

## Things to Consider Regarding IoT Software Development

by Anil Janardhanan | August 30, 2021



Software solutions and smart devices have undergone massive changes with the introduction and growth of IoT. Software teams leverage IT platforms to build scalable and secure applications. Most smart devices rely greatly on IoT too, working in sync with other systems. The whole concept of a smart device revolves around superior connectivity and collaboration between systems.

Ideally, a smart device must be able to increase its service value by adapting to the user's behavior and the environment. An amazing range of smart devices for various purposes is currently available. However, to be market-ready and to succeed, connected smart products must meet certain criteria.

- 1. The cyber security features should be reliable, protecting the systems and users.**  
Security logistics are extremely important when it comes to IoT software development, as the threats are plenty. The security solutions in a smart product must protect against threats to the network, the services, data, and the device itself.
- 2. The architecture of the product must be flexible and proven to be effective**  
One of the key aspects that have an impact on IoT software development is the chosen architectural pattern. Ideally, the architecture of IoT software should make seamless connectivity possible. Other aspects that the architecture should cover include intelligent interactions with the users, open interfaces, device and user management, loose coupling, security, ingestion of data, open interfaces, analytics, scalability, and more. Hence, it is evident that the architecture plays a key role in meeting key business objectives. This is why

IoT has been gaining importance in the field of software development. In most cases, software teams adopt a reference architecture to start the development. Eventually, they customize it to make it suitable for the specific use or domain.

**3. The product should support network protocols and make use of the network topology**

The layout of devices (data sources) and how they connect to the edge devices typically determines the network topology and protocols relevant for the IoT application. In many cases, the devices connect to the edge Gateways. In few instances, the device can connect directly to the cloud. There are many other factors that could impact the choice of protocols and topology includes restrictions from the operating environment, source and consumption of power, and geographical requirements such as proximity and length of connectivity.

**4. Testing and deploying the product should not be a hassle**

Before launching IoT software, it is crucial to carry out end-to-end testing at different levels and aspects. The software meeting the functional, performance, and operational requirements is a major success factor. Best practices like continuous development (CD), continuous integration (CI), and automated testing along with agile & DevOps development model are to improve products' success.

**5. The application should be scalable**

Among the various non-functional requirements of an IoT solution, building for scalability deserves special mention. The number of data sources, data storage levels, processing engines, and data ingestion need to be scalable. Cloud platforms usually provide managed scalability. However, the system must take care of the scalability for on-premise deployments. It is possible to achieve storage scalability through a balance of computational needs. The storage scalability helps to retain the value of the data in the future.