

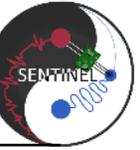
SENTINEL a Penta project

XECS MATCHMAKING EVENT

Paris September 25th, 2023



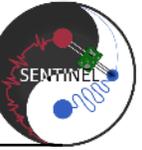
Sentinel – key success factors



- The need
- Technological innovation
- The team
- Market & societal impact

Sentinel – the need

Patient Monitoring



Hospital disorders: 24% chance on Delirium & ~15% on serious infection after major surgery



Interviews with ICU staff
14 DACH, 8 US & 12 Benelux



máxima
medisch centrum



Despite current early warning tools

A- Monitoring chemical biomarkers & vital signs will improve early warning



Early warning tool

Physiology & disorders can be cyclic. While doctors' visits are randomly in time



B – None-obtrusive, frequent & autonomous sensing detecting deviations in cyclic physiology

Sentinel – technological innovation



The application challenge

Required:
Frequent sampling and sensing

User friendly
patient monitoring
by
chemical biomarkers

None obtrusive sampling
No multiple blood drawings

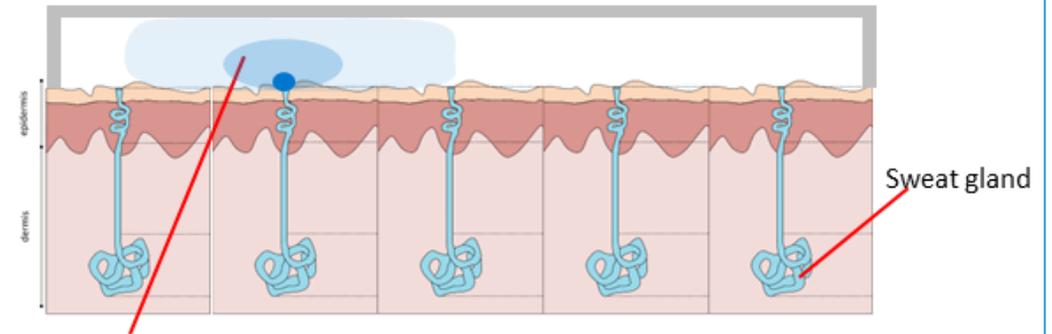
Only possible if:

Autonomous in use
No workflow burden

State-of-the-art tests like Central lab & POC assays
cannot deliver on these requirements

The technical challenge

- Sweat, rich on biomarkers, can be obtained non-obtrusive.
- But patients have extremely low sweat rate: 0.2 nl/min/gland.

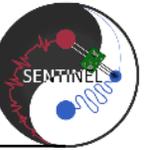


Continuous flow problem:

Chamber of only 50 μm in height requires
already 40 hours to be filled!!

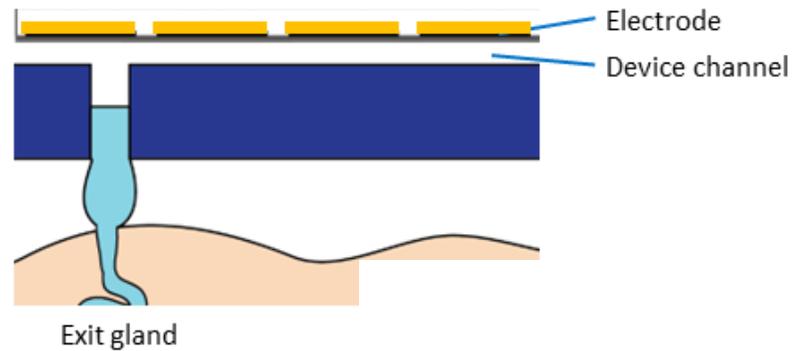
Competitors only work with athletes, with high
sweat rates of a factor 50-100 larger.

