



Web Components Introduction

A quick guide on how to create and use Web Components

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Slides, Code, Video



<http://fihlon.ch/javacro17>

About Me

- **Software Engineer**

CSS Insurance, Open Source Software

- **Agile Coach**

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- **Lecturer**

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Agenda

Intro

Specifications

Live Coding

Wrap-up

Intro

“Web Components are a set of standards currently being produced by Google engineers as a W3C specification that allow for the creation of reusable widgets or components in web documents and web applications. The intention behind them is to bring component-based software engineering to the World Wide Web. The components model allows for encapsulation and interoperability of individual HTML elements.”

Wikipedia

- New W3C Standard
- Allows reuse of components
- The standard is divided into four specifications:
 - Templates
 - Shadow DOM
 - Custom Elements
 - Imports
- A Web Component uses well-known technologies:
 - HTML
 - CSS
 - JavaScript
- No need of a framework or library
 - Except an optional polyfill to support older browsers

Specifications

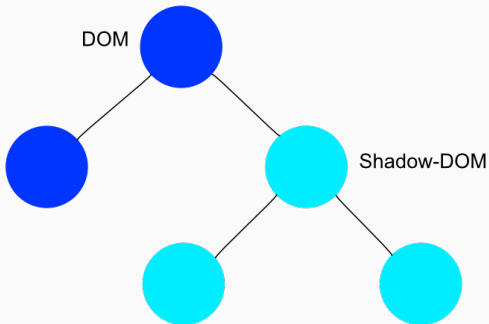
Templates

- Defines HTML parts to be reused any number of times
- Define reusable parts directly inside of HTML documents
- Is defined by the new `<template>` tag
- Can be added to the DOM using JavaScript
- Unlimited number of templates possible

```
1 <template id="my-template">
2   <div>
3     
4   </div>
5 </template>
```

Shadow DOM

- Create an independent sub-DOM
- Not accessible from “outside” of the sub-DOM
- Avoids DOM collisions between components
- No side-effects of CSS or JavaScript between components
- Can be added to the DOM using JavaScript
- Unlimited number of Shadow DOMs possible



Custom Elements

- Connect template and shadow DOM
- Define reusable components
- Create own tags to produce readable HTML
 - own tags need to include a hyphen
- Apply styles inside of the custom element
- Use JavaScript for interaction
- Throws lifecycle events:
 - created, ready, attached, detached, attributeChanged

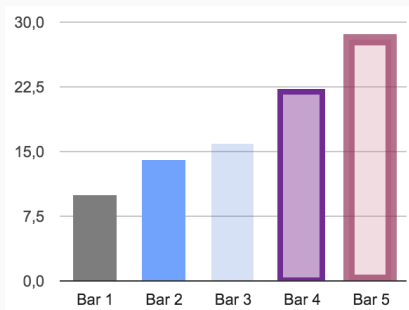
1 `<google-hangout-button></google-hangout-button>`



Imports

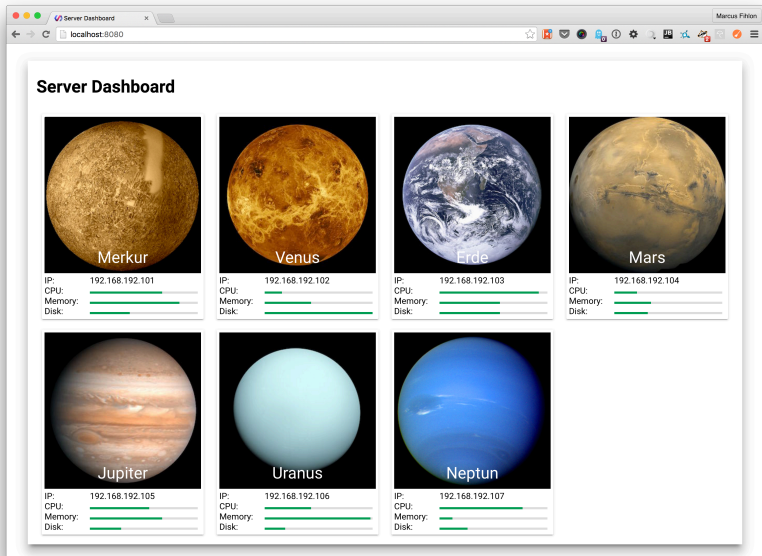
- Outsourcing of HTML parts
- Create own HTML files for components (higher reusability)
- Add components to HTML documents using imports

```
1 <link rel="import" href="google-chart.html">  
2 <google-chart type="column" data="chart.json">
```

