



D7.6 - Final Advertising, Community Engagement materials and Results

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1.0	2021-04-01	Philippe Krief (ECL)	Integrated LINKS review

Review History

Version	Review Date	Reviewer	Summary of Comments
0.1	2021-03-28	Guillemette MASSOT (AIRBUS)	Approved with minor comments
0.3	2021-04-01	Enrico Ferrera (LINKS)	Approved with minor comments

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1 Introduction

The main objective of work package 7 is to create awareness and adoption of the BRAIN-IoT project within the targeted communities defined by deliverables D7.4 & D7.1, i.e.: research communities, developer communities (Early adopters and Late adopters), solution makers, end-users and the general public.

This report documents the final efforts and results of the project in term of advertising and community engagement. It follows the dissemination strategy defined in D7.1. and the updated version of the advertising, community engagement materials and results available in D7.5.

In this document, a list of press releases, articles, social media tools and available contents will be presented.

1.1 Answers to M18 Reviewer's feedback

- *The specific plan of dissemination activities for the last 12 months of the project should be more detailed, with a set of detailed actions that will be implemented, and responsibilities assigned.*

This point is answered in the deliverables D7.7 and D7.8.

- *Dissemination towards the IoT cluster should also be the opportunity to assess the interest of the stakeholders community for Brain-IoT developments.*

This point is answered in the section 3.15.

- *The scientific dissemination should be strengthened to reach at least partially KPIs defined for the project.*

We were targeting 10 publications in international conference, we published 13 articles (see section 3.6) and we published 5 articles in international journals when we were planning only 3 (see section 3.7)

- *The goals and KPIs included in the Grant Agreement should be taken seriously and not be devaluated during the course of the project. The status of KPIs to be addressed within the project is unclear.*

The BRAIN-IoT consortium has made tremendous progress in achieving the key performance indicators submitted in the DoA (see Section 2). Most of the key performance indicators have been achieved or are on track to be achieved despite the current pandemic.

- *R5: Dissemination activities need to be properly planned to achieve impacts and support realization of project goals. It is not important how many activities will be performed, but the quality of these events (number of people reached, quality of publication, etc.). Scientific dissemination needs to be strengthened.*

We organized 3 major (virtual) events which contributed to the enhancement of our community / early adopters. These events are mentioned in the section 3.8.

- *Please clarify what are the activities jointly undertaken with other projects from the cluster.*

This point is answered in the section 3.15.

- *Please provide update in relation to previously provided KPIs. Please include statistics showing presence in all channels.*






This deliverable included some stats on our communication in the section 3.4.

- *Please clarify what happened AFTER events e.g. in terms of website visits or new contacts. For whom are the leaflets/newsletter?*

The point is evidenced in section 3.4.4 by presenting the impacts of some key events on the activity around the website.

- *Are the audience needs properly addressed (proper content and proper language)?*

We will use the following symbols to designate any specific target when some dissemination assets or events will require it:

Symbol	Target
	Developers
	Early adopters
	Eclipse Community
	Industrials, System Integrators and Solution makers
	Water managers and technicians

It shows the diversity of our dissemination activity.

- *What are the activities to create the community of developers around the marketplace?*

BRAIN-IoT was present at EclipseCon every year for 3 years and participated in a few Eclipse IoT days where BRAIN-IoT could be presented to the Eclipse developer community. As reported in D7.7, the assets of BRAIN-IoT project had a low TRL, which required to develop some of them from ground. Because of this, the Consortium decided to not open source immediately the code for the assets which were still not mature enough and could create a negative perception. Only few assets with a higher TRL were already available (e.g., BRAIN-IoT Monitoring Tool, the sensiNact-based Edge Nodes) but with a low integration maturity. The source code has been officially released only during the third year of the project and, for these reasons, it was more difficult to attract many developers these past years. However, with the creation of the Kentyou startup (spin-off of CEA, which also include employees from IDATE and Paremus) the engagement of the community is part of the sustainability plan for the commercialization of services based on BRAIN-IoT solution. On the other hand, the Consortium focused on communication by organizing events like SAM IoT and having a central role in the foundation of an alliance for the Smart Cities – namely Urban Technology Alliance - for the networking and cities engagement.

2 Dissemination KPI summary

The following table summarizes all the dissemination KPIs mentioned in D7.1 and provides for each KPI the target value and the final result.

KPI	Target	Results
[KPI-01] Non-scientific publications (articles, press releases, TV ...)	10	18
[KPI-02] Newsletters	3	6
[KPI-03] Videos created with relevant content	20	13
[KPI-03.b] Video views	4000	879
[KPI-04] Followers in social networks	500	467
[KPI-05] Number of deliverables downloaded	200	5573
[KPI-06] Publications in international conferences	10	13
[KPI-07] Publications in international journals	3	6
[KPI-08] Co-organized international workshops	3	7
[KPI-09] Graduate Education course	6	3
[KPI-10] Summer Schools / Lectures series	4	3
[KPI-11] Tutorials	2	5
[KPI-12] Hands-on coaching participant	100	0
[KPI-13] One-day open workshop format	2	2
[KPI-14] Standardization groups that project interact with	5	3
[KPI-15] Participation in EU commission's consultation and other worldwide regulatory in the field of interest	5	3
[KPI-16] Dedicated workshop to third parties (outside the consortium)	2	5
[KPI-17] Clustering activities with other EU related projects/initiatives (e.g. ECSEL/ARTEMIS)	2	2
[KPI-18] Other conferences and Eclipse community building events	4	11
[KPI-19] Blogposts and up-to-date contents in the website	36	45
BRAIN-IoT public presentations	--	7
Other downloaded assets (but deliverables)	--	2720








The following sections will detail each of these KPIs.

