

PHILIPS

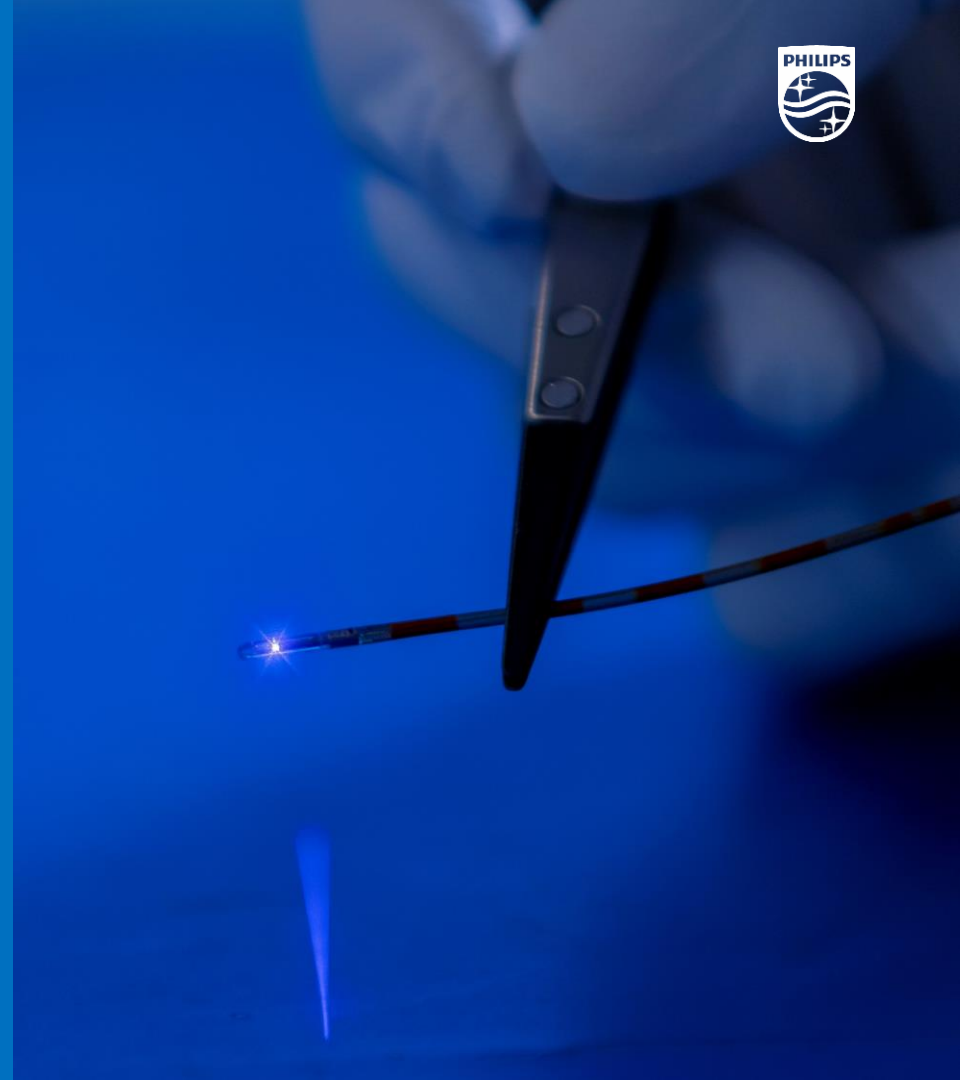
Advancing fiber integration and assembly towards volume production

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MEMS & Micro Devices
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innovation ✦ you

