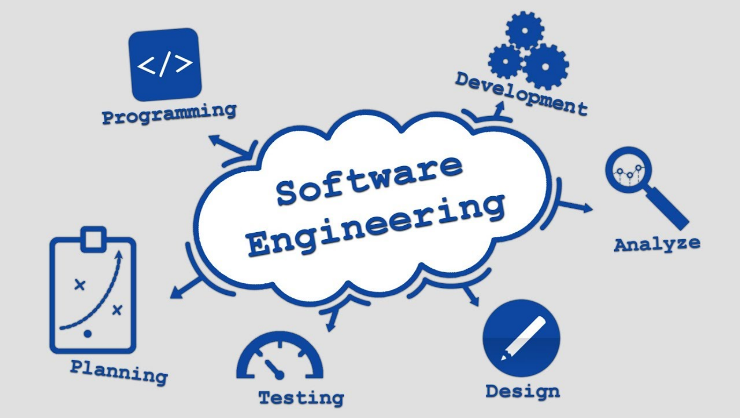
UNIVERSITY OF LEICESTER

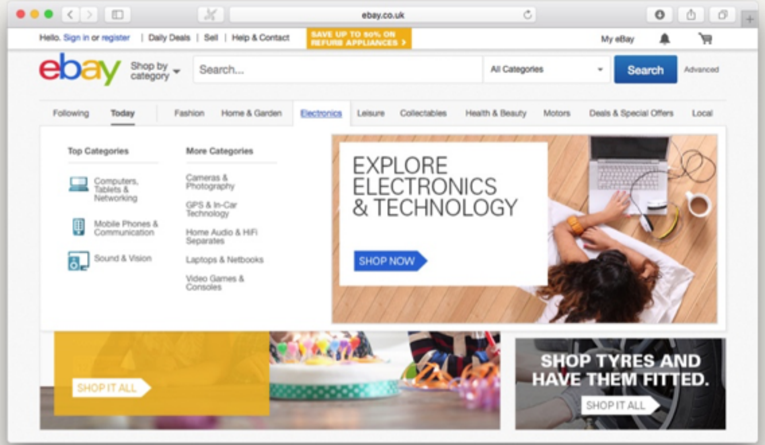
INFORMATICS

CO2006
Software Engineering and System Development

Artur Boronat



Online shop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SHOP IT ALL
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SHOP IT ALL

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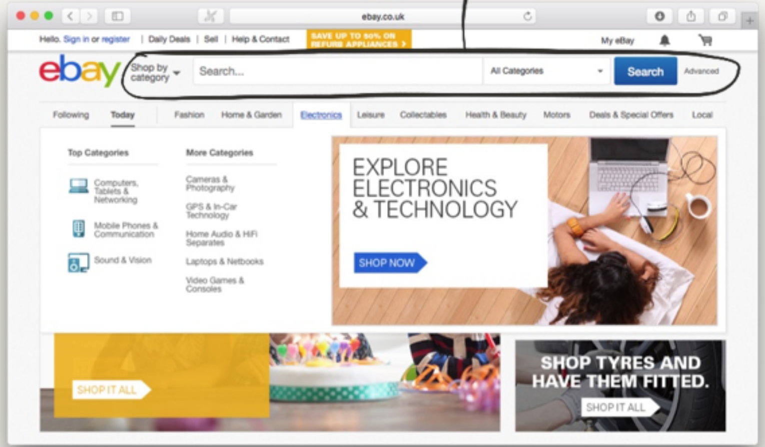
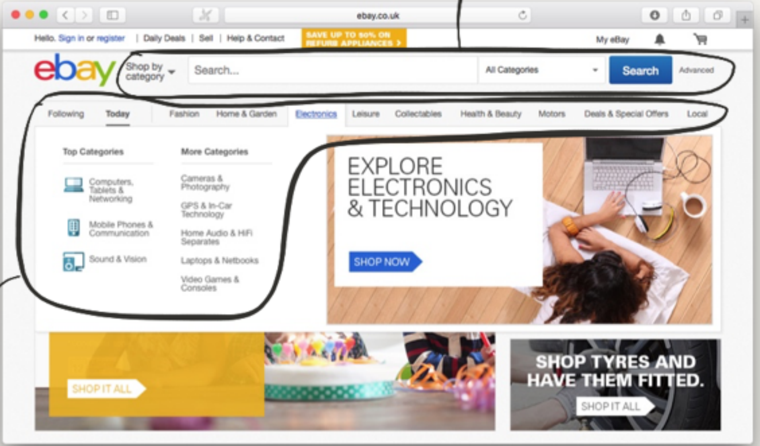


