Data Binding and OnPush

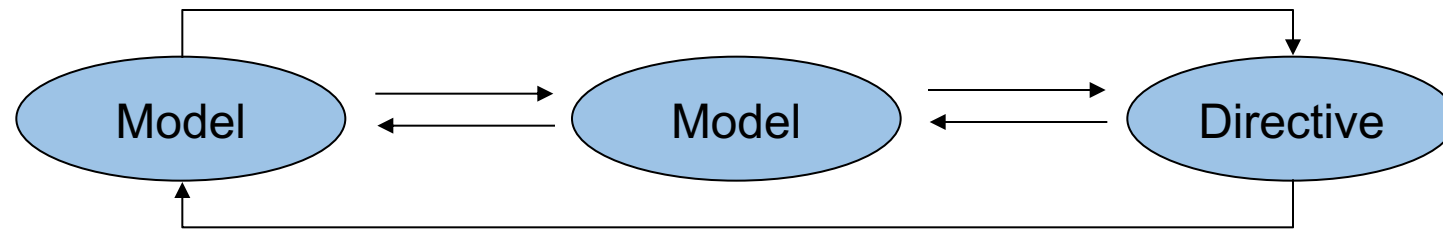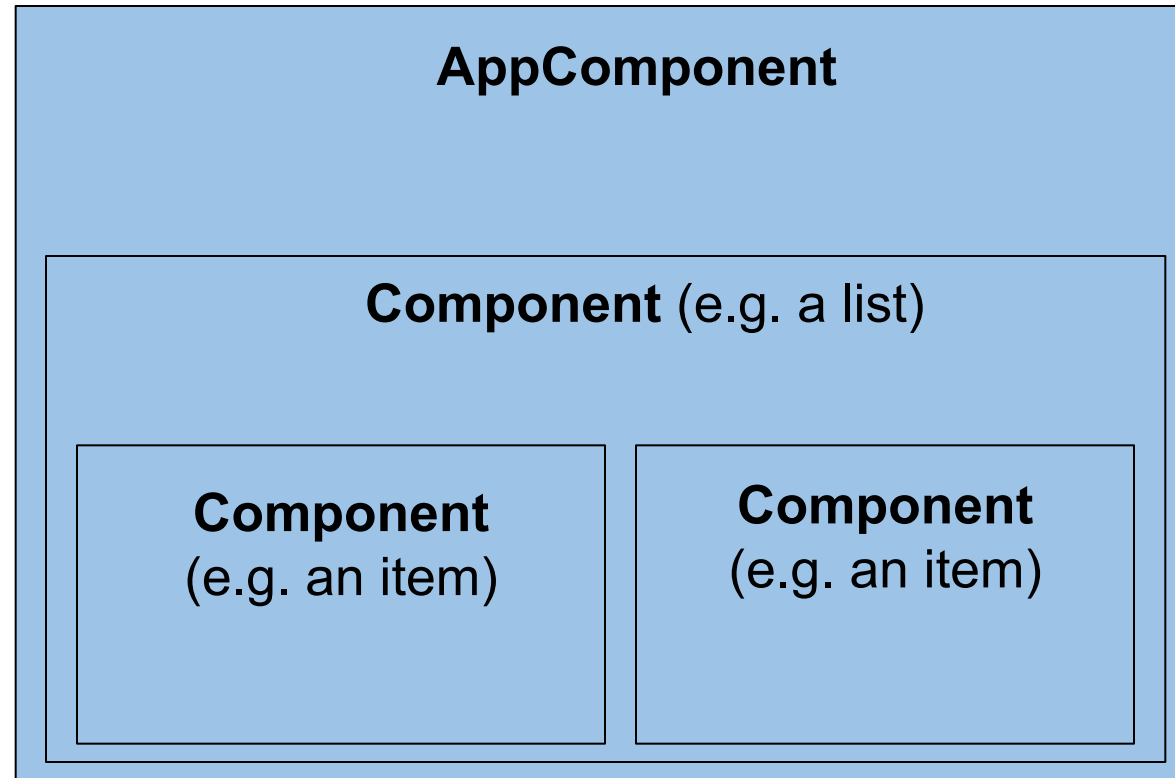**ANGULARarchitects.io**

