

THOUGHTWORKS

ANGULAR

冯杨琦君

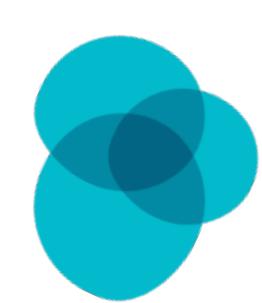


大纲

- **ANGULAR** 优势，我们为什么要用**ANGULAR**
- **STARTER** 对比，选择一个合适的框架快速启动项目
- 前端**MVVM**及数据流导向
- 小技巧分享
- 开源库推荐



STATUS ON TECH RADAR?



● TRIAL ?

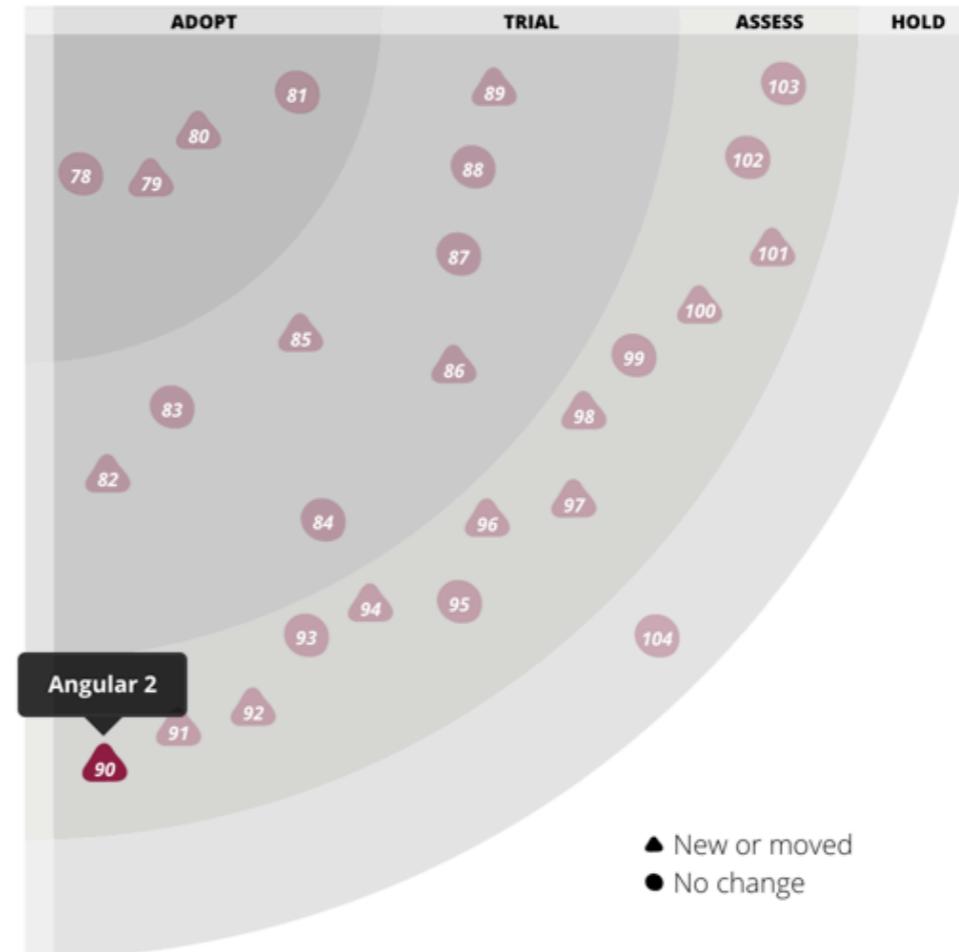
- 82. Avro new
- 83. Elixir
- 84. Enzyme
- 85. Hangfire new
- 86. Nightwatch new
- 87. Phoenix
- 88. Quick and Nimble
- 89. Vue.js

● ASSESS ?

- 90. Angular 2 new
- 91. Caffe new
- 92. DeepLearning.scala new
- 93. ECMAScript 2017
- 94. Instana new
- 95. JuMP
- 96. Keras new
- 97. Knet.jl new
- 98. Kotlin new
- 99. Physical Web
- 100. PostCSS new
- 101. Spring Cloud new
- 102. Three.js
- 103. WebRTC

● HOLD ?

- 104. AngularJS



Unable to find something you expected to see? Your item may have been on a [previous radar](#) »

STATUS ON TECH RADAR?



WHAT'S NEW?



跨平台



UNIVERSAL



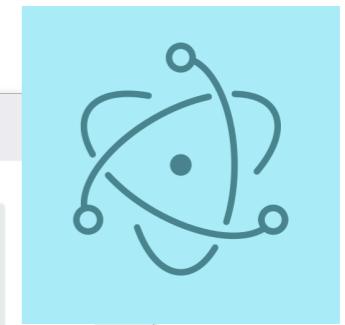
PWA



NATIVESCR



IONIC 2+



ELECTRON

IPT



WHAT'S NEW?

