

TAKING DIMS TO THE NEXT LEVEL

# NU3MONITOR

INTRODUCTION

Tracking food, waste and adding game elements to enhance interaction



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# ABOUT ME

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Michal Dobroczyński

Education: MSc / BSc in Computer Science

Work: sysCore ApS / Effihub / HSCORE

Cooperation: AAU & FoodScape Lab

Intelligent Buffet, FWM / DIMS, NU3MONITOR

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# ABOUT US

## SYSCORE (SME) AND AAU

RESEARCH,  
DESIGN OF  
EXPERIMENTS



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PROTOTYPES &  
INTEGRATION,  
ALGORITHMS &  
CO.



FOODSCAPE LAB

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# HOW WE WORK

## OUR WAY OF SOLVING PROBLEMS

Whenever possible we try to use open source software and hardware (flexibility and freedom)

Thanks to that we are independent from vendor lock-in and can adapt our solutions to a given customer case

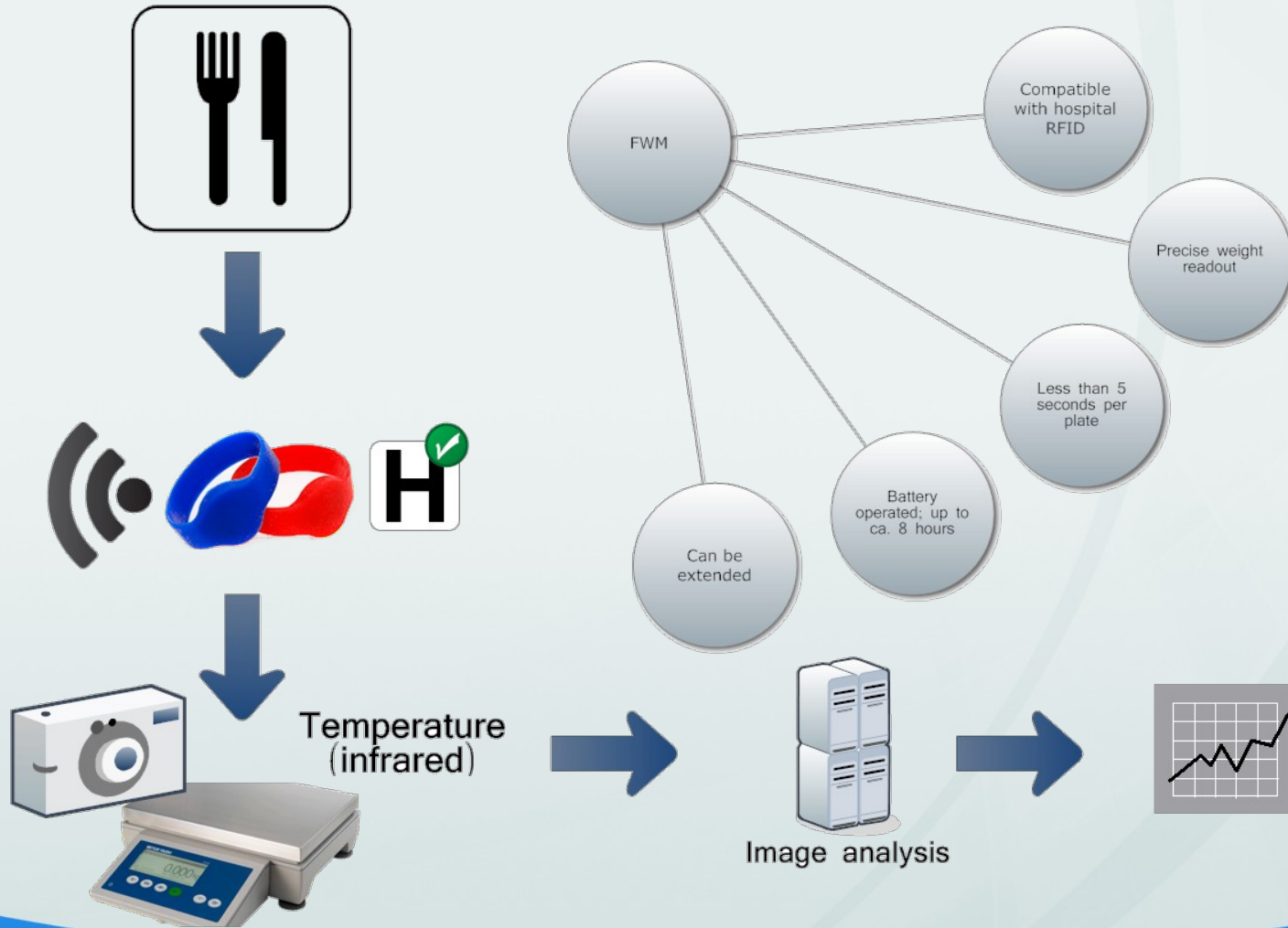


# PURPOSE OF DIMS/NU3

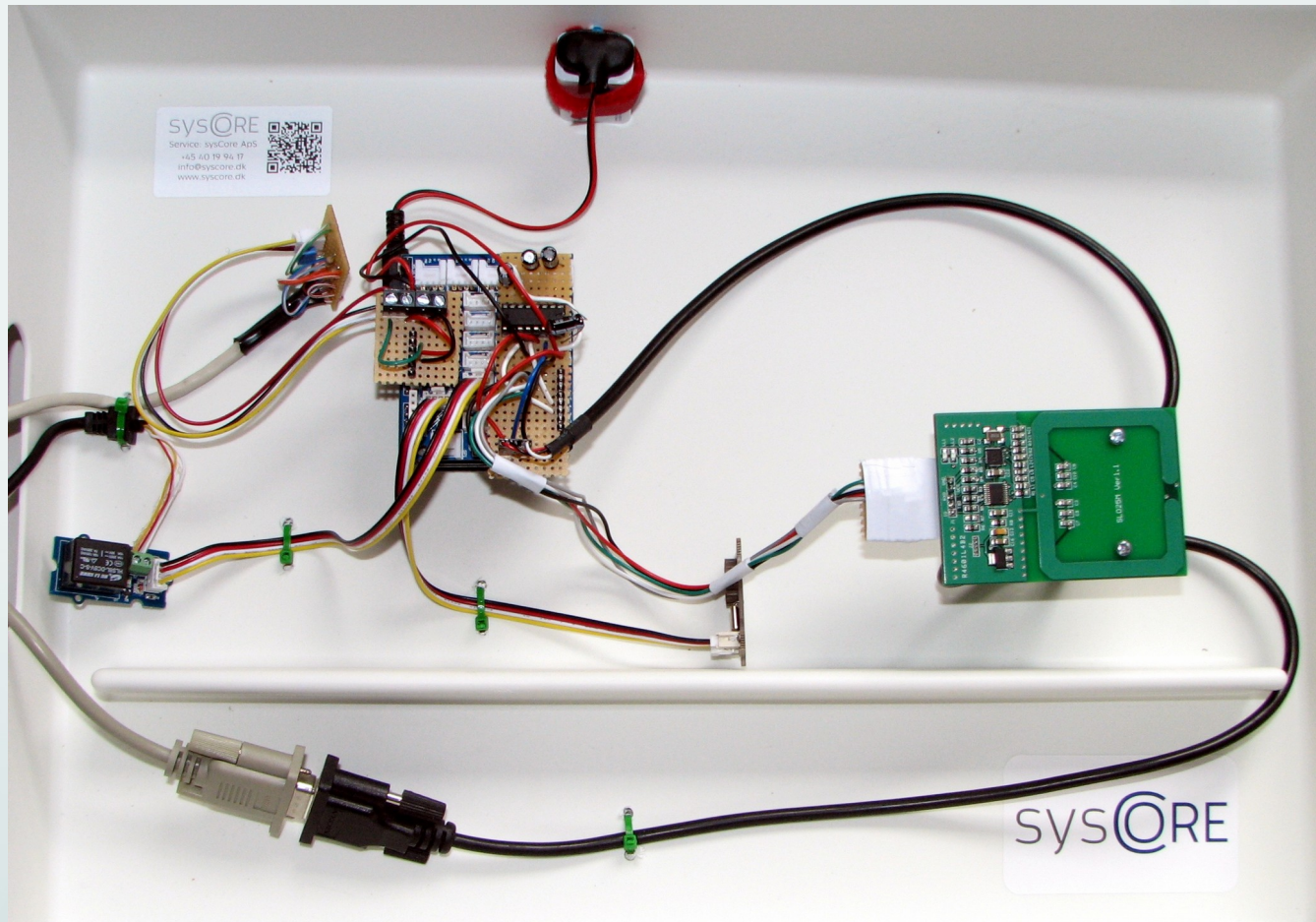
- Speeding up data collection process (automatic weighing, picture taking, temperature measurements, subject identification)
- DIMS is basically a **tool** that can be used in many ways – goals can be different (waste, monitoring patients, research activities, working with elderly people)
- NU3 adds the human factor into the feedback loop