Contents

- How does data binding work (underneath the covers)?
- Performance-Tuning with OnPush
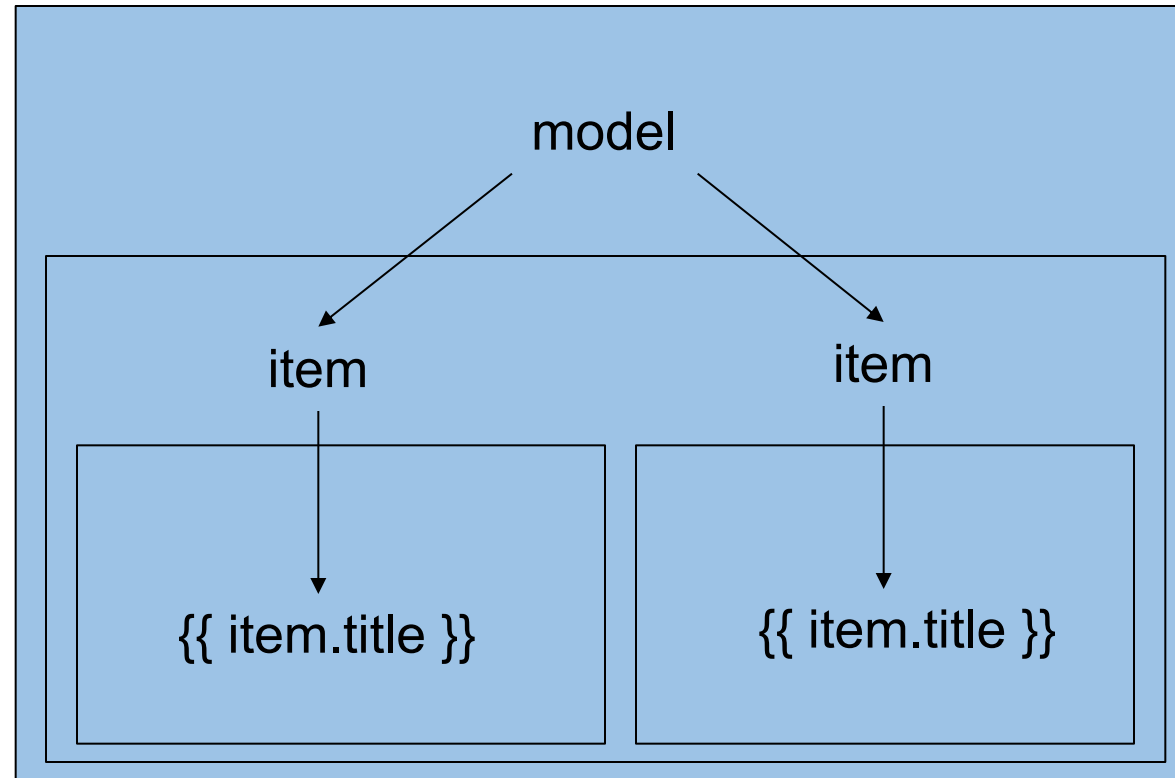
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Data Binding

Data Binding in AngularJS 1.x

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Component Tree in Angular 2+

AppComponent

Component (e.g. a list)

Component
(e.g. an item)

Component
(e.g. an item)

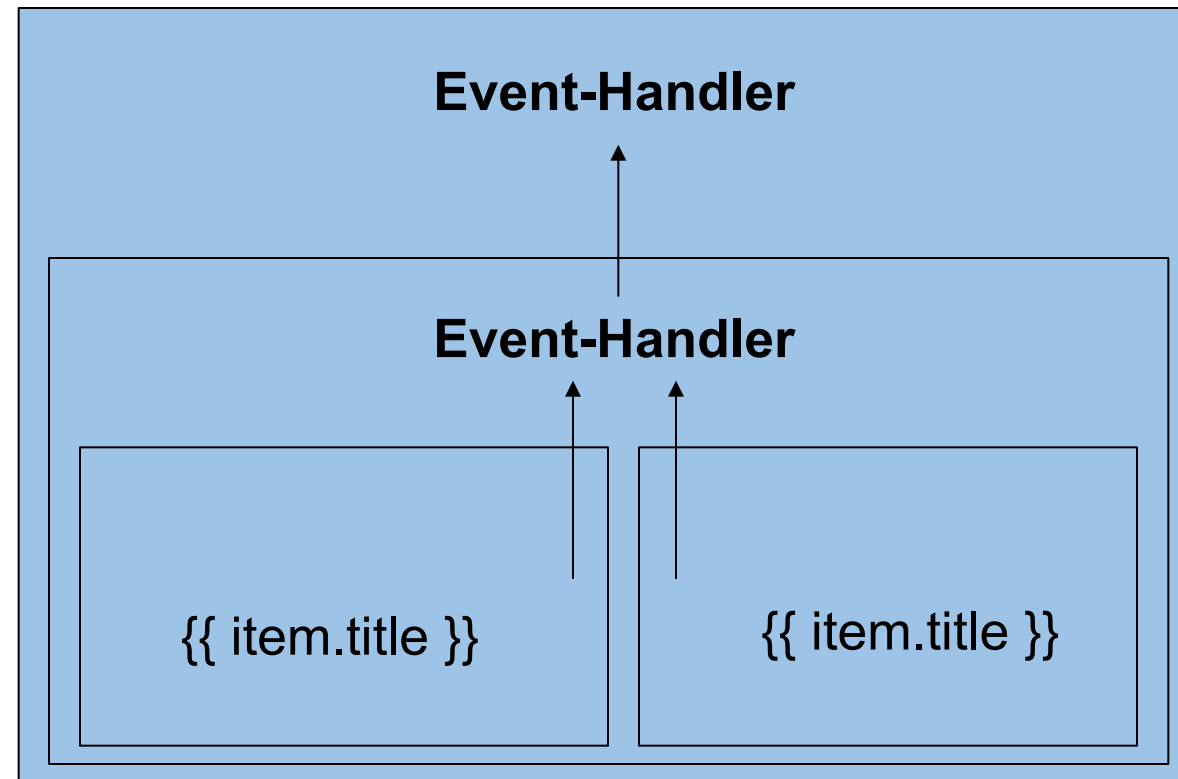@aawada

Rules for Property-Bindings

- Data flows top/down
    - Parent can send data to children
    - Children **cannot** send data to parent

- Dependency graph is a tree

- Angular only needs one "digest"

