

# VELKOMMEN TIL ANGULAR FAGKVELD!



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# PROGRAM

1. Introduksjon til Angular
2. Workshop - lage en enkel app
3. Diskusjon

Andre ønsker?

# HVA ER ANGULAR

- Frontend-rammeverk for å lage SPA'er (Single Page Apps)
- Siste versjon er 5

# HVA SKJEDDE MED ANGULAR 3?

- Semver!



<https://juristr.com/blog/assets/imgs/semver.png>

**HVORFOR ANGULAR?**

# KOMPLETT RAMMEVERK FOR SPA

- Skjema
- Ruting
- Animasjoner
- Tilgjengelighet
- Webpack-oppsett
- Testoppsett
- Byggeverktøy

- Solid støtte (Google)
- Aktiv utvikling

# TYPESCRIPT

- Supersett av Javascript
- Kompileres til vanilla JavaScript
- Statisk typet (typesjekking skjer ved kompilering ) = færre bugs, lettere refaktorering
- Familiært for de med bakgrunn i C#, Java, etc.



# YTELSE

- SSR, Angular Universal, App shell
- Mobil er høyt prioritert, minnehåndtering, touchbaserte kontrollere, ytelse, +++



# Duration in milliseconds ± standard deviation (Slowdown = Duration / Fastest)

Name	vanillajs-keyed	inferno-v3.10.1-keyed	redom-v3.7.0-keyed	etch-v0.12.5-keyed	marko-v4.5.6-keyed	angular-v5.0.0-no-zone-keyed	react-v16.1.0-keyed	mithril-v1.1.1-keyed	preact-v8.2.6-keyed	angular-v5.0.0-keyed	vue-v2.5.3-keyed	angular-v1.6.3-keyed	ember-v2.16.2-keyed	react-lite-v0.15.30-keyed
<b>create rows</b> Duration for creating 1000 rows after the page loaded.	136.2 ± 5.1 (1.0)	150.6 ± 6.8 (1.1)	164.1 ± 6.9 (1.2)	166.0 ± 12.9 (1.2)	166.2 ± 4.5 (1.2)	170.9 ± 6.4 (1.3)	187.6 ± 4.3 (1.4)	167.9 ± 4.7 (1.2)	182.8 ± 4.4 (1.3)	185.7 ± 7.8 (1.4)	169.2 ± 3.6 (1.2)	223.0 ± 9.1 (1.6)	361.2 ± 23.6 (2.7)	169.0 ± 7.8 (1.2)
<b>replace all rows</b> Duration for updating all 1000 rows of the table (with 5 warmup iterations).	144.8 ± 6.2 (1.0)	152.3 ± 5.5 (1.1)	164.6 ± 4.7 (1.1)	168.5 ± 8.8 (1.2)	176.5 ± 5.3 (1.2)	176.6 ± 5.4 (1.2)	165.2 ± 7.0 (1.1)	165.8 ± 5.8 (1.1)	187.5 ± 7.2 (1.3)	179.3 ± 6.5 (1.2)	161.8 ± 3.9 (1.1)	221.9 ± 13.5 (1.5)	238.8 ± 7.7 (1.6)	228.9 ± 5.1 (1.6)
<b>partial update</b> Time to update the text of every 10th row (with 5 warmup iterations) for a table with 10k rows.	74.4 ± 5.5 (1.0)	92.6 ± 5.0 (1.3)	86.0 ± 5.4 (1.2)	89.8 ± 3.9 (1.2)	99.7 ± 9.2 (1.4)	73.7 ± 4.1 (1.0)	93.6 ± 5.6 (1.3)	144.0 ± 18.3 (2.0)	101.1 ± 2.6 (1.4)	73.5 ± 4.9 (1.0)	168.1 ± 7.4 (2.3)	82.5 ± 2.8 (1.1)	128.5 ± 3.2 (1.7)	2019.5 ± 49.3 (27.5)
