coded tests



Test Scenario – Step 1



Co się dzieje?

meetup_test
@meetup_test

TWEETY 11
OBSERWOWANI 21

Engadget @engadget · 12 min.
Nintendo's 'Arms' has all the depth the 'Wii Sports' games lacked

Przetłumacz z języka: angielski

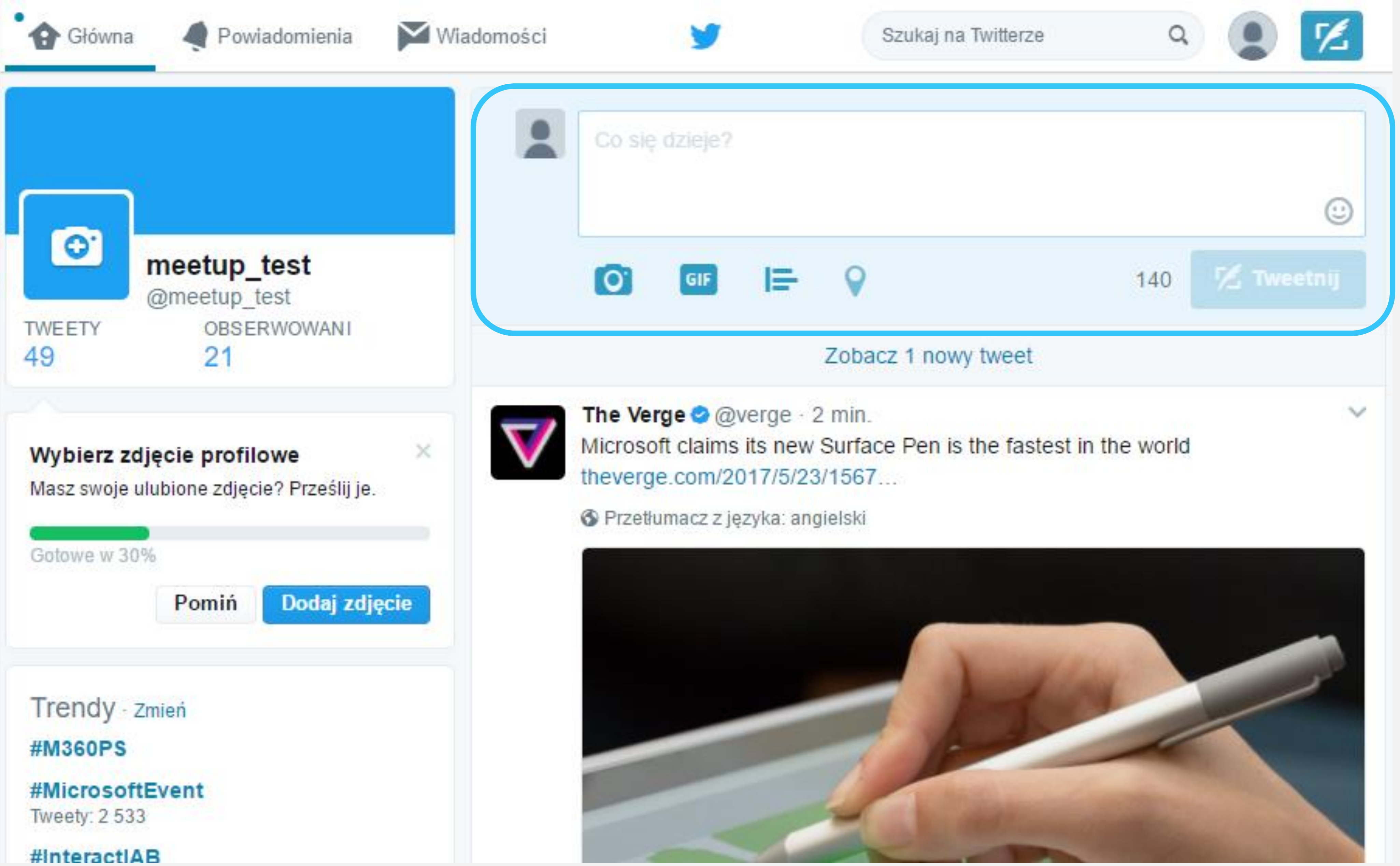
Wybierz zdjęcie profilowe

Masz swoje ulubione zdjęcie? Prześlij je.

Gotowe w 30%

Warci obserwowania · Odśwież · Pokaż wszystko

Test Scenario – Step 2



meetup_test
@meetup_test

TWEETY	OBSERWOWANI
49	21

Wybierz zdjęcie profilowe

Masz swoje ulubione zdjęcie? Prześlij je.

Gotowe w 30%

Pomiń | Dodaj zdjęcie

Trendy · Zmień

#M360PS

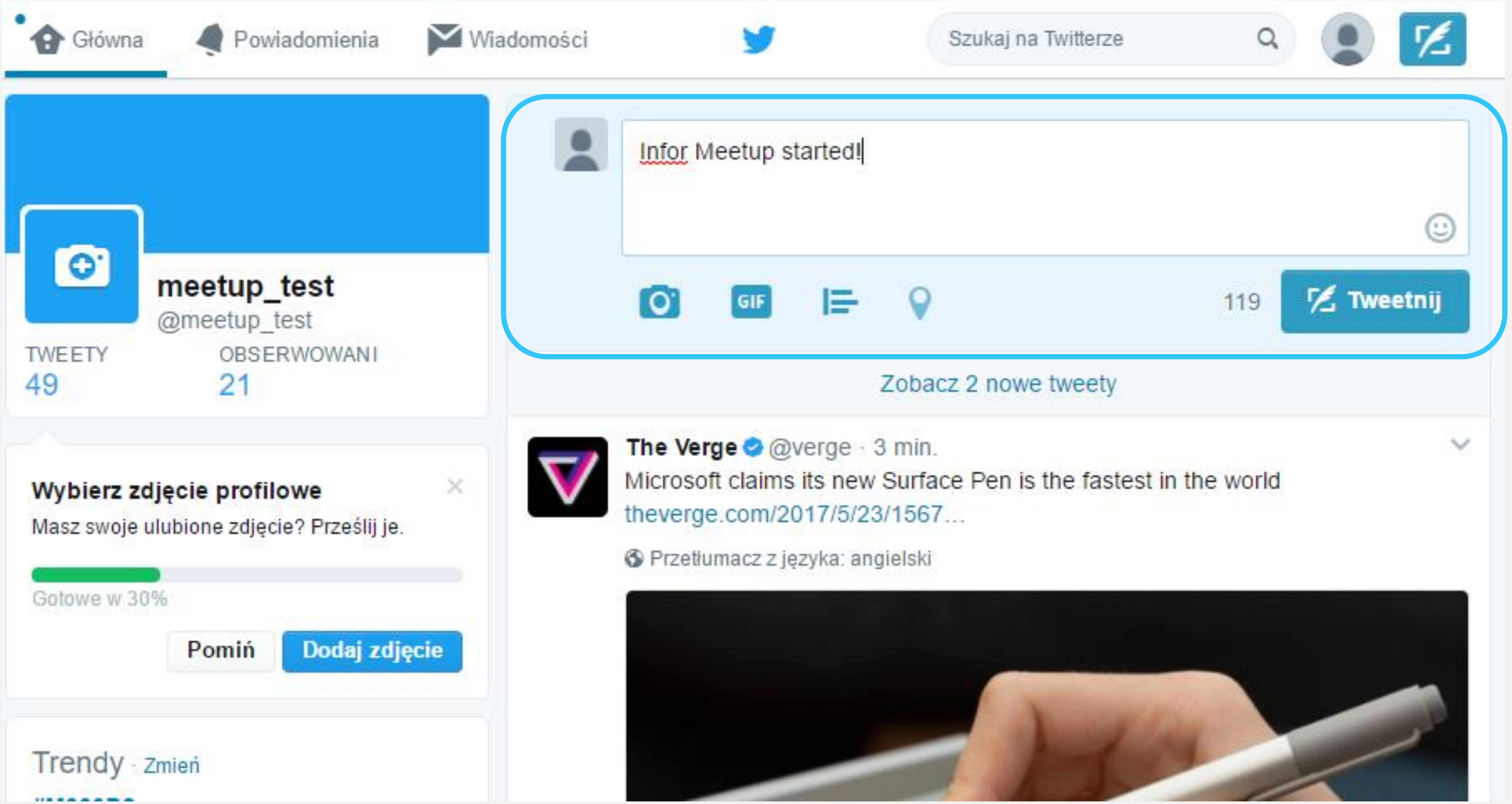
#MicrosoftEvent
Tweety: 2 533

#InteractIAB

The Verge @verge · 2 min.
Microsoft claims its new Surface Pen is the fastest in the world
theverge.com/2017/5/23/1567…

