Software Testing

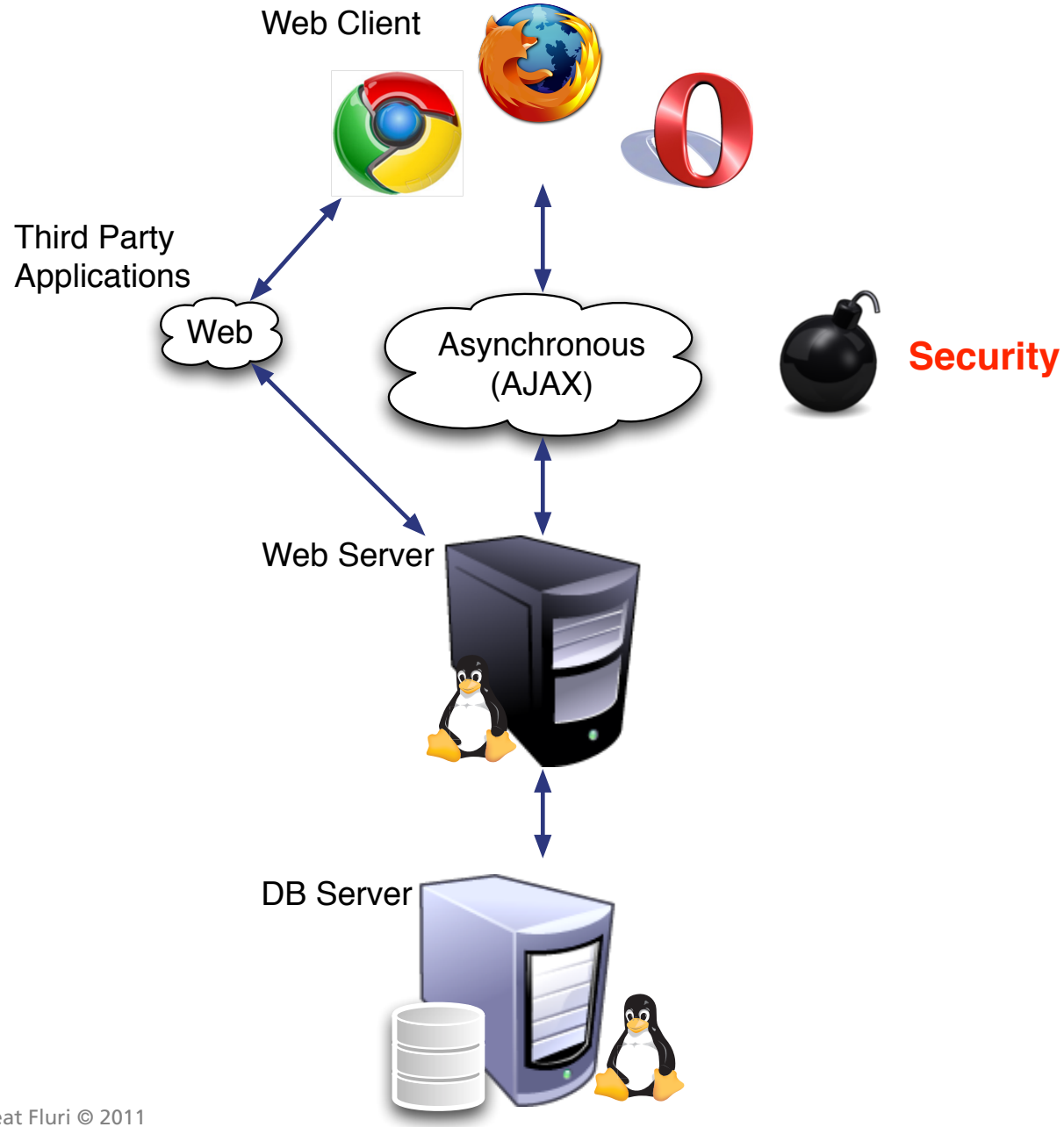
Web Testing

Beat Fluri

University of Zurich[UZH]

s.e.a.l.
software evolution & architecture lab

Web Applications



Web Application

Compared to standard applications: Internet

- Number of users is not predictable

Security

- Authentication, authorization
- Privacy
- Reliability

Performance

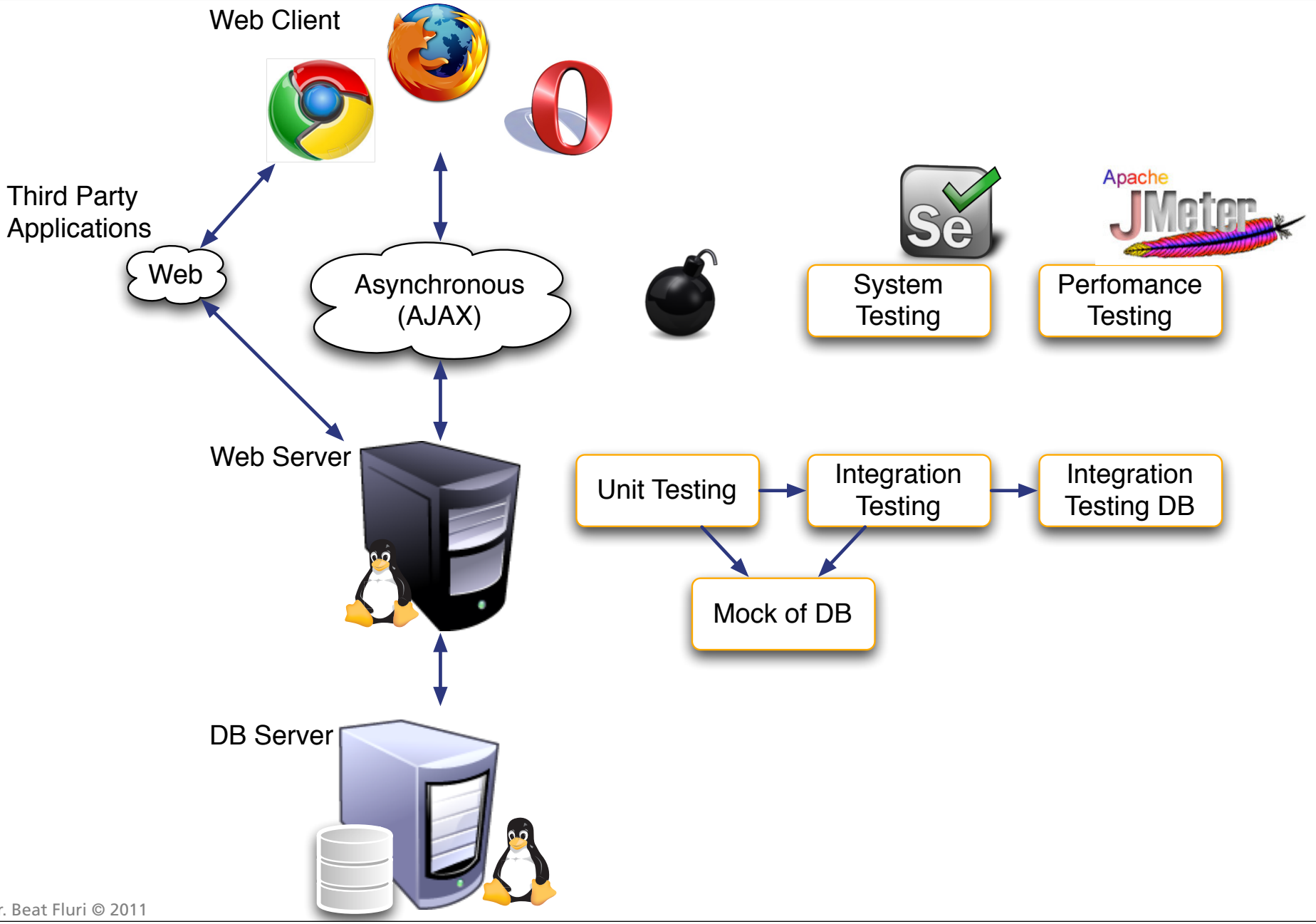
- Facebook maintains ~10’000 users per server (~300 Mio Users => ~30’000 Servers)[1]

Asynchronous access

- Concurrency

[1] http://www.datacenterknowledge.com/archives/2009/10/13/facebook-now-has-30000-servers/

Web Testing Strategy



Web Security Testing

Exception handling and failure notification

- Which information should go to the client?
- Which information should be silently logged?
- Which information should be sent to the administrator?

Testing for information leaks

- Check comments in HTML code
- Check error messages sent to the client
- Check browser access to server directories
- Check write privileges to server directories

Web Security Testing

SQL injection attacks

```
SELECT * FROM User where LOGIN='ADMIN' AND PASSWORD='no' OR 1 #'
```

=> Never use passed parameters directly in SQL statements

Testing for bad data

Input data cannot be trusted

Check server-side input validation (*e.g.*, `</body></html>` as user-name?)