3 Dissemination KPI details









3.1 [KPI-01] Non-scientific publications (articles, press releases, TV ...)

3.1.1 Press Releases

The BRAIN-IoT project has released a series of digital articles to disseminate the goals and objectives of the project, and to inform the general public about relevant assemblies that the project has carried-out during its lifetime. In the following table, a list of the BRAIN-IoT press releases is given:

Press Release	Location	Link
ISMB Hosts the Kick-Off Meeting of BRAIN-IoT Project 	ISMB's website	link
BRAIN-IoT – The Evolvable Software Nervous System for Tomorrow's Autonomous Smart Cities and Industry 4.0 (PAREMUS) 	Paremus' website	link
Eclipse Foundation supports EU funded Brain-IoT Project 	Eclipse's website	link
IDATE DigiWorld has been selected to Provide Market Analysis and Exploitation Support for EU funded IoT Research Project 	IDATE website	link
Airbus CyberSecurity brings its expertise to EU funded Brain-IoT Project	Airbus Cyber Security website, other sources	link
Os encargados europeos de facer doada a Internet das Cousas xúntanse na Coruña (Improving Metrics) [In Galician]	Codigo Cero	link
Emalcsa e Improving Metrics organizan un encontro en A Coruña sobre el proyecto europeo BRAIN-IOT (Improving Metrics) [In Spanish] 	Big Data Magazine	link
European consortium aims to improve IoT security, interoperability 	Consulting-Specifying engineer	link
New European consortium to improve IoT security, interoperability 	Internet of Business magazine	link

3.1.2 Other articles

Article	Type	Link
BRAIN-IoT for Smart Cities 	Blog Article	link
EMALCSA Critical Infrastructure Use Case 	Blog Article	link
Robotnik's Service Robotics Use Case 	Blog Article	link
WoT activities in the context of BRAIN-IoT 	Blog Article	link
The BRAIN-IoT modelling framework	Blog Article	link
Machine Learning in BRAIN-IoT for Critical Infrastructure Management 	Blog Article	link
BRAIN-IoT featured in the Eclipse Foundation Newsletter 	Blog Article	link
Towards a Reference Architecture for IoT systems 	Blog Article	link
A smarter Internet of Things for industrial efficiencies 	Article	link

3.2 [KPI-02] Newsletters

We have created a MailChimp account to host our website/newsletter followers. We published in 3 years a total of 6 newsletters: one every 6 months summarizing the activity and the progress of the project.

Newsletter	Recipients	Link
· Newsletter #1 - Dec. 2018	26	link
· Newsletter #2 - Jul. 2019	36	link
· Eclipse Newsletter - Jul. 2019	250.000	link
· Newsletter #3 - Dec. 2019	41	link
· Newsletter #4 - Jun. 2020	42	link
· Newsletter #5 - Jan. 2021	212	link

We increased a lot our subscribers after we organized the Eclipse SAM-IoT virtual conference. This conference attracted IoT experts and researchers on topics of Security, AI and Modelling, 3 key topics of the BRAIN-IoT project.

In January, the newsletter #5 has been sent to 212. It has been opened by 136 subscribers. We end the project with **209 subscribers**.

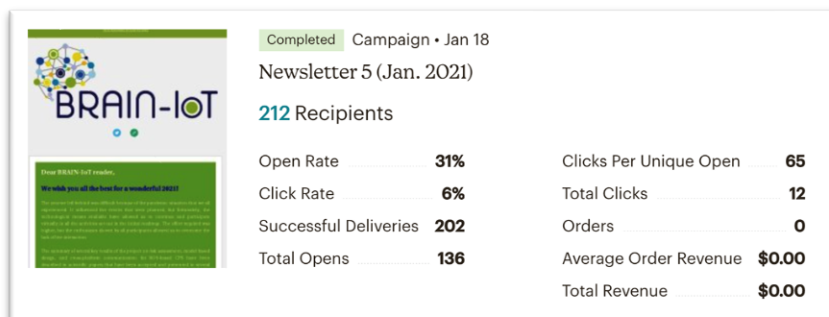















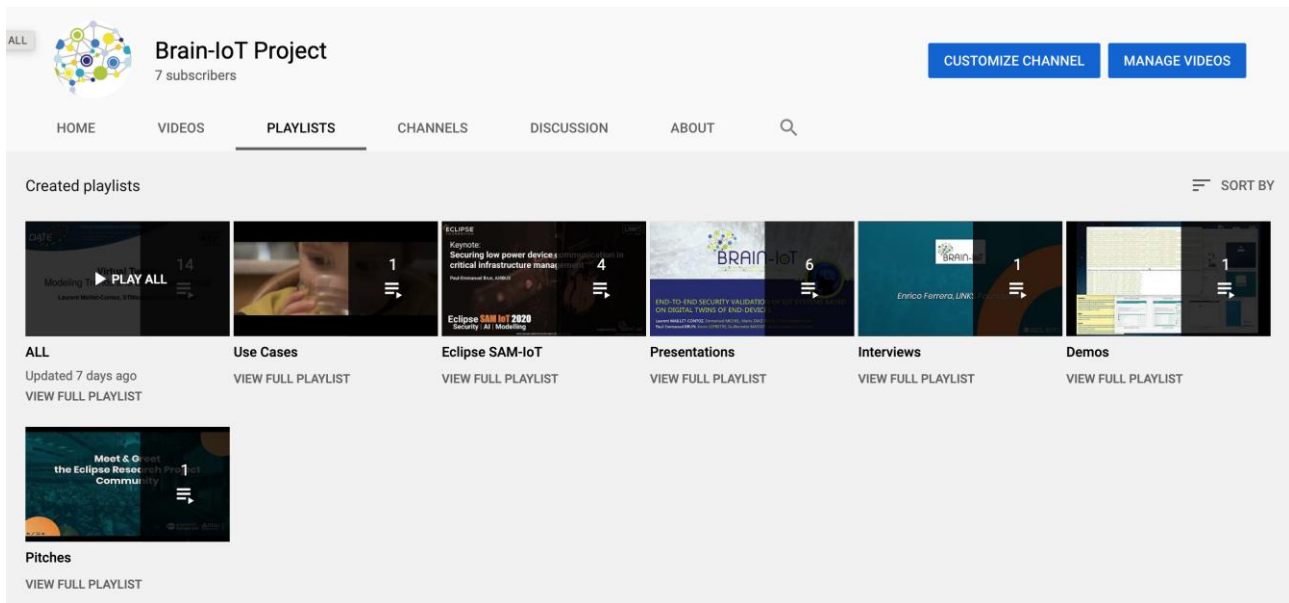
Figure 1: Latest BRAIN-IoT newsletter campaign results

