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0 Publications POSITION

0.1 Year 1

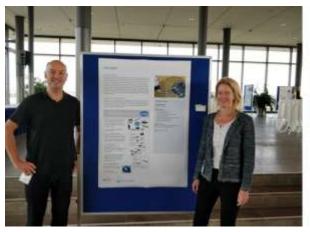
- Ronald Dekker, "Health.E, Accelerating innovation in Medical Devices. Enabling "Moore for Medical", kick-off of the Strategic Governing Group "Digital Health & Patient-Centric Evidence Generation" from IMI. Location headquarters Sanofi Paris, 20th of April 2018 [Doc_0]
- 2. John Schmitz (Dean of EWI faculty Delft University) and Mart Graef, "Micro- and Nano-Electronics in The Netherlands," presentation at the 2018 Sino-Dutch International High Level Talent Forum and Summer School on Semiconductor Technologies, Tsinghua University, Beijing, China, July 9, 2018 [Doc_7]
- 3. Ronald Dekker, poster presentation of the InForMed and POSITION projects at the 2018 ECSEL Symposium 19-21 June 2018 Brussels. [Doc_11]
- Ronald Dekker, poster presentation of the Health.E lighthouse referencing the POSITION project as cornerstone as well as the ULIMPIA project. at the 2018 ECSEL Symposium 19-21 June 2018 Brussels. [Doc_12]
- 5. Both the POSITION project as well as the InForMed project were presented by Fraunhofer IZM at the "Kongress ECSEL in Deutchland" event the 5th and 6th of September 2018 in Dresden [Doc_22]
- 6. The Autumn 2018 number of the EU Research magazine featured an extensive article on the Health.E lighthouse. In the article the InForMed, POSITION as well as the ULIMPIA projects were referenced. The article is available on-line from the EU Research Magazine website [Doc_24]. https://issuu.com/eu research/docs/informed h res eur17
- 7. The POSITION project was part of a presentation to tell the internal Philips organization about the content and organization of European projects. The presentation was held at the High Tech Campus the 4th of October 2014 and webcasted to Philips worldwide. After the presentation there was a poster session in which PPP projects were presented. [Doc_25]
- 8. The POSITION project was part of a presentation on Innovation in Medical Devices in an invited presentation during the Microelectronic Circuit Centre Ireland annular 2018 Forum in Cork the 11th of October 2018 https://www.mcci.ie/mcci-annual-forum-2018/ [Doc 31]
- 9. Chris van Heesch (Philips), invited presentation at the IEEE International Ultrasonics Symposium (IUS) 2018, "Collapse -mode CMUT: design and characterization" 22-25 October 2018, Kobe Japan. The paper received the conference highlight award. http://sites.ieee.org/ius-2018/ [Doc_34]
- 10. Every year PhDs and PostDocs at Philips Research organize an event during which they tell the Philips community about their research projects. On the 1st of November 2018 this also included contributions from PhD students working in the European projects ULIMPIA and POSITION [Doc_36].
- 11. On the 8th of November Vincent Henneken, Leader of Demo 2 gave a Philips Internal presentation on what has been achieved in the InForMed project, and the plans for the POSITION project. The presentation was available via remote connections to Philips Research world wide [Doc 38]
- 12. During the Medical MEMS and Sensors conference 7-8 Nov 2018 at Santa Clara California, Rob van Schaijk from Philips Innovation services gave a presentation entitled "CMUT and PMUT: New Technology Platform



- for Medical Ultrasound," During the stand Philips was also present with a company booth http://www.medicalmemsconference.com/ [Doc_39]
- 13. The 13th of November 2018 Ronald Dekker presented an Invited presentation entitled "Moore for Medical," at the Semicon Europe conference 2018 in Munich. The presentation disseminates the goals of the lighthouse and introduces projects like POSTION, ULIMPIA and ORCHID. http://www.semiconeuropa.org/flex-europe-be-flexible [Doc_40]
- 14. Pieter Harpe (TU/e), "Resource-Efficient & Intelligent Electronics," presentation at the "FREE workshop" (Frontier of Electrical Engineering 2018: Bioelectric applications), Yonsei University, South Korea, 2nd November 2018. [Doc 41]
- 15. The POSTION project was represented with a poster at the 2018 EFECS. 20-23 November, Lisbon 2018. [Doc 43]
- 16. Martin v.d. Mark (Philips Research), "Power of Fibre." presentation at the "Day of Photonics" 28th of November 2018, The High Tech Campus Eindhoven, the Netherlands.
- 17. As part of the Health.E lighthouse, the POSITION project was presented during the high level conference organized by DG-RTD "The impact of EU research and innovation on your daily life" the 27th of November 2018. Location was the meeting space directly in front of the hemicycle European parliament in Brussels. The stand was very well received and visited by EU parliament president Tajani, DG-RTD (innovation) commissioner Moedas and MP Lambert van Nistelrooij.[Doc_45]
- 18. The demonstration in the EU parliament of the InForMed project at the EU parliament was highlighted in an article in the online newsletter Philips Global News. The article placed the InForMed project in the context of both the POSITION and the ULIMPIA (PENTA) as well as the Health.E lighthouse [Doc_46]
- 19. The magazine SciTech Europe Quarterly published an interview with Ronald Dekker about the recently established Health.E lighthouse. The interview also extensively references the POSITION project. SciTech Europe Quarterly, December 2018, issue 29 [Doc_47]
- 20. The F2R platform developed in the POSITION project is the "test-case / use-case" in a 3D in-line inspection tool that is being developed in the H2020 CITCOM project (https://citcom.eu/). During this review meeting the platform was presented [Doc_58].
- 21. The Artemis Magazine featured an extensive interview on the Health.E lighthouse entitled "Health.E lighthouse; 'Moore for Medical': accelerating innovation in medical devices" by Chris Horgan, Artemis Magazine No. 25, December 2019 [Doc_66].
- 22. Anna Pak from TUDelft presented her work in POSITION titled "Embedding small electronic components into tiny flexible implants" at the BioEl2019, The International Winterschool on bioelectronics in Kirchberg, Tirol, Austria March 16th-23th, 2019 [Doc 59]
- 23. Anna Pak from TUDelft presented her work in POSITION titled "Embedding small electronic components into tiny flexible implants" at the 7th Dutch Biomedical Engineering Conference 2019, January 24th-25th, Egmond aan Zee, the Netherlands [Doc_59]
- 24. Nasim Bakhshaee Babaroud from TUDelft presented her work in POSITION titled "Towards a Semi-Flexible Parylene-Based Platform Technology for Active Implantable Medical Devices" at the BioEl2019, The International Winterschool on bioelectronics in Kirchberg, Tirol, Austria March 16th-23th, 2019 [Doc_60]