<b>select row</b> Duration to highlight a row in response to a click on the row. (with 5 warmup iterations).	10.8 ± 3.5 (1.0)	13.3 ± 3.1 (1.0)	7.7 ± 3.3 (1.0)	11.3 ± 4.7 (1.0)	10.1 ± 2.3 (1.0)	8.8 ± 3.5 (1.0)	12.4 ± 4.1 (1.0)	11.2 ± 3.1 (1.0)	12.5 ± 4.6 (1.0)	7.6 ± 4.0 (1.0)	9.8 ± 2.5 (1.0)	9.0 ± 3.5 (1.0)	8.6 ± 3.5 (1.0)	23.0 ± 0.7 (1.4)
<b>swap rows</b> Time to swap 2 rows on a 1K table. (with 5 warmup iterations).	18.3 ± 4.7 (1.1)	16.7 ± 4.3 (1.0)	20.7 ± 5.3 (1.2)	20.9 ± 2.6 (1.3)	19.8 ± 4.1 (1.2)	18.8 ± 3.9 (1.1)	19.6 ± 4.7 (1.2)	19.3 ± 3.1 (1.2)	18.9 ± 5.1 (1.1)	20.1 ± 4.2 (1.2)	21.8 ± 4.5 (1.3)	19.0 ± 5.6 (1.1)	20.6 ± 3.6 (1.2)	33.6 ± 2.1 (2.0)
<b>remove row</b> Duration to remove a row. (with 5 warmup iterations).	43.1 ± 1.6 (1.0)	45.0 ± 2.5 (1.0)	45.0 ± 1.6 (1.0)	53.5 ± 6.5 (1.2)	47.4 ± 2.6 (1.1)	43.5 ± 2.3 (1.0)	51.5 ± 2.0 (1.2)	52.0 ± 2.6 (1.2)	46.9 ± 1.6 (1.1)	46.1 ± 2.6 (1.1)	52.5 ± 1.8 (1.2)	47.2 ± 1.9 (1.1)	53.6 ± 2.5 (1.2)	65.3 ± 2.0 (1.5)
<b>create many rows</b> Duration to create 10,000 rows	1374.5 ± 33.3 (1.0)	1429.0 ± 32.5 (1.0)	1614.9 ± 27.6 (1.2)	1556.3 ± 48.5 (1.1)	1625.0 ± 28.3 (1.2)	1629.6 ± 53.4 (1.2)	2033.7 ± 32.0 (1.5)	1639.7 ± 44.7 (1.2)	2531.0 ± 36.3 (1.8)	1682.0 ± 53.1 (1.2)	1521.4 ± 55.7 (1.1)	2137.3 ± 49.1 (1.6)	2406.0 ± 44.6 (1.8)	2281.3 ± 27.9 (1.7)
<b>append rows to large table</b> Duration for adding 1000 rows on a table of 10,000 rows.	217.4 ± 7.3 (1.0)	221.5 ± 7.7 (1.0)	266.2 ± 7.4 (1.2)	295.1 ± 22.6 (1.4)	262.8 ± 8.1 (1.2)	275.4 ± 5.1 (1.3)	271.8 ± 9.9 (1.3)	342.3 ± 36.3 (1.6)	384.2 ± 11.5 (1.8)	257.6 ± 11.1 (1.2)	338.4 ± 10.3 (1.6)	358.7 ± 65.4 (1.6)	432.3 ± 31.4 (2.0)	2523.6 ± 55.6 (11.6)
<b>clear rows</b> Duration to clear the table filled with 10.000 rows.	177.1 ± 10.2 (1.0)	328.9 ± 8.6 (1.9)	245.4 ± 5.0 (1.4)	196.2 ± 6.5 (1.1)	275.3 ± 9.2 (1.6)	334.7 ± 25.1 (1.9)	224.4 ± 6.0 (1.3)	245.4 ± 5.5 (1.4)	238.2 ± 3.5 (1.3)	360.3 ± 16.4 (2.0)	240.9 ± 11.4 (1.4)	494.9 ± 57.8 (2.8)	262.3 ± 10.2 (1.5)	308.1 ± 9.4 (1.7)
<b>startup time</b> Time for loading, parsing and starting up	30.0 ± 1.0 (1.0)	36.0 ± 0.8 (1.2)	31.5 ± 0.8 (1.1)	34.0 ± 0.9 (1.1)	38.4 ± 0.7 (1.3)	50.8 ± 1.7 (1.7)	49.4 ± 0.7 (1.6)	34.9 ± 0.9 (1.2)	33.1 ± 1.1 (1.1)	88.8 ± 2.9 (3.0)	48.4 ± 2.4 (1.6)	103.5 ± 3.3 (3.5)	163.4 ± 3.4 (5.4)	36.9 ± 0.7 (1.2)
<b>slowdown geometric mean</b>	1.01	1.14	1.16	1.18	1.22	1.24	1.27	1.28	1.30	1.34	1.34	1.56	1.79	2.51

