

Mobile Cross-Platform Development from a Progressive Perspective



Web App



Progressive
Web App



NativeScript
App




“Progressive”
NativeScript App

Progressive Web Apps

What makes the difference?





“Progressive Web Apps bring features we expect from native apps to the mobile browser experience in a way that uses standards-based technologies” (3)

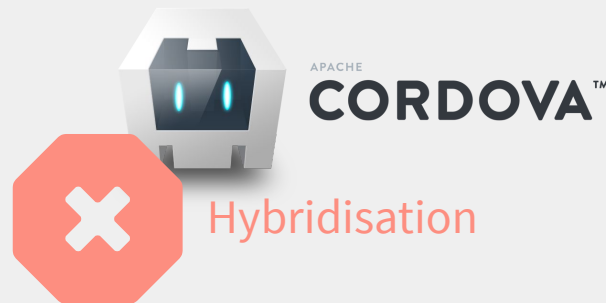


Emergence

No atomic innovation but generic term for characteristics of innovative web apps

Emergence of new standards

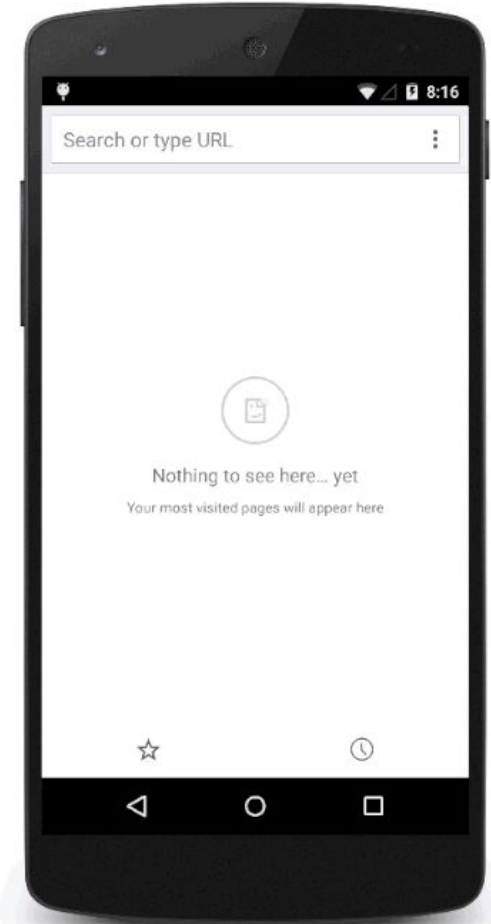
- usage of native features
- allows for enhanced user experience





