Importance of Mobile App Architecture For Mobile App Development

Factors To Consider Before Developing Mobile App Architecture

Steps to Choose the Right Mobile App Architecture

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Overview

- Enterprise mobility is the new necessity when it comes to the corporate world. Many organizations have started to embrace mobility to enhance the efficiency of their workforce, increase productivity, reduce operational cost, deliver customer delight, and more.

- As per the report by Strategy Analytics, the enterprise mobility market is expected to grow **$2.2 billion by 2022**. Due to rapid growth in the development of new apps, there is a constant pressure on **mobile app development companies** to launch apps that stand out.

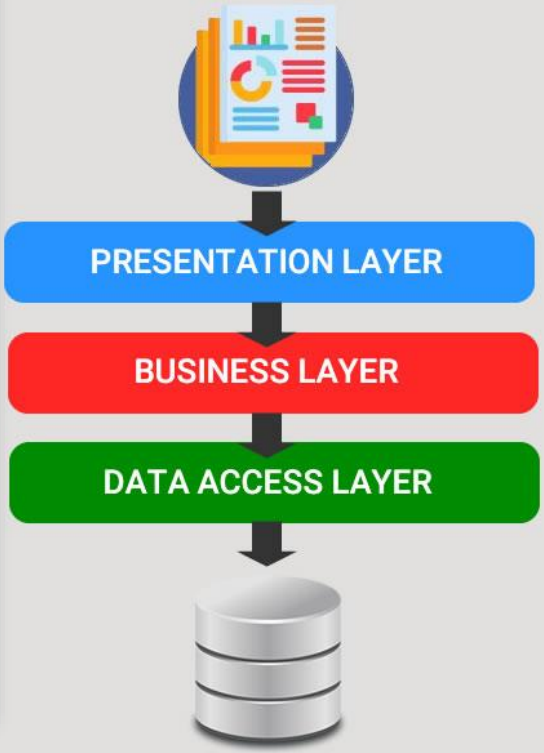
- However, heavy competition means not every player can reach their goals. Often the reason for failure is attributed to the ignorance of app development companies towards one of the fundamentals of mobile app development – the **mobile app architecture**.

What Is Mobile App Architecture?

- Mobile app architecture is a set of techniques and patterns used to create fully structured mobile applications based on industry and vendor specific standards. While developing the app architecture, the procedures that work on wireless mobile device like smartphones and tablets are also taken into consideration.

- The mobile app architecture design usually comprises of multiple-layers within an application comprising of the following layers:

  Presentation layer: *Comprises of the UI components*
  Business layer: *Comprises of business entities, workflows and business components*
  Data layer: *Comprises of data access components, data utilities and service agents*



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Factor # 1

Evaluate the device type and its characteristics

- There are different categories of smartphones and it is very important for you to determine the device type and its characteristics prior to selecting particular app architecture.

- You must put into consideration the following characteristics of the device:
  - Screen resolution
  - Size of screen
  - CPU characteristics
  - Memory
  - Availability of development framework
  - Storage space

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Factor # 2

Assess the bandwidth scenario

- It is crucial to consider the internet network scenarios of the areas your target audience live or work. This is because fluctuation of internet speeds can negatively impact user experience. Your audience may not be connected to the internet all the time. Also, at times, they may have intermittent network.
- While selecting software protocols and hardware for your mobile app, you would need to consider power consumption and speed. Moreover, you need to design your cache mechanism, data access mechanism and state management such that it can adjust to slow and intermittent internet connection.

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Factor # 3

Focus on the design of the user interface

- While designing the user interface of your mobile application, you must explore the horizons of creativity and innovation with your unique style and format. However, it is important that you keep the interface as simple as possible so that users can intuitively interact with the same.
- Moreover, it is advisable to avoid clumsy UI or else your app is more likely to fail.

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Factor # 4

Choose the right navigation method

- The navigation of an app plays a vital role in determining the success of an app. It involves managing both frontend and backend. While working on the navigation method, you need to keep in mind your customers' preferences and also the requirements or purpose of the app. This is important as it will have a tremendous effect on user experience.
- From so many different navigation methods, you must put your analysis into practice to choose your best fit; you must go through the following elements:

  Stacked navigation bar, Tab controller, Modal controller, Single view, Gesture-based navigation, Scroll views, Search driven navigation

Maintaining The Process Flow Of Mobile App

- Usually, your mobile app can be structured in 3 different layers:

PRESENTATION LAYER :

- This layer deals with how the entire application would be presented to the end user. While designing this layer, every app developer is supposed to determine the correct client-type that is compliant with the infrastructure. Also, the deployment constraints of client should be taken into account.
- The other prerequisite for creating this layer is choosing the correct data format and embed a strong data validation technique so that your app can be protected from invalid data input.
- Moreover, all the mobile app developers should also focus on decoupling of the business logic from the presentation layer code.

Maintaining The Process Flow Of Mobile App

BUSINESS LAYER:

- This layer deals with logging, caching, validation, security and exception management. It is wise to separate the tasks into various categories and then tackle each category independently, in order to reduce the complexity of this layer.
- Nevertheless, the ideal approach for designing this layer is to use a separate business layer wherever permissible. For different functionalities such as complex business rules, applying policies, data transformation and validation, etc. you must identify business layer.

