

# Introducing Aurelia

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# Agenda

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- SPAs
- Web Components
- Aurelia

# Single Pages Apps (SPAs)

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- Single Page Applications (SPAs) are a web app served up as a single HTML request.
  - One initial page load of HTML
  - Dynamic features via sophisticated Javascript/AJAX incorporated into the page
- Built with a client-side MVC (Model View Controller)/MVVM (Model View View-Model) library or framework (Angular, Ember, Aurelia)
- Interact with Rest backends - using JSON default data format

# Key Features of SPAs

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- Back-end language agnostic
- Apps usually driven by data and events
- Enhanced Performance & User Experience
- Decoupling/testability
- Easier to build/maintain
- Heavy JS lifting on the client, lighter back-end
- Easier to provide offline operation

## SPA - Performance

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- Load time - One file each of HTML, CSS, JS, static files not dynamic
- Less data transfer: XHR calls only send raw data, not HTML markup
- Load distribution: dramatically less load on server, by distributing it to clients

## SPA - UX

- AJAX and SPAs have raised the bar for user expectations
- Besides actually being faster, JS interactions make apps feel more responsive
- Immediate feedback on click
- Smaller data transfer means faster responses

# Web Components

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- A set of features currently being added by the W3C to the HTML and DOM specifications that allow for the creation of reusable components in web applications.
- Bring component-based software engineering to the World Wide Web.
- The components model allows for encapsulation and interoperability of individual HTML elements.





# WebComponents.org

- An emerging standard for the web development



## **CUSTOM ELEMENTS**

This specification describes the method for enabling the author to define and use new types of DOM elements in a document.



## **HTML IMPORTS**

HTML Imports are a way to include and reuse HTML documents in other HTML documents.



## **TEMPLATES**

This specification describes a method for declaring inert DOM subtrees in HTML and manipulating them to instantiate document fragments with identical contents.



## **SHADOW DOM**

This specification describes a method of establishing and maintaining functional boundaries between DOM trees and how these trees interact with each other within a document, thus enabling better functional encapsulation within the DOM.

# Polymer Web Components Library

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- Google project to pioneer Web Component Libraries

## Use Elements

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Get started using Web Components in your apps.

Browse the Polymer Element Catalog for interoperable elements that can be used on any site.

[BROWSE ELEMENTS](#)

## Build Elements

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Ready to create your own elements? The Polymer library has you covered.

With custom elements, you can extend HTML semantics, brand and polish your UI, or embed rich functionality in your site.

[BUILD AN ELEMENT](#)

## Build Apps

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Build Progressive Web Apps from the ground up with Web Components.

Use the pieces of the Polymer App Toolbox to deliver fast, responsive apps that work from anywhere.

[BUILD AN APP](#)



# Polymer Catalogue

0.10.0

## App

App  
Elements

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App elements

1.0.10

## Fe

Iron  
Elements

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Polymer core elements

1.0.7

## Md

Paper  
Elements

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Material design elements

1.1.1

## Go

Google Web  
Components

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Components for Google's APIs  
and services

1.0.1

## Au

Gold  
Elements

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Ecommerce Elements

1.0.0

## Ne

Neon  
Elements

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Animation and Special Effects

2.0.0

## Pt

Platinum  
Elements

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Offline, push, and more

1.0.0

## Mo

Molecules

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Wrappers for third-party  
libraries

All Elements

App

App Elements

Fe

Iron Elements

Md

Paper Elements

Go

Google Web Components

Au

Gold Elements

Ne

Neon Elements

Pt

Platinum Elements

Mo

Molecules

Name	Description
firebase-element	An element that makes it easy to declaratively use the powerful firebase backend
google-analytics	Encapsulates Google Analytics dashboard features into web components
google-apis	Web components to load Google API libraries
google-calendar	Web components for working with Google Calendar
google-castable-video	HTML5 Video Element with extended Chromecast functionality.
google-chart	Encapsulates Google Charts into a web component
google-feeds	Google Feeds element for Polymer
google-hangout-button	Google Hangout button web component
google-map	Google Maps web components

# Aurelia

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*“Aurelia is a JavaScript client framework for mobile, desktop and web leveraging simple conventions and empowering creativity”*

## Technical Principles:

- Forward-thinking
- Two-Way Databinding
- Routing & UI Composition
- Broad Language Support
- Modern Architecture
- Extensible HTML
- MV\* with Conventions
- Testable



# Forward-thinking

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- Written with next-generation EcmaScript.
- Integrates with Web Components.
- No external dependencies.
- Leverage the technology of the future but target today's mobile, desktop and browser environments.