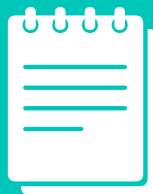
Example

Add to home screen





Web App



**Progressive
Web App**



Web App



IDENTIFY



Progressive
Web App



Characteristics



Network independent



Safe



Re-engageable



Installable



Discoverable



Linkable



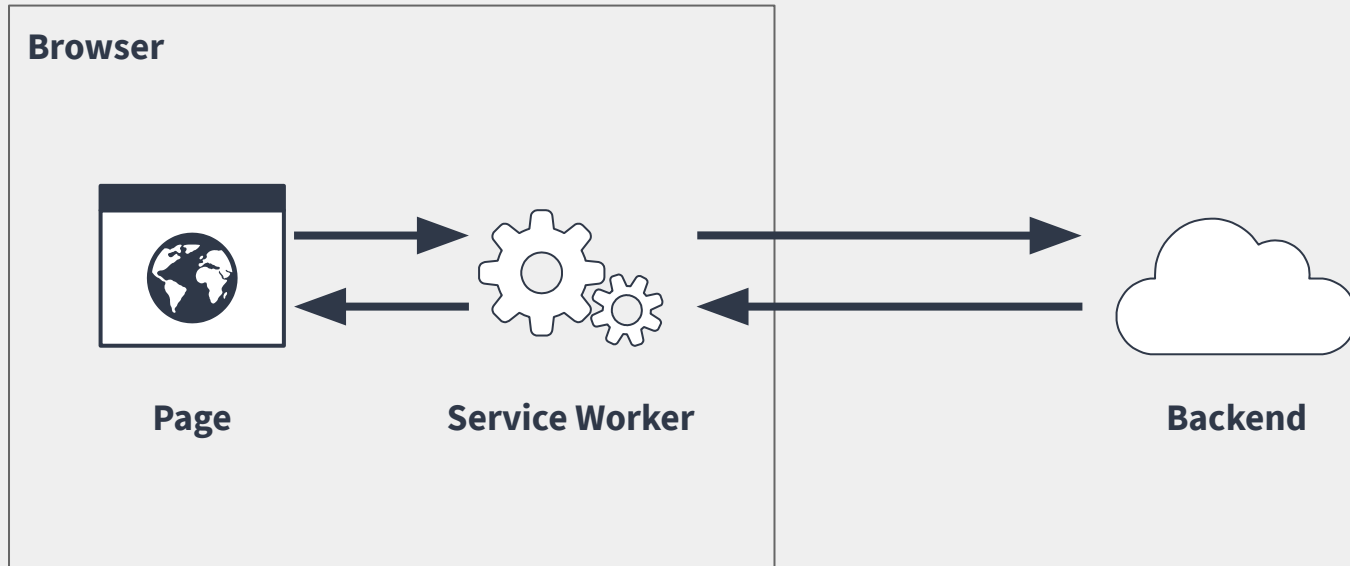
Responsive



Progressive

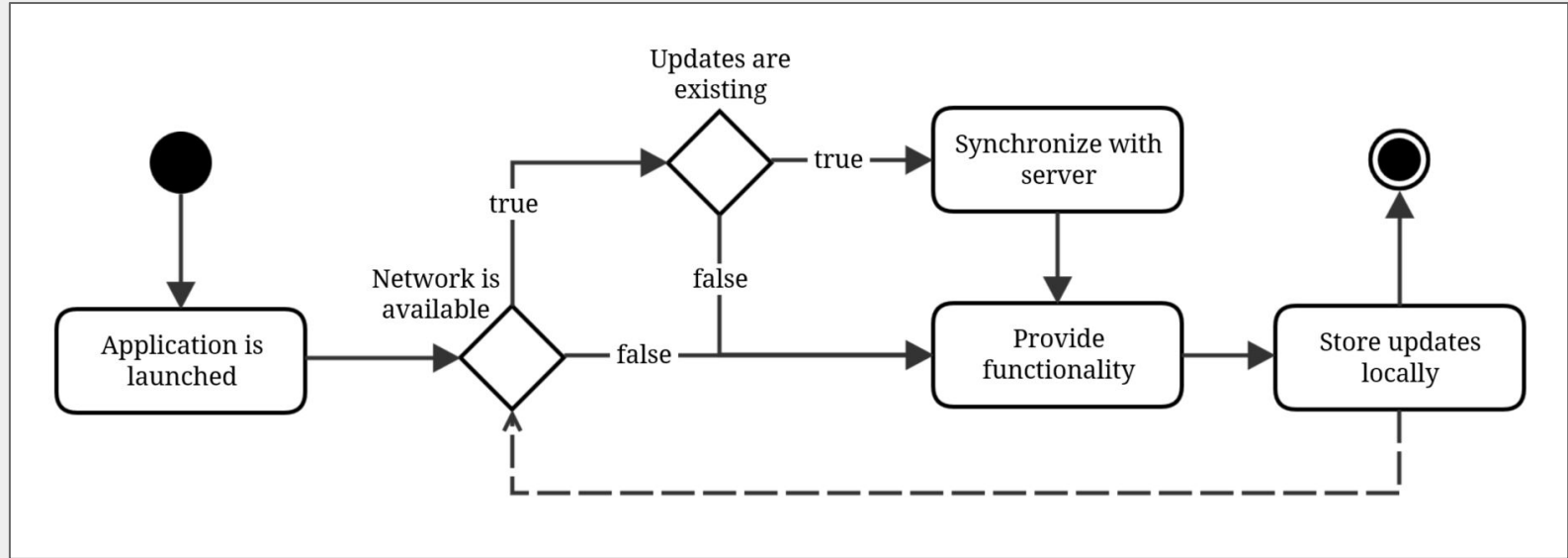


Service Workers





Offline Workflow





Characteristics



Caching

Service worker

Network independent

Synchronisation

Offline-capable
workflow



Safe



Re-engageable



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Push notifications

Re-engageable

Bring users back



Installable



Discoverable



Linkable



Responsive



Progressive

Application Shell





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Secure
communication

Safe

HTTPS



Push notifications

Re-engageable

Bring users back

Icon on home
screen



Installable

Application shell



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Bring users back

Icon on home
screen



Installable

Application shell

Web-App
manifest



Discoverable

Identification of
apps



Linkable



Responsive



Progressive



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screen

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Application shell



Web-App
manifest

Discoverable

Identification of
apps

Enter at any point



Linkable

Simple
forwarding

No installation
required



Responsive



Progressive



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Mobile first

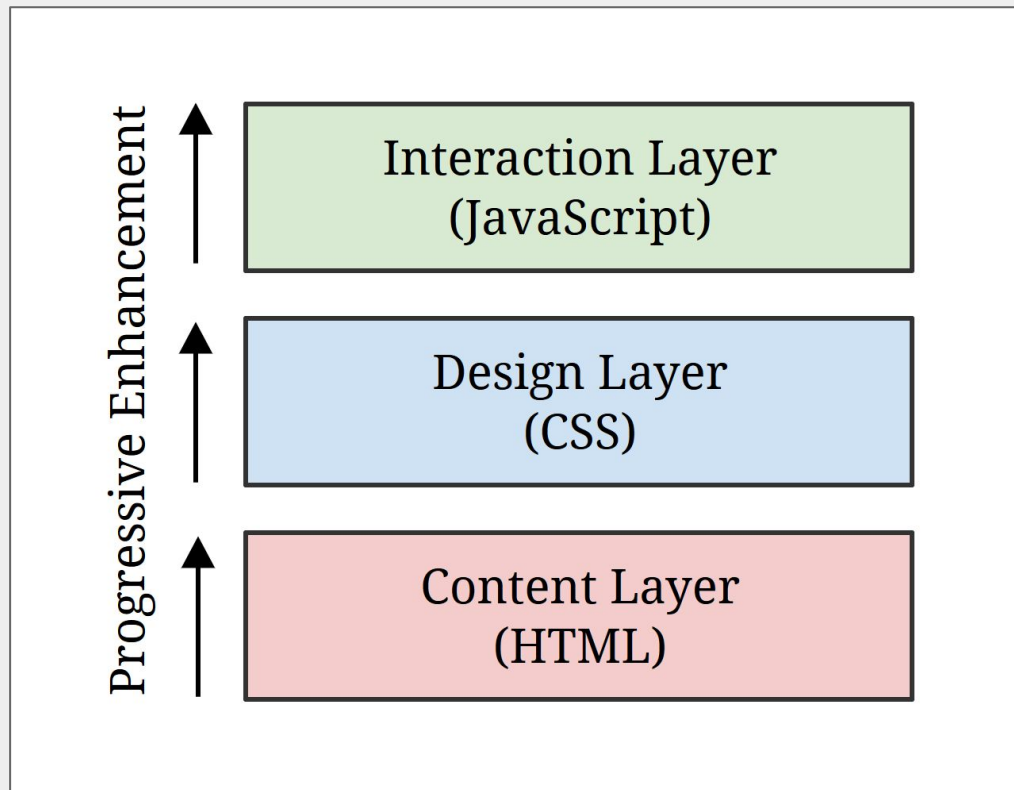
Responsive

Acceptable presentation
anywhere



Progressive

Progressive Enhancement





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Web App



Progressive
Web App



Mobile App





Web App



Progressive
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NativeScript
App



“Progressive”
NativeScript App

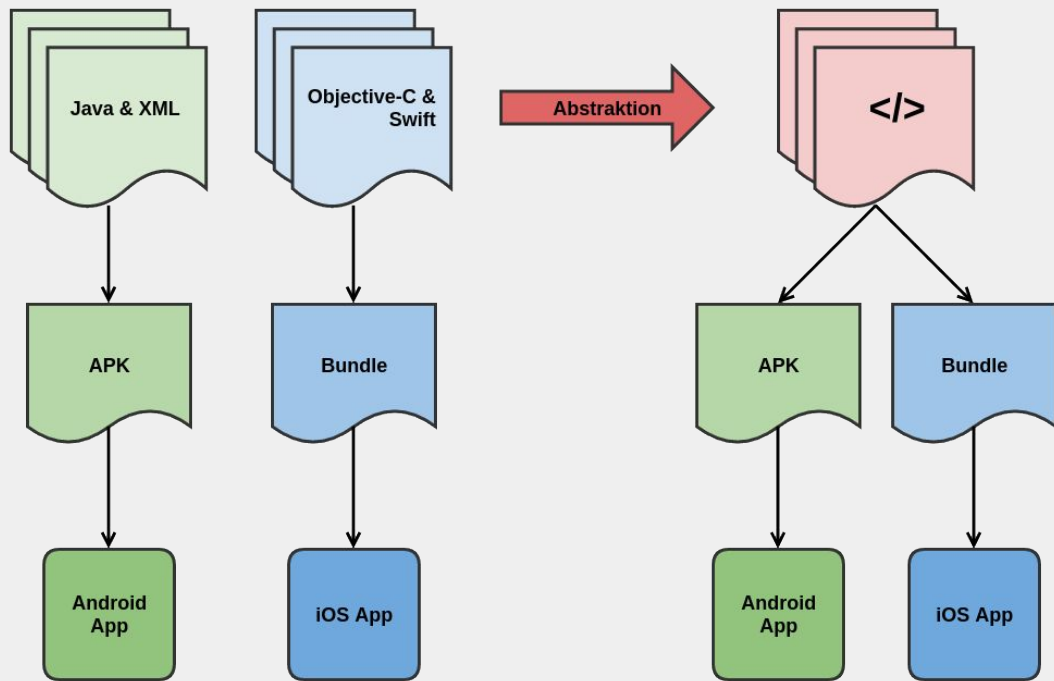
Cross-Platform Development with NativeScript

Where are we coming from?