Client-side script should not be executed without checking

Reliance on client-side scripting

Check that going to an URL directly without authentication must not work

Selenium

Acceptance testing framework for web application

Simulates user interaction directly in browser

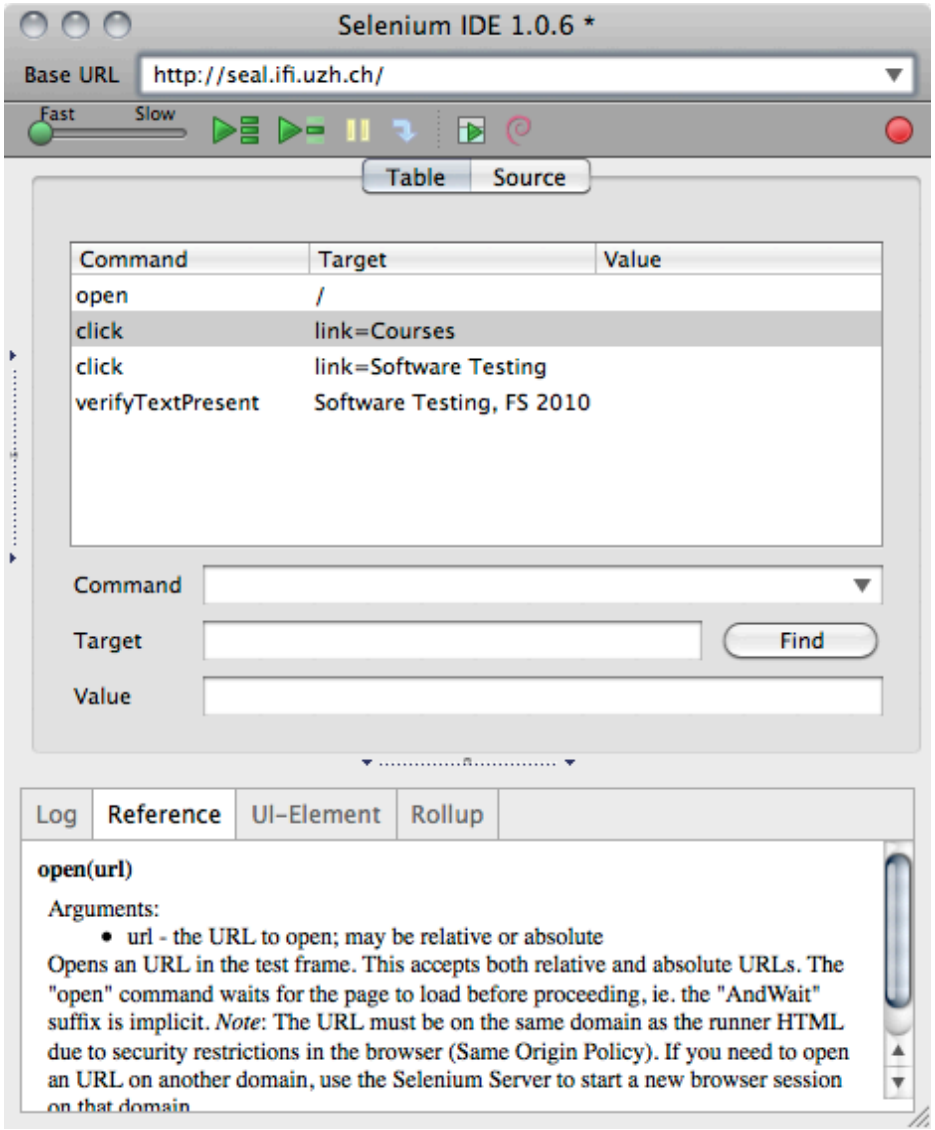
IDE for Firefox exists to record test cases

Test cases can be stored in multiple programing languages

With Selenium RC (remote control) test cases can be automated in build process

- Maven or Ant

Selenium IDE Demo



spood.me - Automated Selenium Tests

During manual tests of new features Selenium test cases are recorded with the Selenium IDE

Mission critical Selenium test cases are selected to be integrated into build process

Export Selenium test cases as JUnit test cases

Integrate JUnit test cases into spood.me Selenium test case framework

- Test suite per page or per use case
- Generation of necessary HTML element IDs