



SWAMP

SMART WATER MANAGEMENT PLATFORM

Project n°: 777112

WP6

D6.4 Final Dissemination and Communication Activity Report

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Table of contents

Abbreviations.....	5
Executive Summary.....	6
1. Introduction	7
1.1. Purpose and Context of this Deliverable.....	7
1.2. Scope of this Deliverable.....	7
1.3. Deliverable Structure	7
2. Dissemination Activities: SWAMP Year #3	8
2.1. Journal Papers	8
2.2. Conference Papers.....	9
2.3. Posters, Short Papers, Demos, Exhibitions.....	12
2.4. Workshop Organization	12
2.5. Impact and Award.....	13
2.6. Researcher Exchanges.....	14
3. Communication Activities: SWAMP Year #3.....	15
3.1. Communication Activities developed by SWAMP Members	15
4. Online Communication Channels	20
4.1. Website	20
4.2. Twitter	21
4.3. ResearchGate, YouTube and LinkedIn	22
5. Key Performance Indicators (KPI)	22
6. Final Remarks	23
References	24

Abbreviations

ICT	Information and Communication Technologies
IoT	Internet of Things
KPI	Key Performance Indicator
SWAMP	Smart Water Management Platform

Executive Summary

SWAMP (Smart Water Management Platform) is a Europe-Brazil cooperation project aiming at developing Internet of Things (IoT) based methods and approaches for smart water management in the precision irrigation domain and piloting the approaches in four places, two pilots in Europe (Italy and Spain) and two pilots in Brazil. SWAMP aims at improving precision irrigation by increasing the awareness of the condition of the crop, by monitoring the field based on crop status (size, growing phase), soil conditions and environment (e.g. weather forecast) and adjusting the irrigation prescription map accordingly. The smart water management pilots aim at guaranteeing that technological components are flexible enough to adapt to different contexts and be replicable in different locations and settings. The same underlying SWAMP platform can be customized to different pilots considering different farms in different countries, climates, soils, and crops.

This document reports dissemination and communication activities developed by the SWAMP members during the third and final year of the project, between November 2019 and October 2020. These activities have been guided by the SWAMP Dissemination [1] and Communication [2] Plans.

During the third year of the project, most activities involved the use the knowledge and experience obtained in the first and second year in the development of platform, devices, irrigation and water distribution models, and management systems. First and foremost, these activities focused on implementing all technological components into the SWAMP pilots. The project members made an effort in making available to the general public the choices, insights and achievements of the third year that are presented in the following subsections. The COVID-19 pandemic affected many activities, mainly those that required face-to-face contact with different people. Within dissemination management activities, the editorial plan developed in the first year has helped partners to focus on particular subjects worth publishing in journals and conferences.

Due to the very nature of the project that allies key ICT technologies with important societal challenges in agriculture, the SWAMP project continued to cause a positive repercussion within the different stakeholders interested in the project, as well as it received significant coverage by the traditional media channels.

An important point to highlight is that SWAMP members belonging to different partner institutions worked together toward the development of dissemination and communication activities, building upon the connections developed in the first two years.

1. Introduction

1.1. Purpose and Context of this Deliverable

The primary objective of the SWAMP (Smart Water Management Platform) project is to develop IoT (Internet of Things) based methods and approaches for smart water management in the precision irrigation domain and to pilot the approaches in four places, two pilots in Europe (Italy and Spain) and two pilots in Brazil. The key challenges faced by SWAMP are:

- Automating advanced platforms and integrating different technologies and solutions;
- Reducing the effort in software development by exploiting IoT, big data, cloud and artificial intelligence;
- Integrating heterogeneous sensors (also drones) for precision irrigation;
- Providing flexibility and adaptability to different contexts and locations.

SWAMP aims at improving precision irrigation by increasing the awareness of the condition of the crop, by monitoring the field based on crop status (size, growing phase), soil conditions and environment (e.g., weather forecast) and adjusting the irrigation prescription map accordingly. The same underlying SWAMP platform can be customized to different pilots considering different countries, climates, soils, and crops.