速度 & 性能

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

Name	angular-v1.6.3-keyed	angular-v4.1.2-keyed	binding.scala-v10.0.1	elm-v0.18.0	plastique-v1.33.0	reactive-edge-keyed	reactive-v0.8.12-keyed	react-lite-v0.15.30	react-v15.5.4-easy-state-v1.0.3	react-v15.5.4-keyed	react-v15.5.4-mobX-v3.1.9	react-v15.5.4-redux-v3.6.0	redom-v2.6.1-keyed	redom-v2.6.4-keyed	rx-domh-v0.0.2-rxjs-v5.3.0	surplus-v0.4.0-keyed	svelte-v1.20.2-keyed	vanillajs-keyed	vidom-v0.9.8	vue-v2.3.3-keyed
create rows Duration for creating 1000 rows after the page loaded.	251.8 ± 8.0 (1.8)	193.1 ± 7.9 (1.4)	362.3 ± 9.6 (2.6)	175.6 ± 10.8 (1.3)	176.5 ± 11.9 (1.3)	300.1 ± 10.7 (2.2)	331.1 ± 13.1 (2.4)	170.0 ± 9.6 (1.6)	222.3 ± 19.6 (1.6)	188.9 ± 10.9 (1.4)	243.9 ± 9.4 (1.8)	212.2 ± 14.2 (1.5)	179.9 ± 9.4 (1.3)	156.9 ± 6.3 (1.1)	550.5 ± 15.2 (4.0)	146.1 ± 5.4 (1.1)	144.8 ± 5.3 (1.0)	138.5 ± 5.8 (1.0)	173.1 ± 8.5 (1.3)	166.7 ± 8.6 (1.2)
replace all rows Duration for updating all 1000 rows of the table (with 5 warmup iterations).	278.3 ± 16.7 (1.9)	197.4 ± 5.3 (1.3)	222.2 ± 10.1 (1.5)	185.1 ± 10.8 (1.3)	177.8 ± 5.5 (1.2)	317.8 ± 17.5 (2.1)	339.8 ± 5.7 (2.3)	235.4 ± 6.8 (1.6)	221.5 ± 8.4 (1.5)	201.0 ± 6.4 (1.4)	229.2 ± 12.2 (1.5)	206.7 ± 7.3 (1.4)	198.2 ± 12.3 (1.3)	166.9 ± 5.0 (1.1)	1548.7 ± 57.9 (10.5)	149.5 ± 5.0 (1.0)	160.9 ± 4.7 (1.1)	148.0 ± 4.5 (1.0)	166.1 ± 6.8 (1.1)	168.5 ± 5.0 (1.1)
partial update Time to update the text of every 10th row (with 5 warmup iterations).	12.5 ± 2.0 (1.0)	13.0 ± 4.5 (1.0)	13.2 ± 2.2 (1.0)	25.0 ± 7.4 (1.6)	19.7 ± 7.2 (1.2)	14.7 ± 4.8 (1.0)	18.3 ± 3.3 (1.1)	29.3 ± 1.8 (1.8)	16.0 ± 0.9 (1.0)	16.5 ± 2.3 (1.0)	16.0 ± 1.8 (1.0)	18.0 ± 1.6 (1.1)	14.6 ± 2.2 (1.0)	15.6 ± 3.6 (1.0)	276.1 ± 13.4 (17.3)	13.8 ± 3.4 (1.0)	13.1 ± 3.0 (1.0)	14.1 ± 4.7 (1.0)	15.0 ± 5.2 (1.0)	17.3 ± 2.9 (1.1)
select row Duration to highlight a row in response to a click on the row. (with 5 warmup iterations).	8.1 ± 3.6 (1.0)	3.4 ± 2.3 (1.0)	11.1 ± 4.9 (1.0)	12.8 ± 4.6 (1.0)	10.5 ± 3.9 (1.0)	9.7 ± 3.3 (1.0)	10.8 ± 4.7 (1.0)	20.1 ± 1.1 (1.3)	10.1 ± 3.8 (1.0)	8.8 ± 3.4 (1.0)	10.1 ± 3.8 (1.0)	8.7 ± 2.9 (1.0)	10.2 ± 3.9 (1.0)	9.7 ± 3.5 (1.0)	6.9 ± 3.8 (1.0)	8.2 ± 5.3 (1.0)	10.0 ± 5.2 (1.0)	10.1 ± 4.7 (1.0)	10.3 ± 3.7 (1.0)	9.3 ± 1.7 (1.0)
swap rows Time to swap 2 rows on a 1K table. (with 5 warmup iterations).	14.7 ± 1.5 (1.0)	13.4 ± 1.0 (1.0)	12.3 ± 1.3 (1.0)	23.7 ± 5.1 (1.5)	12.8 ± 1.2 (1.0)	18.9 ± 1.8 (1.2)	19.6 ± 1.9 (1.2)	30.0 ± 1.8 (1.9)	18.0 ± 1.7 (1.1)	14.7 ± 0.9 (1.0)	18.0 ± 1.2 (1.1)	17.1 ± 1.3 (1.1)	14.1 ± 1.3 (1.0)	12.9 ± 0.8 (1.0)	118.8 ± 3.7 (7.4)	12.3 ± 0.8 (7.4)	119.1 ± 3.4 (7.4)	11.4 ± 1.1 (1.0)	16.2 ± 1.7 (1.0)	18.3 ± 1.5 (1.1)
remove row Duration to remove a row. (with 5 warmup iterations).	47.4 ± 2.4 (1.1)	46.1 ± 3.2 (1.1)	43.6 ± 2.9 (1.0)	77.9 ± 4.7 (1.8)	53.9 ± 5.1 (1.3)	60.7 ± 4.2 (1.4)	57.6 ± 2.8 (1.4)	63.0 ± 2.6 (1.5)	55.5 ± 2.1 (1.3)	47.2 ± 3.2 (1.1)	53.7 ± 2.1 (1.3)	52.4 ± 1.7 (1.2)	126.9 ± 4.0 (3.0)	128.1 ± 5.0 (2.9)	124.0 ± 3.9 (2.9)	44.7 ± 1.8 (1.1)	42.3 ± 2.3 (1.0)	42.8 ± 1.9 (1.0)	54.7 ± 4.7 (1.3)	52.6 ± 2.7 (1.2)
create many rows Duration to create 10,000 rows	3108.7 ± 2162.2 (2.3)	1946.0 ± 41.8 (1.5)	2572.7 ± 55.2 (1.9)	1707.8 ± 46.8 (1.3)	1794.1 ± 30.0 (1.3)	2770.2 ± 66.6 (2.1)	2988.4 ± 72.6 (2.2)	2300.9 ± 51.4 (1.7)	2027.5 ± 54.5 (1.5)	1852.4 ± 29.0 (1.4)	2217.3 ± 71.5 (1.7)	1931.7 ± 35.6 (1.5)	1881.1 ± 56.0 (1.4)	1575.6 ± 31.7 (1.2)	4846.4 ± 50.7 (3.6)	1395.4 ± 23.0 (1.0)	1420.8 ± 35.4 (1.1)	1331.1 ± 22.2 (1.0)	1570.4 ± 29.7 (1.2)	1587.5 ± 33.9 (1.2)
append rows to large table Duration for adding 1000 rows on a table of 10,000 rows.	454.8 ± 42.1 (1.6)	324.6 ± 10.1 (1.1)	367.3 ± 33.1 (1.3)	345.1 ± 19.6 (1.2)	345.4 ± 12.3 (1.2)	536.8 ± 24.3 (1.9)	449.0 ± 9.2 (1.6)	2087.5 ± 65.2 (7.3)	394.0 ± 9.0 (1.4)	345.6 ± 10.4 (1.2)	459.8 ± 47.2 (1.6)	366.4 ± 10.9 (1.3)	341.2 ± 14.4 (1.2)	315.1 ± 8.8 (1.1)	1921.8 ± 26.8 (6.7)	291.0 ± 8.3 (1.0)	287.7 ± 10.2 (1.0)	295.3 ± 12.8 (1.0)	336.4 ± 12.8 (1.2)	399.5 ± 11.0 (1.4)
clear rows Duration to clear the table filled with 10,000 rows.	817.6 ± 37.2 (4.7)	379.9 ± 11.3 (2.2)	325.3 ± 74.2 (2.4)	242.7 ± 15.9 (1.4)	229.8 ± 9.8 (1.3)	478.6 ± 31.0 (2.7)	634.9 ± 8.4 (3.6)	344.1 ± 26.4 (2.0)	416.2 ± 17.5 (2.4)	398.4 ± 8.2 (2.3)	495.1 ± 28.8 (2.8)	410.9 ± 9.8 (2.4)	236.4 ± 5.4 (1.4)	235.9 ± 5.1 (3.1)	536.5 ± 12.4 (3.1)	210.9 ± 5.7 (1.2)	258.1 ± 5.0 (1.5)	174.8 ± 4.2 (1.0)	217.3 ± 4.6 (1.2)	254.5 ± 5.0 (1.5)
startup time Time for loading, parsing and starting up	118.1 ± 5.1 (2.9)	84.3 ± 2.6 (2.1)	96.1 ± 2.8 (2.4)	72.7 ± 5.3 (1.8)	45.9 ± 4.3 (1.1)	94.5 ± 2.2 (2.3)	94.0 ± 2.6 (2.3)	44.9 ± 2.6 (1.1)	59.8 ± 2.1 (1.5)	70.0 ± 2.9 (1.7)	87.6 ± 4.3 (2.2)	93.8 ± 6.9 (2.3)	41.5 ± 6.7 (1.0)	40.9 ± 6.6 (2.5)	100.4 ± 6.8 (2.5)	41.5 ± 7.7 (1.0)	42.1 ± 9.7 (1.0)	40.5 ± 9.5 (1.0)	49.0 ± 6.0 (1.2)	56.6 ± 2.5 (1.4)
slowdown geometric mean	1.69	1.31	1.50	1.38	1.19	1.69	1.77	1.79	1.38	1.30	1.51	1.41	1.28	1.21	4.43	1.04	1.30	1.00	1.14	1.22

