Displaying Data:
Data Binding, Directives, and Pipes

John Papa
PRINCIPAL ARCHITECT

@john_papa www.johnpapa.net

Overview

Data Binding

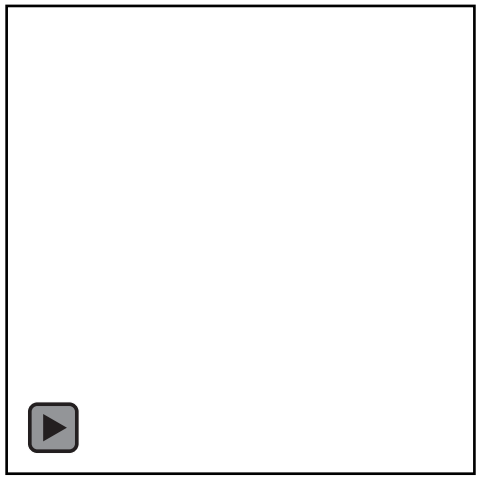
Built-in Directives

Pipes

Data Binding

Data Binding

We use data binding to help coordinate communication between a Component and its Template.



DOM

{{expression}}

Interpolation

[property] = “expression”

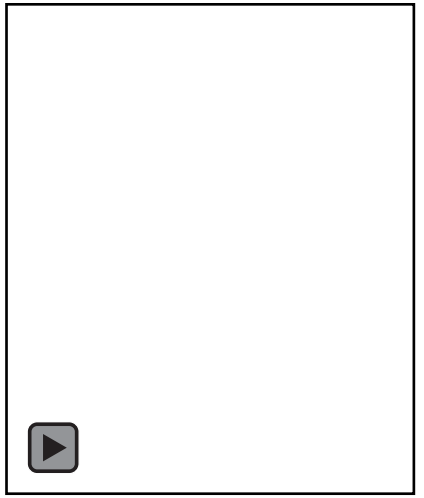
One Way Binding

(event) = “statement”

Event Binding

[(ngModel)] = “property”

Two Way Binding



Component

Angular 2's change detection is based on unidirectional data flow

Benefits of Angular 2's Unidirectional Data Flow

Easier widget integration

No more $apply

No more repeated digest cycles

No more watchers

No more performance issues with digest cycle and watcher limits

Interpolation

Using the {{ }} to render the bound value to the Component's Template

One Way In

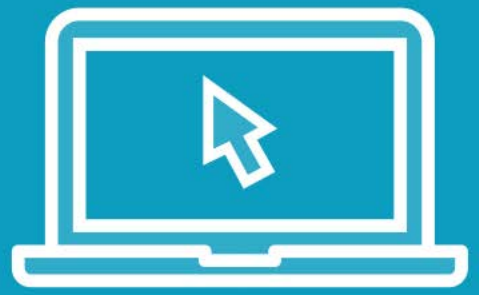
```
<h3>Vehicle: {{vehicle.name}}</h3>
<div>
  <img src="{{vehicle.imageUrl}}">
  <a href="{{vehicle.wikiLink}}">Wiki</a>
</div>
```