The present document reports the dissemination and communication activities developed by the SWAMP member during the third year of the project, between November 2019 and October 2020. These activities have been guided by the SWAMP Dissemination Plan (Deliverable D6.1 [1]) and SWAMP Communication Plan (Deliverable D6.2 [2]).

1.2. Scope of this Deliverable

This document reports dissemination and communication activities undertaken by SWAMP members during the third year of the project, as well as spontaneous media coverage.

1.3. Deliverable Structure

The remainder of this document is organized into five chapters, following the same structure used for the first year report [3]:

- Chapter 2 (Dissemination Activities: SWAMP Year #3) reports dissemination activities during the third year of the project, including papers, posters, workshops and community/clustering activities.
- Chapter 3 (Communication Activities: SWAMP Year #3) reports communication activities during the third year of the project, including news, talks, panels, etc.
- Chapter 4 (Online Communication Channels) reports the use and access of online communication channels, such as the SWAMP website and the Twitter account.
- Chapter 5 (Key Performance Indicators (KPI)), reports a comparison of numbers achieved in the third year of the project against the numbers planned for the whole project duration.
- Chapter 6 (Final Remarks) presents some final thoughts regarding dissemination and communication activities.

2. Dissemination Activities: SWAMP Year #3

During the third year of the project, partners started to harvest the effort undertaken in the first year so that the number of publications and other related activities increased. The experience gained throughout three years of running the project generated knowledge that is worth making public. The editorial plan for dissemination management has helped team members to focus on the important issues that must be brought to the general public, both in the academic and professional worlds.

An important point to highlight is that SWAMP members belonging to different partner institutions have been working together in the development of dissemination activities, which may be observed in the author list in this section.

2.1. Journal Papers

During the third year of the project, three papers have been published in journals and magazines, as depicted by Table 1. Also, currently there are four papers under development that must be submitted for publication soon (Table 2).

TABLE 1: JOURNAL PAPERS - PUBLISHED

#	Title	Authors & Affiliation	Journal	Issue (Vol., N.)	Year	Publisher	DOI
1	Advancing IoT-based Smart Irrigation	Rodrigo Togneri (UFABC), Carlos Kamienski (UFABC), Ramide Dantas (UFPE), Ronaldo Prati (UFABC), Attilio Toscano (UNIBO), Juha-Pekka Soininen (VTT), Tullio Salmon Cinotti (UNIBO)	IoT Magazine	2(4)	2019	IEEE	10.1109/IOTM.0001.1900046
2	Architecting and Deploying IoT Smart Applications: A Performance-Oriented Approach	Ivan Zyrianoff (UFABC), Alexandre Heideker (UFABC), Dener Silva (UFABC), João H, Kleinschmidt (UFABC), Juha-Pekka Soininen (VTT), Tullio Salmon Cinotti (UNIBO), Carlos Kamienski (UFABC)	Sensors	20(1)	2020	MDPI	10.3390/s20010084

3	BloTA: A Buildout IoT Application Language	Fabrizio Borelli (UFABC), Gabriela Biondi (UFABC), Carlos Kamienski (UFABC)	IEEE Access	8	2020	IEEE	10.1109/ACCESS.2020.3003694
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TABLE 2: JOURNAL PAPERS – UNDER DEVELOPMENT

#	Title	Authors & Affiliation	Journal
1	IoT Computing Continuum: Mapping the Distributed Infrastructure for the Internet of Things	Carlos Kamienski (UFABC), Ivan Zyrianoff (UFABC), João Kleinschmidt (UFABC), Ronaldo Prati (UFABC), Alexandre Heideker (UFABC), Dener Silva (UFABC), Marcos Visoli (Embrapa), Tullio Salmon Cinotti (UNIBO), Juha-Pekka Soininen (VTT)	TBD
2	Scheduling formulation for water distribution in open channels	Vittorio Latorre (UNIBO), Lorenzo Carmelo Zingali (UNIBO), Cristiana Bragalli (UNIBO), Armando Brath (UNIBO), Alessio Domeneghetti (UNIBO)	TBD
3	Optimization of irrigation scheduling based on SWMM simulation and derivative free methodology	Vittorio Latorre (UNIBO), Lorenzo Carmelo Zingali (UNIBO), Cristiana Bragalli (UNIBO), Armando Brath (UNIBO), Alessio Domeneghetti (UNIBO)	TBD
4	Exploring the adoption of Precision Agriculture for irrigation in the context of Agriculture 4.0: the key role of Internet of Things	Sergio Monteleone (FEI), Edmilson Alves de Moraes (FEI), Brenno Tondato de Faria (FEI), Plinio Thomaz Aquino Junior (FEI), Rodrigo Filev Maia (FEI), André Torre Neto (Embrapa), Attilio Toscano (UNIBO)	Sensors/MDPI