- 25. Nasim Bakhshaee Babaroud from TUDelft presented her work in POSITION titled "Towards a Semi-Flexible Parylene-Based Platform Technology for Active Implantable Medical Devices" at the 7th Dutch Biomedical Engineering Conference 2019, January 24th-25th, Egmond aan Zee, the Netherlands [Doc_60]
- 26. Agnes Buβmann and Lorentz Grünerbel from Fraunhofer emft had a paper and poster presentation at the Smart Systems Integration (SSI) Conference in Barcelona 10-11 April 2019 titled "Increasing piezo micro diaphragm pump performance by optimizing piezo actuation." [Doc_61]
- 27. Ronald Dekker, Philips Research, "Emerging technologies in healthcare, the opportunities and challenges," presentation during the Artemis Technology Conference 2019,16-17 April 2019 Amsterdam, The Netherlands [Doc_62]





Both the POSITION project as well as the InForMed project were presented by Fraunhofer IZM at the "Kongress ECSEL in Deutchland" event the 5th and 6th of September 2018 in Dresden [Doc_22]





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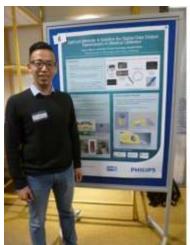
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Chris van Heesch gives an invited presentation at the IEEE International UltraSonic Symposium 2018 in Kobe Japan. The presentation was designated a "Conference highlight"







PhDs and PostDoc students tell the Philips community about their research project in European projects like POSITION and ULIMPIA, 1st Nov 2018.





Impressions of the Philips Booth and presentation during the "Medical MEMS and Sensors" conference in Santa Clare California [Doc_39]





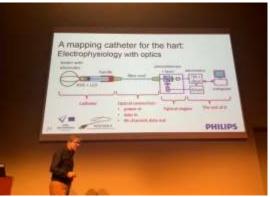
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The Position project was present with a poster at the 2018 EFECS conference, 20-23 Nov, Lisbon 2018 [Doc_43]







Martin v.d. Mark (Philips Research), presents details of the work in Demonstrator 3 during the "Day of Photonics" 28th of November 2018, The High Tech Campus Eindhoven, the Netherlands.

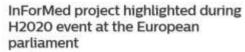




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News thirt

The ECSEL Joint Undertaking project in ForMed was selected for a demonstration claring the figh-level conference "EU research and innovation in our daily life," the 27th of November: The location was the European Parlament haliding in Brunsels directly next to the entrange of the Parliament hemicycle.

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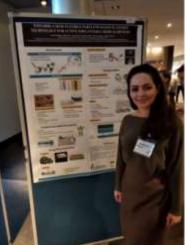
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Anna Pak (left) and Nasim Bakhshaee Babaroud (right) presenting their work at the 2019 Dutch Bio-Medical Engineering conference in januari 2019 in Egmond aan Zee the Netherlands. [Doc_59, Doc_60]







Anna Pak (left) and Nasim Bakhshaee Babaroud (right) presenting their work at the BioEl2019 Winterschool in Austria March 2019 [Doc_59, Doc_60]





Agnes Buβmann from Fraunhofer emft proudly presents het poster at the Smart Systems integration conference 10-11 April 2019, Barcelona [Doc_61]







"Emerging technologies in healthcare, the opportunities and challenges," presentation during the Artemis Technology Conference 2019,16-17 April 2019 Amsterdam, The Netherlands [Doc_62]

0.2 Year 2

- Dr. María Gamella (Universidad Complutense de Madrid, UCM) gave a poster presentation "Electrochemical biosensors: promising tool for multiplexed determination of emerging cardiovascular biomarkers) at the European Biosensor Symposium EBS2019, 18-21 February 2019 in Firenze, Italy https://www2.chim.unifi.it/vp-334-2nd-european-biosensor-symposium-2019.html [Doc_67].
- 2. Dr. María Gamella (Universidad Complutense de Madrid, UCM) gave an oral communication entitled: "Electrochemical immunosensing platforms for emerging cardiovascular biomarkers" at a workshop "Developing reagentless point of care electronic sensors" held in Oxford (UK) March 26th-27th 2019 [Doc 68].
- 3. The Health.E lighthouse was presented during the ECSEL symposium in Bucharest 17/18 June 2019. The poster presentation was part of four guided tours. In the presentation the POSITION project (separate poster) and the ULIMPIA as well as the ORCHID projects were highlighted. Romanian media recorded the poster presentation [Doc_70]
- 4. Maria Gamella from UCM presented a poster "Disposable Amperometric Immunoplatform for the Detection of Amin-terminal pro-B-type Natriuretic Peptide as a Biomarker for Heart Failure" on the Mátrafüred 2019: International Conference on chemical Sensors (https://matrafured.ch/).[Doc_72]
- 5. "Creating the future of healthtech," presentation by Willem van de Brink (Philips Innovation Services) at the <u>MicroTech Suedwest</u> in Freiburg, 19th July 2019. [Doc 75]
- 6. Rob van Schaijk (Philips Innovation Services), "CMUT: a low cost versatile ultrasonic platform," MUT2019, 11-12 June 2019, Maison MINATEC, Grenoble France, http://mut2019.insight-outside.fr/ [Doc_80]
- C. Mountain, M. Kluba, L. Bergers, J.Snijder, R. Dekker, "Novel method of alignment to buried cavities in cavity-SOI wafers for advanced MEMS devices," Micro and Nano Engineering, August 2019, available on line https://doi.org/10.1016/j.mne.2019.100043 [Doc_82]