search products

Online shop

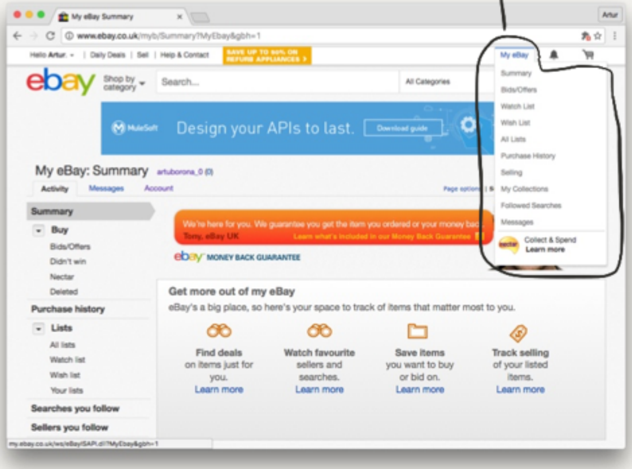


search products

browse the website

Online shop

functional features



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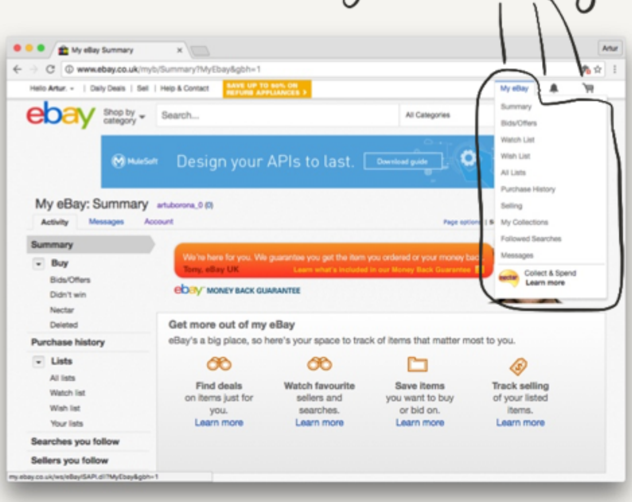
Online shop

functional features



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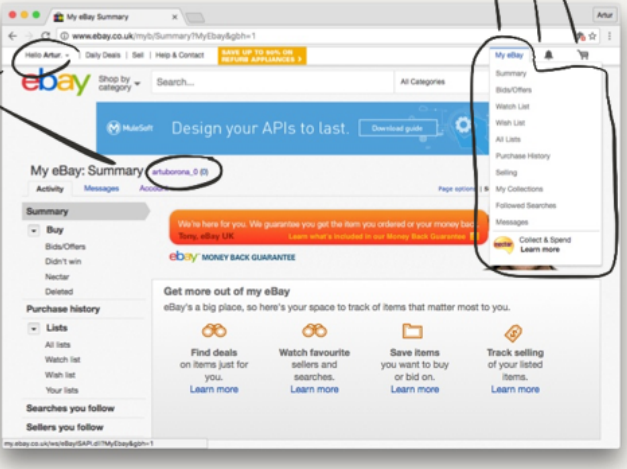
functional features

