



Winner of the 2022
Academic Startup
competition



Rabo Duurzame
Innovatieprijs 2023

Finalist categorie
Voedseltransitie



de coöperatieve Rabobank

Sensip-dx BV

Monitor micro-organisms in food production

General company presentation

May 2023



Food Poisoning

Estimated number of people effected by food borne diseases

	EU (EFSA)	USA (CDC)
Sick	23 million	48 million
Hospitalized		128,000
Death	5,000	3,000



Food poisoning is mainly caused by bacteria ...



... so, food companies need to control bacteria in their processes.

Measuring living Bacteria takes way too long

Golden standard: plating



Measuring bacteria takes way too long

2/3 DAYS



No production control based on test results



Product release takes too long



High inventory and high logistic costs

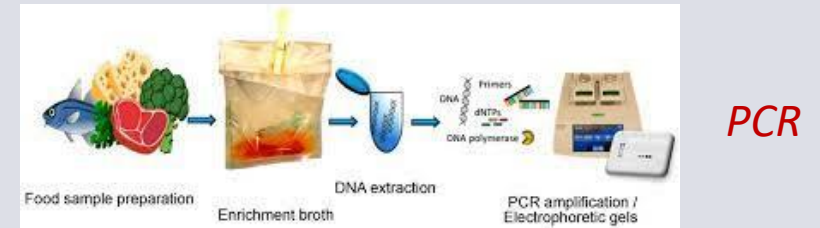


Often false positive

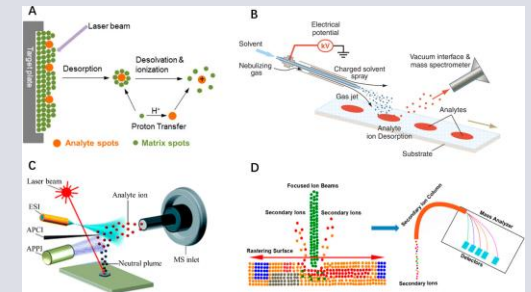


No quantification

Modern technologies




(Mass) Spectrometry



Results based on Bacteria fragments (dna / cell membrane)
- still present after pasteurization


Sensip-dx measures living bacteria in 15 min.

Golden standard: plating

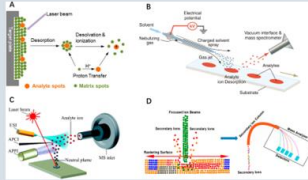


Measuring bacteria takes way too long
2/3 DAYS

Modern technologies



PCR



(Mass) Spectrometry

Results based on Bacteria fragments (dna / cell membrane)
- still present after pasteurization

Problems with Golden Standard:

- No production control based on test results
- Product release takes too long
- High inventory and high logistic costs

Problems with Modern Technologies:

- Often false positive
- No quantification



Sensip-dx will shorten this to:

15 MINUTES

measuring presence and amount of living bacteria

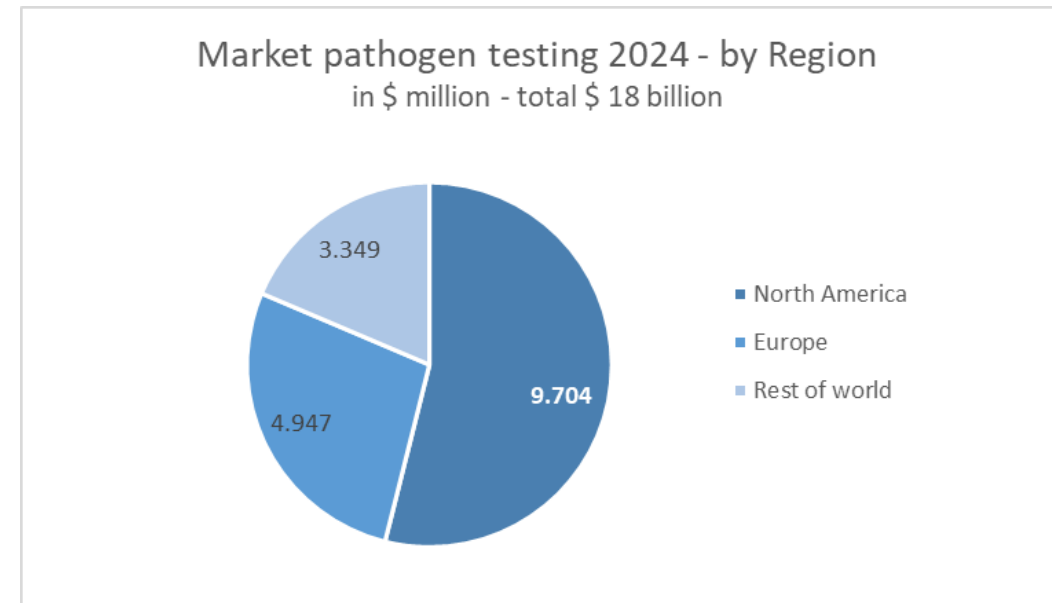
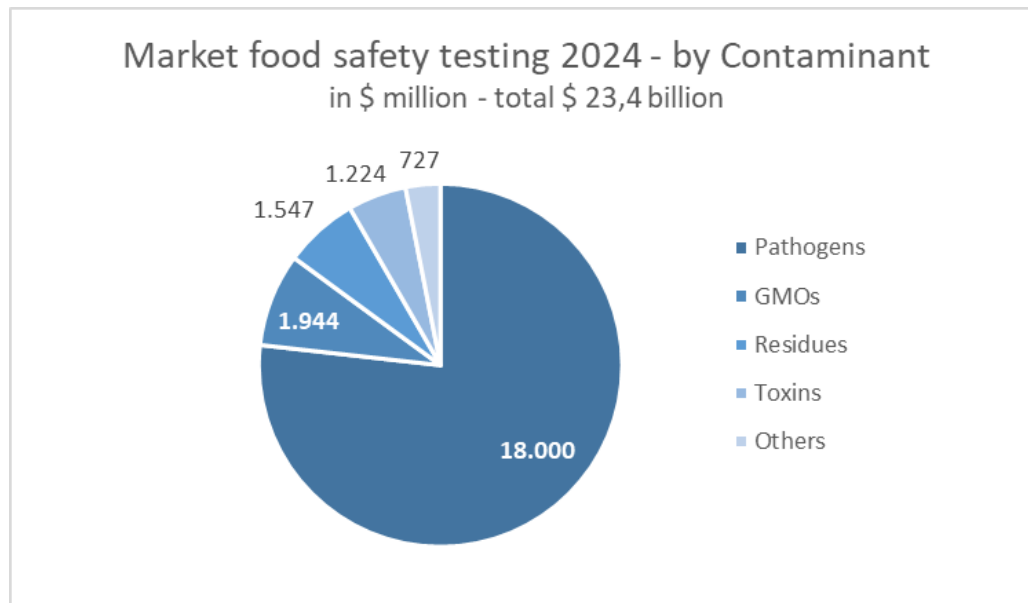
Faster and so fresher from farm to fork

- Reduction of inventory
 - Reduction of recalls
 - Reduction of complaints
 - Test more in process = more prevention
 - Faster re-start after contamination
 - Higher customer agility
 - Increased chain speed
- **Less Food Waste**
- Today 30 % of food is destroyed before it reaches the consumer.



