MedPhab

Photonic Medical Devices

Funded by

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PHOTONICS PUBLIC PRIVATE PARTNERSHIP

Photonics West 2022

MedPhab – The Photonics-Based Medical Technology Pilot Line

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 871345.
www.photonics21.org

Dedicated to Efficiency

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- **Photonics Pilot Line** dedicated to medical devices
- Enable **cost effective development** from prototype devices to manufacturing
- **Several photonics and supportive technologies** through a single entry-point
- Early adoption of **new photonics technologies**
- Develop and support the **entire supply chain**
- Provide unique **training**

Aimed at **reducing R&D costs** and **accelerating commercialization**

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MedPhab's Ambition

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Purpose
MedPhab accelerates photonic devices development and industrialization for medical applications.

Mission
Photonic device development and manufacturing according ISO 13485. A path from idea to manufacturing from single point of entry.

Vision
A customer-centric approach where research and industry work together in a common way with the medical-grade approach.

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Applicability of MedPhab technologies in various medical domains

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Hospital Use

Users→ Medical Professionals

Technology → Fiber optic modules, Reader units

Home Care Diagnostics Services

Users→ Citizens jointly with professionals

Technology→ Miniaturized modules for wearables

Equipment for in-vitro Diagnostics

Users→ Professionals in laboratories

Technologies → Disposable microfluidic cartridges, Reader units

Single entry point across the whole development chain

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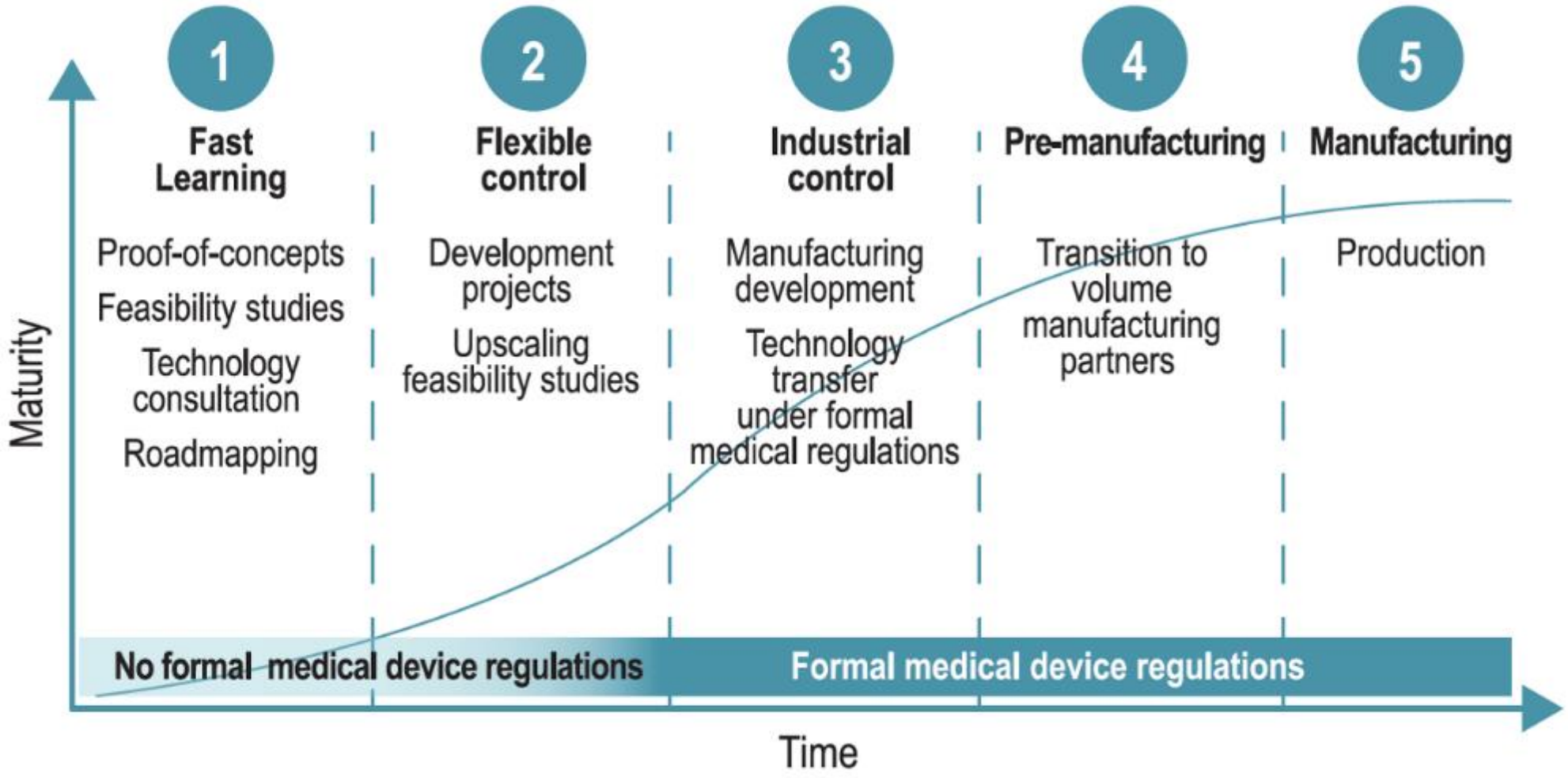
Plan jointly the route towards the product launch!



