Styling Applications with Angular Material

INTRODUCTION

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What is Angular Material?

Reference implementation of Google's Material Design Specification.

The goal of Angular Material

Demo

What we'll be building

Course Overview

Introduction

Material Design

Setup Development Environment

Build an Application

Summarize

Prerequisites and Tools

Prerequisites

- Basic HTML and CSS
- Angular (2+)

Tools

- Visual Studio Code
- NodeJS
- TypeScript

TypeScript is a superset of JavaScript.

References and Links

Material Design Specification

- https://material.io/

Angular Material

- https://material.angular.io/
- https://github.com/angular/components

GitHub

- https://github.com/ajtowf/styling-applications-with-angular-material

YouTube

- https://www.youtube.com/c/AjdenTowfeek

Twitter

- https://twitter.com/ajtowf

Material Design

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Why is beauty important?

> “Attractive things work better.”

Don Norman

Designing beautiful applications is hard.

Material Design Goals

Synthesizes classic principles

Unified experience across devices

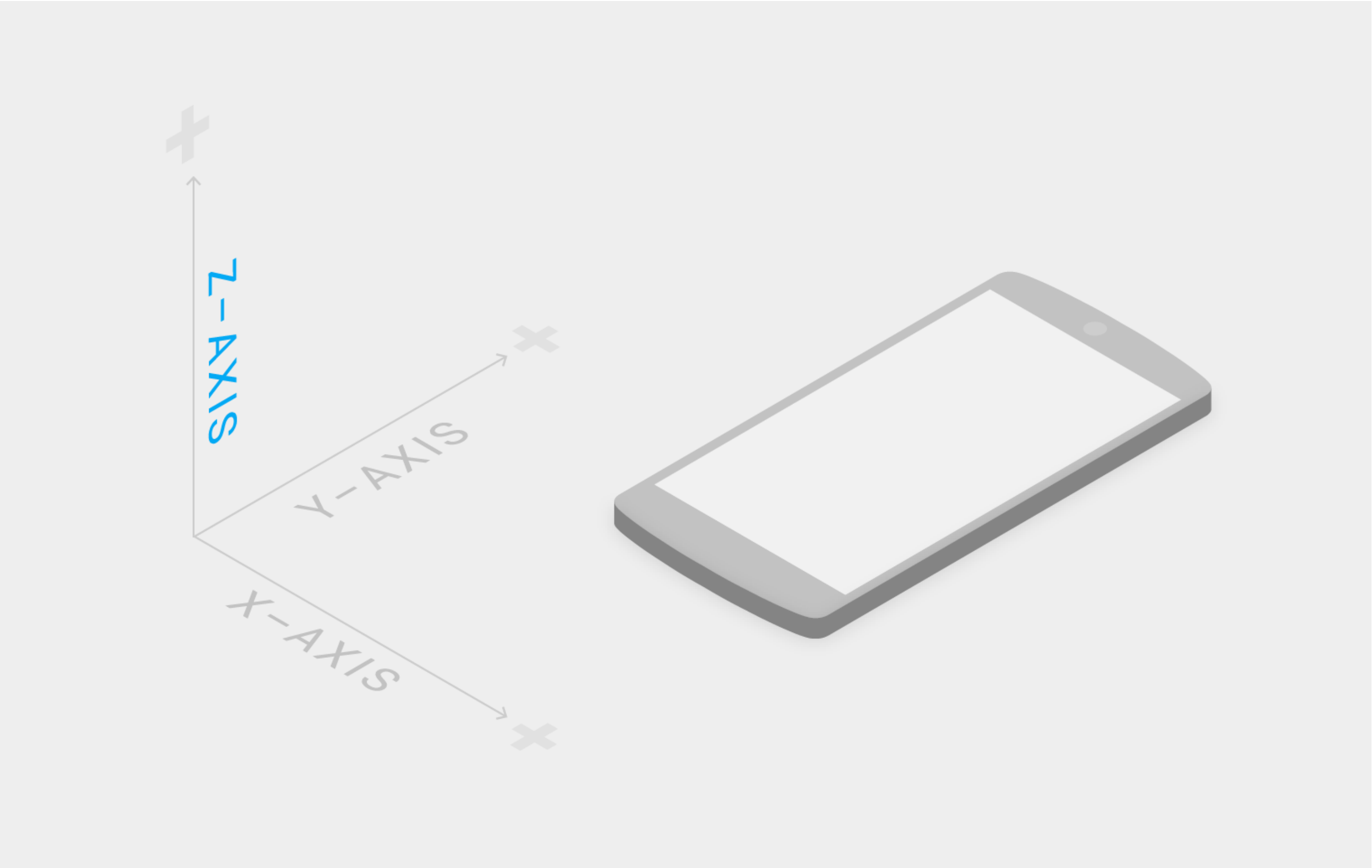
Principles

Material is the metaphor

Bold, graphic and intentional

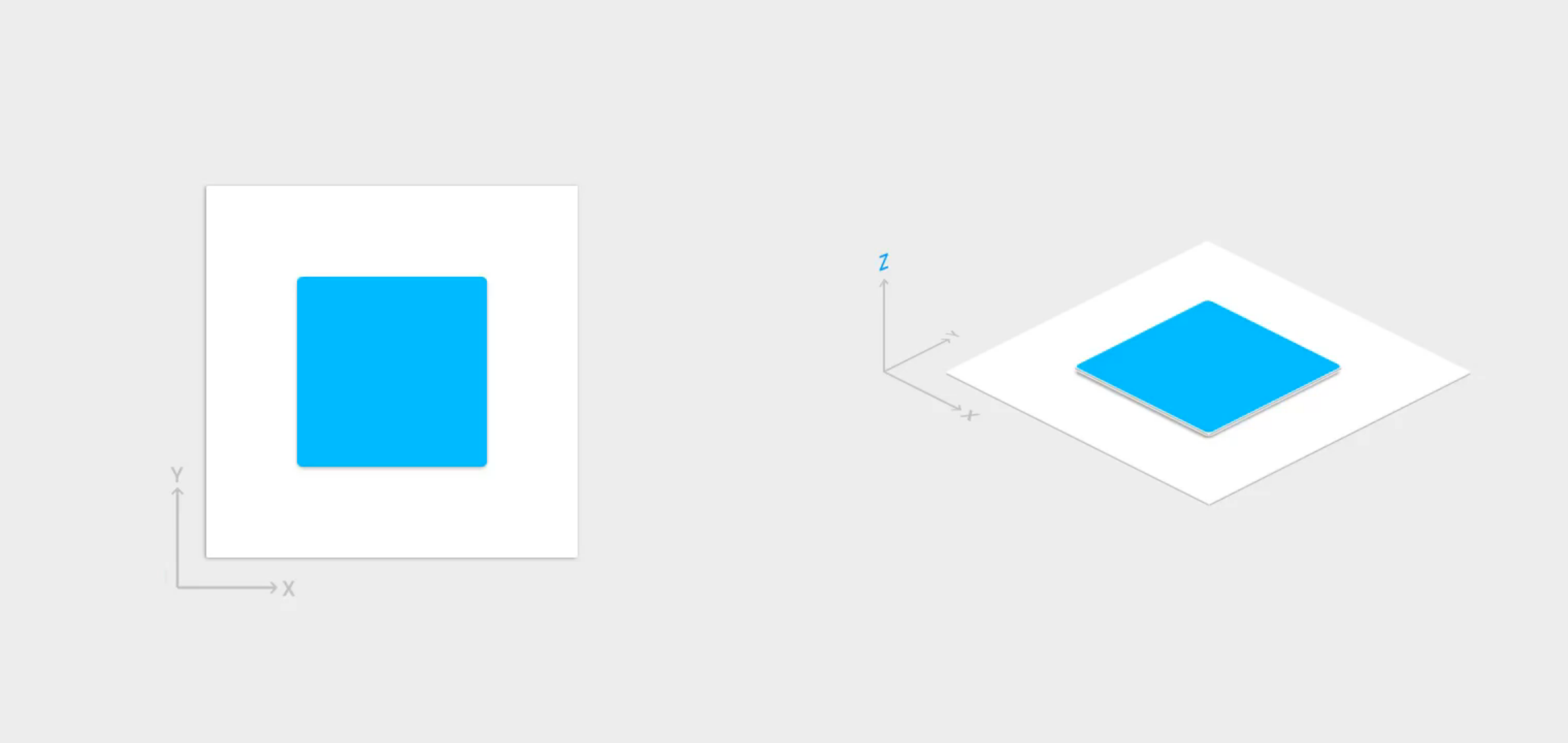
Motion provides meaning

Environment

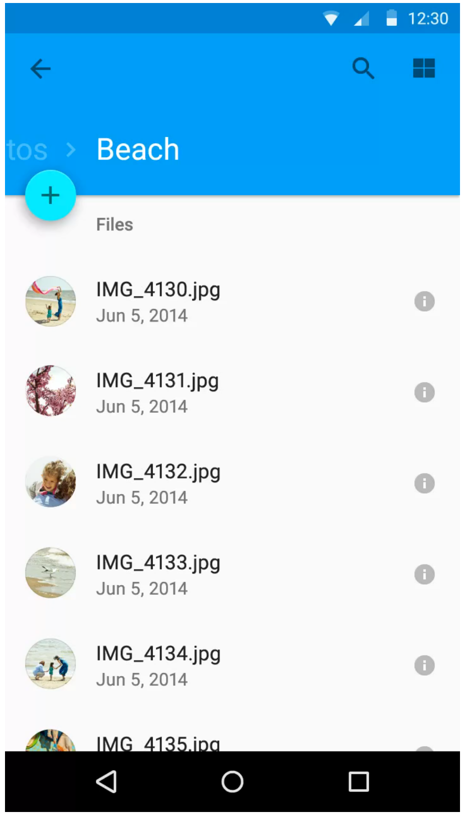


3D world

Material Casts Shadows

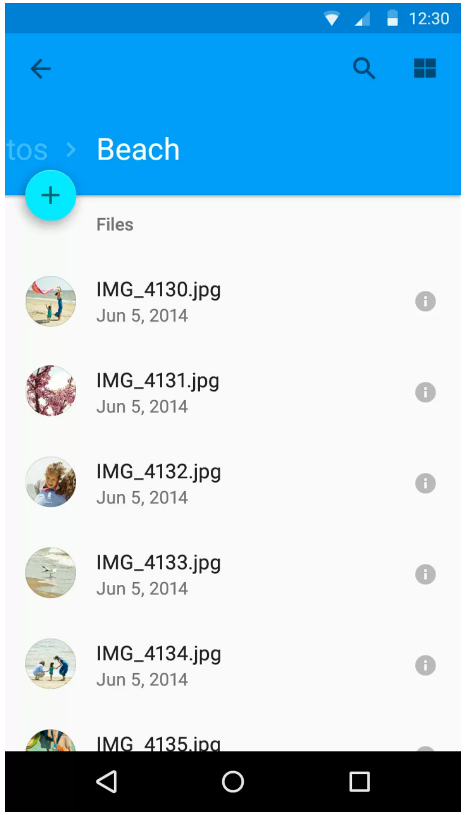


Meaningful Transitions



Do.

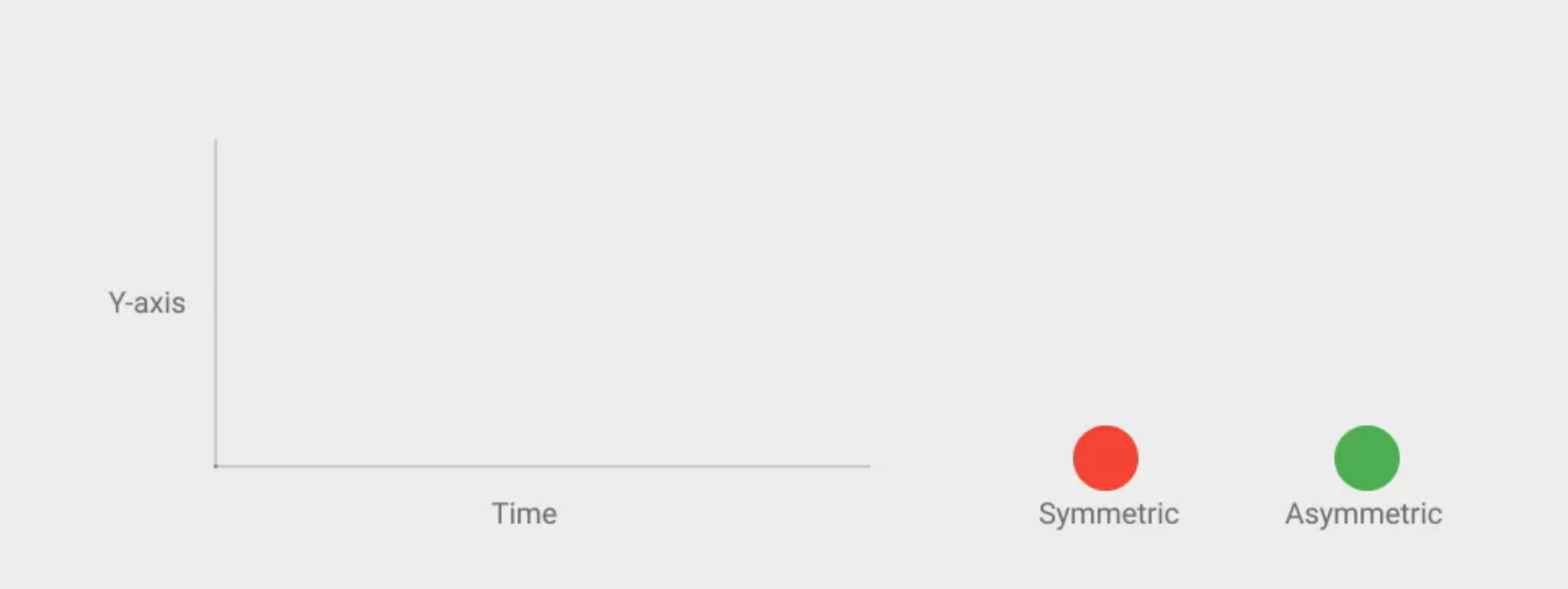
Incoming material elements may expand into view, but content should only fade in.