- 8. K. Nanbakhsh (TUDelft) et al. "Effect of Signals on the Encapsulation Performance of Parylene Coated Platinum Tracksfor Active Medical Implants," Engineering in Medicine and Biology Conference EMBC 2019, 23-27 July Berlin 2019 https://embc.embs.org/2019/, paper available at: http://bioelectronics.tudelft.nl/~wout/documents/embc2019_nanbakhsh.pdf [Doc_85]
- 9. C. van Heesch et al. "CMUT for high volume low cost medical applications," 2019 ICU Bruges, 2019 International Congress on Ultrasonics, 3-6 September 2019 Bruges Belgium [Doc_84]
- 10. T. Göttsche from Osypka presented at the Swiss Medtech symposium 2019 in Luzern a presentation titled "How to handle given boundaries, pushing the boundaries of implantable therapies, pushes the boundaries of implantable devices as well" [Doc 87].
- 11. Rob van Schaijk (Philips Innovation Services) gave a presentation entitled "CMUT: a versatile and low cost ultrasonic platform" during the MEMS & Imaging summit Grenoble 24-26 September 2019 [Doc_91]
- 12. Jorge Fernandes and Taimur Rabuske from partner INESC-ID gave presentation containing results from POSITION at the IEEE CASS Seasonal School on Circuits and Systems for IoT, 5-9 August 2019, Instituto de Informática, UFRGS, Campus do Vale, Porto Alegre, Brazil, http://www.inf.ufrgs.br/cass/iot/ [Doc_94]
- 13. In September 2019, Madrid celebrated the so-called "European Researchers' Night" UCM participated with various activities, one of them devoted to present the European projects (including POSITION) they are involved in. The POSITION project was amongst others presented to the University Rector. The posters presented can be downloaded from https://quimicas.ucm.es/noche-europea-de-los-investigadores-2019/ [Doc_96]
- 14. The Health.E lighthouse including results from POSITION was presented during the two-day workshop on Bio Electronics and Wearable Systems organized by the MNBS (DG Connect) the 22nd and 23rd of October 2019 in Brussels https://ec.europa.eu/digital-single-market/en/news/workshop-smart-bioelectronic-and-wearable-systems [Doc_97]
- 15. O. C. Akgun, K. Nanbakhsh, V. Giagka, and W. A. Serdijn, "A chip integrity monitor for evaluating long-term encapsulation performance within active flexible implants," in Proc. IEEE Biomed. Circ. Syst. Conf. (BioCAS) 2019, Nara, Japan, Oct.2019.[Doc_118] http://bioelectronics.tudelft.nl/~wout/documents/biocas2019 akgun.pdf
- 16. Hans Hofstraat, vice president and research program manager Royal Philips gave a presentation "Digital healthcare solutions from big data to clinical impact," which includes results from the POSITION project at the Medtech & Pharma platform, 24th October 2019. [Doc_99]
- 17. On the 7th of November 2019 a delegation of the ECSEL Governance board visit Philips Medical Systems in Best. They were updated on the work in POSITION and the Health.E lighthouse. As an illustration of the impact of state-of-the-art technology on minimally invasive procedures they were given a FORS demo, and there was the opportunity for hands-on experience. [Doc_102]
- 18. Results from the POSITION project were shown in a plenary Health.E lighthouse presentation during the 2019 EFECS in Helsinki, Finland, 19-21 November 2019 [Doc_103]



- 19. Every year Philips Medical Systems (PMS) organizes a "PPP-gallery" event where the PPP projects where PMS is active in are presented. On the 26th of November also POSITION was presented.
- Omer Can Akgun, Kambiz Nanbakhsh, Vasiliki Giagky and Wouter A. Serdij, "A Chip Integrity Monitor for Evaluating Long-term Encapsulation Performance Within Active Flexible Implants" 2019 BioCAS conference October 17-19, 2019, Nara Japan. https://biocas2019.org/ [Doc_105]
- 21. Partner Taimur Rabuske from INESC-ID gave a presentation for an IEEE Circuits and Systems Society Tech Talk in Brazil in which results from POSITION were disseminated. The title of the talk was "Designing ADCs for the internet of things". https://wp.ufpel.edu.br/cdtec/2019/12/03/convite-seminarios-em-computacao-ieee-cass-tech-talk/ 3rd od December 2019 [Doc 107]
- 22. On the 30th of January Vasiliki Giagka from Fraunhofer IZM / TUDelft and Daniel Schobben from Salvia gave an open colloquium at the technical university of Delft on the work being done on Bioelectronic Medicines in POSITION. [Doc_109]
- 23. E. Österlund et al. (Aalto University) "Stability and residual mechanical stresses of sputtered wurtzite AlScN thin films," submitted to APL materials [Doc_115]
- 24. J. Guerreiro et al. (PDMFC), "On the Achievable Capacity of MIMO-OFDM Systems in the CathLab Environment" in Sensors 2020, 20, 938; doi:10.3390/s20030938 [Doc_116]
- 25. I. Elfergani, A. Iqbal, C. Zebiri, A. Basir, J. Rodriguez, M. Sajedin, A. O. Pereira, W. Mshwat, R. A. Abd-Alhameed, S. Ullah, "Low-Profile and Closely Spaced Four-Element MIMO Antenna for Wireless Body Area Networks," Electronics 2020, 9, 258. https://www.mdpi.com/2079-9292/9/2/258 [Doc_120]
- 26. R. A. Abd-Alhameed, I. Elfergani, J. Rodriguez, "Recent Technical Developments in Energy-Efficient 5G Mobile Cells: Present and Future," Electronics 2020. 9. 664. https://www.mdpi.com/2079-9292/9/4/664 [Doc 120]
- 27. C. Zebiri, D. Sayad, I. Elfergani, A. Iqbal, W. F.A. Mshwat, J. Kosha, J. Rodriguez and R. Abd-Alhameed, A Compact Semi-Circular and Arc-Shaped Slot Antenna for Heterogeneous RF Front-Ends, MDPI Electronics, pp. 1-13, 2019. https://www.mdpi.com/2079-9292/8/10/1123 [Doc_120]







Dr. María Gamella presenting her work in a poster at the EBS2019, 18-21 February 2019 in Italy and with a presentation in a Workshop "Developing reagent less point of care electronic sensors" held in Oxford (UK) March 26th-27th 2019 [Doc_67] [Doc_68].





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"Creating the future of healthtech," presentation by Willem van de Brink (Philips Innovation Services) at the MicroTech Suedwest in Freiburg, 19th July 2019. From left to right: Dr Alfred Stett, Retina Implant AG, Willem van den Brink, Philips Innovation Services, Prof Thomas Stieglitz, University of Freiburg, Roland Doerr, MictroTec Suedwest, and Reinhard Pusch, RoodMicrotec GmbH.



