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Coordinator ACTIA

Microsystems for Food Roadmap

MNBS 2013 – Cork, Industry Panel

Patric Salomon

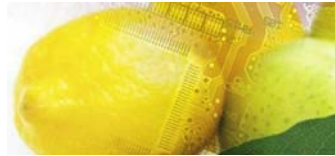
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Project Factsheet

FoodMicroSystems

- ✓ Support Action (798 K€ EC contribution)
- ✓ 2 years from September 2011
- ✓ Coordination: ACTIA (France)
- ✓ 9 partners
- ✓ Objective: initiate the implementation of microsystems in the food and drink sector



Overview

Challenge

- Unite two remote areas
- ✓ Food
 - ✓ Microsystems



How?

Promote cooperation between the two communities

Website

13 Meetings

3 Food-MST roadmaps;
1 MST roadmap for 4 areas

5 Reports
Needs of food industry
Potential of microsystems
+ consumer perception + ethics + regulation

Food industry needs and demands

- Food safety (fast, portable, cheap and easy-to-use devices)
- Food quality (continuous and simultaneous measurements of several parameters)
- Food sustainability (water and energy consumption, cleaning operations...)
- Authentication, traceability, detection of frauds...
- Intelligent packaging

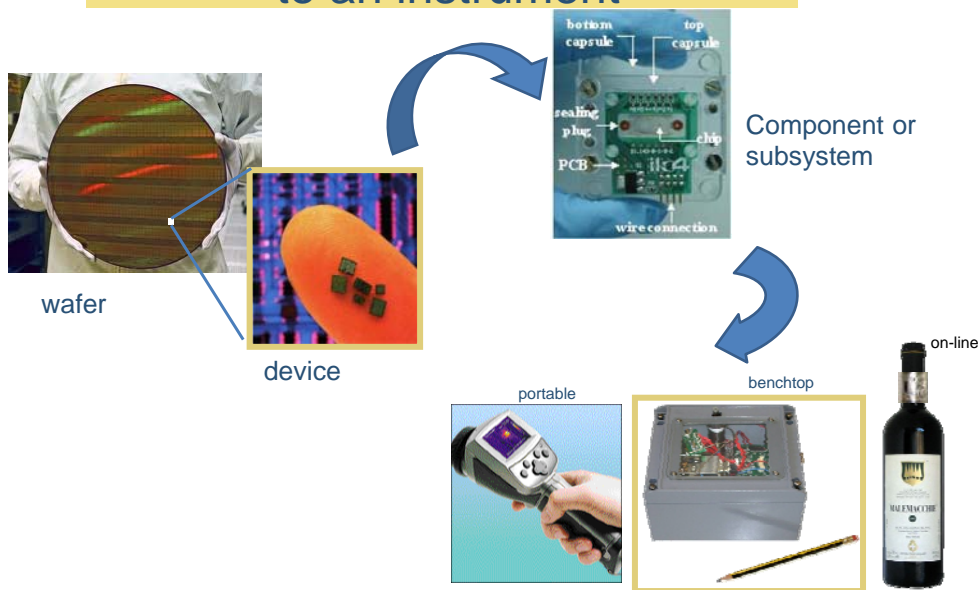
Industry constraints

- Robustness of devices
- Reliability of measurements
- Compatibility with food processes
- Time to process information and provide results
- Cost per measurement
- Sampling strategy (number of measures, when, where, (pre)treatment of samples...)
- Cleanability
- Compatibility with current regulations for food

