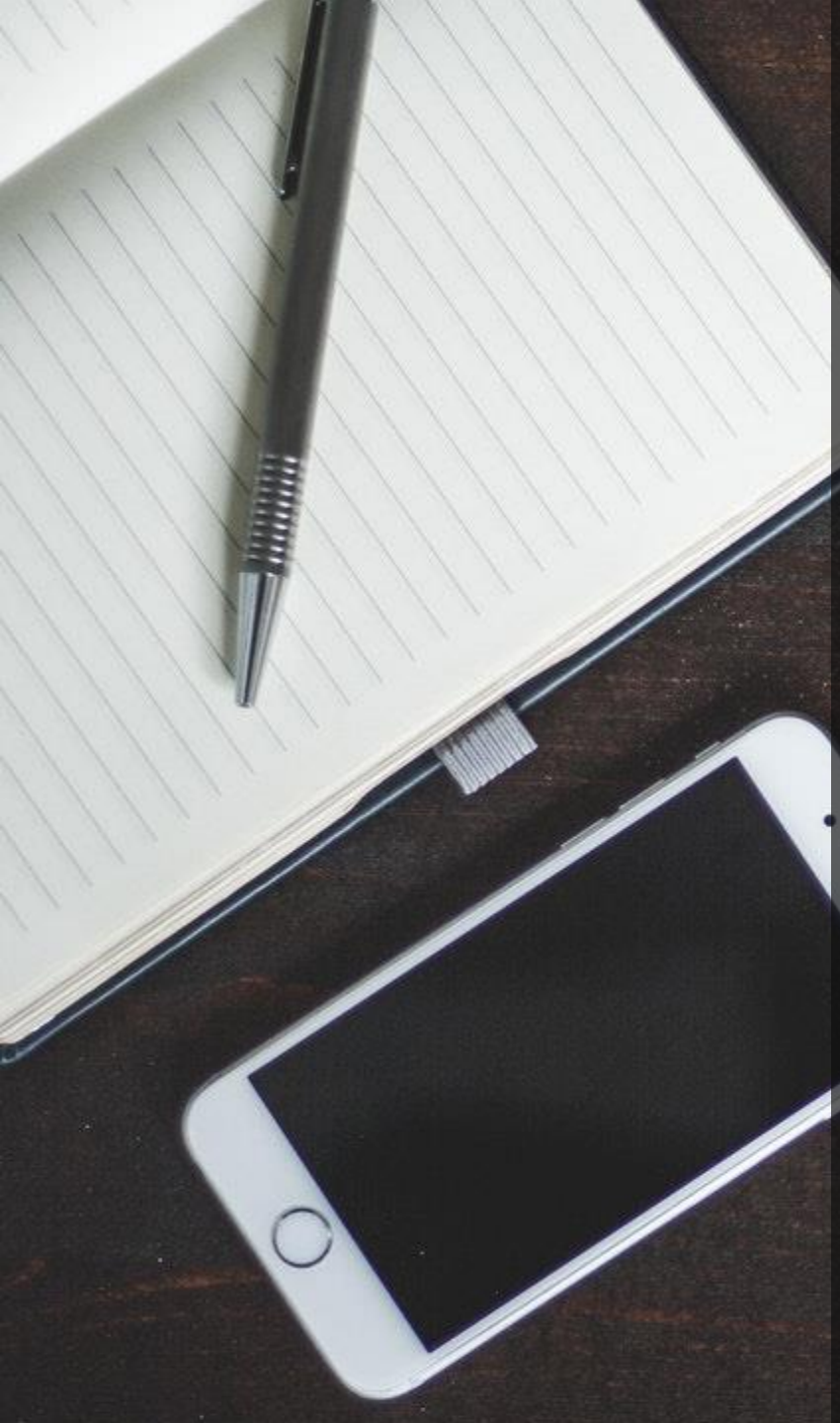

Progressive Web Apps

A Technical Seminar

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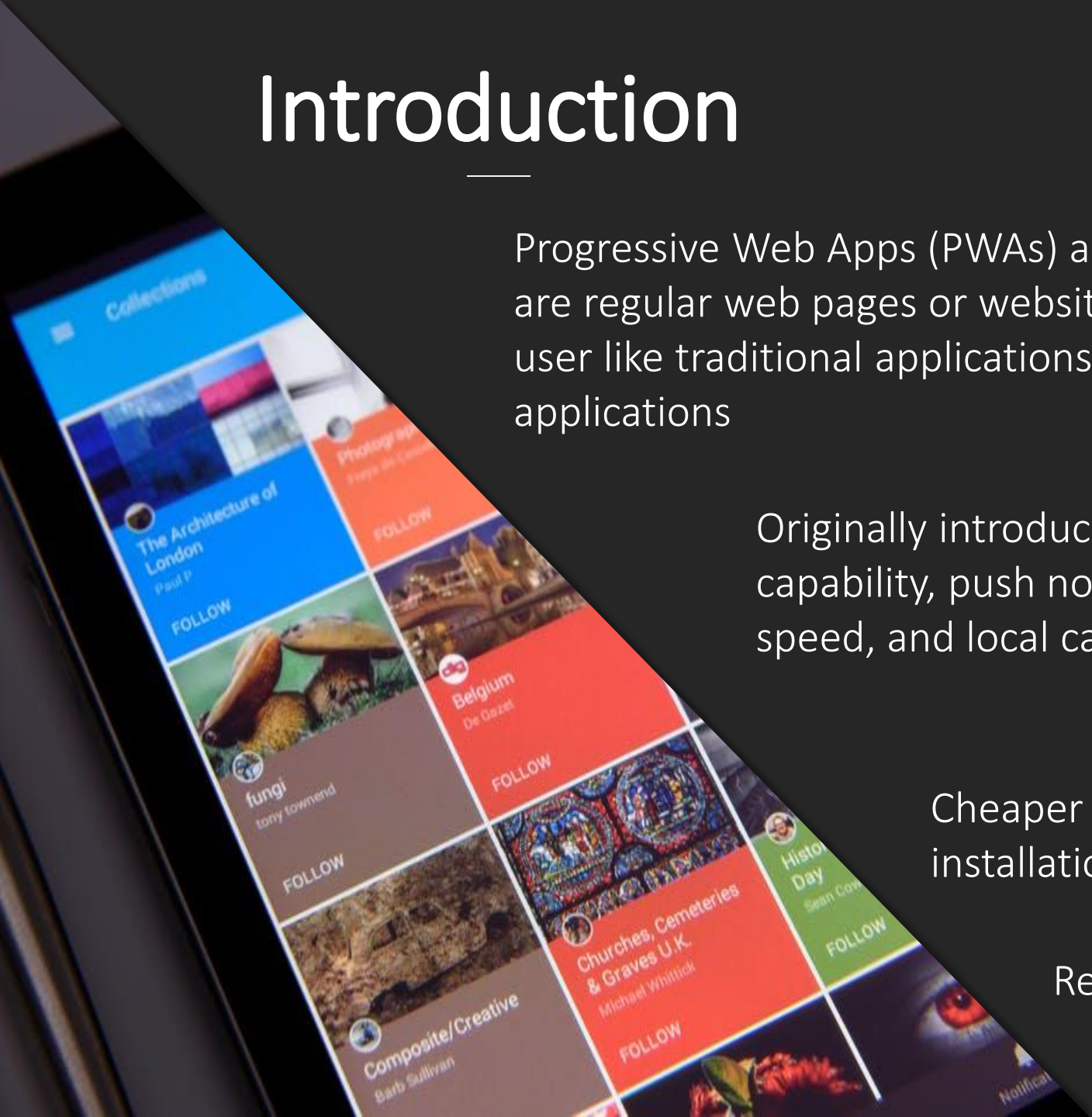
Agenda

- Abstract
- Introduction
- Existing Methods & Problem Statement
- Architecture
- Results and Discussions
- Conclusion
- References