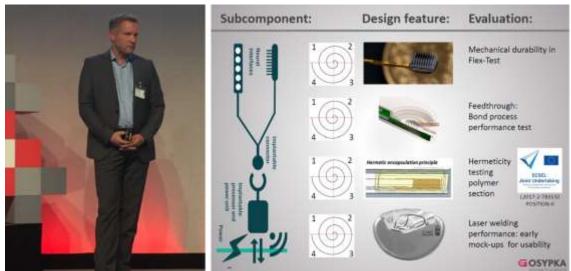


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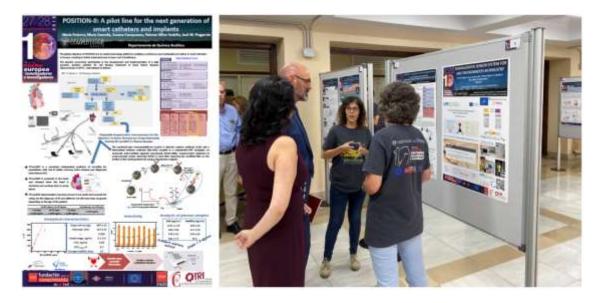


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0.3 Year 3

- Kambiz Nanbakhsh, Riina Ritasalo, Wouter A. Serdijn, and Vasiliki Giagka, "Long-term Encapsulation of Platinum Metallization Using a HfO2 ALD - PDMS Bilayer for Non-hermetic Active Implants," in Proc. of 2020 IEEE 70th Electronic Components and Technology Conference, on-line June 2020, https://www.ectc.net/index.cfm [Doc_121]
- Marco Kircher from partner Fraunhofer IMPS referred to the POSITION-II project in a speech for the German wide digitalday "What makes an engineer a superhero? Example of a career path." https://www.ipms.fraunhofer.de/de/features/Digitaltag2020.html



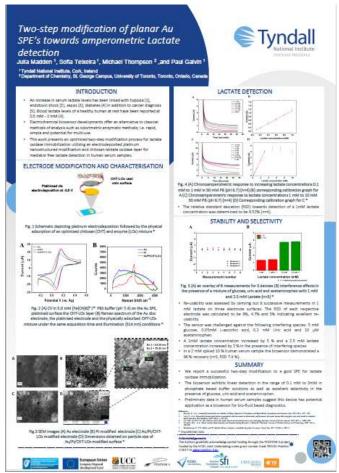
 Kambiz Nanbakhsh et al. (TUDelft), "A Chip Integrity Monitor for Evaluating Moisture/Ion Ingress in mm-Sized Single-Chip Implants," in IEEE Transactions on Biomedical Circuits and Systems, 07 July 2020 [Doc_126] DOI: 10.1109/TBCAS.2020.3007484 https://ieeexplore.ieee.org/document/9134882

The article was also shared on LinkedIn (Link)

- Julia Madden (Tyndall), "Two step modification of planar Au SPE's towards amperometric lactate detection," poster at the 71st meeting of the International Society of Electrochemistry [Doc_129]
- The POSITION project featured in an interview for Artemis Magazine "International Networks and Growing Innovation, ECEL's Impact in Latvia and the Netherlands," Artemis Magazine no. 28 (2020) https://artemis-ia.eu/publications.html [Doc_130]
- Glenn Ross et al. (Aalto University), "The impact of residual stress on resonating piezoelectric devices," Materials and Design 196 (2020) 109126, [Doc_132] DOI: 10.1016/j.matdes.2020.109126
- Kristina Bespalova et al. (Aaltop University), "Temperature Stability of Electrode/AlScN Multilayer Systems for pMUT Process Integration," IEEE International Ultrasonic Symposium, online meeting (originally planned Las Vegas), Las Vegas 6 – 11 September 2020 [Doc_133]
- Jian Li, "Embedded High-Density Trench Capacitors for Smart Catheters," Electronics Systems-Integration Technology Conference," ESTC2020 [Doc-136] https://www.estc-conference.net/about-estc
- Health.E lighthouse presentation for the 21th International Conference on Industrial Technology Innovation (ICITI, 2020), Digital Innovation for smart health and wellbeing. In the context of open technology platforms, the presentation references the POSITION project. Date: October 15 (Thursday) 2020 Venue: Taiwan Institute of Economic Research (on-line) [Doc_139]
- Health.E lighthouse presentation for the MedTech&Pharma Platform Conference. In the context of open technology platforms, the presentation references the POSITION project. 22-23 October (on-line) https://www.medtech-pharma.com/program [Doc_140]

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1 Press Releases POSITION

1.1 Year 1

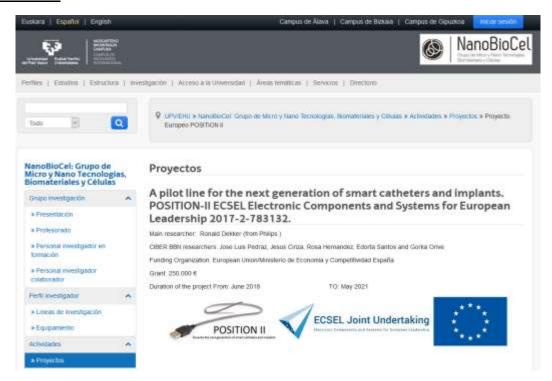
- CIBER (Spain) announced the Kick-off of POSITION on their "nanbiosys" website http://www.nanbiosis.es/nanbiosis-working-on-the-development-of-next-generation-catheters/ [Doc_2]
- 2. The POSITION project is listed and detailed in the "ECSEL book of projects II" published by ECSEL June 2018 [Doc_3]
- 3. The public authorities of a number of participating countries announced the funding of POSITION-II on their websites:
 - a. Sweden (click here)
 - b. Holland (click here)
 - c. Germany (click here)
- 4. The funding of POSITION-II was announced by a press release on the website of the Technical University of Delft. In the item, it was linked to the open pilot line project "InForMed" June 2018, https://www.tudelft.nl/2017/ewi/financiering-voor-de-ontwikkeling-van-slimme-katheters-implantaten/ [Doc_4]
- The start of the POSITION-II project was announced on the website of the website of the Biomedical Research Center on Bioengineering, Biomaterials and Nanomedicine, CIBER-BBN: https://www.ehu.eus/es/web/nanobiocel/projektu-aipagarrienak/-/asset_publisher/Bs6n/content/proyecto-europeo-position--2
 [Doc_5]
- In May 2018 the Health.E lighthouse was established. It references both the POSITION project (cornerstone) as well as the ULIMPIA project. https://www.ecsel.eu/healthe
- 7. 26th of July 2018 the POSITION websites is officially on-line: www.position-2.eu
- 8. 5th of June 2018, partner Salvia announced the Kick-off of POSITION in the news category of their website: https://salvianeuro.com
- The 9th of August 2018, partner MTA TTK announced the POSITION project on their website with a special item (<u>click here</u>) as well as with a special news item (<u>click here</u>) [Doc_17]
- 10. The 15th of August 2018, partner 3D Micromac announced the POSITION project on their website (click here) [Doc_18]
- 11. The 1st of September 2018, partner IMS announced the POSITION project on their website (<u>click here</u>) [Doc_19]
- 12. The 3rd of September 2019 Fraunhofer IPMS announced the POSITION project in an extensive press release on their website [Doc_21]
- 13. The POSITION project is referenced on the institution <u>website of partner</u>