3.3 [KPI-03] Videos created with relevant content

BRAIN-IoT produced 13 videos despite the constraints associated with the pandemic.

Videos	Views	Link
Service Fabric for Cloud, Edge & Fog Computing – Paremus 	190	link
Pitch at EclipseCon Europe 2019 	118	link
Enrico Ferrera Interview, Oct. 2019 	229	link
Medusa Project – EMALCSA 	36	link
End-to-end security validation of IoT systems based on digital twins of end-devices - 2020 Global Internet of Things Summit (GloTS) - Airbus – STMicroelectronics 	36	link
Exploration of Impactful Countermeasures on IoT Attacks – UGA 	38	link
Risk Assessment in IoT Case Study: Collaborative Robots System - UGA/SAM-IoT 	58	link
Model-Based Methodology and Framework for Design and Management of Next-Gen IoT Systems - LINKS/SAM-IoT 	51	link
A Cross-Platform Communication Mechanism for ROS-Based Cyber-Physical System - LINKS/SAM-IoT 	58	link
Securing low power device communication in critical infrastructure management - Airbus/SAM-IoT 	36	link
Virtual Twins: Modelling Trends and Challenges Ahead – STMicroelectronics 	14	link
BRAIN-IoT presentation – Robotnik 	15	link
Using Eclipse Technologies to Develop the BRAIN-IoT model-based framework for IoT platform - Eclipse IoT Day Grenoble 2019 	Broken link	link

BRAIN-IoT videos are either uploaded in our YouTube channel¹ or referenced by this channel.



3.3.1 Video request for scientific TIB AV Portal

We also have been contacted by the “German National Library of Science and Technology in Hannover in the field of inventory development” to collect our SAM-IoT video and publish them on their two portals: TIB AV Portal (<https://av.tib.eu/>) and via the TIB Portal (<http://tib.eu>). The TIB AV Portal is available for use free of charge and free of advertising.

¹ <https://www.youtube.com/channel/UCuft33LBDS54oOcR06tDBxw>

The videos made available in the TIB AV Portal can be used and cited easily. The films are permanently stored for users and are allocated a digital object identifier (DOI) as a clear citation link (to the second). The DOI enables AV media to be cited, referenced, and accessed on a long-term basis. In addition, the videos can be analysed using automated scene, text, speech and image recognition, meaning that special-interest communities can research them more effectively.

3.4 [KPI-04] Followers in social networks

The project created the following social media accounts to promote project progress and deliverables:

Social Media	Followers	Link
Twitter	204	link
LinkedIn	34	link
MailChimp	212	
SlideShare	10	link
YouTube	7	link

3.4.1 Twitter account (<https://twitter.com/Brain IoT>)

BRAIN-IoT created a Twitter account to engage in social media and contribute in building a community around the project and its results.

By the end of March 2021, BRAIN-IoT has published **189 tweets** and has **203 followers**.



Figure 2. Status of the BRAIN-IoT Twitter account (Mar. 2021)

The following table shows the impressions of BRAIN-IoT's quarterly tweets. We find, of course, the same peaks as for the website activity (section 3.4.4). The activity on this social media was growing smoothly.

Tweets impressions (x1000)	2018				2019				2020				2021
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1
	4.2	4.3	2.2	9.8	5.6	4.9	5.3	6.3	5.1	9.1	2.7	8.2	5.9

3.4.2 LinkedIn account (<https://www.linkedin.com/groups/13579932/>)

We used this account to tweet more broadly to our partners' networks. In fact, some of our partners do not have access to their organization's Twitter account and/or do not have a Twitter account. Their tweets under LinkedIn allowed us to access their network anyway.