Sentinel – technological innovation

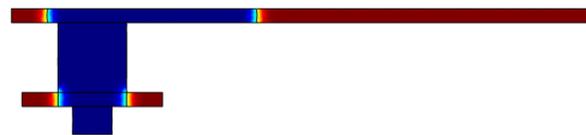


Our solution

Make sweat droplets and move by active EWOD

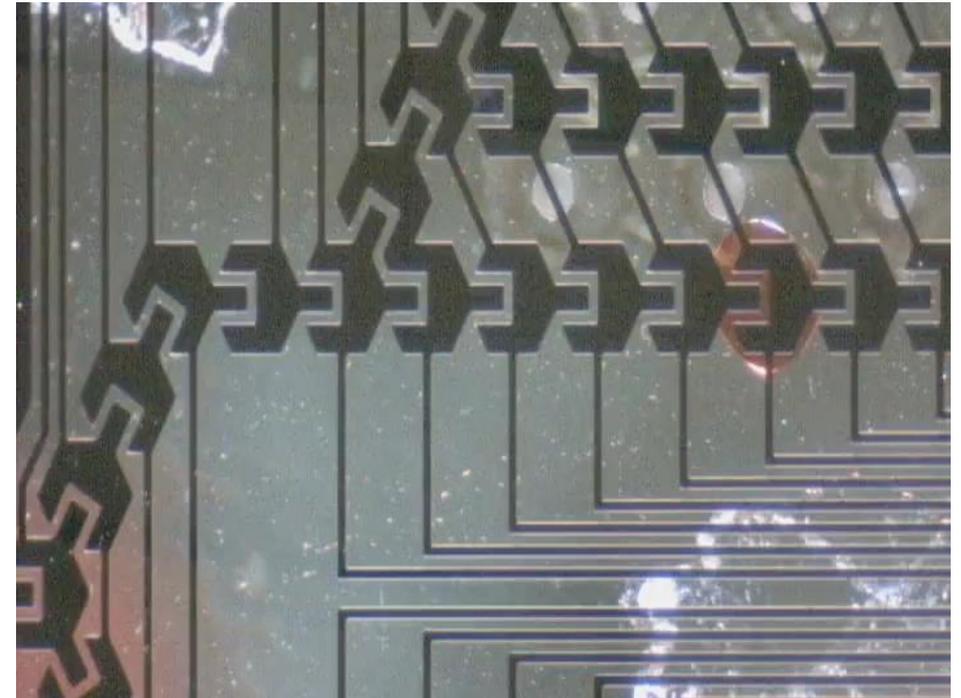


~2 min



The discretized sweat transport solution

Does it work?

