

# Benefits Of Embedded Software Development

by Satya K Vivek | November 29, 2022



An embedded system is where software and hardware are combined, usually in relatively small-sized gadgets, for performing designated tasks. These systems have now become extremely crucial elements for us, as most of the gadgets that we use every day are powered by them. With embedded systems, many of the day-to-day tasks can be carried out in an uncomplicated way.

Smartphones, tablets, digital cameras, and smartwatches are a few of the devices that are based on embedded systems. Here, it is going to be worthwhile to speak about the major advantages of embedded software development.

- The software for these systems is developed to execute designated tasks, and its hardware is compact and optimized for the purpose. As a result, the system often consumes less power and leads to cost savings, over a period.
- In comparison to regular computers, embedded systems devices come in smaller sizes which increases its mobility (can carry around as needed) of these devices.
- Additionally, even when we view embedded software devices specific to usage in businesses, there are many plus points. For instance, these gadgets/ devices can be accommodated in very small spaces, more so when compared with conventional computers. The embedded systems are designed in such a way that they continue to operate without the need for frequent human involvement.
- Similarly, on account of the compactness of the systems, tasks get completed in high precision short time windows. An embedded system often has to manage only a fewer number of components.

- The materials from which these gadgets are manufactured have a long life and consequently, you don't have to spend much on maintenance.
- Another striking aspect of embedded software is worthy of special mention. The hardware used in these systems are assured of high performance and quality.
- As the basic functionality of any embedded device remains unchanged, there are no frequent updates required. However due to increase in connectivity to and from the devices, the firmware are frequently updated to handle newer cyber security threats.
- Embedded software systems are highly flexible as well as highly customized according to the specifications of specific use cases.
- Now that IoT (Internet of Things) technology is being widely used, embedded software has also become more sophisticated. Typical embedded systems in an organization are now sources of dependable data from the business processes.
- There is one more salient positive aspect of embedded software systems, especially for sectors like manufacturing and construction. The embedded system can be fitted into machines/ tools that are used daily. The data collected from these machines can be analyzed and using AI/ML models to predict failures leading to predictive maintenance and ensures high availability. Also, the data enables remote monitoring with automated alerts on specified events. This helps reducing the overall cost of operations across the plants.
- Embedded software systems have tremendous potential in the defense sector. These systems facilitate the development of tiny robots that can be operated remotely by embedded system gadgets. This enhances the feasibility and safety of mission critical military operations and missions.

There are many more benefits to business and human from the usage of embedded software systems.