2.2. Conference Papers

Since the path for publishing papers in conferences is shorter compared to journal, SWAMP members manage to publish 11 papers in important conferences during the third year of the project, as listed in Table 3, Also, 11 papers have been accepted for conferences, as listed in Table 4, where 10 were accepted for the IEEE International Conference on Metrology for Agriculture and Forestry (MetroAgriFor 2020). As of 15 November 2020, these papers have been already presented.

TABLE 3: CONFERENCE PAPERS – PUBLISHED

#	Conference	Venue	Date	Title	Authors
1	IEEE Latin-American Conference on Communications (Latincom 2019)	Salvador (Brazil)	11-13 November 2019	Foundations of Data Quality Assurance for IoT-based Smart Applications	Rodrigo Togneri, Glauber Camponogara, Juha-Pekka Soininen, Carlos Kamienski
2	CLADS 2019 - XVII Latin American Conference and Colombian Meeting of System Dynamics	Bogota (Colombia)	13-15 November 2019	Exploring the Precision Agriculture diffusion in the context of Agriculture 4,0 through System Dynamics	Sergio Monteleone, Edmilson Alves de Moraes, Rodrigo Filev Maia
3	IEEE Global Humanitarian Technology Conference (GHTC 2020)	Online	29 Oct, 01 Nov 2020	A Fuzzy Irrigation Control System	SOUZA, G. ; AQUINO JUNIOR, P. T. ; FILEV MAIA, RODRIGO ; KAMIENSKI, C. A. ; SOININEN, J.
4	EurOMA Conference 2020	Online	29th - 30th June 2020	Exploring the Operations Management in the Agriculture 4.0 adoption	Sergio Monteleone, Edmilson Alves de Moraes, Rafael Gomes Alves, Fábio Lima

TABLE 4: CONFERENCE PAPERS – ACCEPTED

#	Conference	Date	Title	Authors
1	MetroAgriFor 2020	04-06 Nov 2020	IoT-based Measurement for Smart Agriculture	Alexandre Heideker, Dener Ottolini Tullio Salmon Cinotti, André Torre Neto, Ivan Zyrianoff, Carlos Kamienski
2	MetroAgriFor 2020	04-06 Nov 2020	The SWAMP Farmer App for IoT-based Smart Water Status Monitoring and Irrigation Control	Ramide Dantas, Milton Gama Neto, Ivan Zyrianoff, Carlos Kamienski
3	MetroAgriFor 2020	04-06 Nov 2020	Understanding the Tradeoffs of LoRaWAN for IoT-based Smart Irrigation	Bruno Queté, Alexandre Heideker, Dener Ottolini, João Henrique Kleinschmidt, Ivan Zyrianoff, Juha-Pekka Soininen, Carlos Kamienski
4	MetroAgriFor 2020	04-06 Nov 2020	Enhancing Soil Measurements with a Multi-Depth Sensor for IoT-based Smart Irrigation	André Torre-Neto, Jeferson Rodrigues Cotrim, João Kleinschmidt, Carlos Kamienski, Marcos Cezar Visoli
5	MetroAgriFor 2020	04-06 Nov 2020	Water spray detection for smart irrigation systems with Mask R-CNN and UAV footage	Caio Albuquerque, Sergio Polimante, André Torre-Neto, Ronaldo C. Prati
6	MetroAgriFor 2020	04-06 Nov 2020	Sensitivity of the agro-hydrological model CRITERIA -1D to the Leaf Area Index parameter	Tamara Ricchi, Vincenzo Alagna, Giulia Villani, Fausto Tomei, Attilio