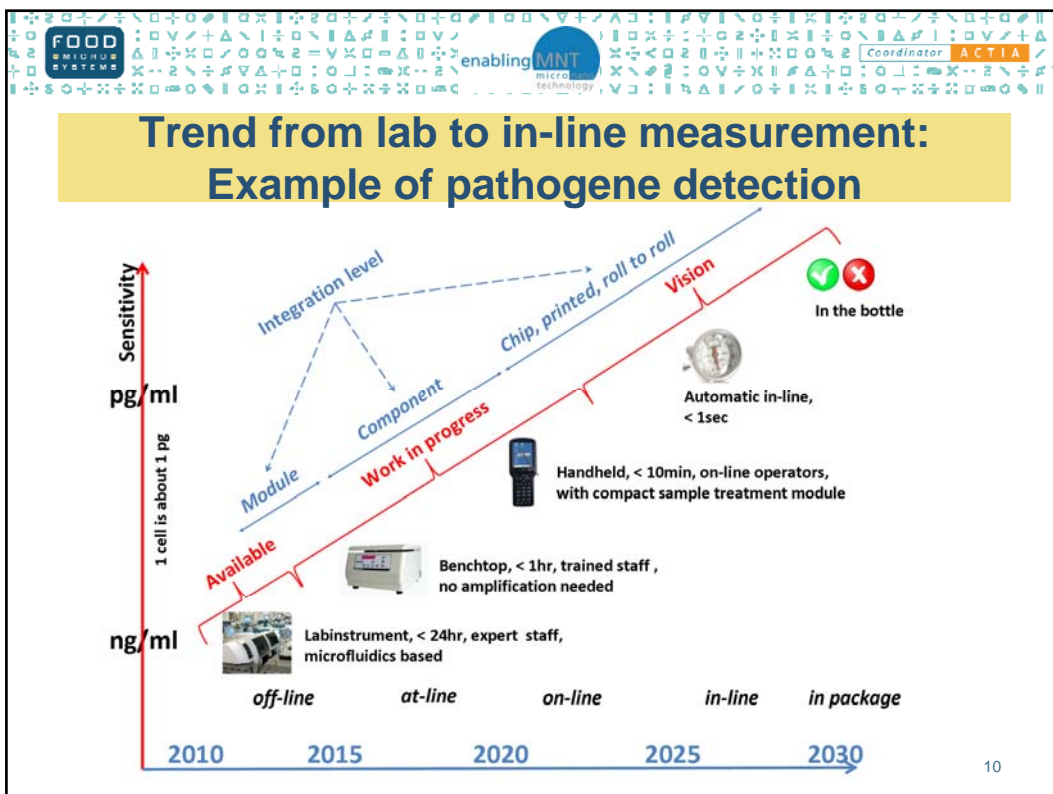
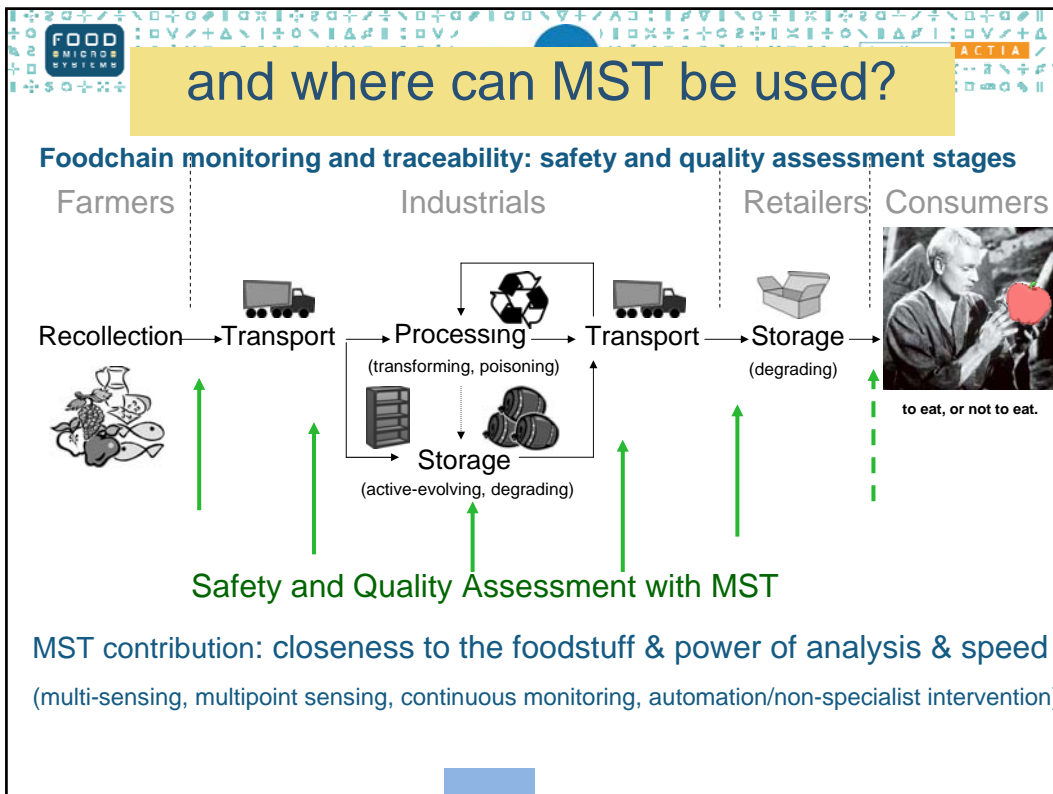
Consumer perception and ethical issues