 <u>CIBER-BBN.</u> as well as on their <u>research infrastructure website</u>. The pages <u>link</u>
 <u>to a page</u> with an extensive project description. [Doc_32]





CIBER (Spain) announced the Kick-off of POSITION on their "nanbiosys" website http://www.nanbiosis.es/nanbiosis-working-on-the-development-of-next-generation-catheters/



The start of the POSITION-II project was announced on the website of the <u>website</u> of the Biomedical Research Center on Bioengineering, Biomaterials and Nanomedicine, CIBER-BBN: 2 [Doc_5]





THE NEXT GENERATION SMART CATHETERS AND IMPLANTS

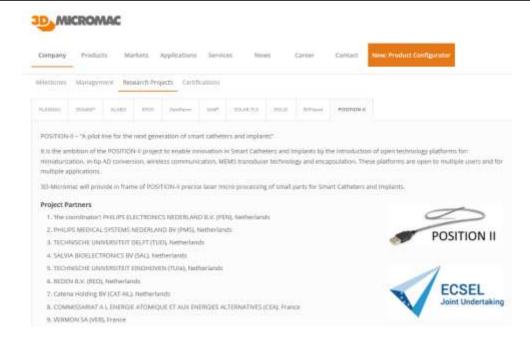
it is the archition of POSITION project to enable invariation in Smart Entheters and Implients by the introduction of open technology plotforms for establishments for the AD conversion, wireless communication, NESS invariance inchnology and enapsulation. These plotforms are open to multiple surers and for multiple applications.

Screen shot of the POSITION website www.position-2.eu



Screenshot of the announcement of the POSITION project on the website of partner MTA TTK (click here) [Doc_17].





Screenshot of the announcement of the POSITION project on the website of partner 3D Micromac [Doc_18]

POSITION-II - A pilot line for the next generation of smart catheters and implants August 17, 2018



It is the ambition of POSITION project to enable innovation in Smart Catheters and Implants by the introduction of open technology platforms for: miniaturization, in-tip AD conversion, wireless communication, MEMS transducer technology and encapsulation. These platforms are open to multiple users and for multiple applications.

The IMS will be responsible for the development and start-up of the ASICs within the subproject "digital MRI-safe EP catheter". Up to 96 electrical signals of the heart will be readout, digitized and accessible via optical fiber.

POSITION-II has received funding within the Electronic Components and Systems for European Leadership Joint Undertaking (ECSEL JU) in collaboration with the European Union.

Course of the project: 01.06.2018 - 31.05.2021

Sponsor: EU

Support code: 16ES0775

For further information the TAKEMI5 research project, please refer to: http://position-2.eu/

Screenshot of the announcement of the POSITION project on the website of partner IMS (click here) [Doc_19]



Presseinformation

Volkskrankheit Arterienverkalkung – bessere Behandlung durch intelligente Katheter vom Fraunhofer IPMS

Presseinformation / 3.9.2018

Das Fraunhofer-Institut für Photonische Mikrosysteme IPMS hat im Juni 2018 das EU-Verbundprojekt »POSITION-II« gestartet, in dem ikromechanische Ultraschallwandler für smarte Katheteranwendungen erforscht werden, die zukünftig mehr Sicherheit bei medizinischen Untersuchungen gewährleisten sollen,



zukünftig seine Arbeit erleichtern, mehr Festu bleten und den medizinischen Eingriff sicherer mechen



Dresden, 3. September 2018, Dig. Arterienverkalkung ist das häufigste aller Gefäßleiden. Früher noch als Krankheit der alten Leute betitelt, sehen sich heutzutage auch immer mehr jüngere Menschen damit kanfrantiert. Die Verengung der Arterien bewirkt einen verminderten Blutzufluss zu Organen und Körperteilen -Herzinfarkt oder Schlaganfall sind die Folgen. Um verengte oder verschlossene Blutgefäße zu weiten, muss sich der Patient einer Operation unterziehen, bei der der Arzt einen Katheter über eine Schlagader in das arterielle Gefäßsystem einführt und die Verengung durch einen Ballon oder Stent wieder aufdehnt.

Die meisten dieser Eingriffe können mit werden, die durch eine Vielzahl von intelligenten bildgebenden und sensorischen Kethetern unterstützt werden. So kann der Arzt zu jedem Zeitpunkt der Behandlung genau sehen, wo sich der Katheter im

Um dem Arzt zukünftig seine Arbeit zu

und alntecher zu bedienen. erleichtern und den Eingriff sicherer zu machen, forscht das Fraunhofer IPMS im jüngst gestarteten Projekt »POSITION-II« an intalligenten Kathetern mit mehr Features. Ziel ist es, medizinische Instrumente mit besserer Funktionalität auszustatten, die aber gleichzeitig auch kleiner, billiger und einfacher zu bedienen sind. Die technologische Grundlage dafür bilden mikromechanische Ultraschallwandler.

Derzeit, basieren Ultraschallwandler für die medizinische Bildgebung vor allem auf dem piezoelektrischen Effekt für die Signalerzeugung und -auswertung. Dazu werden spezielle Piezo-Materialien genutzt, die den großen Nachteil haben, dass sie toxisch wirken können. Außerdem sind sie schwierig herzustellen und deshalb sehr teuer. Die Technologie des Fraunhofer iPMS umgeht diese Nachteile, indem sie für den Aufbau von Ultraschallwandlern MEMS-Strukturen, sogenannte MUT-Bauelemente, nutzt. So wird eine kompakte Aufbauform und damit verbunden eine höhere Miniaturisierung erreicht. Durch die Integrationsfähigkeit in CMOS-Prozesse in einer speziellen Technologie (als Post-CMOS-Modul) ist eine weiteus güristigere Fertigung als bei piezobasierten Ultraschallwandlern möglich. Ein weiteres Plus ist die erreichbare höhere Frequenz und die damit verbundene bessere Auflösung, die eine genauere Analyse in der medizinischen Bildgebung erlaubt.

Kontakt



Mikrosysteme IPMS 01109 Dresden

Telefon +49 351 88 23-239 Fax +49 351 88 23-266

→ E-Mail senden



EU-Verbundprojekt

Das Fraunhofer IPMS hat das EU-Verbundprojekt »POSITION-II« gestartet, in dem mikromechanische Ultraschallwandler für smarte Katheteranwendungen erforscht. werden, die zukünftig mehr Si cherheit bei medizinischen Untersuchungen gewährleisten sollen.