Abstract

- Web Applications are described as **cross-platform**
- They are accessible from a wide range and variety of devices
- Majority of visitors use a smartphone to access websites.
- Web apps don’t provide the experience of a native app installed on a phone
- **Progressive Web Apps** are web apps that are designed to behave like a **native app**

Introduction



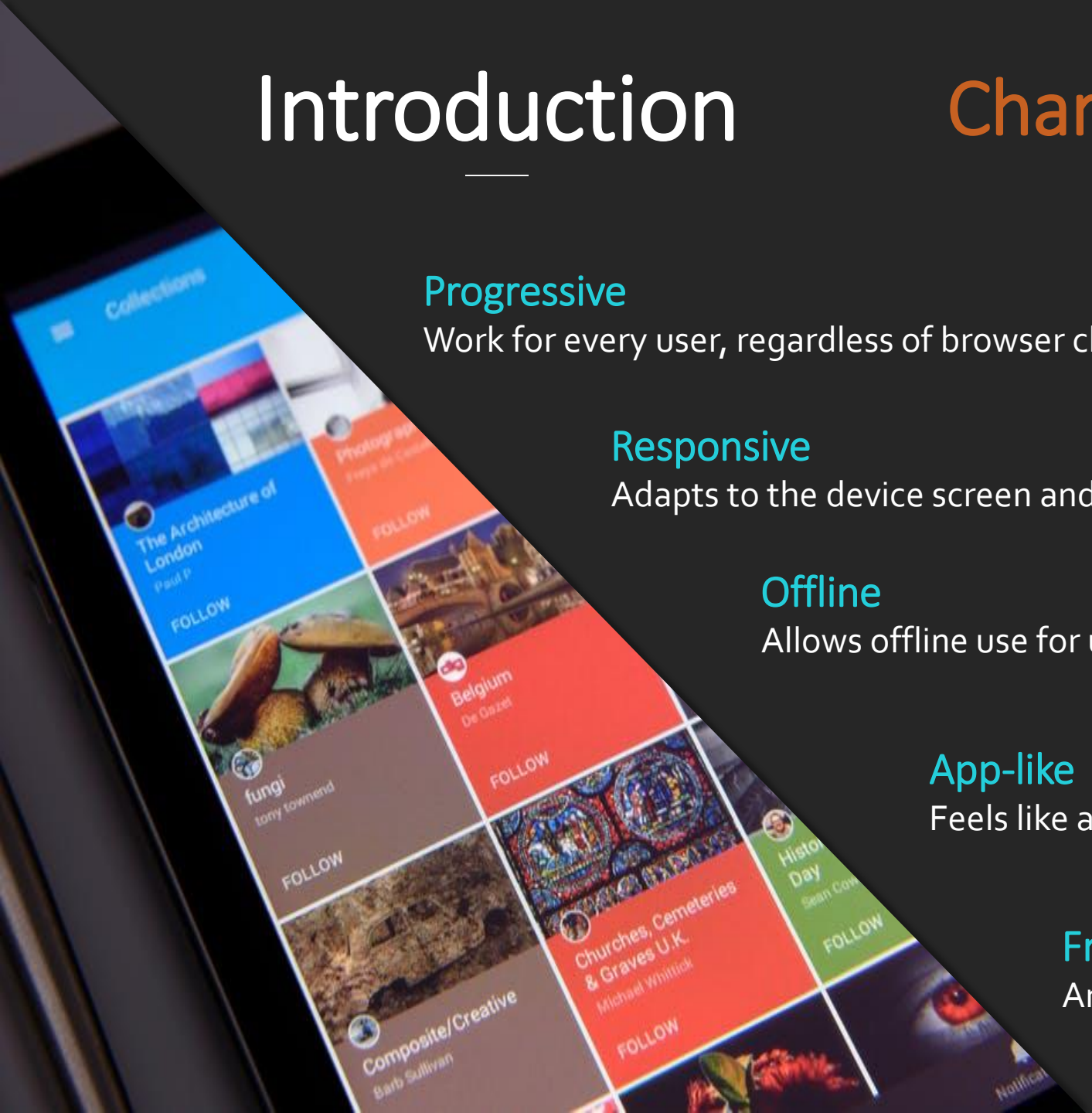
Progressive Web Apps (PWAs) are web applications that are regular web pages or websites, but can appear to the user like traditional applications or native mobile applications

