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C I G I P

FIWARE in Smart Farming – A review

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INTRODUCTION

FIWARE is an open source platform for the deployment of Internet of Things (IoT) applications, driven by European Union and managed by FIWARE Foundation. Recently, FIWARE Foundation has launched his new product Agricolus, developed by TeamDev on March 2018, which focus on Smart Farming and it uses FIWARE infrastructure.

OBJECTIVES

The following poster analyze the existing solutions in Smart Farming which used FIWARE and has compared FIWARE components (generic enablers) reused on these systems. The aim of the poster is to make a literature review of the state-of-the-art of FIWARE in Smart Farming and identify the components of Agricolus in comparison with essential FIWARE architecture.

FIWARE

The key of FIWARE is to be an open architecture and a reference implementation of a service infrastructure, building upon generic and reusable building blocks, called **Generic Enablers** (GEs) [1]:

SECURITY
1. Wilma
2. KeyRock
3. AuthZForce

CLOUD
1. Docker
2. Murano
3. Bosun
4. Cloud Portal
5. Sagitta
6. Pegasus

DATA/CONTEXT
1. CKAN
2. Comet
3. Cygnus
4. Kurento
5. Orion
6. Cosmos
7. CEP

APPS
1. Knowage
2. Biz Ecos.
3. Wirecloud

ADVANCED UI
1. FiVES
2. Cloud RD
3. Geoserver/3D
4. 3D-UI-XML3D
5. WebTundra

I2ND
1. Kiara
2. OFNIC

INTERNET OF THINGS
1. IDAS
2. IoT Discovery
3. IoT Brocker
4. Cepheus

FIWARE in Smart Farming

Solutions for smart farming using FIWARE:
- *Agri-IoT* [2]: Sensor data streams in real-time.
- *SME Widhoc* [3]: App for reducing water in crops.
- *Testbed* [4]: Laboratory environment to simulate.
- *Cropinfra* [5]: Infrastructure to assist farmers.
- *Greenhouse* [6]: Platform from the agri-food sector.
- ***Agricolus*** [7]: A new platform which manages to bring Hardware and Software together in a decision-making process that support farming activities and offers a "plug and play" interface for smart farming.
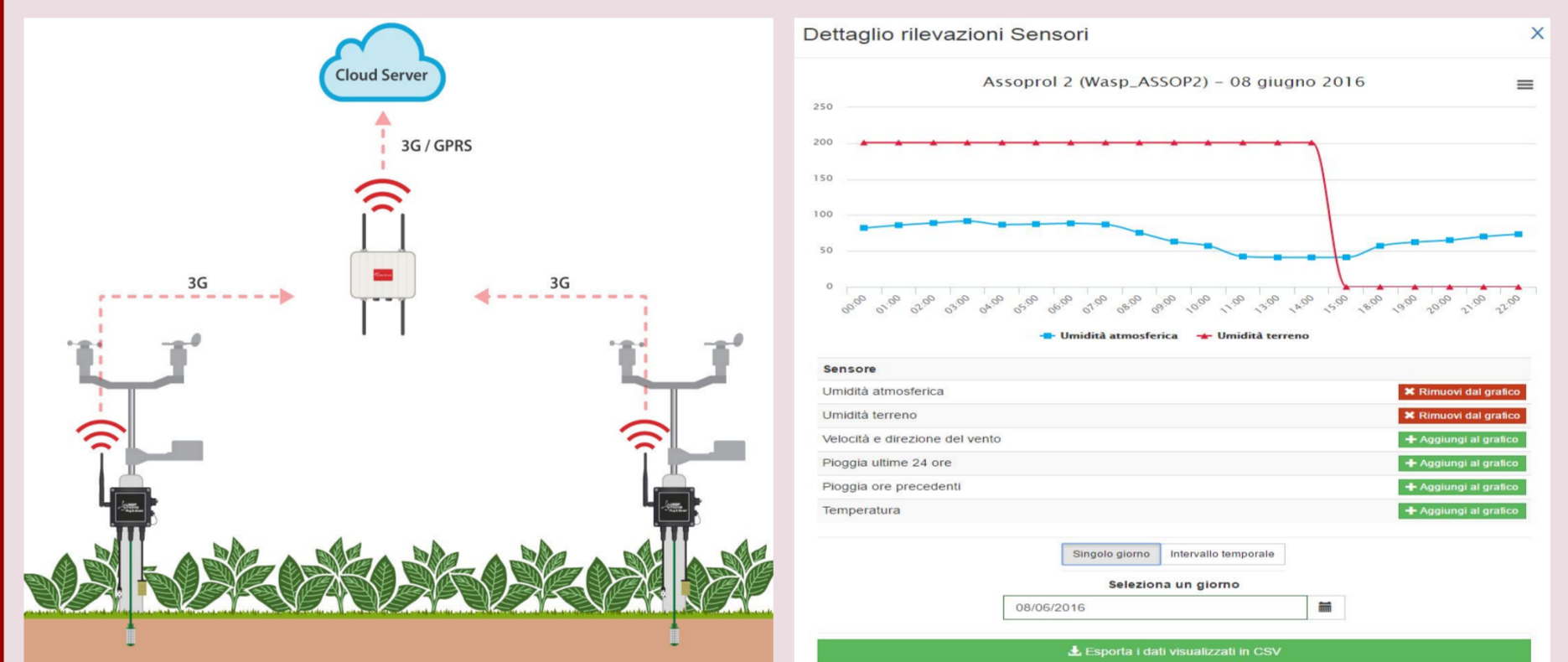

Fig. 1. Agricolus in tobacco's crops in Italy

In the table 1 can notice that **DCM group is the most reused**, because is essential the data/context management for the any IoT platform in Smart Farming.

SmartFarm Solution	SEDF	CH	DCM	I2ND	IoTSE	SEC	AWUI
Agri-IoT	0	0	0	0	2	0	0
SME Widhoc	1	0	3	0	0	0	0
Testbed	0	0	3	0	2	0	0
Cropinfra	2	0	2	1	1	1	0
FMS or Greenhouse	2	0	2	1	1	1	0
Total present applications	*5*	*0*	*10*	*2*	*6*	*2*	*0*
Agricolus	0	0	3	0	1	1	0
Total with Agricolus	*5*	*0*	*13*	*2*	*7*	*3*	*0*

Table 1. Number of FIWARE GEs reused in each group

CONCLUSIONS

These FIWARE solutions studied provides tools accessible to worldwide farmers and to consumers too. It is good news for the agricultural sector, which can adopt these open technologies in his farms and create connected farms.
To conclude, we observed that Orion belonging to DCM group, is the most generic enabler reused in solutions analyzed in Smart Farming, so data/context management can seem essential for any Smart Farming IoT platform. Therefore, FIWARE is a powerful open platform and it is a useful way to standardize the adoption of common interfaces in the IoT field in many different sectors in Europe as agriculture.

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