MEHR INFO



Förderung

. menprogramm der Europäisch (H2020 / 2014-2020) und nat

Extensive press release on the website of Fraunhofer IPMS 13th of September 2019 [Doc 21]

1.2 Year 2

- 1. ECSEL office produced a poster of the POSITION project for the EFECS2019 in Helsinki [Doc-89]
- 2. The 26th of August 209 innBW announced the POSITION project on their website. The InnBW is a cooperation of the 13 biggest non-university research institutes in south Germany (Baden Württemberg).



https://www.innbw.de/de/projekte/projektdetails/position-II-projekt/

3. The POSITION project is the corner stone project of the Health.E lighthouse. Smart minimally invasive instruments and implants such as being developed in the POSITION as well as the project itself are extensively referenced on the Health.E website that went live 1st May 2020 www.health-lighthouse.eu



Screenshot of the announcement of the POSITION project on the website of the innBW



POSITION

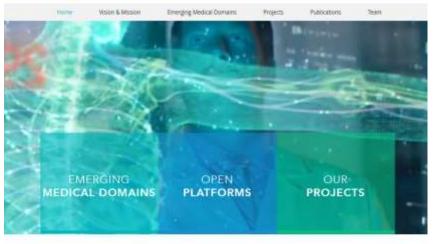




ECSEL office produced a poster of the POSITION project for the EFECS2019 in Helsinki [Doc-89]







HEALTH.E LIGHTHOUSE

Enabling "Moore for Medical"



Screenshot of the Health.E website that extensively references the POSITION project www.health-lighthouse.eu

1.3 Year 3

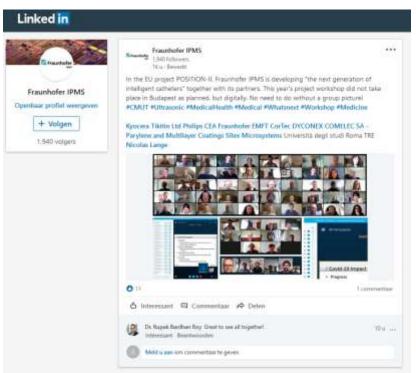
- Fraunhofer IPMS posted a nice item on LinkedIn on the first fully online general assembly meeting of POSITION 19th May 2020. https://www.linkedin.com/posts/fraunhofer-ipms cmut-ultrasonic-medicalhealth-activity-6668142121243045888-xdG3
- Multi Channel posted a nice item on POSITION-2 Moore4Medical as well as the Health.E lighthouse on Linkedin 19th May 2020. https://www.linkedin.com/feed/update/urn:li:activity:6668419586024579072
- 3. Multi Channel Systems posted an item on Twitter referencing POSITION-2, Moore4Medical and the Health.E lighthouse 19th May 2020. https://twitter.com/SmartEphys/status/1262663145451028481
- 4. Picosun referred to both the ECSEL POSITION as well as the PENTA ULIMPIA in their Picosun's communications press release 29.6.2020 in an article entitled "Picosun's medical ALD solutions ensure excellent hermetic encapsulation," The article was shared on the web, linkedin, twitter etc. [Doc_124].



https://www.picosun.com/press/picosuns-medical-ald-solutions-ensure-excellent-hermetic-encapsulation/

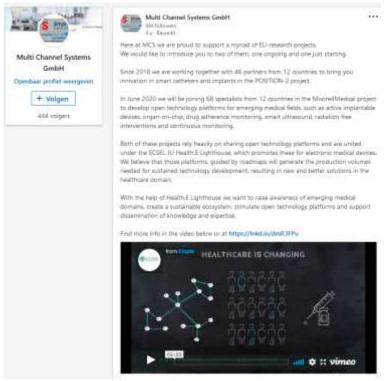
- 5. Partner Salvia feaured in a "Start-ups to Watch" article in the journal of the Medtech Strategist 2019 https://salvianeuro.com/MTS_Salvia_20190313_UL.pdf
- Philips made a short social media movie on the MEMS ultrasound transducer benchmark. The video is available on YouTube and also posted on LinkedIn. https://youtu.be/NI50J76zzcA https://www.linkedin.com/posts/healthlighthouse_position-mems-ultrasound-benchmark-activity-6687316309656539136-O5I8
- 23rd of September 2020 partner Salvia issued a press release to announce that they raised EUR 26M (USD 31M) to develop innovative neurostimulation therapy for chronic migraine. [Doc_135] https://www.salvianeuro.com/assets/press_release_salvia_september2020.pdf
- 8. 28th of September 2020, the press release of Salvia was mirrored on the ECSEL JU website https://www.ecsel.eu/news/ecsel-ju-projects-start-develops-innovative-neurostimulation-solution-treating-chronic

9.



Fraunhofer IPMS posted a nice item on LinkedIn on the first fully online general assembly meeting of POSITION 19th May 2020





Multi Channel posted a nice item on POSITION-2 Moore4Medical as well as the Health.E lighthouse on Linkedin 19th May 2020

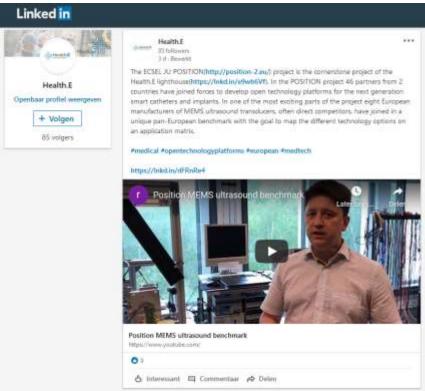


Multi Channel Systems posted an item on Twitter referencing POSITION-2, Moore4Medical and the Health.E lighthouse 19th May 2020





Picosun referred to both the ECSEL POSITION as well as the PENTA ULIMPIA in their Picosun's communications press release 29.6.2020 in an article entitled "Picosun's medical ALD solutions ensure excellent hermetic encapsulation," The article was shared on the web, linkedin, twitter etc. [Doc_124].



Philips made a short social media movie on the MEMS ultrasound transducer benchmark. The video is available on <u>YouTube</u> and also posted on <u>LinkedIn</u>.





Impressions from the fund raising press release by partner Salvia and a mirrored article on the ECSEL JU website.