				Toscano, Gabriele Baroni
7	MetroAgriFor 2020	04-06 Nov 2020	Calibration equation and field test of a capacitive soil moisture sensor	Gilberto Souza, Brenno Tondato de Faria, Rafael Gomes Alves, Fabio Lima, Plinio Thomaz Aquino-Jr, Juha-Pekka Soininen
8	MetroAgriFor 2020	04-06 Nov 2020	Smart Water Management in Agriculture: a Proposal for an Optimal Scheduling Formulation of a Gravity Water Distribution System	Vittorio Latorre, Lorenzo Carmelo Zingali, Cristiana Bragalli, Alessio Domeneghetti, Armando Brath
9	MetroAgriFor 2020	04-06 Nov 2020	A Nearest Neighbors based Data Filter for Fog Computing in IoT Smart Agriculture	Ribeiro Jr., F., Prati, R., Bianchi, R., Kamienski, C.
10	MetroAgriFor 2020	04-06 Nov 2020	Enabling Context Aware Tuning of Low Power Sensors for Smart Agriculture	Simone Sindaco, Stefania Nanni, Cristiano Aguzzi, Luca Roffia, Tullio Salmon Cinotti
11	SemeAD 2020	25th - 27th November	Exploring the Precision Agriculture adoption in the context of Agriculture 4.0: proposal of a conceptual model	Sergio Monteleone, Edmilson Alves de Moraes, Roberto Max Prottil, Rodrigo Filev Maia

TABLE 5: CONFERENCE PAPERS – SUBMITTED

#	Conference	Date	Title	Authors
1	IFIP/IEEE International Symposium on Integrated Network Management (IM 2021)	17-21 May 2021	A Management Architecture for IoT Smart Solutions: Design and Implementation	Dener Ottolini Alexandre Heideker João Henrique Kleinschmidt Luca Roffia Juha-Pekka Soininen Carlos Kamienski

2.3. Posters, Short Papers, Demos, Exhibitions

By the very nature of posters, short papers, demos and exhibitions, there are more opportunities to disseminate the work developed within the project through those means. During the third year of the project, SWAMP members engaged in the presentation of one activities of this kind (TABLE 6) and manage to have one short paper accepted (TABLE 7).

TABLE 6: POSTERS, SHORT PAPERS, DEMOS, EXHIBITIONS – PRESENTED

#	Event	Venue	Date	Title	Authors
1	1st Workshop on vAlidation and verification in FuturE cybeR-physical Systems (WAFERS)	Natal (Brazil)	21 November 2019	End-to-end Security in the IoT Computing Continuum: Perspectives in the SWAMP Project	João Kleinschmidt, Carlos Kamienski, Ronaldo Prati, Kari Kolehmainen, Cristiano Aguzzi

TABLE 7: POSTERS, SHORT PAPERS, DEMOS, EXHIBITIONS – ACCEPTED

#	Event	Venue	Date	Title	Authors	Participants	Note
1							

2.4. Workshop Organization

According to TABLE 8, two workshops to the scientific community have been organized during the third year of the project, Both happened in November 2018.

TABLE 8: WORKSHOP ORGANIZATION

#	Workshop/Event	Venue	Date	Participants	Target stakeholders	Note
	2020 IEEE International Workshop on Metrology for Agriculture and Forestry (MetroAgriFor 2020)	Online	04-06 Nov 2020	Various participants from SWAMP	Scientific community	SWAMP has an important role in MetroAgriFor 2020, with a TPC Co-Chair and organizing two special sessions on Water Management. Special Session #8: Integrated Water Management For Agriculture (Part I): Sensing, Modeling, And Data Integration Special Session #9: Integrated Water Management For Agriculture (Part II): Architectures, Platforms And Sustainability

2.5. Impact and Award

Two papers published by SWAMP members received special attention during the third year of the project.

