Engineering Web Applications
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University of Minho
MAP-i Doctoral Programme
Technologies

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Motivation

- Web applications are nowadays ubiquitous

  - in our personal computers, they are replacing traditional desktop applications;

  - at work, they provide productive cooperative environments;

  - our smartphones/tablets were conceived with them in mind.

- There is an (web) app for everything!

- Unfortunately, web apps are mostly built in ad-hoc fashion

- We will learn how to use software engineering methodologies to design, build and maintain them

Objectives and Learning Outcomes

- plan, design, develop, deploy and maintain web applications;

- describe and critically discuss the issues surrounding web applications development;

- create reliable, usable, and accessible web applications;

- adapt to future developments in the world wide web by providing students with a solid grounding in its underlying concepts and principles.
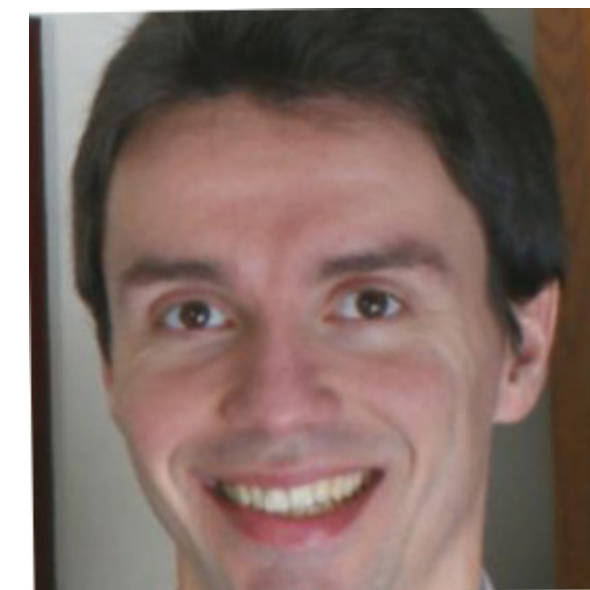
Topics