2 Workshops POSITION

2.1 Year 1

- 1. On the 5-6th of June 2018 all partners of POSITION gather at the ENGELS conference center in Rotterdam for the official Kick-off of the project. The event was attended by more than 80 representatives from the different partners.
- Dekker R., "Health.E, Accelerating innovation for medical devices," presentation given during a workshop at Philips Research with representatives from the Technical University of Munich (Pfeiffer, Franz, Prof. Dr. rer. nat., Rummeny, Ernst J., Prof. Dr. med., Pfeiffer (née Münzel), Daniela, Priv.-Doz. Dr. med., MHBA, Karampinos, Dimtrios, Priv.-Doz. Dr.-ing., Prof. Dr. rer. nat. Franz Pfeiffer, 4th June 2015 [Doc_1]
- 3. On the 12th of June 2018 partners from work package 1 met at the High Tech Campus in Eindhoven for a one day workshop on F2R. Present were partners from Philips research, Philips Innovation Services, TUDelft, Fraunhofer IZM and EK-MFA (Hungary) [Doc_6]
- 4. On the 25th of June 2018 partner Catena visited Philips Medical Systems in Best the Netherlands for a workshop to get a better understanding on the work flow in a typical Cath Lab setting [Doc_16]
- 5. On the 19th of July 2018 the electronic design partners from demonstator 2 had a workshop at the High Tech Campus in Eindhoven to align the activities with respect to the design and implementation of the ADC for the IVUS and ICE catheters. [Doc_13]
- 6. On the 12th and 13th of September 2018, the project partners in WP3 (CMUT/PMUT benchmark) met in Eindhoven for an intensive two day workshop to align the activities and visit the US measurement lab and the cleanroom facilities. [Doc 20]
- 7. On the 13th of September Partners Philips Medical Systems and Catena met at the site of Catene to align the different technology options for the wireless catheters [Doc_30]
- 8. On the 21st of September 2018, the partners from Demo4 "Cell Therapy Catheter" met at the Minimally Invasive Center Jesus Uson (CCMIJU) in Caceres (Spain) to align the work in the project [Doc_23]
- 9. Jian Li, PhD student in the POSITION project gave a presentation about his project within the POSITION project in the context of a workshop with a group of PhD and master students from TUDelft the 5th of October 2018 [Doc_26]
- 10. On the 9-11th of October 2018 Tyndall organized a very successful general assembly workshop in the Tyndall National Institute in Cork. The workshop was attended by over 70 people and during the workshop there was a very interesting excursion to the Medical training center ASSERT www.ucc.ie/en/assert/. [Doc_28]
- 11. The 26th of October there was a workshop to align the work in Demo 2 of POSITION. Present Vincent Henneken and Martin van der Mark from Philips Research and Bart Koot from Osypka. Topic was to come to agreement on 1st version Demo 3 system architecture [Doc_37]
- 12. The 12th and 13th of December 2018 Bas Jacobs (Philips Research) and Rene Sanders (Philips Innovation Services) visited partner 3D Micomac and Fraunhofer IMWS at their facilities in Chemnitz (Germany) and Halle to learn about each other capabilities and align the work in WP1 [Doc_49]



- 13. On the 15th of Januari 2019 there was a workshop between partners Salvia and Dyconex at the High Tech Campus Eindhoven to further detail the work for Demonstrator 5 [Doc_51]
- 14. The 22-24th of Januari 2019 more than 75 partners met in Grenoble for a plenary workshop [Doc_52]
- 15. Partners from the Institute for Technical Physics and Material Science visited Philips Research for a two-day workshop to detail out the work plan related to the in-tip catheter force sensor. 14-15th of February 2019.
- 16. On the 21st of March 2019 there was a workshop with partners TUDelft, Philips Research and Philips Innovation Services to come to exchange results from the PENTA ULIMPIA project and the ECSEL JU POSITION project. The result was a decision to work together on certain aspects of ultra-sound front-ends to avoid duplication [Doc_56].
- 17. Partners Creganna, Tyndall, Philips Research and Philips Medical Systems met the 1st and 2nd of April 2019 at the High Tech Campus in Eindhoven to discuss the integration of the FFR pressure sensor into Creganna's micro-catheter. Participants were: Eamonn Hawe (Tyndall), Nguyen, Thanh Trung (Philips Research), Haartsen, Jaap Haartsen (Philips Research), Gallagher, Dion (Creganna), Frank Stam (Tyndall), O'Reilly, Dermot (Creganna), Chantal van den Broek (Philips Medical Systems) [Doc 57]
- 18. The 6th of May 2019, partners Salvia, TUDelft and Fraunhofer IZM used the opportunity of a planned general workshop in Helsinki to add a day and visit Picosun in Finland to align activities. [Doc_63]
- 19. From the 7th till the 9th of May, VTT/Aalto University organized a very well attended general workshop in Helsinki Finland. [Doc_64]





During the POSITION Kick-off the 5-6th of June in Rotterdam, the partners informally met during an evening boat tour + dinner in the harbour of Rotterdam.



Impressions from the Kick-off meeting 5-6th June 2018 in Rotterdam





Impressions from the one day F2R workshop at the High Tech Campus in Eindhoven the 12th of July 2018



Impressions from the Demo 2 workshop the 19th of July 2018 at the high tech campus in Eindhoven [Doc_13]



On the 25th of June 2018, partner Catena visited Philips Medical Systems in Best to get a better idea of the Cath ab working environment [Doc_16]





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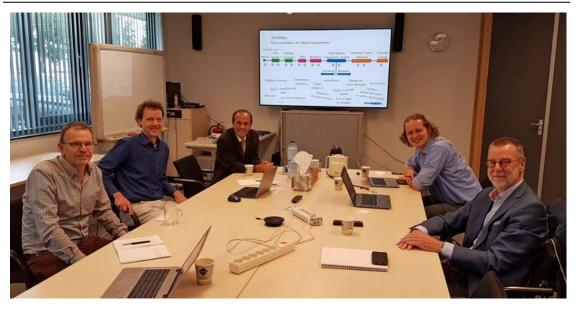


Figure 2-1 On the 13th of September Partners Philips Medical Systems and Catena met at the site of Catene to align the different technology options for the wireless catheters [Doc_30]





On the 21st of September 2018, the partners from Demo4 "Cell Therapy Catheter" met at the Minimally Invasive Center Jesus Uson (CCMIJU) in Caceres (Spain) to align the work in the project [Doc_23]