Przetłumacz z języka: angielski

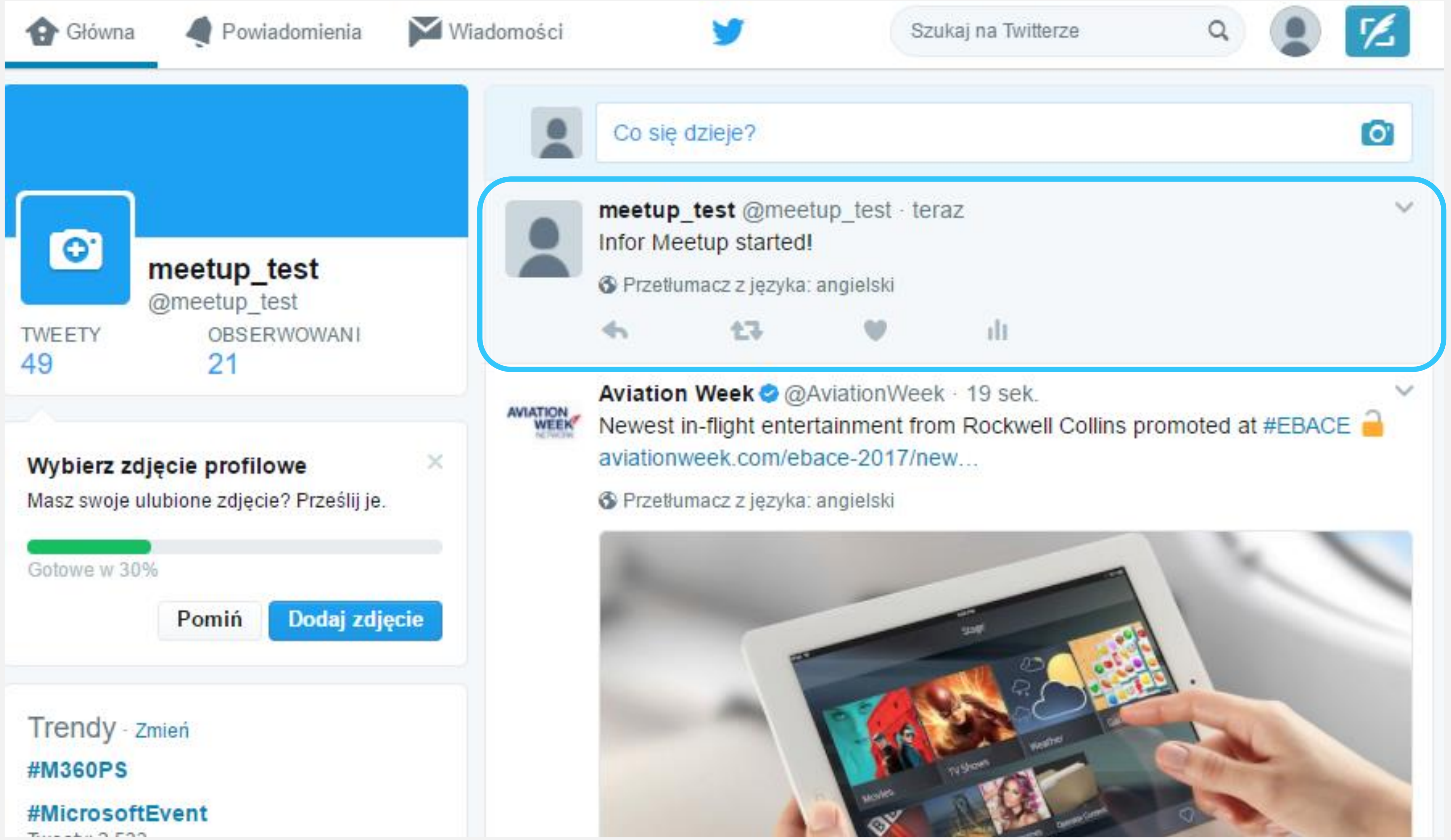
Test Scenario – Step 3



Infor Meetup started!

The Verge @verge · 3 min.
Microsoft claims its new Surface Pen is the fastest in the world
theverge.com/2017/5/23/1567...
Przetłumacz z języka: angielski

Test Scenario – Step 4



meetup_test
@meetup_test

meetup_test @meetup_test · teraz
Infor Meetup started!
Przetłumacz z języka: angielski

Aviation Week @AviationWeek · 19 sek.
Newest in-flight entertainment from Rockwell Collins promoted at #EBACE 🔓 aviationweek.com/ebace-2017/new…
Przetłumacz z języka: angielski