Don’t.

Hard cuts are jarring and require the user to do all the work in order to understand the transition.

Natural Acceleration and Deceleration



Asymmetric acceleration and deceleration creates a more natural and delightful motion.

Summary

Material is the metaphor

Bold, graphic and intentional

Motion provides meaning

Getting Started

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Overview of Tooling

VisualStudio Code

NodeJS

TypeScript

Angular CLI

Angular CLI

```
npm install –g @angular/cli
ng new my-app
cd my-app
ng serve
```

Angular Material

ng add @angular/material

- Angular Material
- Component Dev Kit (CDK)
- Angular Animations

> “The goal of the CDK is to give developers more tools to build awesome components for the web. This will be especially useful for projects that want to take advantage of the features of Angular Material without adopting the Material Design visual language.”

Angular Team

Angular Material

Install Angular Material and Angular CDK

Import the component modules

Summary

Installed tooling

- VS Code, NodeJS, Angular CLI, TypeScript

Scaffolded an Application

- Got started with Angular Material

Layout Components

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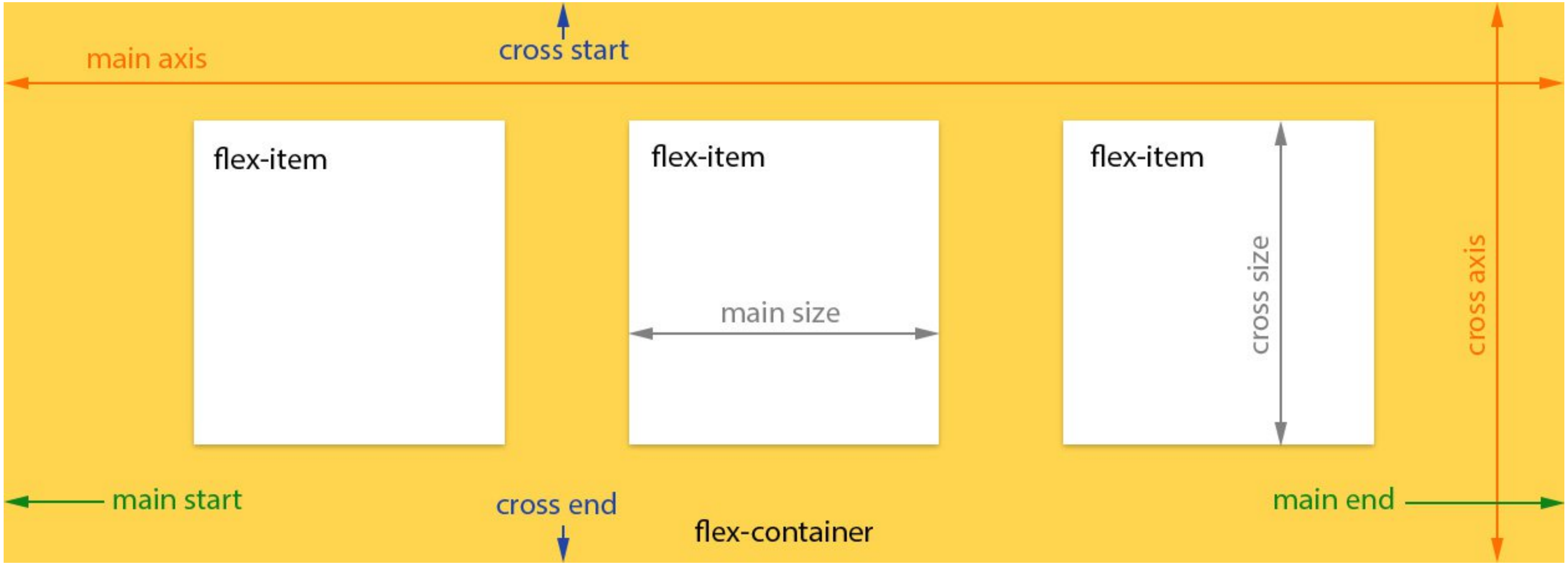
Flex Layout Box Model and Terminology