Cross-Platform Development



Abstraction

Reusability

Develop as abstract as possible

while

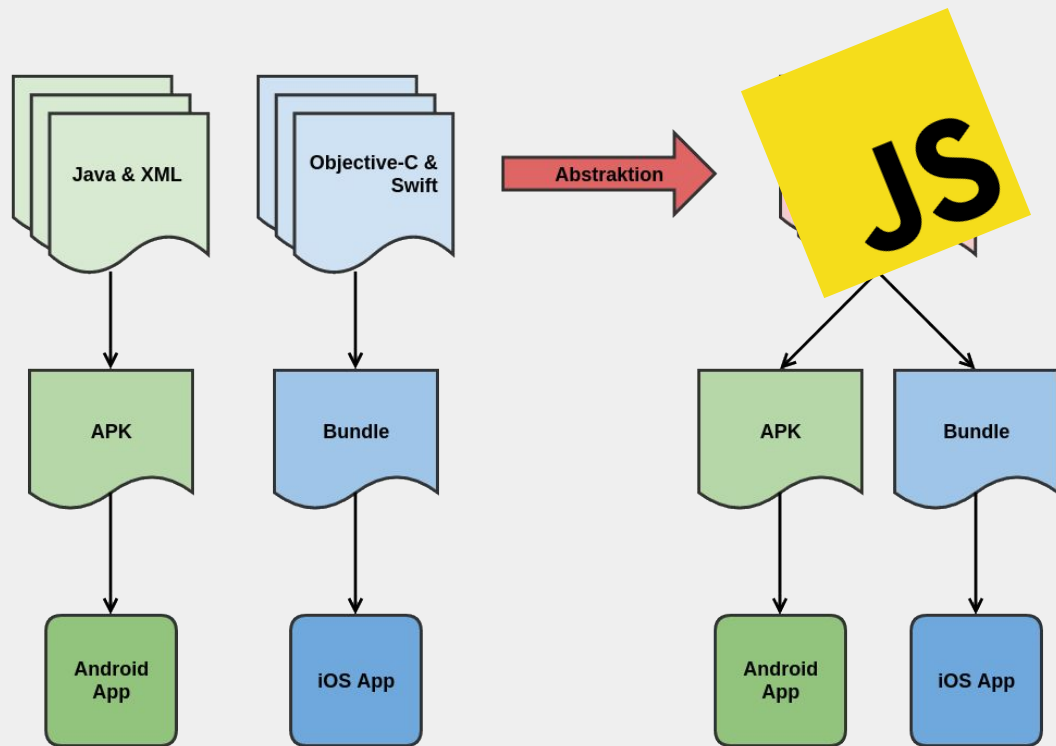
delivering ideally native results

User Experience

Performance



Cross-Platform Development



Abstraction

Reusability

Develop as abstract as possible

while

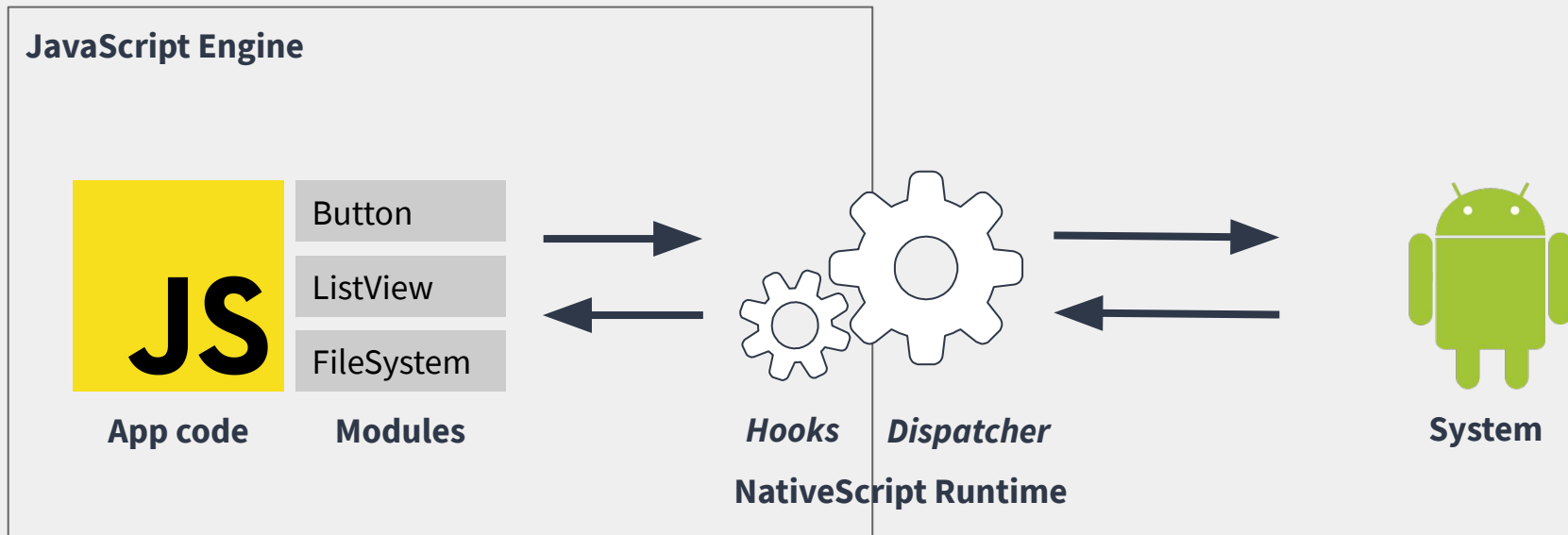
delivering ideally native results

User Experience

Performance

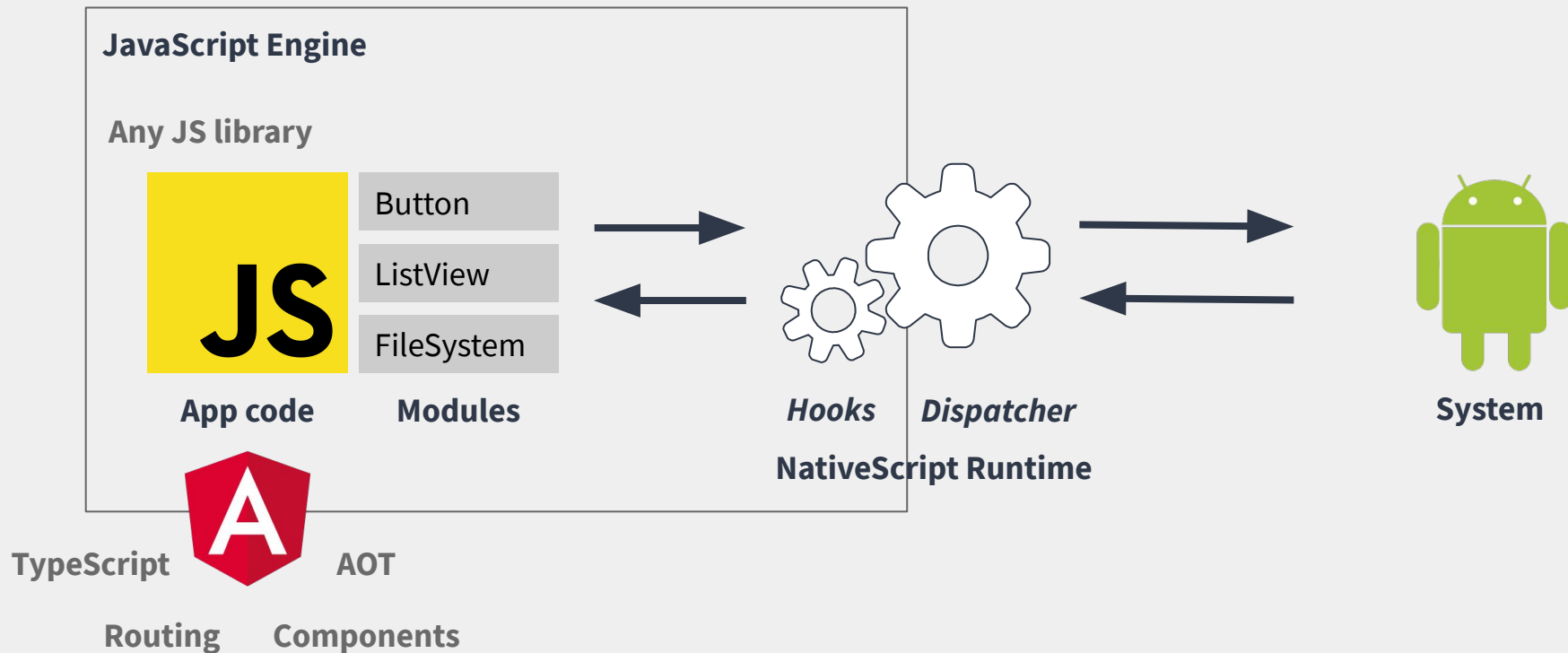


NativeScript



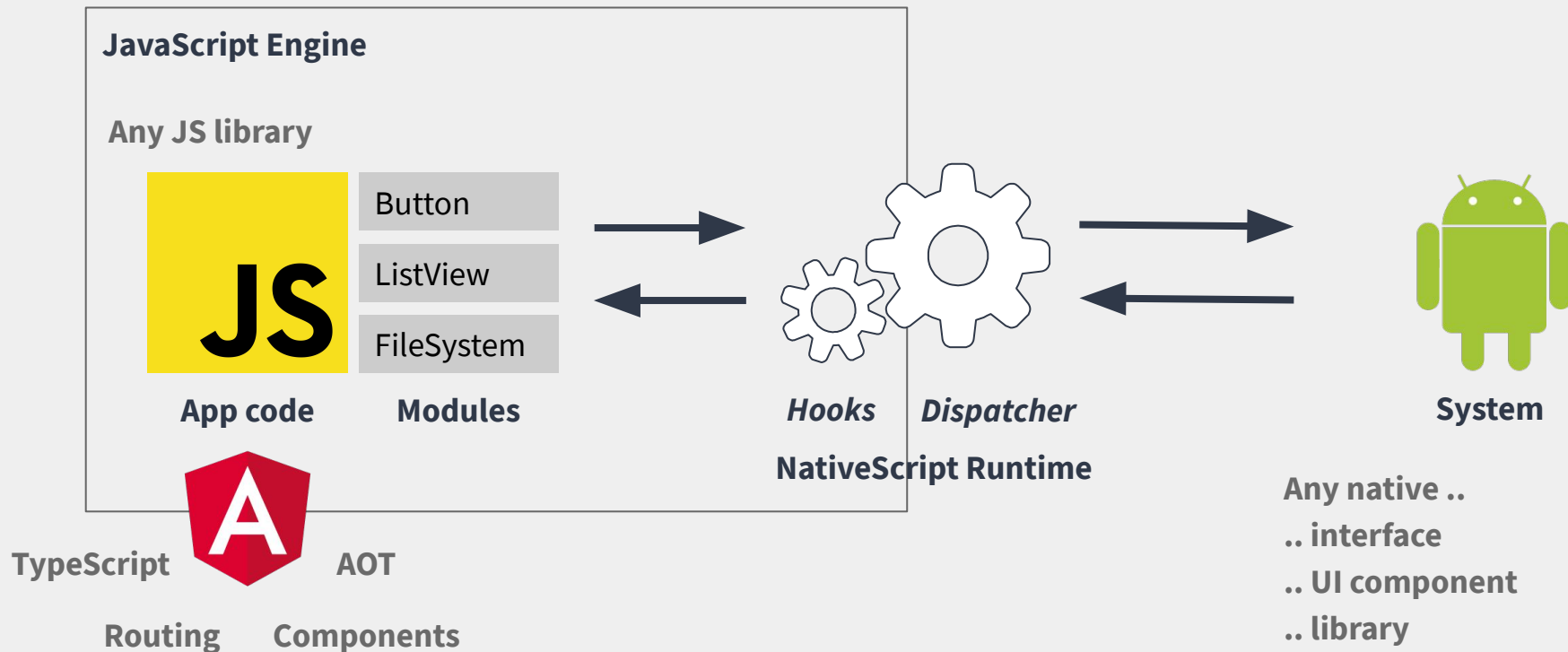


NativeScript



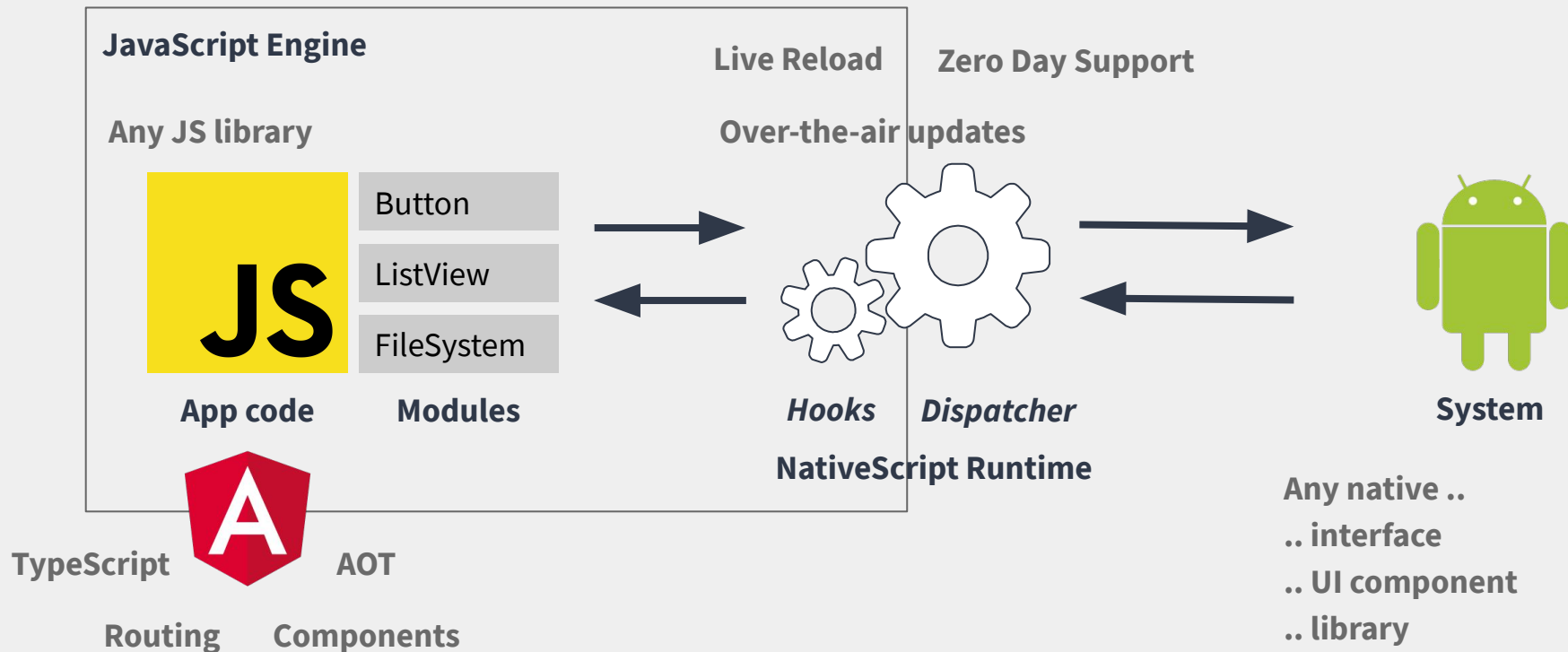


NativeScript



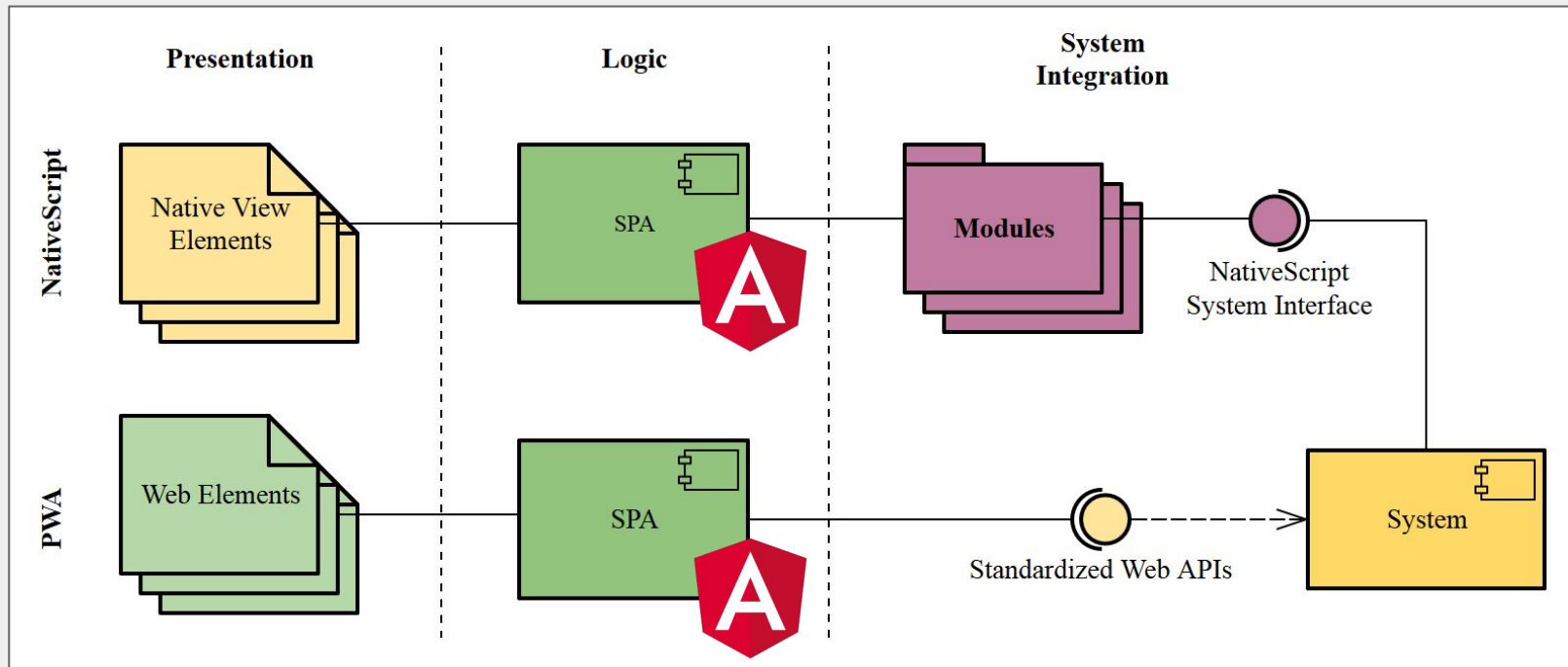


NativeScript





Architectural Considerations





Web App



Progressive