Wybierz zdjęcie profilowe
Masz swoje ulubione zdjęcie? Prześlij je.
Gotowe w 30%

Coded tests – Web Frameworks

Nightwatch.js

cypress

Telerik
Test Studio

Protractor
end to end testing for AngularJS

Watir.com
Web Application Testing in Ruby

SeleniumHQ
Browser Automation

tellurium

TestComplete

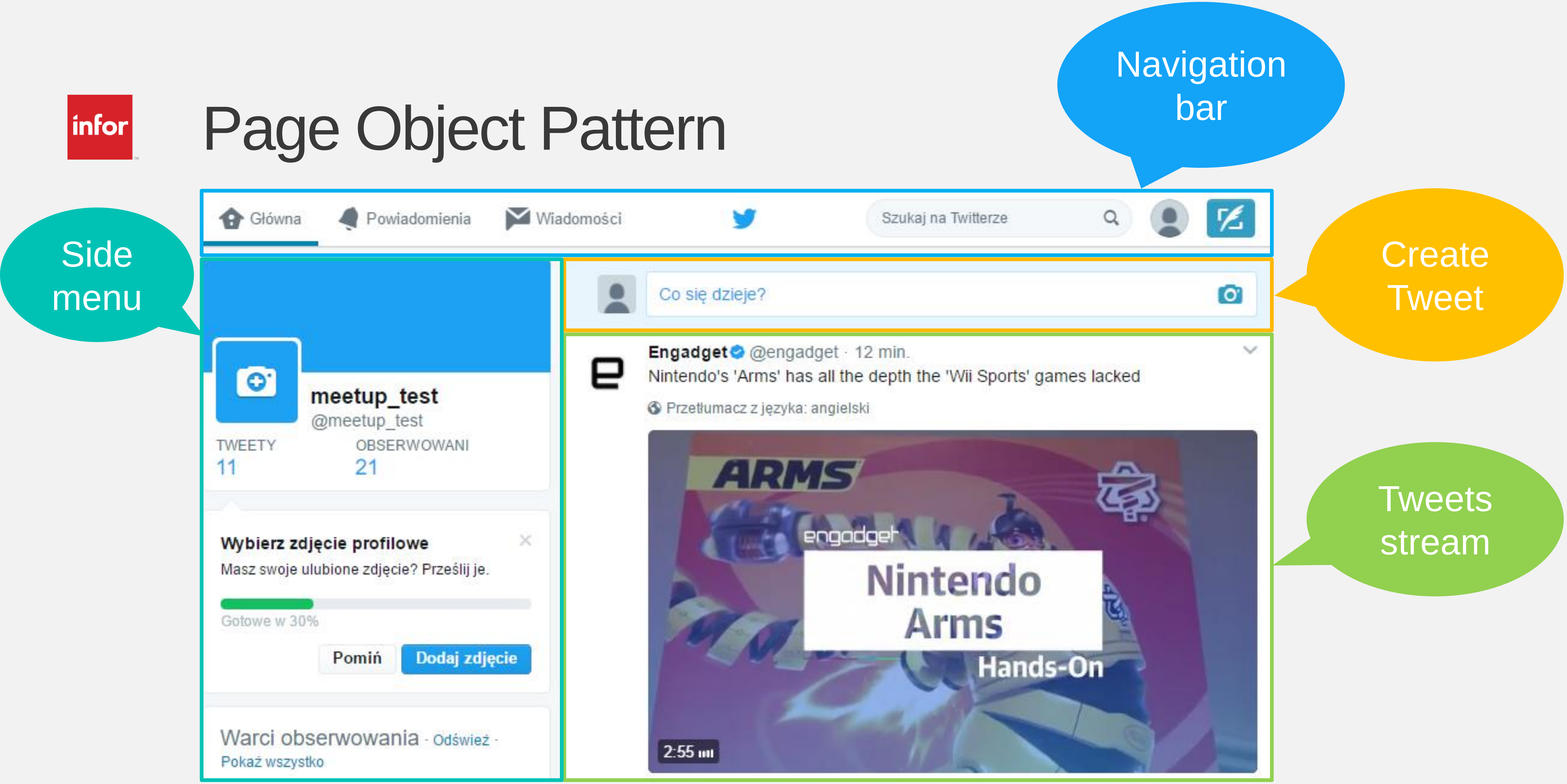
Demo 1

- https://github.com/achrapowicki/cross-platform-testing/tree/master/Demo1/Tweeter.Tests

Demo 1 - Issues

- Test cases are difficult to read
- Changes in the UI breaks multiple tests often in several places
- Duplication of selectors inside and across tests

Page Object Pattern



meetup_test
@meetup_test

TWEETY	OBSERWOWANI
11	21

Wybierz zdjęcie profilowe

Masz swoje ulubione zdjęcie? Prześlij je.

Gotowe w 30%

Pomiń | Dodaj zdjęcie

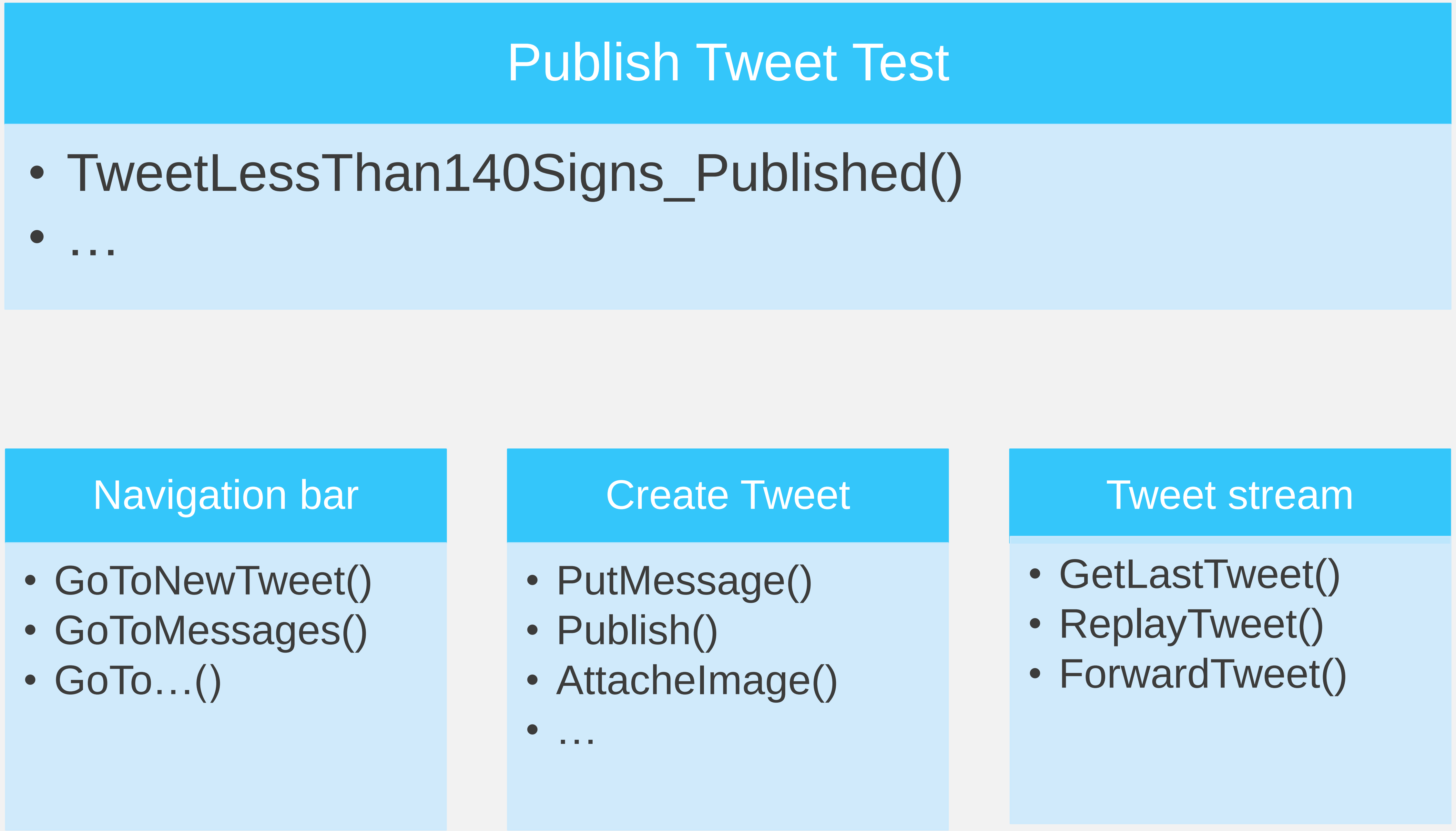
Warci obserwowania · Odśwież · Pokaż wszystko

Engadget @engadget · 12 min.

Nintendo's 'Arms' has all the depth the 'Wii Sports' games lacked

Przetłumacz z języka: angielski

Page Object Pattern



Publish Tweet Test

- TweetLessThan140Signs_Published()
- …

Navigation bar

- GoToNewTweet()
- GoToMessages()
- GoTo…()

Create Tweet

- PutMessage()
- Publish()
- AttacheImage()
- …

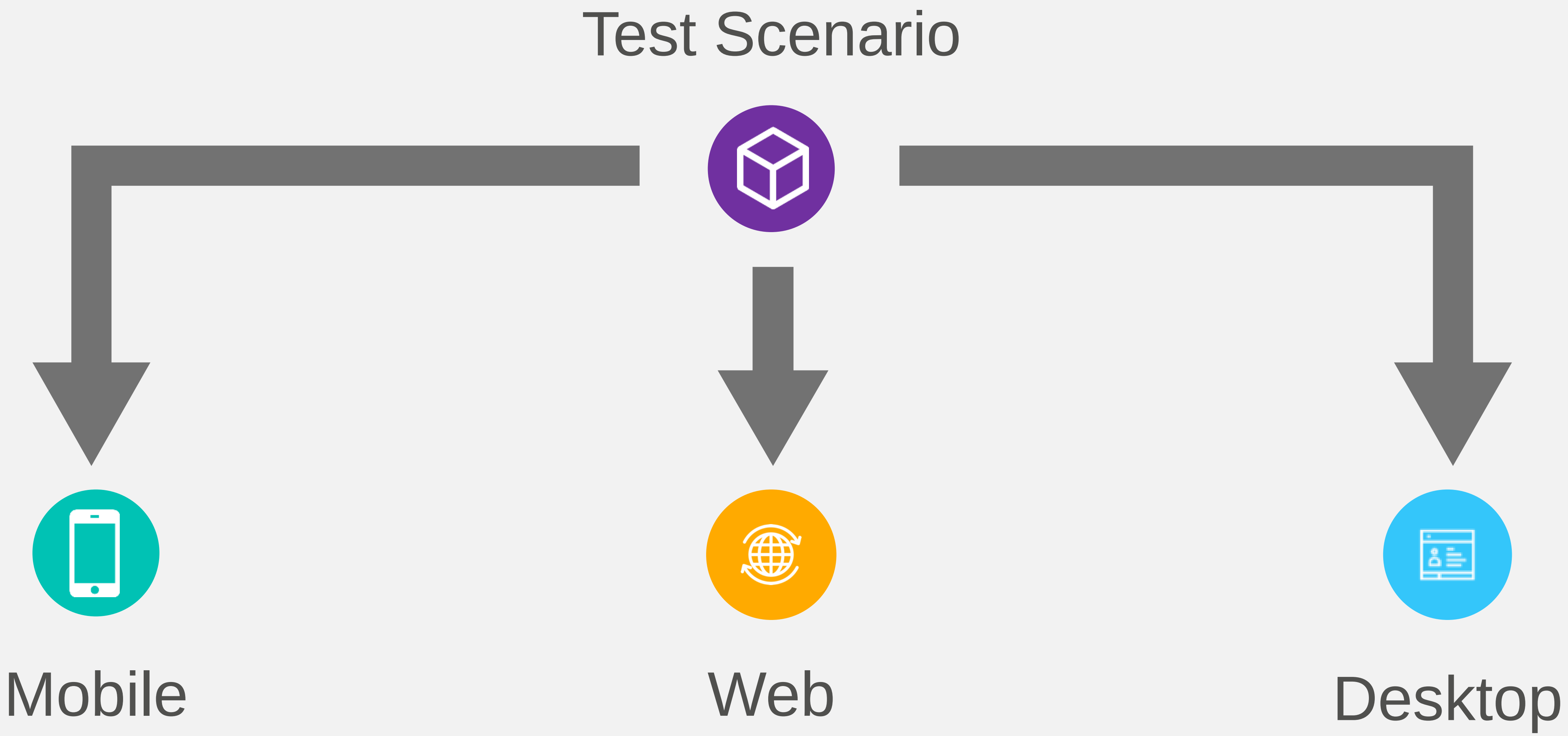
Tweet stream

- GetLastTweet()
- ReplayTweet()
- ForwardTweet()

Demo 2

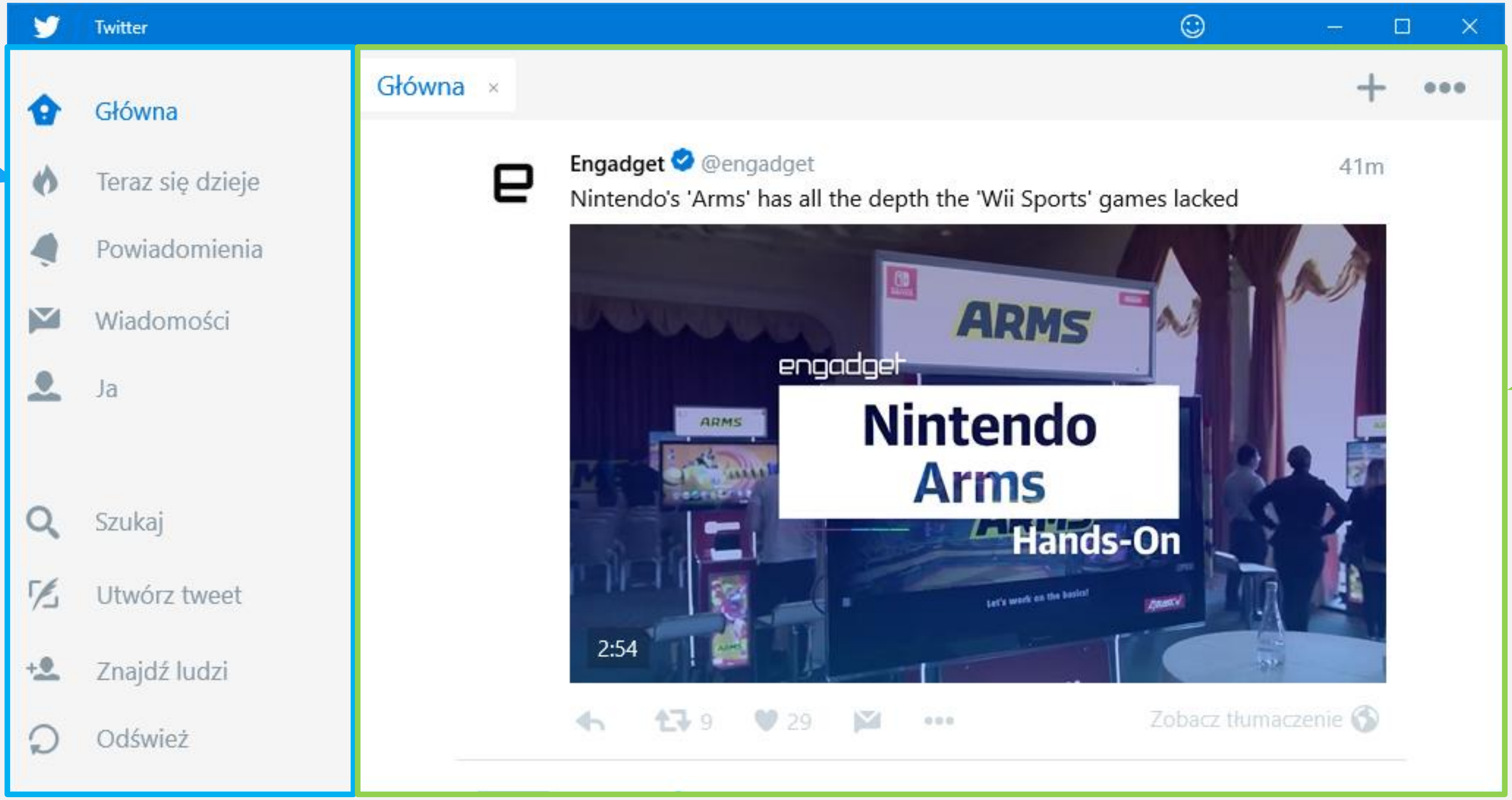
- https://github.com/achrapowicki/cross-platform-testing