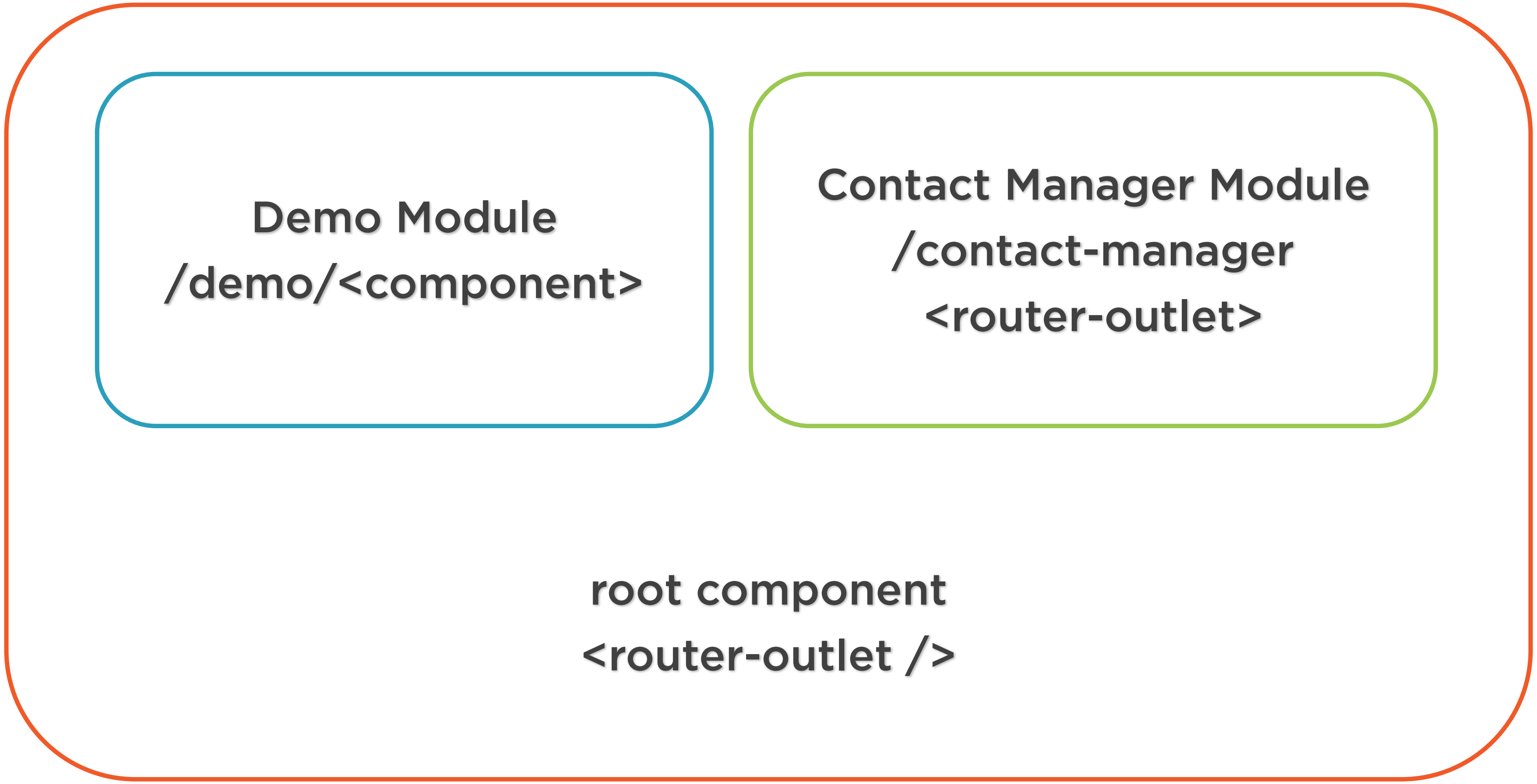


Angular Flex Layout

FlexBox CSS + mediaQuery

Angular version 4.1 and higher

Application Routes

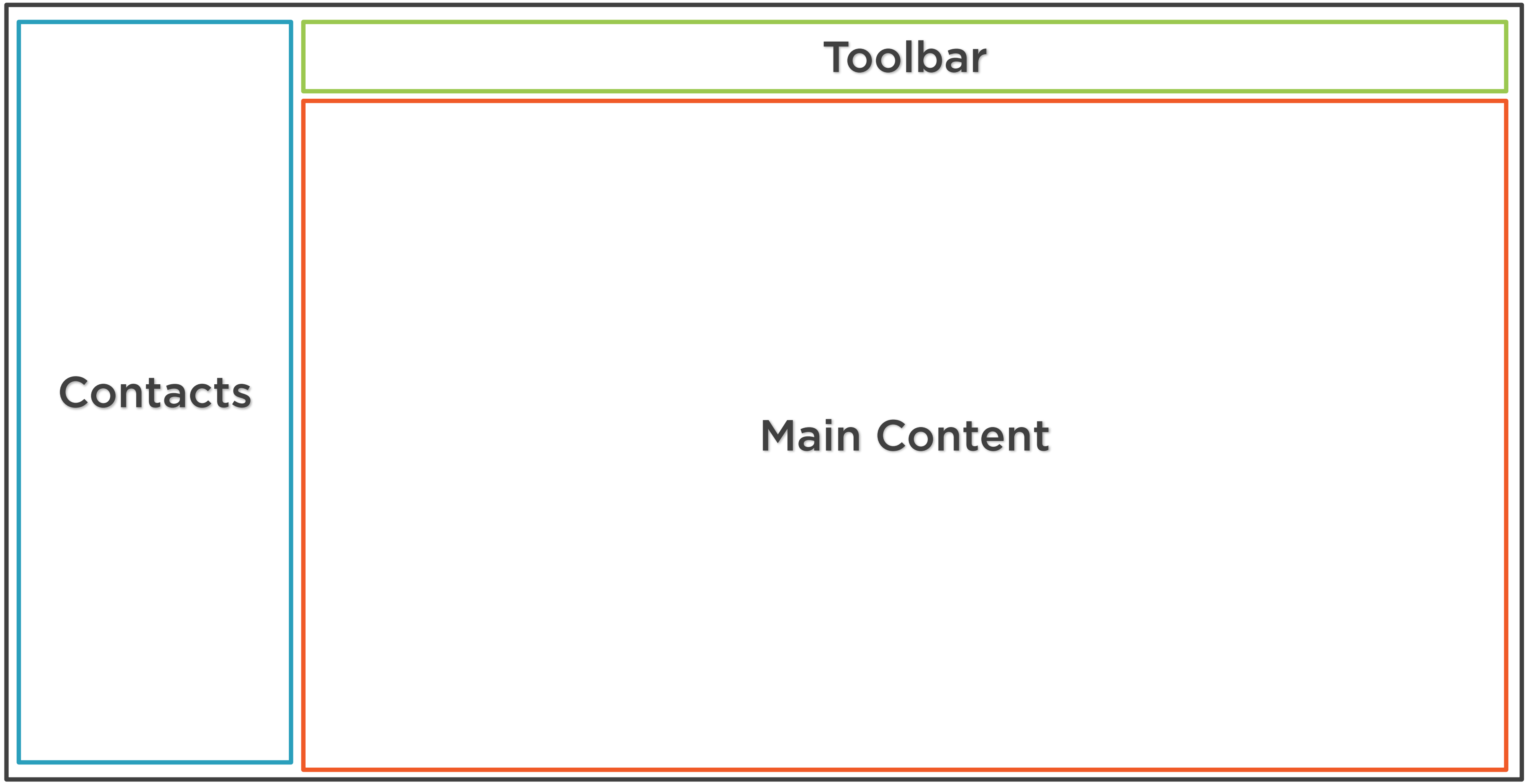


Demo Module
/demo/<component>

Contact Manager Module
/contact-manager
<router-outlet>

root component
<router-outlet />

Contact Manager Layout

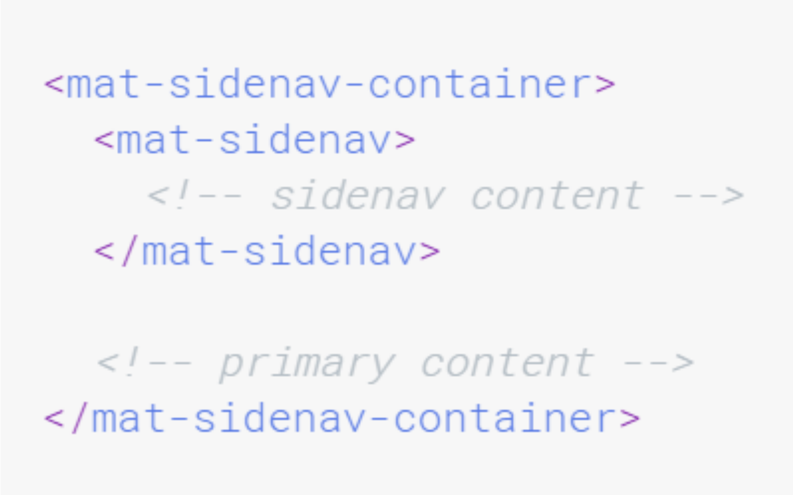