Originally introduced by Google in 2005, it supports offline capability, push notifications, an almost native app look and speed, and local caching of resources

Cheaper to build, less learning curve, no device installation required

Requires no knowledge of app development

Introduction



Characteristics of PWAs

Progressive
Work for every user, regardless of browser choice

Responsive
Adapts to the device screen and auto-fits the contents

Offline
Allows offline use for users with low network connectivity

App-like
Feels like an app that was installed from PlayStore

Fresh and updated
Any changes in content should immediately be reflected

Existing Methods

- The Web has shifted from static to dynamic pages and implements responsive design
- Web apps initially failed in comparison to native apps
- Native apps provide better user experience and boot faster than web apps that take time to load
- Enhancements and developments in HTML5, CSS3 and JavaScript frameworks significantly made web apps more viable.

Problem Statement

- Developers need to create different apps for different platforms
- They often need to create two mobile apps, one for Android and another for iOS
- Developing multiple apps requires hiring multiple developers and this increases production cost
- Introducing new features or updates requires development and updating all apps
- Maintaining multiple apps can introduce out-of-sync changes with other platforms
- Platform-dependency may also introduce limitations on app features

Architecture

Service Worker

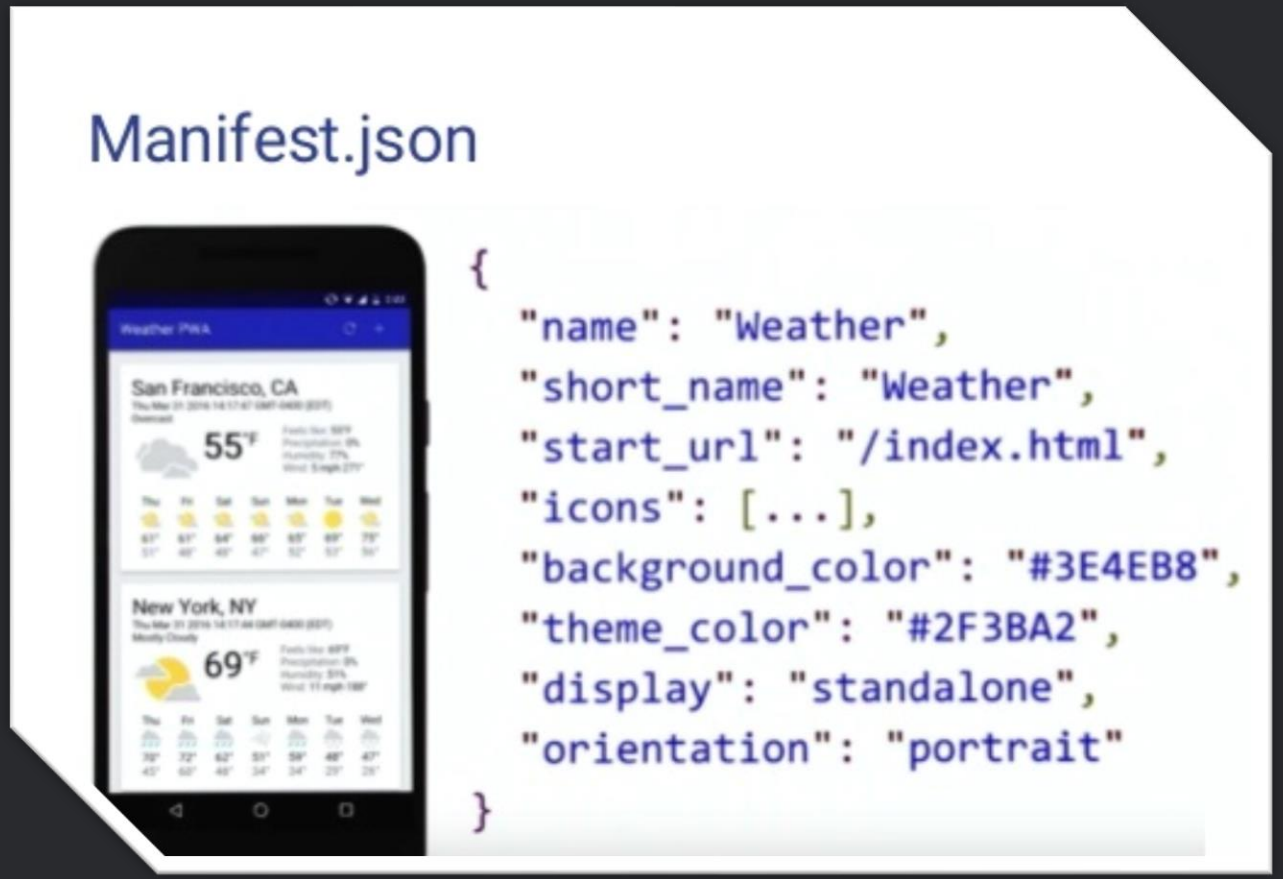
A Service Worker is a JavaScript file that acts as a middleman between the web app and the network.