Interpolation

Evaluate an expression between double curly braces

{{ expression }}

Demo



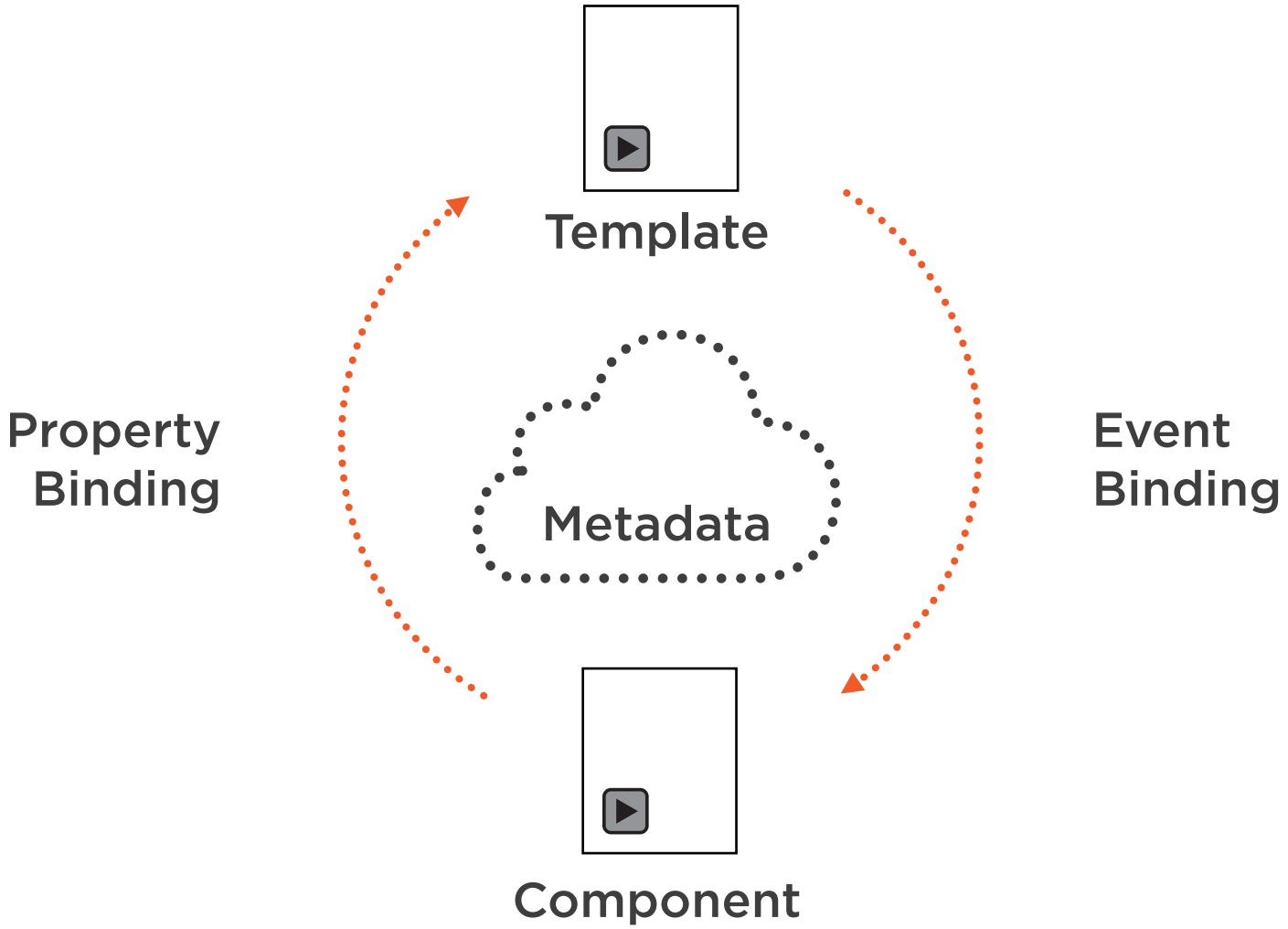
Interpolation

{{ }}

Property Binding

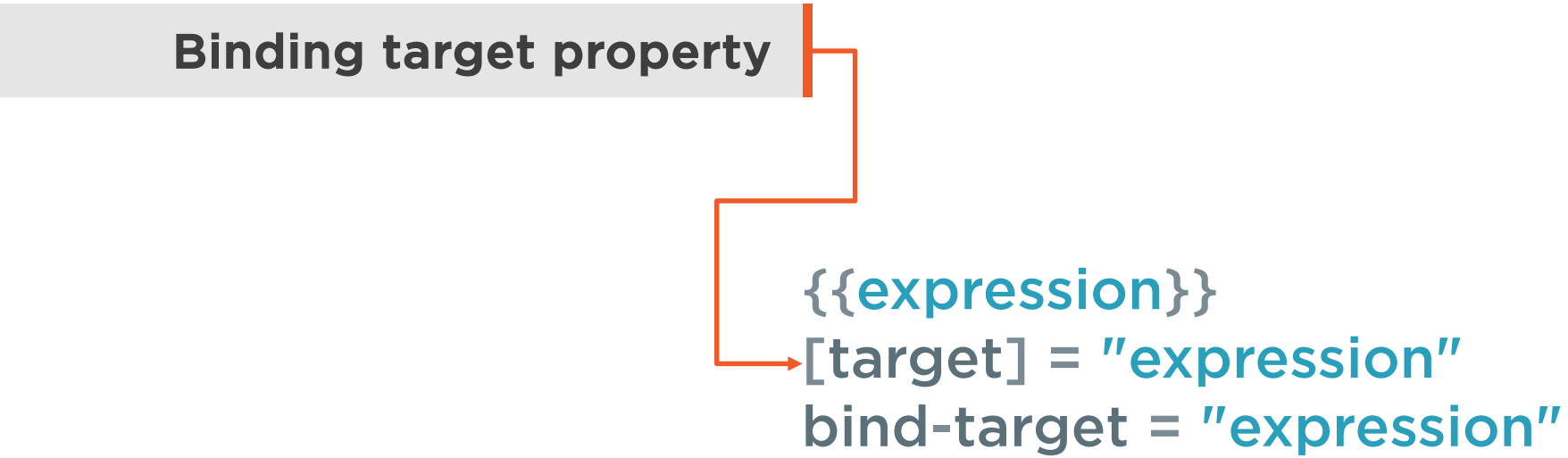
Using the [ ] to send values from the Component to the Template

