



“Single molecule bio-electronic smart system array for clinical testing”

Grant Agreement n° 824946

Deliverable 7.5 - Final report on dissemination, communication and exploitation activities

December 30th, 2022

with contributions from: Efficient Innovation, CSGI

Release Deliverable History

Release	Date	Author	Description
1	16/12/2022	EI, CSGI	V1 for validation
2	30/12/2022	Luisa Torsi, Eugenio Cantatore	Revision

EXECUTIVE SUMMARY

The deliverable D7.5 “Final report on dissemination, communication and exploitation activities” reports the third period of activities for the WP7 of the SiMBiT project. This document first presents the internal communication activities through the monthly meetings held between the partners. Then, it introduces the communication and dissemination activities carried out through SiMBiT online channels, events attended by the partners and scientific publications released. As one can note, the SiMBiT consortium has been quite active and productive during this reporting period. In the meantime, SiMBiT available achievements have also been considered as far as their future exploitation and valorisation is concerned within and outside the consortium. The last part of this deliverable presents a summary of the final SiMBiT commercialisation roadmap and IPR strategy.

TABLE DES MATIERES

Executive summary	2
Content.....	4
Internal communication	4
Communication, Dissemination activities.....	4
Online Communication supports	4
Events	6
Scientific Publications – Publications and articles	13
Exploitation activities	22
Intellectual Property Rights.....	24
During SiMBit project generated IP	24
After SiMBit Project IP Strategy	24
Conclusion	25

CONTENT

INTERNAL COMMUNICATION

As foreseen in the Grant Agreement, the consortium should have met every 6 months in person, gathering all partners' representatives. However, due to the COVID-19 situation, all meetings for this third reporting period were held remotely through video conferencing, except a final meeting held in Bari on December 12th 2022. Every month WP meetings have then been set to address the activities' progress and possible delay in relation with the COVID-19 situation. In each WP package meeting all the PIs were present and each of them presented the developments for that given month. All meetings' minutes are available on the project secured collaborative platform. In addition, the PI of WP5 has organized informal video-call meeting to discuss in detail with all the involved partners how to proceed with the fabrication and testing of the first SiMBiT prototype.

Meeting	Date	Localization	Attendees
WP meeting	11 th – 12 th March 2021	Video conferencing	All
WP meeting	26 th August 2021	Video conferencing	All
WP meeting	23 rd September 2021	Video conferencing	All
WP meeting	28 th October 2021	Video conferencing	All
WP meeting	16 th December 2022	Video conferencing	All
WP meeting	20 th January 2022	Video conferencing	All
WP meeting	17 th February 2022	Video conferencing	All
WP meeting	17 th March 2022	Video conferencing	All
WP meeting	21 st April 2022	Video conferencing	All
WP meeting	19 th May 2022	Video conferencing	All
WP meeting	16 th June 2022	Video conferencing	All
WP meeting	21 st July 2022	Video conferencing	All
WP meeting	15 th September 2022	Video conferencing	All
WP meeting	20 th October 2022	Video conferencing	All
WP meeting	17 th November 2022	Video conferencing	All
WP meeting	12 th December 2022	Bari, Italy	All

COMMUNICATION, DISSEMINATION ACTIVITIES

ONLINE COMMUNICATION SUPPORTS

Early in the project, a SiMBiT public website (simbit-h2020.eu) and social media profile on LinkedIn (<https://www.linkedin.com/company/36020918>) have been set up. In addition, following the advice of the European Commission's reviewers, a twitter account (<https://twitter.com/simbitproject>) was opened in 2020 to increase and diversify the project online communication channels and related opportunities. These different social network profiles were used as main communication channels for disseminating information on the progress and achievements of the project and its related events attended by the partners. In the following an example of two tweets is given.



