

1. Title: Distributed Network-Control Systems
2. Category: half day tutorial
3. Abstract 200-300 words

The classical definition of NCS is as follows: When a traditional feedback control system is closed via a communication channel, which maybe shared with other nodes outside the control system, then the control system is called a Networked Control System (NCS). A Networked Control System can also be defined as a feedback control system wherein the control loops are closed through a real-time network. Today one of the major focus of NCS is on the Distributed NCS, which are multi-disciplinary efforts whose aim is to produce a network structure and components that are capable of integrating sensors, actuators, and control algorithms over a communication network in a manner to suit real-time applications.

This tutorial presents fundamental details of network control systems. We will then present several concerns about distributed network control systems and solutions to integrate distributed sensors, distributed actuators, and distributed controllers. Several distributed network control systems projects in the Advanced Diagnosis, Automation and Control laboratory at North Carolina State University are used as examples to illustrate the distributed network control systems technologies.

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