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NativeScript
App



TRANSFER



“Progressive”
NativeScript App

Criteria

What's assessable?





Criteria



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Bring users back



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Secure
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Security

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Application shell



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Web-App
manifest

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Identification of
apps



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Launch screen

Marketability

Metadata



Criteria



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Launch screen

Marketability

Metadata

Enter at any point



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Responsive

Acceptable presentation
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Progressive
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Integration of platform
mechanisms

Responsiveness

Acceptable presentation
anywhere

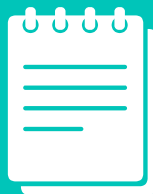


Progressiveness

Acceptable execution
anywhere



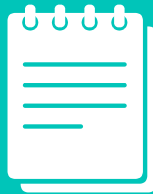
Web App



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ASSESS



“Progressive”
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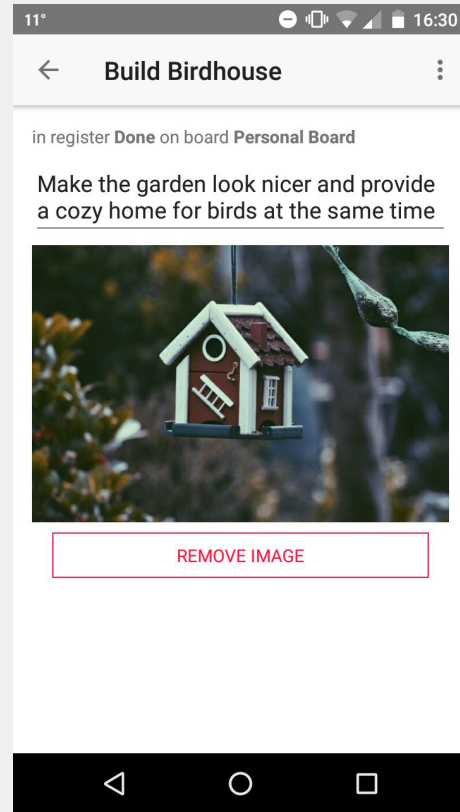
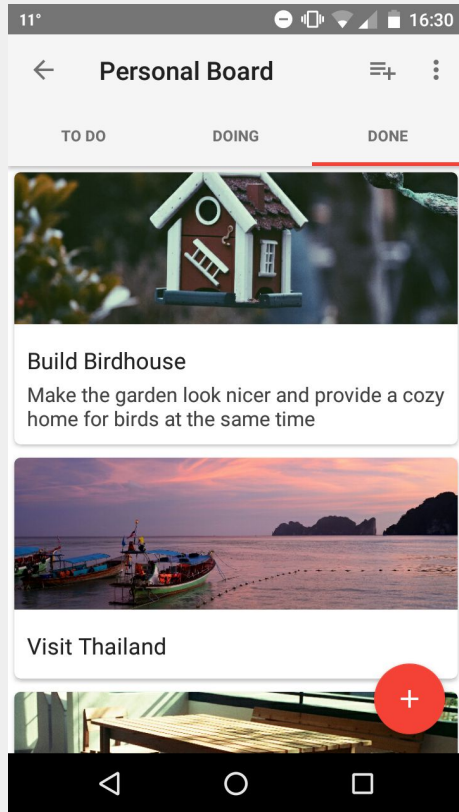
Assessment

What can we achieve?



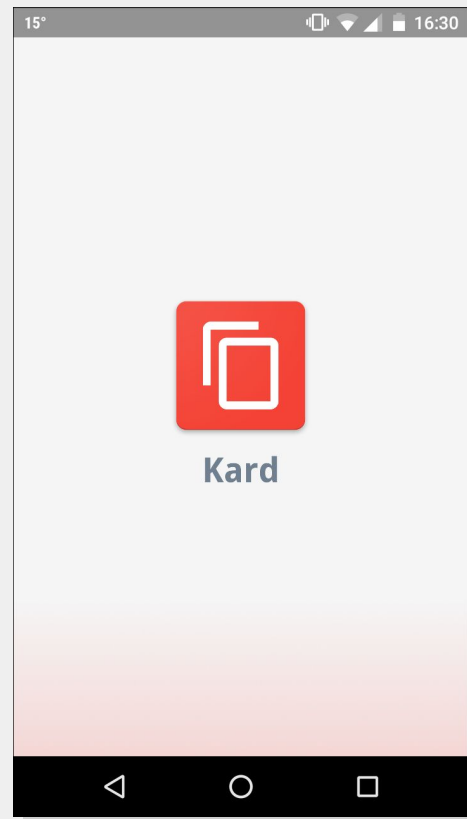
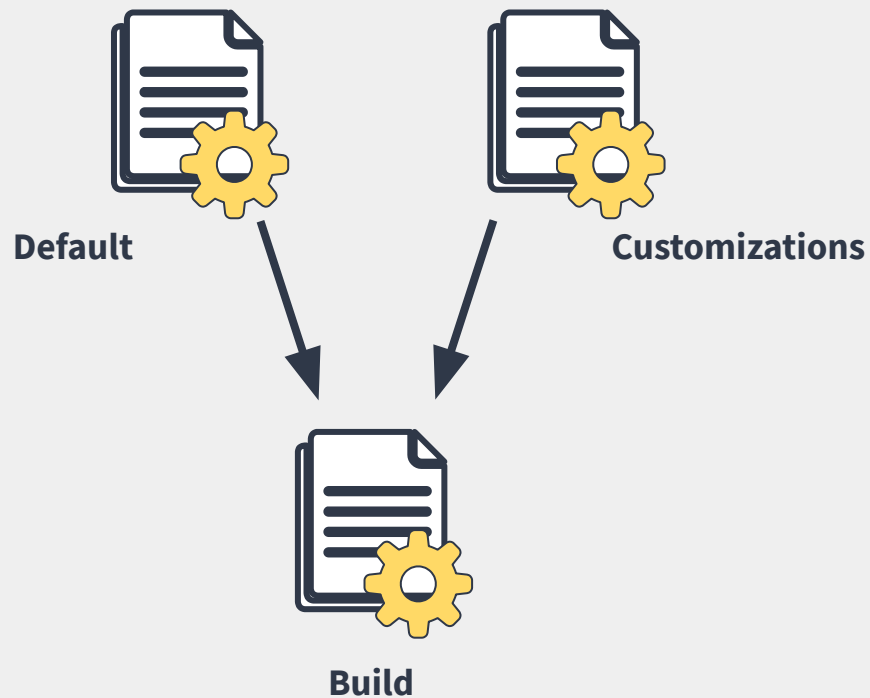