Figure 1 : SiMBiT twitter account

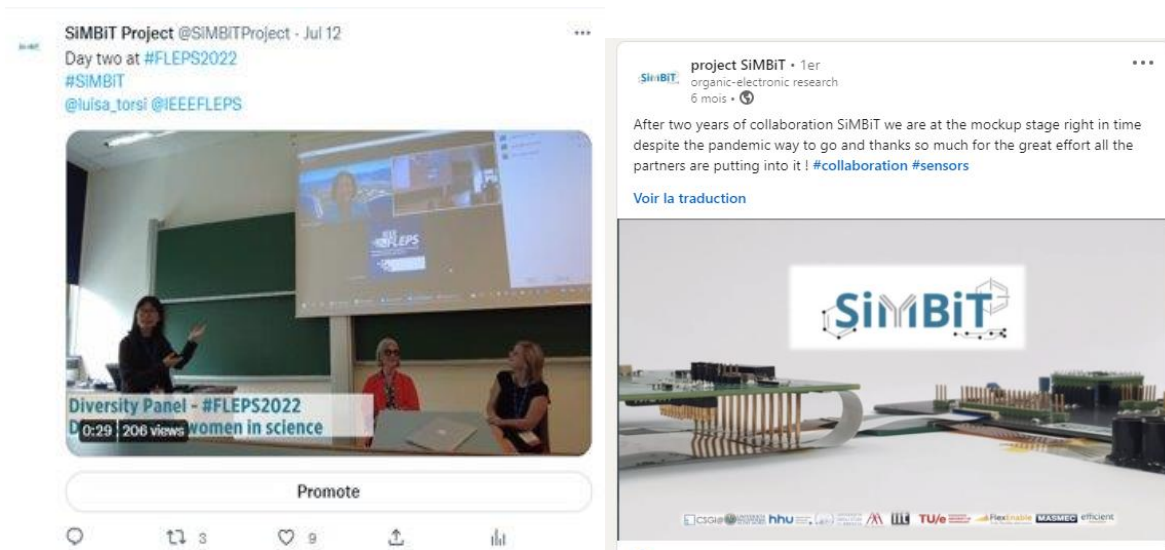


Figure 2 : example of a post from Twitter and relayed to LinkedIn

As announced in the intermediate report about dissemination and communication (D7.4), 41 Tweets have been released (about 2 each month) over the third Reporting Period. 76 Tweets have been released during the whole project, sharing content related to the project demonstration activities and attempted events.

EVENTS

To ensure an effective communication and dissemination of the SiMBiT project activities and outcomes, partners of the project attended relevant events like congresses, conferences, workshops, professional trades etc. Over the third reporting period (M31-M48), SiMBiT partners attended 31 events, which enabled to directly reach more than 3000 people, mostly from the scientific community. Indeed, most of the events enable to reach researchers, however at some of them, several industrials were present. Most of industrials are pharma or life sciences companies, but we can also underline the dissemination towards electronics and informatics companies. **The following table lists the events attended by the Partners:**

Event	Topic	type of events*	estimated number of persons at the event	estimated number of persons reached	type of persons reached	Date	Entity	Partners attending
IEEE IFETC 2021	Pushing the Limits of Printed and Flexible Organic Electronics: Thin, Fast and Edible	Participation to a Conference	100		Scientific Community (Higher Education, Research)	10 August 2021	IIT	Mario Caironi
European Congress of Pathology	pathology	Organisation of a Conference	virtual	400	Scientific Community (Higher Education, Research)	29th-31th August 2021	UDUS	Irene Esposito

CAD-TFT 2021	12th International Conference on Computer-Aided Design for thin Film Transistor Technologies	Participation to a Conference			Scientific Community (Higher Education, Research)	3rd september 2021	TU/e	Eugenio Cantatore
Viszeral Medizin	internal medicine, gastroenterology, oncology	Participation to a Conference	8 000	200	scientific Community (Higher Education, Research)	17th September 2021	UDUS	Irene Esposito
UEGW	internal medicine, gastroenterology, oncology	Participation to a Conference	virtual	300	Scientific Community (Higher Education, Research)	3rd-5th October 2021	UDUS	Irene Esposito
MRS (Materials Research Society)		Participation to a Conference			Scientific Community (Higher Education, Research)	November 29-December 2 (2021)	IIT	Fabrizio Viola
GI Cancer day	internal medicine, gastroenterology, oncology	Participation to a Conference	3000	500	Scientific Community (Higher Education, Research)	4th December 2021	UDUS	Irene Esposito

Spring Meeting - Fun-OrgBio22	Fundamentals of Organic Bioelectronic Devices	Participation to a Conference				10th March 2022	abo	Luisa Torsi, Eleonora Macchia
LOPEC	driving the future of printed electronics	Participation to a Conference			Industry	23-24th March 2022	CSGI / Tu/e	Luisa Torsi, Eugenio Cantatore
The pharmaceutical and biotechnological sectors in belgium and apulia - experiences, possibilities for cooperation	workshop on pharmaceutical and biotechnology	Participation to a Conference				4th April 2022	CSGI	Luisa Torsi
German congress of surgery, DCK	surgery, oncology	Participation to a Conference	7000	200	Scientific Community (Higher Education, Research)	6th-8th April 2022	UDUS	Irene Esposito
MRS Spring 2022	Materials Research Society spring event	Participation to a Conference	4000	50	Scientific Community (Higher Education, Research)	8-13 May 2022	IIT	Mario Caironi, Fabrizio Viola, Francesco Modena