# ANGULAR CLI

- Håndterer generering av
  - Komponenter
  - Servicer
  - Pipes
  - Moduler
- Forenkler
  - Utvikling
  - Bygging til produksjon

# ARKITEKTUR

- Strukturert kode (moduler, komponenter, servicer)
- Enkelt å komme i gang; velkjente prinsipper
- Enkelt å vedlikeholde
- Enkelt å teste

# HVA SKAL VI LAGE

- Andeby
- En klassisk frontend oppgave
- Kommunisere med en REST-tjeneste, filtrere liste, events...

<http://localhost:4200>

# CHECK YA TOOLS

- Node > 6.9.0

```
$ node --version
```

- Nvm (valgfritt)
- Git

# YARN

Mac med homebrew:

```
$ brew install yarn # --without-node hvis du bruker nvm
```

Linux og Windows:

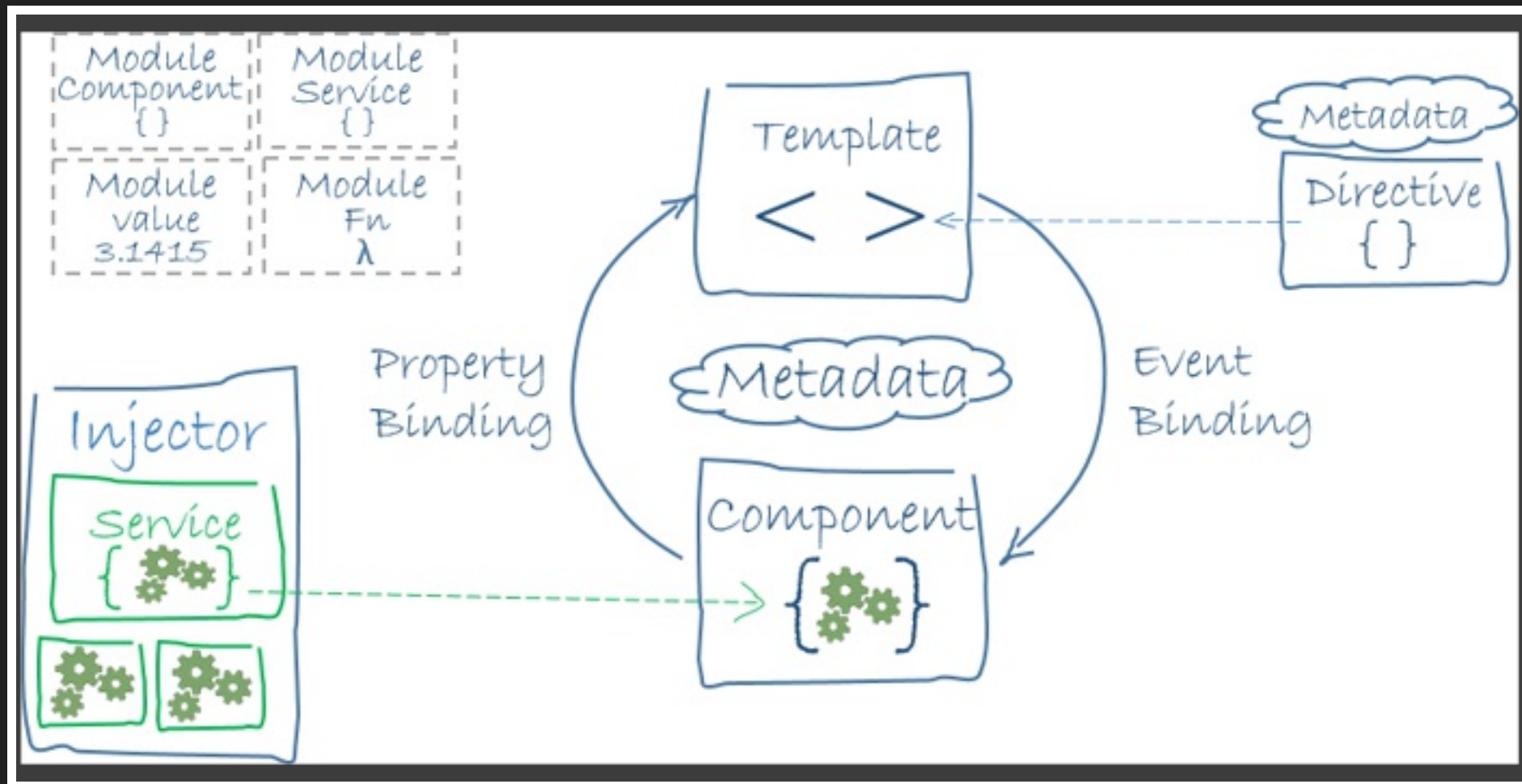
<https://yarnpkg.com/lang/en/docs/install/>