Data Binding Communication

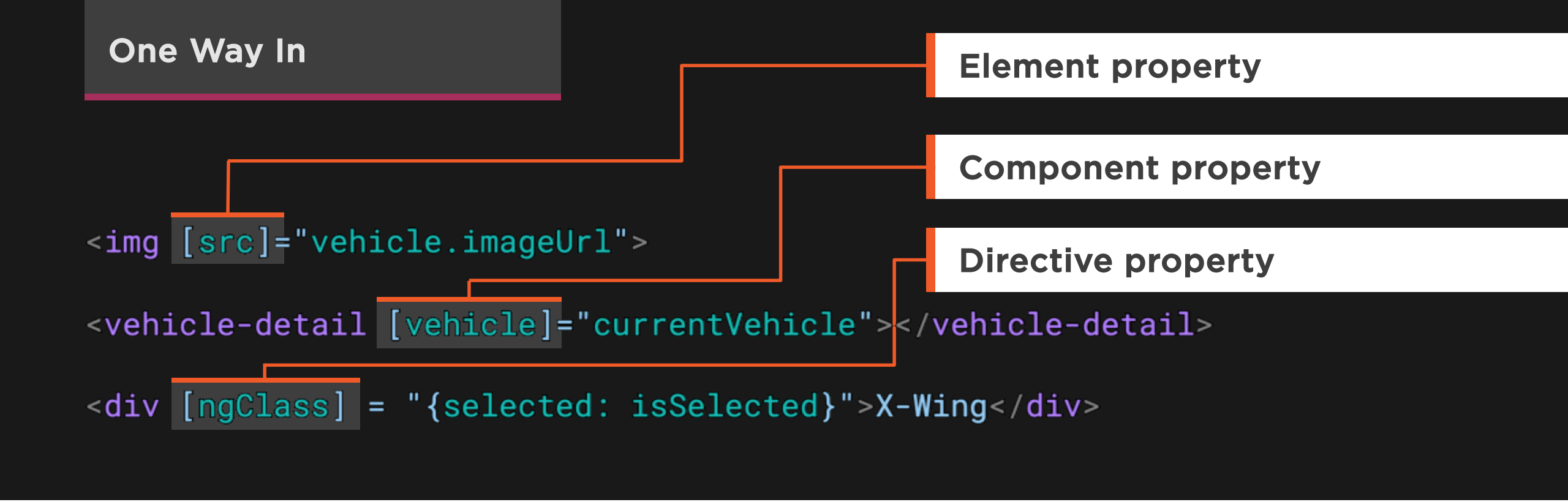


We set properties and events of DOM elements, not attributes

One Way



Data source to view target



Property Binding

[property]="expression"