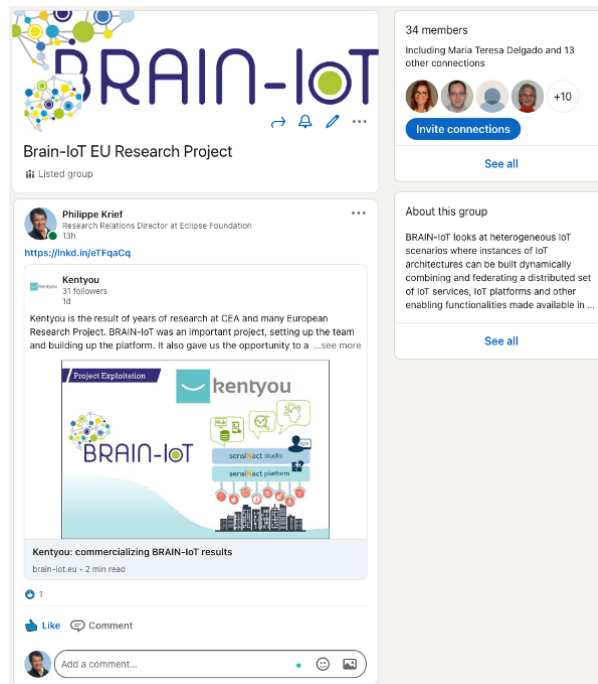
















Figure 3: BRAIN-IoT LinkedIn group

3.4.3 SlideShare account (<http://www.slideshare.net/BrainIoT>)

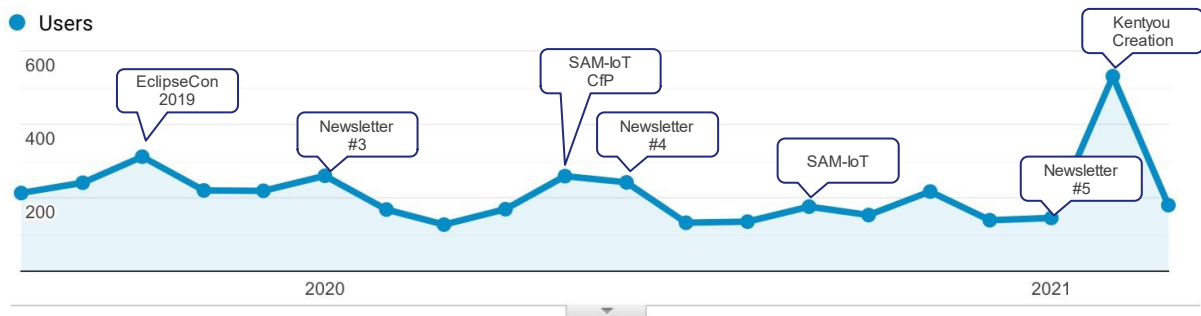
The BRAIN-IoT project has a SlideShare account to share any public presentation made about the project or in relation to the project. We collected 13 presentations during the project:

Name	Views	Link
Virtual Twins: Modeling Trends and Challenges Ahead 	10	link
Using Eclipse technologies to develop the BRAIN-IoT model-based framework for IoT platforms 	8	link
SAM-IoT: A Cross-Platform Communication Mechanism for ROS-Based Cyber-Physical System	7	link
Brain-IoT Project: Security Cluster activities overview 	7	link
Virtual Twins: Modeling Trends and Challenges Ahead 	7	link
Statistical model checking bip tool 	6	link
SAM-IoT: Model Based Methodology and Framework for Design and Management of Next-Gen IoT Systems 	6	link
Overview of the WP4 of BRAIN-IoT  	5	link
IMB Brokerage day - EMALCSA: SICA platform and BRAIN-IoT  	5	link

SAM-IoT: Securing low power device communication in critical infrastructure management 	5	link
SAM-IoT: Risk Assessment in IoT Case Study: Collaborative Robots System 	4	link
Rigorous system design the bip framework 	4	link
ROBOT PATH FINDER Case Study 	3	link

3.4.4 Some stats on the BRAIN-IoT website

The following chart displays the user’s activity on the BRAIN-IoT website during the last 18 months. Some key dates show the impact of events such as conference organisation or newsletter publications



The following table presents the activity during the last

Website stats	Visitors	Visits
Last Month (Mar. 2021)	180	272
Last Quarter (Jan-Mar. 2021)	831	1040
Last Year (Mar.20-Mar.21)	2338	3201

3.5 [KPI-05] Number of deliverables downloaded

3.5.1 Public deliverables

It was important for the consortium to share the public deliverables of the project and track their distribution by counting the number of downloads. Indeed, the deliverables are supposed to provide a detailed and technical understanding of the project. The fact that we have many downloads (5573) shows the interest that people have in our work and our project.

ID	Deliverable Title	Downloads
D2.1	Initial Visions, Scenarios and Use Cases	258
D2.2	Initial Architecture and PoC Specifications	553
D2.3	First Landscape and ESG workshop report	0
D2.4	Updated Visions, Scenarios, Use Cases and Innovations	170
D2.5	Updated Architecture and Test Sites Specifications	289
D2.6	Final Visions, Scenarios, Use Cases and Innovations	(*)
D2.7	Final Architecture and Test Sites Specifications	21
D2.8	Second Landscape and ESG workshop report	(*)
D3.1	Initial data and capabilities models for cross-platform interoperability	177
D3.2	Initial AI and ML features for smart behaviour and actuation	205
D3.3	Initial Enablers for dynamic distribution of IoT behaviour	127
D3.4	Initial Tools for dependable Smart Behaviour	175
D3.5	Final data and capabilities models for cross-platform interoperability	(*)
D3.6	Final AI and ML features for smart behaviour and actuation	(*)
D3.7	Final Enablers for dynamic distribution of IoT behaviour	(*)
D3.8	Final Tools for dependable Smart Behaviour	0

D4.1	Initial discovery, search, composition and orchestration enablers	233
D4.2	Initial Deployment and operation enablers	141
D4.3	Initial BRAIN-IoT Marketplace Business Dynamics	113
D4.4	Final discovery, search, composition and orchestration enablers	(*)
D4.5	Final Deployment and operation enablers	(*)
D4.6	BRAIN-IoT Marketplace enablers	(*)
D4.7	Final BRAIN-IoT Marketplace Business Dynamics	(*)
D5.1	Initial Threat modelling and Security assessment of target scenarios, solutions	1167
D5.2	Initial AAA layer for IoT cross platform models	240
D5.3	Initial enablers for Privacy awareness and control	223
D5.4	Updated Threat modelling and Security assessment of target scenarios, solutions	187
D5.5	Final Threat modelling and Security assessment of target scenarios, solutions	22
D5.6	Final AAA layer for IoT cross platform models	19
D5.7	Final enablers for Privacy awareness and control	(*)
D5.8	End-to-end data security layer for IoT cross platform models	(*)
D5.9	Guidelines for privacy compliance and control in IoT services models	(*)
D6.1	Data Management Plan	153
D6.2	Lab-scale Evaluations	161
D6.3	Phase 1 Integration and Evaluation Framework	134
D6.4	Phase 1 Evaluation Report	14
D6.5	Phase 2 Integration and Evaluation Framework	(*)
D6.6	Phase 2 Evaluation Report	(*)
D7.1	Communication and Dissemination Strategy	251
D7.2	Project Website	190
D7.3	Initial Advertising, Community Engagement materials and Results	200
D7.5	Updated Advertising, Community Engagement materials and Results	150
D7.6	Final Advertising, Community Engagement materials and Results	(*)
D7.8	Replication and Scale-up roadmap	(*)