EBAY knows me



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Page options | S

- Summary
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  - Didn't win
  - Nectar
  - Deleted
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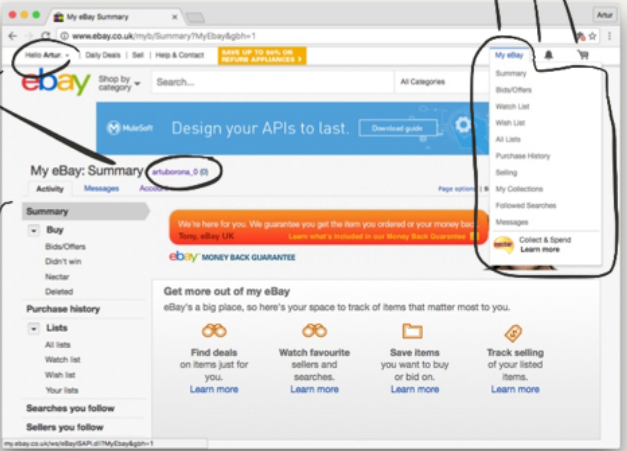
Online shop

functional features

EBAY knows me and remembers what I did



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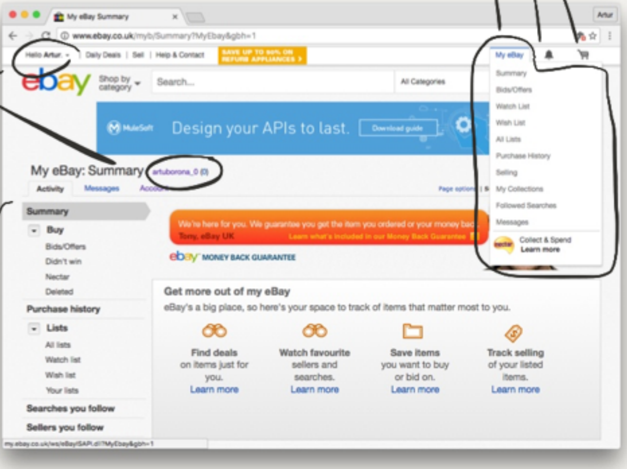

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DATA IS PERSISTED

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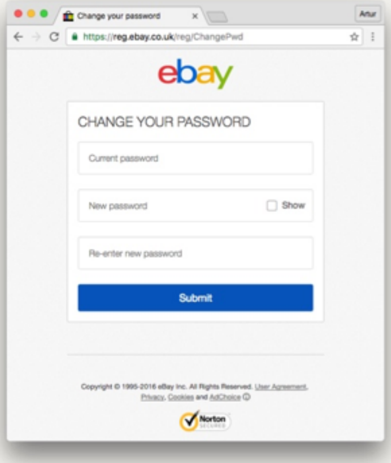

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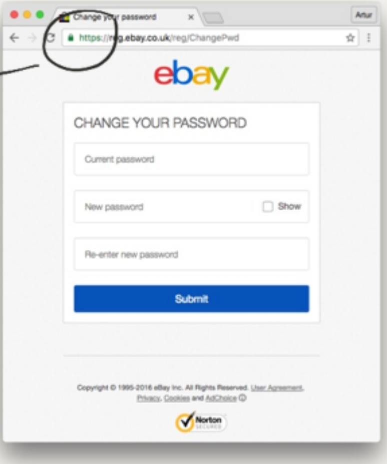
secure communication