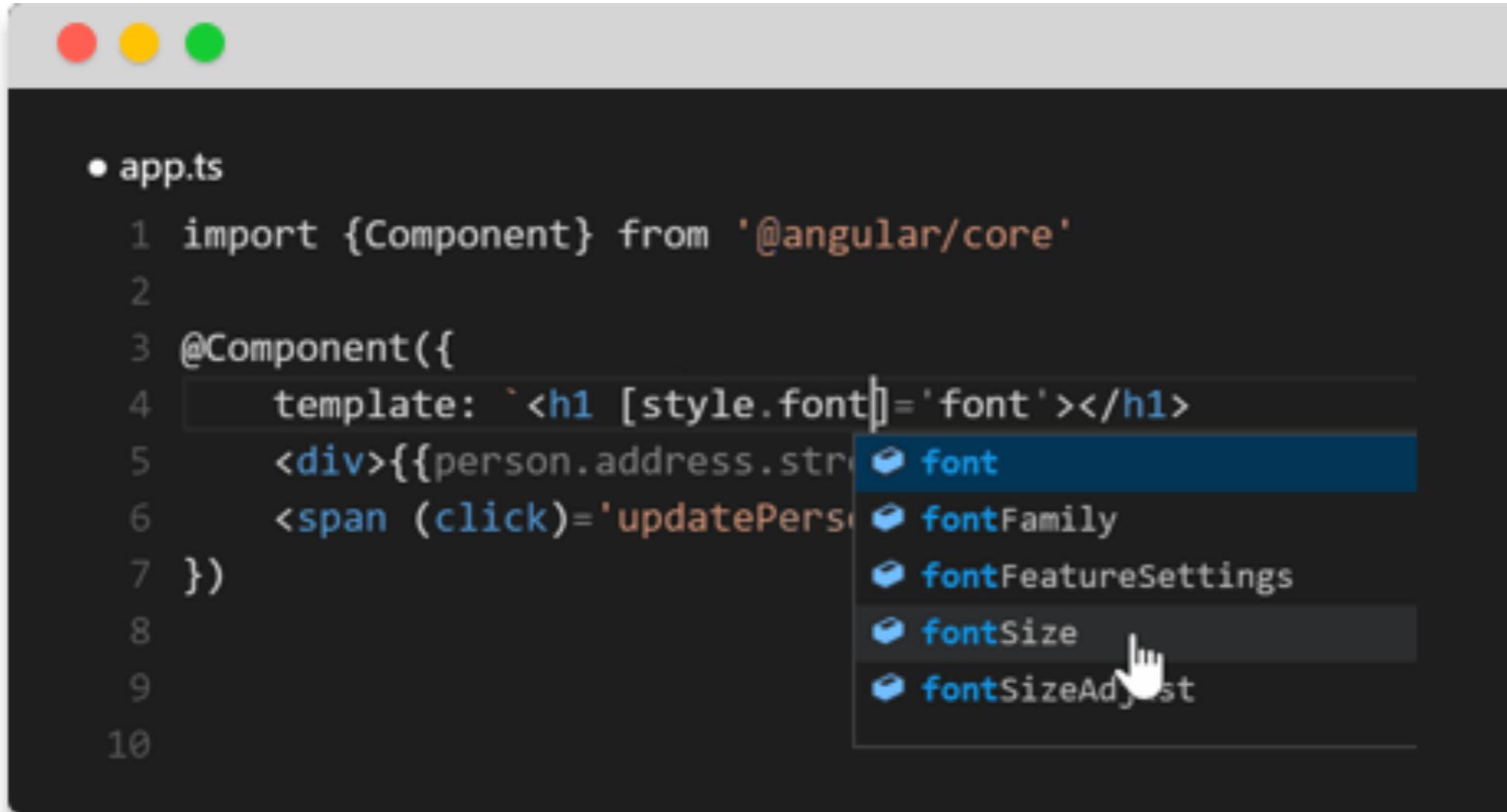
	angular-v1.6.3	angular-v4.1.2	vanillajs
slowdown geometric mean	1.69	1.31	1.00

KRAUSEST/J-S-FRAMEWORK-BENCHMARK

WHAT'S NEW?



工具的集成



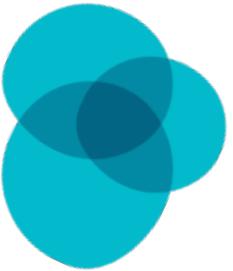
• app.ts

```
1 import {Component} from '@angular/core'
2
3 @Component({
4   template: `<h1 [style.font]=`font`></h1>
5   <div>{{person.address.str}
6   <span (click)=`updatePerson`>
7 })
```

The screenshot shows a code editor window with a dark theme. A tooltip is displayed over the word 'font' in the template section of the component. The tooltip contains five items, each with a small icon and the word 'font' followed by a suffix: 'font', 'fontFamily', 'fontFeatureSettings', 'fontSize', and 'fontWeight'. The item 'font' is highlighted with a blue background, and a hand cursor is visible over the 'fontSize' item.

COMPILER AS A SERVICE => LANGUAGE SERVICE

WHAT'S NEW?



