



Bartels  mikrotechnik

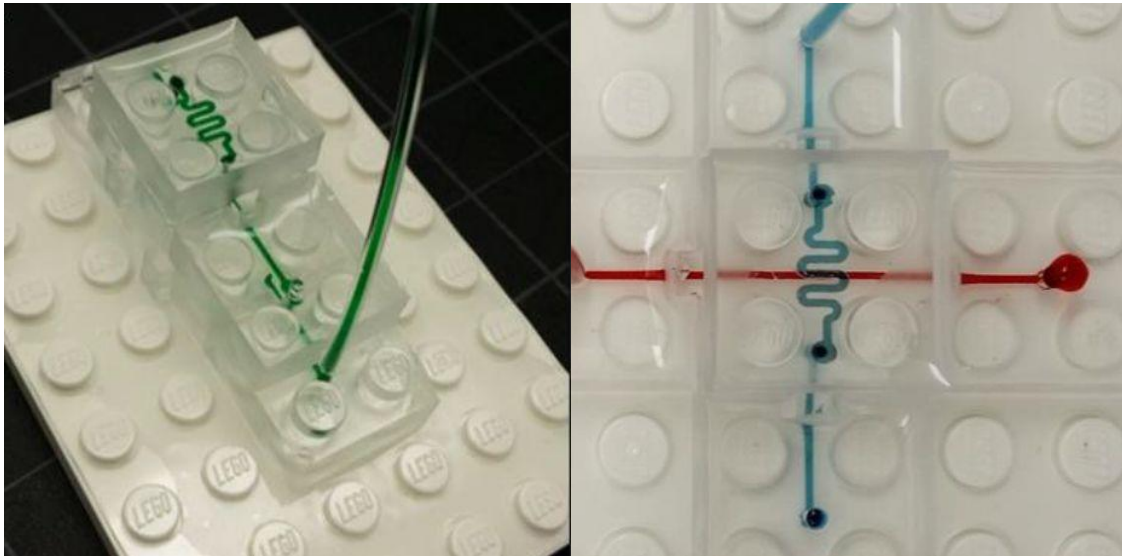
Microfluidics unite! –

Achieving integrated solutions by combining
industrialized microfluidic components

Bartels Mikrotechnik GmbH

Florian Siemenroth

The Vision: Making microfluidics as simple as LEGO



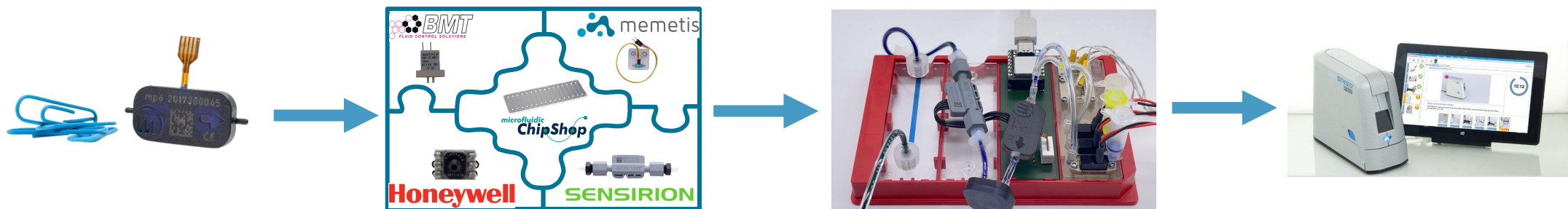
<https://www.i-micronews.com/lego-blocks-inspire-modular-microfluidics/?cn-reloaded=1>

Microfluidics is...

- Challenging
- Needs a lot of knowledge
- Needs a lot of expertise

Let us help users:

- By pre-selecting reasonable components
- Giving easy access to each, single component
- Giving easy access even to the combination of the components



Bartels Mikrotechnik: 25 years of microfluidic expertise



Located in Dortmund, Germany



Supplier and distributor of micropumps, microvalves and microfluidic accessories



One of the world's largest series manufacturer of plastic micropumps suitable for liquids and gases



Worldwide distribution



Strong partner network

Our business segments

microComponents 

microEngineering 

with passion for microfluidics

microComponents



mp6 micropump: Overview

Double piezo pump

Promoting gases & liquids

Full microfluidic system

German Engineering

5,000 hours lifetime guaranteed

Simple functionality

Small & low-weight

High accuracy

RoHS and REACH certified

Many sterilization options

Easy set-up

100% tested

Big batch production possible

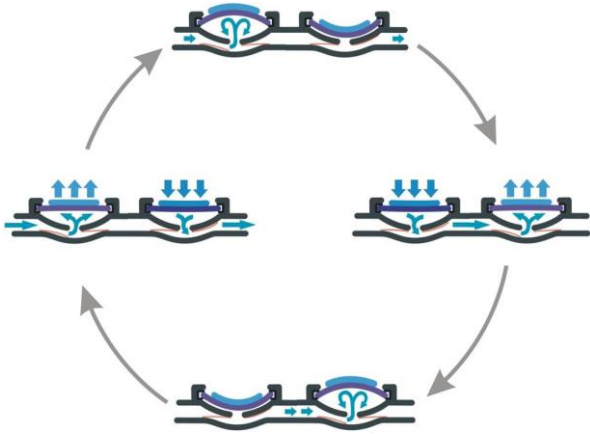
Easy-to-use software

Cyclic test (IEC 60068-2-38)

