BIG Food service Food data

Insights from the Foodtura study on future Needs for ICT assisted nutrition management

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Food4Growth – Ruokapalvelu hyvinvoinnin edelläkävijöina

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Abstract: Modern foodservice is informed by large amounts of data on food and individuals. The FoodTura project investigates how we can get the most out of these data. The lecture presents insights from the Foodtura study on future Needs for ICT assisted nutrition management. FoodTura aims to develop and test ICT solutions that can lead to improved nutritional status for patients in hospitals and is based on a user-driven innovation project. The partners in the project are Anova Data A/S; Aalborg University; BDO A/S and IFAU ApS The project has been co-financed by the Market Development Fund
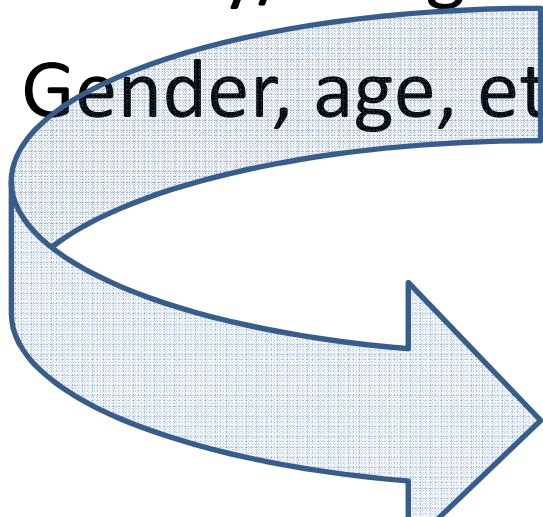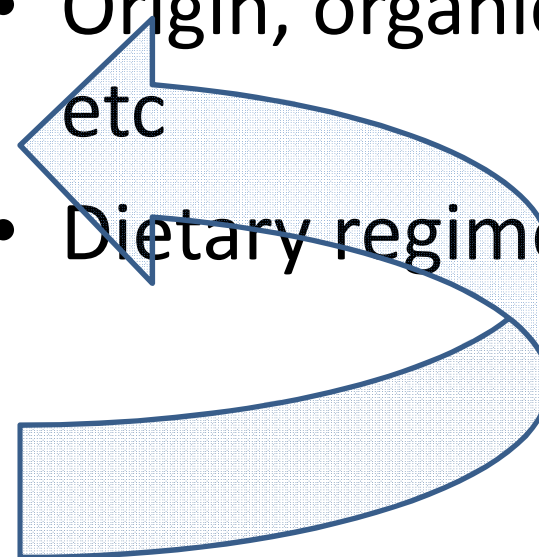
FoodTura adresses
two strands of data

- **Patients**
- Preferences/likings
- Nutritional status
- Disease
- Satiety/hunger
- Gender, age, etnicity

- **Foods**
- Nutritional
- Type
- Preparation
- Origin, organic. local etc
- Dietary regime

Why BigData hype?

