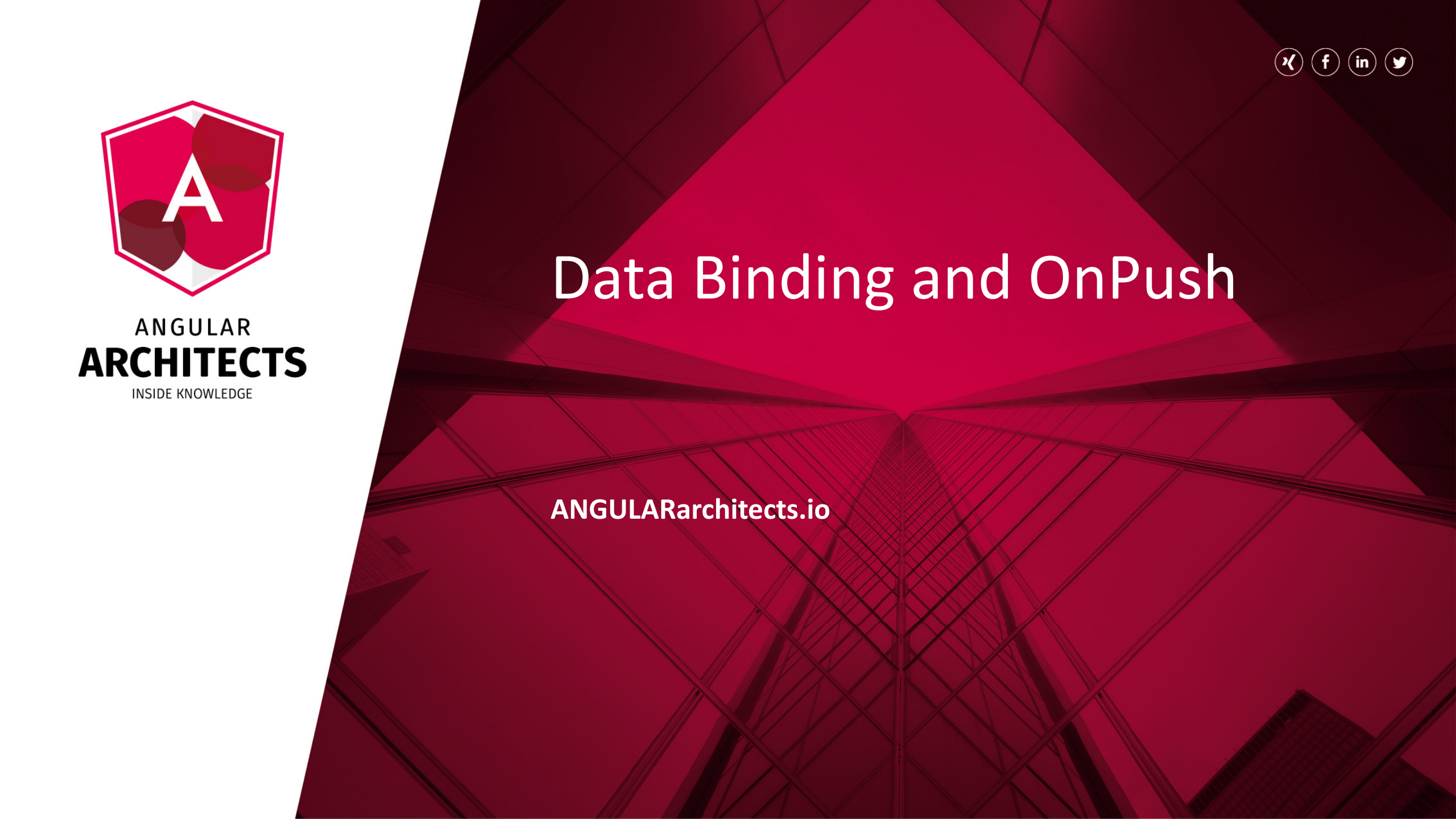

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Data Binding and OnPush

ANGULARarchitects.io

Contents

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