# WHAT IS DIMS & NU3MONITOR?



# PROOF OF CONCEPT



# IT WORKED OUT





# ORIGINAL IDEAS

## WHAT MAKES IT SO SPECIAL

- **Battery operated** means it is fully mobile and can work up to 8 hours on two 9V batteries
- **Any camera can be used** as long as it supports a remote control
- **All RFID systems** can be interfaces: 125kHz, 13.56MHz, NFC etc.
- **Quick and easy** – just 5 seconds for each plate
- **Average temperature** of food can be measured with built-in infrared thermometer
- **External application** makes sure the data is properly joined (the data matters, but ordered data is priceless!)
- **Privacy** – anonymous or full-ID mode
- **Image analysis module** will allow taste profiling, waste management – and again – imagination is the only limit



# ORIGINAL IDIOT

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### MISSING:

- near real-time processing
- correct database
- streamlined version
- better package
- integration with mobile
- ability to use as an independent IoT
- ability to add extensions: gamification, cognitive therapy and more
- **SIZE! SIZE! SIZE!**



**Mission Impossible**



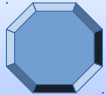
# IMPROVED IDEAS

## LEARN FROM EXPERIENCE (AND MISTAKES)

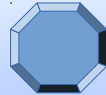
- › Turn DIMS into something that can be carried
- › Dramatically improve the user interface
- › Give some information to the user (processed/not processed)
- › Speed it up!
- › Remove the external application requirement – create a web based interface that can be operated from any PC or a tablet
- › Create advanced analysis tools and ability to extend the system with plugins



# NU3 MONITOR



WEIGHT

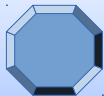


PICTURE

SUBJECT  
INPUT



WEB  
BASED  
INTERFACE



TEMPERATURE

MINIATURE

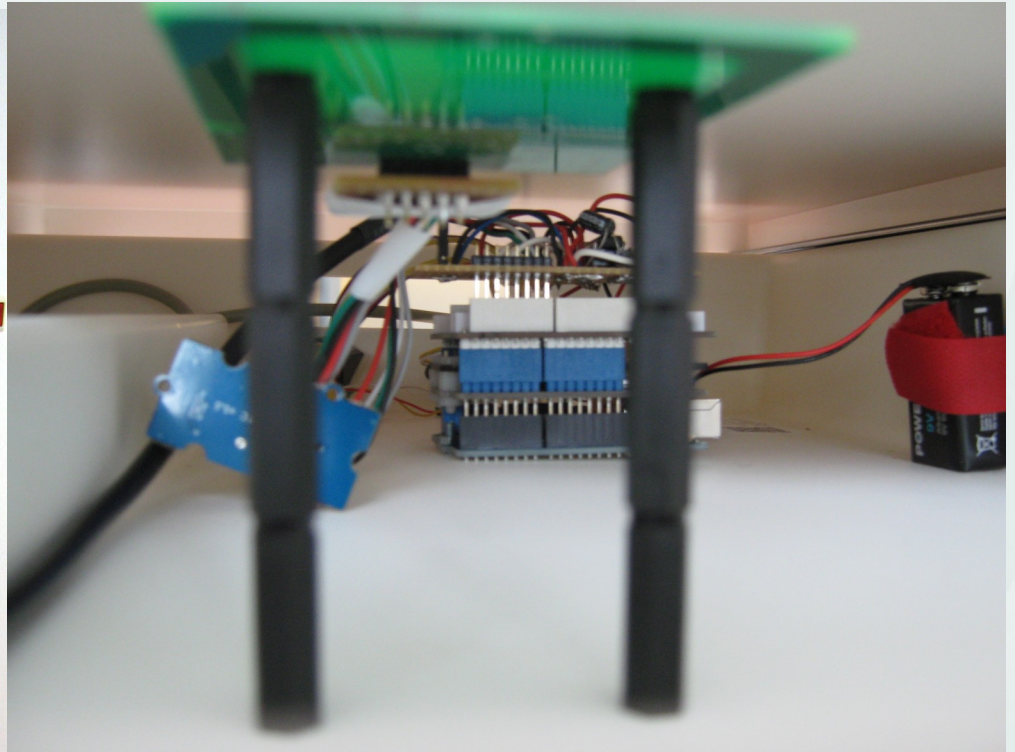
INTERACTIVE  
SHADING  
(NU3)

CLOUD  
READY



# HOW IT WORKS

- 1) Put the meal on
- 2) Swipe identification transponder
- 3) Wait 1 second
- 4) DONE

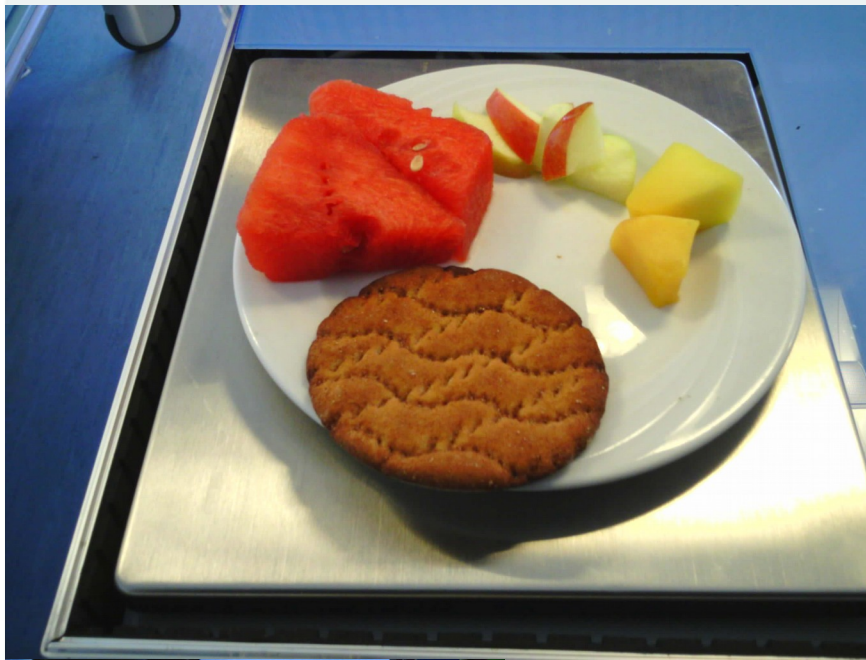


# DIMSv1



# DIMSv2





**Consumption tracking of meals  
and associated liquids**





# NU3 PLANS

- **extending the interface – implementation of experiments and a number of other virtual entities**
- **extending capabilities of algorithms; adding the ability to detect errors and add basic self-correction mechanisms**
- **custom scale module**
- **integration with Danish food database and shader module**



# THANK YOU

## FOR YOUR ATTENTION



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