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Norton SECURED

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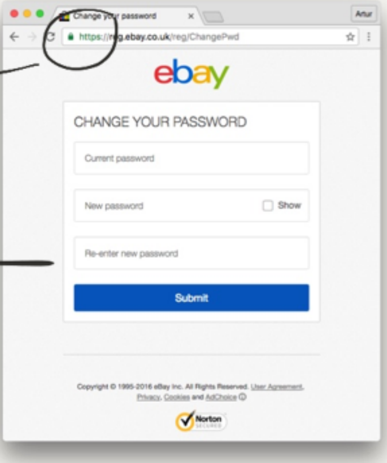
secure communication

authentication mechanism



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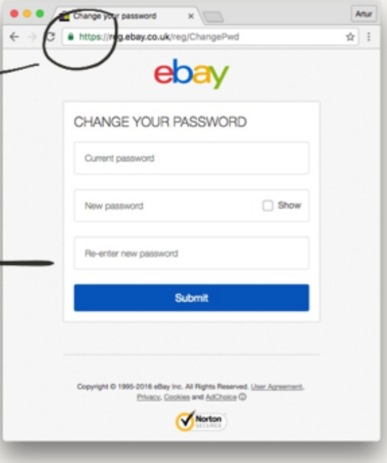
authentication mechanism

SECURITY



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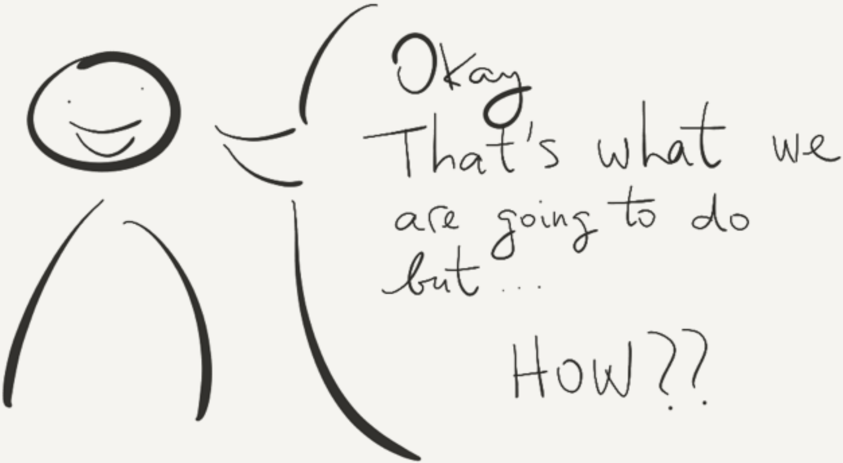
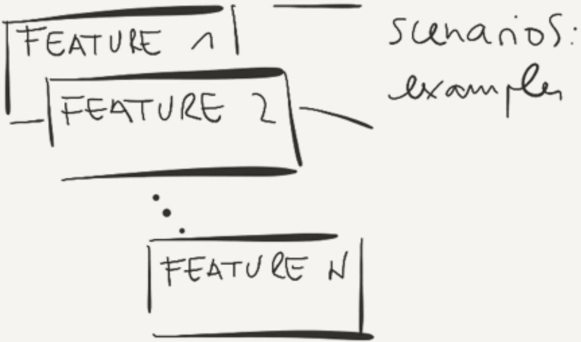

Okay That's what we are going to do but .... HOW??

SOFTWARE METHODOLOGY

1 REQUIREMENTS SPECIFICATION



SOFTWARE METHODOLOGY

1. REQUIREMENTS SPECIFICATION
2. DESIGN AND DEVELOPMENT

Spring MVC

Spring Data

Spring Security
└ used at EBAY

SOFTWARE METHODOLOGY

1. REQUIREMENTS SPECIFICATION
2. DESIGN AND DEVELOPMENT
3. TESTING
   - Test-driven development
   - Behavior-driven development