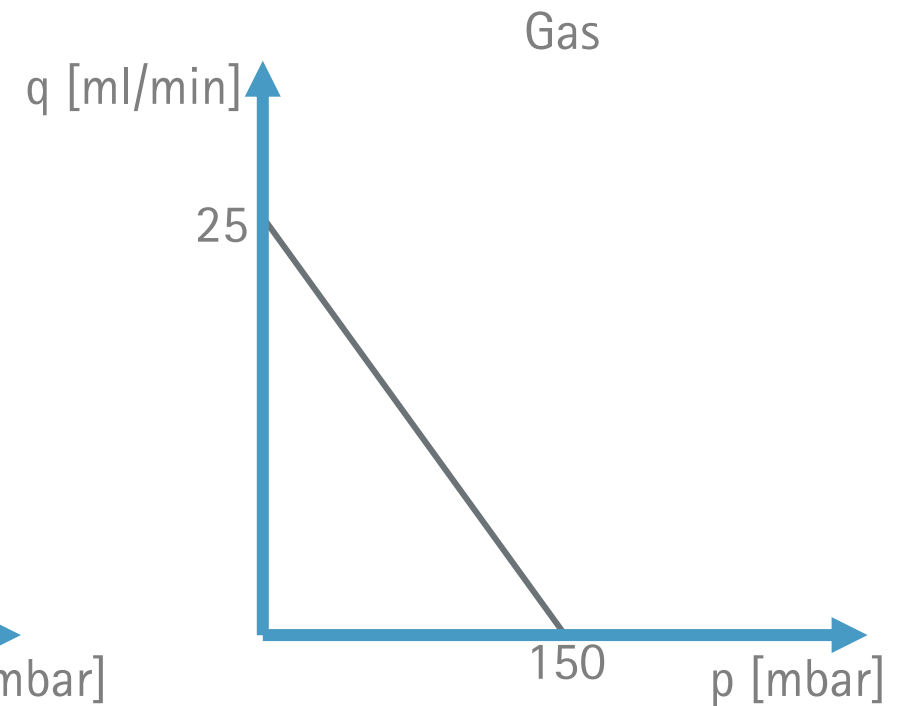
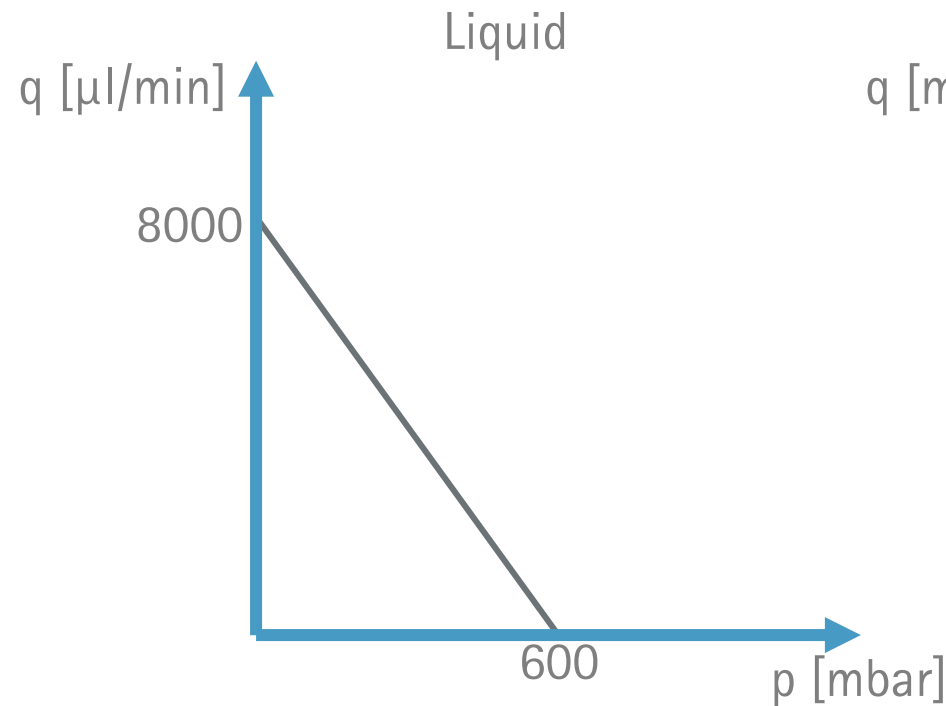
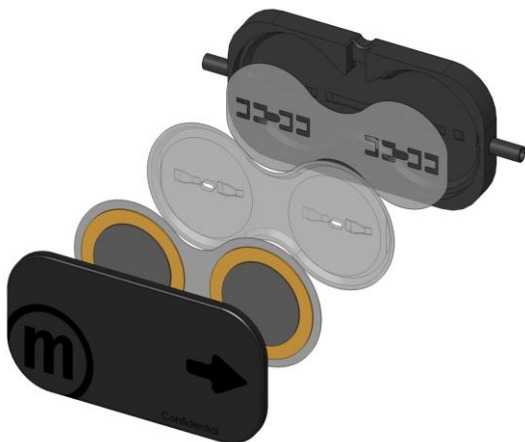


mp6 micropump: Technical details

Double piezo pump functionality:



	Flow rate	Backpressure
Liquid	5 – 8,000 $\mu\text{l}/\text{min}$	up to 700 mbar
Gases	up to 25,000 $\mu\text{l}/\text{min}$	up to 150 mbar



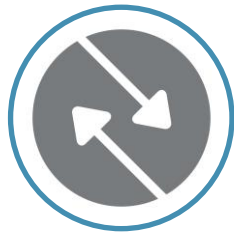
General industry situation in microfluidics

Three main aspects of fluid movement to ensure the proper function of a fluidic system:

- pressure
- flow/ volume
- direction



Pumps



Valves



Pressure sensors



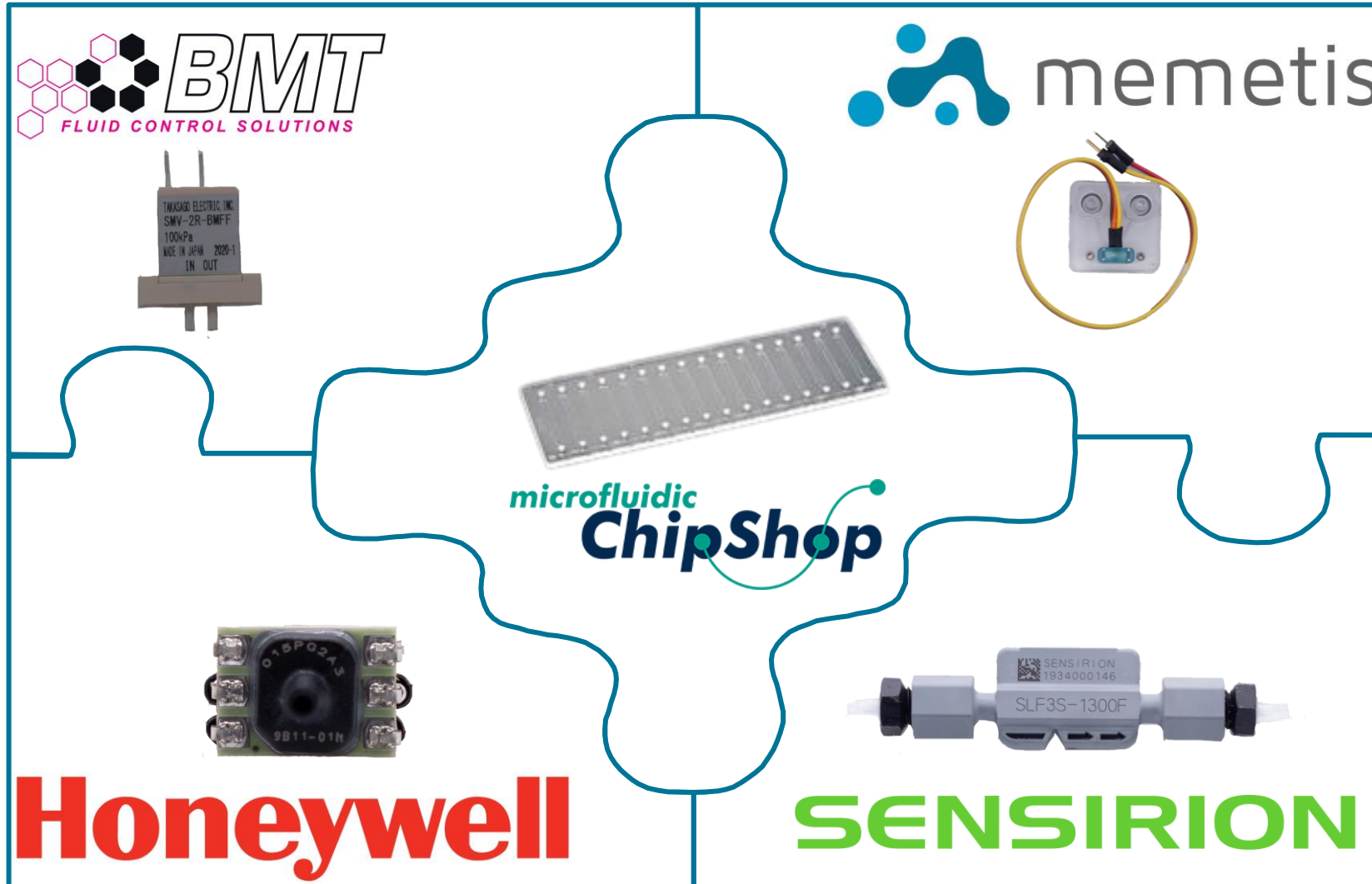
Flow sensors



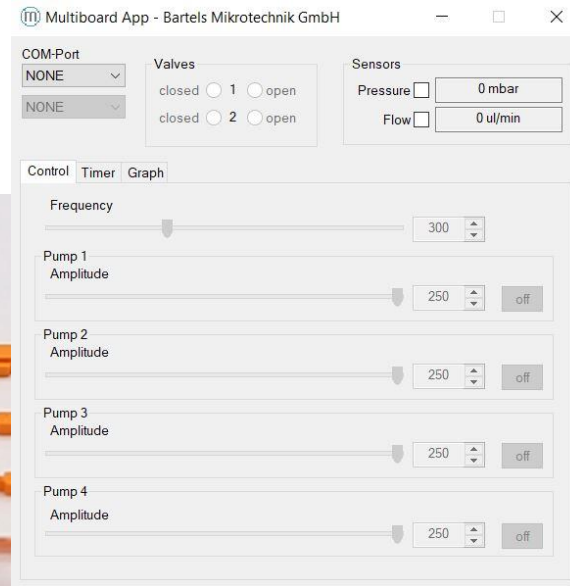
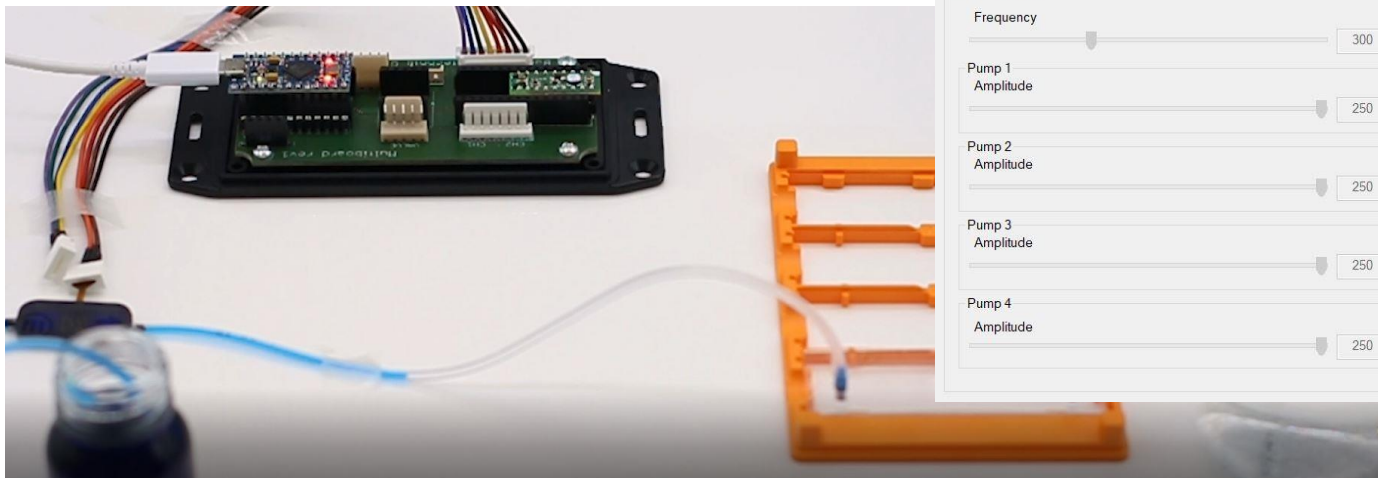
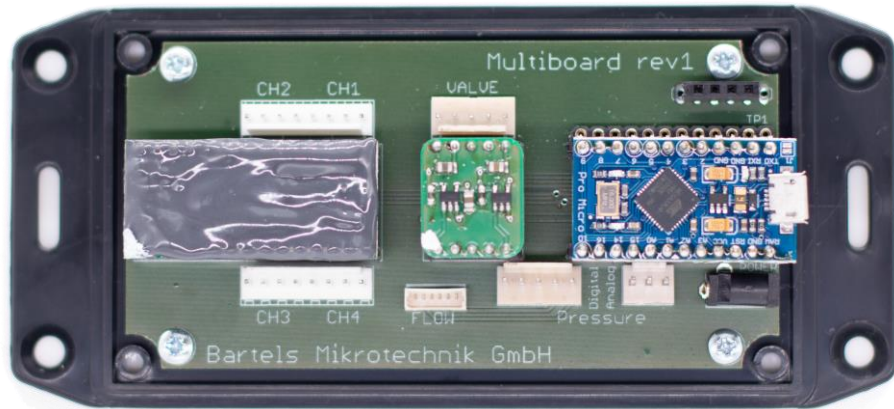
Microfluidic Chips



