

John C. Hoag, Ph.D.  
School of Communication Systems Management  
Ohio University, Athens, OH 45701

### Realtime Reconfiguration of Networks Through A Semantic Web

Between all core and access data networks exists a broadband distribution layer, useful for interconnections of sites and perhaps coalitions of forces. Realtime deployment and reconfiguration of broadband wide-area transport is an important problem, and current solutions have modestly pursued admission controls or addition of functionality to routers – approaches that will limit interoperability and scalability. We are developing management tools to adapt network infrastructure in realtime by application-awareness. We propose to treat network operations and management transactions as language artifacts and solve the problem of service delivery symbolically and intelligently. In particular, our intent is traverse the following domain ontologies: from requirements to specifications, from specifications to configuration, and among various geographic coordinate systems. This has involved incorporating existing telecommunications ontologies and developing others in part.

This research activity is aligned with the Worldwide Consortium for the Grid, with its interest in network centric operations, and the “Valued Information at the Right Time” initiative at the Naval Postgraduate School, whose published work involves adaptation of flight plans with respect to weather using semantic reasoning techniques.

This paper will discuss results and lessons learned from a software testbed for network management through semantic reasoning in largely an open source environment.

*John C. Hoag is an Assistant Professor in the McClure School of Communication Systems Management, where his research interests are network management and network performance. His degrees are in Computer Science and Industrial and Systems Engineering, with a Ph.D. from The Ohio State University. Dr. Hoag is Senior Member of the IEEE, belonging also the IEEE Communications and Systems, Man, and Cybernetics Societies.*