Maintaining The Process Flow Of Mobile App

DATA ACCESS LAYER:

- This layer copes up with the application requirements and enables secure data transactions. Hence, you must design this layer in a way that it could scale in future as the business requirements will change down the road.
- As an experienced mobile app development company, Helios Solutions focuses on utilizing the right data access technology so that a secure and highly functional layer can be formed.
- You can also make use of table-based identities to render a simplified design structure for storing data and allowing movement of data across boundary layers.
- All the data access functionalities are encapsulated inside this layer and it handles all the data connections required by the mobile app. Furthermore, it manages all CRUD (Create, Read, Update and Delete) activities and data sources.

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Step # 1
Analysis of the target audience

- This step is vital in planning your mobile architecture roadmap. Once you identify your target audience and analyze their persona, you will understand for on which platform you need to build your app and also the kind of user experience you need to deliver.
- For example, if general public uses Android devices but your target audience uses iPhones, then you might need to build a native iOS app using the iPhone SDK.
- In contrast, if you are planning to develop an online productivity app for general public then it is wiser to consider cross-platform app development which can be developed once and deployed on multiple platforms as native apps.

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Step # 2
Focus on providing the experience your users expect

- Before taking a call on what is the right technology framework, you must to put yourself in the shoes of your customers. You need to understand - what sort of experience are your end users looking for? what type of app is in-demand: consumer app or an enterprise app?
- If you are going for a consumer app development, it must be able to harness the full capabilities of the mobile device while delivering exceptional experience in order to capture the full attention of your customers.
- In contrast, if you are planning to develop an online productivity app for general public then it is wiser to consider cross-platform app development which can be developed once and deployed on multiple platforms as native apps.

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Step # 3
Identification of key functionality requirements

- Content consumption suggests a great deal of data requirement which can be accomplished with a cross-platform app i.e., develop once and deploy on multiple platforms as native apps (using PhoneGap, Xamarin etc.) or a mobile-web based solution.
- App to be used to execute a task might require an intuitive interface and would direct to native-based solution. You can also build and deploy progressive web apps (PWAs) faster as the technologies used to develop them have come a long way and simultaneously you can rely on service workers caching to deliver user delight.
- App providing offline file access or transaction entry would be better developed utilizing native frameworks as native apps remain installed on the device providing users to take full advantage of device hardware and software.

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Step # 4

If any particular platform is need of the hour, then focus on that

- If you need your app to focus on a single platform, then it is wise to build a native app to deliver the best experience to your app users.
- In case if all the platforms are equally important, then you might go for mobile web apps developed using HTML5 in combination with frameworks like jQuery, Sencha or Ext JS. Or else, you can also go for developing PWA using AngularJS, ReactJS, Knockout, Ionic, etc. to deliver decent app experience to your users.

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Step # 5
Configuration of offline capabilities

- If you Availability of offline capabilities is what most of the users look for. For example, enterprise users can’t afford to be dependent on internet connectivity. They need some basic offline capabilities on their device which allow them to continue working on-the-go.
- The same applies in the case of consumer app users; they can be offered with a few offline capabilities to remain engaged during intermittent connectivity.
- If you plan to leverage the full potential of PWAs, it is recommended that you consider the data that you have found in the audience analysis about the platform usage of your target audience.

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Step # 6
Incorporation of industry-specific requirements

- Consideration of industry-specific requirements is crucial in the selection of the right mobile app architecture. You simply can't give it a miss as it directs you towards an appropriate solution.
- For instance, when it comes to the retail industry, one of the basic requirements is SEO-friendliness. So, when prospects search for fashion clothing, SEO-friendly apps appear on top.
- You may also consider having a native app to engage and retain your customers with an intuitive shopping experience.

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Step # 7
Consideration of the development time-frame

- It is important for you to have the answer of how long will it take to build a mobile app. This is is important because it gives you an idea of when your team can finally present the product to users and start getting feedback.
- Of course, each app is unique and, depending on its size, complexity and the functionality set, the timelines may be different in each particular case.

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Step # 8
Consideration of how well-skilled are your app developers

- Does your team possess the necessary skills? Native app development involves knowledge of technologies such as Swift & Objective C for iOS and Java & Kotlin for Android. While hybrid and mobile web frameworks are mostly based on JavaScript & HTML which most developers are well-versed with.
- It is important that you weigh the time & cost for recruiting resources versus training your existing developers for the technologies that are needed for your app development.

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Step # 9
Consideration of the total cost of ownership

- The cost of **mobile app development** as well as maintenance & support expenses depend on the development architecture that you choose.
- Mobile web apps are the most affordable as well as the least expensive to maintain whereas native apps for multiple platforms are usually the most expensive.
- Nevertheless, you will also need to weigh the cost versus benefits in order to ascertain the return on investment of your chosen app architecture.

Final Thoughts

- Designing mobile app architecture is the first and most crucial step. It plays a very important role in the growth of an app's market. A well-chosen mobile app architecture saves a lot of problems with development and maintenance. Moreover, it also gives structure to both the development process and the project as a whole.

- Whether your aim is a rich, seamless app or an extremely cost-effective but efficiently working iOS and Android application, Helios Solutions is a leading **mobile app development company** that helps you with most dynamic and appropriate solutions for your business.

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