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Photonics solutions for medical diagnostics

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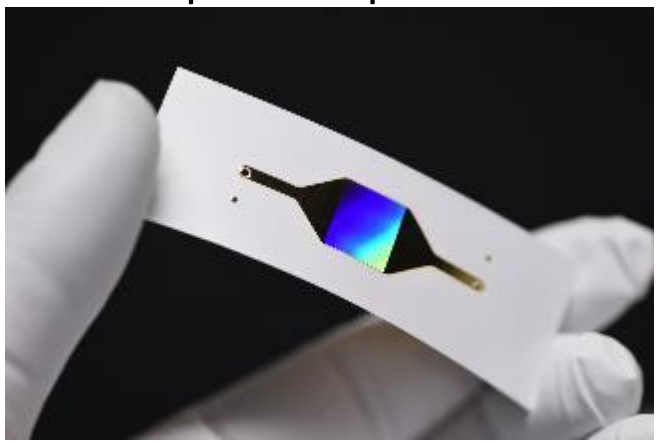
Disposable plasmonic fluidic sensor



Technologies
- ✓ Microfluidics
- ✓ Plasmonics
- ✓ Surface functionalization

Applications
- ✓ SPR
- ✓ Surface-enhanced fluorescence

Reader units for in-vitro diagnostics

Technologies
- ✓ Optics
- ✓ Mechanics
- ✓ Integration

Applications
- ✓ Fluorescence reader
- ✓ SPR
- ✓ Interferometry

Photonic wearables

Technologies
- ✓ Optics
- ✓ Mechanics
- ✓ Integration

Applications
- ✓ PPG
- ✓ SpO2

Surgery aid

Technologies
- ✓ Fiber optics
- ✓ Integrated optics
- ✓ Micromodules

Applications
- ✓ Diagnostics
- ✓ Therapy

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Photonic components

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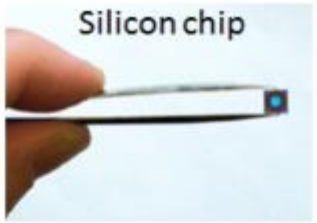