简化的指令

ng-click

```
<button ng-click="vm.toggleImage()">  
<button ng-click="vm.toggleImage($event)">
```

Bind to the `click` event

```
<button (click)="toggleImage()">  
<button (click)="toggleImage($event)">
```

ng-href

```
<a ng-href="angularDocsUrl">Angular Docs</a>
```

Bind to the `href` property

```
<a [href]="angularDocsUrl">Angular Docs</a>
```

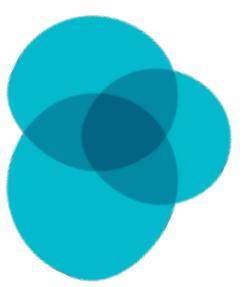
ng-show

```
<h3 ng-show="vm.favoriteHero">  
  Your favorite hero is: {{vm.favoriteHero}}  
</h3>
```

Bind to the `hidden` property

```
<h3 [hidden]="!favoriteHero">  
  Your favorite hero is: {{favoriteHero}}  
</h3>
```

WHAT'S NEW?



```
8 <input
9   (keydown.Enter)="handleKeyEvent( $event, 'Enter' )"
10  (keydown.alt.Enter)="handleKeyEvent( $event, 'ALT + Enter' )"
11  (keydown.control.Enter)="handleKeyEvent( $event, 'Control + Enter' )"
12  (keydown.meta.Enter)="handleKeyEvent( $event, 'Meta + Enter' )"
13  (keydown.shift.Enter)="handleKeyEvent( $event, 'Shift + Enter' )"
14  (keydown.Escape)="handleKeyEvent( $event, 'Escape' )"
15  (keydown.ArrowLeft)="handleKeyEvent( $event, 'Arrow Left' )"
16  (keydown.ArrowUp)="handleKeyEvent( $event, 'Arrow Up' )"
17  (keydown.ArrowRight)="handleKeyEvent( $event, 'Arrow Right' )"
18  (keydown.ArrowDown)="handleKeyEvent( $event, 'Arrow Down' )"
19  (keydown.Dot)="handleKeyEvent( $event, 'Dot' )"
20  (keydown.Space)="handleKeyEvent( $event, 'Space' )"
21  (keydown.shift)="handleKeyEvent( $event, 'Shift' )"
22  (keydown.meta.b)="handleKeyEvent( $event, 'Meta + b' )"
23  (keydown.meta.o)="handleKeyEvent( $event, 'Meta + o' )"
24  (keydown.meta.s)="handleKeyEvent( $event, 'Meta + s' )"
25  (keydown.meta.i)="handleKeyEvent( $event, 'Meta + i' )"
26  (keydown.meta.p)="handleKeyEvent( $event, 'Meta + p' )"
27  (keydown.meta.f)="handleKeyEvent( $event, 'Meta + f' )"
28  (keydown.h)="handleKeyEvent( $event, 'H' )"
29  (keydown.e)="handleKeyEvent( $event, 'E' )"
30  (keydown.l)="handleKeyEvent( $event, 'L' )"
31  (keydown.o)="handleKeyEvent( $event, 'O' )"
32  (keydown.1)="handleKeyEvent( $event, '1' )"
33  (keydown.2)="handleKeyEvent( $event, '2' )"
34  (keydown.3)="handleKeyEvent( $event, '3' )"
35  (keydown.4)="handleKeyEvent( $event, '4' )"
36  (keydown.5)="handleKeyEvent( $event, '5' )">
```



DECLARATION-BASED

Controller registration

```
angular
  .module("movieHunter")
  .controller("MovieListCtrl",
    ["movieService",
     MovieListCtrl]);
```

Dependency injection

```
MovieListCtrl.$inject = ['MovieService'];
function MovieListCtrl(movieService) {
}
```

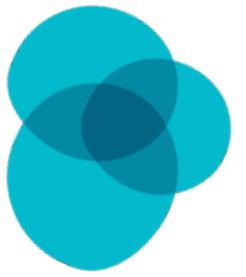
Component decorator

```
@Component({
  selector: 'movie-list',
  templateUrl: './movie-list.component.html',
  styleUrls: [ './movie-list.component.css' ],
})
```

Dependency injection

```
constructor(movieService: MovieService) {  
}
```

WHAT'S NEW?



WHY ANGULAR?



类型友好

```
1 import { Component, ViewContainerRef } from '@angular/core';
2
3 @Component({
4   selector: 'app-root',
5   templateUrl: './app.component.html',
6   styleUrls: ['./app.component.css'],
7 })
8 export class AppComponent {
9   title = 'app works!';
10
11   constructor(private vcRef: ViewContainerRef) {
12     vcRef.
13   }
14 }
15
```



```
1 <h1>
2   {{t}}
3   </h1> ↗ text
4   <route ↗ title
5     ↗ trotyl
```

property

WHY ANGULAR?



容易使用

```
1. export class VersionComponent {  
2.   major: number = 1;  
3.   minor: number = 23;  
4.  
5.   newMinor() {  
6.     this.minor++;  
7.   }  
8.  
9.   newMajor() {  
10.    this.major++;  
11.    this.minor = 0;  
12.  }  
13.}
```

```
1. export class CountdownComponent implements AfterViewInit {  
2.   seconds = 0;  
3.  
4.   reset() {  
5.     setTimeout(() => this.seconds = 0);  
6.   }  
7. }
```

**JUST CHANGE ANY VALUE WITHOUT WORRY
(THX TO ZONE.JS)**

WHY ANGULAR?



容易测试

src/app/shared/twain.component.spec.ts (tests)

```
1. it('should show quote after getQuote promise (async)', async(() => {
2.   fixture.detectChanges();
3.
4.   fixture.whenStable().then(() => { // wait for async getQuote
5.     fixture.detectChanges();          // update view with quote
6.     expect(el.textContent).toBe(testQuote);
7.   });
8. }));
9.
10. it('should show quote after getQuote promise (fakeAsync)', fakeAsync(() => {
11.   fixture.detectChanges();
12.   tick();                      // wait for async getQuote
13.   fixture.detectChanges(); // update view with quote
14.   expect(el.textContent).toBe(testQuote);
15. }));
```

WHY ANGULAR?



模型驱动开发

app.component.ts (template excerpt)

```
<h2>{{selectedHero.name}} details!</h2>
<div><label>id: </label>{{selectedHero.id}}</div>
<div>
  <label>name: </label>
  <input [(ngModel)]="selectedHero.name" placeholder="name"/>
</div>
```

```
1.  <label for="name">Name</label>
2.
3.  <input type="text" id="name" class="form-control"
4.      formControlName="name" required >
5.
6.  <div *ngIf="formErrors.name" class="alert alert-danger">
7.    {{ formErrors.name }}
8.  </div>
```

WHY ANGULAR?



响应式编程

src/app/wiki/wiki-smart.component.ts

src/app/wiki/wiki.component.ts

```
1. export class WikiSmartComponent implements OnInit {  
2.   items: Observable<string[]>;  
3.  
4.   ngOnInit() {  
5.     this.items = this.searchTermStream  
6.       .debounceTime(300)  
7.       .distinctUntilChanged()  
8.       .switchMap((term: string) => this.wikipediaService.search(term));  
9.   }  
10. }
```

BUILT-IN RXJS INTEGRATION

WHY ANGULAR?



数据驱动动画

hero-list-basic.component.ts (@Component excerpt)

```
animations: [
  trigger('heroState', [
    state('inactive', style({
      backgroundColor: '#eee',
      transform: 'scale(1)'
    })),
    state('active',   style({
      backgroundColor: '#cf8dc',
      transform: 'scale(1.1)'
    })),
    transition('inactive => active', animate('100ms ease-in')),
    transition('active => inactive', animate('100ms ease-out'))
  ])
]
```

WHY ANGULAR?