- Impact: the paper “Smart Water Management Platform: IoT-Based Precision Irrigation for Agriculture”¹ published by the Sensors Journal, caused a high impact in the scientific community since it was published in January 2019 (Figure 1)
 - 84 citations in Google Scholar
 - 33 citations in Web of Science
 - 6459 abstract views and 8660 full-text views in the Sensors website
 - Most viewed paper in 2019 with 3189 views²



Figure 1: MDPI Tweet for the most viewed paper in 2019: Sensors Journal

- Award: the paper “Water spray detection for smart irrigation systems with Mask R-CNN and UAV footage” published in MetroAgriFor 2020 received the best paper award, as depicted by Figure 2.

¹ <https://www.mdpi.com/1424-8220/19/2/276>

² https://twitter.com/Sensors_MDPI/status/1215332584764399618?s=20



Figure 2: Best Paper Award in MetroAgriFor 2020

2.6. Researcher Exchanges

During the third year of the project, the COVID-19 pandemic prohibited trips and face-to-face meetings. We had one visit from a PhD Student from UFABC to UNIBO that started on September 2019 and ended on February 2020, reported in TABLE 9. Also, Ivan Zyrianoff from UFABC applied for a PHD position at UNIBO and was accepted (for starting in November 2020).

TABLE 9: RESEARCHER EXCHANGES AMONG PROJECT PARTNERS

#	Researcher / Partner	Receiving Partner / Place	Period
1	Jeferson Cotrim (UFABC)	UNIBO	September 2019 to February 2020
2	Ivan Zyrianoff (UFABC)	UNIBO (accepted as a PhD Student)	From November 2020 on

3. Communication Activities: SWAMP Year #3

SWAMP members have been having great opportunities for actively engaging in communication activities during the first two years of the project. In the third year, the COVID-19 pandemic posed a new challenge for some important face-to-face meetings. Yet, TABLE 10 shows different communication activities developed, involving interviews, news, panels, and talks/speeches. Also, the SWAMP Communication Report Form³ has been serving well its purpose, since it made easier to gather the information from the partners, who have been using it just nicely.

3.1. Communication Activities developed by SWAMP Members

TABLE 10: COMMUNICATION ACTIVITIES UNDERTAKEN BY SWAMP PARTNERS

#	Title	Means	Place	Audience	Date	Partners	URL - Note
1	SWAMP Project Presentation	Meeting	EU-Brazil Workshop on Research & innovation Projects	Scholars, professionals, government	25/11/19	VTT	
2	B2B Business meeting with Turkey businessmen	Fair/Exhibition	Valencia Chamber of Commerce	Agriculture professionals (agronomists, engineers, etc.), Farmers	23/01/20	Quaternium	
3	SWAMP impact for agriculture with clients	Panel	Quaternium Technologies	Agriculture professionals (agronomists, engineers,	04/02/20	Quaternium	https://www.quaternium.com

³ <http://swamp-project.org/forms>

				etc.			
4	LinkedIn Post	Social Media Post	LinkedIn	Scholars, professionals, government	06/02/20	Quaternium	Social media post where we explain the impact and importance of SWAMP Project
5	Facebook Post	Social Media Post	Facebook	Scholars, professionals, government	07/02/20	Quaternium	Social media post where we explain the impact and importance of SWAMP Project
6	Optimization methods for water irrigation scheduling	Talk/Speech	UNIBO	Researchers and Professors	14/02/20	UNIBO	
7	Join us on the SWAMP Interest Group	News	Quaternium Website	Scholars, professionals, government	05/05/20	Quaternium	www.quaternium.com/join-us-on-the-swamp-interest-group/
8	LinkedIn Post - invitation to SWAMP interest group	Social Media Post	LinkedIn	Scholars, professionals, government	06/05/20	Quaternium	https://www.linkedin.com/feed/update/urn:li:activity:6663351886214688768
9	Instagram Post - invitation to SWAMP interest group	Social Media Post	Instagram	Scholars, professionals, government	06/05/20	Quaternium	https://www.instagram.com/p/B_zWP6mHkhv/?igshid=137sf11yb9vvd

