

A Tool for Registering and Replaying Web Navigation

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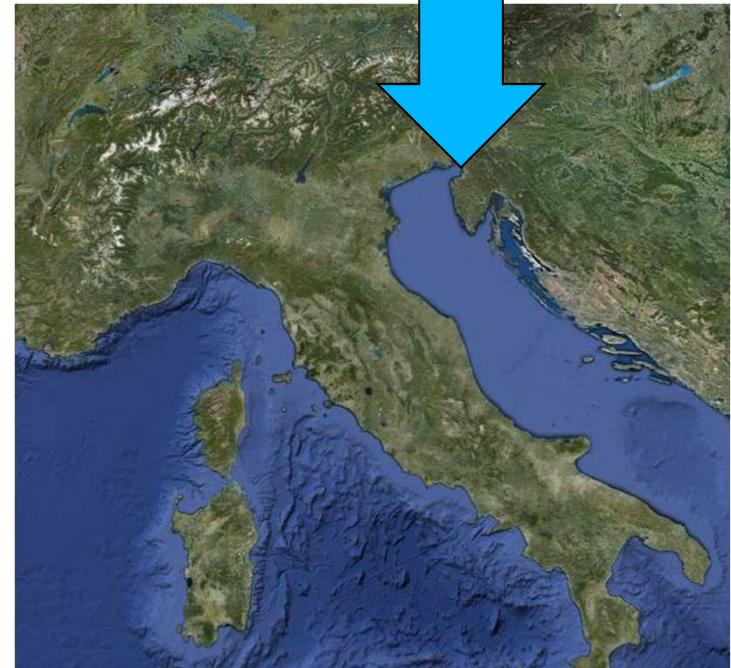
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Scenario (I)



- ❑ Web Application – **AJAX** technology
- ❑ Sources are **not** available
 - ❑ Third party
 - ❑ Black box

Scenario (II)



□ GUI testing

- Functional
- Security
- Regression
- ...

□ (Some) Essential requirements

- Ability to navigate / crawl **automatically**
- Ability to **repeat** specified sequences

(Some) key problems

- ❑ GUI elements do **not** have unique identifiers suitable for programmatic discovery
- ❑ How to identify «the same» element when replaying a recorded trace ?
- ❑ What if «that» element no longer exists ?



Example

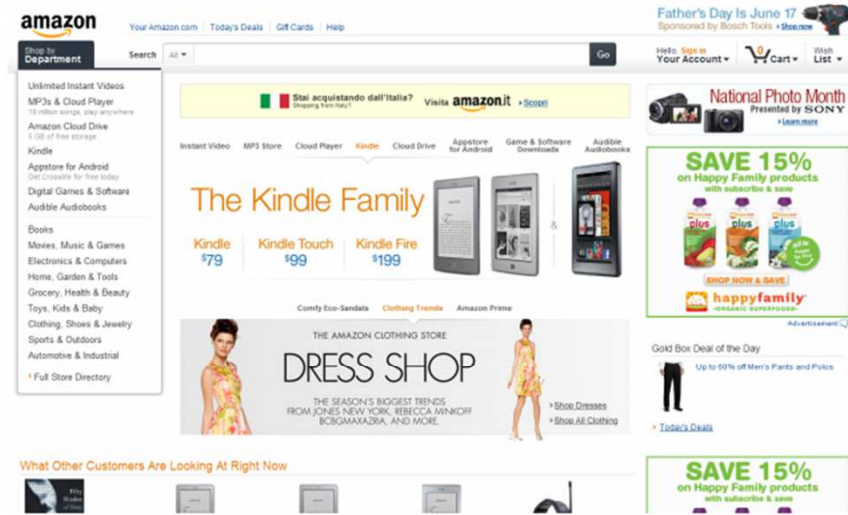


Figure 1. Appearance of Amazon home page during the recording (left) and the last replays (right).

Our work

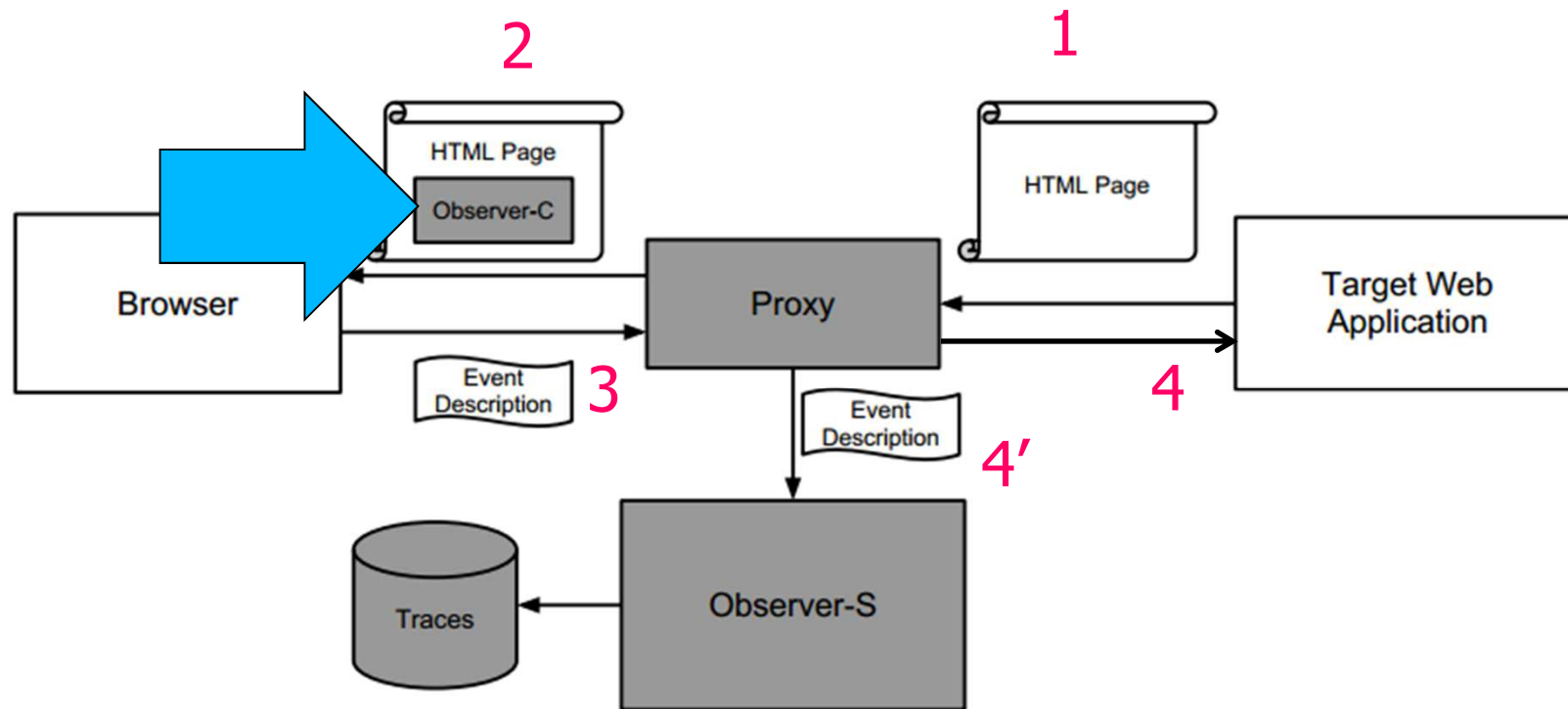


- ❑ **Record and Replay** User Navigation
 - ❑ Transparent Record (with Firefox)
 - ❑ Automated Replay (on the live site)

- ❑ Essential for GUI testing
- ❑ Very difficult to perform

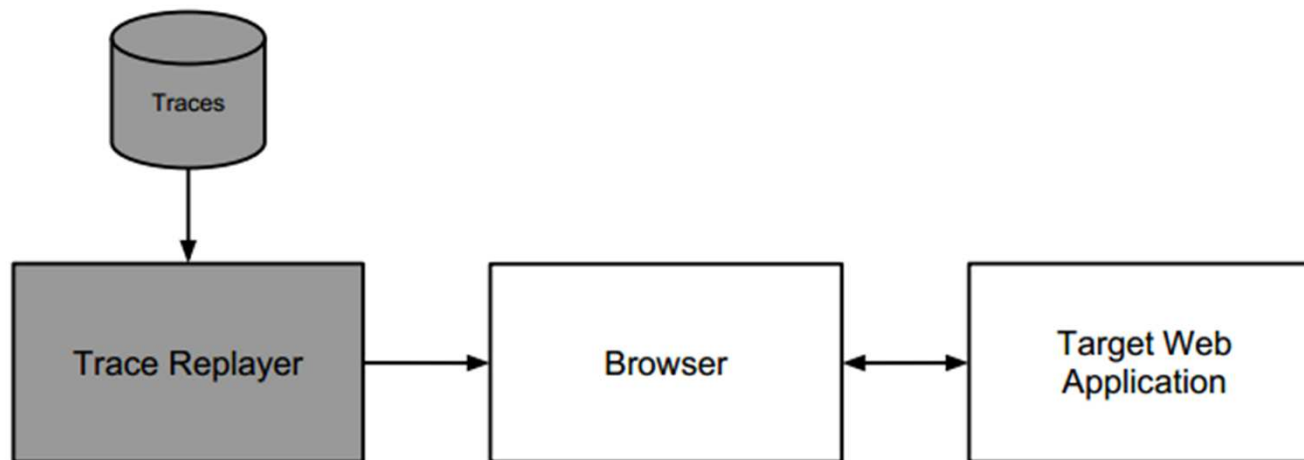
- ❑ Methodology
- ❑ Tool
- ❑ Works with real sites of practical complexity

Record



Replay

Previously recorded



Implementation (in a nutshell)

□ Record

- Inject Javascript code for intercepting all relevant user events

□ Replay

- **Locate the element** involved in the event

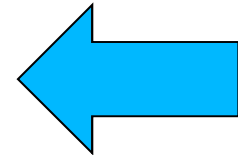
- Execute the event with WebDriver library

- The element might:

- Be in a different position

- Have different attributes

- No longer exist



Heuristics



- ❑ **findElementBySrc**

- ❑ Retrieves the first element with the same tag name

- ❑ **findElementByInput**

- ❑ Same type of form input and same value for certain attributes

- ❑ **findElementByGrid**

- ❑ Same tag name and coordinates in a specified grid

It works...



- ❑ Correct replay
- ❑ Even after several days
- ❑ Ability to detect when replay is no longer possible

- ❑ Realistic complexity
 - ❑ Google Groups
 - ❑ Google Shopping, +1, Monclick
 - ❑ Twitter login, user search, respond to a tweet
 - ❑ Amazon search, share and send by email
 - ❑ ...

Thanks for your attention...

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