特性 & 优势

跨平台

- 服务端渲染
- 手机应用集成
- 支持PWA构建

工具

- 类型友好 - TypeScript
- 语言服务支持
- 官方CLI

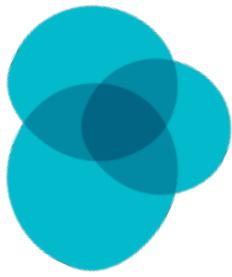
开发方式

- 模板驱动
- 响应式编程 - RxJS
- 依赖注入

集成

- 强大的表单
- 灵活的动画
- 从AngularJS无缝升级

SUMMARY



STARTER对比

- Angular-starter <https://github.com/AngularClass/angular-starter>
- Angular-cli <https://github.com/angular/angular-cli>

ANGULAR-STARTER

亮点

ANGULAR-STARTER

1. 发布早
2. 功能富裕
3. 可自定webpack

亮点

ANGULAR-STARTER

重

不足

ANGULAR-STARTER

```
13  "license": "MIT",
14  "scripts": {
15    "build:aot:prod": "npm run clean:dist && npm run clean:aot && cross-env BUILD_AOT=1 npm run webpack -- --config config/webpack.prod.js --",
16    "build:aot": "npm run build:aot:prod",
17    "build:dev": "npm run clean:dist && npm run webpack -- --config config/webpack.dev.js --progress --profile",
18    "build:docker": "npm run build:prod && docker build -t angular2-webpack-start:latest .",
19    "build:prod": "npm run clean:dist && npm run webpack -- --config config/webpack.prod.js --progress --profile --bail",
20    "build": "npm run build:dev",
21    "ci:aot": "npm run lint && npm run test && npm run build:aot && npm run e2e",
22    "ci:jit": "npm run lint && npm run test && npm run build:prod && npm run e2e",
23    "ci:nobuild": "npm run lint && npm test && npm run e2e",
24    "ci:testall": "npm run lint && npm run test && npm run build:prod && npm run e2e && npm run build:aot && npm run e2e",
25    "ci:travis": "npm run lint && npm run test && npm run build:aot && npm run e2e:travis",
26    "ci": "npm run ci:testall",
27    "clean:dll": "npm run rimraf -- dll",
28    "clean:aot": "npm run rimraf -- compiled",
29    "clean:dist": "npm run rimraf -- dist",
30    "clean:install": "npm set progress=false && npm install",
31    "clean": "npm cache clean && npm run rimraf -- node_modules doc coverage dist compiled dll",
32    "docker": "docker",
33    "docs": "npm run typedoc -- --options typedoc.json --exclude '**/*.spec.ts' ./src/",
34    "e2e:live": "npm-run-all -p -r server:prod:ci protractor:live",
35    "e2e:travis": "npm-run-all -p -r server:prod:ci protractor:delay",
36    "e2e": "npm-run-all -p -r server:prod:ci protractor",
37    "github-deploy:dev": "npm run webpack -- --config config/webpack.github-deploy.js --progress --profile --env.githubDev",
38    "github-deploy:prod": "npm run webpack -- --config config/webpack.github-deploy.js --progress --profile --env.githubProd",
39    "github-deploy": "npm run github-deploy:dev",
40    "lint": "npm run tslint \"src/**/*.{ts,js}\"",
41    "node": "node",
42    "postinstall": "npm run webdriver:update",
43    "postversion": "git push && git push --tags",
44    "preclean:install": "npm run clean",
45    "preversion": "npm test",
46    "protractor": "protractor",
47    "protractor:delay": "sleep 3 && npm run protractor",
48    "protractor:live": "protractor --elementExplorer",
49    "rimraf": "rimraf",
50    "server:dev:hmr": "npm run server:dev -- --inline --hot",
51    "server:dev": "npm run webpack-dev-server -- --config config/webpack.dev.js --open --progress --profile --watch --content-base src/",
52    "server:prod": "http-server dist -c-1 --cors",
53    "server:prod:ci": "http-server dist -p 3000 -c-1 --cors",
54    "server": "npm run server:dev",
55    "start:hmr": "npm run server:dev:hmr",
```

ANGULAR-STARTER

```
"dependencies": {
    "@angular/animations": "~4.1.2",
    "@angular/common": "~4.1.2",
    "@angular/compiler": "~4.1.2",
    "@angular/core": "~4.1.2",
    "@angular/forms": "~4.1.2",
    "@angular/http": "~4.1.2",
    "@angular/platform-browser": "~4.1.2",
    "@angular/platform-browser-dynamic": "~4.1.2",
    "@angular/platform-server": "~4.1.2",
    "@angular/router": "~4.1.2",
    "@angularclass/hmr": "~1.2.2",
    "@angularclass/hmr-loader": "~3.0.2",
    "core-js": "^2.4.1",
    "http-server": "^0.9.0",
    "ie-shim": "^0.1.0",
    "reflect-metadata": "^0.1.10",
    "rxjs": "5.0.2",
    "zone.js": "~0.8.5"
},
"devDependencies": {
    "@angular/compiler-cli": "~4.0.3",
    "@types/hammerjs": "^2.0.34",
    "@types/jasmine": "2.5.45",
    "@types/node": "^7.0.13",
    "@types/source-map": "^0.5.0",
    "@types/uglify-js": "^2.6.28",
    "@types/webpack": "^2.2.15",
    "add-asset-html-webpack-plugin": "^1.0.2",
    "angular2-template-loader": "^0.6.2",
    "assets-webpack-plugin": "^3.5.1",
    "awesome-typescript-loader": "~3.1.2",
    "codelyzer": "~2.1.1",
    "copy-webpack-plugin": "^4.0.1",
    "css-loader": "^0.28.0",
    "cross-env": "^5.0.0",
    "exports-loader": "^0.6.4",
    "expose-loader": "^0.7.3",
    "extract-text-webpack-plugin": "~2.1.0",
    "file-loader": "^0.11.1",
    "find-root": "^1.0.0",
    "gh-pages": "^0.12.0",
    "html-webpack-plugin": "^2.28.0",
    "jasmine-core": "3.0.0",
    "karma": "2.0.0",
    "karma-chrome-launcher": "2.2.0",
    "karma-jasmine": "1.1.1",
    "karma-jasmine-html-reporter": "0.2.2",
    "karma-sourcemap-loader": "0.3.7",
    "karma-webpack": "2.0.0",
    "node-sass": "4.5.3",
    "sass-loader": "6.0.6",
    "style-loader": "0.23.1",
    "tslint": "5.7.0",
    "typescript": "2.4.2"
}
```

ANGULAR-CLI

亮点

ANGULAR-CLI

1. 简单易用
2. 功能完善
3. 关注点隔离

亮点

ANGULAR-CLI

Scaffold	Usage
Component	<code>ng g component my-new-component</code>
Directive	<code>ng g directive my-new-directive</code>
Pipe	<code>ng g pipe my-new-pipe</code>
Service	<code>ng g service my-new-service</code>
Class	<code>ng g class my-new-class</code>
Guard	<code>ng g guard my-new-guard</code>
Interface	<code>ng g interface my-new-interface</code>
Enum	<code>ng g enum my-new-enum</code>
Module	<code>ng g module my-module</code>