Bind to element, Component or a directive property

One Way In

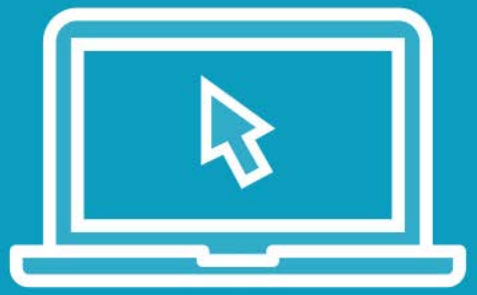
Property Binding

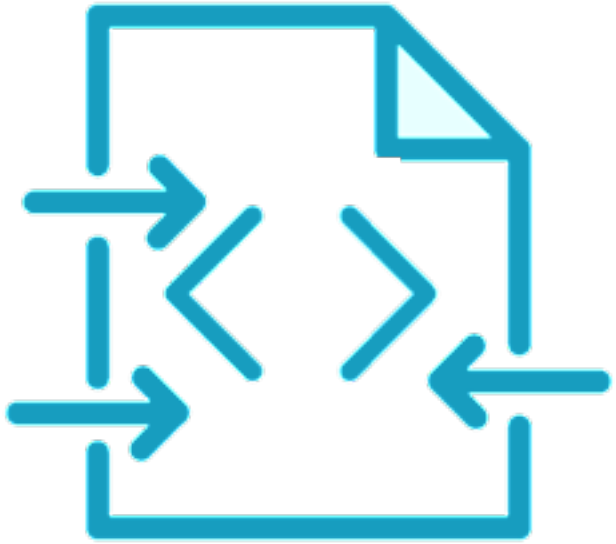
For attributes use attr

Use dots for nested properties

Property Binding

Demo

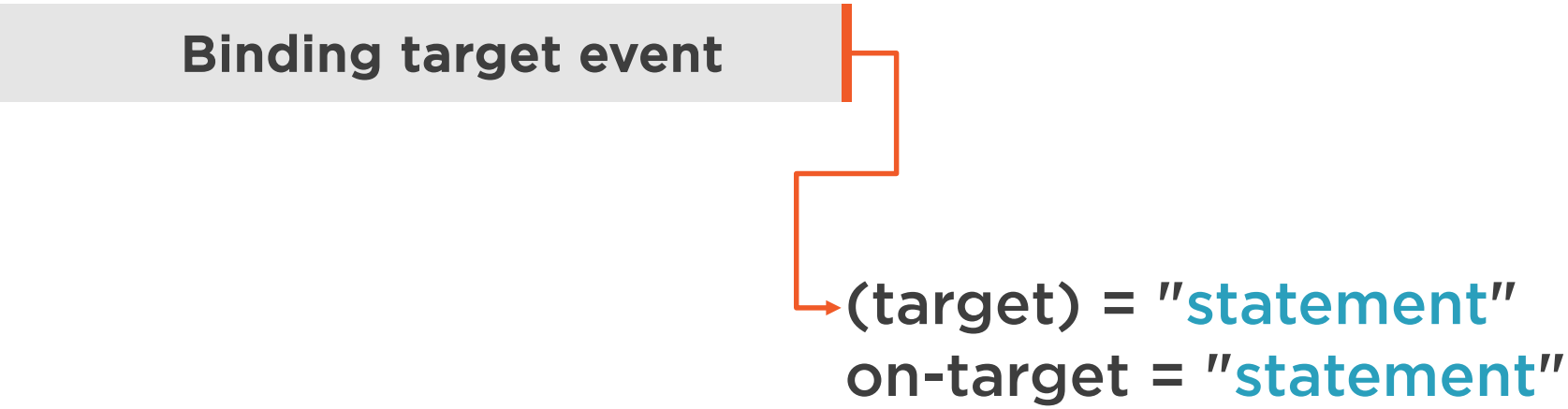




Event Binding

Using the ( ) to send events from the Template to the Component

One Way



View target to data source

One Way to the Component

```
<button (click)="save()">Save</button>

<vehicle-detail (changed)="vehicleChanged()"></vehicle-detail>
```

Element event

Component event

Event Binding

Execute an expression when an event occurs

(event-target)="statement"

One Way to the Component

```
<input [value]="vehicle.name"
  (input)="vehicle.name=$event.target.value">
```

Event message

Input change event

$event

Contains a message about the event

```
@Input() vehicle: Vehicle;
@Output() onChanged = new EventEmitter<Vehicle>();
changed() { this.onChanged.emit(this.vehicle); }

<vehicle-detail (onChanged)="vehicleChanged($event)"
  [vehicle]="currentVehicle"> </vehicle-detail>
```

Custom event

Output (event)

Custom Events

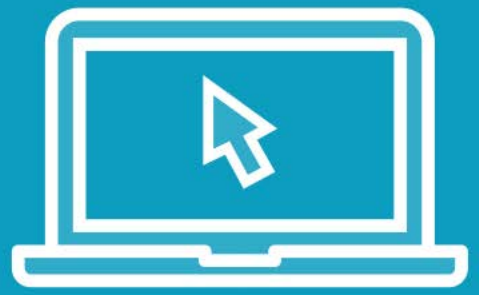
EventEmitter defines a new event

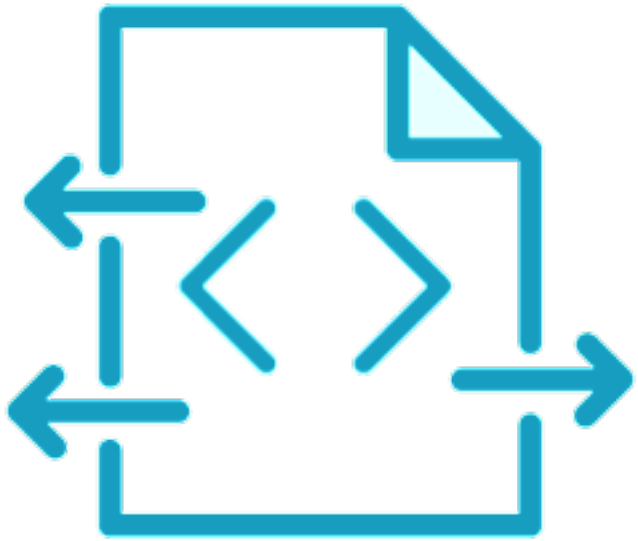
Fire its **emit** method to raise event with data

Bind to the event on the Component's Template

Event Binding

Demo





Two Way Binding

[( )] sends a value from Component to Template, and sends value changes in the Template to the Component