Service workers allow developers to use features such as push notifications and offline functionality

It can provide cache services, speed the app rendering, and improve the user experience

Architecture

App Manifest



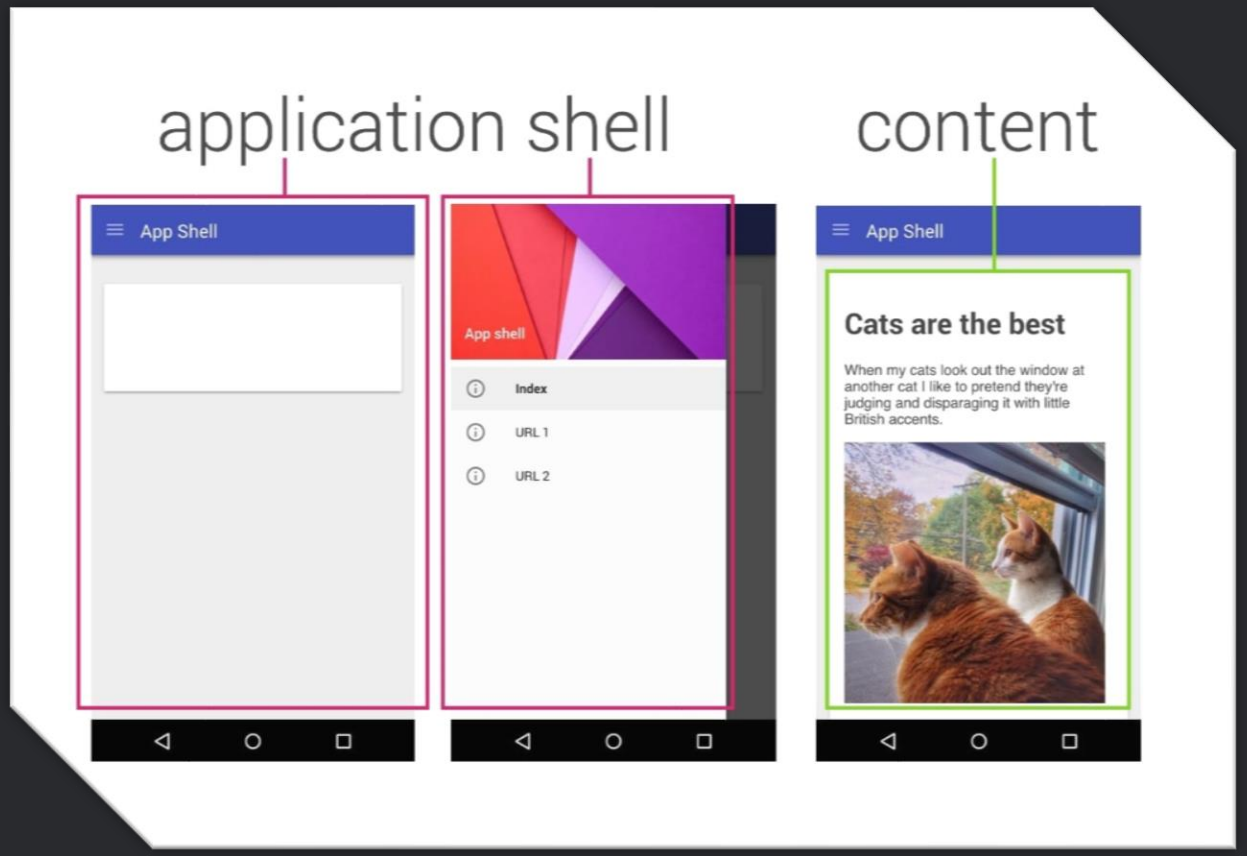
The App Manifest is a JSON file that you can use to provide the device information about your Progressive Web App