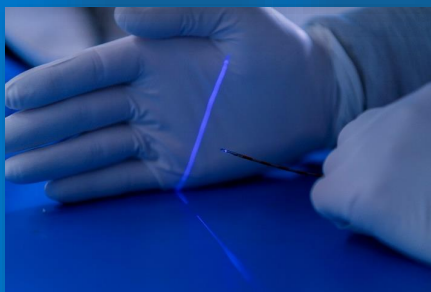
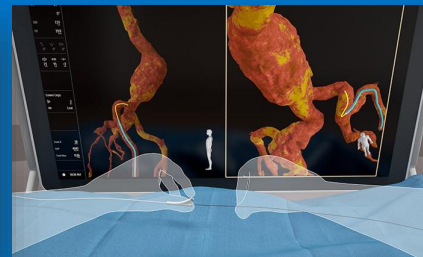
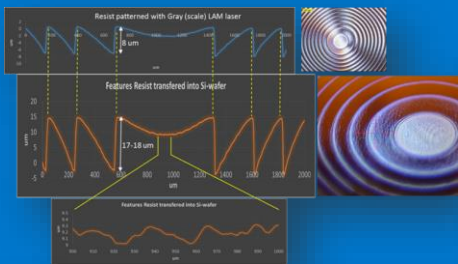
Agenda

- What do we do?
- How do we do it?
- How we can help you?

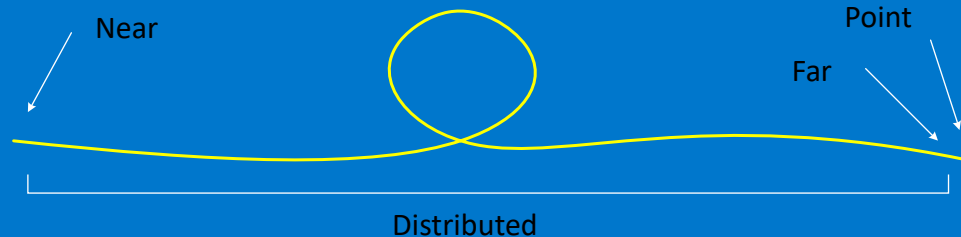


Philips Micro Devices





Fiber sensing

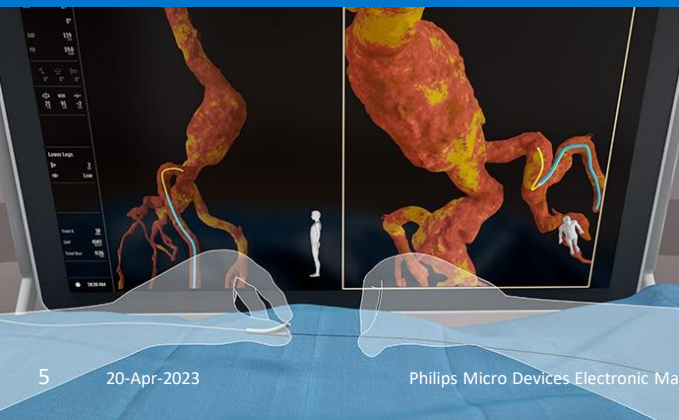


What do we do?

- Fiber processing & probe prototyping
- Optoelectronic micro-assembly
- Design for manufacturing & process development
- Volume production

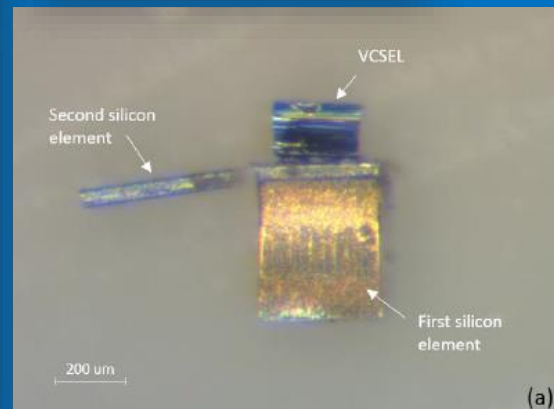
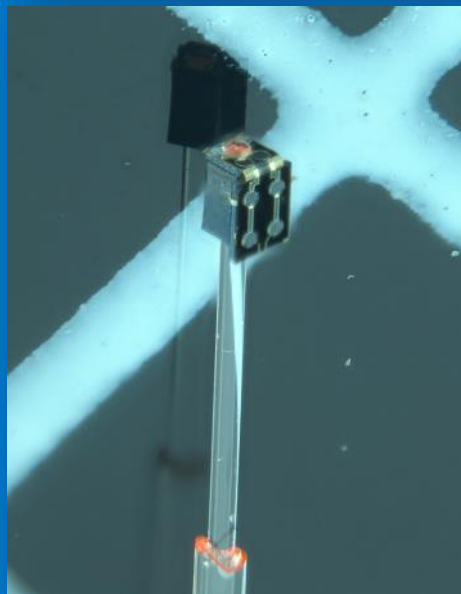
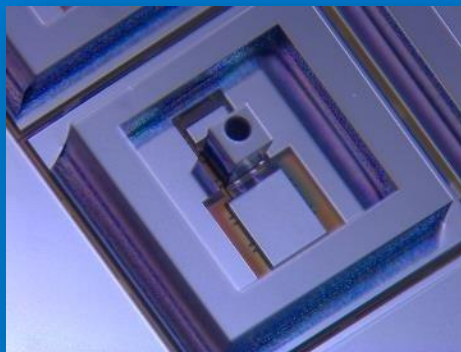
Examples