1. Technologies (frameworks, languages, etc.)

2. Architectures for web applications (e.g. micro-services)

3. Software development processes (for web apps)

4. Requirements engineering

5. Web application design (IFML)

6. Adaptation

7. Deployment and maintenance (e.g. DevOps)

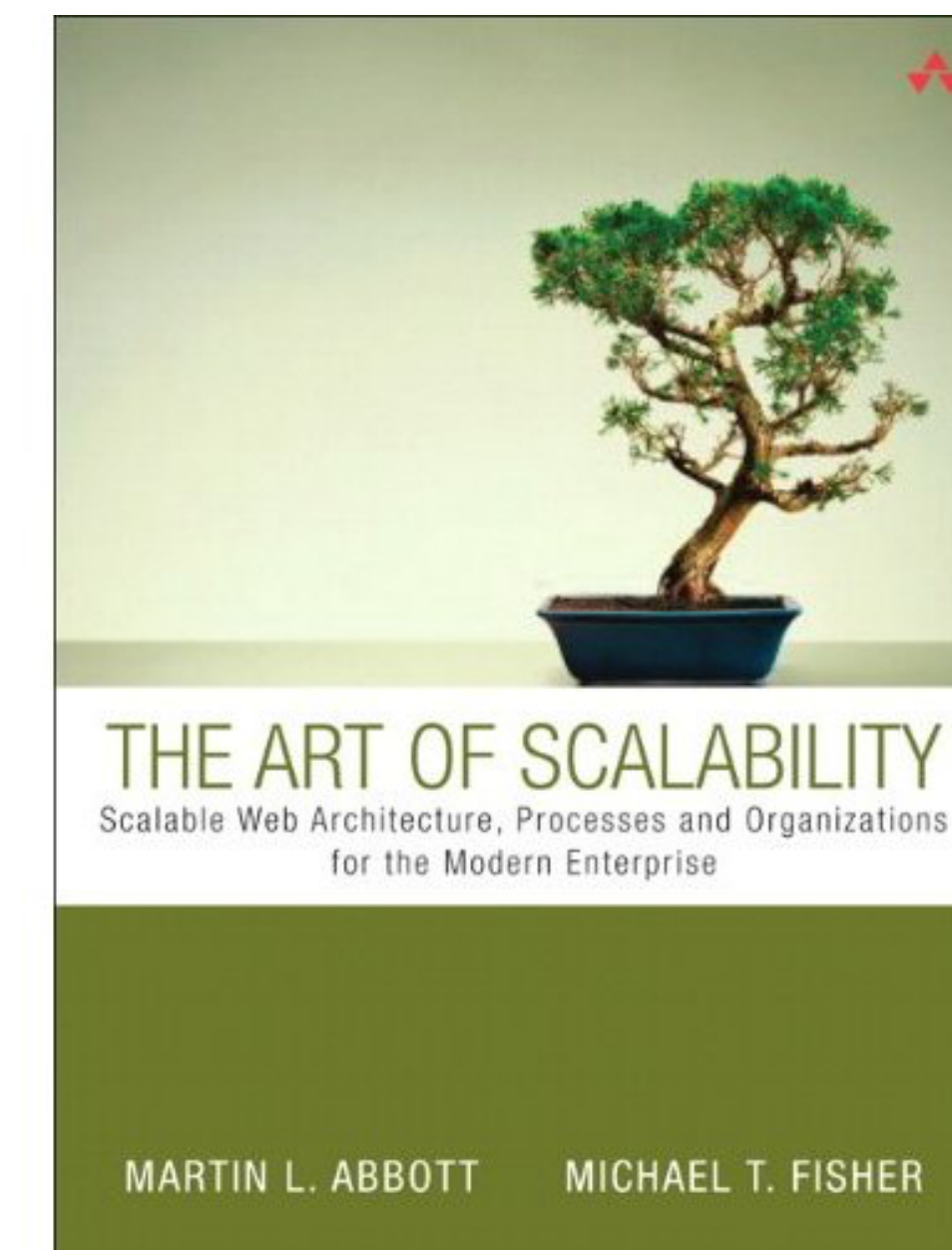8. Quality assessment (e.g. testing)
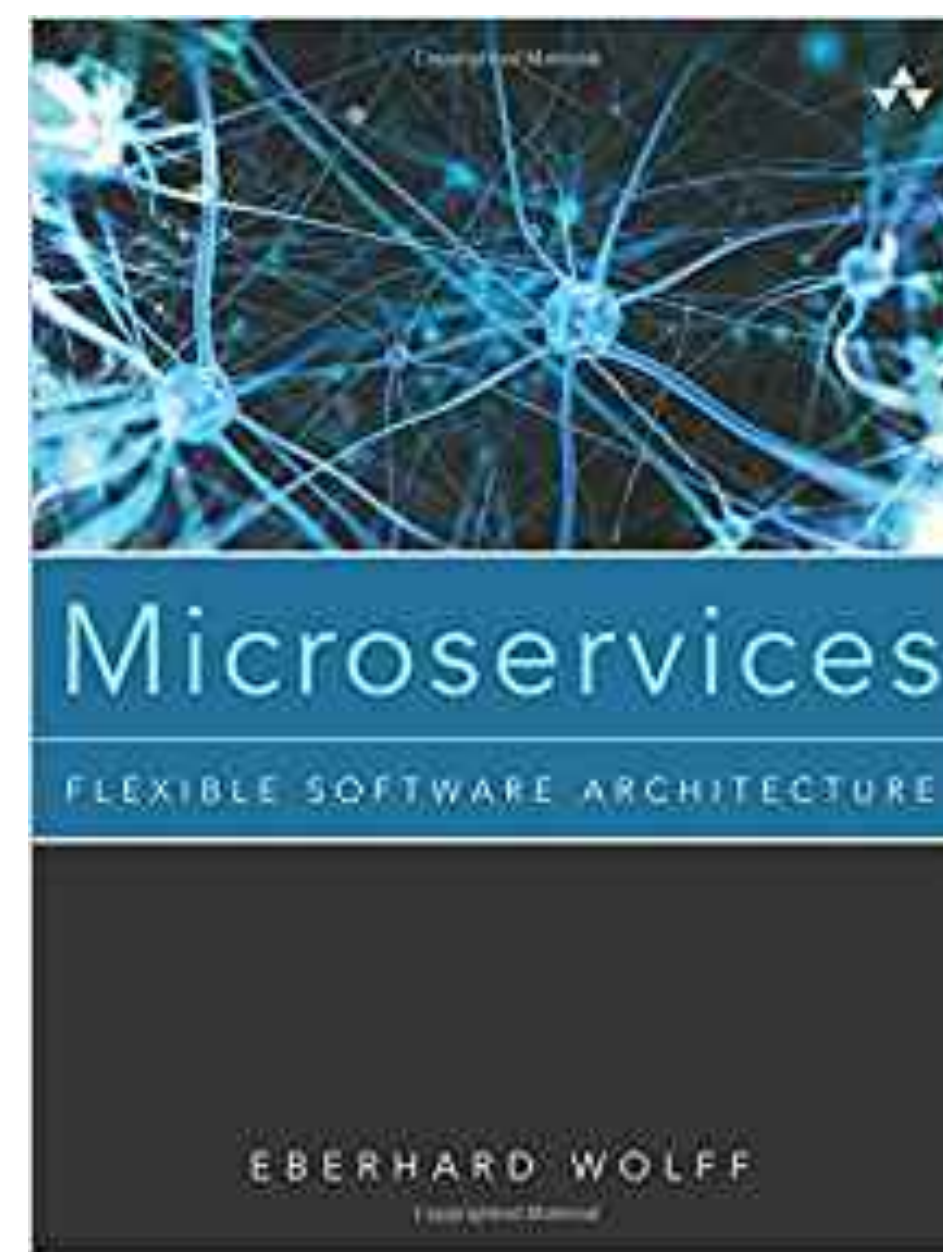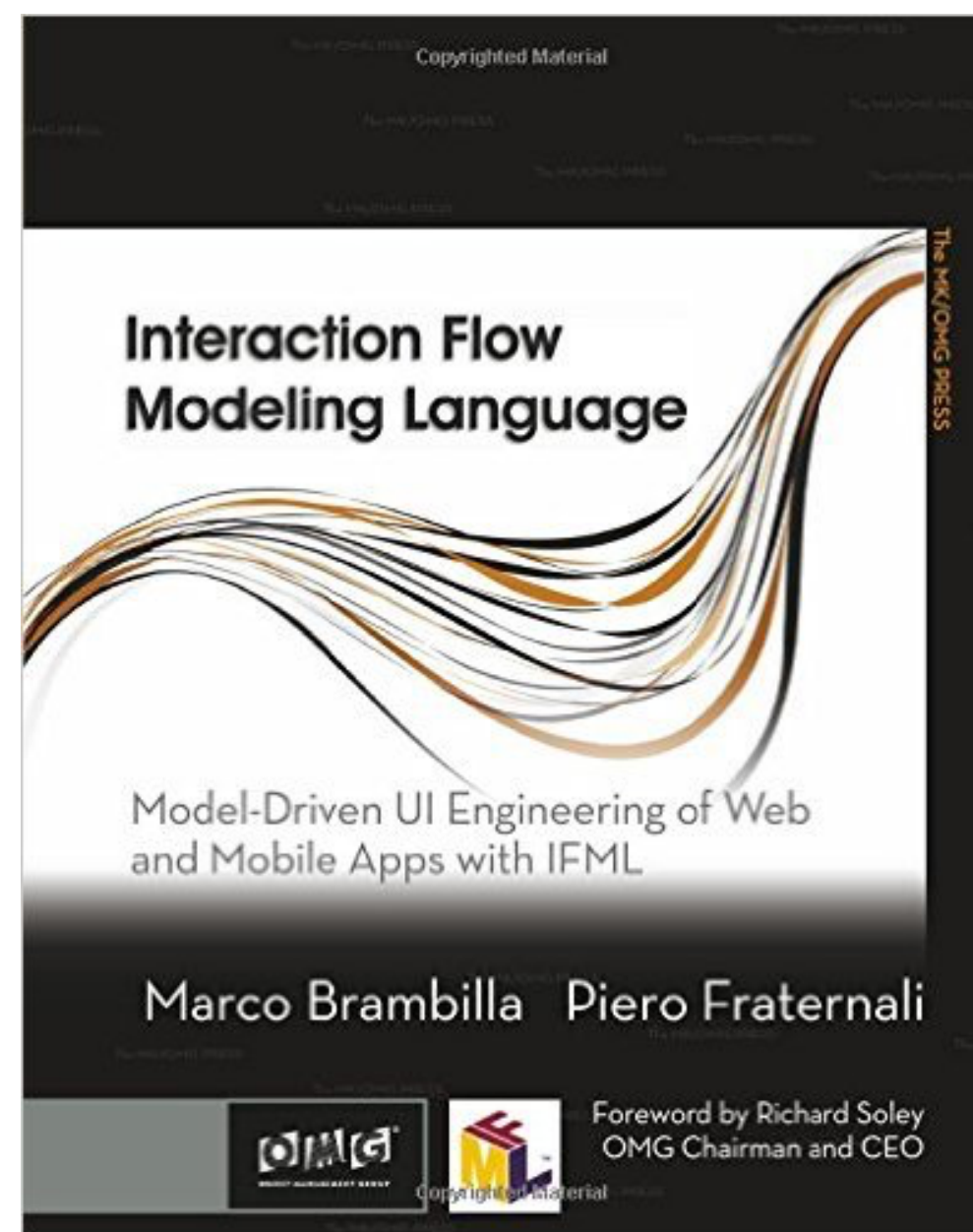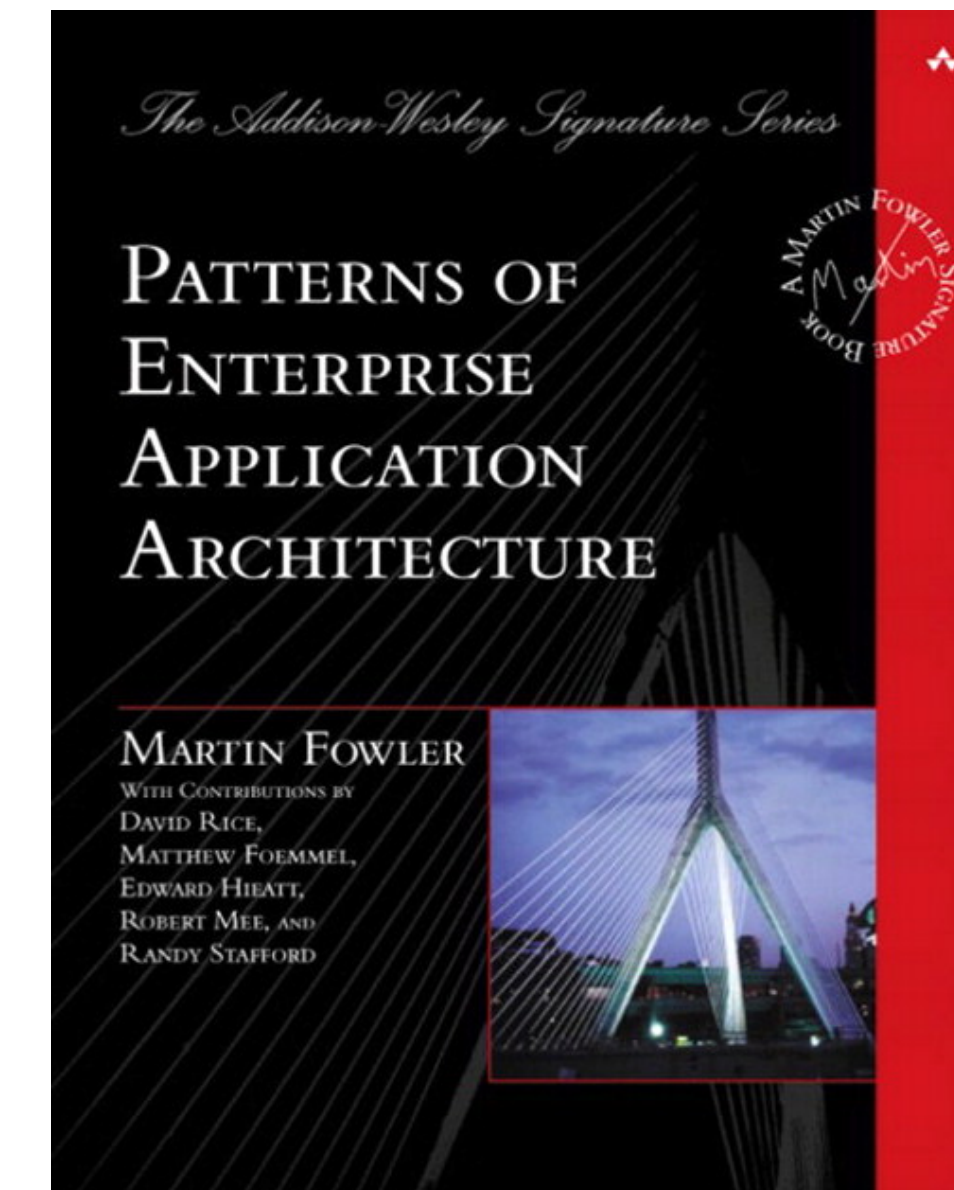
Evaluation

- Build a prototype of a web app

- Write a tool demo paper

- Present the prototype and paper

Team

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Bibliography

Bibliography

- Marco Brambilla and Piero Fraternali. *Interaction Flow Modeling Language – Model-Driven UI Engineering of Web and Mobile Apps with IFML.* Morgan Kaufmann. 2014

- Martin L. Abbott and Michael T. Fischer, *The Art of Scalability: Scalable Web Architecture, Processes and Organizations for the Modern Enterprise*, Addison-Wesley Professional. 2009

- Martin Fowler. *Patterns of Enterprise Application Architecture.* Addison-Wesley. 2002

- Bill Scott, Theresa Neil. Designing Web Interfaces: Principles and Patterns for Rich Interactions. O''Reilly Media. 2009

- Sven Casteleyn, Florian Daniel, Peter Dolog and Maristella Matera. Engineering Web Applications, 2009, ISBN 978-3-540-92200-1, Springer.

- E. Wolff, Microservices: Flexible Software Architecture, Addison-Wesley, 2016
  https://www.ifml.org