PC1 Integrated circuits
1) Silicon photonics
2) Inp
3) Polymer photonics

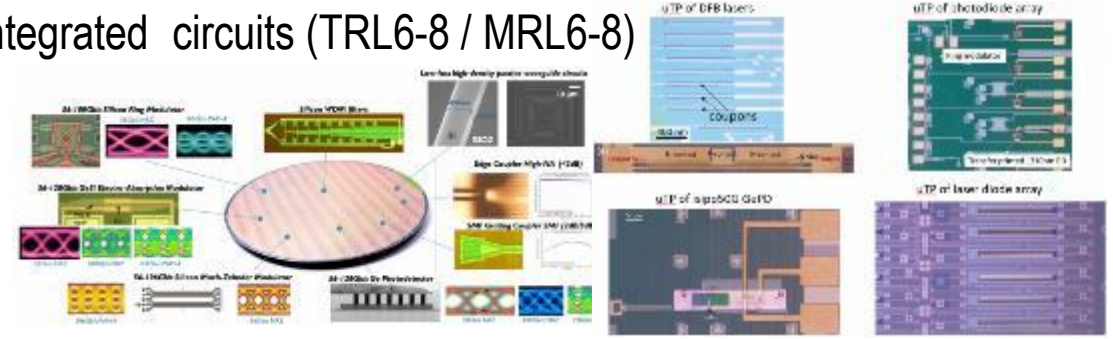
PC2 Micro-optics
1) Polymer
2) Glass

PC3 Fiber optics
1) Standard
2) Customised
3) Facet handling

PC4 Optical components
1) Standard

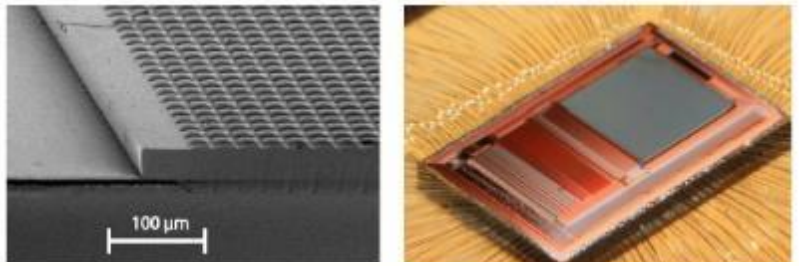
PC5 Active components
1) Standard sources
2) Detectors
3) Organic electronics

Integrated circuits (TRL6-8 / MRL6-8)

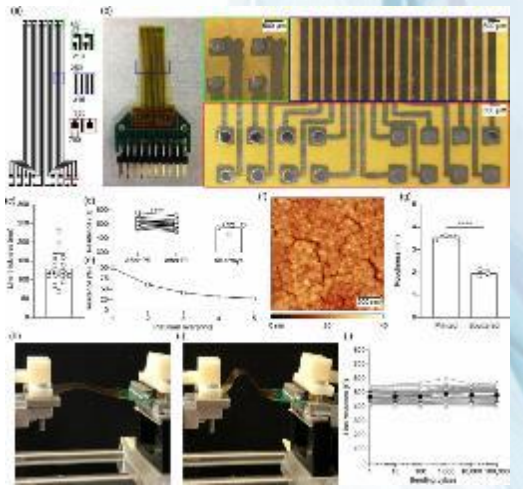


Fiber-optics (TRL3 -8 / MRL1-7)

Micro-optics (TRL3-5 / MRL3-5)



Optical components (TRL2-7 / MRL1-8)



Active components
(TRL2-6 / MRL1-7)

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Platforms – Non-Photonic peripherals

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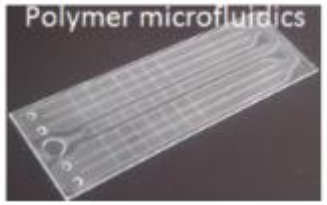


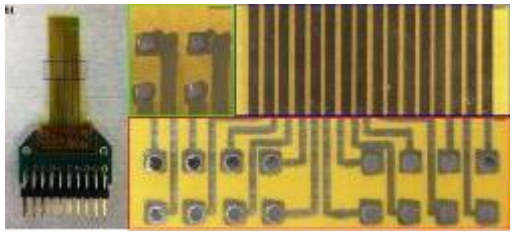
NP1 Electronics
1) Printed circuit boards
2) ICs
3) Roll-to-roll printed electronics
4) Flex-to-Rigid/F2R

