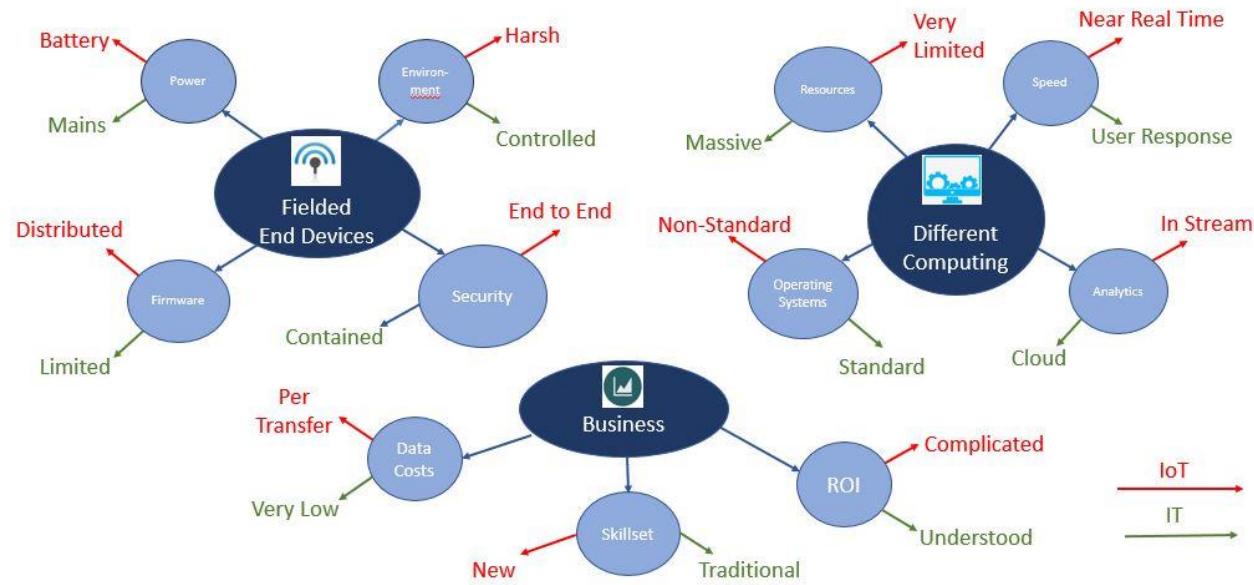


## Is your IT team ready for the demands of an IoT driven digital transformation?

Over the past few years, the Internet of Things has been identified as a major driving force that enables break out digital transformations across many industry segments. In fact, the companies who have successfully harnessed innovative IoT projects have been able to drive significant growth. However, those same companies have also discovered that IoT projects are, in many ways, very different from traditional IT projects.

Why are IoT projects different than traditional IT projects? The differences can be categorized into 3 main areas: Fielded Endpoint Devices; New and Different Computing Environments and generally more Complex Business Models.

### Traditional IT vs IoT



### Fielded Endpoint Devices

IoT system designs include internet connected endpoint devices that are very different from current IT infrastructure components. Many of these devices include low cost sensors that are powered by batteries and connect wirelessly to the internet (with their own IP address). For these devices to have a viable lifetime they must minimize power consumption. The components of these subsystems are designed to be managed with aggressive power management techniques that require the optimized use of available low power states - meaning that they only wake up from deep sleep to measure, format and transmit the sensor information on an optimized monitoring schedule.

In addition, these devices as well as the associated edge compute resources, must operate in a much wider temperature and humidity range than those found in the controlled data center environment. In many cases they operate in an environment that can only be described as extreme. This means that these devices must be

designed with levels of protection far greater than typical data center equipment. In addition, in many cases these devices must be custom designed specifically for the project which requires an engineering partner as part of the team.

In most cases, these devices are built around an embedded controllers that are driven by firmware. The firmware package needs careful management throughout the lifecycle including the ability to be updated remotely with updates and security improvements. Provisioning an array of devices in a controlled, secure manner requires specialized software and protocols that are not often required in the data center environment. To protect the company's computing activities, all these processes must occur in highly secure environments. This means that true end-to-end security techniques must be used; with the devices providing the root of trust for these secured transactions from the cloud, through the edge and to the devices.

### **Different Computing Environments**

The development of device and edge computing solutions need different development (computing) environments. Firstly, many applications require near real time responses where the data must be correlated and processed very quickly to ensure minimal response time (latency) to monitored events. This includes so called "in stream" analytics that are designed to take actions in a timely manner. To support near real time processing these devices need to run with a tiny footprint using purpose built operating systems. Unlike IT software solutions where virtual resources are massive, device firmware development must have a constant awareness of the static footprint and its run time memory needs. The amount of memory available is often measured in kilobytes and code must be memory optimal. Wakeup times need to be minimized so algorithms must be designed to minimize execution times.

### **More Complex Business Models**

From a business viewpoint there are a few key takeaways where business leaders need to focus. First, there is a hidden cost of transferring and storing data from the endpoint devices. Wireless providers and Cloud resource providers charge on the number and size of each transaction. A good system design must minimize the rate and size of data transferred into the cloud environment. This means these applications must be designed to optimize the data transferred as these hidden costs can quickly add up. Introducing these new types of end devices into the computing environment will undoubtedly make the project's ROI calculation more complex. Business justification resources will find that factoring the costs and benefits of processing these new data sources more difficult. All these comparison characteristics require the use of skillsets not readily available to many IT departments - ranging from system designers to different types of developers and engineering partners.

### **Assess-IoT**

These non-traditional skillsets mean that successful projects would benefit from additional expertise throughout the development and deployment cycle. At Assess-IoT we have built our consultancy around the central premise of "business first". We have a team of experienced, results-oriented staff members who understand how to harness IoT for business success through complete system design.

To find out more, as well as have a look at some of our customer testimonials, visit [www.assessiot.com](http://www.assessiot.com), or contact us at [www.assess-iot.com/contact-us-1](http://www.assess-iot.com/contact-us-1). We would enjoy speaking with you about your IoT project needs.