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Property Binding

[http://victorsavkin.com/post/110170125256/change-detection-in-angular-2]
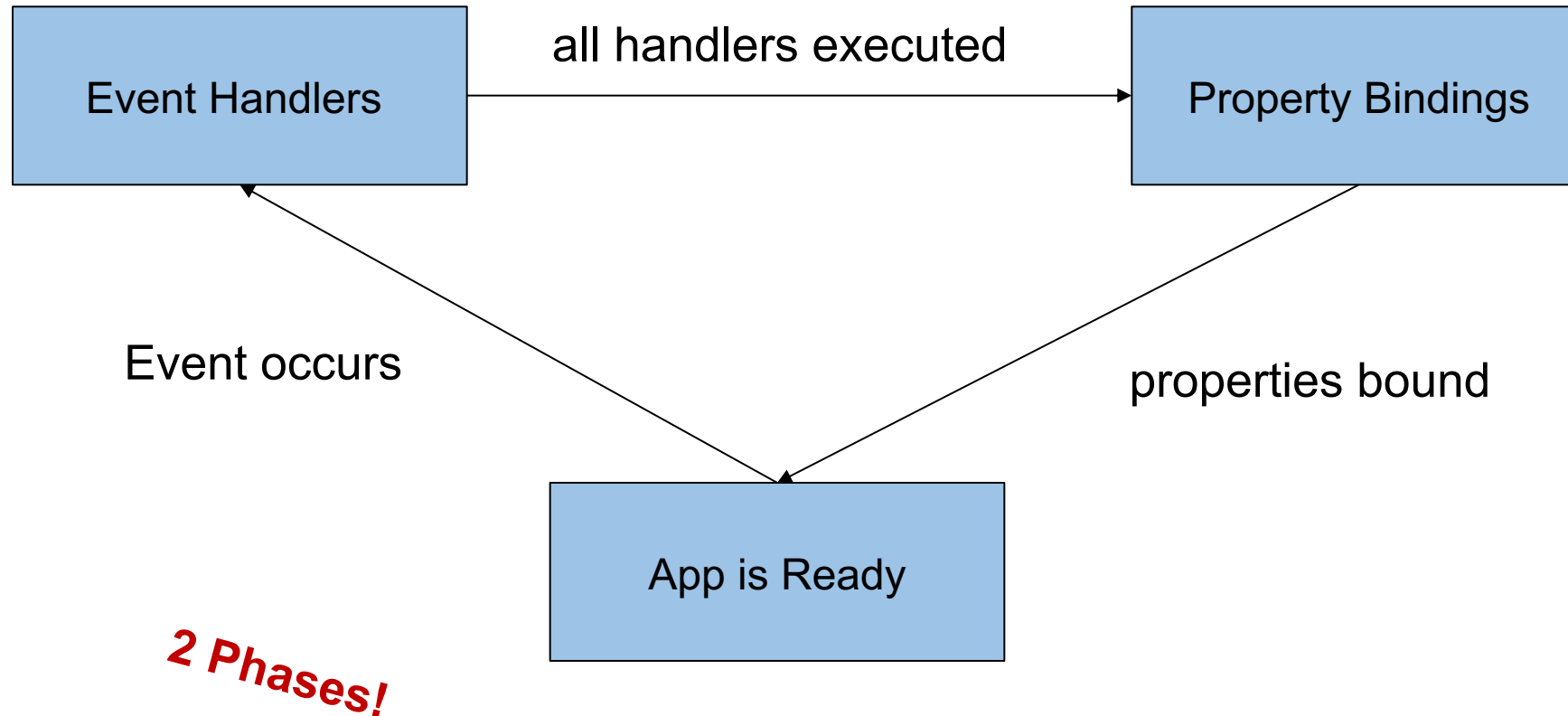
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Event Bindings (One-Way, Bottom/Up)

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Event Bindings (One-Way, Bottom/Up)

- Cheap: No "digest" needed!
- However: Events can change data → Property Binding

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Property- and Event-Bindings

Event Handlers

all handlers executed

Property Bindings

Event occurs

properties bound

App is Ready

2 Phases!

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View

```
<button [disabled]="!von || !nach" (click)="search()">
    Search
</button>

<table>
    <tr *ngFor="let flight of flights">
        <td>{{flight.id}}</td>
        <td>{{flight.date}}</td>    <- - - - - - ->    <td [text-content]="flight.date"></td>
        <td>{{flight.from}}</td>
        <td>{{flight.to}}</td>
        <td><a href="#" (click)="selectFlight(flight)">Select</a></td>
    </tr>
</table>
```
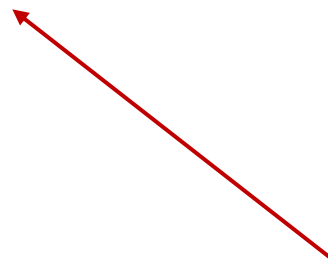
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DEMO

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Recap

- Property-Binding: One-Way; Top/Down
- Event-Binding: One-Way; Bottom/Up
- Two-Way-Binding?
- Two-Way = Property-Binding + Event-Binding