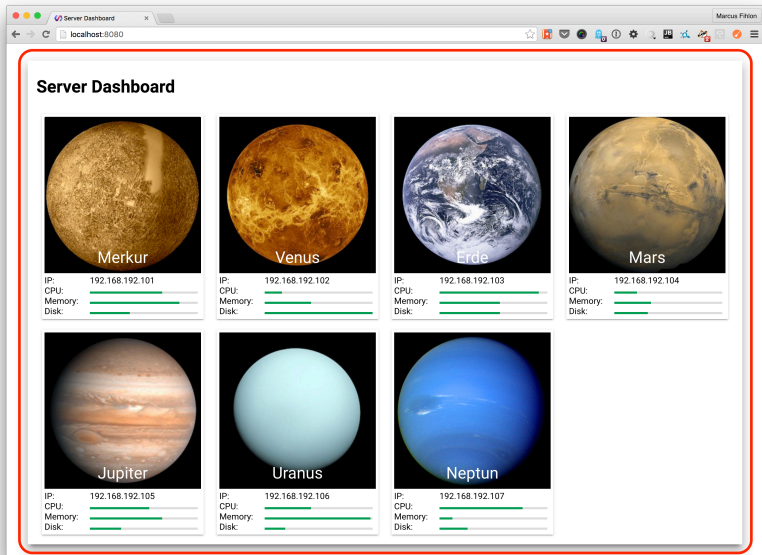


Live Coding

Screenshot of Demo Application



Components of Demo Application



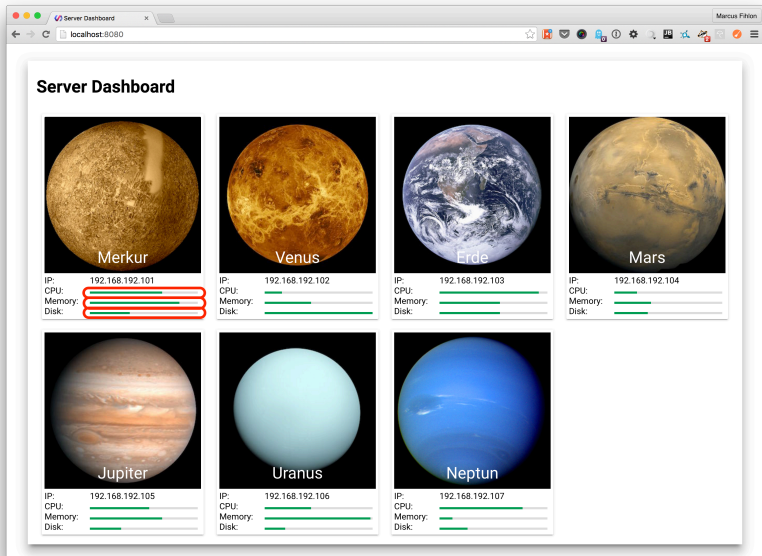
Components of Demo Application

Server Dashboard

The dashboard displays the following data for each planet:

Planet	IP	CPU	Memory	Disk
Merkur	192.168.192.101	██████████	██████████	██████████
Venus	192.168.192.102	██████████	██████████	██████████
Erde	192.168.192.103	██████████	██████████	██████████
Mars	192.168.192.104	██████████	██████████	██████████
Jupiter	192.168.192.105	██████████	██████████	██████████
Uranus	192.168.192.106	██████████	██████████	██████████
Neptun	192.168.192.107	██████████	██████████	██████████

Components of Demo Application



Wrap-up

Web Components...

- are **declarative** and **reuseable**
- are **combinable** and **extensible**
- are **interoperational** – DOM = common demoninator
- allow **encapsulation** – scoping
- increase **productivity** and **accessibility**
- are **standard**
- support **thinking in components**

- W3C Web Components Specification
<https://w3.org/standards/techs/components>
- W3C Introduction to Web Components
<http://w3.org/TR/components-intro/>
- Informations about Web Components
<http://webcomponents.org>
- Directory of custom elements
<https://customelements.io>
- Polymer Project
<https://www.polymer-project.org>

Thank You! Questions?

Slides, Code, Video



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