

Aalto University
School of Science
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Kimmo Puputti

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Master's Thesis
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Supervisor: Professor Petri Vuorimaa, Aalto University
Instructor: Risto Sarvas D.Sc.(Tech.)

Aalto University
School of Science

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ABSTRACT OF
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Kimmo Puputti

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0.1 Thesis Git repository info

Git HEAD:

```
commit e481a1051b640dbfaf23785f06ee47dfb89c4d32
Author: Kimmo Puputti <kpuputti@gmail.com>
Date:   Thu Jan 5 15:05:15 2012 +0200
```

Add gitinfo to deps.

Repository status:

```
# On branch master
nothing to commit (working directory clean)
```


Chapter 1

Introduction: Smartphone Market and the Need for Cross-Platform Support

1.1 Smartphone Landscape

1.2 HTML5

1.2.1 History

1.2.2 Markup

1.2.3 CSS3

1.2.4 JavaScript APIs

1.2.5 Related APIs

1.3 Modern Mobile Web Application Architecture

1.3.1 Single-Page applications

1.3.1.1 JavaScript MVC Libraries

1.3.2 Responsive Design

1.3.3 Progressive Enhancement

1.3.4 UI Libraries

1.3.4.1 jQuery Mobile

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1.3.5 Hybrid Applications

Chapter 2

Research Question: HTML5 - Hype versus Realities?

Chapter 3

Methods: Example Application and Library

3.1 Qt Developer Days 2011 Conference Schedule Application

3.2 JSONCache JavaScript Library

Chapter 4

Results: What Was Good and Where Were the Compromises

4.1 Targeting Different Platforms

4.1.1 Device Detection

4.1.2 Feature Detection

4.2 Targeting Different Screens

4.3 Handling Mobile Networks

4.3.1 Minimizing Data Transfer

4.3.2 Caching

4.3.3 Preloading

4.3.4 Offline Support

4.3.5 Handling Interruptions

4.4 Graphics and Animations

4.5 Performance Analysis

4.5.1 YSlow

4.5.2 PageSpeed

Chapter 5

Discussion: Bright Future Ahead for HTML5

Chapter 6

L^AT_EXtest

6.1 Citing

- Berners-Lee [1]
- Mikkonen & Taivalsaari [4]
- Taivalsaari & Mikkonen [7]
- Pilgrim [5]
- Crockford [2]
- Souders [6]
- Garrett [3]
- Zakas [8]

Bibliography

- [1] BERNERS-LEE, T. Long live the web. *Scientific American* 303, 6 (2010), 80–85.
- [2] CROCKFORD, D. *JavaScript: The Good Parts*. O'Reilly Media / Yahoo Press, 2008.
- [3] GARRETT, J. J. Ajax: A new approach to web applications. *Adaptive path* 18 (2005). Available at: <http://www.adaptivepath.com/ideas/ajax-new-approach-web-applications>. Accessed 5-January-2012.
- [4] MIKKONEN, T., AND TAIVALSAARI, A. Apps vs. Open Web: The Battle of the Decade. In *2nd Annual Workshop on Software Engineering for Mobile Application Development* (2011).
- [5] PILGRIM, M. *HTML5: Up And Running*. O'Reilly Media, 2010.
- [6] SOUDERS, S. *High Performance Web Sites*. O'Reilly Media, 2007.
- [7] TAIVALSAARI, A., AND MIKKONEN, T. The Web as an Application Platform: The Saga Continues. In *Software Engineering and Advanced Applications (SEAA), 2011 37th EUROMICRO Conference on* (2011), IEEE, pp. 170–174.
- [8] ZAKAS, N. C. *High Performance JavaScript*. O'Reilly Media / Yahoo Press, 2010.