(*) Not yet uploaded publicly on the website

3.5.2 Other assets

We also thought it would be interesting to measure the number of downloads of other resources delivered by the project, such as articles, posters, flyers, etc.

The numbers produced are significant (2720 downloads). This shows the general interest in this topic, the need for our readers to be informed, and finally, the potential community around the BRAIN-IoT project.

Asset	Type	Downloads
Eclipse SAM-IoT 2020 Proceedings	Book	23
BRAIN-IoT Brochure	Flyer	149
BRAIN-IoT Flyer	Flyer	157
A Cross-Platform Communication Mechanism for ROS-Based Cyber-Physical System	Paper	21
A smarter Internet of Things for industrial efficiencies	Paper	1
Applied Statistical Model Checking for a Sensor Behavior Analysis	Paper	90
Asset-Driven Approach for Security Risk Assessment in IoT Systems	Paper	52
BRAIN-IoT: Model-Based Framework for Dependable Sensing and Actuation in Intelligent Decentralized IoT System	Paper	85
BRAIN-IoT: Paving The Way For Next-Generation Internet of Things	Paper	83
Dynamic fog computing platform for event-driven deployment and orchestration of distributed Internet of Things applications	Paper	84
End-to-end security for IoT	Paper	11
End-to-end security validation of IoT systems based on digital twins of end-devices	Paper	135

Exploration of Impactful Countermeasures on IoT Attacks	Paper	114
Fog Computing and Blockchain for Massive IoT Deployment	Paper	30
Formal Modeling and Verification of Blockchain Consensus Protocol for IoT Systems	Paper	39
Integración de Herramientas de Gestión de los Sistemas de Agua Urbana en sistemas IoT Descentralizados	Paper	200
IoT European Security and Privacy Projects: Integration, Architectures and Interoperability	Paper	83
Model-Based Methodology and Framework for Design and Management of Next-Gen IoT Systems	Paper	25
Privacy awareness for IoT platforms: BRAIN-IoT approach	Paper	83
Privacy Awareness, Risk Assessment, and Control Measures in IoT Platforms: BRAIN-IoT Approach	Paper	15
Revisiting the Glue of BIP	Paper	80
Risk Assessment in IoT Case Study: Collaborative Robots System	Paper	29
Statistical Model Checking BIP tool	Paper	14
The modeling language and the associated tools for the analysis	Paper	94
BRAIN-IoT Architecture poster (V1 – July 2019)	Poster	208
BRAIN-IoT Architecture poster (V2 – Oct. 2019)	Poster	172
Critical Infrastructure Management – Cecebre Damn	Poster	160
Critical Infrastructure Management – Distribution Deposits Infrastructure	Poster	167
Critical Infrastructure Management – Drinking Water Treatment Station	Poster	143
Official Poster	Poster	159
Rigorous System Design: The BIP framework	Presentation	14

3.6 [KPI-06] Publications in international conferences

Scientific papers have been written and submitted to obtain the recognition from scientific and academic peers. Even if the BRAIN-IoT project has the ambition to deliver an industrializable solution, it was important to first be identified as an innovative project at the cutting edge of technology.

Publications	Authors	Location	Dwnlds	Link
BRAIN-IoT: Paving The Way For Next-Generation Internet of Things	Enrico Ferrera, Xu Tao, Davide Conzon, Victor Sonora Pombo, Miquel Cantero, Tim Ward, Ilaria Bosi, Mirko Sandretto	May 2020, Accepted at the AlinIoT - Workshop on Next Generation Internet of Things, co-located with the IoTBDS2020 conference.	83	link
Integración de Herramientas de Gestión de los Sistemas de Agua Urbana en sistemas IoT Descentralizados	Diego Fernández, Ricardo Vázquez, Román Maceiras y Adriel Regueira	JIA 2019 Línea Temática MD	202	link
BRAIN-IoT: Model-Based Framework for Dependable Sensing and Actuation in Intelligent Decentralized IoT System	Davide Conzon, Mohammad Rifat Ahmmad Rashid, Xu Tao, Angel Soriano, Robotnik Automation, Richard Nicholson, Enrico Ferrera	2019 4th International Conference on Computing, Communications and Security (ICCCS)	142	link
Dynamic fog computing platform for event-driven deployment and orchestration of distributed Internet of Things applications	Richard Nicholson, Timothy Ward, Derek Baum, Xu Tao, Davide Conzon and Enrico Ferrera	Jul. 2019, World Conference on Smart Trends in Systems, Security and Sustainability	84	link
Exploration of Impactful Countermeasures on IoT Attacks	Salim Chehida, Abdelhakim Baouya, Marius Bozga and Saddek Bensalem	June 2020, Accepted at the 9th Mediterranean Conference on Embedded Computing MECO'2020.	151	link
Fog Computing and Blockchain Technology for Massive IoT Deployment	Abdelhakim Baouya, Salim Chehida, Saddek Bensalem, Marius Bozga	2020 9th Mediterranean Conference on Embedded Computing (MECO)	80	link
Risk Assessment in IoT Case Study: Collaborative Robots System	Salim Chehida, Abdelhakim Baouya, Miquel Cantero, Paul-Emmanuel Brun, Guillemette Massot	Eclipse SAM-IoT, Virtual Conference, September 2020	29	link
Applied Statistical Model Checking for a	Salim Chehida, Abdelhakim Baouya,	September 2020, Accepted at	167	link




