

# Seminar Talk

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**Friday, October 24, 2014**  
**3:00 p.m. KH 224**

**Title:**

Real-Time Status: How Often Should One Update?

**Abstract:**

Increasingly ubiquitous communication networks and connectivity via portable devices have engendered applications in which sources, for example people and environmental sensors, send updates of their status to interested recipients. These applications desire timely status updates at the recipients; however, this is typically constrained by limited communication and network resources. In this work, we formulate a status-age timeliness metric for the evaluation of status update systems. We derive general methods for calculating the age metric that can be applied to a broad class of service systems. We apply these methods to queue-theoretic system abstractions of sources, service facilities and monitors. In the presence of interfering traffic, we identify optimal rates that sources should generate updates. For multiple independent sources providing status updates to a monitor, we find the region of feasible average status ages.

**Bio sketch:**

Roy Yates received the B.S.E. degree in 1983 from Princeton University and the S.M. and Ph.D. degrees in 1986 and 1990 from M.I.T., all in Electrical Engineering. Since 1990, he has been with the Wireless Information Networks Laboratory (WINLAB) and the ECE department at Rutgers University where he is currently a Distinguished Professor and Associate Director of WINLAB. In 1999-2000, he served as Director of WINLAB. Dr. Yates is a former associate editor of the IEEE Journal on Selected Areas of Communication Series in Wireless Communication and also a past Associate Editor for Communication Networks of the IEEE Transactions on Information Theory. He is an author of three editions of the text "Probability and Stochastic Processes: A Friendly Introduction for Electrical and Computer Engineers," published by John Wiley. An IEEE Fellow in 2011, Dr. Yates was a recipient of the Marconi Paper Prize for the best paper in the IEEE Transactions in Wireless Communication for 2002, and received the Rutgers University Scholar-Teacher Award for 2010-2011.