



Native Mobile Application Guidelines

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INTRODUCTION

This document communicates important design and development standards for native mobile applications produced and maintained for the purpose of conducting official state business with the State of Michigan. The contents of this document are intended to assist in ensuring a coordinated, consistent, quality image for the State of Michigan brand.

MOBILE DEFINITIONS AND DECISION MATRIX

A *web app* is device-agnostic and accessed through a browser by a user with internet access.

Native apps are downloaded from an app store, fully self-contained, and often leverage device features such as the camera or video.

The *Decision Matrix* below provides guidance on making a decision on whether to build a responsive or native application.

Media Strategy	Device Support	Complexity	User Exp.	Perform.	Dev Lang.	Offline Support	Device Features	Dev Cost	Maint Costs
Responsive Web App	All	Simple display, transactions are used	Great	Good	HTML / CSS / JavaScript	Limited	Limited	Med.	Low
Native App Cross-platform framework	Most	Complex display, complex transactions	Excellent	Great	Various	Yes	All	Med.	Med.
Native App OS Specific SDK	All	Complex display, complex transactions	Excellent	Best	Device specific SDKs	Yes	All	High	High

MOBILE TECHNOLOGIES

The State of Michigan has adopted a cross-platform approach to development. Using cross-platform frameworks allows for a high degree of code reuse between device operating systems. Targeting and developing directly against a specific platform (Objective-C/Swift for iOS or Java for Android) is discouraged and should be avoided in most circumstances. Approved frameworks and technologies can be found in the latest technology roadmap documents.

Technology Roadmap

http://inside.michigan.gov/sites/dtmb/eact/Roadmaps_Published/Forms/AllItems.aspx

The table below documents the frameworks and technologies used at the State as of September 30, 2017:

Technology	Purpose	Availability	Developer Resources
Ionic	Presentation tier framework for Apache Cordova based projects that helps with performance and standardization of UI elements. <i>Ionic is the most widely used hybrid development framework in the industry.</i>	Open source download. Has integration with Visual Studio for providing robust development environment. https://www.visualstudio.com/cordova-vs?wt.mc_id=o~display~ionic~dn948185	Ionic Documentation
Apache Cordova	Cordova is a framework that bridges the gap between native and web dev. Allows the application to run cross platform native functionality via JavaScript hooks.	Open source download	Apache Cordova Documentation
Xamarin	Xamarin is Microsoft's cross-platform mobile development software.	Available with Visual Studio License	Xamarin Documentation
React Native	React Native is a mobile application framework that utilizes JavaScript	Open source download	React Native Documentation
Microsoft Notification Hub	Abstraction of the notification logic that runs in the cloud. Allows us to send targeted notifications in a	The Mobile Operations Team used the Azure Gov	

	simplistic fashion by using tags and offloads the processing to the Azure cloud.	contract to create a SOM notification architecture.	
Mobile Center - HockeyApp	Cloud solution that manages test versions of the mobile applications and allows for easy distribution of test versions to multiple devices.	The Mobile Operations Team has established a subscription for HockeyApp.	https://www.visualstudio.com/vs/mobile-center/ https://hockeyapp.net/

PLANNING A MOBILE APPLICATION

A mobile app is intended to have a very small set of features that will solve a specific need of a target audience. They are not intended to simply repurpose web page content. Users are often looking for specific information, quickly. It is vital your application meet the targeted goals of a mobile app user to be successful.

A mobile app must meet the following criteria to be appropriate for publishing under the State of Michigan account on the app stores, the app must meet the following strategic goals:

- Delivers value to a targeted audience in the interest of the State of Michigan
- Enhances the overall reputation of the State of Michigan
- Is in alignment the state’s brand identity, promise, and character
- Addresses a specific need best solved by a mobile application

General Requirements

Due to the nature of mobile application development, a tailored experience is best. Because each project will be unique, a consultation with the Mobile Operations Team (MOT) design staff is encouraged to assist with requirements. General requirements include:

- Apps must be free of charge and cannot include advertising.
- All apps must comply with the [State of Michigan legal application licensing agreement](#).
- Apps requiring secure login must meet the State of Michigan [privacy policy](#) as well as utilize MILogin; the official State of Michigan single sign-on solution that will allow users to access to all future web and mobile systems with the same username and password.
- Consistent branding within the State of Michigan is important to build trust with our customers. Application icons, splash screens, and names must be approved by the MOT prior to deploying to production. The eMichigan design team is available for consultation if the project team has questions or needs assistance in the creation of these assets. Apps must be designed with [best practices](#) and [elements of the mobile user experience](#) in mind.
- Apps must meet [Mobile Accessibility Guidelines for WCAG 2.0](#)
- Apps must utilize State’s SUITE framework and adhere to all standards.

MOBILE APPLICATION DEVELOPMENT AND DEPLOYMENT

Reaching out to the MOT before coding begins is highly encouraged. They will provide information on standards, guidelines and potential security requirements your project might need. Below is important information related to mobile application standards.

OS SUPPORT

When building applications for public consumption, iOS and Android must both be supported. For iOS, support for the current and previous major versions must be supported. For Android, applications must support all versions of the Android operating system with at least 10% market share. The latest market share information can be found on the Android Dashboard site.

Android Dashboard: <https://developer.android.com/about/dashboards/index.html>

ARCHITECTURE SOLUTION ASSESSMENT

An Enterprise Architecture Solution Assessment (EASA) will need to be completed and approved prior to deployment. For reference purposes, completed EASAs can be found at the following link:

<http://inside.michigan.gov/sites/dtmb/eact/Pagesv2/solutionassessments.aspx>

TESTING

Testing mobile applications from within the enterprise can be challenging. To validate you test on all supported device types and sizes, you should use a combination of simulators and real devices. The recommended strategy for internal beta testing is to use Microsoft HockeyApp. HockeyApp allows developers to upload and distribute applications to a targeted group of testers without deploying to the App Store or Play Store.

LOOK AND FEEL AND ADA TESTING

The MOT will be available to answer questions and advise on development practices, ADA compliance, UX/UI standards, and deployment. It is strongly recommended that team members [review the compliance checklist](#) before coding begins. Preparing will guide development and assist at the time of the compliance review.

Before initiating a compliance review ensure the application has been tested internally in a staged testing environment on the [latest and previous version of iOS](#) and [Android platform versions with distribution greater than 10%](#). Verify each item in the compliance checklist and complete the [review form](#) to the MOT for review.

DEPLOYMENT

All mobile application must be signed and deployed through the official State of Michigan iOS and Android accounts. Prior to release, the MOT will review mobile app requests, and facilitate changes to app store offerings. Project managers and team leads are responsible for coordinating with the MOT to assist with project planning and quality assurance. They are also responsible to notify the MOT of any changes or discontinuation of the app. Development builds can and should be managed by each development team while distribution builds will be handled by the MOT team. Contact MOT early in the project phase to ensure a timely release.

Contact Information

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