Partner components



System solution – mp-Multiboard



Microfluidic
evaluation board 


Compatible with
partner components 

Easy access via app 

Flexibility due to
open source code 

Forward Integration – mpSmart series



Intelligent micropump  and partner component combination

For liquids & gases 

AI - Regulated Systems 

Software interface 



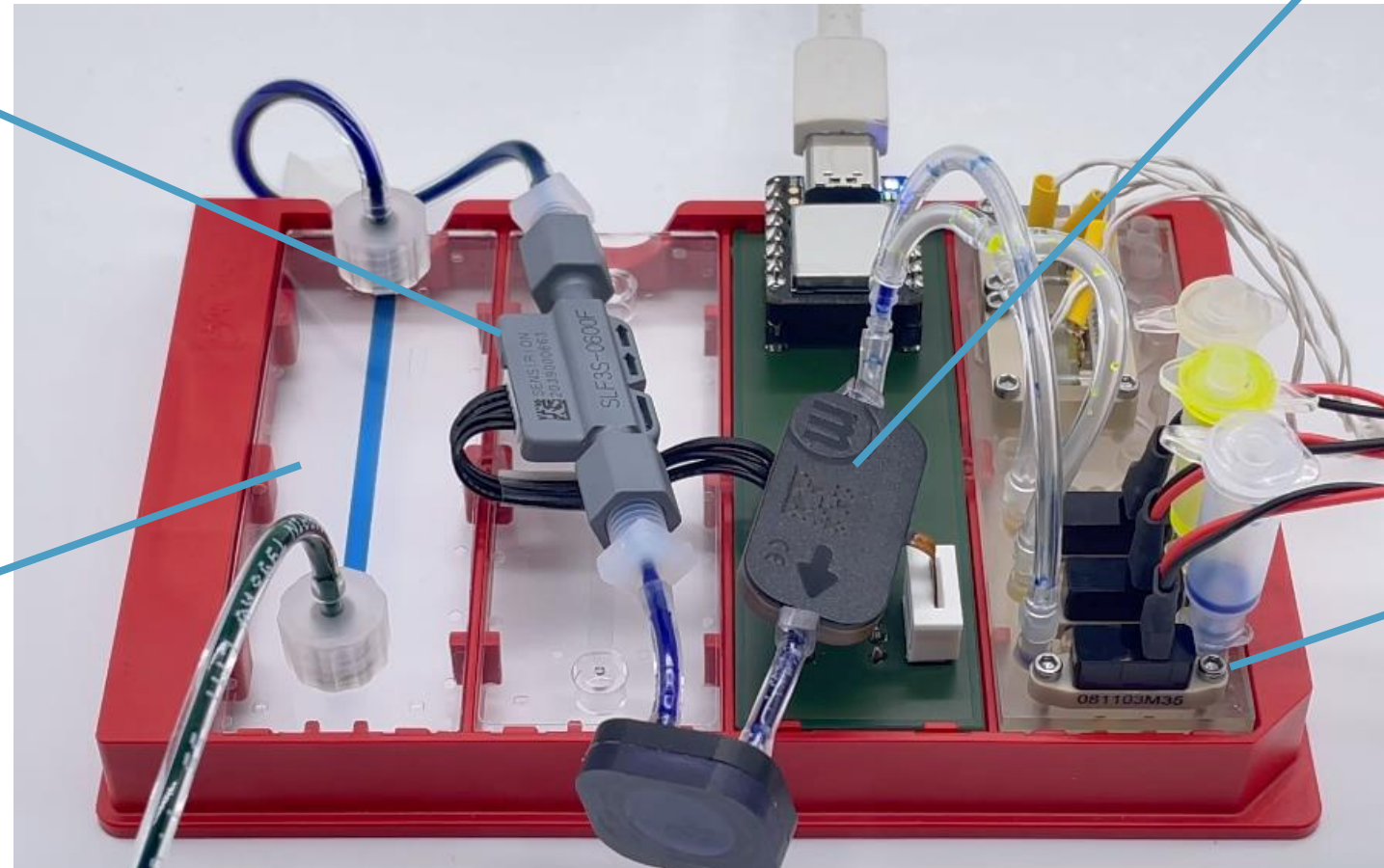
System Integration of microfluidic components