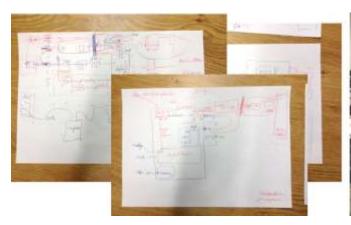
Jian Li, PhD student in the POSITION project gave a presentation about his project within the POSITION project in the context of a workshop with a group of PhD and master students from TUDelft the 5th of October 2018 [Doc_26]



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over 70 people and during the workshop there was a very interesting excursion to the Medical training centre ASSERT www.ucc.ie/en/assert/. [Doc_28]





Hard work during the Demo 2 workshop at Philips Research the 26th of October 2018





The 12th and 13th of December 2018 Bas Jacobs (Philips Research) and Rene Sanders (Philips Innovation Services) visited partner 3D Micomac and Fraunhofer IMWS at their facilities in Chemnitz (Germany) and Halle to learn about each other capabilities and align the work in WP1 [Doc_49]





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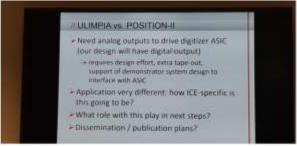
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From the 7th till the 9th of May, VTT/Aalto University organized a very well attended general workshop in Helsinki Finland. [Doc_64]

2.2 Year 2

- On the 16th of July the HELoS project supporting the Health.E lighthouse kickedoff in Delft, the Netherlands. Present were partners: TUDelft, Philips, CEA LETI, Fraunhofer, IMEC, Future, Bayern and Siemens Both the POSITION, as well as the ULIMPIA project were presented as examples of projects working towards open technology platforms [Doc_76]
- 2. The 14th of August 2019 Cregana and Tyndall organized a workshop at Greganna, Galway Ireland to discuss the development and testing of a portable pressure sensor test set up [Doc 94]
- 3. On the 3rd of September PhD student Jian Li from the Technical University Delft presented and discussed his work on the optical interposer to the microfabrication group at Philips Research [Doc_83]
- 4. On the 18th of September 2019 Osypka had a workshop with a potential new customer. During the workshop result of the POSITION project were shown. The meeting could lead to new business [Doc 89]
- 5. The 10th of October 2019 partners Philips, TU/e and INESC-ID met at Philips Research to discuss details on the design of the digitizing ASICs in POSITION [Doc_93]
- 6. The 9th of October 2019 there was a workshop attended by Creganna, Tyndall and Philips at the High Tech Campus in Eindhoven the Netherlands. During the workshop the integrated pressure sensors of dual pressure micro-catheter prototype were tested in the test set up at HTC. There was also a discussion and alignment on encapsulation and calibration strategy.
- 7. On the 10th of October 2019 there was a workshop at the High Tech Campus in Eindhoven of the partners in WP3 that also attended the general assembly meeting. Partners discussed technical details and measurement protocols [Doc_100]



- 8. On the 21st of October 2019 there was an additional workshop at the High Tech Campus of the partners in WP3. Partners discussed technical details and measurement protocols [Doc_101]
- 9. From 21 to 23rd of February 2020 IMEC Belgium hosted a well-attended general assembly meeting in Leuven Belgium. [Doc_110]
- 10. Partner Murata visited the "Greenhouse" of Philips Innovation Services in Eindhoven to align activities on the thin high density capacitors in WP1. [Doc_111]
- 11. The 4th of March partner Salvia visited CORTEC to align the work on implantable devics in POSITION [Doc_112]
- 12. The Corona virus did not stop the work in POSITION. Instead of a personal visit partners Osypka and Salvia met online in a very fruitful meeting, 12th of March 2020 [Doc_113]
- 13. During a workshop in the April 2020 the ICE ASIC (Kevin Pelzers, TU/e) was transferred to Philips (Zhao Chen) where it will be combined with an analog RX board [Doc_117]
- 14. Unfortunately, we had to skip the planned general assembly meeting in Budapest in May 2020. Instead a two-day online meeting was organized the 13th and 14th of May 2020. Despite the fact that the personal interaction was badly missed, the online meeting worked quite well. In the agenda links were provided that made it very easy to switch between the different breakout sessions. [Doc_119]



The 16th of July the HELoS project supporting the Health.E lighthouse kicked-off in Delft, the Netherlands [Doc 76]





On the 3rd of September PhD student Jian Li from the Technical University Delft presented and discussed his work on the optical interposer to the micro-fabrication group at Philips Research [Doc_83]



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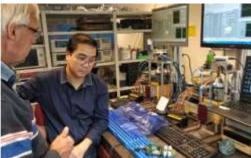






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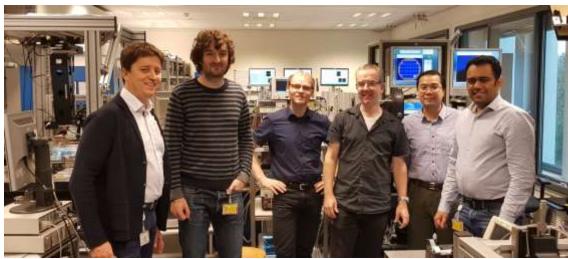


Impressions of workshops between partners Creganna, Tyndall and Philips at Galway Ireland the 14th of August 2019 (left) and at Philips in Eindhoven the 9th of October 2019 (right).





On the 10th of October 2019 there was a workshop at the High Tech Campus in Eindhoven of the partners in WP3 that also attended the general assembly meeting. Partners discussed technical details and measurement protocols [Doc_100]



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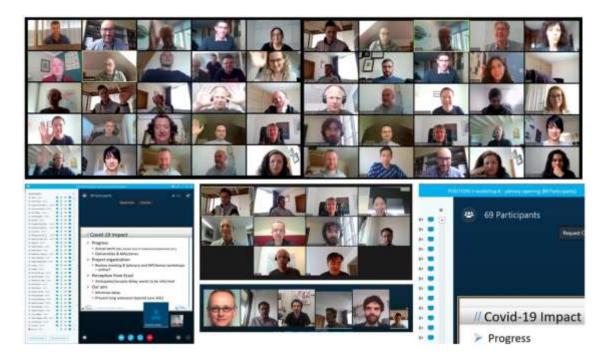


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2.3 Year 3

On the 26th of August 2020 there was the first (online) workshop of the Health.E lighthouse. During the workshop the whitepaper on emerging medical domains was discussed. The POSITION project was especially highlighted as corner stone project of the Health.E lighthouse. The workshop was attended by 45 representatives from industry (LE and SME), RTOs, academia, DG RTD and DG CONNECT, and industry associations. [Doc_131]





Impressions from the first Health.E lighthouse workshop the 26th of August 2020 [Doc_131]