Sensor Behavior Analysis	Saddek Bensalem, and Marius Bozga	the 13th International Conference on the Quality of Information and Communications Technology (QUATIC 2020).		
End-to-end security validation of IoT systems based on digital twins of end-devices	Laurent Maillet-Contoz, Emmanuel Michel, Mario Diaz Nava, Paul-Emmanuel Brun, Kévin Leprêtre, Guillemette Massot	Virtual Event – 3rd June 2020 – 2020 Global Internet of Things Summit (GloTS) – 3rd Workshop on Internet of Things Security and Privacy (WISP)	93	link
Risk Assessment in IoT Case Study: Collaborative Robots System	Salim Chehida, Abdelhakim Baouya, Miquel Cantero, Paul-Emmanuel Brun, Guillemette Massot	Eclipse SAM-IoT, Virtual Conference, September 2020	29	link
Model Based Methodology and Framework for Design and Management of Next-Gen IoT Systems	Xu Tao, Davide Conzon, Enrico Ferrera, Shuai Li, Juergen Goetz, Laurent Maillet-Contoz, Emmanuel Michel, Mario Diaz Nava, Abdelhakim Baouya, Salim Chehida	Eclipse SAM-IoT, Virtual Conference, September 2020	25	link
A Cross-Platform Communication Mechanism for ROS-Based Cyber-Physical System	Rui Zhao, Yenchia Yu, Xu Tao, Davide Conzon, Enrico Ferrera	Eclipse SAM-IoT, Virtual Conference, September 2020	21	link
Asset-Driven Approach for Security Risk Assessment in IoT Systems	Salim Chehida, Abdelhakim Baouya, Diego Fernández Alonso, Paul-Emmanuel Brun, Guillemette Massot, Marius Bozga, Saddek Bensalem	“15th International Conference on Risks and Security of Internet and Systems” (LNCS, vol 12528. Springer)	55	link

3.7 [KPI-07] Publications in international journals and book chapters

Publications	Authors	Location	Dwnlds	Link
A smarter Internet of Things for industrial efficiencies	Enrico Ferrera	EU Research Spring 2021, “For the new normal to a new future”, p.54	6	link
Privacy awareness for IoT platforms: BRAIN-IoT approach	Mohammad Rifat Ahmmad RASHID, Davide CONZON, Xu TAO and Enrico FERRERA	“Security and Privacy in Internet of Things: Challenges and Solutions” Book	82	link
IoT European Security and Privacy Projects: Integration, Architectures and Interoperability	E. Ferrera, C.Pastrone et al.	Book chapter in “Next Generation Internet of Things, Distributed Intelligence at the Edge and Human Machine-to-Machine Cooperation, 2018”	82	link
End-to-end security for IoT	Paul-Emmanuel Brun, Guillemette Massot	John Soldatos (ed.) (2020), “Security Risk Management for the Internet of Things: Technologies and Techniques for IoT Security, Privacy and Data Protection”, Boston-Delft: now publishers, Pages 208-219	732	link
Privacy awareness, risk assessment and control measures in IoT platforms: BRAIN-IoT approach	Mohammad Rifat Ahmmad Rashid, Xu Tao, Davide Conzon, and Enrico Ferrera	“Security Risk Management for the Internet of Things: Technologies and Techniques for IoT Security, Privacy and Data Protection”	732	link
Formal Modeling and Verification of Blockchain Consensus Protocol for IoT Systems	Abdelhakim Baouya, Salim Chehida, Saddek Bensalem, and Marius Bozga	The 19th International Conference on Intelligent Software Methodologies, Tools and Techniques, Tools and Techniques (SOMET 2020), held in Kitakyushu, JAPAN.	38	link

3.8 [KPI-08] Co-organized international workshops

Event	Link
EclipseCon Europe 2018 	link

Eclipse IoT day 2019 	link
EclipseCon Europe 2019 	link
Eclipse IoT day 2020 	link
SAM-IoT 2020 	link
EclipseCon 2020 	link
Urban Technology Alliance workshop 	link

3.9 [KPI-09] Graduate Education course

- Rigorous System Design: The BIP framework
- Design and verification of collaborative robots system, Jun. 2020: CPS&IoT Summer School Lectures
- Internship Student Politecnico de Torino / OSGi / BRAIN-IoT / Edge Node (LINKS)

3.10 [KPI-10] Summer Schools / Lectures series

- Jun. 2020: CPS&IoT Summer School Lectures on "Design and verification of collaborative robots system"
- Sept. 2020: SAM-IoT keynote: "Securing low power devices communication in a water management use case – A Brain-IoT feedback"
- Nov. 2020: 3rd Future IoT Summer Scholl hackathon keynote: "Securing low power devices communication in a water management use case – A Brain-IoT feedback"

3.11 [KPI-11] Tutorials

The BRAIN-IoT project created so far 6 tutorials. They are all available and automatically updated online².