Data Binding

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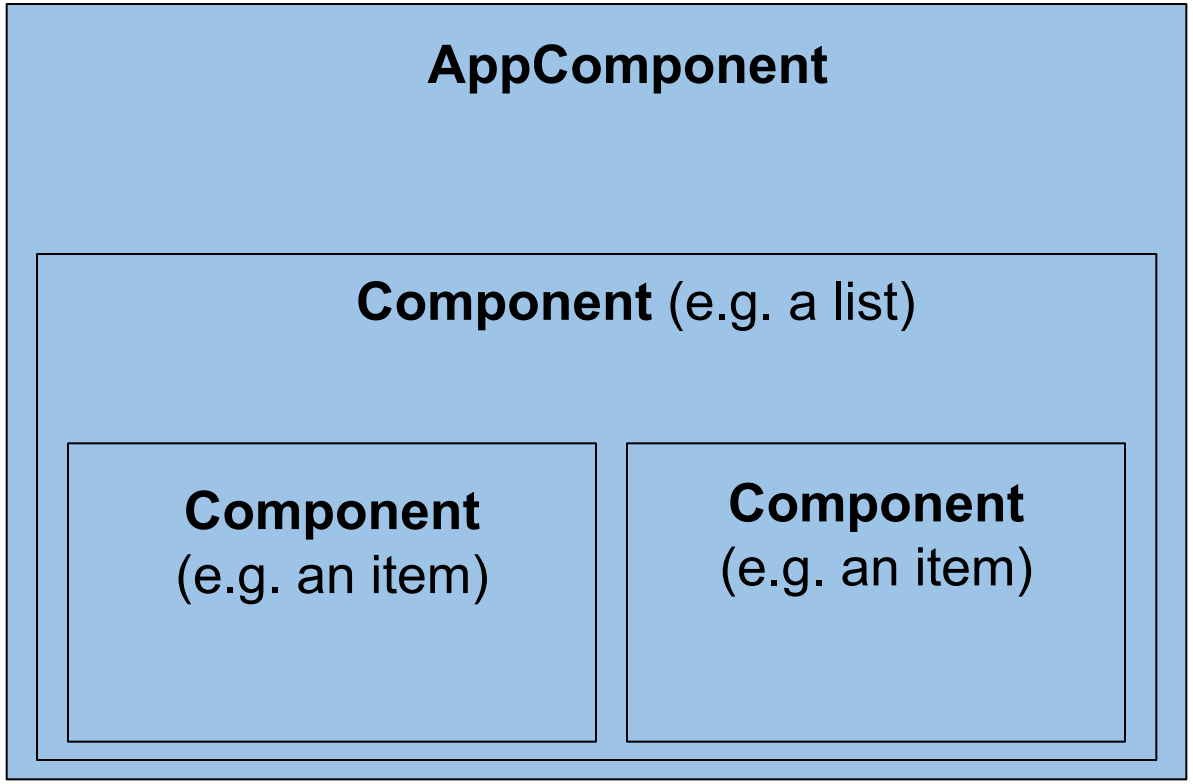
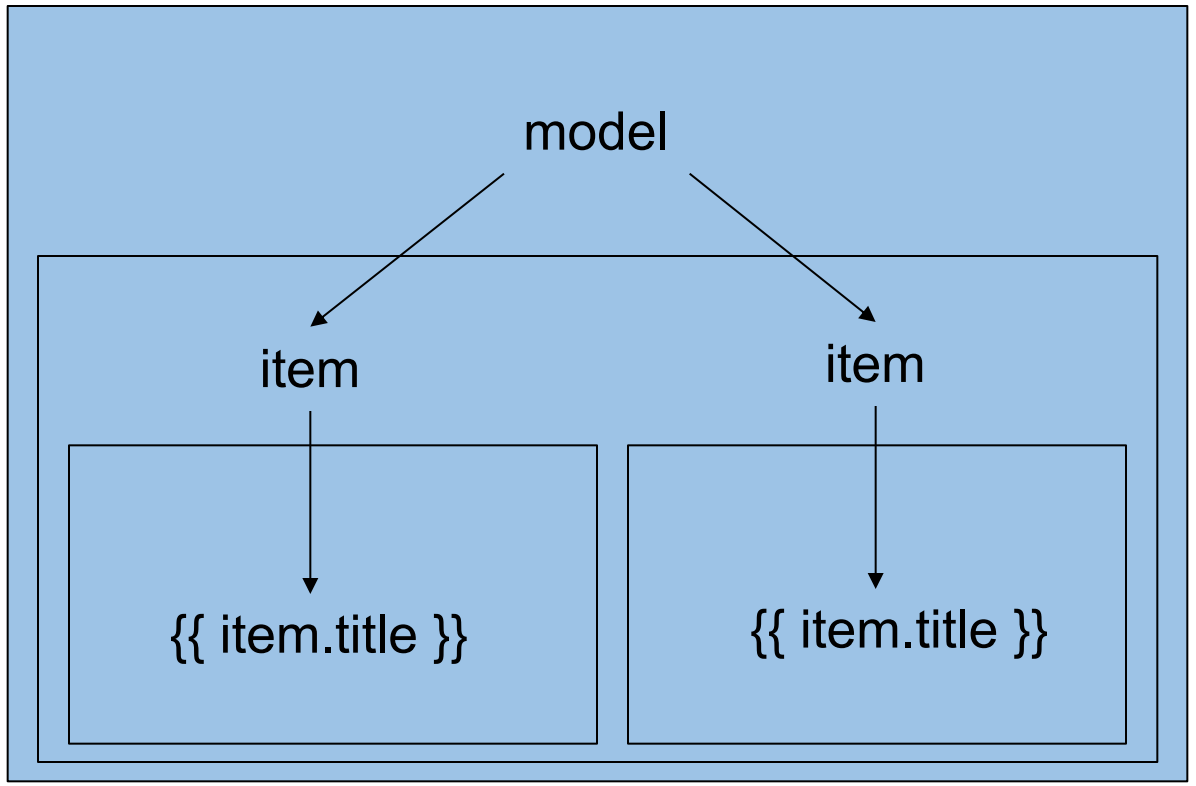
Component Tree in Angular 2+