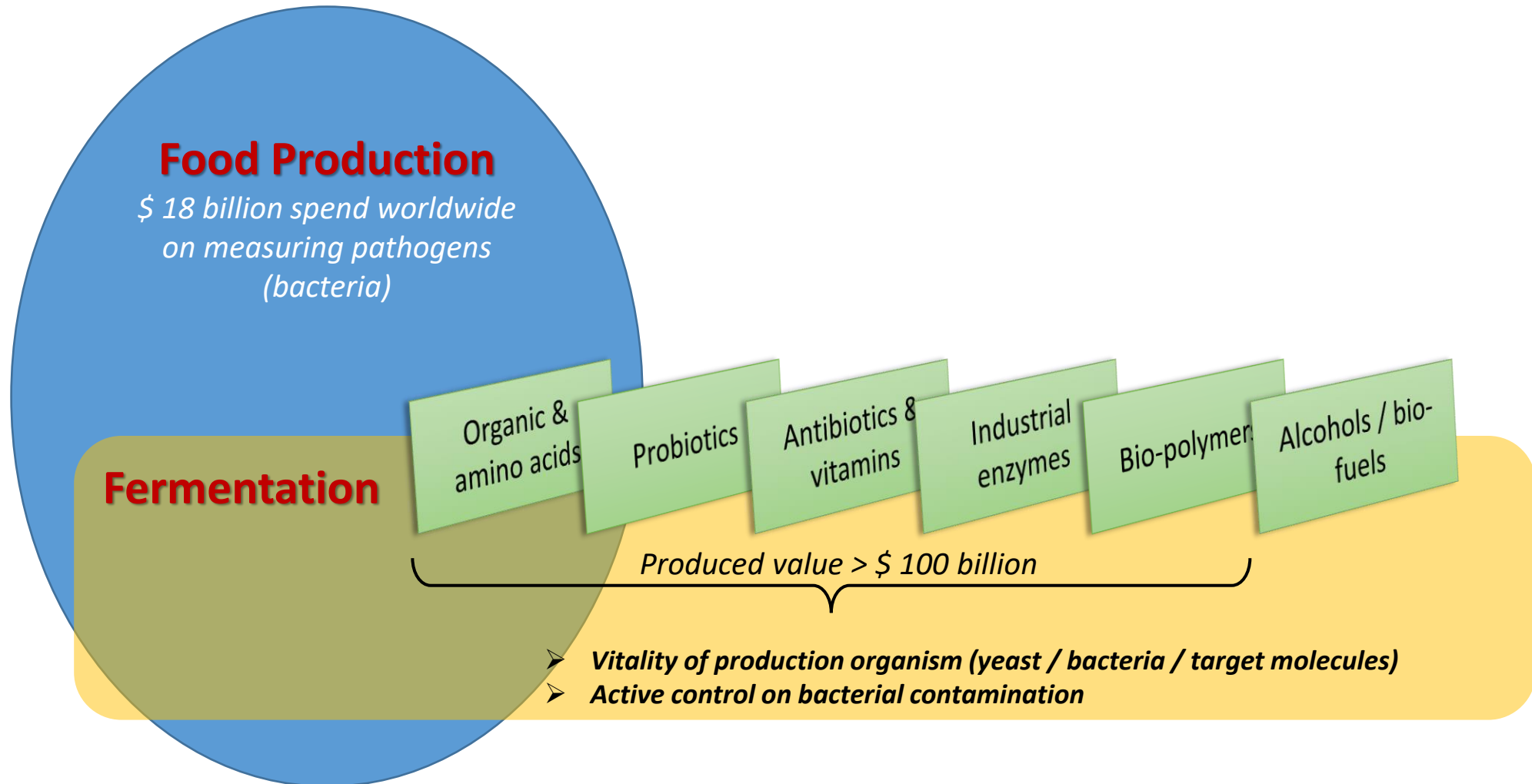
Market potential: \$ 18 billion

- Target market, detecting pathogens in food:
 - \$ 15 billion in USA, Canada and Europe.