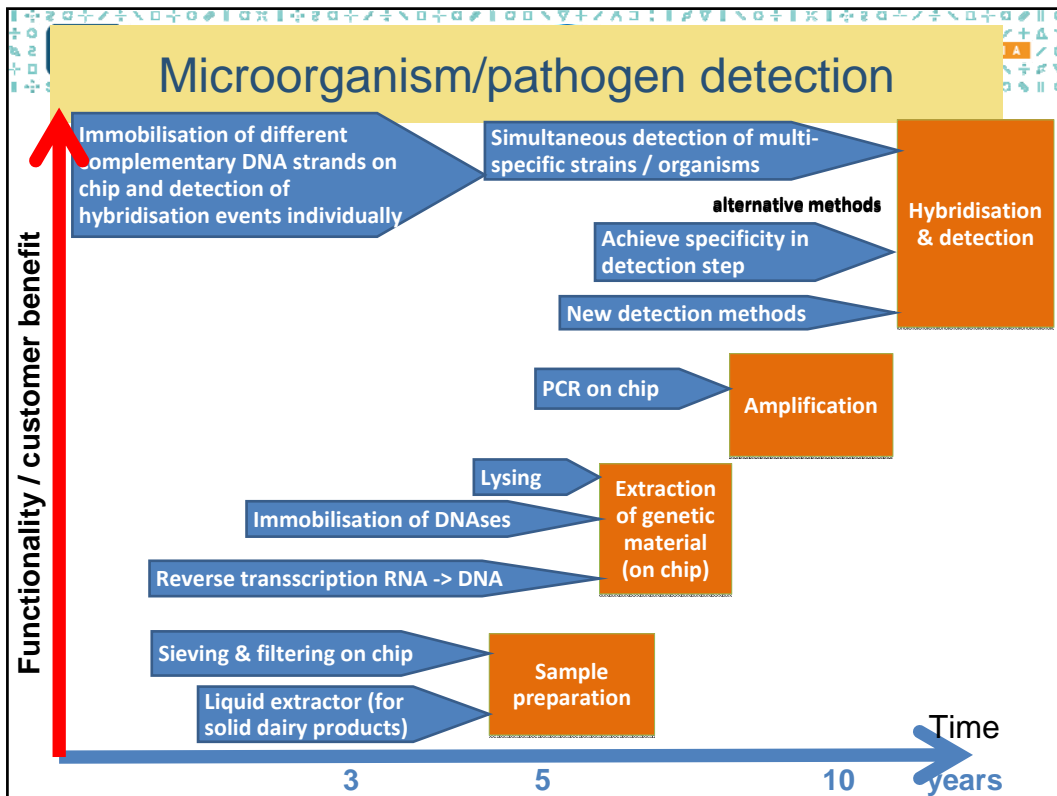
- Limited trust towards the food chain providers
- Control of the technology
- Potential use to track consumers after purchase (privacy violation)
- Health concerns (chemical contamination, particles)
- Increasing the price of food products
- Effects on environment (bio-accumulation of particles, packaging...)
- Transparency about application and clear regulatory frame




MST: From a chip... to an instrument



Miniaturised and cost-effective instruments





Conclusions from FMS roadmapping – tech.

- Looking for MST solutions that both can compete with laboratory systems but also that can complement them
- Current use of other non MST or standard laboratory solutions is still valid when small size is not a must
- MST researchers are looking for improving the stability and reliability of biosensors, as it is still an issue for on-line and in-line deployments
- Regulations (samples of 25 g.) may be an issue for MST based solutions, thus some MST-based solutions may only be used for screening, not for the “official” test

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MNT for Food – Discussion at COMS 2013

- Food industry needs <--> Consumer demands
- Industry constraints: compatibility, speed, COST
- Ethical issues: contamination through MNT?
- Opportunities for MNT:
 - Technologies to increase shelf life & improve taste / nutritial value
 - Even new food products are possible (e.g. through emulsification)
 - Bring Lab analytics to the manufacturing line
- How to move forward:
 - Networking / communication along the “MST - Food industry” supply chain and internationally (e.g. FoodValley)

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Overall conclusions from the Microsystems for Food Roadmapping Excercise 1


=> the food sector is a significant market to MST developers

- MST can help the food sector to address its key challenges (safety, quality, authenticity and optimise the use of resources)
- There are strong needs for new solutions

=> ideas for H2020

- Food-MST roadmaps on 3 sectors and technology roadmaps on 4 key areas can be used as a source of inspiration in H2020

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Overall conclusions from the Microsystems for Food Roadmapping Exercise 2

⇒ It is more about innovation than research

- There are some constraints for entering the food and beverage sector (need to know well the targeted sector as the MST solution needs to be part of the process management systems of the companies / the measurement per se is useless)
- To address these constraints, we need projects on innovation (including users in key positions) and not only projects on research and development

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Overall conclusions from the Microsystems for Food Roadmapping Exercise 3

⇒ An ambitious programme is needed

- Price / cost is the most important factor
- We have a chicken and egg situation (price depends on quantity, quantity depends on price)
- When one success is achieved in food, we expect many others to follow (think for example if a company was offering a portable & cheap solution for authentication of horse meat..)
- How to make a start?
 - ⇒ Public support on key applications, we need ambitious (= large) programmes to have a first successful application. Does H2020 provides this ?

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Thank you for your attention!

Thank you for your support:

Especially to partners from the FoodMicroSystems Project and to my colleague Henne van Heeren, enablingMNT The Netherlands.

- Patric Salomon

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FoodMicroSystems: EC-funded Coordination Action to provide a Roadmap of the "Microsystems for Food" Sector

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