

Università degli Studi di Padova

DEPARTMENT OF MATHEMATICS "TULLIO LEVI CIVITA"

Master Thesis in Computer Science

Supporting tools for Agile software development: Experience from a real use case

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Abstract

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Sommario

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1 Introduction

- I.I CONTRIBUTIONS
- I.2 DOCUMENT OUTLINE

The document is organized in the following chapters as such:

- I. Introduction:
- 2. Background:
- 3. Technologies:
- 4. Related work:
- 5. Conclusions:



2 Background

This chapter introduces the concept of Internet of Things, which is at the base of this thesis, it describes the problem statement and gives an overview on the background work and state of the art present at the moment of writing. A deeper understanding of the related work can be found in chapter Related Work.

2.1 Internet of Things

The *Internet of Things*, abbreviated with *IoT*, has a longer history than many people know about.

The term "Internet of Things" which is now know all around the globe, has been attributed to Kevin Ashton, who used it in a presentation at Protector & Gamble in 1999 [1] to describe the network connecting objects in the physical world to the Internet.

- 2.2 AIR QUALITY
- 2.3 SOLUTIONS TO DETECT AIR POLLUTION
- 2.4 MEGASENSE



3 Technologies

To fully understand the project and the choices behind it, is worth taking a look at some backgrounds technology which can be useful to know before proceeding further into this thesis. In this chapter we describe DTNs, the notion of peer-to-peer and overlay networks.

- 3.1 RADIO TECHNOLOGIES
- 3.1.1 LoRA
- 3.I.2 LoRAWAN
- 3.1.3 BLUETOOTH
- 3.1.4 W1F1
- 3.1.5 LTE
- 3.2 LORA AND LORAWAN
- 3.3 HARDWARE (MICROCONTROLLERS)
- 3.3.1 Arduino
- 3.3.2 RASPBERRY PI
- 3.3.3 Русом

4 Related work

To better understand the proposed solution in this thesis, this chapter better describes the state of the art and the related work that has been done in this field, both commercially and in research.

5 Proposed solution

- 5.1 Idea
- 5.2 Architecture
- 5.3 HARDWARE
- 5.4 SOFTWARE
- 5.5 Use cases

6 Results and experimentation

Conclusions

- 7.1 Improvements
- 7.2 Future work
- 7.3 Personal considerations

Acknowledgments

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References

[1] K. Ashton. That 'internet of things' thing. [Online]. Available: https://www.rfidjournal.com/that-internet-of-things-thing



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