Two Way

```
[(ngModel)] = "expression"
bindon-ngModel= "expression"
```

Value in, Value Out

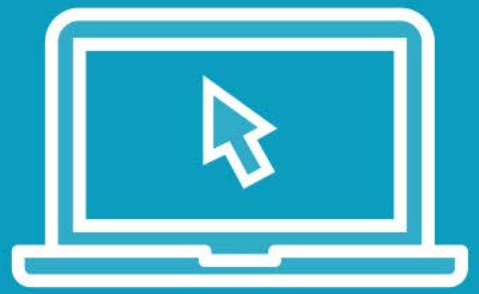
```
<input [(ngModel)]="vehicle.name">
```

Built-in directive

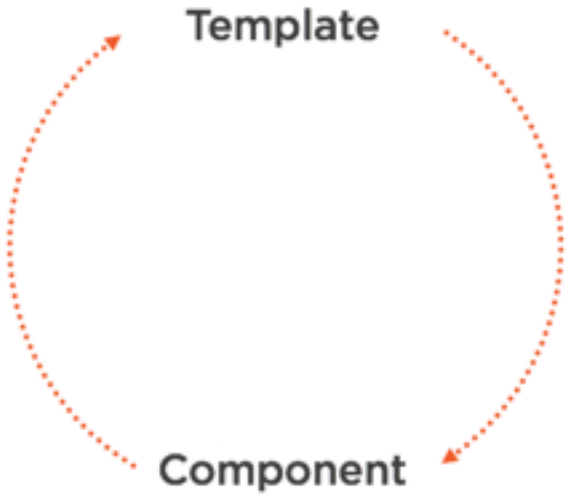
Two Way Binding

[( )] = Banana in a box

Demo



Data Binding



Built-in Directives

Directives

When Angular renders templates, it transforms the DOM according to instructions from Directives

Angular Class and Style Directives

Angular 1

Angular 2

ng-class

ngClass

ng-class="{active: isActive, color: myColor}"

[ngClass]="{active: isActive, color: myColor}"

ng-style

ngStyle

ng-style="{color: colorPreference}

[ngStyle]="{color: colorPreference}"
[style.color]="colorPreference"

Style Binding

```
<div [ngStyle]="setStyles()">{{vehicle.name}}</div>
```

Style binding

ngStyle

Alternative to [style.style-name]