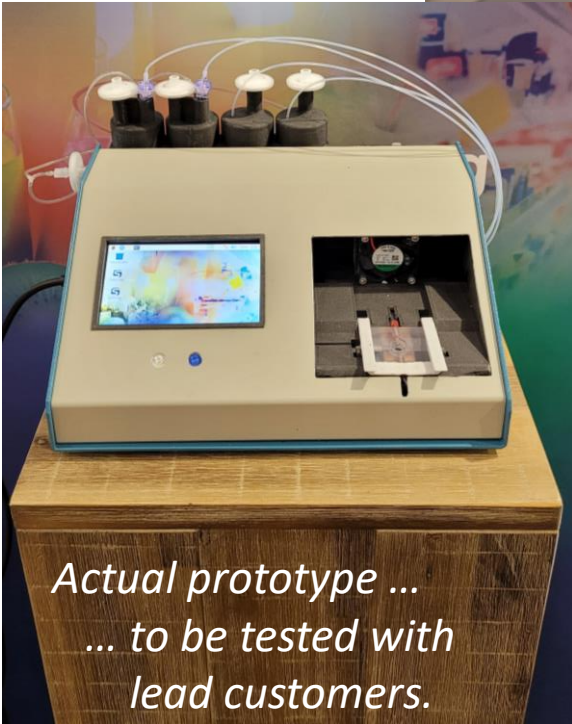


Source: BCC report 2022
FOD011L:
Global Markets and
Technologies for Food
Safety Testing

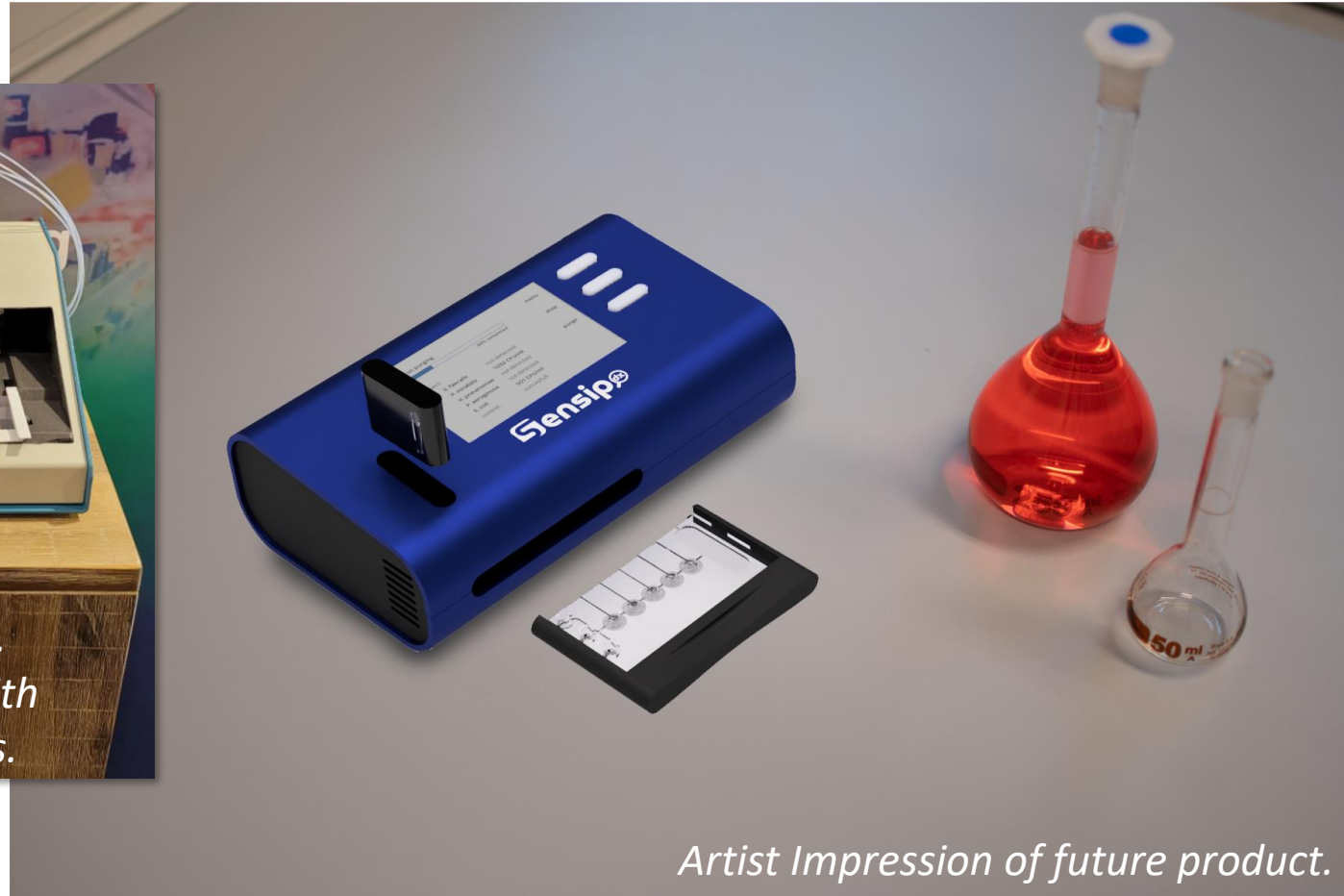
A result in only 15 minutes enables active process control