NP2 Opto-mechanics
1) Injection modling
2) Metal tooling
3) 2D and 3D printing

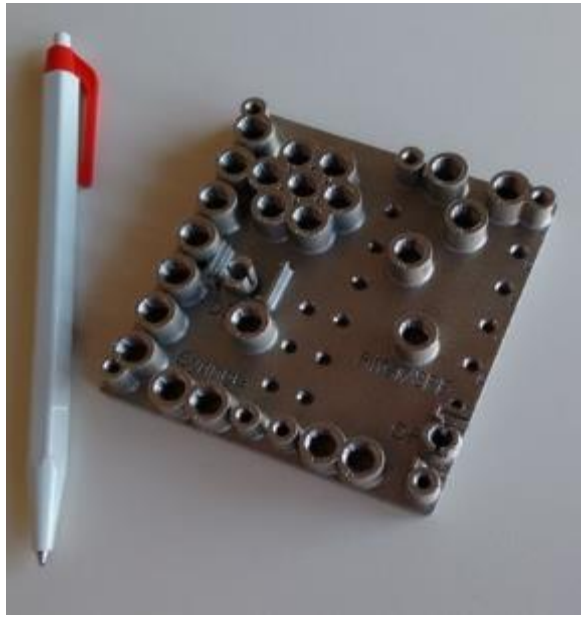
NP3 Microfluidics
1) Injection molding
2) Thermoplastics
3) UV-curable
4) PDMS high-volume
5) Adhesives

NP4 MEMS
1) Si-processing
2) SiN-processing

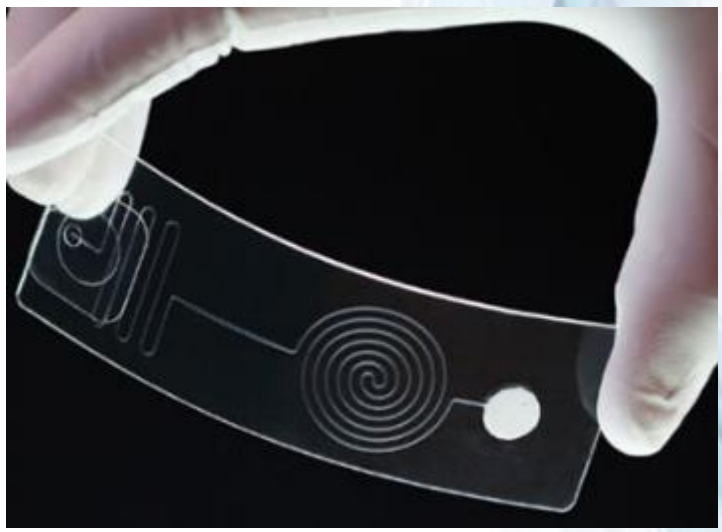
Printed electronics
(TRL2-8 / MRL1-8)



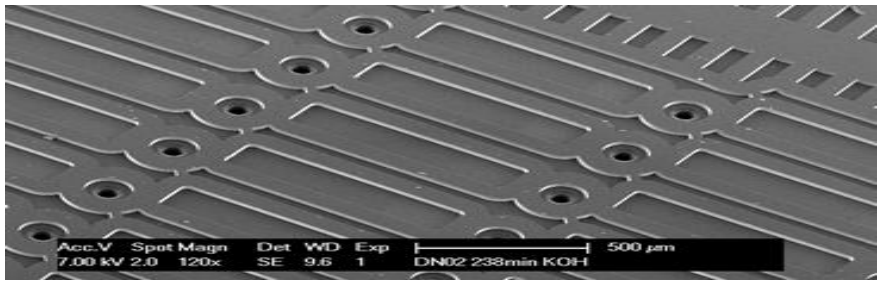
Opto-mechanics
(TRL1-9 / MRL1-9)



Microfluidics
(TRL1-5 / MRL 2-8)



MEMS



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Integration

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Sensor module

IN1 Fiber/Waveguide coupling

1) Active component / waveguide alignment
2) Grating couplers

IN2 Optical assembly

1) Free-space lens alignment
2) Mirror / grating assembly
3) Coupler lenses, prisms

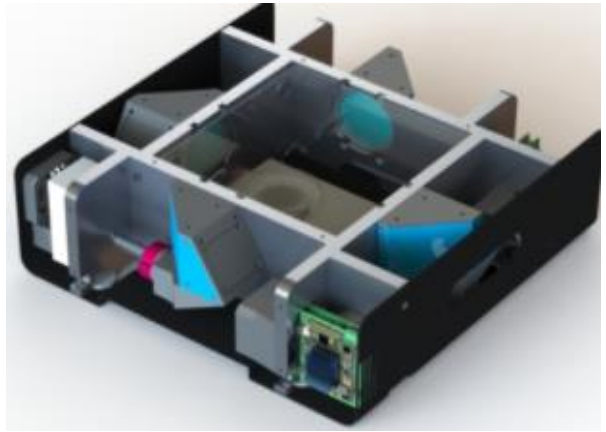
IN3 Component assembly

1) Rigid board
2) Flexible foil
3) Stretchable foil
4) Module assembly

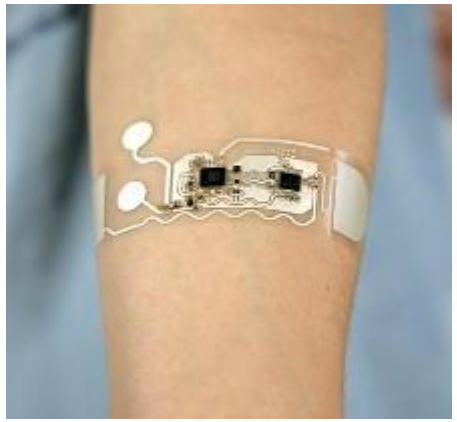
IN4 Surface activation

1) Array spotting
2) Bio-reagent dispense
3) Surface modification

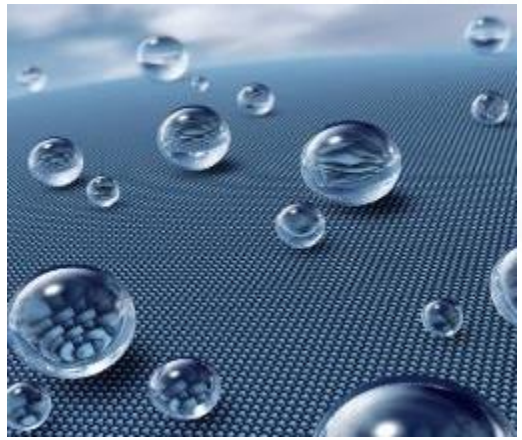
Optical assembly (TRL 3-5 / MRL 1-5)



Components assembly (TRL 2-7 / MRL 1-8)



Surface activation
(TRL 2-7 / MRL 1-7)



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Production kit - Disposable plasmonic fluidic sensor

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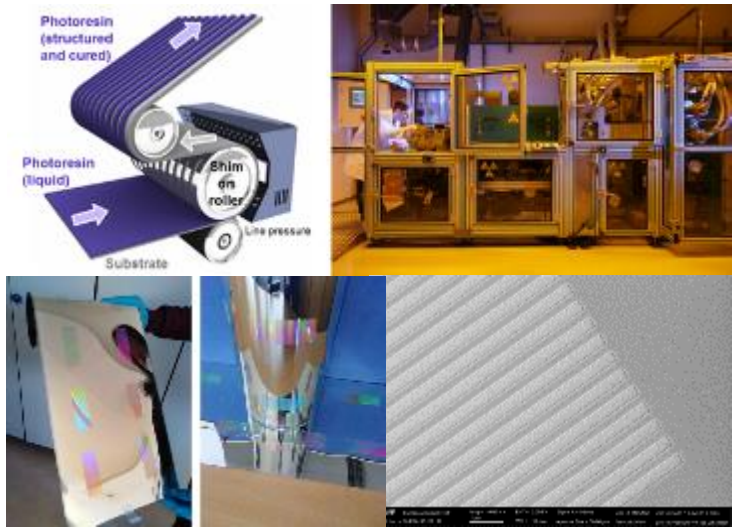
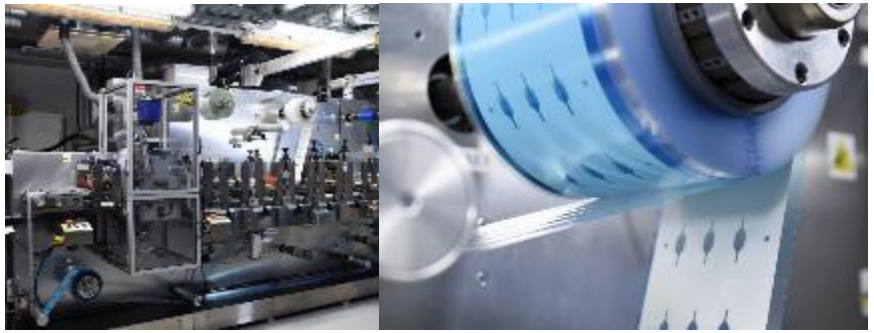
Design of photonic structure, VTT

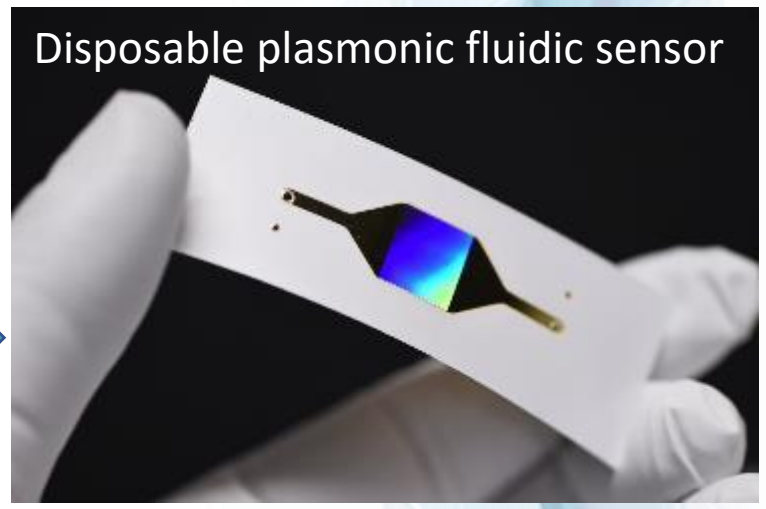
Sensor surface by roll-to-roll UV nanoimprinting lithography, Joanneum Research



Roll-to-roll manufactured tape microfluidics, VTT



Hybrid integration and singulation, VTT



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Community management platform

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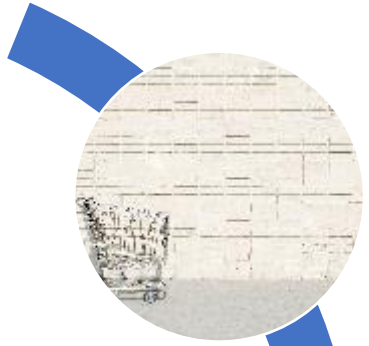
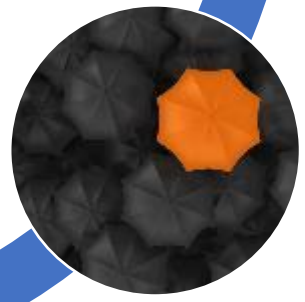
CMP



One virtual stop shop

Community building tool

- Low the barrier for technology adoption



Benchmarking tool for available technologies

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Financial support for Demo-case Projects

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3rd Party	EU-contribution for MedPhab services (Budget provided to MedPhab partners via MedPhab–Demo case fund)	3rd party in-cash contribution (on top of optional in-kind contribution)
SME (EU-based)	75%	25%
Large company (EU-based)	50%	50%

- Total budget of MedPhab Demo Case Fund: 1.85 M€
- **Maximum EU-contribution per project: 125 K€**

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How to participate

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What	Pre-screening (in-take form)	Preparation & submission of full proposal (MedPhab writing coach)	Evaluation & Selection	Project execution
When	**Continuous process**	 **Within 2M***	 **Every 2 M**	

Jan 2022	Feb 2022	Mar 2022	Apr 2022	May 2022	June 2022	July 2022	
In-take form		Evaluation & selection		Evaluation & selection		Evaluation & selection	...

* The procedure allows for full proposal preparation and evaluation within 2M

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Open Call Contact

MedPhab
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Helpdesk

+420 226 217 422

helpdesk@medphab.eu

Monday - Friday from 9:00 -17:00 (CET)

MedPhab website for Open Calls

https://medphab.eu/open-call/

First round of open calls

Launched in June 2021

10 applications from 9 different countries

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Thank you for your attention!

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