Cross-Platform testing



Cross-Platform testing - Desktop

Navigation bar

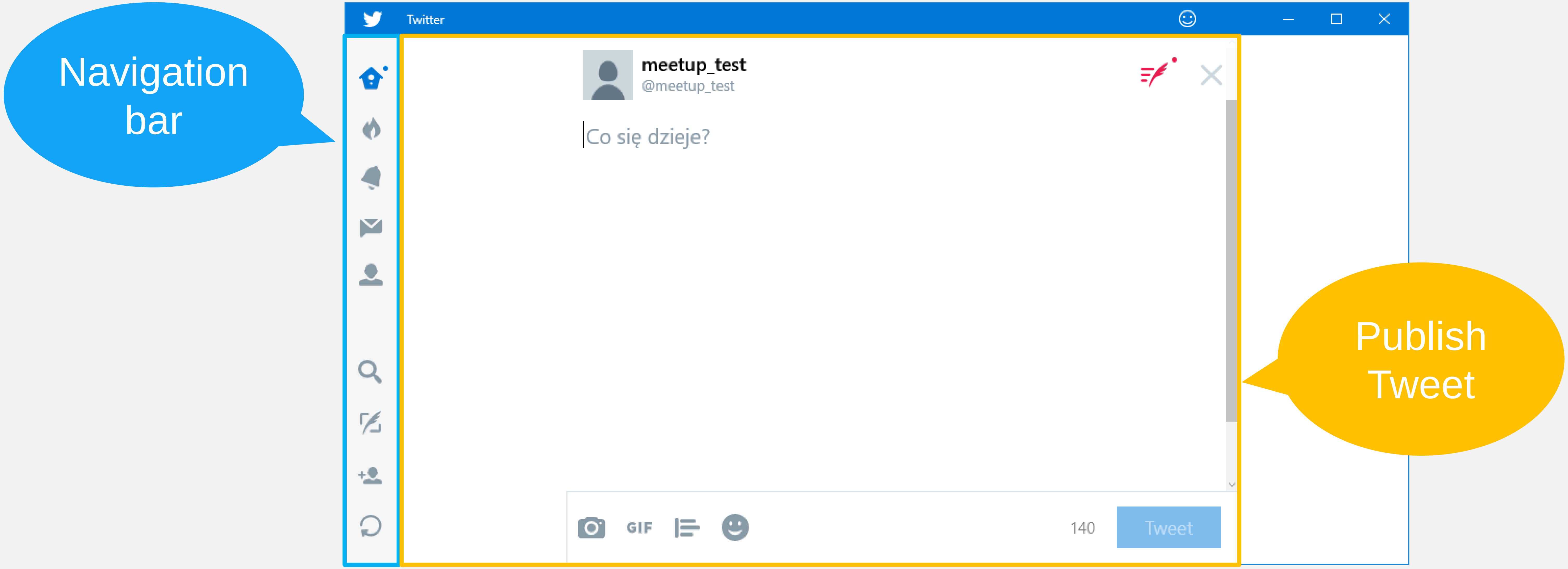


Engadget @engadget 41m

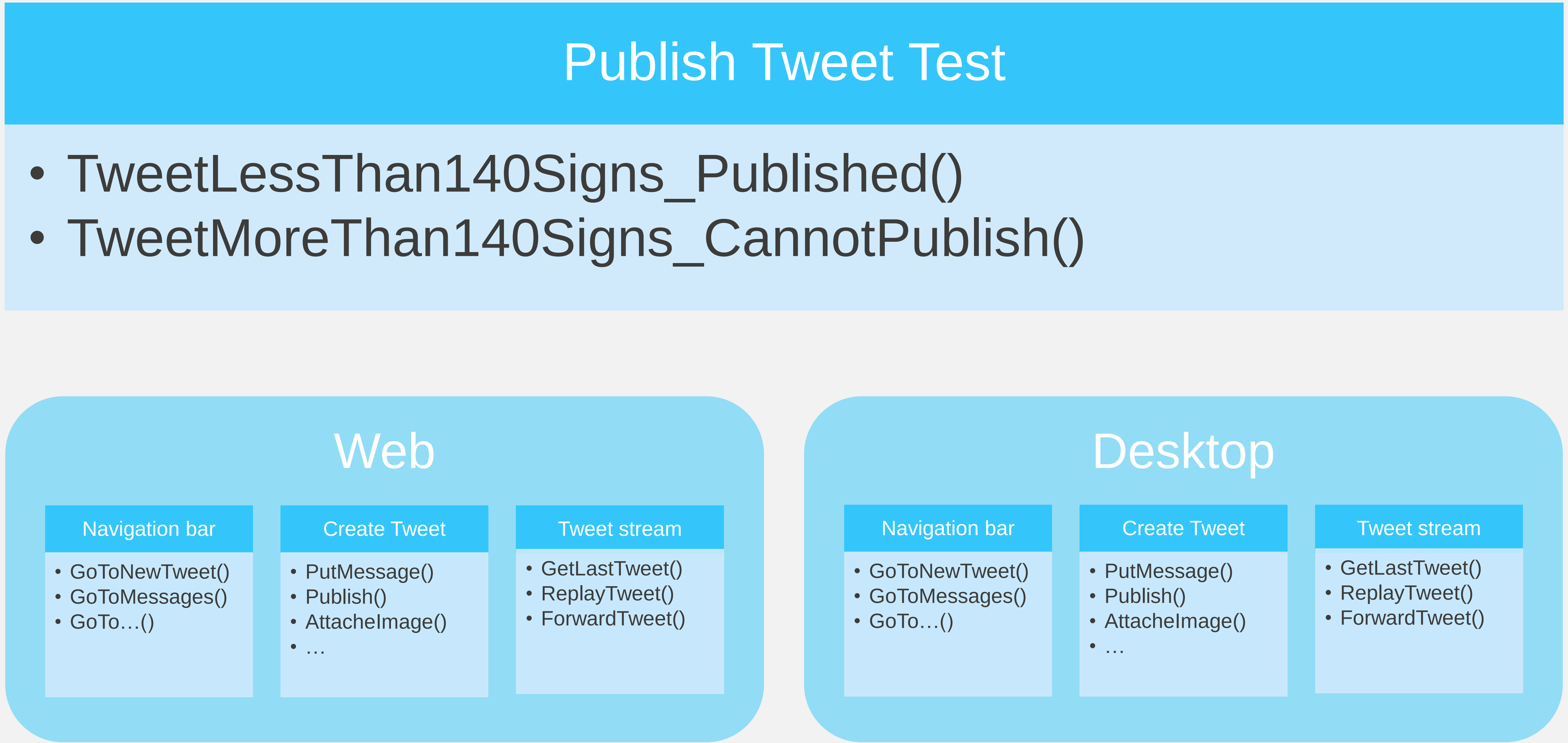
Nintendo's 'Arms' has all the depth the 'Wii Sports' games lacked

Tweets stream

Cross-Platform testing - Desktop



Cross-Platform testing - Page Object Pattern



Publish Tweet Test

- TweetLessThan140Signs_Published()
- TweetMoreThan140Signs_CannotPublish()

Web

Navigation bar

- GoToNewTweet()
- GoToMessages()
- GoTo…()

Create Tweet

- PutMessage()
- Publish()
- AttacheImage()
- …

Tweet stream

- GetLastTweet()
- ReplayTweet()
- ForwardTweet()

Desktop

Navigation bar

- GoToNewTweet()
- GoToMessages()
- GoTo…()

Create Tweet

- PutMessage()
- Publish()
- AttacheImage()
- …

Tweet stream

- GetLastTweet()
- ReplayTweet()
- ForwardTweet()

Demo 3

- https://github.com/achrapowicki/cross-platform-testing

Page Object Pattern - Summary

- Makes tests more readable
- Reduces the duplication of code
- Changes in the UI doesn’t break multiple tests
- Allow to separate the tests logic from manipulation with application
- Opened for the new platforms
- Require some effort at the begining to implement the basic framework and PageObjects

Q&A