ANGULAR-CLI

```
$ ng serve      # 启动dev server
```

```
$ ng test      # 单元测试
```

```
$ ng e2e      # 端到端测试
```

```
$ ng build      # 编译打包
```

```
$ ng eject      # 脱离ng-cli
```

ANGULAR-CLI

```
"scripts": {  
  "ng": "ng",  
  "start": "ng serve --port 3000 --host 0.0.0.0 --proxy-config proxy.conf.json",  
  "build": "ng build",  
  "build:prod": "ng build --prod --aot",  
  "test": "ng test --code-coverage",  
  "lint": "ng lint \"src/**/*.ts\"",  
  "stylelint": "stylelint '**/*.scss' --syntax scss",  
  "e2e": "ng e2e"  
},
```

ANGULAR-CLI

不足

ANGULAR-CLI

不支持loader

不足

小结 & 建议

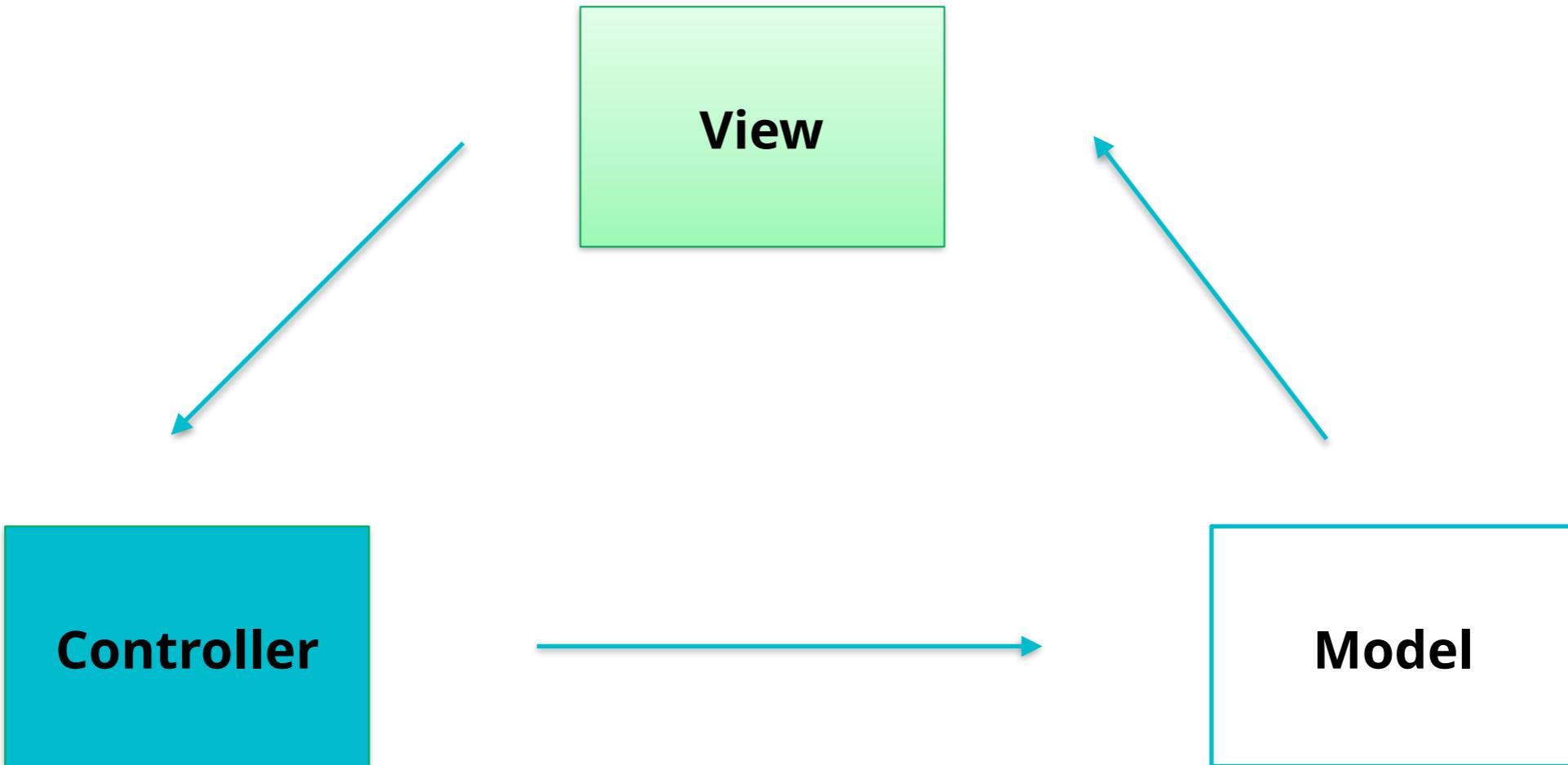
- 不推荐再使用STARTER
- 主要用ANGULAR-CLI

前端MVVM及数据流导向

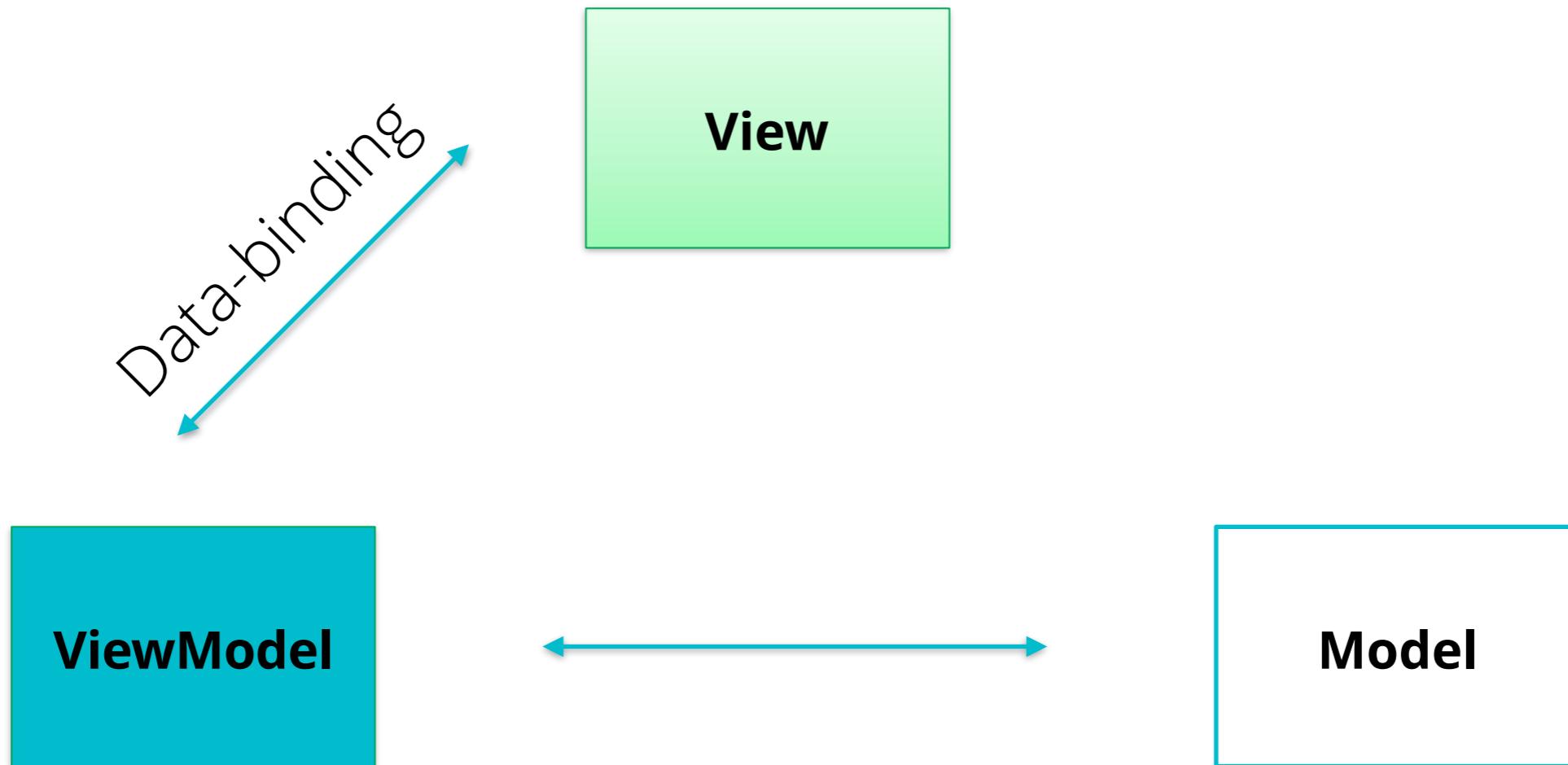
前端MVVM及数据流导向

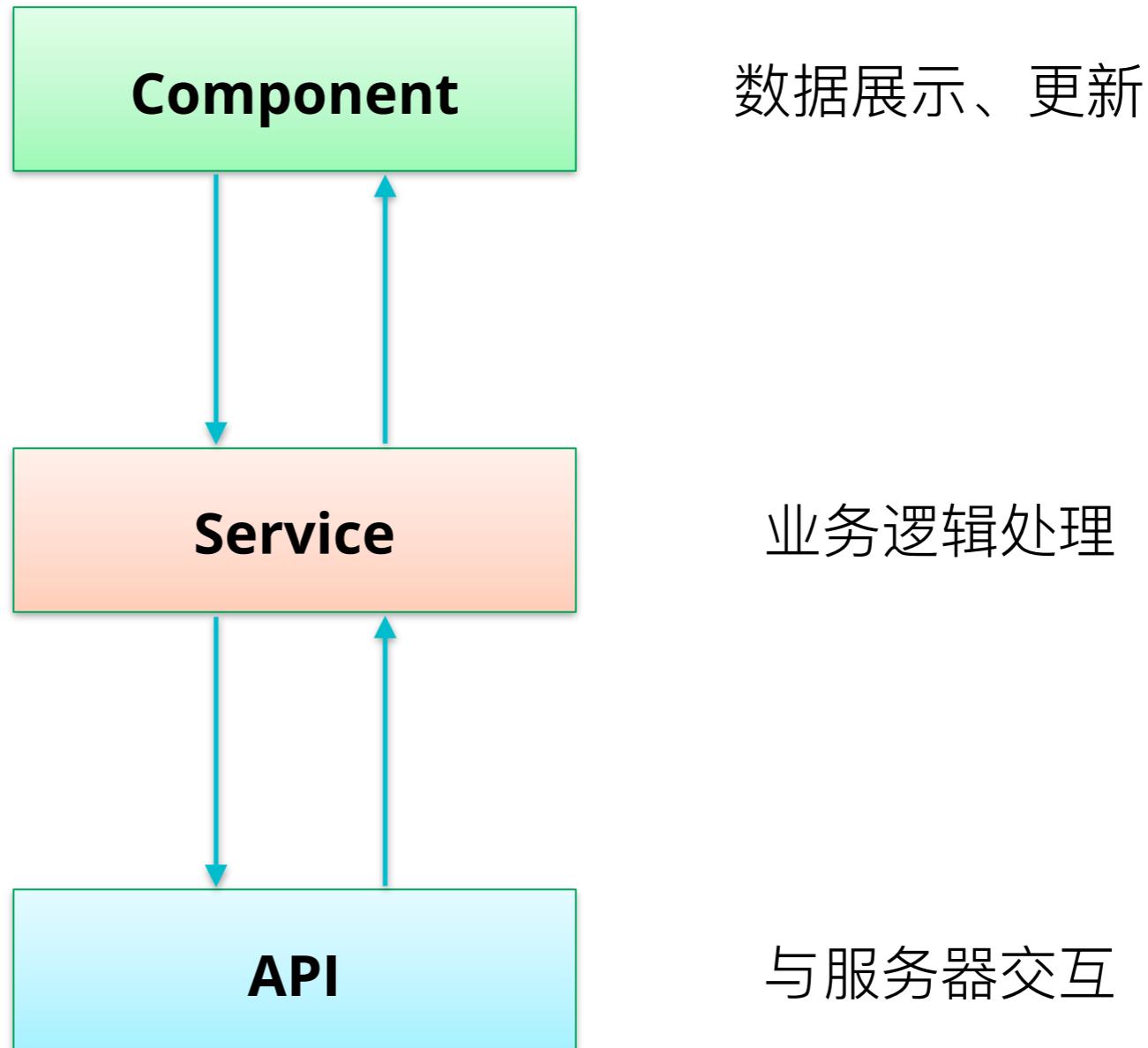
1. MVC
2. MVVM
3. Angular?

MVC



MVVM





小技巧分享

小技巧分享

- 善用**PIPE**
- **NGZONE的使用**
- 巧用**CHANGE**策略
- **UNSUBSCRIBE**

1. 时间格式
2. 货币符号
3. 大小写转换
4. 异步返回
5. 模板替换

善用PIPE

```
<p>The hero's birthday is {{ birthday | date:'MM/dd/yy' }} </p>
```

The hero's birthday is 06/09/17

```
The chained hero's birthday is  
{{ birthday | date:'fullDate' | uppercase}}
```