- Registers **accumulate** tons of **data**

- **Portable** devices brings new **opportunities**

http://www.care4all.dk/

- Increased focus on measurement of **food** and **lifestyle related behaviour**

- **Self-monitoring** of lifestyle through mobile devices and apps


http://www.blipsystems.com/

Methods

- Interviews with primary users in hospital kitchens based on semi-structured questionnaires;
- Interviews with secondary users in regional governments;
- On-site visit to Aalborg Hospital's kitchen;
- Reviewing of literature;
- Workshop at Alborg University and discussions with the participants => engaging with a wider user group;
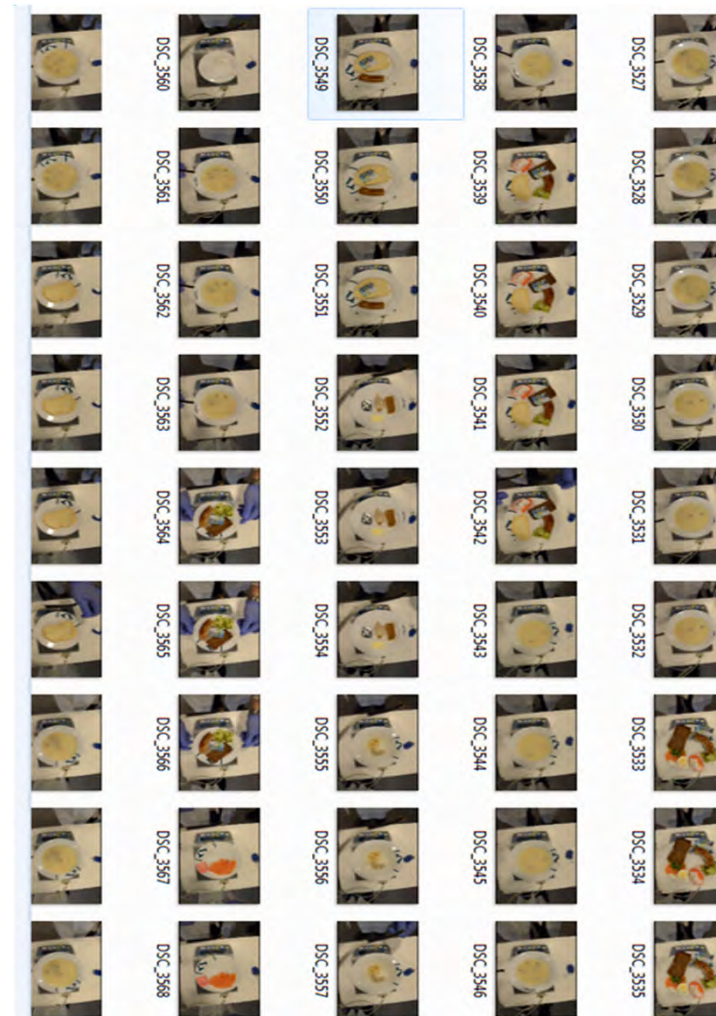- The report: "The Users' demands for data and functions in a modern menu planning system"

