Application of the Internet of Things (IOT) in Construction Field

تطبيق انترنت الاشياء في مجال البناء

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Introduction

Construction has a productivity problem. Many projects run overtime, over budget, and the industry is slower than others at adapting to change. And it's costing companies billions.

Large projects are taking up to 20% longer to finish than scheduled and are up to 80% over budget, according to research from McKinsey.

But how can this be changed? Other industries, such as manufacturing, have turned to the Internet of Things (IoT) and other new technologies to help unlock productivity growth — and it also could be the key for construction.

Internet of things is unified division of imminent internet consisting combination of prevailing and rapid development of network. IoT is the branch of Information Technology which generates a connectivity link between " Internet " and actual physical 'Things ". IoT intensions to amalgamate everything under common infrastructure and provide not only the control over everything but also defines provides the actual status of things. This course addresses the basic notion of Internet of Things, reviews and application of IoT construction projects. The course focuses on most important construction application areas of Internet of Things. The core intent of the course is to present an indication about various applications of Internet of Things for the development of Smart City Infrastructure & Smart dwelling construction projects. This course provides the anticipations with future scenarios of Internet of Things technology and it simplifies the knowledge about the various applications in construction projects.

Objectives

The objectives of this course are:

- ✓ Be introduced to different aspects of the IoT in construction, including end devices, networks, programming, and security and privacy implications
- ✓ Understand what constitutes an IoT design solution in Construction Field
- ✓ Start to grow the seeds of IoT ideas within Construction field.

Who Should Attend?

- Construction managers
- IT managers
- Performance measurement Officers
- Operations and maintenance departments
- Project managers

Course Outline

Day One

Introduction to IoT
- What is the Internet of Things?
- The Internet of Things is everywhere
- What sort of 'things' are we talking about?
- Microcontroller
- Wireless Sensor Networks (WSNs)
- Connecting system to the internet
- Remote monitoring of devices with the Internet
- IoT Applications

Day Two

IoT Applications in Construction of smart Buildings
- Building information modelling (BIM) is a process that delivers a 3D model of a building. BIM is typically used to depict the systems and structure of a building during the design and construction phases. Changes to one set of plans can automatically update all other affected plans.
- BIM can also be used to catalyst smart buildings projects. IoT sensors can be integrated into a model, creating data that can be used to model occupant movements, temperature trends, and energy usage patterns. The output can be examined to improve projects in the future and even improve building operations management.

Day Three

IoT Applications in Construction of green Buildings
- The construction industry produces a lot of landfill waste, which has strengthened interest in sustainable construction and architecture. There is, however, more to green building than keeping waste materials out of landfills. Thanks to the use of IoT in the construction industry, the design and engineering of building systems allows them to use energy management to reduce their environmental impact.
- Green buildings today can-do things like close non-essential systems automatically when the building is empty and automatically open and close louvres to provide access to ideal levels of natural light

Day Four

IoT Applications in Fabrications of Construction components

- Prefabricated building components can be more efficient and cost-effective to use than regular methods. As a bonus, they create less construction waste.
- The IoT has helped solve the problem of prefab being too complex for large commercial buildings. RFID sensors can be used to track individual parts through the supply chain. One high-profile and recent example is the construction of London's Leadenhall Building. It occupies a small footprint but required large prefab components, so coordinating the installation was a complex task.
- RFID data helped mitigate the effects of downstream construction displays. The data was also included in the BIM after parts were installed, enabling real-time rendering of the building as it progressed as well as establishment as project KPIs and controls.

Day Five

IoT Applications in Construction Management

- Construction project delays can be expensive. The good news is that the IoT can help you prevent critical heavy equipment from going out of commission and hindering the progress of all the other trades at work.
- Sensors are now being applied to heavy construction equipment, enabling the remote monitoring of excessive vibrations, temperature fluctuations, and other potential maintenance problems. When the sensors detect abnormal patterns, they issue alerts that can trigger maintenance workers to investigate and correct the problem before important equipment fails. This type of predictive maintenance can save time and money and protect your construction projects from unnecessary delays.

Training Method

- Pre-assessment
- Live group instruction
- Use of real-world examples, case studies and exercises
- Interactive participation and discussion
- Power point presentation, LCD and flip chart
- Group activities and tests
- slides and handouts
- Post-assessment

Program Support

This program is supported by interactive discussions, role-play, case studies and highlight the techniques available to the participants.

Schedule

The course agenda will be as follows:

- Technical Session   08.30-10.00 am
- Coffee Break   10.00-10.15 am
- Technical Session   10.15-12.15 noon
- Coffee Break   12.15-12.45 pm
- Technical Session   12.45-02.30 pm
- Course Ends   02.30 pm

Course Fees*

- **3,200USD**
  VAT is Excluded If Applicable