Setting multiple styles

Class Binding

```
<div [ngClass]="setClasses()">{{vehicle.name}}</div>
```

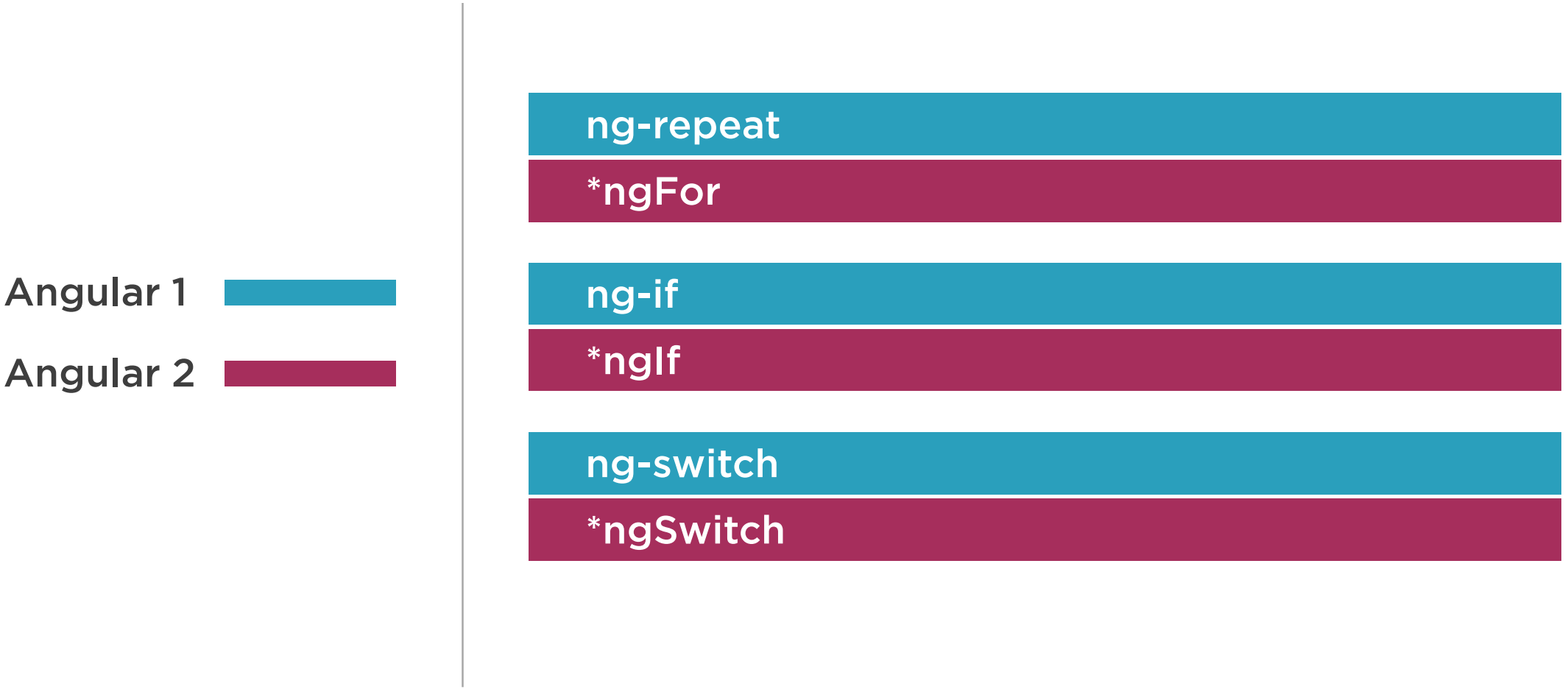
Class binding

ngClass

Alternative to [class.class-name]

Setting multiple classes

Angular Structural Directives



Conditional Template

Show template if truthy

```
<div *ngIf="currentVehicle">
  You selected {{currentVehicle.name}}
</div>
```

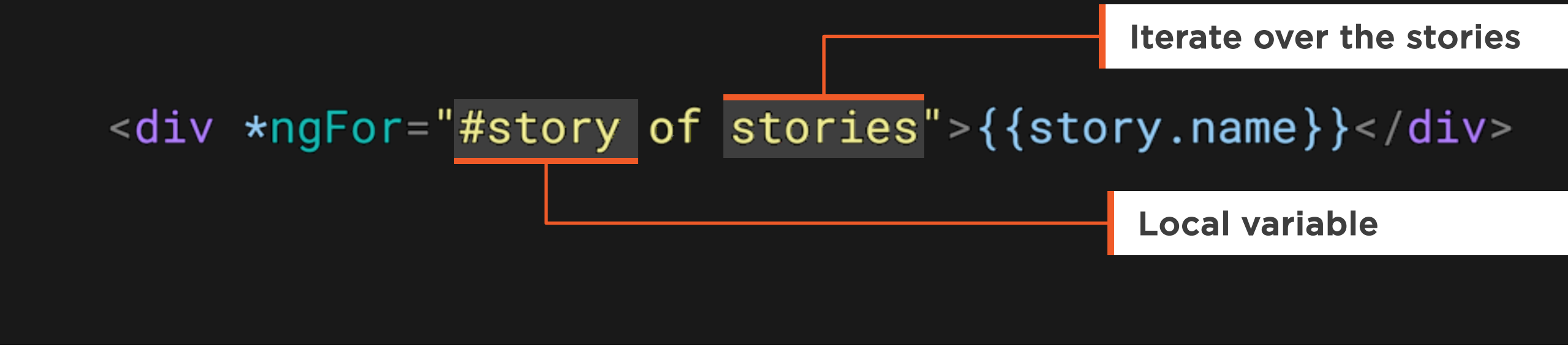
*ngIf

Conditionally removes elements from the DOM

Structural directive

Use [style.visibility]="isVisible()" to hide

Repeating a Template



*ngFor

Structural directive

Show an element n number of times

declares a local variable

```
<div *ngFor="#story of stories, #i=index">
  {{i}}. {{story.name}}
</div>
```

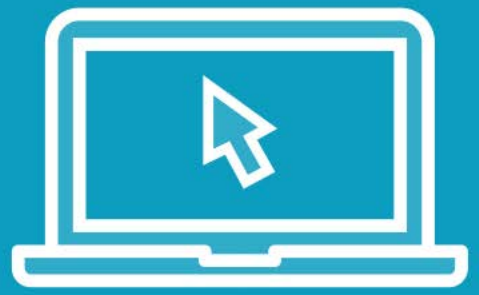
Local variable

Local Variables

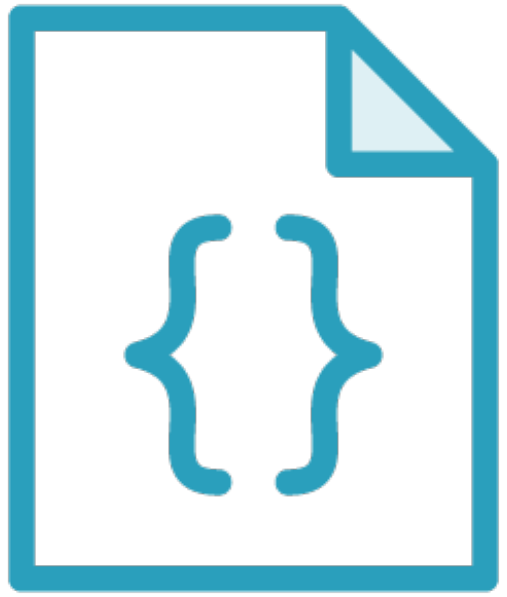
 # declares a local variable

Can also use var i = index

Demo



Directives

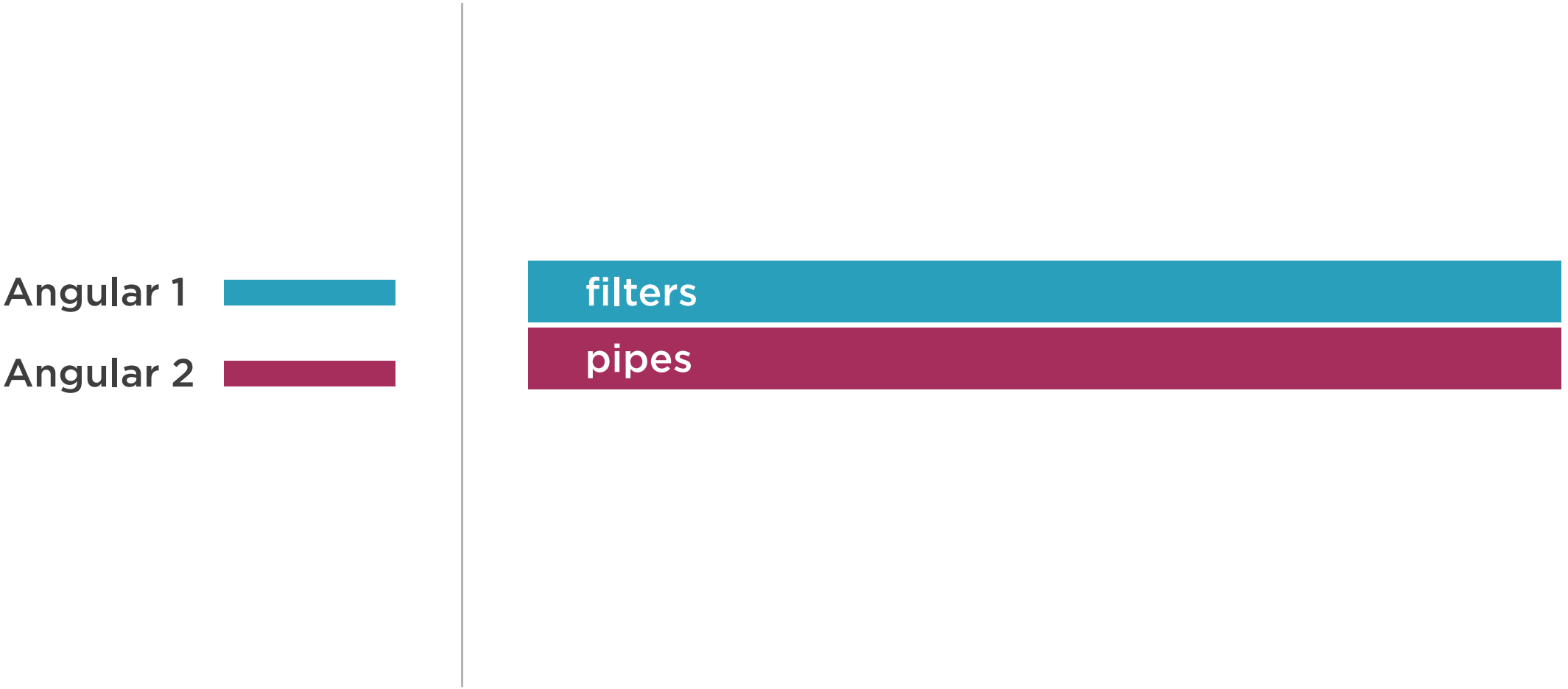


Pipes

Pipes

Pipes allow us to transform data for display in a Template.

Angular Formatters



```
<p>{{character.name | uppercase}}</p>
<p>{{character.name | lowercase}}</p>
```

Lowercase Pipe

Built-in Pipes

Format a value in a Template

```
<p>{{eventDate | date:'medium'}}</p>
<p>{{eventDate | date:'yMMMd'}}</p>
```

Date Pipe

Date Pipe

https://angular.io/docs/ts/latest/api/

Date accepts **format**

expression | date[:format]

```
<p>{{price | currency}}</p>
<p>{{value | percent:'1.1-1'}}</p>
<p>{{value | number:'1.1-3'}}</p>
```

Number Pipe

Numeric Pipes

Number and **Percent** accept **digitInfo**

Expression | number[:digitInfo]

{minIntegerDigits}.{minFractionDigits}-{maxFractionDigits}

Async Pipe

Subscribes to a Promise or an Observable, returning the latest value emitted

```
import { Pipe, PipeTransform } from 'angular2/core';

@Pipe({ name: 'myCustomPipe' })
export class MyCustomPipe implements PipeTransform {
  transform(value: string, args: any[]) {
    return // transformed value

  }
}
```