Rules for Property-Bindings

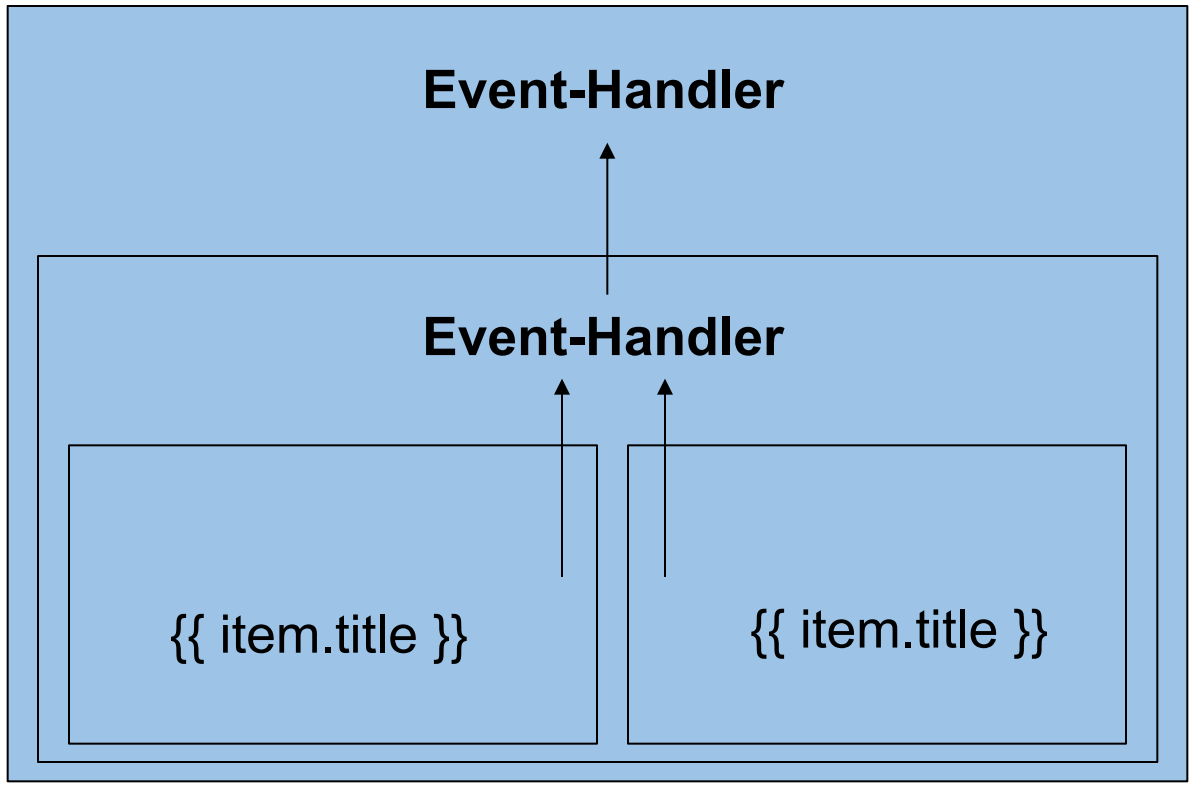
- Data flows top/down
  - Parent can send data to children
  - Children **cannot** send data to parent
- Dependency graph is a tree
- Angular only needs one "digest"