# ANGULAR CLI

```
$ npm install -g @angular/cli
```

# ARKITEKTUREN TIL EN ANGULAR APP



<https://angular.io/generated/images/guide/architecture/overview2.png>

**LA OSS SE PÅ ANGULAR CLI**

# ANDEBY

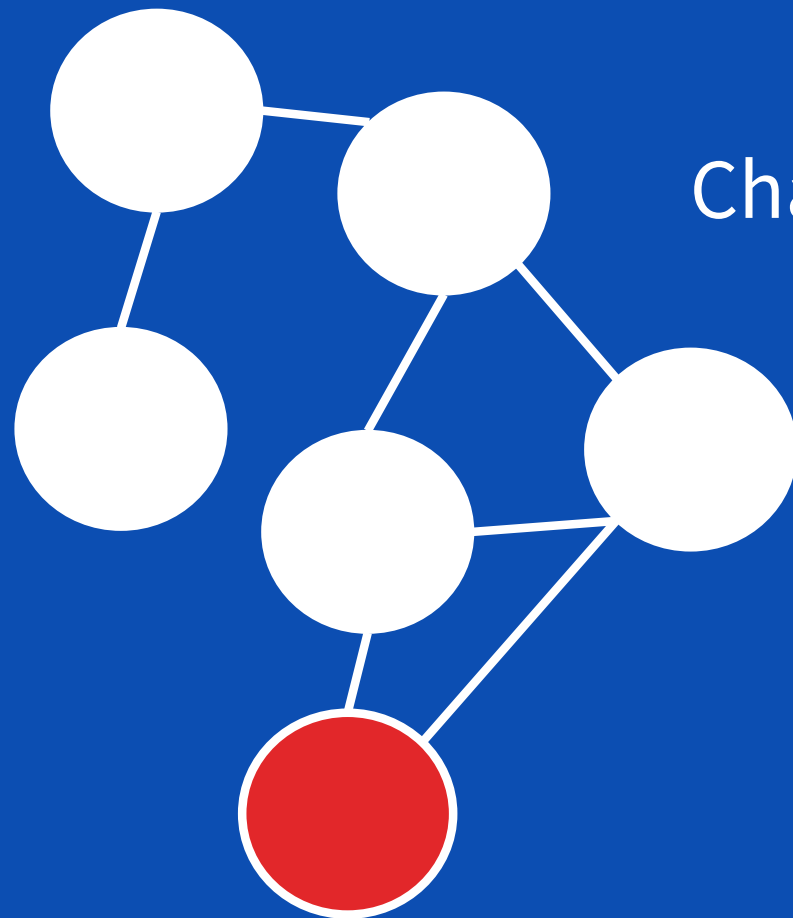
Hent ned boilerplate-prosjekt

```
$ git clone https://github.com/stianmorsund/angular-fagkveld-boilerplate
```