- Catheters
- Spectroscopy:
 - Dental
 - Surgical
- Imaging
- Shape sensing
- Other



Fast data transfer from catheter tip

- Utilizing Flex-to-Rigid platform for fiber insertion and passive alignment to VCSEL
- Routing of VCSEL connection pads to the side of package
- Small form factor allowing integration within the catheter of 1.2 mm diameter

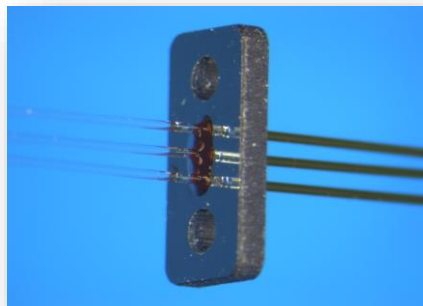


Photonics integration for medical devices

MedPhab
Photonic Medical Devices

Pilot line use-case:

- Support in design for manufacturing
- Integration of photonics components into a custom medical device
- Documentation of requirements, risk assessment
- Prototyping and pilot line development
- Towards volume manufacturing of disposable photonic needles



stryker PHILIPS

Tyndall
National Institute
INSTITUUT NATIONAAL

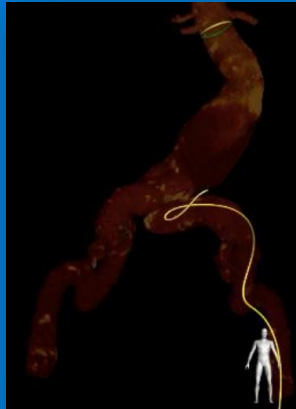
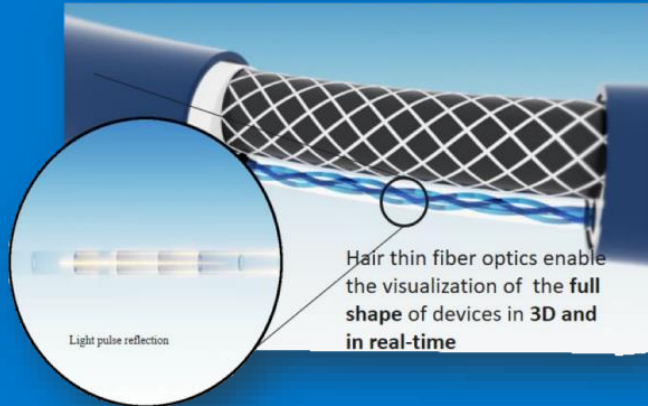
NETHERLANDS
CANCER
INSTITUTE
ANTONI VAN LEEUWENHOEK