SENSIRION

Micro Sensors

microfluidic
ChipShop

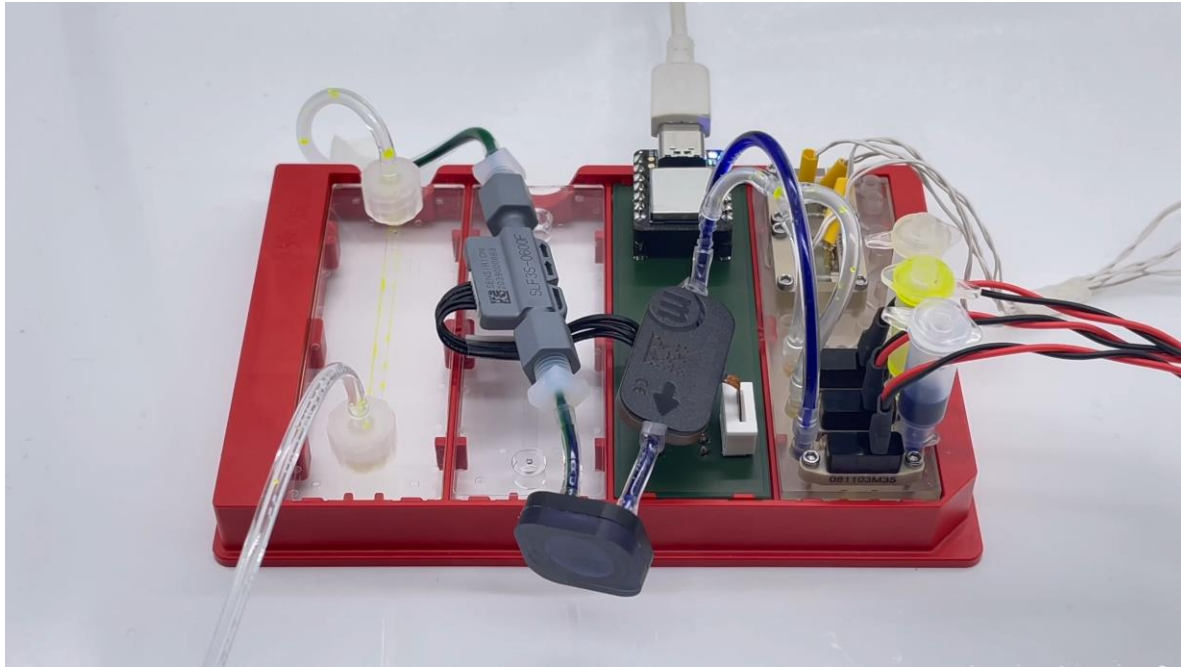
Microfluidic
Chips



memetis
Valves

96 Well-Plate format, less than DIN A5 sheet

System Integration of microfluidic components



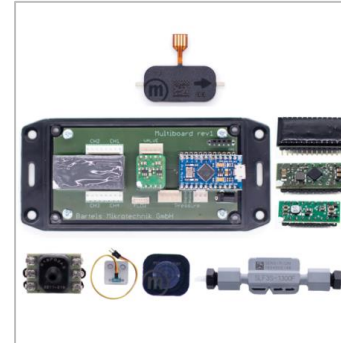
Find the right microfluidic kit for you!