Kanban App



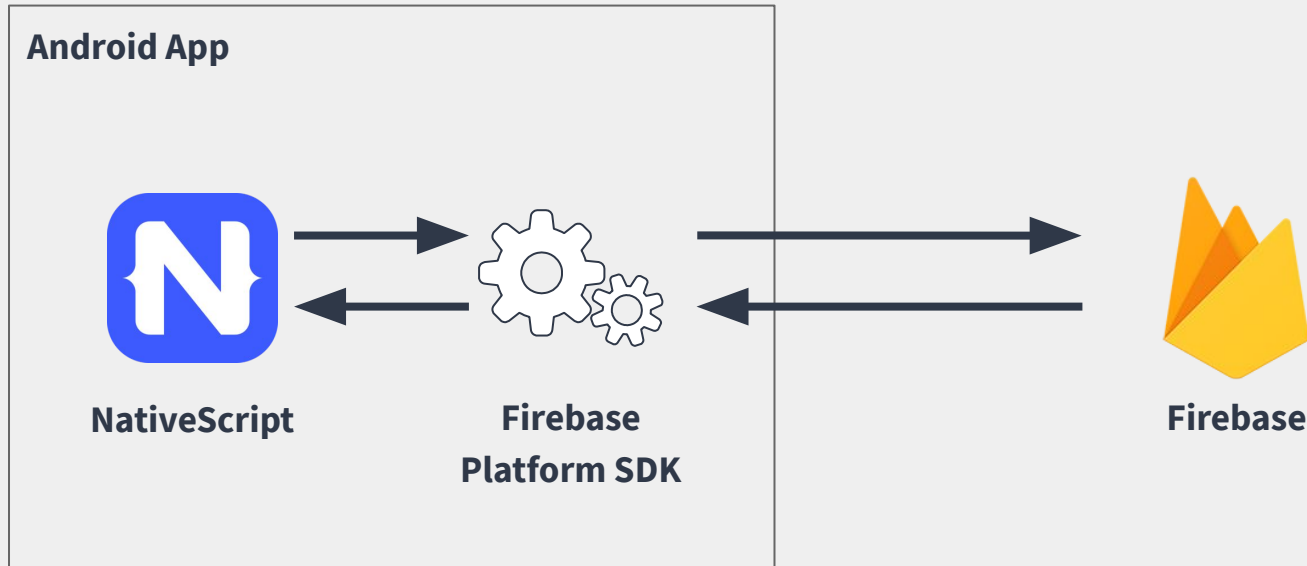


Marketability



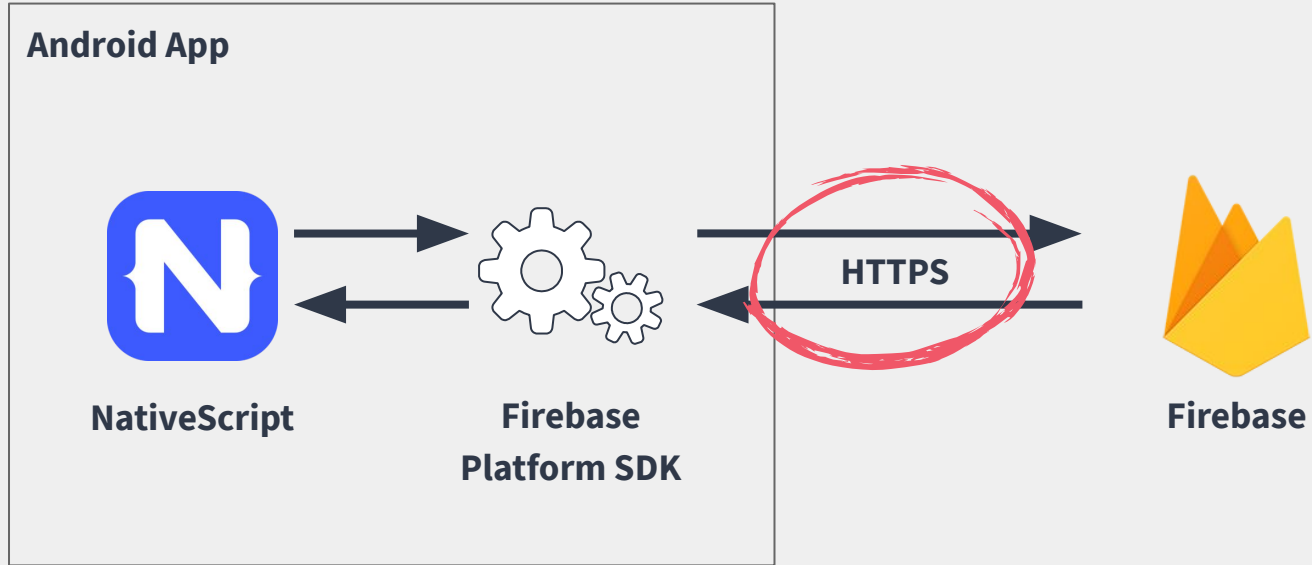


Network Independence



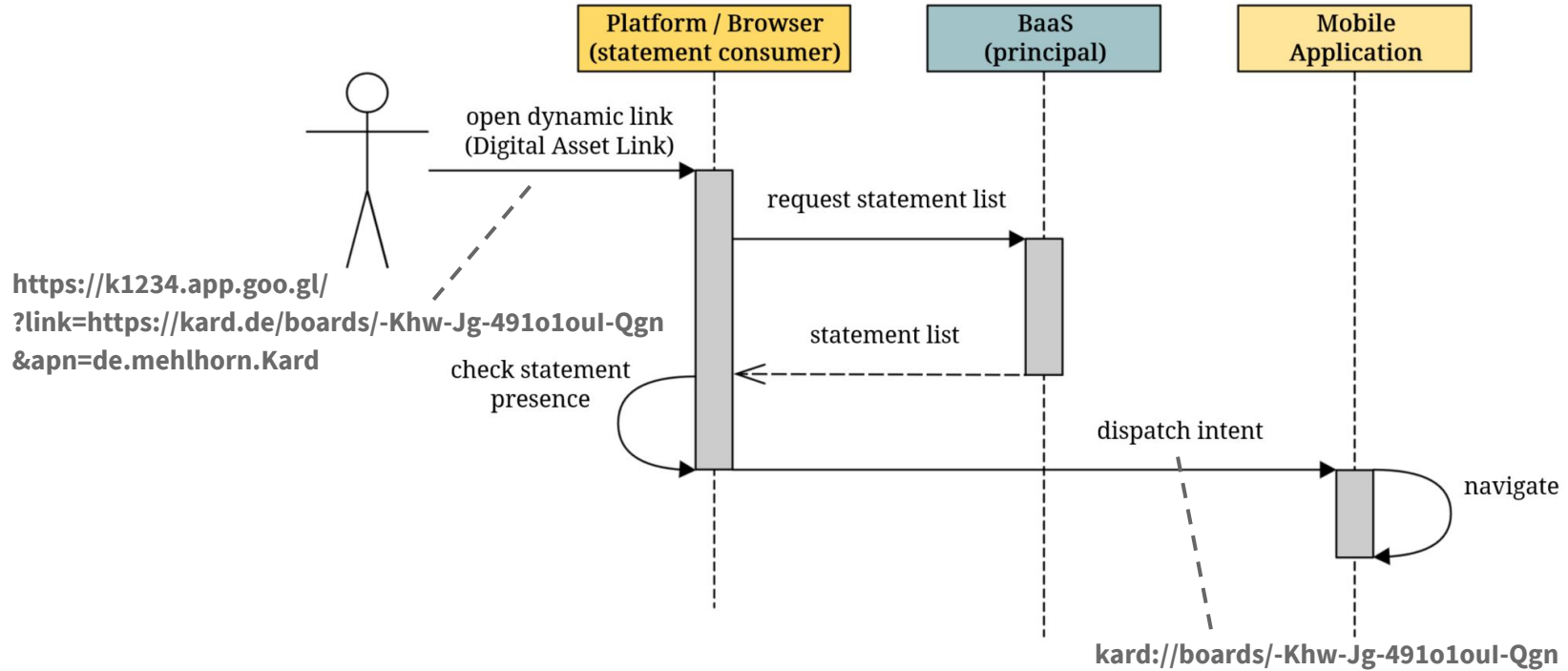


Security



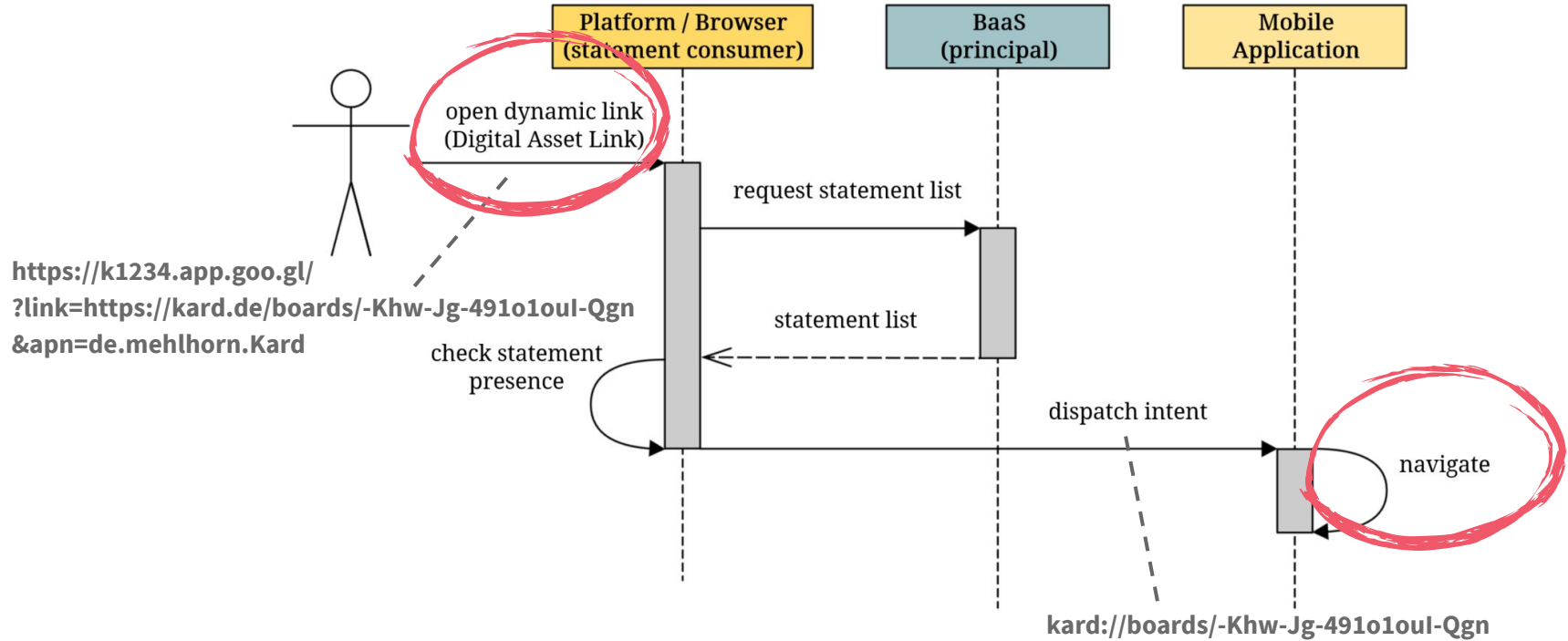


Linkability



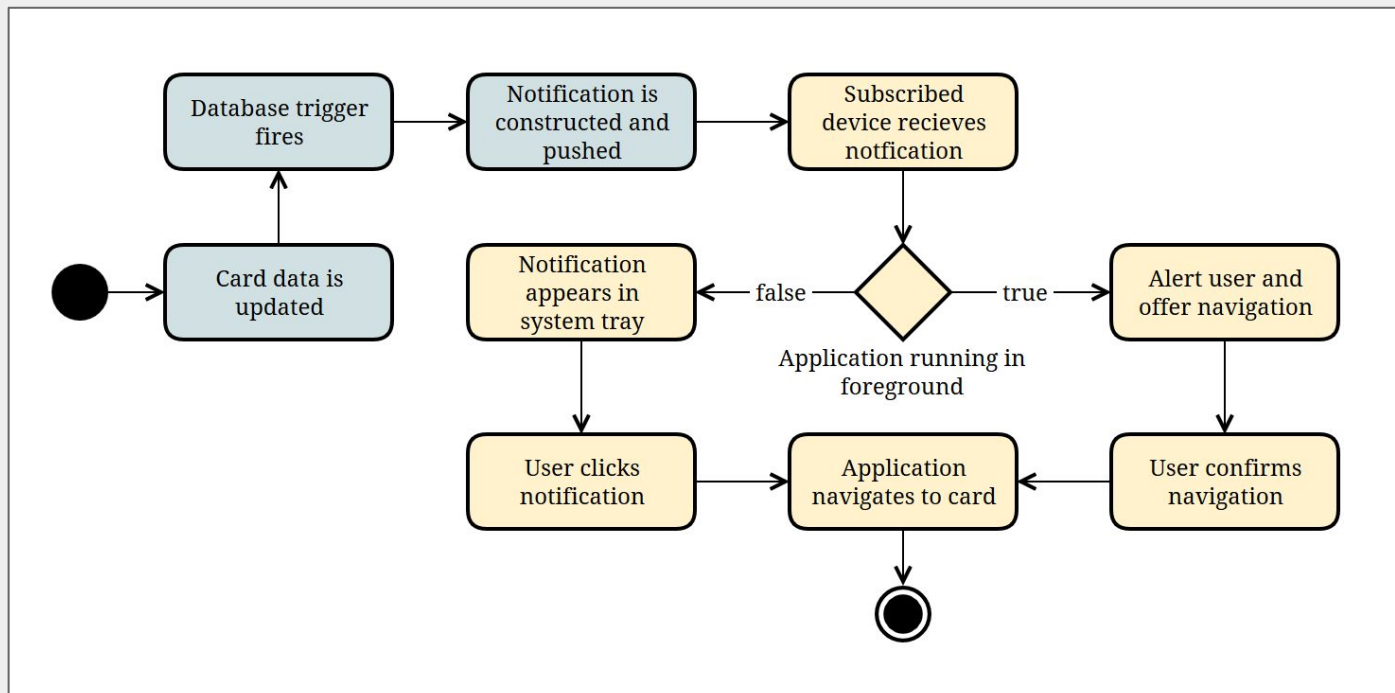


Linkability





Re-engagement





Responsiveness



Relative Styling

- App_Resources
 - Android
 - drawable-hdpi
 - super-marshmallow-man.png
 - drawable-ldpi
 - super-marshmallow-man.png
 - drawable-mdpi
 - super-marshmallow-man.png
 - drawable-xhdpi
 - super-marshmallow-man.png
 - drawable-xxhdpi
 - super-marshmallow-man.png

Native Asset Handling

- package.json
- main-view-model.js
- main-page.xml
- main-page.minWH720.xml
- main-page.minWH600.xml
- main-page.minWH480.xml
- main-page.minWH320.xml
- main-page.js
- LICENSE
- app.js
- app.css
- tns_modules
- App_Resources

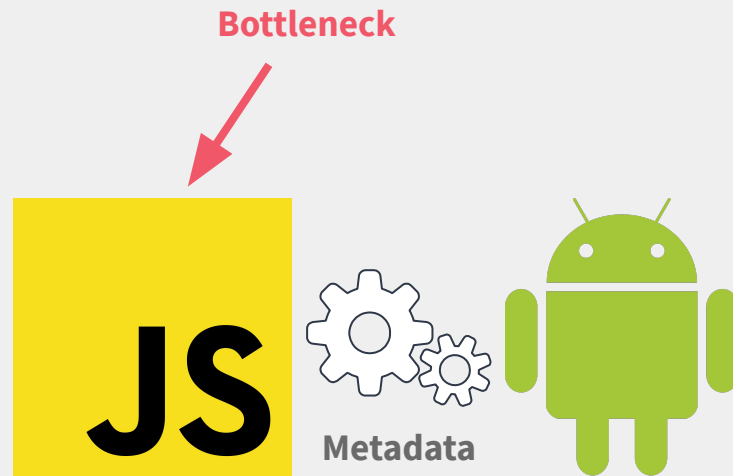


Screen Size Qualifiers

Progressiveness



JavaScript Engine + Transpilation



System Integration

7.

Bottom Line

What to pick up?





Bottom Line



**Enhance web apps
step by step and be
soon able to keep up
with native apps**

**Use web technologies
today for effective
mobile development**



- **web technologies are getting more powerful**