NGZONE的使用

ZONE

onZoneCreated: 在zone被fork时运行

beforeTask: 在执行zone.run包裹的函数之前调用

afterTask: 在执行zone.run包裹的函数之后调用

onError: zone.run方法中的Task任务抛出异常时的钩子函数

NGZONE的使用

runOutsideAngular

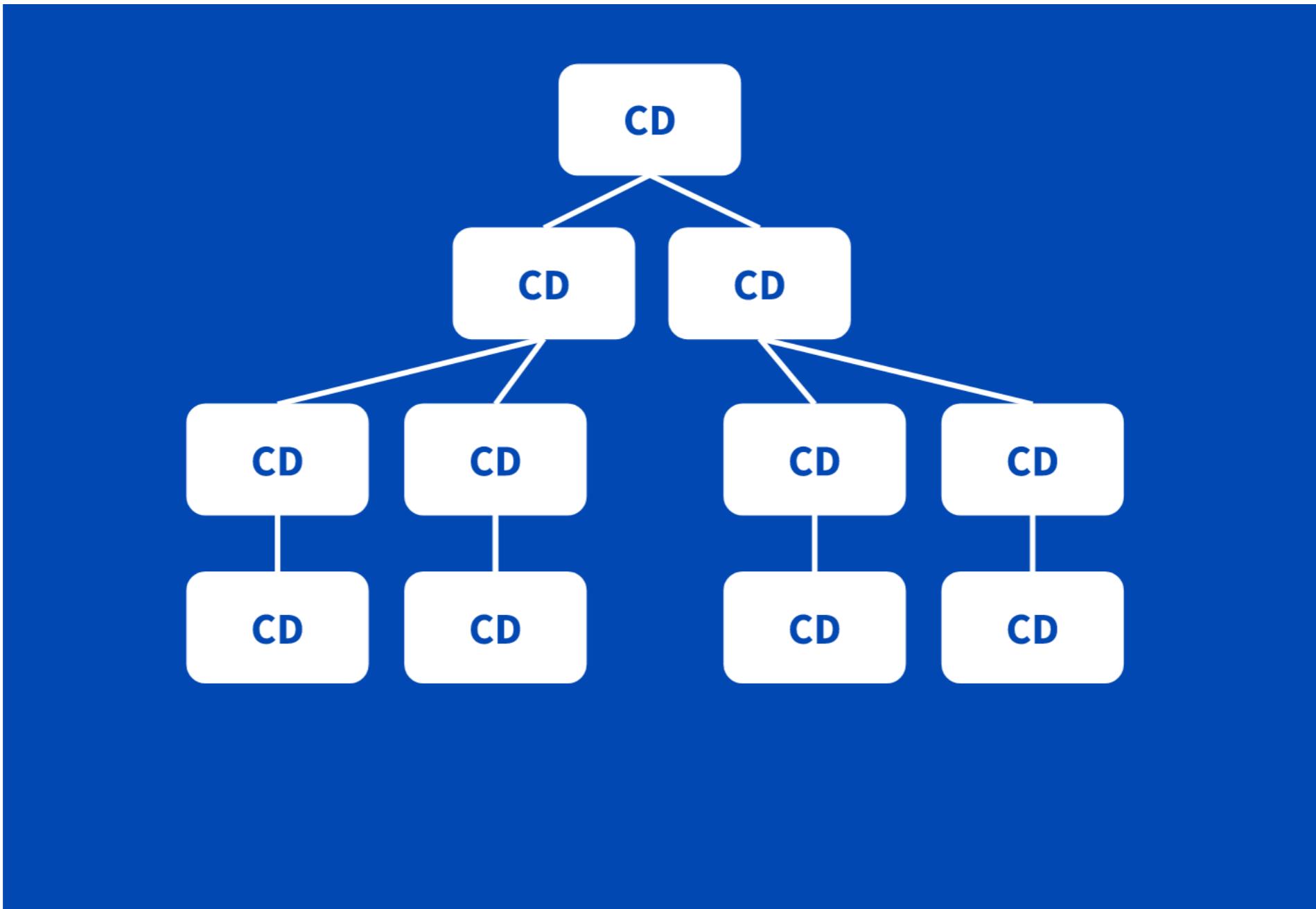
运行在ngzone之外



run

启动检测

巧用CHANGE策略



巧用CHANGE策略

ChangeDetectionStrategy.OnPush



Immutable Objects

巧用CHANGE策略

```
1 import { ChangeDetectionStrategy, Component, OnInit } from '@angular/core';
2
3 @Component({
4   selector: 'app-card',
5   templateUrl: './card.component.html',
6   styleUrls: ['./card.component.scss'],
7   changeDetection: ChangeDetectionStrategy.OnPush
8 })
9 export class CardComponent implements OnInit {
10   constructor() {
11   }
12 }
```

UNSUBSCRIBE

```
6  @Component({
7    selector: 'app-my-thing',
8    templateUrl: './my-thing.component.html'
9  })
10 export class MyThingComponent implements OnInit {
11
12   constructor(private myThingService: MyThingService, private route: ActivatedRoute) {
13   }
14
15   ngOnInit() {
16     this.route.params
17       .subscribe(params => {
18         const id = params['id'];
19         // do something
20       });
21     this.myThingService.getThings()
22       .subscribe(things => console.log(things));
23
24     this.myThingService.getOtherThings()
25       .subscribe(things => console.log(things));
26   }
27 }
```

UNSUBSCRIBE

```
5  @Component({
6    selector: 'app-my-thing',
7    templateUrl: './my-thing.component.html'
8  })
9  export class MyThingComponent implements OnInit, OnDestroy {
10    private ngUnsubscribe: Subject<void> = new Subject<void>();
11
12    constructor(private myThingService: MyThingService) {
13    }
14
15    ngOnInit() {
16      this.myThingService.myThingSubject1
17        .takeUntil(this.ngUnsubscribe)
18        .subscribe();
19      this.myThingService.myThingSubject2
20        .takeUntil(this.ngUnsubscribe)
21        .subscribe();
22      this.myThingService.myThingSubject3
23        .takeUntil(this.ngUnsubscribe)
24        .subscribe();
25    }
26
27    ngOnDestroy() {
28      this.ngUnsubscribe.next();
29      this.ngUnsubscribe.complete();
30    }
31 }
```



开源库推荐

开源库推荐

- rebirth-http (<https://github.com/greengerong/rebirth-http>)
- rebirth-ng (<https://github.com/greengerong/rebirth-ng>)
- ngx-bootstrap (<https://github.com/valor-software/ngx-bootstrap>)
- ui-model (<https://github.com/ui-model/ui-model/>)

REBIRTH-HTTP

```
@GET("article/:id")
getArticleByUrl(@Path("id") articleUrl: string): Observable<Article> {
    return null;
}

@POST("article")
createArticle( @Body article: Article): Observable {
    return null;
}

@PUT("article/:id")
updateArticle( @Path("id") id: string, @Body article: Article): Observable<Article> {
    return null;
}

@DELETE("article/:id")
deleteArticleById( @Path("id") id: string): Observable<Article> {
    return null;
}

@JSONP("article/:id")
getArticleByJsonp(@Path("id") id: string, @Query("name") name: string): Observable<any> {
    return null;
}
```

REBIRTH-HTTP

```
export class AppComponent {

  constructor(rebirthHttpProvider: RebirthHttpProvider) {

    rebirthHttpProvider
      .baseUrl(config.api.host)
      .json()
      .addInterceptor({
        request: request => {
          console.log('Global interceptors(request)', request);
        },
        response: (stream) => stream.map(response => {
          console.log('Global interceptors(response)', response);
          return response;
        })
      });
  }
}
```

总结

总结

- **ANGULAR** 优势，我们为什么要用**ANGULAR**
- **STARTER** 对比，选择一个合适的框架快速启动项目
- 前端**MVVM**及数据流导向
- 小技巧分享
- 开源库推荐

THANK YOU

Q&A

-- 冯杨琦君

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