Conference Wilhelm Exner Medals	award ceremony - honored selected researchers	Participation to an Event other than a Conference or a Workshop			Scientific Community (Higher Education, Research)	15-19 May 2022	CSGI	Luisa Torsi, Eleonora Macchia, Paolo Bolella
7th International Conference on Bio-Sensing Technology	Biosensors	Participation to a Conference	200	200	Scientific Community (Higher Education, Research)	22nd-25th May 2022	ABO	Kim Björkström
ISCAS	International Symposium on Circuits and Systems	Participation to a Conference	1000	200	Scientific Community (Higher Education, Research)	28 May - 1 June 2022	TU/e	Marco Fattori
Workshop gruppo di chemiometria SCI	Recent analytical-based chemometric approaches	Participation to a Workshop	50		Scientific Community (Higher Education, Research)	30 May 2022 - 1st June 2022	CSGI / abo	Eleonora Macchia, Cecilia Scandurra
German Congress of Pathology, DGP	pathology	Participation to a Conference	3000	400	scientific Community (Higher Education, Research)	8th-11th June 2022	UDUS	Irene Esposito
Gordon Research Conference on Electronic Processes in Organic Materials	Electronic processes in organic materials	Participation to a Conference	80		Scientific Community (Higher Education, Research)	26th June 2022 - 1st July 2022	CSGI	Luisa Torsi, Cecilia Scandurra

76th international workshop and 6th orbitaly	fundamental mechanisms to drive progresses in organic and large-area bioelectronics	Organisation of a Workshop			Scientific Community (Higher Education, Research)	3rd - 9th July 2022	CSGI / abo / IIT	Luisa Torsi, Lucia Sarcina, Ronald Osterbacka, Mario Caironi
IEEE - fleps 2022	international conference on flexible printable sensors and systems	Participation to a Conference				10-13th July 2022	CSGI	Luisa Torsi
PRORISC	Program for Research on Integrated Systems and Circuits	Participation to a Conference	150	150	Scientific Community (Higher Education, Research)	14-15 July 2022	TU/e	Enrico Genco-Eugenio Cantatore
ICSM	organic electronics	Participation to a Conference				17th -22nd July 2022	Abo	Ronald Osterbacka
SPIE Optics and Photonics 2022	multidisciplinary optical sciences and technology	Participation to a Conference			Scientific Community (Higher Education, Research)	21- 22th August 2022	CSGI / abo	Eleonora Macchia
European Congress of Pathology	pathology	Organisation of a Conference	4000	800	Scientific Community (Higher Education, Research)	3rd-7th September 2022	UDUS	Irene Esposito, Lena Häberle

XXIX Congresso della Divisione di Chimica Analitica della Società Chimica Italiana	Analytical Chemistry for a green and sustainable future	Participation to a Conference	250		Scientific Community (Higher Education, Research)	11-15th September 2022	CSGI	Eleonora Macchia, Lucia Sarcina, Cecilia Scandurra
Viszeralmedizin 2022	internal medicine, oncology, gastroenterology	Participation to a Conference	10000	200	scientific Community (Higher Education, Research)	11th-16th Sept. 2022	UDUS	Irene Esposito
ITC	International Thin-Film Transistor Conference	Participation to a Conference	200	200	Scientific Community (Higher Education, Research)	14-16th September 2022	TU/e	Eugenio Cantatore, Enrico Genco
MSCA-Staff Exchanges	opportunities for companies - promote international, cross-sectoral and interdisciplinary collaboration in research and innovation	Brokerage Event				13th October 2022	CSGI	Luisa Torsi

German Congress of Cancer, DKK	oncology	Participation to a Conference	10 000	80	Scientific Community (Higher Education, Research)	13th-16th November 2022	UDUS	Irene Esposito
ÅAU Sensor Seminar (online event)	workshop on sensors and biosensors for diagnosis procedures	Participation to a Conference	50			24/11/2022	abo	Luisa Torsi, Eleonora Macchia
MRS Fall 2022	Materials Research Society fall event	Participation to a Conference	4000	50	Scientific Community (Higher Education, Research)	27 November, 2 December	IIT	Fabrizio Viola

SCIENTIFIC PUBLICATIONS – PUBLICATIONS AND ARTICLES

During the third period, the consortium published more than 28 articles in renowned and peer-reviewed scientific journals to present the results of the project research activities carried out. These articles mainly addressed the scientific community but were also relevant for stakeholders in the field of organic electronics, pancreatic cancer diagnosis and ultra-sensitive diagnostic tools.