PHOTONICS²¹

FORS – Fiber Optic Real Shape

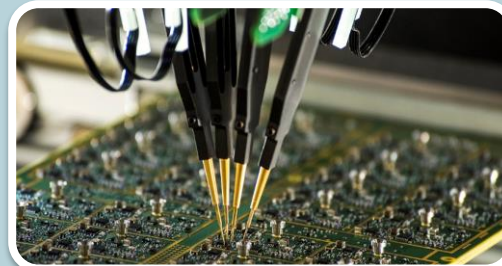
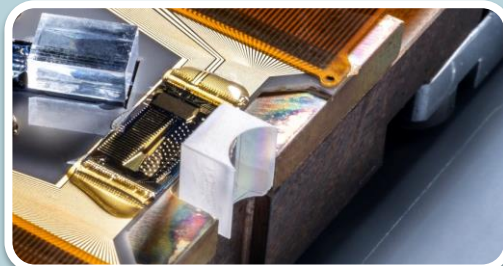
- Detecting device shape during surgery
- Development of the technology – Philips
- Micro Devices support:
 - Development and prototyping for fiber integration
 - Release for manufacturing with external partner
 - Manufacturing of fiber-based interrogator system





Our capabilities

Micro Devices Services & Capabilities



Process Development

- DfX: Design for eXcellence
- Continuous improvement
- Cpk analysis and yield improvement
- (In line) Inspection and failure analysis: solder paste inspection, 3D automated optical, X-ray
- Risk management, FMEA
- Supply chain management
- TPD/DMR product documentation management
- Verification & validation of process & tooling

Prototyping

- PCB Assembly line
- Micro-assembly: die attach, wire-bonding, stud bumping, ACF bonding, pick & place, soldering
- Concept creation and technology scoping
- Mentor Graphics lay-outing
- Microsystem and board design
- Functional testing
- Inspection & failure analysis: solder paste inspect., 3D AOI/3D X-RAY

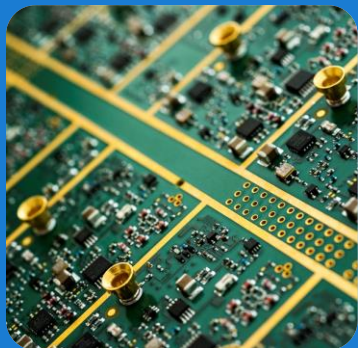
Volume Manufacturing

- ISO13485, ISO9001, ISO14001, ISO27001, ISO45001
- TPD/DMR product documentation management (PTC Windchill)
- Purchasing, Forecasting, MRP
- Quality Management (SAP ERP)
- Routing, Tracking, Traceability (SAP ME)
- Statistical process control (SPC)

Philips Micro Devices Electronic Manufacturing

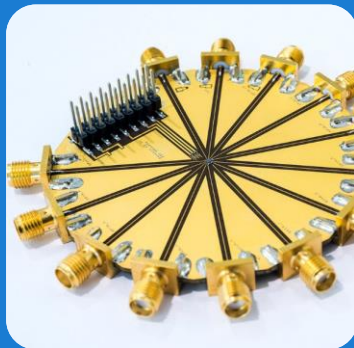
Our strategic pillars

PCB Assembly



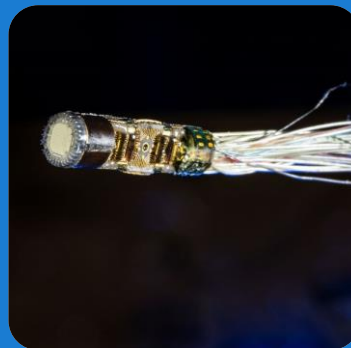
Up to 100k per year PCBA manufacturing

Verification & Validation



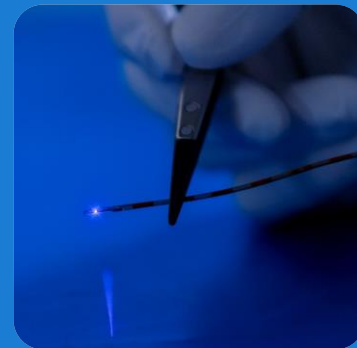
NPI support (production of verification, valid. & application boards)

Micro Assembly Medical Devices



Micro assembly of medical devices.

