

## Invited Speaker, November 19: Dr. Mark Hartong



### Positive Train Control Critical Infrastructure

Positive Train Control (PTC) is a supervisory control and data acquisition system designed to protect against loss of locomotive crew situational awareness that could result in train-to-train collision, train derailments due to excessive speed, train incursion into roadway work zones, and train movements through misaligned switches. Multiple technological approaches are being implemented by different railroads. The complexity of these systems of systems, coupled with the lack of a common ontological description, complicates creation of interoperable systems and implementation of adequate critical infrastructure protections. This talk will introduce PTC, its operation, and associated implementation issues, which could be used as the basis for the development of an appropriate ontological model that supports formalization of interoperability and infrastructure security.

### Biography: Dr. Mark Hartong

Dr. Mark Hartong is the Senior Scientific and Technical Advisor for Railroad Electronics at the Federal Railroad Administration, US Department of Transportation. The Federal Railroad Administration is the regulatory and enforcement agency responsible for promoting safe and secure railroad transportation within the United States. Mark serves as the agency's senior technical authority with respect to the application of safety and security critical electronics and software for use in the railroad environment. He also plays an integral part in the agency's regulatory and enforcement agenda in the creation of new federal regulations, determination of technical merits of requests for relief by railroads and vendors from existing federal regulations and evaluations of regulatory non-compliance.

Before joining the Federal Railroad Administration, Mark was a Staff Systems Engineer with Lockheed Martin Corporation providing systems engineering support for a wide range of classified and unclassified communications hardware and software development programs exploring state of the art communications systems and networking technologies. This included combat and communications systems for Virginia and Seawolf nuclear attack submarines as well as Trident class nuclear ballistic missile submarines, combat command and control systems for Kuwait, Saudi Arabia, and Qatar, and the US Defense Message System.

Prior to his employment at Lockheed Martin, Mark served on active duty in the US Navy as a Naval Engineering Duty Officer. A navy line technical specialist qualified in submarine warfare, he provided technical, acquisition and fleet industrial leadership to meet national defense needs for ships, submarines, and their associated warfare support systems. This covered hull systems, mechanical and electrical systems; combat systems; and command, communications and electronics.

Mark has a BS in Mechanical Engineering from Iowa State University, an MS in Computer Science from the Naval Postgraduate School, and both an MS in Software Engineering with a certificate in Information System Security as well as a PhD in Information Technology from George Mason University. He is also a Registered Professional Engineer.