Property Binding



[http://victorsavkin.com/post/110170125256/change-detection-in-angular-2]

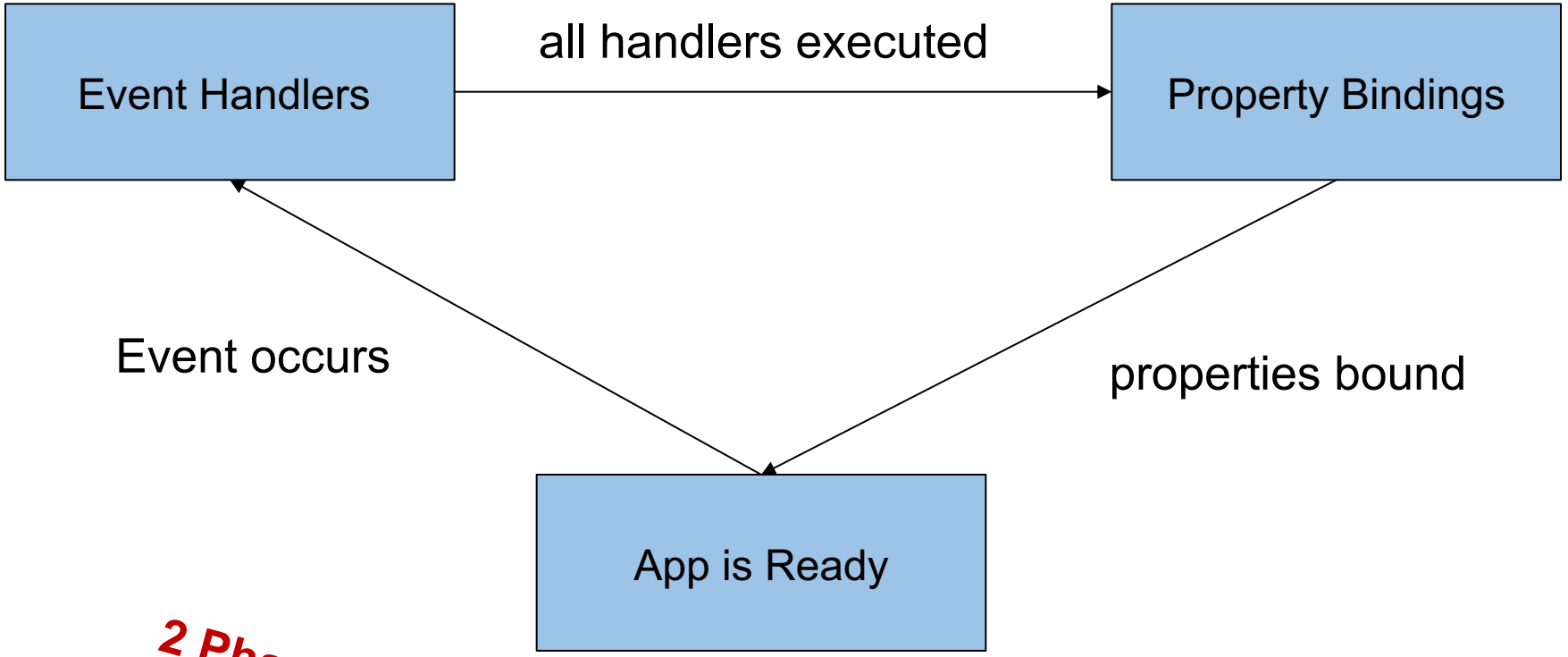
Event Bindings (One-Way, Bottom/Up)