Adjacent (Photonic) Micro Assy

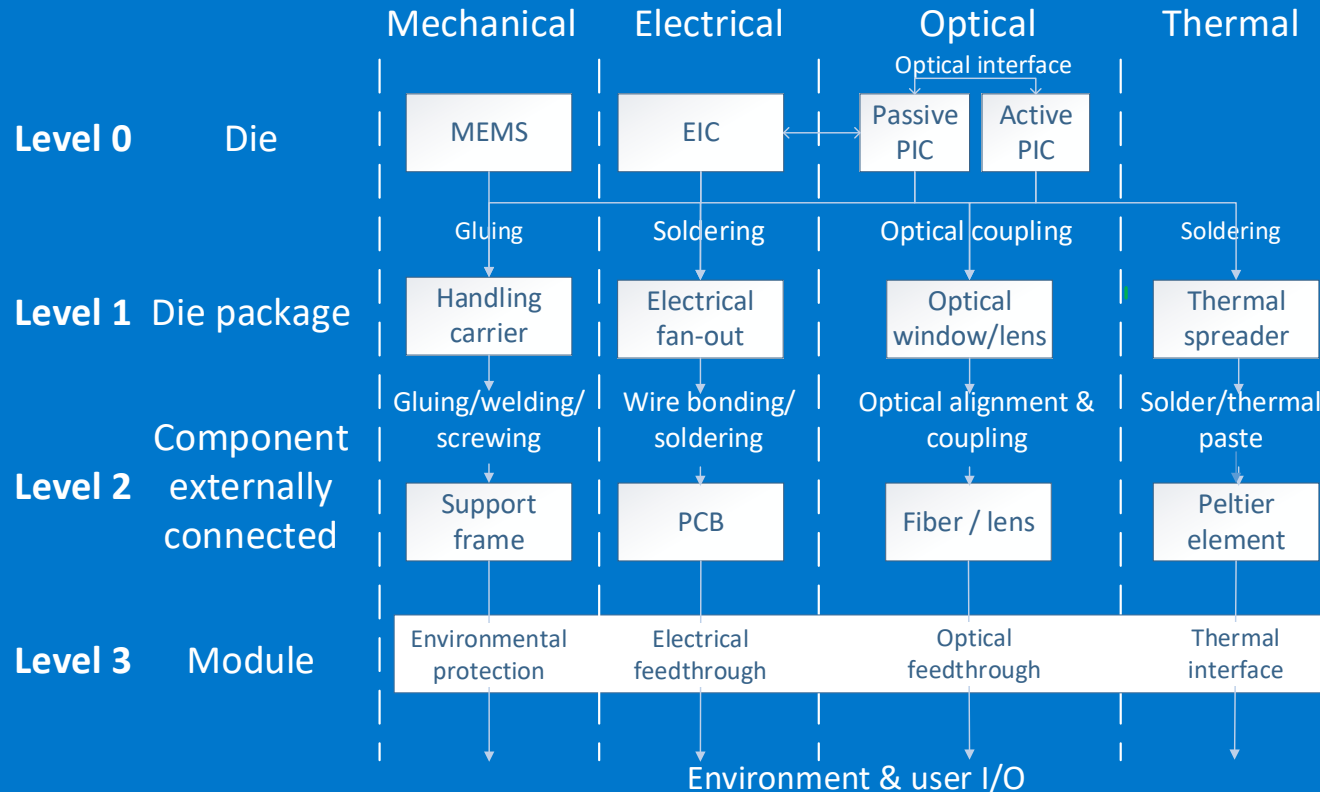


Photonics integration and micro assembly.

Operations, Delivery & Services



Optoelectronic module – generic interfaces





Summary

Integration and assembly – Bringing products from development towards market release

Medical and high tech applications – Supporting cutting-edge technologies and applications

Focus on quality – wide expertise and processes in place to ensure high yield and low defect rate

Photonics is a key enabler – allows for new sensing modalities, needs integration with existing technologies

Seemingly impossible manufacturing challenge?



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We continue where others stop