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Property and Event Bindings

<input **[ngModel]="from" (ngModelChange)="update($event)"**>

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Property and Event Bindings

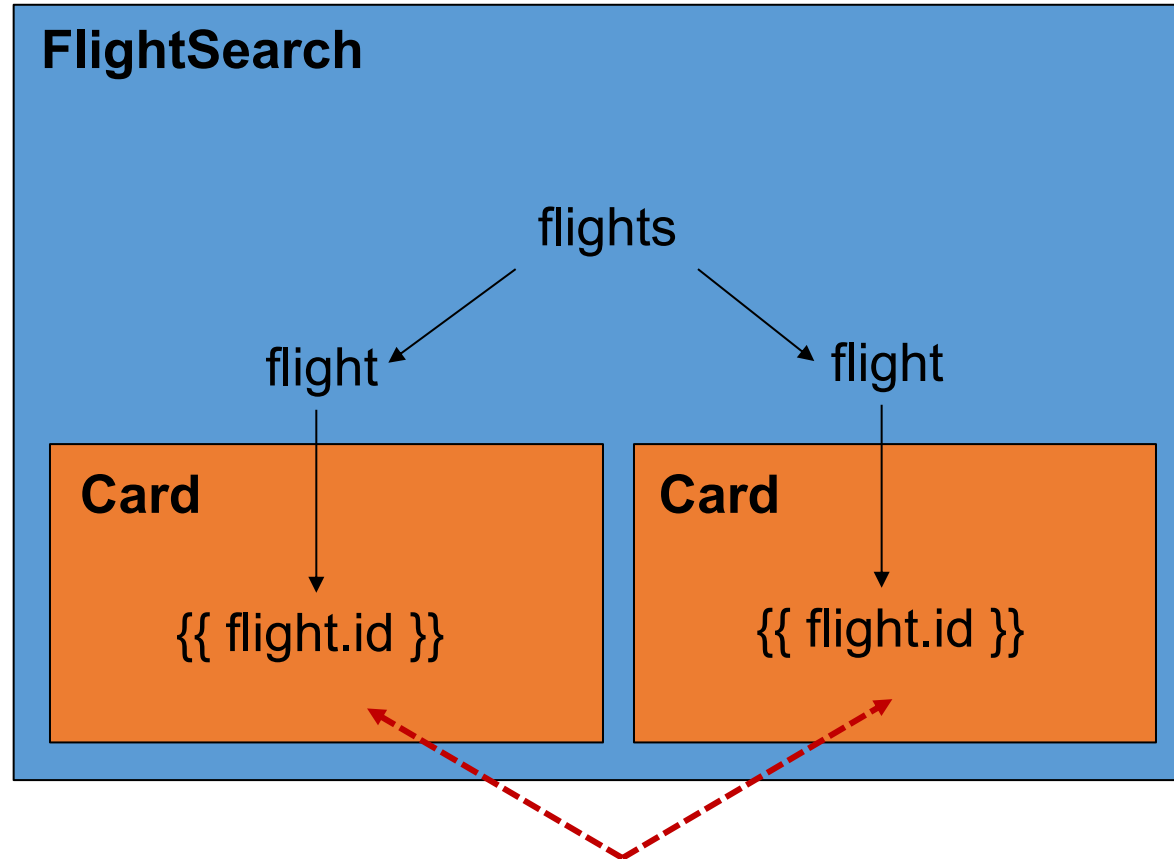`<input [ngModel]="from" (ngModelChange)="from = $event">`

Property + *Change*

`<input [(ngModel)]="from">`

New Value

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DEMO

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Performance Tuning with OnPush

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OnPush

FlightSearch

flights

flight → flight

Card — {{ flight.id }}

Card — {{ flight.id }}

Angular just checks when "notified"

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"Notify" about change?

- Change bound data (@Input)
  - OnPush: Angular just compares the object reference!
  - e. g. oldFlight === newFlight
- Raise event within the component
- Notify a bound observable
  - {{ flights$ | async }}
- Trigger it manually
  - Don't do this at home ;-)
  - At least: Try to avoid this

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Activate OnPush

```
@Component({
        […]
        changeDetection: ChangeDetectionStrategy.OnPush
})
export class FlightCard {
    […]
    @Input() flight;
}
```

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DEMO

Summary

- Event Bindigs → Property Bindings

- No cycles allowed!

- OnPush

- Immutables & Observables

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LAB