SOFTWARE METHODOLOGY

① REQUIREMENTS SPECIFICATION

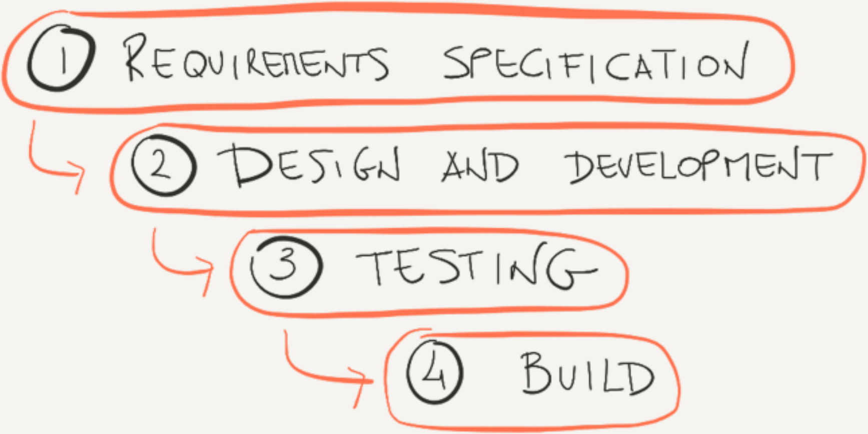
② DESIGN AND DEVELOPMENT

③ TESTING

④ BUILD

- automates tasks in ①, ② and ③
- Gradle

SOFTWARE METHODOLOGY



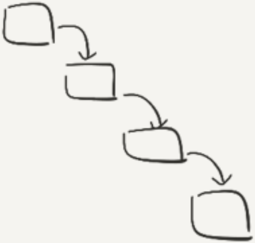
1. REQUIREMENTS SPECIFICATION
2. DESIGN AND DEVELOPMENT
3. TESTING
4. BUILD

IS THIS THE WATERFALL MODEL?