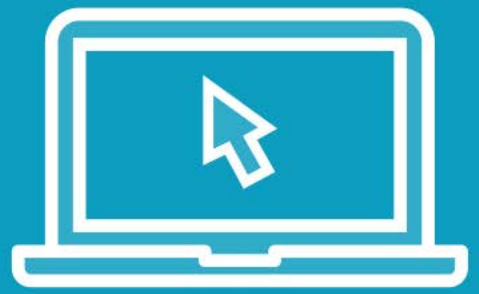
Implement the interface

Custom Pipes

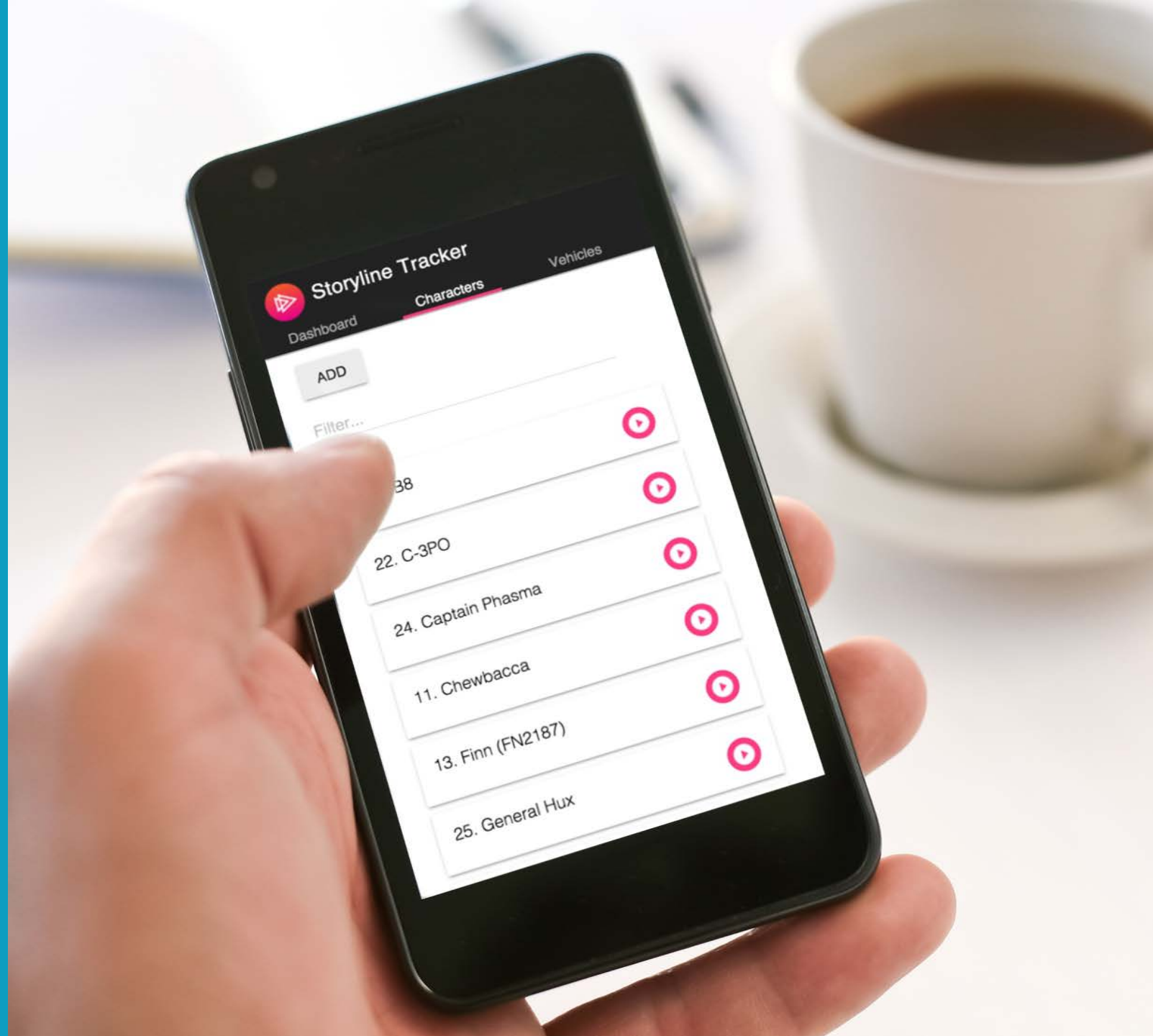
value to transform

Optional args

Demo



Putting it all Together



Template Syntax

- Data Binding
- Unidirectional Data Flow
- Attribute Directives
- Structural Directives
- Pipes