Event Bindings (One-Way, Bottom/Up)

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

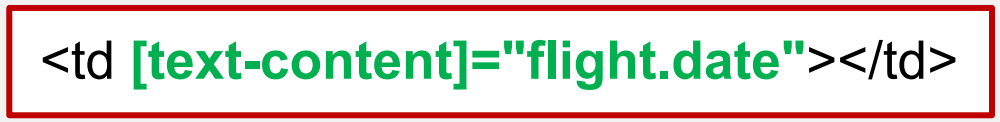
Property- and Event-Bindings



View

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

<table>
   <tr *ngFor="let flight of flights">
      <td>{{flight.id}}</td>
      <td>{{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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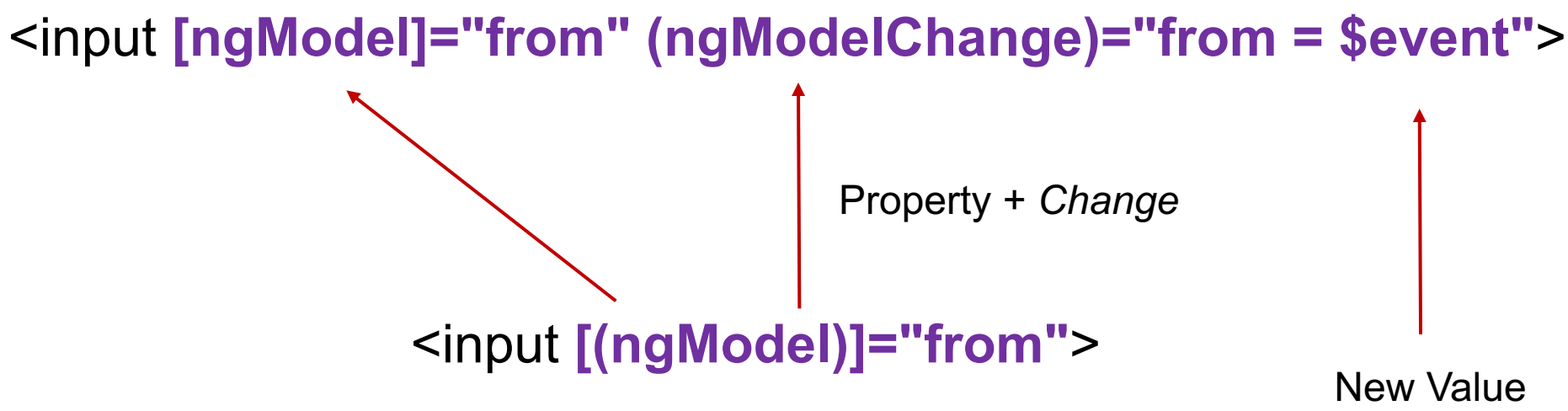
Recap

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

Property and Event Bindings

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

Property and Event Bindings



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Performance Tuning with OnPush