10	Twitter Post - invitation to SWAMP interest group	Social Media Post	Twitter	Scholars, professionals, government	10/05/20	Quaternium	https://twitter.com/quaternium/status/1257612413844815873?s=12
11	Instagram Post - invitation to SWAMP interest group	Social Media Post	Instagram	Scholars, professionals, government	06/05/20	Quaternium	www.embrapa.br/en/busca-de-noticias/-/noticia/54293512/brasil-avanca-em-tecnologia-de-irrigacao-de-precisao-com-uso-de-internet-das-coisas
12	Brasil avança em tecnologia de irrigação de precisão com uso de Internet das Coisas (Brazil advances in precision irrigation technologies using the Internet of Thing)	News	Agrolink – Brazil (www.agrolink.com.br)	Farmers, researchers, professionals	17/07/20	UFABC	www.agrolink.com.br/noticias/brasil-avanca-em-tecnologia-de-irrigacao-de-precisao-com-uso-de-internet-das-coisas_436810.html
13	Irrigation Technology in Brazil	Interview	Terra Viva TV Channel - Brazil (tvterraviva.band.uol.com.br)	Farmers	24/07/20	UFABC	tvterraviva.band.uol.com.br/videos/16812166/conversa-franca-tecnologia-de-irrigacao-no-brasil
14	Lodspeaker integration post	Social Media Post	LinkedIn	General Public	21/08/20	Quaternium	Social media post showing SWAMP drone and rproving that also works for surveillance operations

15	IoT in Agriculture	Interview	AgEvolution Channel – Brazil (agevolution.canalrural.com.br)	Farmers	08/09/20	UFABC	youtu.be/3IA7ZmAsUyQ
16	Dissemination of the SWAMP project with clients	Talk/speech	Demo at Quaternium	General Public	09/09/20	Quaternium	Short demo of our SWAMP technology to possible clients
17	The Internet of Things and Applications in Smart Agriculture	Talk/speech	Regional School of Computer Science (ERBASE): online	Computer Science Students	28/10/20	UFABC	https://erbase2020.ifal.edu.br/
18	Computational Intelligence in Industry and Agribusiness	Panel	Regional School of Computer Science (ERBASE): online	Computer Science Students	30/10/20	UFABC, UFPE	https://erbase2020.ifal.edu.br/
19	Precise and smart irrigation management: the H2020 SWAMP project	Workshop	ECOMONDO - The Green Technology EXPO - Rimini, Italy	General public, Scientific community, Government	03/11/20	CBEC - UNIBO	https://www.ecomondo.com/eventi/programma/seminari-e-convegni/e16142606/approvvigionamento-idrico-sostenibile-e-resiliente-in-agricoltura-il-ruolo-delle-grandi-infrastrutture-idriche-e-del-riuso-delle-acque-reflue-depurate.html
20	Gestione precisa e intelligente dell'irrigazione: il progetto H2020	Workshop	ECOMONDO - The Green Technology EXPO - Rimini, Italy	General public, Scientific community, Government	03/11/20	UNIBO	https://www.ecomondo.com/eventi/programma/seminari-e-convegni/e16142606/approvvigionamento-idrico-sostenibile-e-resiliente-in-agricoltura-il-ruolo-delle-grandi-infrastrutture-idriche-e-del-riuso-delle-acque-reflue-depurate.html

	SWAMP			nt			
21	Quanto le tecnologie IoT vengono utilizzate in Italia: siamo in linea con altri paesi europei?	Workshop	LORAWAN The future of IoT technologies in Emilia Romagna Region (WORKSHOP at "Unione della Romagna Faentina", Faenza, Italy)	Government and Professionals, some Scholars (> 50 people)	11/11/20	UBO	http://www.romagnafaentina.it/Notizie-ed-eventi/Calendario-Eventi/LORAWAN-il-futuro-delle-tecnologie-IoT

4. Online Communication Channels

The online communication channels played an important role during the third year of the project, with a special highlight for the project website that received a high number of visits.

4.1. Website

The SWAMP Website⁴ is by far the most accessed communication channel during the third year of the project, as in the previous two years. TABLE 11 shows statistics obtained by the website provider, where according to different metrics, accesses reached a monthly average of 1055 unique visitors (by IP address), 1,713 visits (considering returning visitors), 6,030 page views (mostly HTML objects) and 23,084 hits (all objects),

TABLE 11: ACCESS TO THE WEBSITE: VISITORS, VISITS, PAGES AND HITS

Month	Unique Visitors	Number of visits	Pages	Hits (objects, including pages)
Nov 2019	878	1530	4340	24,875
Dec 2019	1,031	1,698	4,473	16,829
Jan 2020	1,097	1,919	5,156	20,892
Feb 2020	1,259	2,019	5,261	22,502
Mar 2020	1,093	2,079	5,497	21,474
Apr 2020	1,047	2,045	5,818	22,008
May 2020	1,112	1,956	5,599	24,283
Jun 2020	1,235	2,106	10,391	38,196
Jul 2020	966	1,586	7,437	23,361
Aug 2020	847	1,407	6,543	16,224
Sept 2020	1,219	1,937	8,545	25,261
Oct 2020	880	1,659	7,212	21,104
Total	12,664	20,564	72,366	277,009
Average	1,055	1,713	6,030	23,084

TABLE 12 shows the 20th top most countries where the accesses to the website originated from, Apart from the home countries of the SWAMP partners (Brazil, Finland, Italy), it is clear that SWAMP is attracting the attention from the community of countries such as the United States, Russia, China, India, France, and Great Britain.

TABLE 12: ACCESS TO THE WEBSITE BY COUNTRY

#	Country	Pages (%)	#	Country	Hits (%)
1	United States	51.51	1	United States	36.09
2	Brazil	10.53	2	Brazil	15.65

⁴ <http://swamp-project.org>⁵

3	China	5.81	3	China	5.56
4	Russian Federation	5.68	4	India	4.31
5	Ukraine	5.30	5	Italy	3.74
6	France	3.35	6	France	3.67
7	India	2.37	7	Ukraine	2,09
8	Great Britain	1.16	8	Russian Federation	1.94
9	Italy	0.94	9	Great Britain	1.91
10	Germany	0.67	10	Germany	1.82
11	Morocco	0.67	11	Finland	1.74
12	Malaysia	0.63	12	Malaysia	1.57
13	Canada	0.58	13	Canada	1.32
14	Turkey	0.58	14	Turkey	1.25
15	Australia	0.51	15	Romania	0.87
16	South Africa	0.47	16	Ireland	0.80
17	Greece	0.45	17	Australia	0.80
18	Netherlands	0.45	18	Greece	0.77
19	Mexico	0.42	19	South Africa	0.72
20	Finland	0.40	20	Portugal	0.71
	Others	7.13		Others	12.66

In order to communicate important activities of the project, 13 pieces of news have been published in the SWAMP Website:

- 1 SWAMP Newsletter #1: Message from the Coordinators
- 2 News from the Reggio Emilia Pilot at COVID-19 Time
- 3 Experiences on the SWAMP Cartagena pilot during spring 2020
- 4 News from the MATOPIBA Pilot
- 5 Communication Activities
- 6 Dissemination Activities
- 7 Exploitation Activities
- 8 SWAMP Paper: Architecting and Deploying IoT Smart Applications
- 9 SWAMP Paper: Advancing IoT-Based Smart Irrigation
- 10 SWAMP Paper: End-to-End Security in the IoT Computing Continuum
- 11 SWAMP Paper: Foundations of Data Quality Assurance for IoT-based Smart Applications
- 12 SWAMP Paper: A Digital Twin for Smart Farming
- 13 SWAMP Paper: Designing an Open IoT Ecosystem

4.2. Twitter

The SWAMP Twitter account⁵ (@SwampProject) has been the most active social media communication channel during the third year of the project, having 125 followers. TABLE 13 shows the monthly statistics for

⁵ <https://twitter.com/SwampProject>

the third year of the project, including the number of Tweets (created by the project account, which does not count retweets), Impressions (number of times tweets were shown to other users), Profile Visits, Mentions (number of times the @SwampProject was mention in another tweet) and the number of new followers, Also, all tweets and retweets made by the SWAMP account go directly to the first page of the Website.