Tutorial	Link
Requirements for running these tutorials.	link
Quick start : Run Smart Behaviour in single container.	link
Create and package a Smart Behaviour.	link
Distributed deployment: Run Smart Behaviour in multiple containers.	link
Create Fabric in Cloud : Create Fabric using AWS EC2 instances.	link
Create Fabric on-premise : Create Fabric using existing resources.	link

3.12 [KPI-12] Hands-on coaching participant

None

3.13 [KPI-13] One-day open workshop format

- 2-days ESG workshops

3.14 [KPI-14] Standardization groups that project interact with

- OSGi Paremus and Eclipse
- W3C Web of Things Siemens
- OMG CEA

² <https://eclipse-researchlabs.github.io/brain-iot-tutorials/tutorial/index.html>

3.15 [KPI-15] Participation in EU commission’s consultation and other worldwide regulatory in the field of interest

The BRAIN-IoT project, together with other EU-funded projects, is a member of the European Cluster on Security & Privacy.



Figure 4: IoT European Security and Privacy Cluster

Other European projects participating in the cluster are:

- CHARIOT
- ENACT
- IoT-CRAWLER
- SECUREIoT
- SEMIoTICS
- SERIoT
- SOFIE
- NGIoT

Three partners of the consortium were mainly involved in the cluster activities: LINKS, AIRBUS and UGA. They have actively participated to this initiative by contributing to the identification of Actions to be jointly performed among the involved Projects. Then, the BRAIN-IoT project has been asked to coordinate one of these Actions. The BRAIN-IoT project led the identification of "*Common tools for risk assessment and threat analysis*" with the goal of producing a "*Joint presentation on approaches and tools for risk assessment and threat analysis in IoT domain from cluster’s project members perspective.*"

Within the context of the cluster activities, the project has been invited to participate in two face-to-face meeting at the end of 2018:

- A workshop organized by the IoT Large Scale Pilots European cluster (IoT LSP) coordinated by Ovidiu Vermesan, that took place in Brussels on October 30th
- A face-to-face meeting in Brussels, during the month of December 2018, collocated with BRAIN-IoT’s technical review.

3.15.1 Update

During the face-to-face meeting on December 2018 in Bruxelles, which was collocated with BRAIN-IoT’s technical review, AIRBUS represented the BRAIN-IoT consortium and introduced the methodology developed in the project to elicitate risks and perform threat analysis. AIRBUS also provided some subjects of interest to be treated in the “Common tools for risk assessment and threat analysis” Action.

Beginning of 2019, a phone conference has been held to discuss about progresses made on the different actions. Concerning ours, AIRBUS in the name of the project collected inputs from the other European projects listed above and worked jointly with John Soldatos from the SECUREIoT project to provide a couple of slides presenting the Risk Assessment work made by projects of the Cluster and some ideas/recommendations for further collaboration activities.

Together with John Soldatos and the other Projects of the Cluster, the BRAIN-IoT project published an Open Access Book³. Two chapters of this book have been written by partners of the BRAIN-IoT project. One related to end-to-end security⁴ and another related to Privacy awareness, Risk Assessment and Control Measures in IoT Platforms⁵.

In September 2020, few members of the Security and Privacy Cluster joined the organization of the SAM IoT Conference both as members if the Program Committee and speakers. More specifically, apart from BRAIN-IoT the projects belonging to the Cluster which participated to SAM IoT were:

- CHARIOT project
- NGIoT project
- SEMIoTICS project

The contributions of the projects have been collected along with all the other contributions within the SAM IoT Conference proceedings, available on CEUR-WS portal⁶.

In terms of participation in EU commission's consultation, the BRAIN-IoT project, through its leading Partner LINKS, contributed also to:

- White Paper on Artificial Intelligence: Public consultation towards a European approach for excellence and trust [July 2020]⁷
- Online consultation – a European Strategy for data [May 2020]⁸

3.16 [KPI-16] Dedicated workshop to third parties (outside the consortium)

- SAM-IoT can be considered as a dedicated workshop
- Revisiting the Glue of BIP
- The modelling language and the associated tools for the analysis
- Statistical Model Checking BIP tool
- BRAIN-IoT at the workshop on Smart Building and Internet of Things (ICCS 2019) September 11, 2019

3.17 [KPI-17] Clustering activities with other EU related projects/initiatives (e.g. ECSEL/ARTEMIS)

- Security IoT Cluster
- AIOTI Working Group

³ <https://nowpublishers.com/Article/BookDetails/9781680836820>

⁴ <https://nowpublishers.com/article/Chapter/9781680836820?cid=978-1-68083-683-7.ch12>

⁵ <https://nowpublishers.com/article/Chapter/9781680836820?cid=978-1-68083-683-7.ch4>

⁶ <http://ceur-ws.org/Vol-2739/>

⁷ <https://ec.europa.eu/digital-single-market/en/news/white-paper-artificial-intelligence-public-consultation-towards-european-approach-excellence>

⁸ <https://digital-strategy.ec.europa.eu/en/consultations/online-consultation-european-strategy-data>

3.18 [KPI-18] Other conferences and Eclipse community building events

- EclipseCon France 2018 (LINKS, Eclipse)
- EclipseCon Europe 2018 (LINKS, Eclipse)
- Models'2018 (Eclipse)
- Eclipse IoT Day 2019 (LINKS, ST, UGA, Eclipse)
- EclipseCon Europe 2019 (LINKS, Eclipse)
- Models'2019 (Eclipse)
- European CyberWeek in Rennes (AIRBUS)
- eG4U 2018 (CEA LETI)
- The 4th China Smart City International Expo 2018 (Paremus)
- EclipseCon France 2019 (LINKS, Eclipse)
- EclipseCon 2020 - Virtual Booth (LINKS, Eclipse)

3.19 [KPI-19] Blogposts and up-to-date contents in the website

BRAIN-IoT launched a website in February 2018, which currently hosts a blog that is periodically populated with contents⁹.