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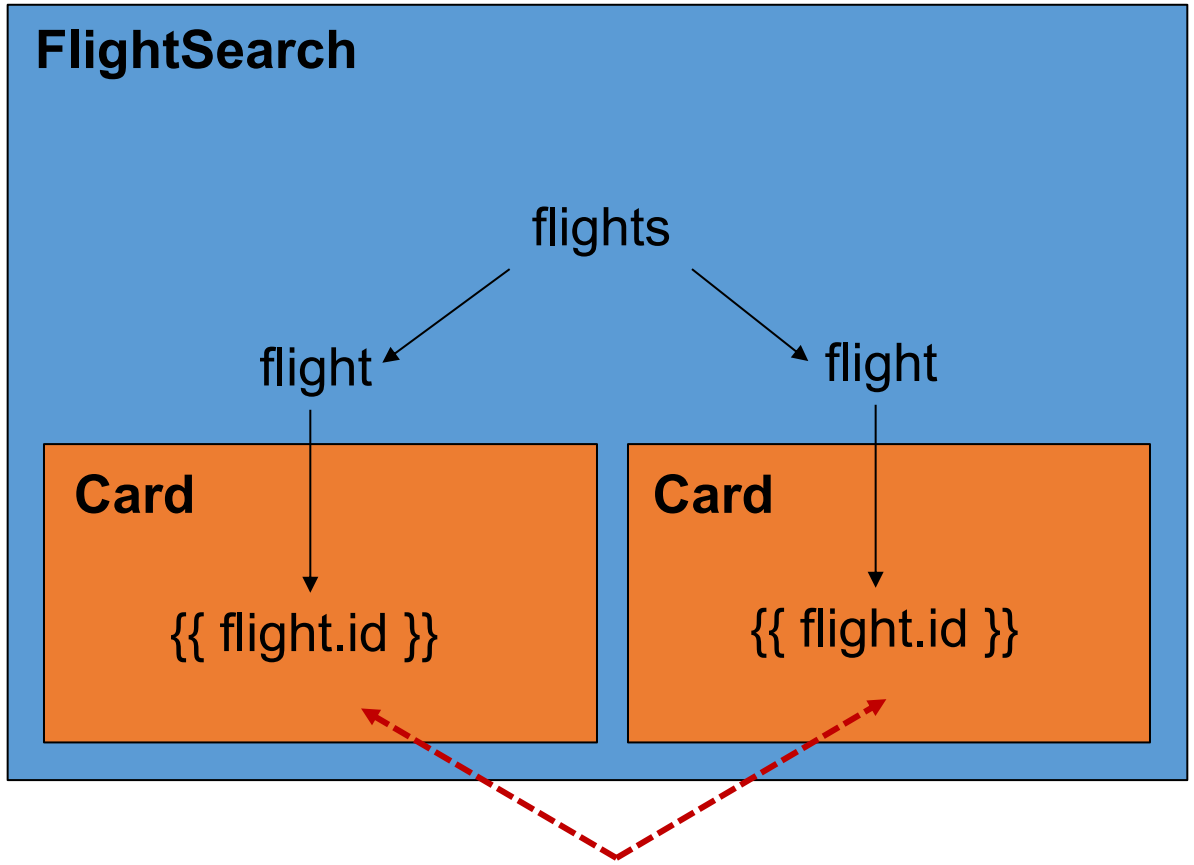
OnPush



Angular just checks when “notified”

"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

Activate OnPush

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

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Summary

- Event Bindigs → Property Bindings
- No cycles allowed!
- OnPush
- Immutables & Observables

One more thing: change detection

detectChanges	• Runs Change Detector for the component and its children • It runs CD once also for the component which is detached from the component tree
markForCheck	• It marks component and all parents up to root as dirty • In next cycle Angular runs CD for marked components
reattach	• Re-attaches the component in the change detection tree • If parent component's CD is detached, it won't help, so make sure to run markForCheck with reattach
detach	• Detaches the component from the change detection tree • Bindings will also not work for the component with detached CD
checkNoChanges	• Changes the component and its children and throws error if change detected