Description of Key Components of the DIMS
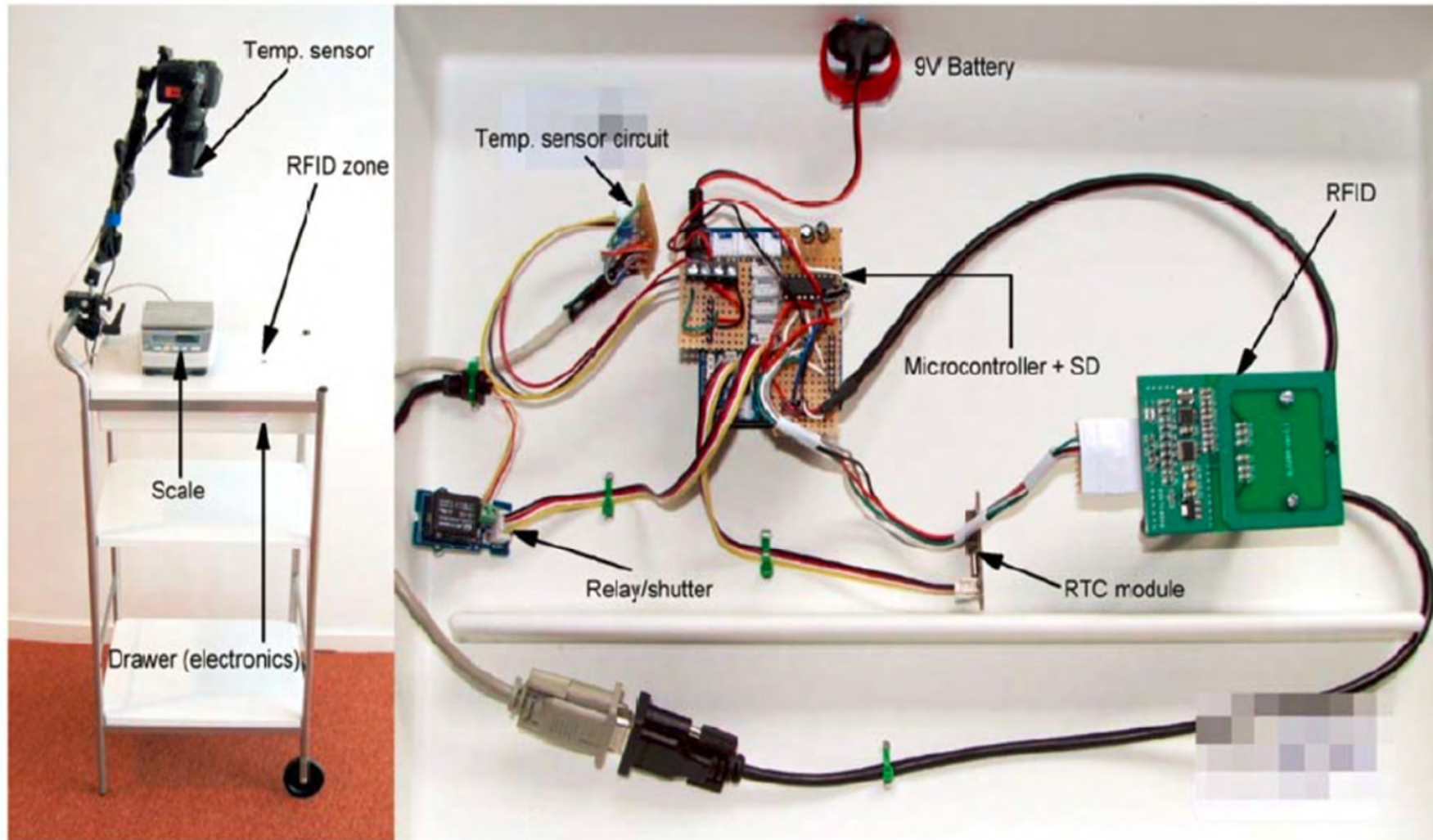
The Dietary Intake Monitoring System (DIMS) - an Innovative Device for Capturing Patient's Food Choice, Food Intake and Plate Waste in a Hospital Setting by *Kwabena Ofei, Michal Dobroczynsky, Mette Holst, Henrik Rasmussen and Bent Egberg Mikkelsen*. Proceedings of Measuring Behavior 2014, (Wageningen, The Netherlands, August 27-29, 2014). Editors: A.J. Spink, L.W.S. Loijens, M. Woloszynowska-Fraser & L.P.J.J.) Downloads: conference slides and conference proceedings paper.

Stored Data from DIMS

The Dietary Intake Monitoring System (DIMS) - an Innovative Device for Capturing Patient's Food Choice, Food Intake and Plate Waste in a Hospital Setting by *Kwabena Ofei, Michal Dobroczynsky, Mette Holst, Henrik Rasmussen and Bent Egberg Mikkelsen*. Proceedings of Measuring Behavior 2014, (Wageningen, The Netherlands, August 27-29, 2014). Editors: A.J. Spink, L.W.S. Loijens, M. Woloszynowska-Fraser & L.P.J.J.) Downloads: conference slides and conference proceedings paper.

Scope of Foodtura
2012-2014

- **Scope**: To <u>develop</u> and <u>test</u> ICT solutions that can lead to improved nutritional status for patients in hospitals.

- **Approach:** <u>user-driven</u> innovation project.

- **Partners**: Anova Data A/S; Aalborg University; BDO A/S and IFAU ApS.