Partners were encouraged to publish blog posts in a regular rhythm, to show the progress of the project. We published in total 46 blog posts during these 39 months:

3.19.1 Blog posts in 2018

Blog Posts	Link
ISMB Hosts the Kick-Off Meeting of BRAIN-IoT Project February 23, 2018	link
OSS licenses and the Eclipse Public License May 29, 2018	link
BRAIN-IoT consortium meeting at A Coruña October 19, 2018	link
BRAIN-IoT for Smart Cities October 19, 2018	link
BRAIN-IoT at EclipseCon Europe 2018 October 19, 2018	link
IoT European Security and Privacy Cluster October 22, 2018	link
Narrow Band IoT technologies for remote reading of water meters November 6, 2018	link
BRAIN-IoT co-authors a book chapter on IoT and Security December 5, 2018	link
Our talk at EclipseCon Europe 2018: Turtles all the way up – From OSGi bundles to Fog Computing December 5, 2018	link
EMALCSA Critical Infrastructure Use Case December 5, 2018	link
Robotnik's Service Robotics Use Case December 5, 2018	link
Making Smart Cities Sustainable using BRAIN-IoT at eG4U December 5, 2018	link
IoT European Security and Privacy Projects: Integration, Architecture and Interoperability December 7, 2018	link
BRAIN-IoT publishes the first version of its functional Architecture December 10, 2018	link

⁹ <http://www.brain-iot.eu/home/news/>

3.19.2 Blog posts in 2019

Blog Posts	Link
WoT activities in the context of BRAIN-IoT February 22, 2019	link
Using Eclipse technologies to develop the BRAIN-IoT model-based framework for IoT platforms March 27, 2019	link
BRAIN-IoT at the IoT TECH Expo 2019 May 24, 2019	link
International Symposium on Cybersecurity & IoT May 24, 2019	link
BRAIN-IoT will be present at Worlds4 2019 June 14, 2019	link
The BRAIN-IoT modelling framework June 28, 2019	link
Machine Learning in BRAIN-IoT for Critical Infrastructure Management July 5, 2019	link
BRAIN-IoT featured in the Eclipse Foundation Newsletter August 1, 2019	link
BRAIN-IoT at the workshop on Smart Building and Internet of Things (ICCCS 2019) September 11, 2019	link
Cybersecurity solutions developed by BRAIN-IoT at the IoT Tech Expo Europe 2019 September 11, 2019	link
BRAIN-IoT at EclipseCon Europe 2019 October 23, 2019	link
BRAIN-IoT participation in JIA 2019 November 1, 2019	link
Innovation & Manufacturing Brokerage event (IMB 2019) November 18, 2019	link
Towards a Reference Architecture for IoT systems December 4, 2019	link

3.19.3 Blog posts in 2020-21

Blog Posts	Link
Enrico Ferrera ECE interview is online! February 10, 2020	link
MEDUSA Project March 18, 2020	link
Privacy Awareness for IoT Platforms: BRAIN-IoT Approach March 22, 2020	link
Privacy awareness, risk assessment and control measures in IoT platforms March 22, 2020	link
End-to-end security validation of IoT systems based on digital twins of end-devices June 3, 2020	link
Submit your papers to Eclipse SAM IoT 2020 June 15, 2020	link
End-to-End Security for IoT June 19, 2020	link
Exploration of Impactful Countermeasures on IoT Attacks June 25, 2020	link
Eclipse SAM IoT virtual conference is coming soon... September 6, 2020	link
Securing low power device communication in critical infrastructure management November 1, 2020	link
Risk Assessment in IoT Case Study: Collaborative Robots System November 1, 2020	link
Model Based Methodology and Framework for Design and Management of Next-Gen IoT Systems November 1, 2020	link
A Cross-Platform Communication Mechanism for ROS-Based Cyber-Physical System November 1, 2020	link
Eclipse SAM-IoT 2020 proceedings are online November 15, 2020	link
BRAIN-IoT will participate in the first virtual 3D smart city event organized by UTA November 24, 2020	link
Virtual Twins: Modelling Trends and Challenges Ahead January 16, 2021	link
"BRAIN-IoT for Robotics" video March 19, 2021	link
Kentyou: commercializing BRAIN-IoT results March 24, 2021	link

3.20 BRAIN-IoT public presentations

- Presented BRAIN-IoT during EclipseCon Europe 2018
- Presented BRAIN-IoT during Eclipse IoT day 2019



- Presented BRAIN-IoT during EclipseCon Europe 2019
- Presented BRAIN-IoT during Eclipse IoT day 2020
- Presented BRAIN-IoT during EclipseCon Europe 2020
- Keynote at SAM-IoT: "Securing low power device communication in critical infrastructure management"
- Virtual Twins: Modelling trends and challenges ahead
- Participation to NGIoT - Security Cluster Workshop

4 Conclusion

During this last period, the BRAIN-IoT project updated and delivered a new set of dissemination materials, including tutorials, videos, articles, pitches and presentations. Today, the project website hosts all these resources to help the reader understands the project architecture, its components, how to deploy it and create specific behaviors.

The pandemic generated some difficulties to reach out some of our targets. Nevertheless, the events such as Eclipse SAM IoT or Urban Technology Alliance helped a lot in gaining more visibility and a growing community.

Today the consortium can apply each exploitation plan with serenity by continuing:

- Feeding the existing community,
- Respecting by answering to the community feedback,
- Embracing new communities by using existing resources, and
- Engaging the community by inviting it using the open-source code, assisted by the tutorial and the current project developers.

Acronyms

Acronym	Explanation
AIOTI	Alliance for the Internet of Things Innovation
CPS	Cyber-Physical System
ESG	External Stakeholder Group
IoT	Internet of Things
KPI	Key Performance Indicator
OMG	Object Management Group
OSGi	Open Services Gateway initiative
OSS	Open-Source Software
ROS	Robot Operating System
SAM	Security, AI and Modelling
WoT	Web of Things

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