# Two-Way Databinding

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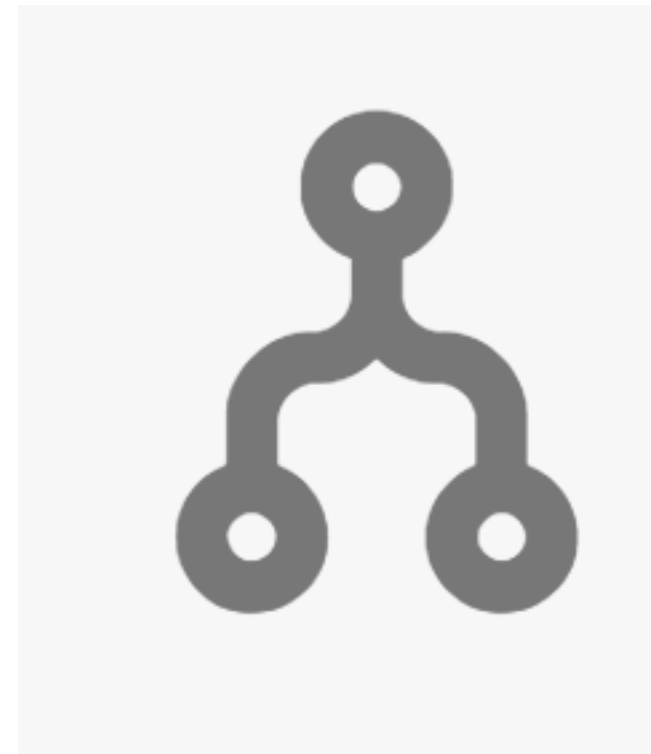
- Powerful two-way binding to any object.
- Uses adaptive techniques to select the most efficient way to observe each property in your model
- Automatically sync UI with best-in-class performance.



# Routing & UI Composition

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- Data-driven UI composition
- Advanced client-side router:
  - pluggable pipeline
  - dynamic route patterns
  - child routers
  - asynchronous screen activation





# Broad Language Support

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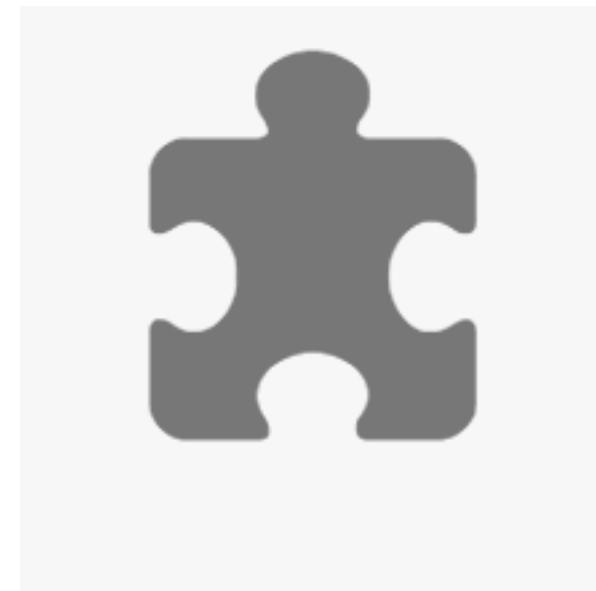
- Use ES5, ES 2015, ES 2016 and TypeScript.
- Aurelia's APIs were designed to be consumed these languages



# Modern Architecture

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- Not a monolithic framework
- Composed of smaller, focused modules.
- Use them together as a full-featured framework or pick and choose to build a custom solution.





# Extensible HTML

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- HTML compiler supports:
  - creation of custom HTML elements
  - addition of custom attributes to existing elements
  - controls template generation
- Supports dynamic loading, databinding and high-performance batched rendering.



# MV\* with Conventions

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- Fully integrated MV\* architecture
- Leverages conventions to facilitate seamless app construction
- Plug in conventions to override framework approach



# Testable

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- Combines ES 2015 modules with a Dependency Injection Container,
- Facilitates creation of cohesive, minimally coupled code
- Important for testing