

Cyber safety for Control Systems

Digital systems now control most of our critical infrastructure including transportation, industrial process control, and the electrical power grid. These digital control systems (usually preferred to as operational technology or OT) are increasingly merging with conventional IT infrastructure. They are connected to digital networks, use modern mainstream digital processors and are often implemented on top of conventional operating systems. Along with the benefits that these changes bring there are is exposure to cyber attacks. We have seen such attacks in the past few years in Ukraine (power grid), Saudi Arabia (unsuccessful attack on oil extraction) and Iran (Stuxnet attack on power grids). In this talk, I will explain how we might better protect such systems. I will also highlight areas of particular concern where new types of defenses are required. Many of these techniques draw from insights developed in the safety community, although the safety and security communities do not often collaborate. I will emphasize the opportunity and need for such collaboration.