

## Title

Not just gadgets, the Internet of Things will definitely change how we think Non-Destructive Testing

## Abstract

Low Power Wide Area Networks are empowering the Internet of Things to reach a multitude of new connected devices. The combination of broader coverage, interference immunity, indoor performance, and low power node consumption, is enabling the design of improved, smaller, cheaper and longer-lasting wireless connected devices. Fridges, mail packages, lockers and doorbells, garbage bins, beehives and even mouse traps are getting connected. SIGFOX and WiFi-based geolocation are driving tracking/connected devices costs down to encouraging return-on-investments.

But the IoT and LPWANs aren't there just for the low-end, cost sensitive use cases. Potential damage detection and follow-up through Non-Destructive Testing is a high-end, life-critical application example where those technologies are expected to have profound impact. The so called Structural Health Monitoring is growing at fast pace while driven by the infrastructures aging. Massive integration of sensors data, environment variables, machine learning, analysis and reporting are just some of the tools SHM will be provided with by the IoT framework.

This presentation focuses mostly on the particularities of SIGFOX and WiFi based geolocation and the design of devices exploring those technologies. It later digs into the IoT-supported SHM, approaching topics such as cloud/device intelligence splitting, the articulation of different sensors data and the role reserved for the inspector of the future.

## Short Bio



Luís S. Rosado received the B.Sc. and M.Sc. in electronics engineering by the *Instituto Superior Técnico* – University of Lisbon. He concluded the Ph.D in Electrical and Computer Engineering, in December 2014 at the same institution, researching Non-Destructive Testing (NDT) methods and probes for the inspection of friction stir welded joints. From June 2014 to July 2018 he was with Sensima Inspection Sàrl on the R&D of innovative eddy currents NDT systems. Alongside, in November 2015 he became co-founder and Chief Technology Officer of the spin-off SEDECT SA getting focused on innovative metal detection systems for airports security screening. He is currently with LOKA SYSTEMS LIMITED as Head of the IoT devices R&D and with the Department of Electrical and Computer Engineering at *Instituto Superior Técnico* as an Invited Professor. He is interested on wireless devices architectures for the Internet of Things (IoT), radio circuitry for Low Power Wide Area Network (LPWAN), WiFi-based geolocation and Structural Health Monitoring (SHM).