This file will tell the device how to set:

- The name and short name of the app
- The icons' locations, in various sizes
- The starting URL, relative to the domain
- The default orientation
- The splash screen

Architecture

App Shell

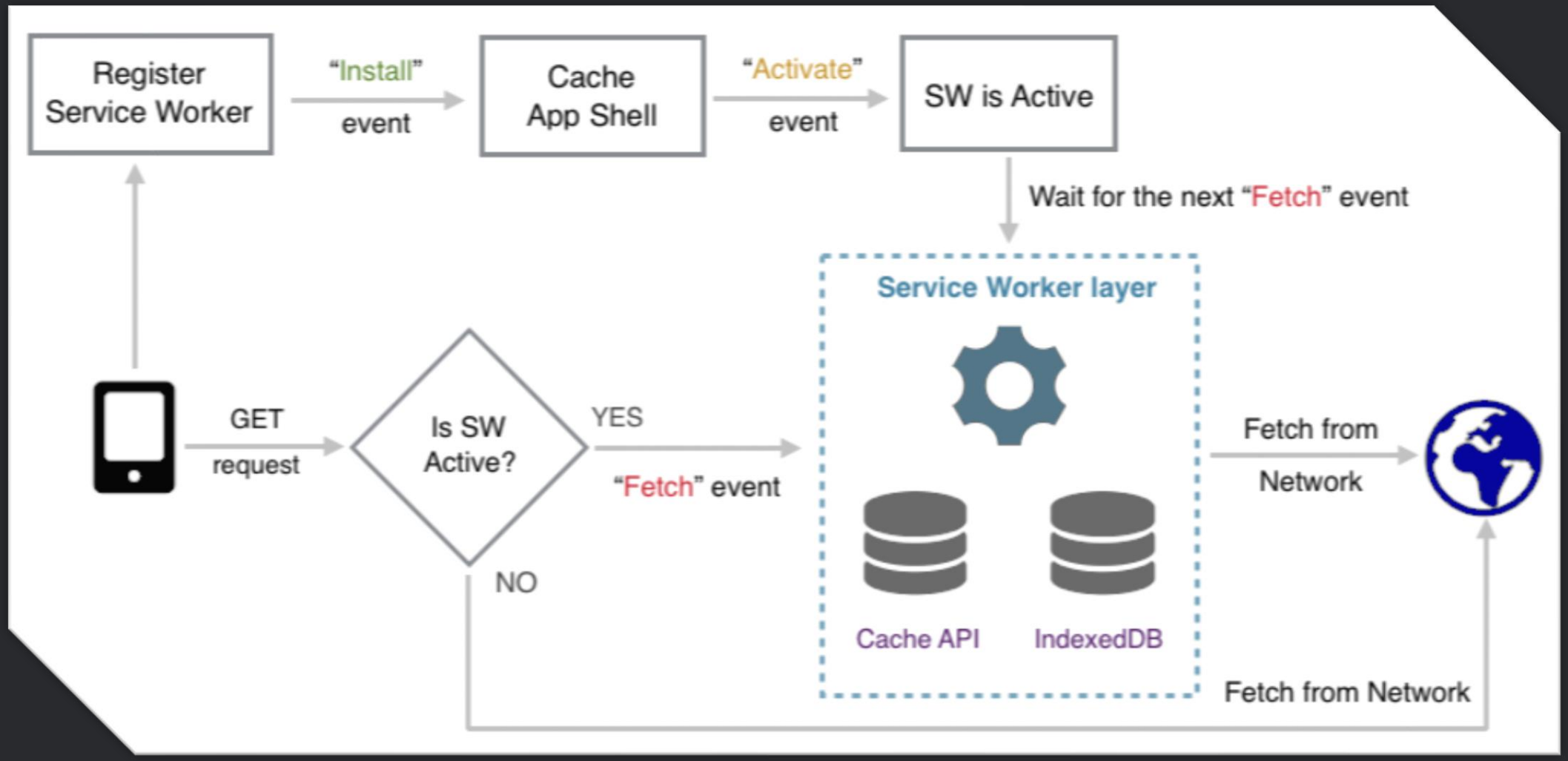


The App Shell loads and renders the web app container first, and the actual content shortly after, to give the user a nice app-like impression.

Service Workers store the Basic User Interface or "shell" of the responsive web design web application

The Shell provides an initial static frame, a layout or architecture into which content can be loaded dynamically

Overall Architecture



Advantages & Disadvantages

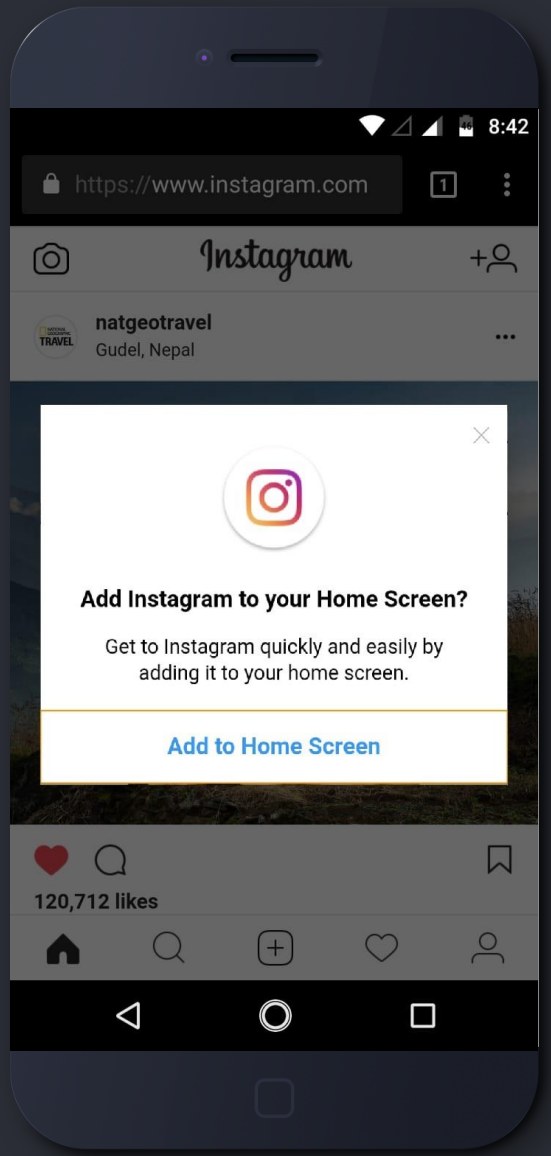
ADVANTAGES

- PWA are lighter and are usually in Kilobytes
- No native platform code, as apps run on browser
- Updated content is readily available and doesn't require installation
- Cross-platform and developed using web technologies

DISADVANTAGES

- Except Chrome, many browsers don't fully support PWA
- Limited to Android devices, not available on iOS
- Not available on PlayStore, and are installed by visiting web page
- Maybe unsafe, fraudulent and harmful

Results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natgeotravel Photo by @renan_ozturk // A quiet moment harvesting wheat below the Himalaya during the @natgeo #thelasthoneyhunter more

Conclusion

Progressive Web Apps are the future of web development technologies and methods that allow us to perform our tasks on web browsers instead of our traditional native apps on mobile platforms.