TABLE 13: STATISTICS OF THE SWAMP TWITTER ACCOUNT

Month	Tweets	Impressions	Profile Visits	Mentions	New Followers
Nov 2019	2	2,212	54	1	2
Dec 2019	2	2,187	21	2	2
Jan 2020	2	1,595	19	2	1
Feb 2020	9	2,042	49	13	3
Mar 2020	4	2,063	42	5	5
Apr 2020	-	1,773	46	-	4
May 2020	-	1,746	20	1	1
Jun 2020	4	3,503	25	3	3
Jul 2020	-	1,300	3	3	-
Aug 2020	1	1,351	110	-	1
Sept 2020	-	1,017	5	-	1
Oct 2020	-	794	16	-	2
Total	25	20,296	410	30	25

4.3. ResearchGate, YouTube and LinkedIn

The ResearchGate SWAMP Project⁶ has been the most active social media service for academic and research results related to the project. 22 SWAMP members are included as collaborators, dozens of research items have been added, the project has 37 followers and received 356 reads.

The SWAMP YouTube channel⁷ has been primarily used for storing videos that are shared via other communication channels and SWAMP LinkedIn⁸ project page is intended to be the key online channel targeting the professional community. YouTube and LinkedIn have not been very active social networks for the SWAMP Projects.

5. Key Performance Indicators (KPI)

TABLE 14 presents the Target KPIs for the three years of the SWAMP project as approved in the proposal and also kept in the SWAMP Dissemination Plan and SWAMP Communication Plan, as well as it provides some estimated numbers for the third year. It becomes clear that for most of the KPIs their target values have been surpassed the original expected numbers.

TABLE 14: TARGET KPIs FOR DISSEMINATION AND COMMUNICATION ACTIONS

Key Performance Indicator (KPI)	Target	1 st Year	2 nd Year	3 rd Year
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6 <https://www.researchgate.net/project/SWAMP-Smart-Water-Management-Platform-2>

7 <https://www.youtube.com/channel/UCBhiat4FfEv65I2Nofrv2lg>

8 <https://www.linkedin.com/company/swamp-project/>

	value			
Number of journal paper published	12	1	4	3
Number of conference papers published	20	6	11	4
Number of participants in communication activities	150	+1000	+1000	+1000
Number of workshops and meetings organised by project members	8	2+6	2+4	1
Number of participations in different community/cluster events	12	7	3	2
Number of updates in social media channels	50	79	40	25
Number of visitors per month in Website	50	1185 (average)	887 (average)	1,055 (average)
Number of followers and comments in social media channels	150	141	150+	170+
Number of press releases	12	1	0	1
Number of posters, leaflets, and presentations created	4	11	19	2
Number of participations in scientific conferences and workshops	20	15	11	10

6. Final Remarks

During the third and last year of the project, between November 2019 and October 2020, dissemination and communication activities have been playing an important role in the SWAMP project and members have been putting a lot of effort to make sure that the society and all involved stakeholders understand its importance and contributions. An important point to highlight is that SWAMP members belonging to different partner institutions have been working together toward the development of dissemination and communication activities. During the COVID-19 pandemic in 2020 many activities could not be done, for example, those requiring physical contact or face-to-face meeting.

Building upon the knowledge and experience gained in the first year, in the third year the project partners could harvest some important results in terms of dissemination. As for communication activities, due to the very nature of the project that allies key ICT technologies with important societal challenges in agriculture, the SWAMP project has been having a good repercussion within the different stakeholders interested in the project, as well as it received significant coverage by the traditional media channels.

SWAMP partners have planned a considerable number of journal and conference papers for the third and final year, which are expected to make justice to the interdisciplinary effort that has been developed within the project. Also, dissemination activities are expected to survive to the end of the project, since many new and high-quality content, with original contributions to the generation of knowledge beyond the current state of the art, has not yet been published.

References

- [1] Salmon-Cinotti, T., et al., "Dissemination Plan", SWAMP Deliverable D6,1, April 2018,
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- [3] Kamienski, C., Salmon-Cinotti, T., "Intermediate Dissemination and Communication Activity Report", SWAMP Deliverable D6.3, November 2018.
- [4] Kamienski, C., Salmon-Cinotti, T., "Intermediate Dissemination and Communication Activity Report", SWAMP Deliverable D6.8, November 2019.