From Prototype to product in the market in 2024.



*Actual prototype ...
... to be tested with
lead customers.*



Artist Impression of future product.

Sensip-dx: Solid scientific base

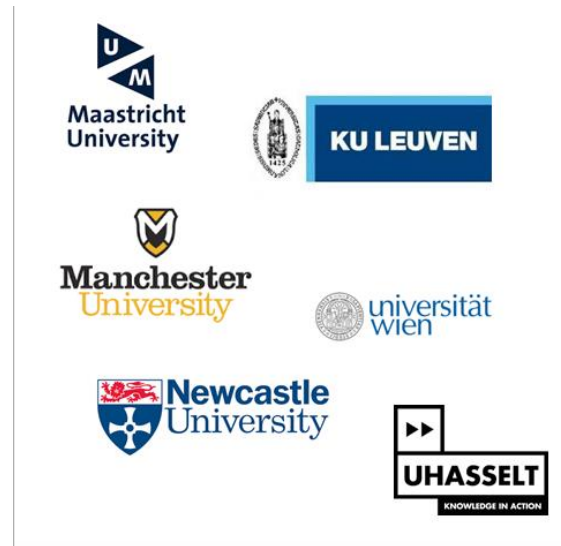


Sensip-dx is a spinout from the University Maastricht



and has a worldwide exclusive license on the UM patents and the underlying mature technology + ***right to purchase patent***

- 100 + articles in respected journals with peer review the last 10 years



Sensip-dx combines established results

Solid scientific base



Improved sensitivity < 100 CFU



Demonstrated Selectivity for bacteria



Tested in real life samples



Mature technology fields

Microfluidics / Thermodynamics / Polymers & polymerization / Mechanics / Electronics