- **Co-financing:** Market Development Fund

The sample
(no. of meals per day)
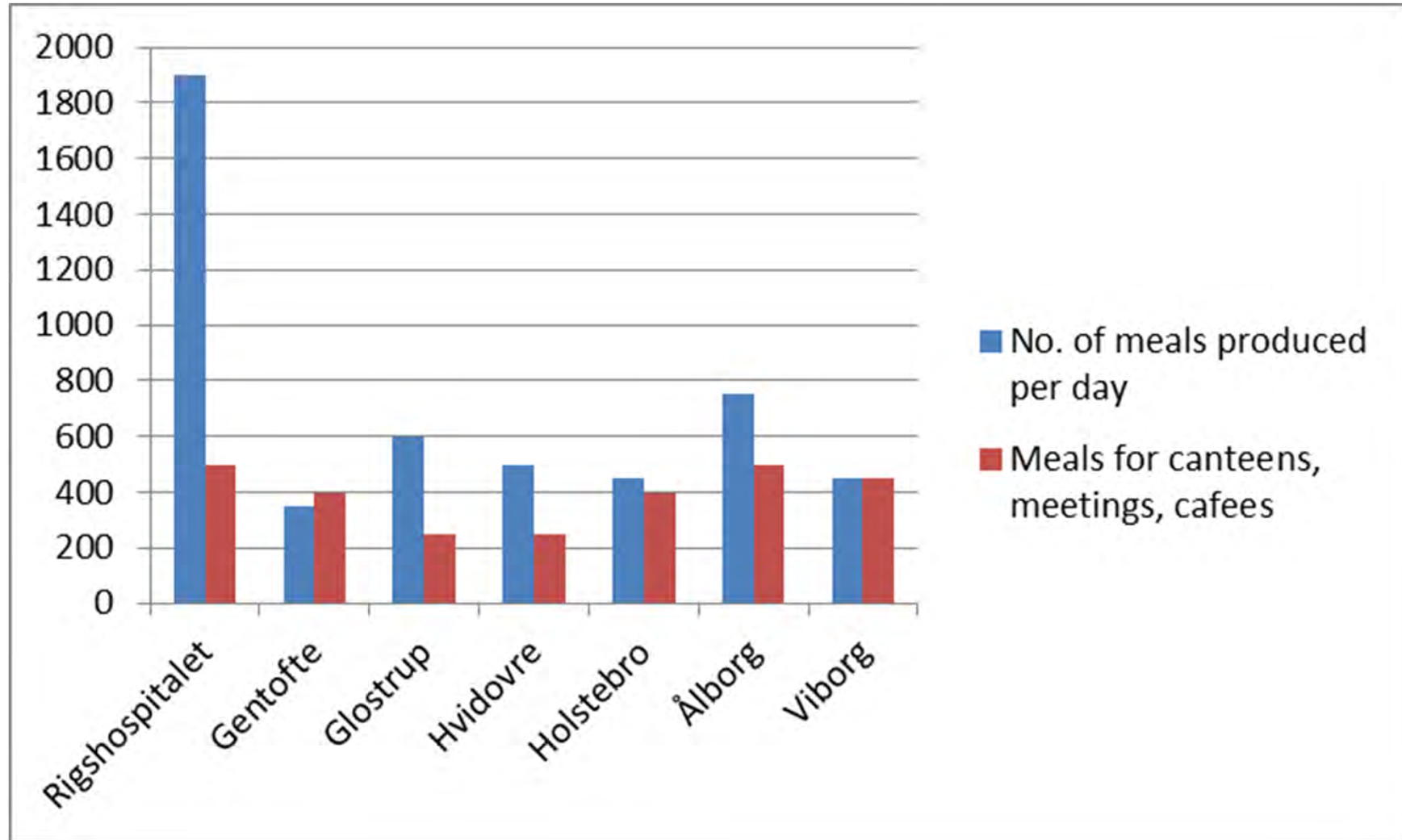
From menu planning to improved nutrition of patients

Improving the menuplanning system

- Improving the menu planning system in hospital kitchens based on better **understanding** of the **users' needs and demands**.

Better data about patients

- **Integration** of data about the patient's nutritional condition with data about food intake. The screening and monitoring procedure.

Improved nutrition

- Method to collect data about food intake;
- Development of a prototype **mobile device** to be used for data collection and communication betwteen ward and kitchen

Users of the menu planning system
multistakeholder profiles

Primary Users

Production:

Kitchens in hospitals, but also in canteens and other large-scale food service operations (public and private)

Secondary Users

Nutrition:

Dieticians and personnel at the wards

Menu planning system: database about food items; calculation of nutrional values; recipes; and production planning

Other Users:

Food producers and food whole salers

Food purchasing:

Regional governments

Other Users

Task list

information & tasks frequently performed

Functions, that are used on a DAILY basis:

- Finding information about **food products**
- Calculation of recipes and **nutritional values** of the meal
- Production planning
- **Ordering** of meals from the wards
- **Calculation of prices** for the meals
- Printing of **labels** for packaged food (relevant for canteens and meetings)
- **Shopping/procurement** lists
- **Agregated data** on sales and production (analytics)

Functions that are used on a REGULAR basis:

- Menu planning (e.g. by every 3rd week or by season)
- **Calculation** of prices for **menus**

Functions that are used occasionally:

- **Calculation of diets**

Challenges with the menu planning system

- Information about food items must be **maintained**
- More detailed information is **required for packaged** food (allergenes and additives);
- Calculation of the nutritional value – food made from fresh raw materials e.g. half pork carcass;
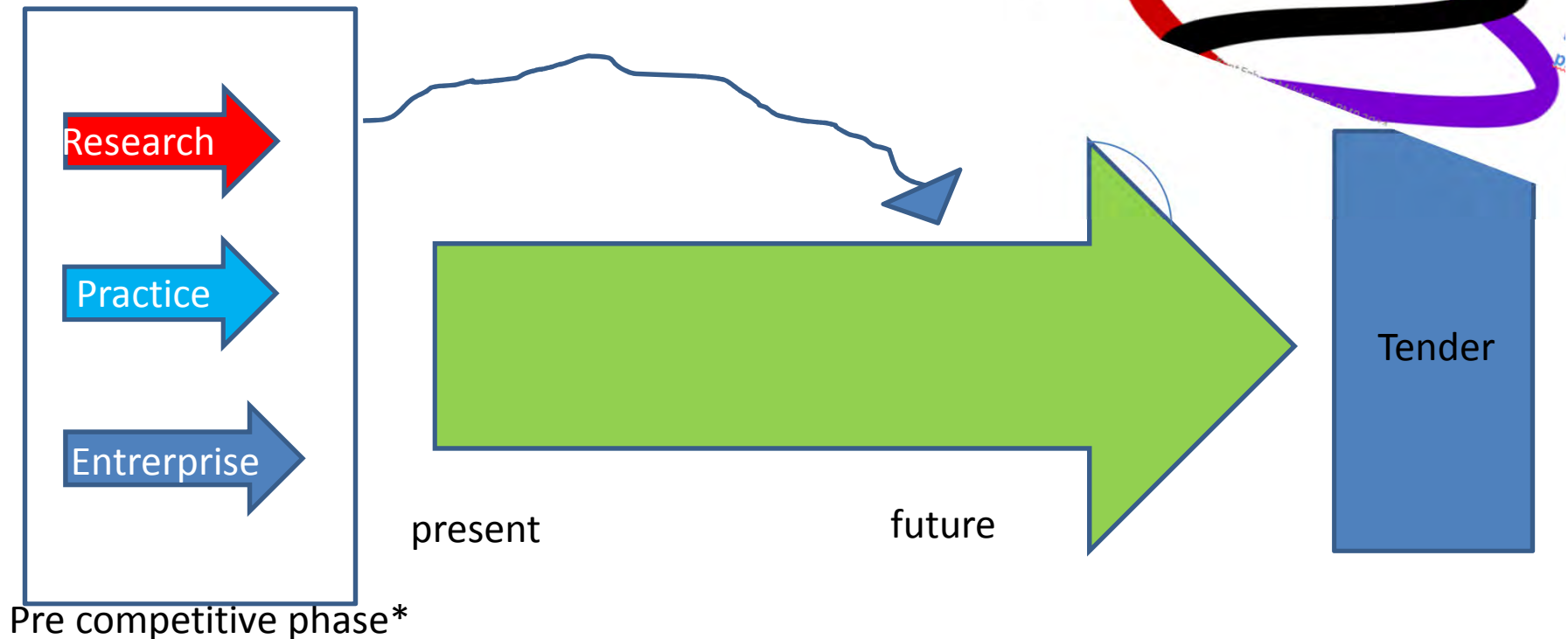
=>

- Need improvements in the menu planning system to provide more accurate data if an improved nutritional condition of patients should be achieved.