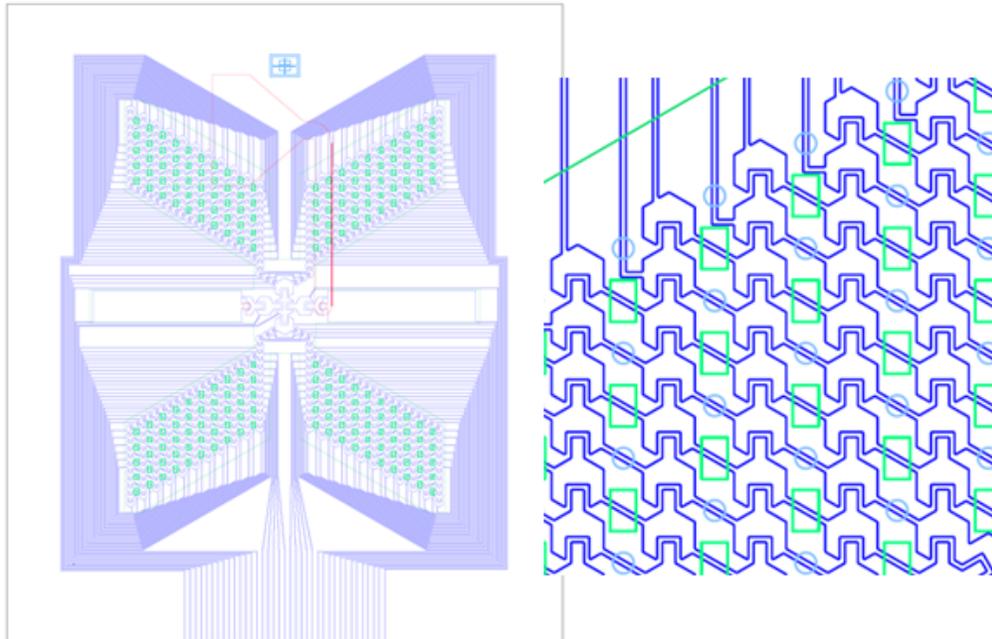


Real time transport of 100 picolitre droplets
Velocity 1 mm / second

Sentinel – technological innovation



Complexity in one frame

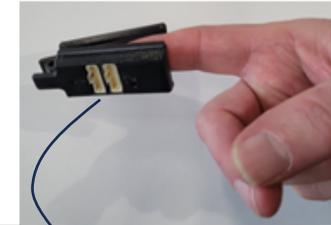


EWOD is high-end microfluidics

The integrated device



Sensing
sweat rate
& biomarker



Can be placed on the finger but also other body locations can be assessed.

Sentinel – the team



The number one vital asset

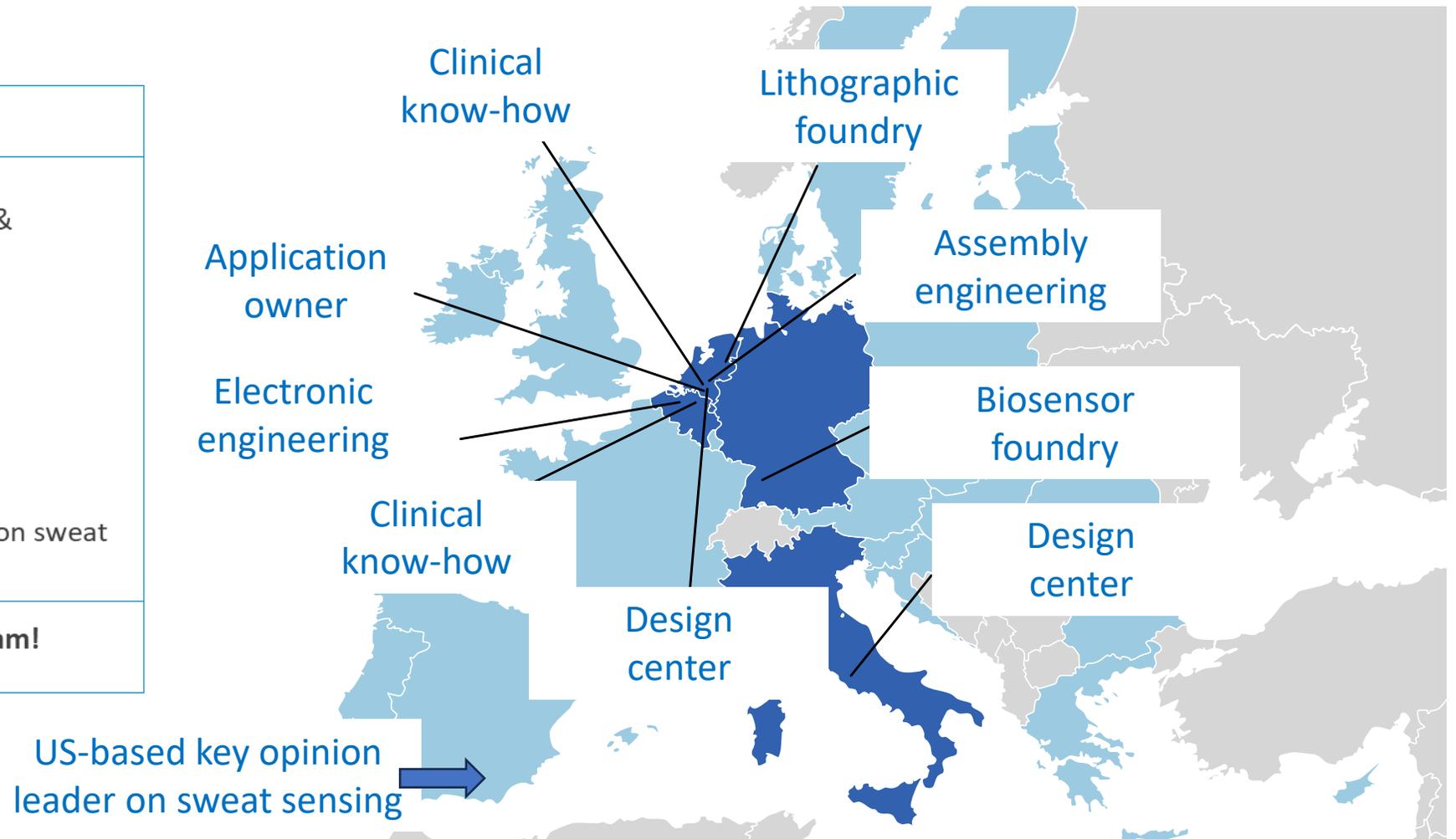
- Consortium with complementary & professional knowledge