NO fundamental Research

A great team & support



Support from inventors > 10 postdocs & PhD students



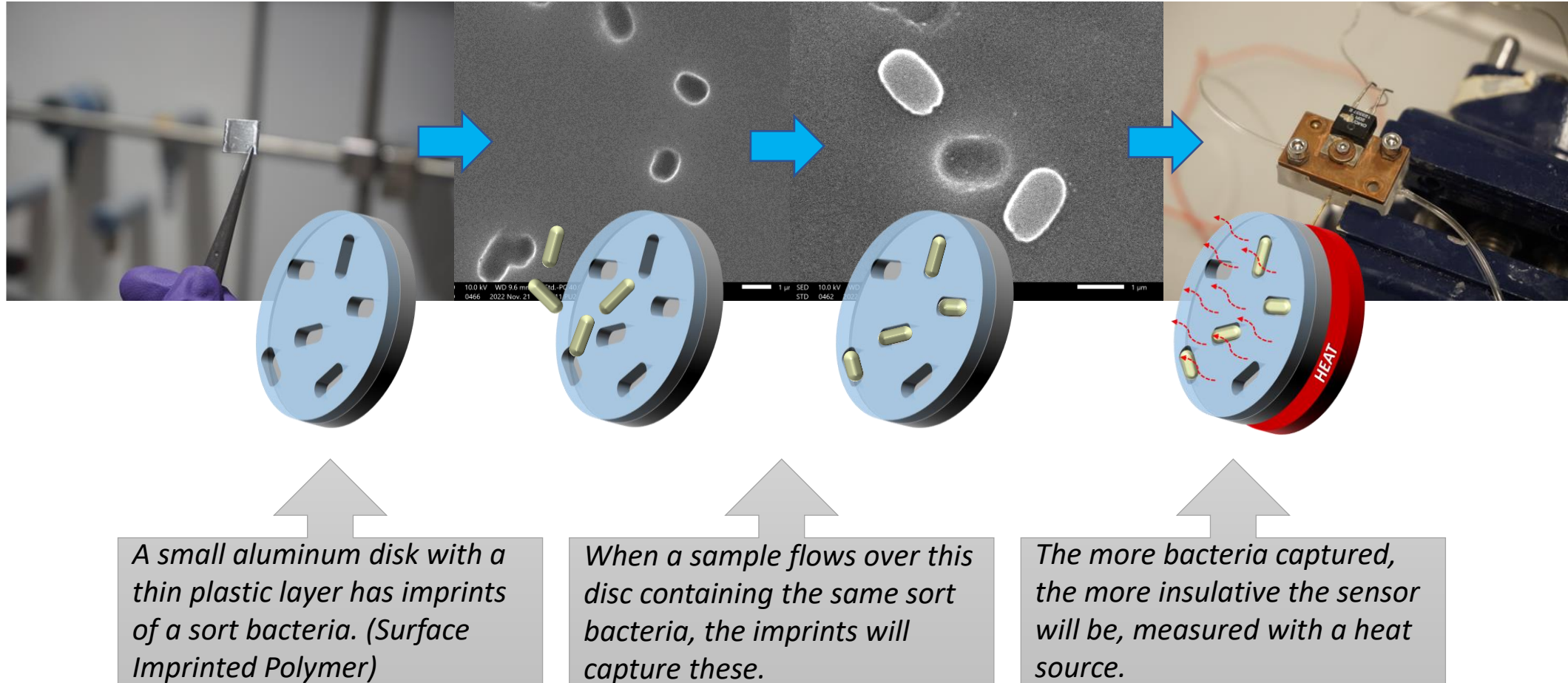
Engineering companies fill the gap in know-how and needed equipment

Active shareholders with food background actively support business development

Together with market parties

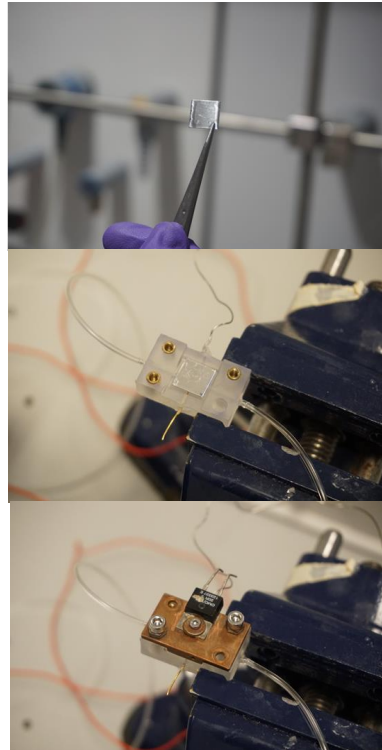
... enables market introduction in 2024

Sensip-dx product: how does it work?



Sensip-dx: good financial base

**Low cost
components**



Scalable

Target costs price per
test per bacterium:

\$ 1

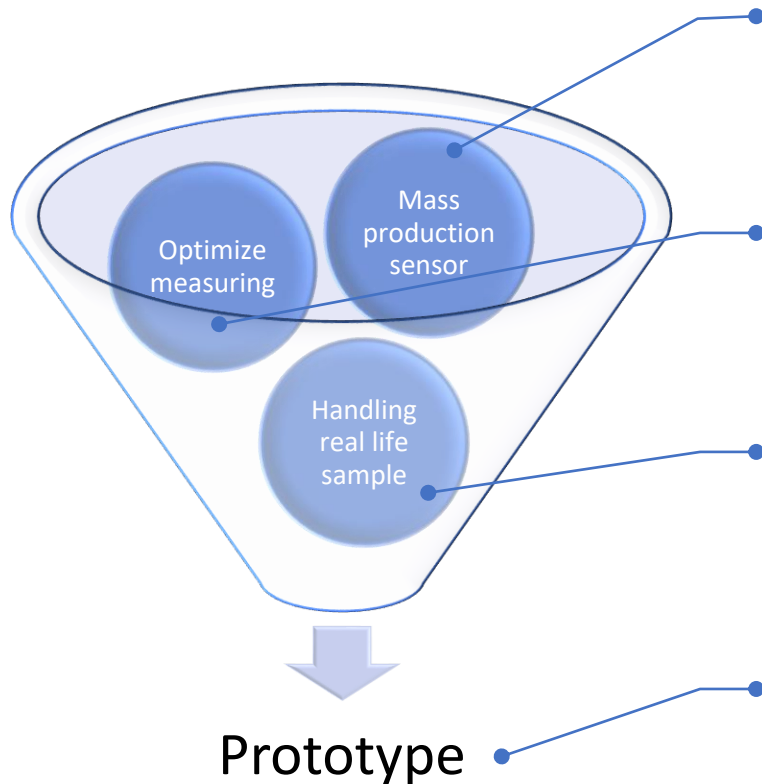
Today's customer cost
per test per bacterium

\$ 5 - \$ 25

= good margin

**= price
competitiveness**

Technical Fields - status



Sensor production:

A scalable protocol to mass produce the sensor where every sensor is equal

What did we achieve – status Dec '23

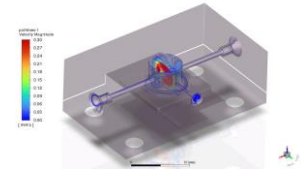
Reproduced the UM-protocols for the sensors and realized the first improvements toward a mass production protocol.



Flow cell design:

Optimize measurement cell that operates optimal in every environment

Critical success factors that influence the measurements are determined and being analyzed (simulation models)



Complex sample matrix:

Ability to process e.g. egg-white and sour fruit juices, and pre-enrichment to enable measuring.

First results in measuring directly in egg-white realized. To be tested at customer production site.



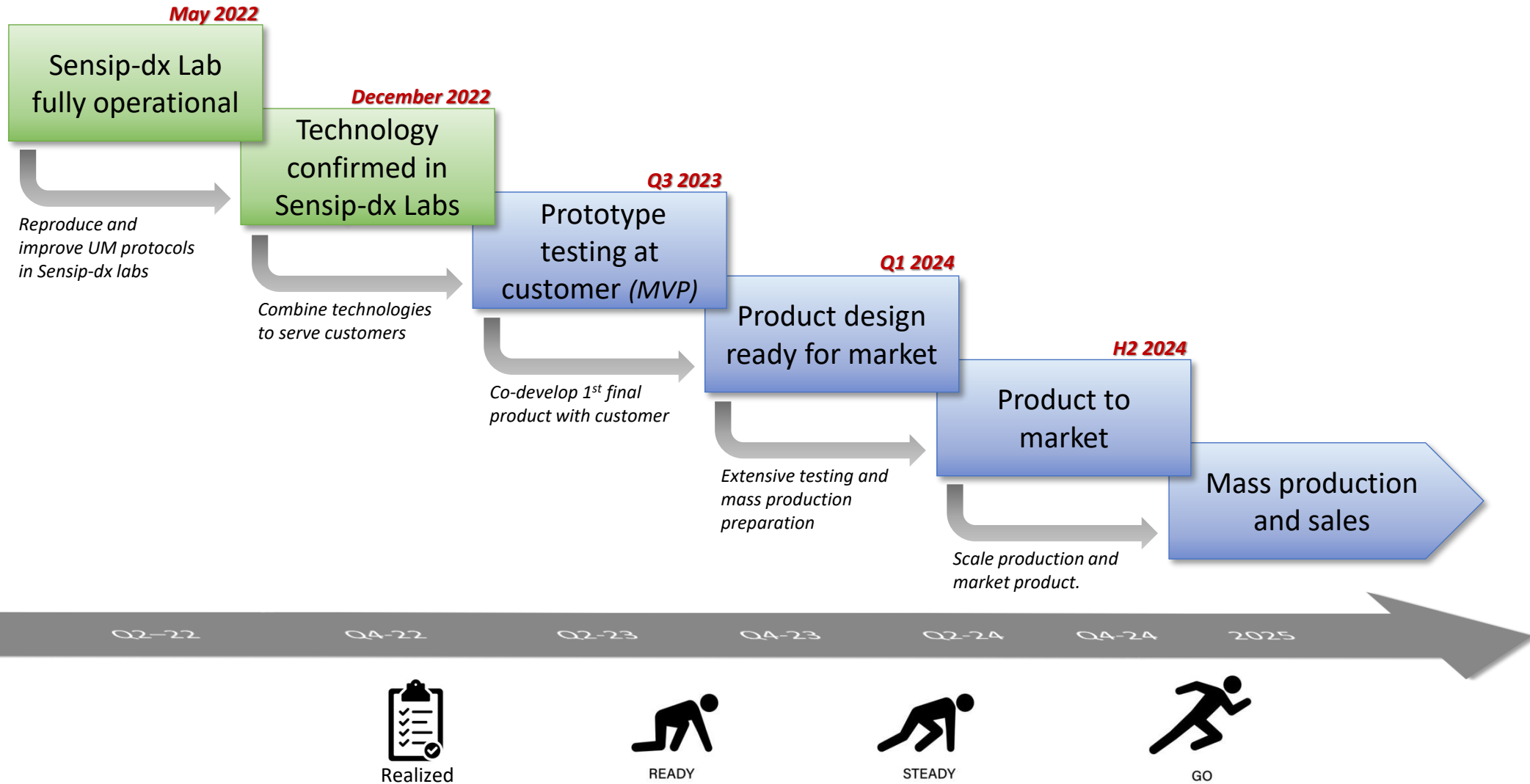
Prototype:

Bring above fields together, add pumps, electronics, etc., and design a user-friendly product.

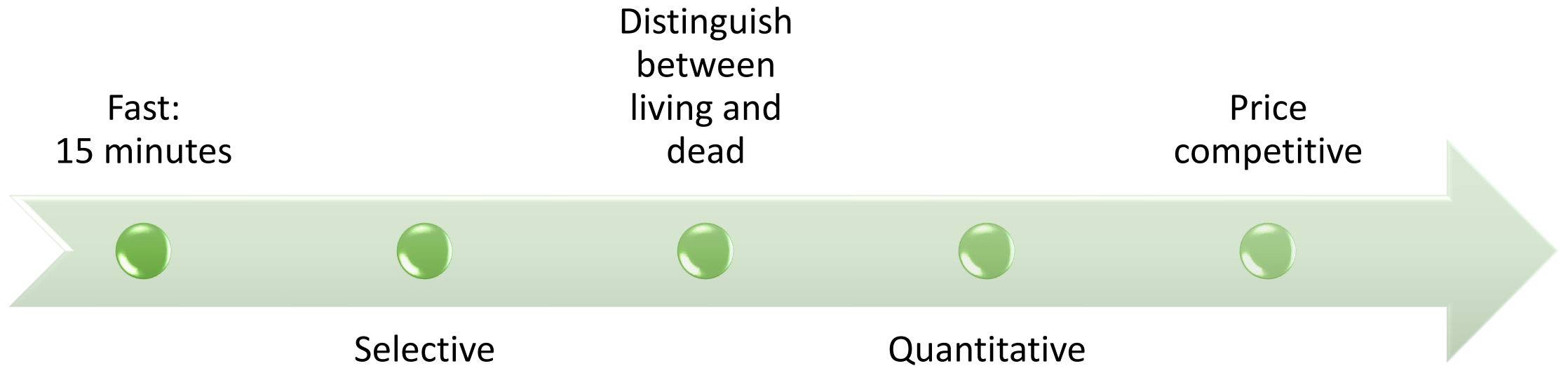
First generation prototype that measures stand alone a bacterium in a fluid, operational and improved.



Technical Fields - path to market



Sensip-dx: Unique selling points (USP)





THANK YOU

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