- **areas of application and abilities are growing**
- **extensive apps with excellent user experience**



Sources



Mobile Cross-Platform Development from a Progressive Perspective

An analysis of NativeScript applications based on the characteristics of progressive web applications

Nils Mehlhorn

Matriculation Number: 649194

Bachelor Thesis

B.Sc. Media Informatics

May 17, 2017



Supervisors
Prof. Dr. Manfred Wojciechowski
Andreas Hartmann

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7 References

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11. Popescu, Andrei. *Geolocation API Specification 2nd Edition*. World Wide Web Consortium. [Online] November 8, 2016. [Cited: March 9, 2017.] <https://www.w3.org/TR/2016/REC-geolocation-API-20161108/>.

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Hochschule Düsseldorf University of Applied Sciences, Faculty of Media

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Faculty of Media. Hochschule Düsseldorf. Düsseldorf. 2017. Bachelor Thesis.

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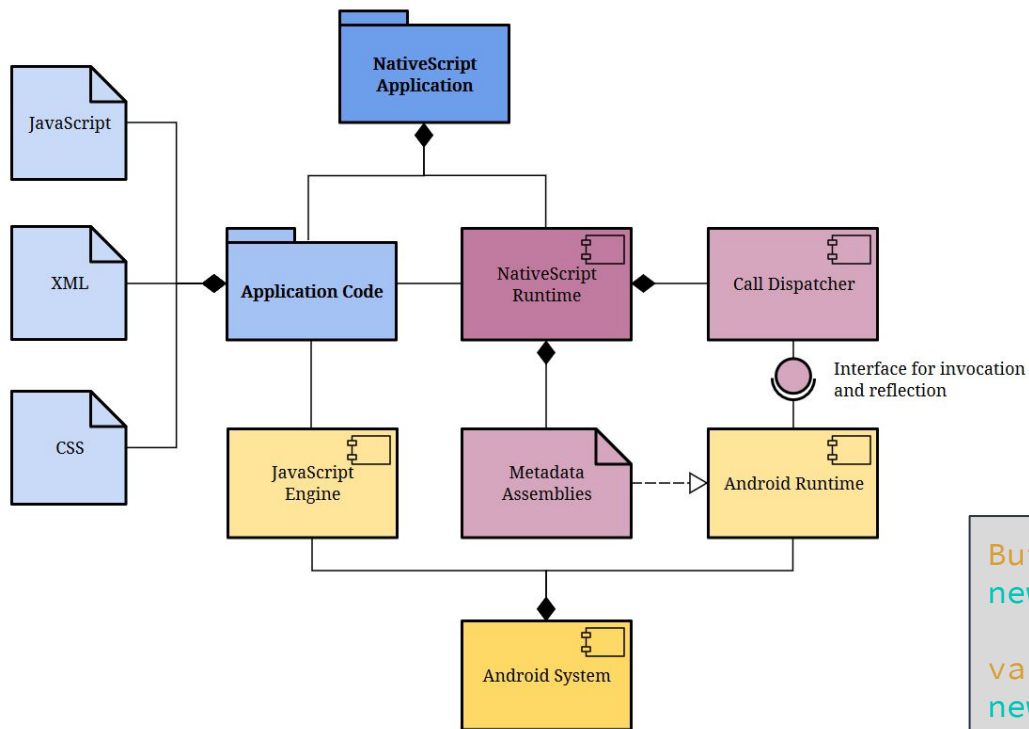


Thank you!

Questions or remarks?



NativeScript



```
Button button =  
new Button(getApplicationContext());  
  
var button =  
new Button(getApplicationContext());
```