

Building the Campus As A Lab (CaaL) Platform

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January 5, 2023

Abstract

Internet of Things (IOT) related and IOT enabled education and research are becoming more prevalent in today's academic environment. One of the challenges faced by educators and researchers is the availability of resources to support lab based, hands on learning and research projects. Existing resources are often highly customized, balkanized, and difficult to manage. For new technology areas such as IOT, these environments rarely provide opportunities for resource sharing and interdisciplinary collaboration. In this paper we describe the development of a multi-tenant, IOT centric platform, the Environmental Sensing Data Network (ESDN) meant to support plug and play sensor deployment and the tools necessary for data management. The platform turns the University campus into an open platform that can be used to easily set up IOT based labs for education, research, campus infrastructure management and community applications innovation. The paper covers the development of a sensor augmentation module facilitating easy deployment and management. The operational tools and services integration are also described. We believe the platform is an important step in facilitating distance and in person education and research. ESDN is rapidly expanding beyond the multi-site University campus supporting a growing number of research and community projects.

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