mp-basic kit



mp-advance kit



mp-select kit

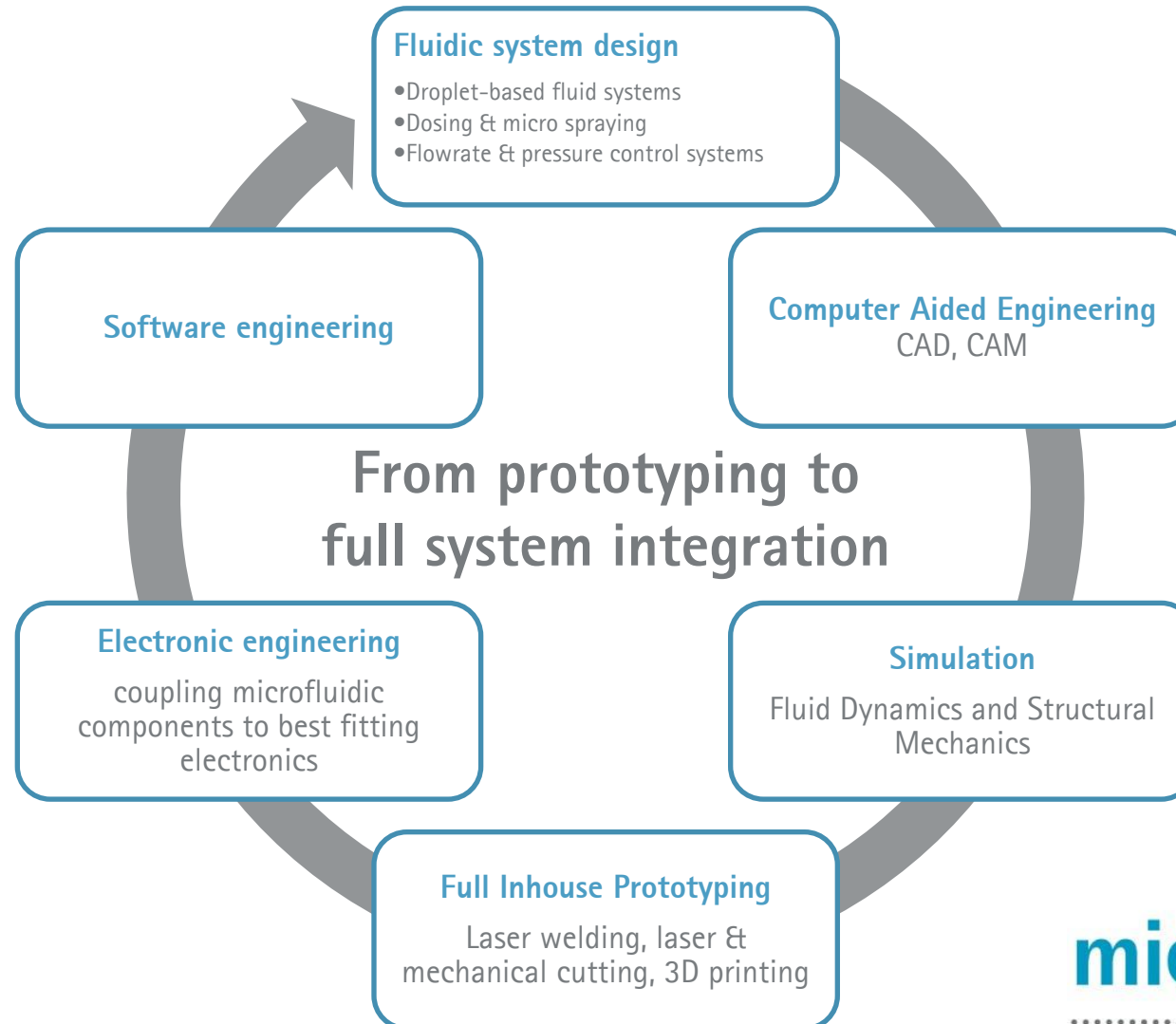


mp-Lab! kit

Shop now at: www.bartels-mikrotechnik.shop

microEngineering

Our engineering expertise

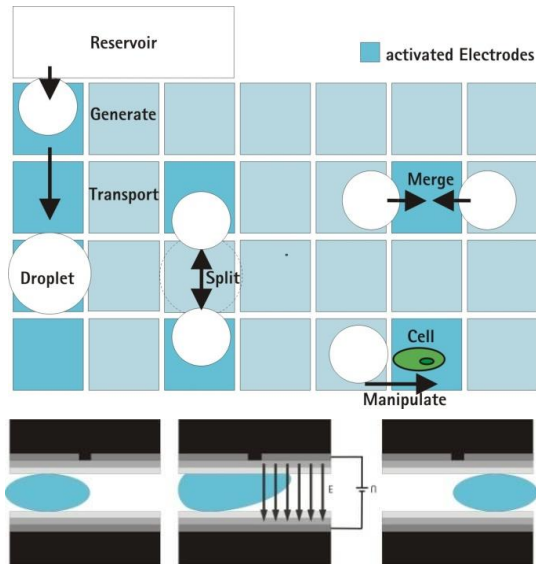


microEngineering

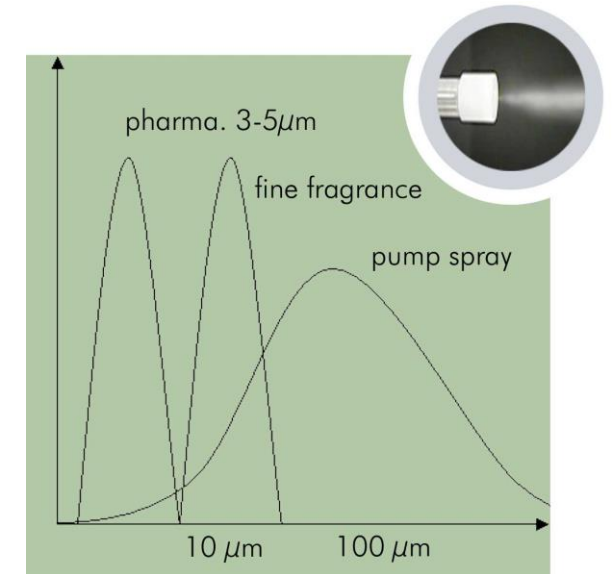
System Integration of microfluidic components



Electrowetting: Manipulation of liquids in electric fields



Micro Spraying/Generation of mist



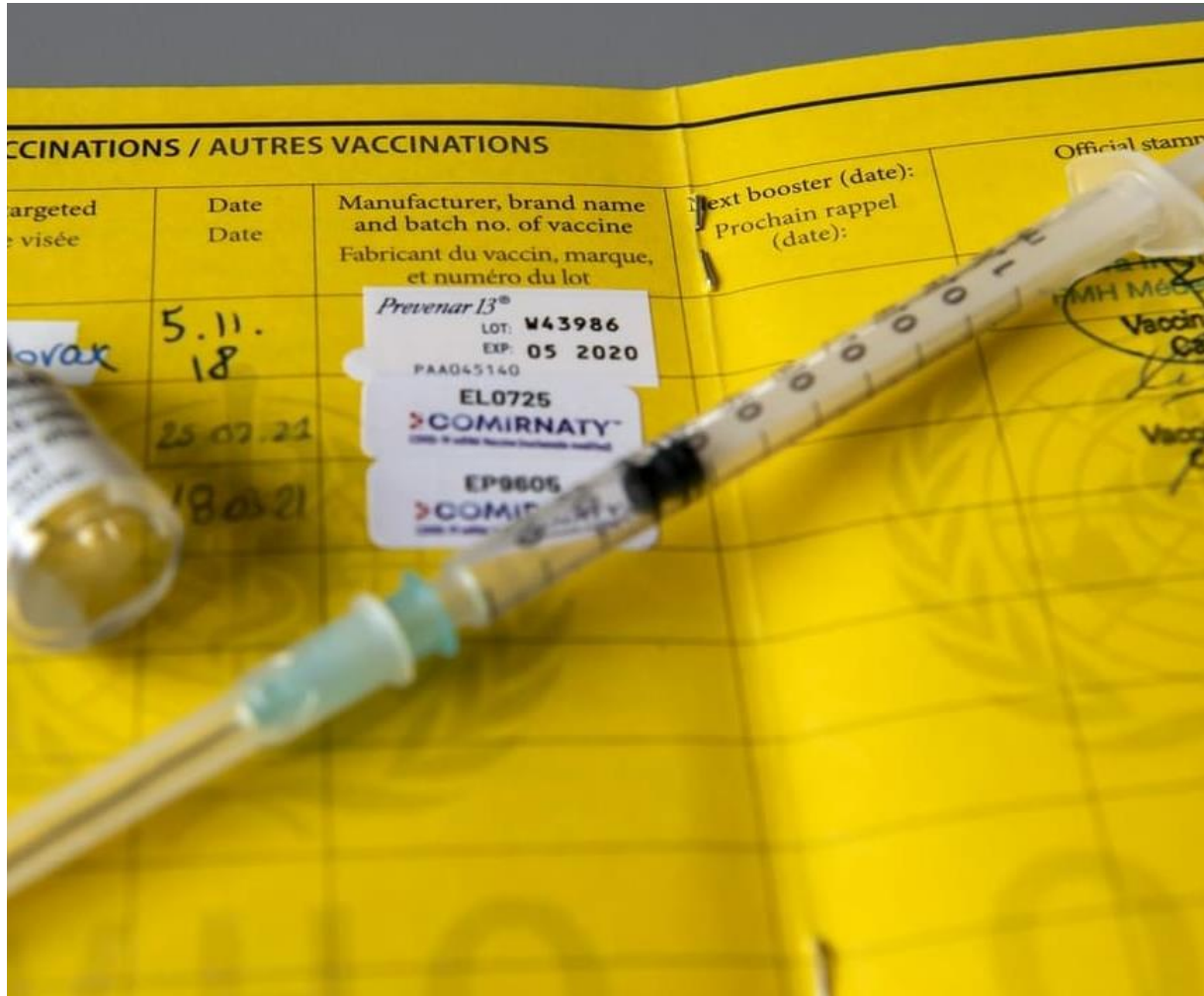
Open to help in:

- Customer Projects
- Nationally funded projects
- EU funded projects

Applications & markets for microfluidics



Why Microfluidics?



Lessons learned from vaccines within COVID-19 pandemic:

- mRNA vaccines can be developed and adapted very quickly
- mRNA vaccine production and transport is very difficult, upscaling is too slow
- No experience in duration of immunity

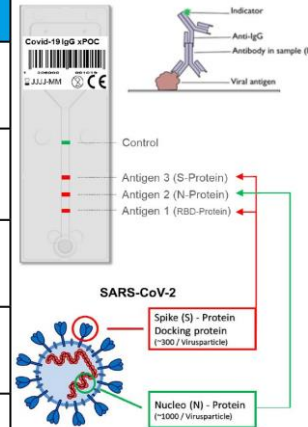
Thesis: Lack of vaccines again shortly for refreshing the immunity

How can we effectively distribute the rare vaccines to the real point of need?

Why Microfluidics?



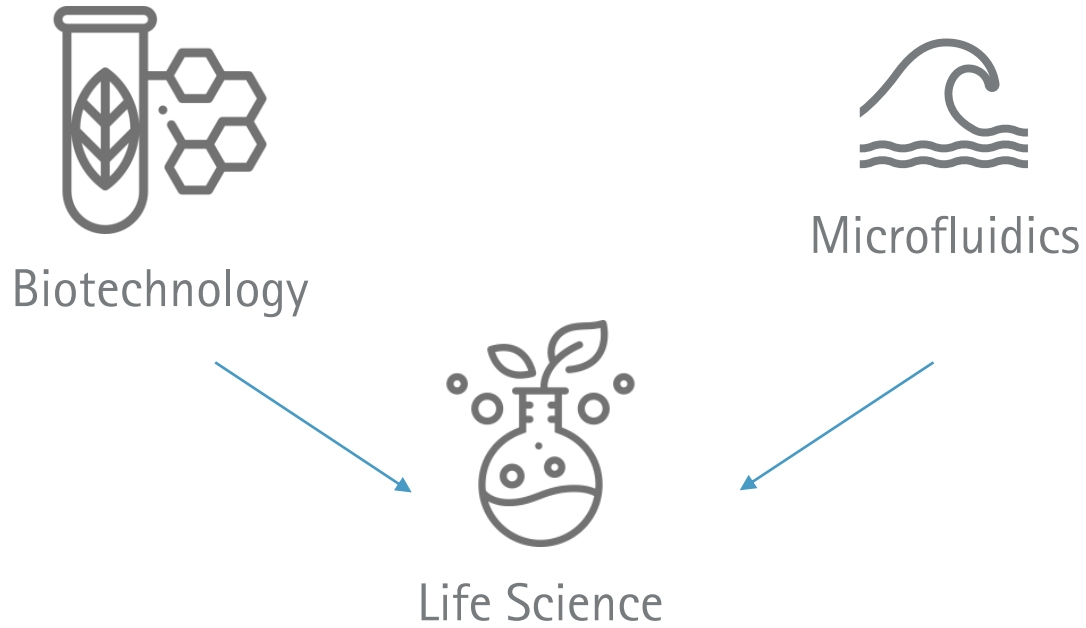
Test type	lateral flow test	Lab-ELISA	GENSPEED Mikro-ELISA
Criterion			
Sensitivity	++ (due to technology)	+++ (gold standard)	+++ (comparable to lab)
Specificity	+ (often N-protein only)	++ (either N- or S-protein)	+++ (N-, S- and RBD simultaneously)
Handling	+++ (approx. 1 min.)	- (depending on automation)	+++ (approx. 1 min.)
Usability at the point of need	+++ (mobile)	- (large devices)	+++ (mobile)
Time to result	+++ (15 - 20 min.)	- (2 - 4 h)	+++ (18 min.)



Features:

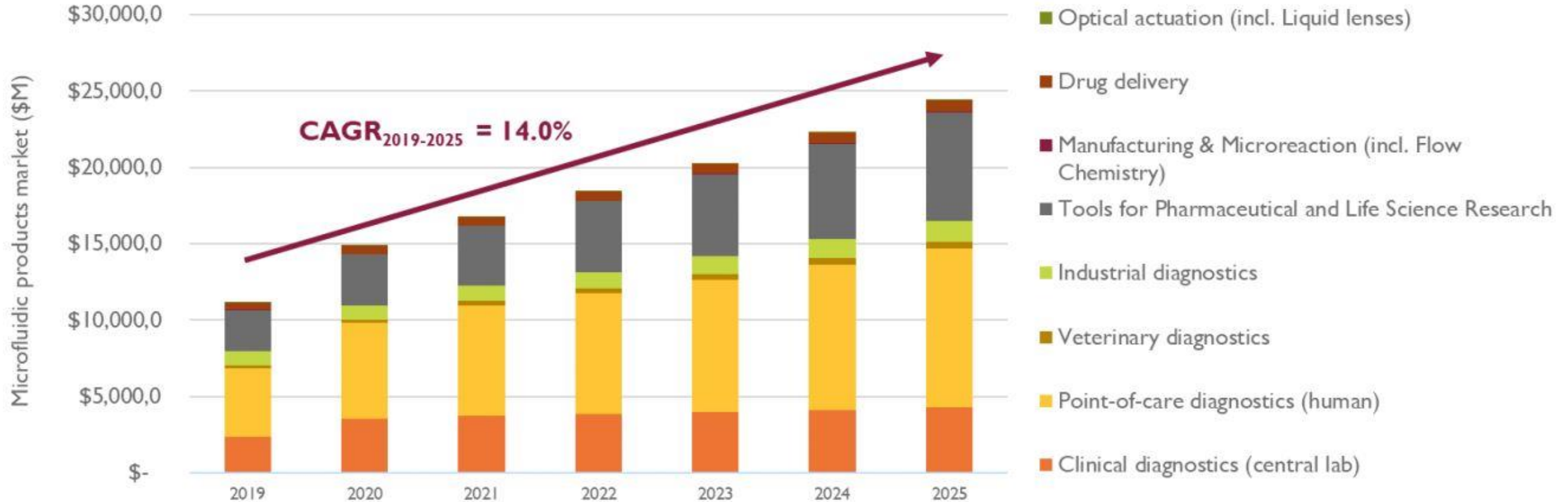
- One drop of blood from fingertip
- Results within 18 min
- Highly sensitive
- Highly specific
- Quantitative measurement enables follow-up and monitoring
- Digital

Main markets for microfluidics



Market Situation

Microfluidic products market (\$M)



Applications



Life
Science



Diagnostics



Diagnostics



Pharma



Pharma



Microscopy



Safety technology



Industrial



Smart ELISA POCT



Smart PCR POCT



Micro Bioreactor:
Cell Line
Development



Analytics Cell Culturing



Auto immersion

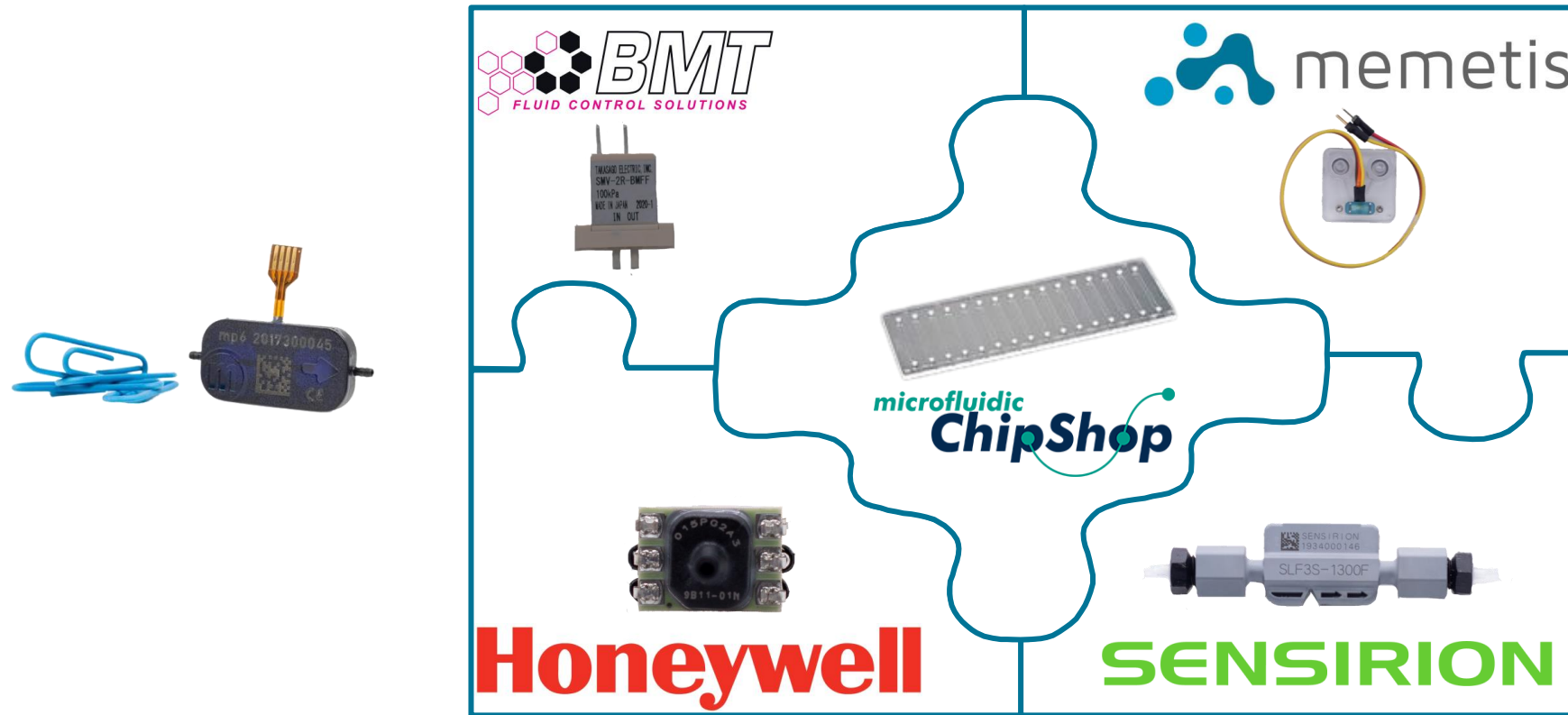


Handheld
chemicals/explosives
detection



Analytics at power
transformers

Let us increase the number of pieces...



... for realising visions!



Bartels  mikrotechnik

Konrad - Adenauer - Allee 11
44263 Dortmund
Tel.: +49 (0)231 / 47730 - 500

www.bartels-mikrotechnik.com
info@bartels-mikrotechnik.de

Follow us:

