

# The mixed telemetry/image USN in the overload conditions

Ammar Muthanna\*, Andrey Prokopiev\*\*, Andrey Koucheryavy\*\*\*\*

\*State University of Telecommunication, Pr. Bolshevikov, 22, St.Petersburg, Russia

\*\*UbiTel, Ruzovskaya, 21, St.Petersburg, Russia

\*\*\*Central Science Research Telecommunication Institute, First Proezd Perova Poly, 8, Moscow. Russia

ammarexpress@gmail.com, a.prokopiev@ubitel.ru, akouch@mail.ru

**Abstract**—The Internet of Things (IoT) is a new concept for telecommunication development. The IoT and things determinations are considering in accordance with the ITU-T recommendations. The Ubiquitous Sensor Network (USN) is one of the general IoT components. The traffic models for such network are the important field of research presently. The mixed telemetry/image USN behavior in the overload conditions is the investigation goal of this paper. This investigated USN is multi-application network with AODV (Ad Hoc On Demand Distance Vector) signaling protocol. The paper results show that the USN efficiency can reduce in the overload conditions likely the same effect for the PSTN and NGN networks.

**Keyword**—IoT, USN traffic, image applications, Hurst parameter



A.Muthanna was born in Lahj, Yemen 01.01.1984. Graduated from St. Petersburg State University of Telecommunications in 2009 bachelor's degree and in 2011 master's degree. He is PhD student at "Telecommunication Networks" department.

A.Muthanna's scientific areas of interest are traffic models for ubiquitous sensor networks. In 2012/2013 he take part in Erasmus student program in the University of Ljubljana in Faculty of Electrical engineering.



A.Prokopiev was born in small Siberian town Angarsk 11.12.1983. He was studied in St. Petersburg State University of Telecommunication. In 2006 he received Engineer degree. He became PhD in 2012.

After graduating A.Prokopiev works in a small company targeting on the market of wireless sensor networks (WSN), radio frequency identification (RFID) and real-time location system (RTLS). Starting with Engineer position in 2007, right now he became Head of technical department.

Scope of interests includes Ubiquitous Sensor Networks and RTLS systems. Papers of A. Prokopiev published in science journals in Russia and discussed on international conferences. He is also co-author of book dedicated to wireless self-similar networks.



A.Koucheryavy was born in Leningrad 02.02.1952. After graduated from Leningrad University of Telecommunication in 1974 he going to Telecommunication Research Institute named LONIIS, where A.Koucheryavy working up to October 2003 ( from 1986 up to 2003 as the First Deputy Director ). He became the Ph.D and D.Sc in 1982 and 1994 respectively.

A.Koucheryavy is the St. Petersburg State University of Telecommunication (SUT) professor from 1998. He is SUT department "Telecommunication Networks" chief from 2011. Prof. A.Koucheryavy is the advisor of the Central Science Research Telecommunication Institute and St. Petersburg Branch of "GIPROSVYAZ" Institute simultaneously. He is honorary member of A.S.Popov society.

Prof. A.Koucheryavy was the vice-chairman Study Group 11 ITU-T (Study periods 2005-2008, 2009-2012 ). His scientific areas of interest are the network planning, teletraffic theory, IoT and its enablers.