PWA in brief:

Reliable Fast loading and works offline

Fast Smooth Animations, jerk free scrolling and seamless navigation even on flaky networks

Engaging Launched from home screen and can receive push notification

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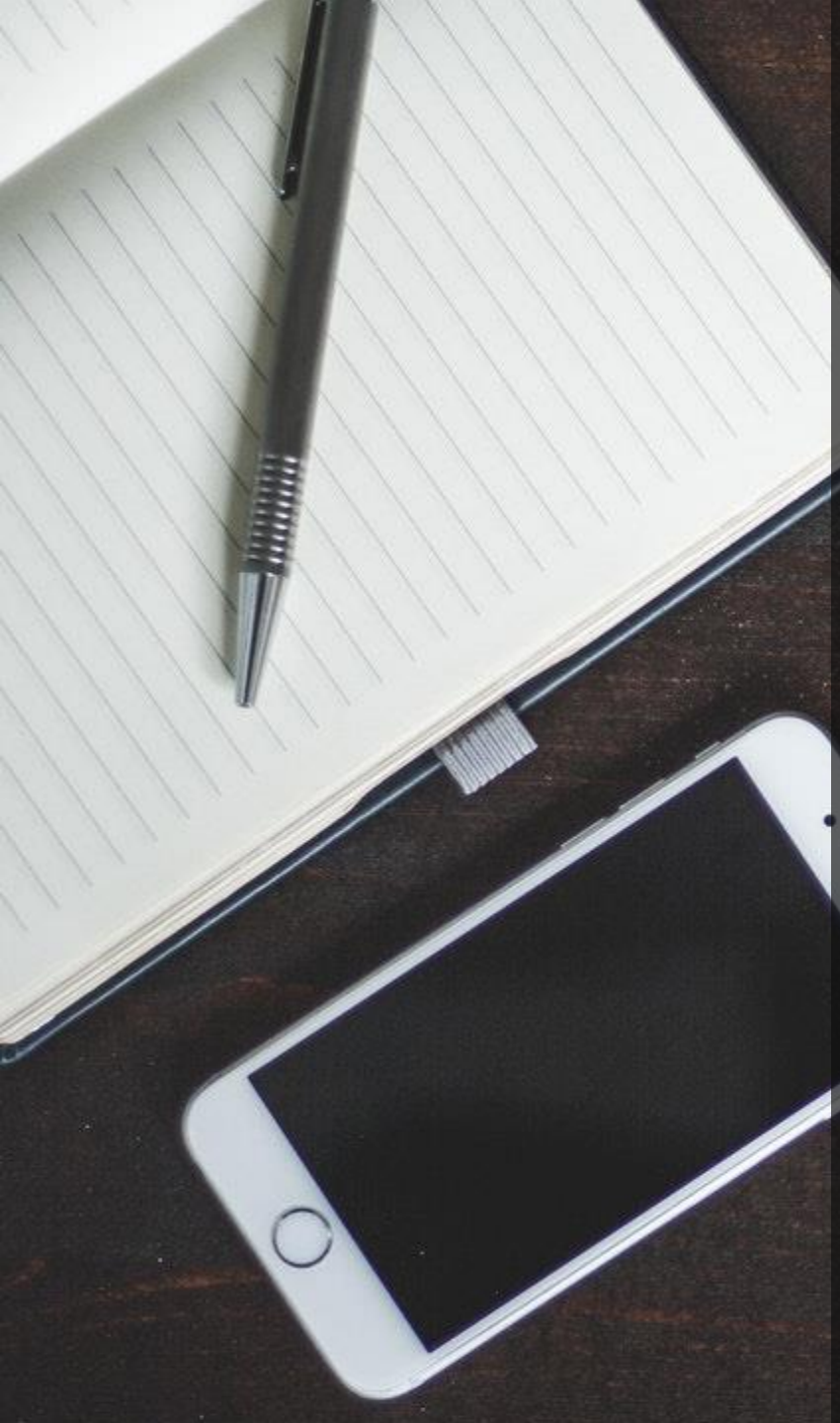

Thank You

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