Toolbar

Contacts

Main Content

Sidenav



```
<mat-sidenav-container>
  <mat-sidenav>
    <!-- sidenav content -->
  </mat-sidenav>

  <!-- primary content -->
</mat-sidenav-container>
```

Modes

- Over – Floats over primary content
- Push – Pushes primary content
- Side – Side-by-side with primary content

Breakpoint Observer

Evaluates media queries

- Current viewport
- Changes to the viewport

Summary

Flexbox

- Flexbox CSS + mediaQuery

Sidenav

- Modes: over, push and side

Toolbar

- Container for headers, titles or actions

Media queries

- BreakpointObserver

Displaying Real Data

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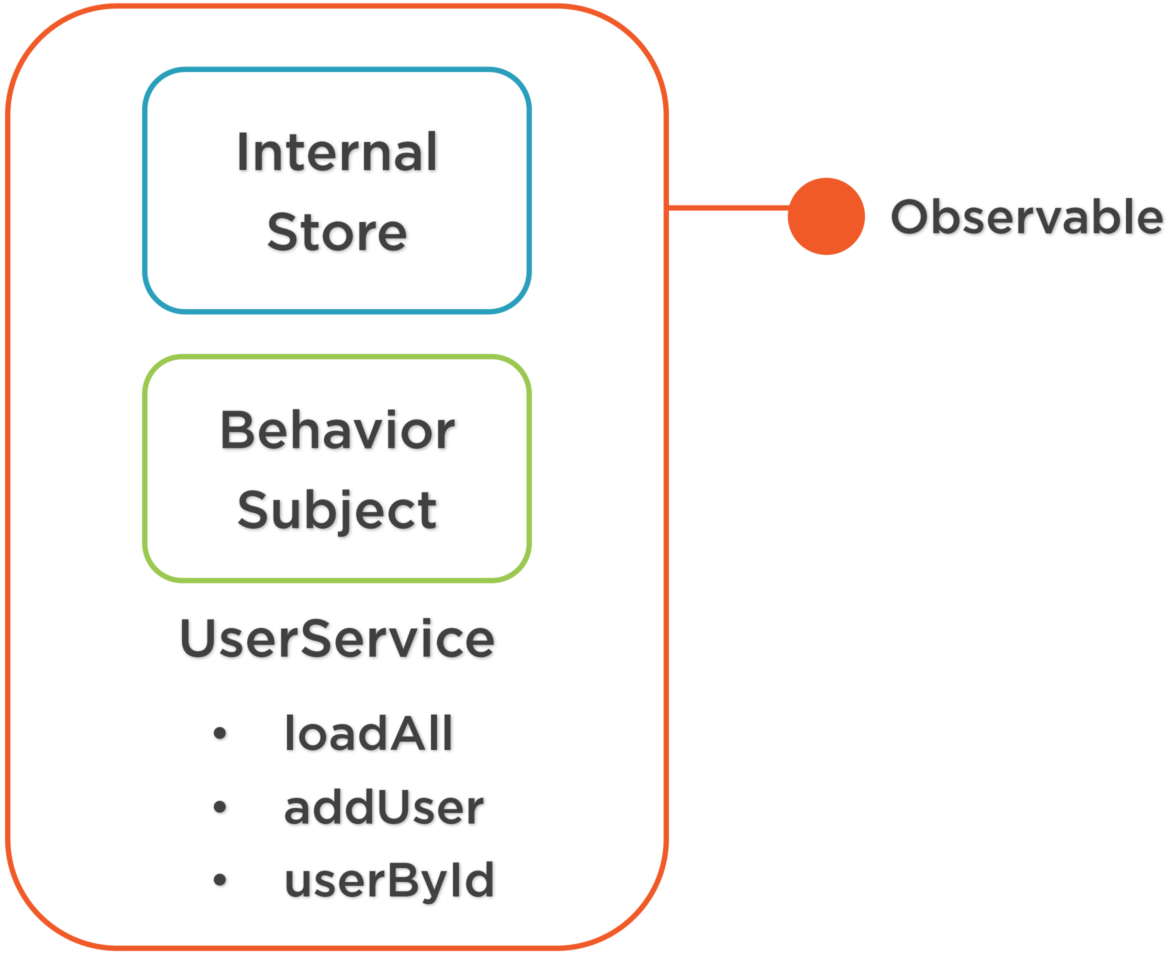
Data Service