Challenges

- Monitoring has low <u>priority</u> in buzy foodscapes
- From <u>nice2 to need2</u>
- Low <u>status</u> & no <u>tradition of R&D</u> projects
- Limited <u>innovation</u> efforts
- Innovation requires <u>funds</u>
- Capacity building & <u>training</u> is key

Menage a trois?

knowledge information communi...
research, education & inno...

Research

Practice

Entrerprise

Pre competitive phase*

present

future

Tender

Knowledge broker

Idea: how an evidensbased "collective (COP) by working in partnership between academia, enterprise and foodservice/nutrtitional care practice can develop new ideas that can be taken into the market

* European Innovation Partnership

Two kinds of transformations

- Research: Money into knowledge
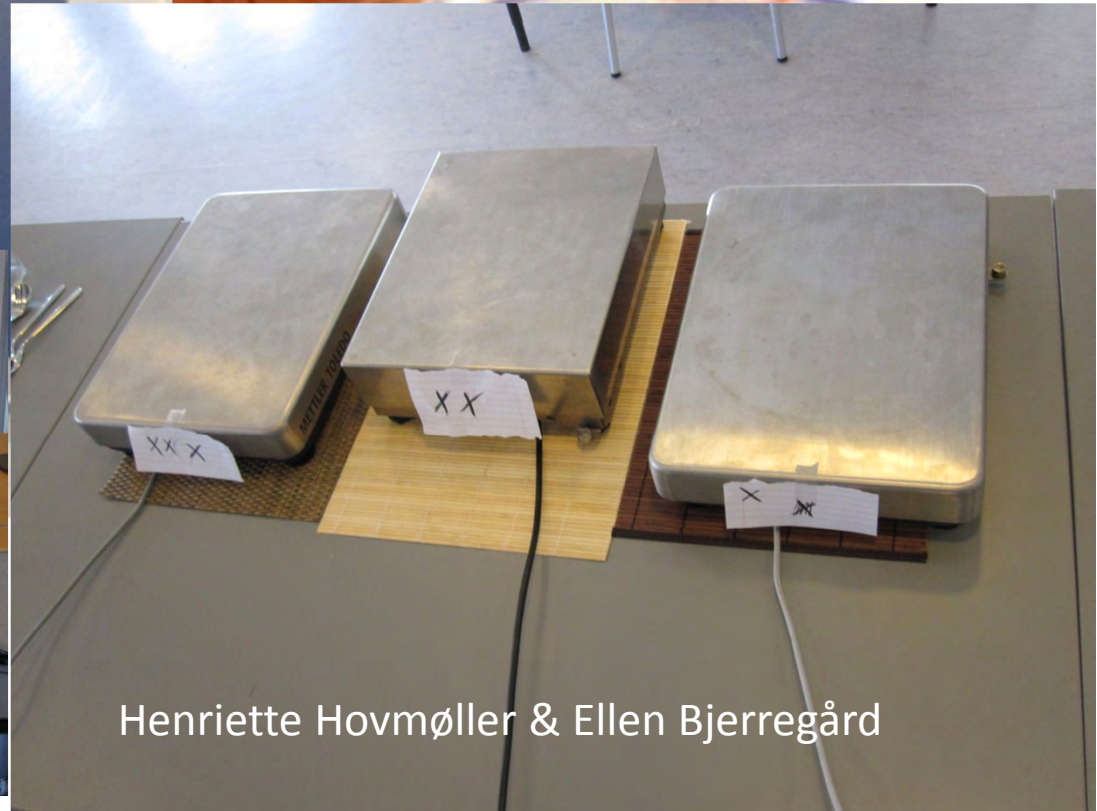
- Innovation: Knowledge into money
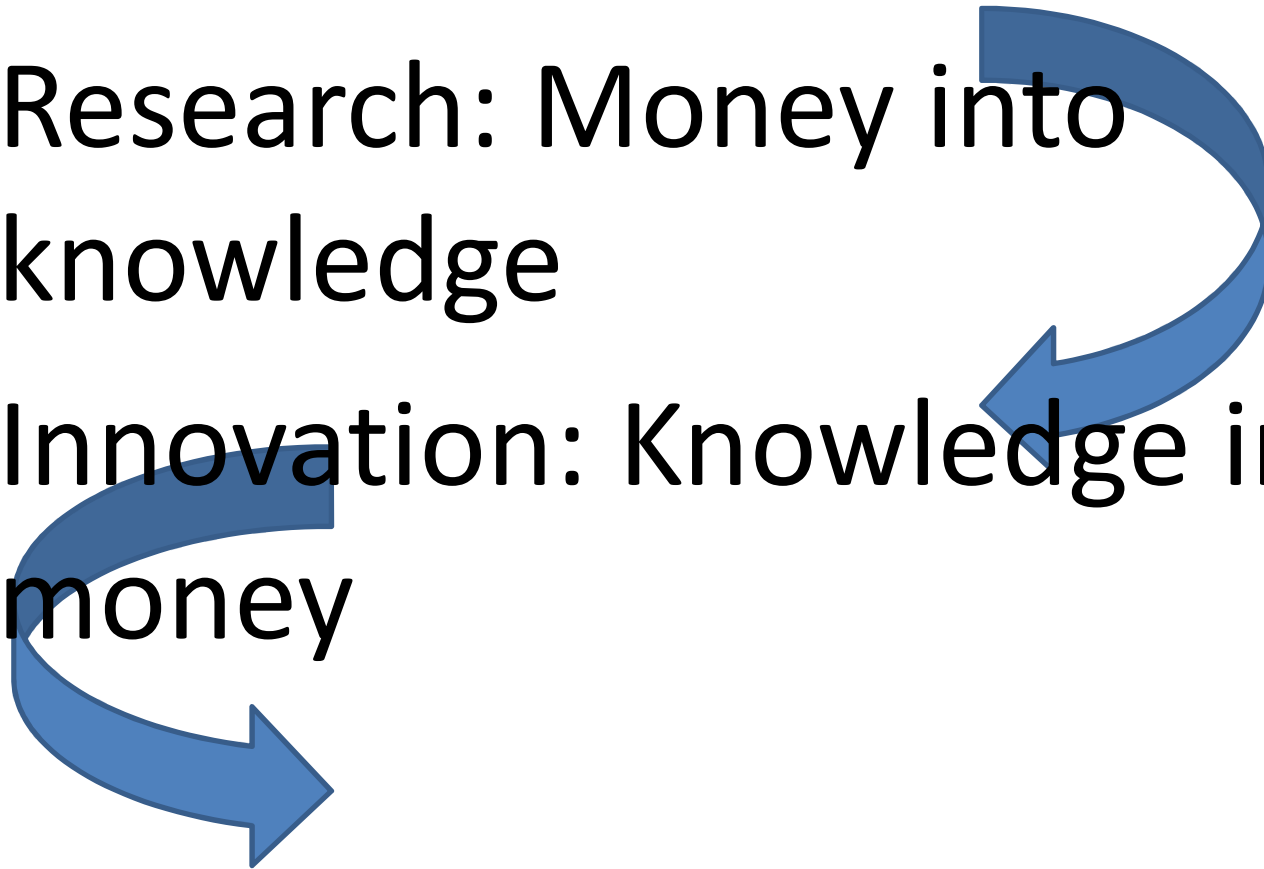
Research2innovation

- **Research**
- Presenting at conferences
- Creating evidence
- Publishing papers
- Collecting research data

- **Commercial**
- Investigating practice use
- Exploring commercial potential
- Attracting capital

Early version made by IFS students
– the FoodScale Tracker

Henriette Hovmøller & Ellen Bjerregård

Conclusion

- Big food data calls for exploitation
- Mobile devices offers new possibilities
- Public food service is already totally computerized
- Modern consumers expect "every data about everyhing"
- Universities need more "triangle" training

Beyond FoodTura

- To develop a mobile device for transfer of food data, thus linking the patient with the hospital kitchen in order to:

  - Provide more personalised nutrition;
  - Monitor the patient's nutritional intake;
  - Improve the patient's condition from better nutrition
  - Facilitate data transfer and thus reduce work loads;
  - Reduce food waste;

Thank you for your attention.

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