Type of scientific publication	Title of the scientific publication	DOI	Authors	Title of the journal	Year	Place of publication	Publisher	Peer-reviewed	Public & private participation	Is/ will open access
Article in journal	Electrolyte-gated transistors for enhanced performance bioelectronics	DOI:10.1038/s43586-021-00065-8	Torricelli, F., Adrahtas, D.Z., Bao, Z. et al.	Nature Reviews Methods Primers	2021		Nature	Y	N	
Article in journal	A sub-150-nanometre-thick and ultraconformable solution-processed all-organic transistor	https://doi.org/10.1038/s41467-021-26120-2	Viola, F.A., Barsotti, J., Melloni, F. et al.	Nature communications	2021		Nature	Y	N	yes-green
Article in journal	Neoadjuvant Treatment Lowers the Risk of Mesopancreatic Fat Infiltration and Local Recurrence in Patients	10.3390/cancers14010068	Safi SA, Haerberle L, Rehders A, Fung S, Vaghiri S, Roderburg C, Luedde T, Ziayee F, Esposito I, Fluegen G, Knoefel WT.	Cancers (Basel)	2021		MDPI	Y	N	yes-gold

	with Pancreatic Cancer									
Article in journal	Microenvironment in Pancreatic Intraepithelial Neoplasia	10.3390/cancers13246188	Opitz FV, Haeberle L, Daum A, Esposito I. Tumor	Cancers (Basel)	2021		MDPI	Y	N	<i>yes-gold</i>
Article in journal	Pre-Operative MDCT Staging Predicts Mesopancreatic Fat Infiltration-A Novel Marker for Neoadjuvant Treatment?	10.3390/cancers13174361	Safi SA, Haeberle L, Heuveloop S, Kroepil P, Fung S, Rehders A, Keitel V, Luedde T, Fuerst G, Esposito I, Ziayee F, Antoch G, Knoefel WT, Fluegen G	Cancers (Basel)	2021		MDPI	Y	N	<i>yes-gold</i>
Article in journal	Stroma composition and proliferative activity are related to therapy response in neoadjuvant treated pancreatic ductal adenocarcinoma.	10.14670/HH-18-332	Haeberle L, Cacciato Insilla A, Kapp AC, Steiger K, Schlitter AM, Konukiewitz B, Demir IE, Friess H, Esposito I.	Histology Histopathology	2021		EM	y	N	yes-green

Article in journal	Surface composition of mixed self-assembled monolayers on Au by infrared attenuated total reflection spectroscopy	https://doi.org/10.1016/j.apsusc.2021.149883	Angelo Tricase, Davide Blasi, Alessandro Favia, Angela Stefanachi, Francesco Leonetti, Giuseppe Colafemmina, Luisa Torsi, Gaetano Scamarcio		2021		Elsevier	Y	N	<i>yes-gold</i>
Article in journal	Single Molecule with a large Transistor using a 3D printed sensing gate module for non-invasive detection of pancreatic mucinous cysts' markers		Lucia Sarcina, Fabrizio Viola, Francesco Modena, Rosaria A. Picca, P. Bollella, Cinzia Di Franco, Nicola Cioffi, Mario Caironi, Ronald Österbacka, Irene Esposito, Gaetano Scamarcio, Luisa Torsi, Fabrizio Torricelli, and Eleonora Macchia	Research Paper to the topical paper collection featuring "Promising Early-Career (Bio-) Analytical Researchers".	2022					
Article in journal	Large-area interfaces for single-molecule label-free bioelectronic detection	Manuscript ID: cr-2021-00290m.R2	Eleonora Macchia, Fabrizio Torricelli, Paolo Bollella, Lucia Sarcina, Angelo Tricase, Cinzia di Franco, Ronald Österbacka, Zsolt M. Kovács-Vajna, Gaetano Scamarcio and Luisa Torsi	ACS Chemical Review (IF. 60)	2022					
Article in journal	The 2021 flexible and printed electronics roadmap	DOI: 10.1088/2058-8585/abf986	Yvan Bonnassieux et al	Flexible and Printed Electronics	2022		IOP publishing	Y	N	yes-green