Internal Store

Behavior Subject

UserService

- loadAll
- addUser
- userById

Observable

Data Structure

```
User:
{
    id: number,
    birthDate: Date
    name: string,
    avatar: string,
    bio: string
    notes: Note[]
}
```

```
Note:
{
    id: number
    title: string,
    date: Date
}
```

https://angular-material-api.azurewebsites.net/users

SVG Icons

Register with MatIconRegistry

Register once

- app.component.ts

XSS vulnerabilities

- DomSanitizer

Summary

User Service

- Internal store
- BehaviorSubject
  - asObservable()

Registering Icons

- MatIconRegistry
- DomSantizer

Card

```
<mat-card>

  <mat-card-header>
    <mat-card-title>…</mat-card-title>
    <mat-card-subtitle>…</mat-card-subtitle>
  </mat-card-header>

  <mat-card-content>
    …
  </mat-card-content>

  <mat-card-actions>
    …
  </mat-card-actions>

</mat-card>
```

Using Data Tables

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mat-table

Pagination

- <mat-paginator>

Sorting

- matSort, mat-sort-header

Filtering

Passing Data

Array

Observable stream

DataSource

Summary

<mat-table> features

- Pagination
- Sorting
- Filtering

MatTableDataSource

- Set sort and paginator in ngAfterViewInit

Dialogs and Popups

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MatDialog

```
let dialogRef = dialog.open(
    UserProfileComponent,
    {
        height: '400px’,
        width: '600px’,
    });
```

MatDialog

```
dialogRef.afterClosed().subscribe(result => {
  console.log(`Dialog result: ${result}`); // Pizza!
});

dialogRef.close('Pizza!');
```

MatDialog

```
@Component({/* ... */})
export class YourDialog {

constructor(public dialogRef: MatDialogRef<YourDialog>) { }

  closeDialog() {
    this.dialogRef.close('Pizza!’);
  }
}
```

Dialog Content

```
<h2 mat-dialog-title>Delete all</h2>
<mat-dialog-content>Are you sure?</mat-dialog-content>
<mat-dialog-actions>
  <button mat-button mat-dialog-close>No</button>
  <!-- Can optionally provide a result for the closing dialog. -->
  <button mat-button [mat-dialog-close]="true">Yes</button>
</mat-dialog-actions>
```

Summary

MatDialog Service

- Returns a handle: MatDialogRef

MatSnackBar

- Returns a handle: MatSnackBarRef
- Exposes an onAction() observable

Wrapping Up

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Theming Angular Material

Primary palette

- Widely used

Accent palette

- Interactive elements

Warn palette

- Error states

Foreground palette

- Text and icons

Background palette

- Element backgrounds

Prebuilt Themes

Applying a theme

- styles.css / styles.scss

@angular/ material/prebuilt-themes

- deeppurple-amber.css
- indigo-pink.css
- pink-bluegrey.css
- purple-green.css

Custom Themes

Imports the mat-core() sass mixin

- Includes all common styles
- styles.css / styles.scss

Defines a theme data structure

- Composes multiple palettes
- mat-light-theme or mat-dark-theme

Custom Theme

```scss
@import '~@angular/material/theming’;
@include mat-core();

$candy-app-primary: mat-palette($mat-indigo);
$candy-app-accent: mat-palette($mat-pink, A200, A100, A400);

$candy-app-warn: mat-palette($mat-red);

$candy-app-theme: mat-light-theme(
  $candy-app-primary,
  $candy-app-accent,
  $candy-app-warn);

@include angular-material-theme($candy-app-theme);
```

Summary

Theming

- Prebuilt themes
- Custom themes
  - Import mat-core()
  - Defines a theme data structure
  - Multiple themes

Direction

- Bind dir attribute (RTL / LTR)

Final words.