# NYE FEATURES | ANGULAR

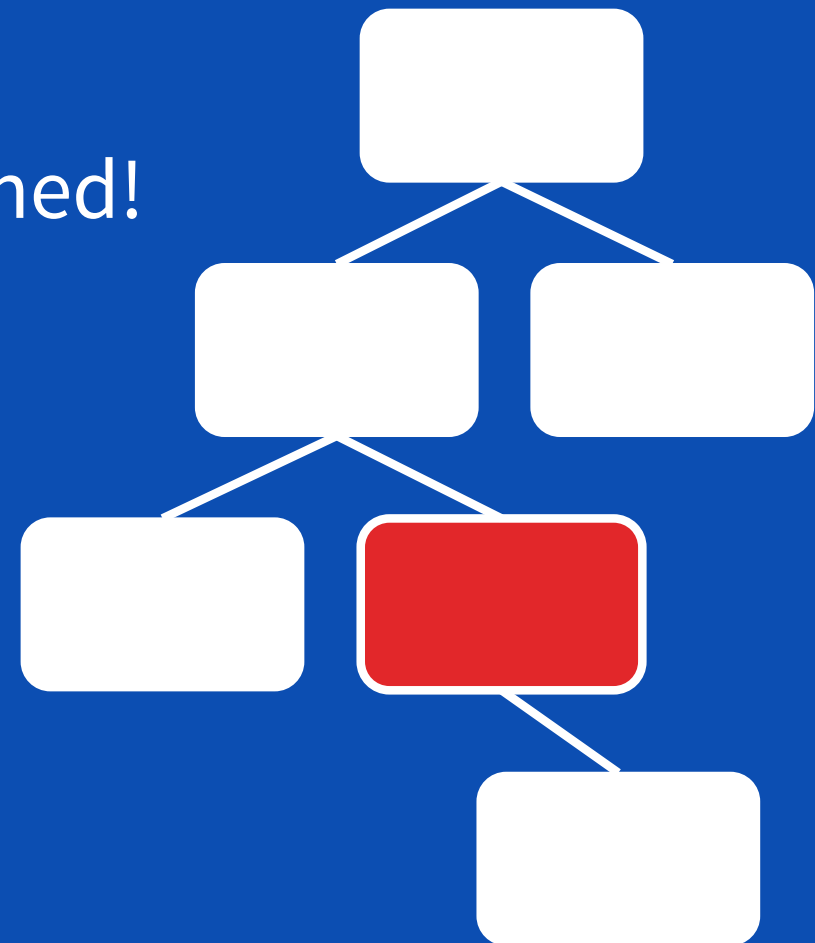
- Form builder
- Zones
- Change detection strategies
- Routing
- RxJs\Observables

## MODEL



Change happened!

## DOM





# VEIEN VIDERE

- Storybook - Stilguide for Angular
- Reactive forms
- Optimalisering, AOT, tree shaking
- Angular Universal & App shell
- Angular material - Material design komponentbibliotek
- ngrx/store - State management inspirert av redux