SOFTWARE METHODOLOGY

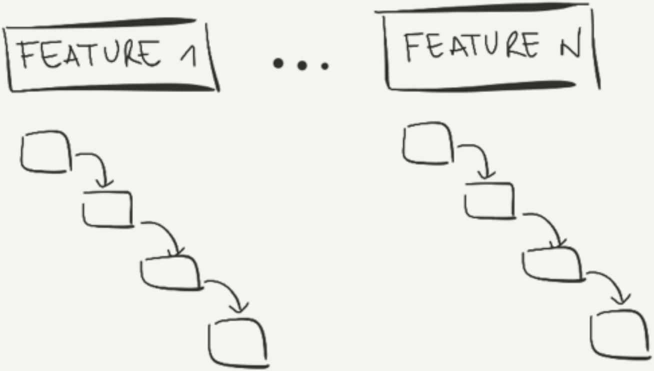
● ● ● actually think **AGILE**

FEATURE 1



SOFTWARE METHODOLOGY

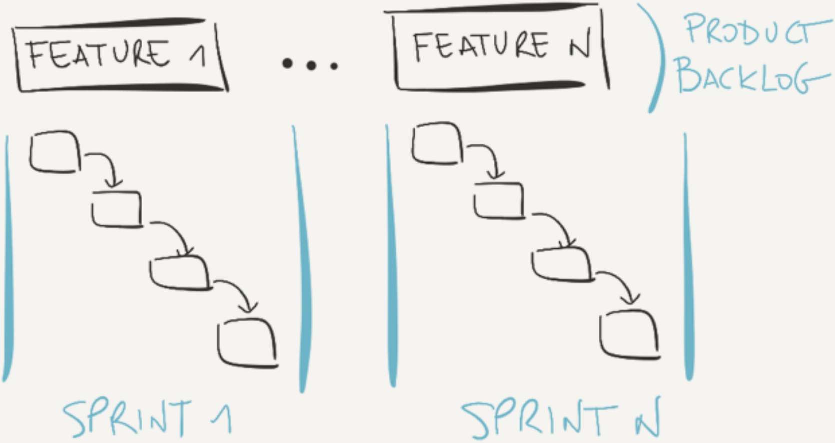
••• actually think AGILE



FEATURE 1 ... FEATURE N

SOFTWARE METHODOLOGY

... actually think AGILE



MODULE CONTENTS

SPRINT 1: AGILE + GRADLE

MODULE CONTENTS

SPRINT 1: AGILE + GRADLE

SPRINT 2: SPRING MVC

MODULE CONTENTS

SPRINT 1: AGILE + GRADLE

SPRINT 2: SPRING MVC

SPRINT 3: TDD + BDD

MODULE CONTENTS

SPRINT 1: AGILE + GRADLE

SPRINT 2: SPRING MVC

SPRINT 3: TDD + BDD

SPRINT 4: SPRING DATA
+ SECURITY

Challenges: release management

Goal

- Software release: software that is developed and tested, i.e. our goal
- Build: software that is compiled and assembled (a jar file), intermediate goal to achieve a release

Challenges: release management

Goal

- Software release: software that is developed and tested, i.e. our goal
- Build: software that is compiled and assembled (a jar file), intermediate goal to achieve a release

Problems in release management

- Does the code compile?
- Does the code pass the tests? (unit tests)
- Does the code meet the business requirements? (functionality)
- Does the code meet the quality criteria? (performance, security, etc.)

Challenge: release management

Solution: continuous delivery

- automatically produce build artifacts (jar files)

Challenge: release management

Solution: continuous delivery

- automatically produce build artifacts (jar files)
- release often and small

Challenge: release management

Solution: continuous delivery

- automatically produce build artifacts (jar files)
- release often and small
- produce a Minimum Viable Product (MVP)
  - to obtain fast feedback from customers
  - reducing risks
  - ensuring continuous progress

How? Agile Methodology

- Iterative, incremental and evolutionary

How? Agile Methodology

- Iterative, incremental and evolutionary
- People not process (when sensible)

How? Agile Methodology

- Iterative, incremental and evolutionary
- People not process (when sensible)
- Focus on quality and on maintaining simplicity
  - continuous delivery: automate as much as possible
    - optimise resources: save time
    - increase quality: to achieve repeatable and consistent processes
  - automated testing
    - quantitative measures
    - consistency
    - release readiness

How? Agile Methodology

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    - consistency
    - release readiness
- Embrace change: very short feedback loop and adaptation cycle

HOW? Tooling

compile

HOW? Tooling

compile > test

spring
by Pivotal
SPOCK FRAMEWORK

HOW? Tooling

compile > test > build

spring

by Pivotal

SPOCK FRAMEWORK

JPA

Java Persistence API

HIBERNATE

MySQL

HOW? Tooling

compile > test > build > release

HOW? Tooling

compile > test > build > release

Challenges: dependency hell

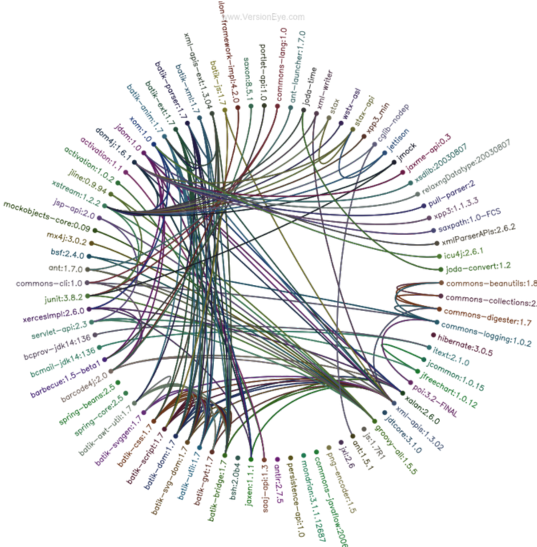
Dependency Hell

- Many dependencies
- Long chains of dependencies
- Conflicting dependencies: when different versions cannot be simultaneously installed
- Circular dependencies

Solution

Dependency management

JasperReports



During this sprint

Syllabus

- Eclipse STS and Java (revision)
- Agile principles (Pluralsight, private study)
- Groovy: scripting in the JVM ecosystem
- Gradle: build automation

Assessment

- Test on 16 October: it may involve small programming exercises