Results in:

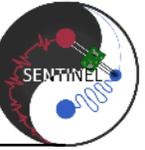
- Strong collaboration
- Covering the value chain

- Completed by key-opinion leader on sweat sensing as consultant

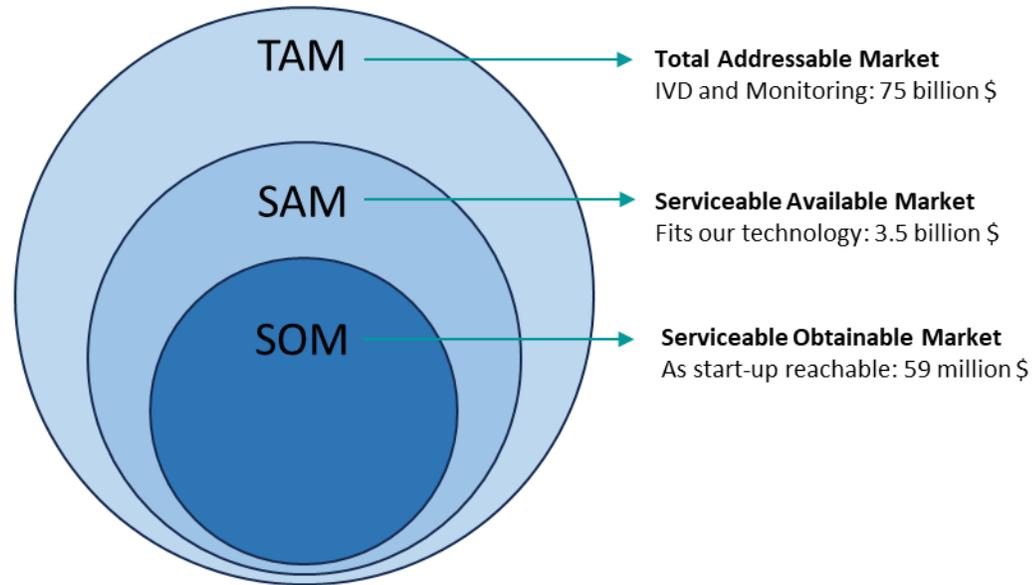
Start early to assemble the team!



Sentinel – market impact



Global market sizes



There will be mutual benefits: start-up will use know how & infrastructure of consortium

Market segments of the SAM

	million \$
• Hyper/Hypo glycemia in hospital	717
• Delirium in hospital	1393
• Diabetics @home	1301
• Kidney failure @home	131

Realism? Other player with glucose ISF-patch:
3.8% coverage of market, already 3.6 billion \$ sales

Sentinel – societal impact



Improved patient outcome

- With focus on Patient's care:
- Improved early warning preventing critical conditions
- Improving patient & hospital staff experience
- A much higher chance after hospital release of not having obtained a chronic disorder
- For instance, after a delirium patients will very often have a mental disability

Early warning saves lives with less disabilities

Economics and ecosystem

- Adding to the relative new field of semi-continuous monitoring by establishing in this field a superior European technology
- Our devices will decrease the number of crash interventions and thereby will decrease the environmental footprint and save money for the hospital and insurance companies

Extend the parameter space of patient monitoring by chemical biomarkers



THANK YOU FOR YOUR ATTENTION

Eduard Pelssers
Project manager SENTINEL