Article in journal	Label-free electronic detection of peptide post-translational modification with functional enzyme-driven assay at the physical limit		Eleonora Macchia, Kim Björkström, Amit Tewari, Ville Eskonen, Axel Luukkonen, Amir Mohammad Ghafari, Lucia Sarcina, Kyriaki Manoli, Natalia Tong-Ochoa, Kari Kopra, Fredrik Pettersson, Zahra Gounani, Luisa Torsi, Harri Härmä, Ronald Österbacka		2022	Submitted				
Article in journal	A n-type, Stable Electrolyte Gated Organic Transistor Based on a Printed Polymer	10.1002/aelm.202200573	Fabrizio Antonio Viola,* Filippo Melloni, Alireza Molazemhosseini, Francesco Modena, Mauro Sassi, Luca Beverina, and Mario Caironi*	Advanced Electronic Materials	2022		Wiley	Y	N	yes-gold
Article in journal	Molecular heterogeneity and commonalities in pancreatic cancer precursors with gastric and intestinal phenotype	10.1136/gutjnl-2021-326550	Liffers ST, Godfrey L, Frohn L, Haeberle L, Yavas A, Vesce R, Goering W, Opitz FV, Stoecklein N, Knoefel WT, Schlitter AM, Klöppel G, Espinet E, Trumpp A, Siveke JT, Esposito I.	Gut	2022		BMJ	Y	N	yes-gold
Article in journal	Histopathological tumour response scoring in resected pancreatic cancer following neoadjuvant therapy: international interobserver study (ISGPP-1)	10.1093/bjs/znac350	Janssen BV, van Roessel S, van Dieren S, de Boer O, Adsay V, Basturk O, Brosens L, Campbell F, Chatterjee D, Chou A, Doglioni C, Esposito I, Feakins R, Fuchs TL, Fukushima N, Gill AJ, Hong SM, Hruban RH, Kaplan J, Krasinkas A, Luchini C, Shi C, Singhi A, Thompson E, Velthuysen MF, Besselink MG, Verheij J, Wang H, Verbeke C, Fariña A; International Study	Br J Surg	2022		Oxford Academic	Y	N	no

			Group of Pancreatic Pathologists (ISGPP).							
Article in journal	The tumour immune microenvironment and microbiome of pancreatic intraductal papillary mucinous neoplasms.	10.1016/S2468-1253(22)00235-7	Pollini T, Adsay V, Capurso G, Dal Molin M, Esposito I, Hruban R, Luchini C, Maggino L, Matthaei H, Marchegiani G, Scarpa A, Wood LD, Bassi C, Salvia R, Mino-Kenudson M, Maker AV.	Lancet Gastroenterol Hepatol			Elsevier	Y	N	no
Article in journal	Intraductal tubulopapillary neoplasm (ITPN) of the pancreas: a distinct entity among pancreatic tumors.	10.1111/his.14698	Paolino G, Esposito I, Hong SM, Basturk O, Mattiolo P, Kaneko T, Veronese N, Scarpa A, Adsay V, Luchini C.	Histopathology	2022		Wiley	Y	N	no
Article in journal	Genetic Alterations Predict Long-Term Survival in Ductal Adenocarcinoma of the Pancreatic Head.	10.3390/cancers14030850	Safi SA, Haeberle L, Goering W, Keitel V, Fluegen G, Stoecklein N, Rehders A, Knoefel WT, Esposito I.	Cancers	2022		MDPI	Y	N	yes-gold
Article in journal	Nonmucinous Cystic Lesions of the Pancreas	10.5858/arpa.2020-0446-RA	https://pubmed.ncbi.nlm.nih.gov/33503226/#:~:text=Esposito%20I%2C%20Haeberle%20L.	Arch Pathol LabMed	2022		Allen Press	Y	N	no

Article in journal	A handheld intelligent single-molecule binary bioelectronic system for fast and reliable immunometric point-of-care testing	DOI: 10.1126/sciadv.abo0881	Eleonora Macchia, Zsolt M. Kovács-Vajna, Daniela Loconsole, Lucia Sarcina, Massimiliano Redolfi, Maria Chironna, Fabrizio Torricelli, Luisa Torsi	SCIENCE ADVANCES	2022		American Association for the Advancement of Science		Y	yes-green
Article in journal	Green Materials and Technologies for Sustainable Organic Transistors	https://doi.org/10.1002/admt.202100445	Fabrizio Torricelli, Ivano Alessandri, Eleonora Macchia, Irene Vassalini, Marina Maddaloni, Luisa Torsi	Adv. Mater. Technol.	2022		John Wiley and Sons Inc		N	yes-gold
Article in journal	A 4 × 4 Biosensor Array With a 42- μ W/Channel Multiplexed Current Sensitive Front-End Featuring 137-dB DR and Zeptomolar Sensitivity	DOI 10.1109/OJSSCS.2022.3217231	Enrico Genco, Marco Fattori, Pieter J. A. Harpe, Francesco Modena, Fabrizio Viola, Mario Caironi, May Wheeler, Guillaume Fichet, Fabrizio Torricelli, Lucia Sarcina, Eleonora Macchia, Luisa Torsi and Eugenio Cantatore	IEEE OPEN JOURNAL OF THE SOLID-STATE CIRCUITS SOCIETY	2022		IEEE	Y	Y	yes-gold
Article in journal	Fast and Reliable Electronic Assay of a <i>Xylella fastidiosa</i> Single Bacterium in Infected Plants Sap	https://doi.org/10.1002/advs.202203900	Lucia Sarcina, Eleonora Macchia, Giuliana Loconsole, Giusy D'Attoma, Paolo Bollella, Michele Catacchio, Francesco Leonetti, Cinzia Di Franco, Vito Elicio, Gaetano Scamarcio, Gerardo Palazzo, Donato Boscia, Pasquale Saldarelli, Luisa Torsi	Advanced Science	2022		John Wiley and Sons Inc		Y	yes-green

Publication in conference proceeding/workshop	Electrochemical Investigation of Self-Assembling Monolayers toward Ultrasensitive Sensing	doi: 10.1109/FLEPS53764.2022.9781585.	Angelo Tricase; Anna Imbriano; Eleonora Macchia; Rosaria Anna Picca; Davide Blasi; Luisa Torsi Paolo Bollella	2022 IEEE International Conference on Flexible and Printable Sensors and Systems (FLEPS)	2022		Institute of Electrical and Electronics Engineers Inc.		N	
Publication in conference proceeding/workshop	Enzymatic Boolean Logic Gates toward ON/OFF Sensing	doi: 10.1109/FLEPS53764.2022.9781600.	Paolo Bollella, Eleonora Macchia, Luisa Torsi	2022 IEEE International Conference on Flexible and Printable Sensors and Systems (FLEPS)	2022		Institute of Electrical and Electronics Engineers Inc.		N	
Publication in conference proceeding/workshop	Large-area bio-electronic sensors for early detection of pancreatic-biliary cancer protein markers	doi: 10.1109/FLEPS53764.2022.9781550.	Lucia Sarcina, Fabrizio Viola, Francesco Modena, Paolo Bollella, Mario Caironi, Irene Esposito, Luisa Torsi, Fabrizio Torricelli, Eleonora Macchia	2022 IEEE International Conference on Flexible and Printable Sensors and Systems (FLEPS)	2022		Institute of Electrical and Electronics Engineers Inc.		N	
Article in journal	Why a Diffusing Single-Molecule can be Detected in Few Minutes by a Large Capturing Bioelectronic Interface	https://doi.org/10.1002/adv.202104381	Eleonora Macchia, Liberato De Caro, Fabrizio Torricelli, Cinzia Di Franco, Giuseppe Felice Mangiatordi, Gaetano Scamarcio, Luisa Torsi	Advanced Science	2022		John Wiley and Sons Inc		N	yes-green

Article in journal	Electrochemical and X-ray Photoelectron Spectroscopy Surface Characterization of Interchain-Driven Self-Assembled Monolayer (SAM) Reorganization	https://doi.org/10.3390/nano12050867	Angelo Tricase, Anna Imbriano, Nicoletta Ditaranto, Eleonora Macchia, Rosaria Anna Picca, Davide Blasi, Luisa Torsi, Paolo Bollella	Nanomaterials	2022		MDPI		N	<i>yes-gold</i>
Publication in conference proceeding/workshop	Physical Modelling of Large-Area Single-Molecule Organic Transistors	doi: 10.1109/FLEPS53764.2022.9781507	Fabrizio Torricelli, Eleonora Macchia, Paolo Bollella, Cinzia Di Franco, Zsolt M Kovács-Vajna, Gaetano Scamarcio, Luisa Torsi	2022 IEEE International Conference on Flexible and Printable Sensors and Systems (FLEPS)	2022		Institute of Electrical and Electronics Engineers Inc.		N	
Article in journal	Enzyme based field effect transistor: State-of-the-art and future perspectives	https://doi.org/10.1002/elsa.202100216	Lucia Sarcina, Eleonora Macchia, Angelo Tricase, Cecilia Scandurra, Anna Imbriano, Fabrizio Torricelli, Nicola Cioffi, Luisa Torsi, Paolo Bollella	Electrochemical Science Advances - Minireview	2022					
Article in journal	Enzyme based amperometric wide field biosensors: Is single-molecule detection possible?	https://doi.org/10.1002/elsa.202100215	Angelo Tricase, Anna Imbriano, Eleonora Macchia, Lucia Sarcina, Cecilia Scandurra, Fabrizio Torricelli, Nicola Cioffi, Luisa Torsi, Paolo Bollella	Electrochemical Science Advances - review	2022					
Publication in conference proceeding/workshop	A Correlated Double Sampling Technique for Charge-Sensitive Amplifiers based on TFTs	doi: 10.1109/ISCA548785.2022.9937715.	M. Fattori and E. Genco	2022 IEEE International Symposium on Circuits and Systems (ISCAS)	2022		IEEE	Y	N	<i>No</i>

Article in journal	Long-term electrical characteristics of a poly-3-hexylthiophene water-gated thin-film transistor	https://doi.org/10.48550/arXiv.2208.11486	Axel Luukkonen, Amit Tewari, Kim Björkström, Amir Mohammad Ghafari, Eleonora Macchia, Fabrizio Torricelli, Luisa Torsi, Ronald Österbacka	Cornell University Arxiv preprint Applied Physics	2023	Submitted					
Article in journal	Stability of Thiol-Based Self-Assembled Monolayer Functionalized Electrodes in EG-OFET-Based Applications		Amit Tewari, Kim Björkström, Amir Mohammad Ghafari, Eleonora Macchia, Luisa Torsi, Ronald Österbacka		2023	Submitted					

EXPLOITATION ACTIVITIES

The different activities of the SiMBiT project exploitation plan are presented in the Deliverable 7.6, containing individual exploitation plans for each partner as well as a SiMBiT general final exploitation plan, is summarized below in **Figure 3**.

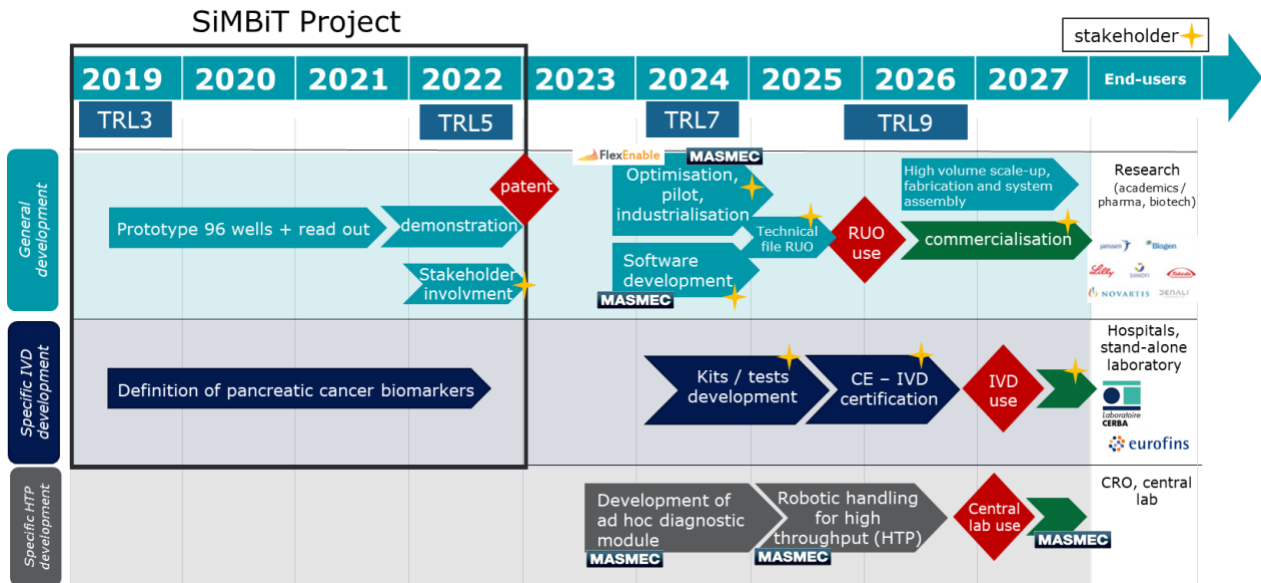


Figure 3 : Final SiMBiT commercialisation roadmap

SiMBiT partners have generated new knowledge and know-how in their respective fields of expertise, which will be exploited at the end of the project as presented below:

	CSGI	UNIBS	ABO	TU/e	IIT	FE	MASMEC	UDUS
Individual outcomes with immediate opportunities	Four seminal patents (<i>one in collaboration with UNIBS</i>) on the SiMoT technology covering not only the technology itself but also a number of devices and arrays structures	Know-how for rational design and manufacturing of bio-electronic smart systems. One seminal patent with UNIBS on the SiMBiT 3D gate technology	Understanding of OFET-based bio-electronic devices	Design and fabrication of a low-noise TIA IC	Know-how on cost-effective printed microelectronic systems	Cost-effective manufacturable process based on bio-functionalized electrolyte-gated transistors associated with systems	-	Possible New biomarkers on pancreatic cancer
Business model or sources of revenues	License for SiMBiT platform (<i>see previous section</i>) License for other structures	To be determined (TBD)	further development of the paper-based electronics platform	Tech – transfer to industrial	Tech-transfer to FE or IIT startups or NewCo.s Internal platform use for further funded project with companies	Integrator of ELISA kits aiming at B2B market SiMBiT small scale production	Commercialisation of SiMBiT assay – obtain the licence of the joint patent (<i>see previous section</i>)	License on the biomarkers
Targeted customers / users / partners	Life sciences companies		electronics companies	Photonic-based sensing companies	IIT start-ups in printed electronics Large biomedical companies (e.g. Bracco)	Diagnostics manufacturers as: R&D Systems, Thermo Fisher Scientific,	HTP use: services for actual MASMEC customers	Depending of IVD strategy – SiMBiT joint-venture / MASMEC / diagnostic companies
Actions during SiMBiT to optimize exploitation of the outcomes	Workshops with stakeholders				Discussion with IIT startups for interest in the outcomes of SiMBiT Search for sponsored research	Search for stakeholders	Search for stakeholders	Attention to PI possibilities

INTELLECTUAL PROPERTY RIGHTS

DURING SIMBIT PROJECT GENERATED IP

CREATED KNOWLEDGE - PATENTS

Type of IP Rights	Application reference	Date of the application	Official title of the application	Applicant(s)
Patent	<i>PCT/B2019/061345</i>	24/12/2019	A Clustered Biosensor System For Biological Assay	Fabrizio Torricelli, Luisa Torsi, Gaetano Scamarcio, Zsolt Miklós Kovács-Vajna

CREATED KNOW-HOW – PROTOTYPES

Activities developed within the project	Number	Comments
Prototypes	4	Final prototypes built so far
Testing activities (feasibility/demo)	2	Final prototypes under test so far, two more planned
New product (good or service)	YES	
New process	YES	
New method	YES	

DURING AND AFTER THE SIMBIT PROJECT: IP STRATEGY

One of the main SiMBiT Project Outcomes is the final 8x12 prototype of diagnostic device, which consists of the SiMBiT reusable device reader and the SiMBiT disposable cartridge. The latter consists in turn of the EG-TFT 8x12 array + addressing electronics and the 3D biofunctionalized gate plate. Some SiMBiT partners identified their own ways of IP generation based on SiMBiT results during and after the project, as detailed here below.

FlexEnable:

FlexEnable has a strong commitment to secure intellectual property with a portfolio of more than 1000 patents but also a large know-how that enable the transfer of FlexEnable's technology to its multiple factory partners. FlexEnable foresee very high impact in many of the results generated during the project such as the assembly processes, the addressing electronic process flows and materials, drastic improvement in term of production yield through designs, or cost and performance which will lead to either reduced noise or faster signal treatment.

CSGI:

CSGI node has patented the two most important concepts on which the SiMBiT technology relies, namely: the dual-electrolyte systems and the bio-layer capacity modulated TFT sensor. The latter has been proposed for the first time as a bare proof-of-principle on an organic semiconductor by the CSGI partner. Moreover, the CSGI group has submitted three patents on the single molecule detection with the single EG-FTF [EPA/16207596; EPA/17177349.2; PCT/IB2018/050491]. Plenty of IP generation is possible on the specific device architecture concepts that have been researched in SiMBiT.

IIT:

IIT is constantly paying attention to eventual IP produced in the development of printed sensors arrays. So far, no opportunity IP protection has been identified. One plausible scenario is that the process for the printed sensor arrays, or part of that, may constitute a codified know-how and therefore qualify as IP. Protection of that with a patent is considered unlikely. A patent could cover alternative architecture of the EG-FET aimed to simplify the SiMBiT platform. IIT considered and experimented one option, which was anyway discarded given the poor results obtained.

MASMEC:

The cartridge system, result of the SiMBiT Project, will be possibly jointly patented. The patent could also include the readout part, where MASMEC plans to develop an ad hoc device. A joint patent between partners could also be prepared on this device. The criteria for the recognition of the intellectual property right will be on financial royalties basis that MASMEC can recognize to the other partners.

UDUS:

IP generated at UDUS during the SiMBiT project will mainly consist of scientific results.

TUE:

IP generated at TUE mostly consisted of codified know-how and thus did not require IP protection. Opportunities for IP protection might stem from the later applications of SiMBiT know-how even to other fields and systems, within the TUE research activities.

CONCLUSION

The initial communication tools implemented during the project to ease its internal communication and overall management have been used and updated throughout the second and third period of the SiMBiT project, enabling strong interaction between the partners.

In addition, new communication channels have been implemented and fed with updates on the project achievements. Social networks made it possible to achieve regular communication and dissemination outside of the Consortium. During this third period, communication and dissemination activities were intensified even more. The SiMBiT consortium has still increased its scientific publications (28) and managed to present at 31 events (congresses, workshops).

The exploitation strategy of SiMBiT results has been finalised and presented in D7.6. In that deliverable, a final commercialisation roadmap has been provided, as well as a final IP strategy based on SiMBiT generated knowledge and know-how.