



**Fall 2017 Colloquium**  
**Department of Computer and Information Sciences**

***Smart Usage of Wake-up Radio and Energy Harvesting  
for Long Lasting IoT Systems***

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**Abstract:** We will explore the impact of recent technologies on the performance of wireless networked systems that enable the Internet of Things (IoT). Specifically, we describe advances in wake-up radio technology with semantic addressing capabilities and its usage to obtain very short packet delivery delays and up to five orders of magnitude energy savings, resulting in lifetimes that are decades longer than those obtained with standard energy-conserving methods (e.g., duty cycling). We will then illustrate how combining energy harvesting from different sources (e.g., solar and wind) with wake-up radios enables perennial networked systems with performance similar to that of systems with battery-operated nodes.

**Bio:** Stefano Basagni holds a Ph.D. in electrical engineering from the University of Texas at Dallas (December 2001) and a Ph.D. in computer science from the University of Milano, Italy (May 1998). He received his B.Sc. degree in computer science from the University of Pisa, Italy, in 1991. Since Winter 2002 he is an associate professor at the Department of Electrical and Computer Engineering at Northeastern University, in Boston, MA.

Dr. Basagni's current research interests concern research and implementation aspects of mobile networks and wireless communications systems, wireless sensor networking for IoT (underwater and terrestrial), definition and performance evaluation of network protocols and theoretical and practical aspects of distributed algorithms. Dr. Basagni has published over nine dozens of highly cited, refereed technical papers and book chapters. His h-index is currently 36. He is also co-editor of three books. Dr. Basagni served as a guest editor of multiple international ACM/IEEE, Wiley and Elsevier journals. He has been the TPC co-chair of international conferences such as ACM Dial M for Mobility (2004), Med Hoc Net (2006), IEEE SECON (2010), IEEE Globecom (AHSN Symposium, 2012), IEEE MASS (2012), IEEE WiMob 2013, IEEE ICNC (NAPE Symposium, 2015), IFIP Wireless Days 2016, and ICNC (WAHS Symposium, 2018). Dr. Basagni serves as a member of the editorial board, the organizing committee and of the technical program committee of ACM and IEEE journals and international conferences. He is a distinguished scientist of the ACM (including the ACM SIGMOBILE), a senior member of the IEEE (Computer and Communications societies), a member of ASEE (American Society for Engineering Education) and of CUR (Council for Undergraduate Education).