

Accepted Manuscript

Cloud based sensor network for environmental monitoring

S. Corbellini, E. Di Francia, S. Grassini, L. Iannucci, L. Lombardo, M. Parvis

PII: S0263-2241(17)30621-8

DOI: <https://doi.org/10.1016/j.measurement.2017.09.049>

Reference: MEASUR 4999

To appear in: *Measurement*

Received Date: 20 March 2017

Revised Date: 21 August 2017

Accepted Date: 28 September 2017



Please cite this article as: S. Corbellini, E.D. Francia, S. Grassini, L. Iannucci, L. Lombardo, M. Parvis, Cloud based sensor network for environmental monitoring, *Measurement* (2017), doi: <https://doi.org/10.1016/j.measurement.2017.09.049>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Cloud based sensor network for environmental monitoring

S. Corbellini^b, E. Di Francia^a, S. Grassini^a, L. Iannucci^b, L. Lombardo^b, M. Parvis^{b,*}

^a*Dipartimento di Scienza Applicata e Tecnologia Politecnico di Torino*

^b*Dipartimento di Elettronica e Telecomunicazioni*

Politecnico di Torino, Corso Duca degli Abruzzi, 24 - 10129 Torino

Abstract

This paper describes a complete infrastructure for environmental monitoring, which is based on a cloud architecture. The proposed system employs small button-like battery-operated sensors, which connect through a wireless link to small receivers capable of routing data to the cloud system. Cloud data can be accessed in real time through smart phones and downloaded for further analyses. Each button-like sensor is capable of measuring temperature and humidity for more than one year without attendance. All data are sent to the receiver and in addition stored inside the button memory so that the system can work also in the absence of power and Internet connection. The architecture takes advantage of the μ Panel environment, which is conceived to work also with unreliable and slow Internet connections and permits to implement a cloud-based infrastructure with the capability to control the sensors locally and in absence of Internet connectivity. The proposed architecture is currently used in different museums to monitor the local environment inside the display rooms, but the system can be easily extended to open environments without additional costs.

Keywords: Environmental monitoring, Cloud-based measuring systems.

1. Introduction

Environment monitoring is an important issue both to guarantee people health and for preserving materials. Ranges of the different quantities as well as the most important quantities to be monitored of course are related to the specific target, however the infrastructure required for the monitoring is similar in all cases requiring to measure for extended time intervals the quantities of interest in several places at the same time, to concentrate the values in an easy to access repository and to process the acquired data both in real time,

*Corresponding author: marco.parvis@polito.it

متن کامل مقاله

دریافت فوری ←

ISIArticles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات