

FUTURE CHALLENGES IN PROFESSIONAL KITCHENS II

Reports of Seminar Presentations



| *Eliisa Kotro (ed.)* |

Mikkelin ammattikorkeakoulu

A *Tutkimuksia ja raportteja | Research Reports*

| 46 |



MIKKELIN AMMATTIKORKEAKOULU

Mikkeli University of Applied Sciences

Eliisa Kotro (ed.)

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FOREWORD

Future Challenges in Professional Kitchens II–seminar took place on 13 - 14 May in Mikkeli and it was arranged by Mikkeli University of Applied Sciences. The seminar was directed to researchers, developers, teachers, professionals, students and other actors in the field of Professional Kitchens (restaurants, catering, public and private food services etc.) to come together to discuss and exchange opinions and experiences about the future challenges in the field. Another goal was to open up possibilities for networking with experts and companies.

The seminar was organized by Department of Environmental and Hospitality Management where use of IT systems of Professional Kitchens are researched and developed, and food services professionals are educated. As result of projects publications on the following topics have been given out: Acquiring and Using of IT systems, Production Processes of Food Services, Professional Kitchens in Finland in 2015, Food Production Processes of Professional Kitchens.

In the seminar experts from U.K., Switzerland, USA, Sweden, Denmark and Finland gave versatile lectures under themes:

Developing the Production Processes of Food Services
Food Safety
Customer viewpoint

During the seminar the already existing information and theory of the themes was deepened and the challenges of the future were foreseen and discussed.

Mikkeli 09.06.2009

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CONTENTS

FOREWORD

JUST MIX IN THE INGREDIENTS - CAREMÈ'S ORIGINALITY AND SPACE AGE TECHNOLOGIES	1
---	---

Svetlana Rogers

FOOD PRODUCTION PROCESSES AND DATA FLOWS IN PROFESSIONAL KITCHENS.....	14
--	----

Teija Taskinen

HUMANS - HOUSEHOLD TECHNOLOGY - COMPUTER TECHNOLOGY: THE PROJECT "INTELLIGENT COOKING TECHNOLOGY"	20
---	----

Wolfgang Schmidberger

"NEW TECHNOLOGY AND CHANGE IN KITCHEN PROCESSES	22
---	----

Juha Jokinen

WHY NEW TECHNOLOGY IS A CHANCE IN KITCHEN PROCESS.....	24
--	----

Jari Korhonen

NETWORKS OF FOOD SAFETY INFORMATION SYSTEMS IN FINLAND	26
--	----

Pirjo-Liisa Penttilä

NORDIC ID MONITOR - ENSURING COLD CHAIN QUALITY WITH MOBILE TECHNOLOGY.....	28
---	----

Teemu Ainasoja

FOODSERVICE AND NUTRITION SECURITY FOR OLD PEOPLE	43
---	----

Ylva Mattsson Sydner

I CAN SEE THE ECOLIGHT – THE GASTRONOMIC GREEN ENLIGHTENMENT	44
--	----

V.A. Heikkinen

KEYNOTE SPEAKERS	62
------------------------	----

CASE PRESENTERS	65
-----------------------	----

JUST MIX IN THE INGREDIENTS - CAREMÈ'S ORIGINALITY AND SPACE AGE TECHNOLOGIES

Svetlana Rogers

Being so tantalizingly close to C^àremé's kitchen at the Brighton Pavilion compels us to reflect on the logistical complexity of producing food for hundreds of guests at a time. To do this, C^àremé, the Prince Regent's personal chef, combined art with food preservation. Using the modern terminology, he was a product developer and food system designer. He would undoubtedly find a clamor of TV producers looking to make him a celebrity chef. His skills would be valued in banqueting, conferences centres, casinos, stadiums, cruise ships and airlines. But in the twenty first century technically competent operators can match and extend his brilliance because of technological advancements borrowed from space exploration, military technologies, electronics, advanced engineering, medicine and nutrigenomics.

Today I would like to take you on a journey from the past into the future. First, I will outline the fundamentals underpinning culinary/food service practices at product/process/system level. I will link them to the latest developments and my personal contribution to the field. The latter consist of experimental results as well as futuristic concepts.

PART 1 – INNOVATION AT PRODUCT/PROCESS/SYSTEM LEVEL

Being at the University of Brighton, it is not possible not to mention the famous kitchen at the Brighton Pavilion and its designer, Antonin C^àremé (1784-1833). C^àremé was one of the first celebrity chefs for the Paris high society, his clients included Napoleon, the Prince Regent of the United Kingdom (the future George IV) in Brighton and later the tsar of Russia, Alexander I. C^àremé originally trained as a *pâtisier* was known for his centerpieces, food sculptures to be admired but not eaten. He borrowed his ideas from texts on architectural history. C^àremé also invented soufflé, the dish requiring

gentle cooking – this was possible with better control of heating in the kitchen range designed by an American, Benjamin Thompson. However, few would know that Carême developed a systematic approach to food preparation to cope with pressures of cooking for hundreds at a time. He invented the three basic sauces or *fonds* (*espagnole*, *veloute* and *béchamel*), which were prepared in advance in bulk and used later for over 100 ‘compound’ sauces. In modern terms this can be described as a ‘food platform’ or mass customization, which combined simplification and differentiation.



PICTURE 1. Marie Antoine Carême



PICTURE 2. The Brighton Pavilion

My personal admiration for C rem  stems from his ingenuity to serve dishes in large volumes quickly and efficiently – quite an achievement even for a modern operator. C rem ’s kitchen at the Pavilion was famous for its steam table, which is now lost, central steam supply, running hot and cold water. This is an early example of functional design: the hot holding boxes and plating surfaces, pre-heated lids and production flow - the kitchen was in the close proximity to the dining hall. This was much more alike a modern banqueting setting than the primitive medieval kitchen. In modern terms a large variety of disciplines could be used to describe such operations at the product-process-system level as shown in exhibit 1. The degree of complexity and integration increases from the left to the right of the continuum. At the product level these are represented by ingredient functionality principles; and at the process level by operational functionality; at the system level by logistics of distribution. Now I would like to dwell on each of these in more detail.

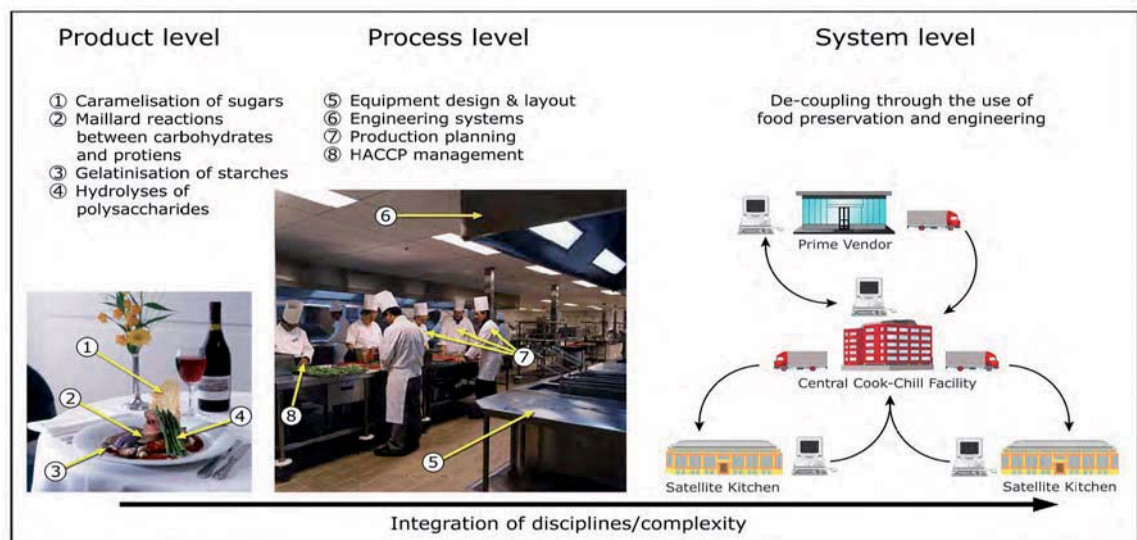


EXHIBIT 1. An overview of modern banqueting operations

The image representing the **product level** is the actual meal served in large numbers at the Brisbane Convention Centre (Australia). Except from intuitive in-sights into the effect of heat on food, chefs assembling this meal were not likely to contemplate or control the physico-chemical phenomena taking pla-

ce: gelatinization of starches resulting in thickening of the sauce; the Millard reactions in browning and the roasted meat flavor; hydrolysis of polysaccharides in softening of asparagus; and caramelisation of sugars in the decoration piece. The Molecular Gastronomy dish (exhibit 2) created by the chef, Mads Nybro from Denmark is radically different. Here the chef actively used chemistry of cooking principles and processes borrowed from food manufacturing to achieve new culinary sensations. C rem  would be puzzled seeing these items.



EXHIBIT 2. Molecular Gastronomy meal

In fact, the green 'skyscraper' sauce at the back of the plate, is made by freezing the sauce in a rectangular-shaped mold, then dipping it in alginate solution and then into calcium solution. The calcium ions attract polysaccharide polymers without the need for heating to achieve gelation; then the sauce was melted the shape remained. The piece at the front is the *sous vide* lobster. *Sous vide* is the process when a product is vacuum-packed and then cooked in a laboratory-style water bath. The cooked muscles are juicier with proteins being less denaturalized under gentle highly controlled heating. The two pieces in the middle of the exhibit are freeze-dried sauce and yoghurt. This is a new preparation technique for restaurants; in food manufacturing ingredients are dried to low water activity levels to ensure the long shelf-life. When the drying is stopped much earlier, the taste and texture are quite different – it melts in the mouth.



PICTURE 3. Sous vide water baths

Molecular Gastronomy and its variation Industrial Gastronomy is a trend amongst top chefs to use industrial thickeners and laboratory-type equipment. This is a reverse of the notion of food technologists relying on the culinary expertise of chefs to enhance the quality of industrial products with the product stability being the primary goal. Not pre-occupied with the shelf-life extension, chefs can borrow industrial techniques (extrusion, freeze-drying, phase separation and others) to derive unusual texture, shape and appearance. Coincidentally, the two most successful restaurants in the world, the Fat Duck in the UK and elBulli in Spain are participants in the EU project 'Introduction of innovative technologies in modern gastronomy of cooking'.

The image representing the **process level** in exhibit 1 is the actual kitchen at the Brisbane Convention Centre. The inputting disciplines here are equipment layout and design, facility design, engineering systems (the so-called HVAC, heating ventilations and air-conditioning), process design, production planning and food safety management or HACCP (hazard analysis critical control point). This is a relatively old-fashioned setting unlike the new 2zones² kitchen concept shown on exhibit 3 – Câremé would not have recognized it as a kitchen at all, a sign of a radically new design. Instead of coolrooms, there are so-called 'cold walls', which define preparation zones supporting a continuous flow of product. Coolrooms are, in my opinion, the most wasteful units - the physical space they require, the energy it takes to chill

empty volumes, the labour to walk to and fro. The design uses the latest HVAC systems - humidity, temperature and chlorine levels are controlled in each point; the ventilation is operating according to the pollution; ice slurry is produced at night, when excess energy is available; no detergent is used, washing and disinfecting is done with ionized water.

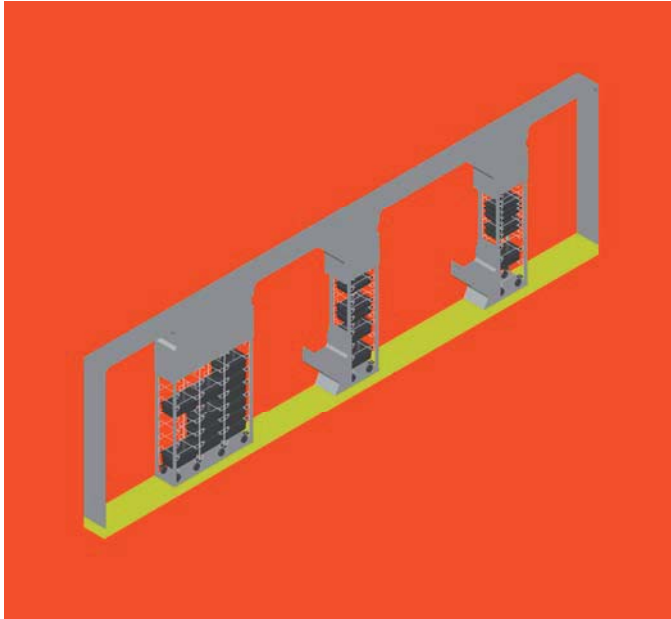


EXHIBIT 3. 2zones2 kitchen design

At the **system level**, a central kitchen or CPU (central production unit) is linked to serveries (if under the same roof) or satellite kitchens (if geographically remote). The production line approach to food preparation can be conceptualized as Industrial Cuisine. It offers outstanding advantages of economy of scale not only in banqueting, but also in convention centers, stadiums, hotel/restaurant/resort chains, institutional catering, transport catering including in-flight catering. At the Cornell Hotel School (New York State, US), where I was a visiting scholar in 2004, former graduates who opened restaurants told students that it is nearly impossible to make profit operating only one unit in New York; one has to have several outlets supported by a CPU or commissary. Product consistency and labor saving are the main drivers. Several chefs can produce thousands of portions a day. The output of 20 000 meals per day was impressive in the 1980s, now new in-flight CPUs in Dubai boast 100 000 meals per day. The food service systems, which include

cook-chill, cook-freeze and *sous vide*, are the union of food microbiology (food preservation), engineering (heating, refrigeration and sometimes packaging) and operational concepts (de-coupling of production from consumption).

Now I would like to describe one of these systems in more details. When I worked in the New South Wales Department of Health in Sydney (Australia), I oversaw the development of a *sous vide* CPU. This is quite a different application to the bench-top water baths used to derive better texture in the fine dining sector. At a CPU, the purpose of *sous vide* technology is shelf-life extension (up to 30 days). In Industrial Gastronomy applications, water baths can hold tons of vacuum-packed meats to justify the large volumes of production. The liquid items such as casseroles, soups and some deserts are prepared in gigantic kettles and pumped whilst hot, then sealed in bags and chilled in water to render stability during storage. One can appreciate the complexity of the engineering systems and food science principles supporting such settings – the food sensory attributes (the impact of mechanical action of the agitator, the pressure of the pump, the tumble chiller and transportation), nutritional value and safety. Actually, food safety concerns are the major obstacles in wider adoption of this technology as it is associated with the most dangerous food poisoning known to humankind – botulism; 30-100 ng or 10⁻⁹g of botulinal toxin is lethal. *Sous vide* products are mildly heated (pasteurized) so the spores of *Clostridium botulinum*, bacteria causing botulism, survive processing and potentially could grow if the storage temperature exceeds 3°C. Such low temperatures are difficult to achieve in practice.

PART 2 – MICROBIAL GASTRONOMY?

When I become an academic at the University for Western Sydney (Australia), I decided to find a way to prevent botulism in *sous vide* products. This was challenging because my choice was limited to the natural means of food production – customers would not accept chemical preservatives in a restaurant meal. Another option, harsh heating, would result in a product quali-

ty typical to canned foods, again not acceptable. The use of tomato paste and spices (both reduce the risk of botulism) was limited only to recipes calling for them. Thus, a more subtle and universal method was needed. I suggested the use of the so-called protective cultures, lactic acid bacteria commonly isolated from cheese and fermented vegetables. I found that cultures producing bacteriocins (anti-microbial substances effective at very low levels) can kill *C. botulinum* in a wide range of prepared meals.

The exhibit 4 represents nearly six years of my work in one image. Here you can see two samples of seafood chowder inoculated with *C. botulinum* spores and stored at 10°C (a gross temperature abuse scenario): the highly toxic and spoiled control is on the left; and the protected sample is on the right. Seafood is usually associated with the type of *C. botulinum*, which is capable of growth at low temperatures under refrigeration. The high populations (up to 10^7 cells per gram or 1-2 gram of the culture preparation per kg of product) of the two protective cultures, *Lactococcus lactis* and *Pediococcus pentosaceus*, reduced the number of *C. botulinum* to undetectable levels, prevented toxicity and spoilage. This was the first practical demonstration of bio-preservation in non-fermented refrigerated products in action.



EXHIBIT 4. Seafood chowder – toxic control (left) and ‘protected’ with lactic cultures sample (right)

When we sent a press release to the mass media, it exploded – the coverage in major newspapers, numerous radio and TV interviews. Some of the reporters were quite aggressive asking me to prove that botulism is a real danger or what I would do with the money if I become rich from the patent we have registered at the time. Overall, the public was fascinated with the notion of adding bacteria to food rather than killing them as in the mainstream food preservation/sanitation. Actually, it was a Russian scientist, Nobel Price laureate, Ilea Metchnikoff, who for the first time articulated the concept of health-improving bacteria. In his book *The Prolongation of Life* (1910) he wrote:

“A reader who has little knowledge of such matters may be surprised by my recommendation to absorb large quantities of microbes, as the general belief is that microbes are all harmful. This belief, however, is erroneous”.

Metchnikoff recognized the two different beneficial effects of bacteria – as a food preservative (such as in fermentation and bio-preservation) and as beneficial gut bacteria (probiotics in modern terms). He hypothesized that the mode of action of the latter lies in breaking down of toxins accumulated in the body. This has been proven - the reduction of carcinogens and blood cholesterol level. At the time of excessive cleaning and over-processed foods, strengthening immunity is another major benefit of consuming live bacteria. In my earlier studies, I surveyed the survival of probiotic cultures, *Lactobacillus acidophilus* and bifidobacteria, in Australian yoghurts. Later at the Conrad Hilton Hotel School in Houston (US), I used the same cultures to develop novel meals for restaurants with probiotics.

I noticed that despite the fact that probiotics were one of the major topics in functional nutrition, food services did not play an active role in this field. The simple addition of probiotic preparations to products was less scientifically demanding than the bio-preservation applications with protective cultures. The technological challenge here was the delivery of the therapeutic minimum, which is recognized at 10^7 - 10^8 viable cells per gram of product. I stu-

died the survival of the stock culture preparations (frozen and freeze-dried) during storage to develop the inoculation protocol; we also recommended the suitable products – cold items such as sandwiches, sushi, dips, cold desserts, milkshakes, smoothies, iced tea and other non-alcoholic beverages. I concluded that if the product is not consumed immediately, it should not be acidic ($\text{pH} > 4.7$). Otherwise, probiotic bacteria will die – the same outcome as during retail storage in the yogurts I observed in Australia. Overall, fresh meals represent a valid alternative as probiotic carriers to the often sugar-laden dairy products. Could this be a beginning of the Microbial Gastronomy?



PICTURE 4. Microbial Gastronomy

PART 3 –FUTURISTIC CONCEPTS

Technically, a meal with probiotics can be classified as a functional meal – I conceptualized this new term in 2003 whilst attending the New Functional Ingredients and Foods (NFIF) conference in Copenhagen, Denmark. Fresh meals enhanced with functional ingredients can be an alternative to the highly processed manufactured functional foods in the retail sector. The examples of functional ingredients are dietary fibres including pre-biotics (indigestible polysaccharides promoting the growth of probiotics in the gut), bio-active proteins, anti-oxidants, vitamins and minerals. C rem  would not be surprised by this idea - the word ‘restaurant’ originated in the 1760s in France from the ‘restauratif’ or ‘pick me up’. Restaurants can venture in the field of the Personalised Nutrition or ‘nutrigenomics’ where personal genetic information can be saved on a computer chip, scanned during meal ordering and

used to prepare a dish with scientifically selected functional ingredients. Perhaps, food services can go even further – networking with local pharmacies to test the ultimate health effects or clinical efficacy of functional meals – as the Unilever does for cholesterol lowering effects of their Flora-branded products.

This has brought me to the last part of my presentation – the future of the field of culinary technologies. I have written a number of reviews in high profile journals on present and potential innovations. The concept of a functional meal is one of the examples at the product level. At the process level, I have suggested scanning for latest breakthroughs in ‘high tech’ industries such as military technologies or space exploration for possibilities to adopt these to culinary practices. Such examples already exist – the filters in hoodless vents over cooking units came from nuclear energy projects in the 1960s. Ironically, it took over 40 years for the technology transfer - the filters were originally developed to stop radioactive particles from escaping into the atmosphere. When I was at the University of Houston, I saw reports on the latest developments in NASA (The National Aeronautics and Space Administration). I wondered what if the ‘electronic noses’ (gas detectors used for safety reasons on space ships) are used in the cooking controlled by smell. This would optimize culinary quality – an oven or a grill can be programmed to stop heating when the ‘cooked’ odor appears.



PICTURE 5. Gas detectors on the space ship

At the system level, I would recommend the system-based menu engineering. I have coined this term to reflect the need to match the make-up of a product with the physical stresses and food safety risks imposed by the technology used to prepare it in order to achieve the optimum culinary outcomes. The example of such philosophy is the Legal Seafood restaurant chain in the US and its *sous vide* CPU in Boston. It takes an innovative thinking to adopt industrial practices to an upmarket seafood restaurant chain. Sauces and soup bases withstand heating and can be prepared centrally in bulk and then reheated in chain outlets with fresh ingredients such as seafood and fresh garnishes added at the last minute. An 'intelligent' fit between menu items and technologies can alleviate numerous geo-political challenges experienced by many high profile establishments in locations where the price of real estate is prohibitively high for back-of-house spaces such as central London or New York. It is a common misunderstanding that Industrial Cuisine can not deliver high quality product. In fact, modern food service systems can provide efficiencies for large establishments such as casinos in the Atlantic City in the US. The Trump's Taj Mahal casino, for example, was criticised in the press for operational losses. The same applies to Planet Hollywood and other high profile establishments where brilliant marketing ideas are not always matched with efficiency and food quality supported with 'high tech' innovation. In the future, the cutting edge projects such as Jumeirah or Hydropolis Underwater Hotel (Dubai) may be the first to implement cutting edge food production systems.

The increase in technological sophistication would soften many of the current pressures including the growing competition from food manufacturing. To address competitive pressures from China, India and Brazil, the European Union funded the NovelQ project (high pressure processing, pulsed electric field processing, plasma, advanced heating technologies and packaging) facilitating the production of products with 'fresh-like character'. Currently supermarkets shelves are full of ready-to-eat items, bulk portioned meals are even supplied to restaurants. Are chefs destined to be bag openers? If C rem , an innovator on product, process and system level, would be alive

today he would not despair. He would re-invent himself to become a chef-scientist, a chef-doctor or both.



PICTURE 6. Câremé: Chef-scientist and chef-doctor

The full text of this paper can be found in:

Rodgers, S. 2008. State of technological sophistication and the need for new specialized tertiary curricular in food services. *International Journal of Hospitality Management* (in press).

Other relevant publications:

Rodgers, S. 2008. Technological innovation supporting Industrial Cuisine, Fast Food and Fresh Food production philosophies. *International Journal of Contemporary Hospitality Management* 20 (1): 19-34.

Rodgers, S. 2006. Deriving operational efficiencies from the extended shelf-life of food service products. *Journal of Culinary Science & Technology* 5 (2/3): 111-129.

Rodgers, S. 2007. Innovation in food service technology and its strategic role. *International Journal of Hospitality Management* 26: 899-912.

Rodgers, S. 2005. Technological developments and the need for technical competencies in food services. *The Journal of the Royal Society for the Promotion of Health* 125 (3):117-123.

Useful websites:

Advanced Culinary Technology Research Centre -
www.brighton.ac.uk/ssm/research/actrc

Masters in Culinary Arts Degree -

<http://courses.brighton.ac.uk/course.php?cnum=831>

FOOD PRODUCTION PROCESSES AND DATA FLOWS IN PROFESSIONAL KITCHENS

Teija Taskinen

This article is shortened version. Original version:

Taskinen, T., Tiainen, T., Tuikkanen, R., Harju, P., Hynes, D. & Cobanoglu, C. 2007. Information shaping data flows during professional kitchen process in Khosrow-Pour, Mehdi (editor, author) *Managing worldwide operations and communications with information technolog.* Philadelphia; IGI Publishing, pages 1264 - 1266

Introduction

The data flows in food production processes were studied in a research project "Modular information Model of Professional Kitchens". Project was funded by the Finnish Funding Agency for Technology and Innovation, TEKES and it was carried out in years 2005 - 2007. Professional kitchens were in interest because they have a very important role in food chain. In Finland every third Finn uses daily in catering services and there were over 811 million meals produced year 2008. The term professional kitchen is used here in reference to private catering companies, such as restaurants and personnel canteens, or institutional kitchens, such as those of schools, day-care centres and hospitals.

Data flows in professional kitchen processes were examined in two dimensions: (1) the iterative character of information, which means that information shaping, is happened gradually within a repetition process, and (2) those reasons why iterativity is typical for professional kitchens. The focus was on how information is built iteratively through kitchen processes. This is partly achieved through planning tasks but is fully accomplished through the practical implementations of food production.

Professional Kitchens

The empirical information was gathered from professional kitchens and aimed to generalise the results, pointing out those processes and data flows which are shared by all kitchens, and which recur in an identical form in food production planning, implementation and monitoring, thus enabling the formulation of a model at the general level.

Eight professional kitchens were chosen as research objects, whose food production processes and related data were modelled. The research objects represented networking food service organisations operating in Finland. The research objects consisted of national and local organisations that operate as businesses, municipal business units or municipal organisations. The research objects' kitchens were responsible for food production in personnel canteens, student canteens, restaurant chains, a la carte restaurants, health care institutions or hospitals. A number of these research objects operated as central kitchens, which means that they supplied food to several distribution kitchens. Some prepared meals to be served to their own clients, others combined both functions. On a daily basis, the number of food portions prepared varied from 300 to 7 000.

Empirical material for the study was collected by using theme interviews focusing on following themes: food production planning, raw material acquisitions and storage, food preparation, food production monitoring, and food-related communication. The interviewees were selected from among supervisors responsible for planning at the executive level, and food productions supervisors.

The analysis aimed to modelling the information flows, process-required information, and process-generated information of various professional kitchen types' food production processes. Modelling was used as a tool to find out similarities and differences between processes and used information. Modelling was based on a process division that was applied to the diagrams by the

interviewers. Based on these, a maximum number of processes were drafted which the research objects had in common. To achieve a uniform level of abstraction, some processes were combined into higher level functions or divided into lower level functions.

Completion of the Information Used in Planning Processes

Food production operations are usually viewed as series of stages consisting planning, purchasing, storage, production and service (Jones & Lockwood 1995, Saarela et al., 2005; Sivonen & Työppönen 2006). In this study the focus was information related to processes and the main food production processes were generated as: planning of offered food service activities, food product assortment management, food production planning, implementation and follow-up (see Figure). This study indicates that professional kitchens need a large amount of planning work with plenty of information. The planning process was geared towards ensuring the profitability of food production, plus the high quality of food, throughout the organisation, under centralised instruction provision. A typical outcome was that information was edited and specified during the planning process. Planning took place in intertwining periods of varying durations.

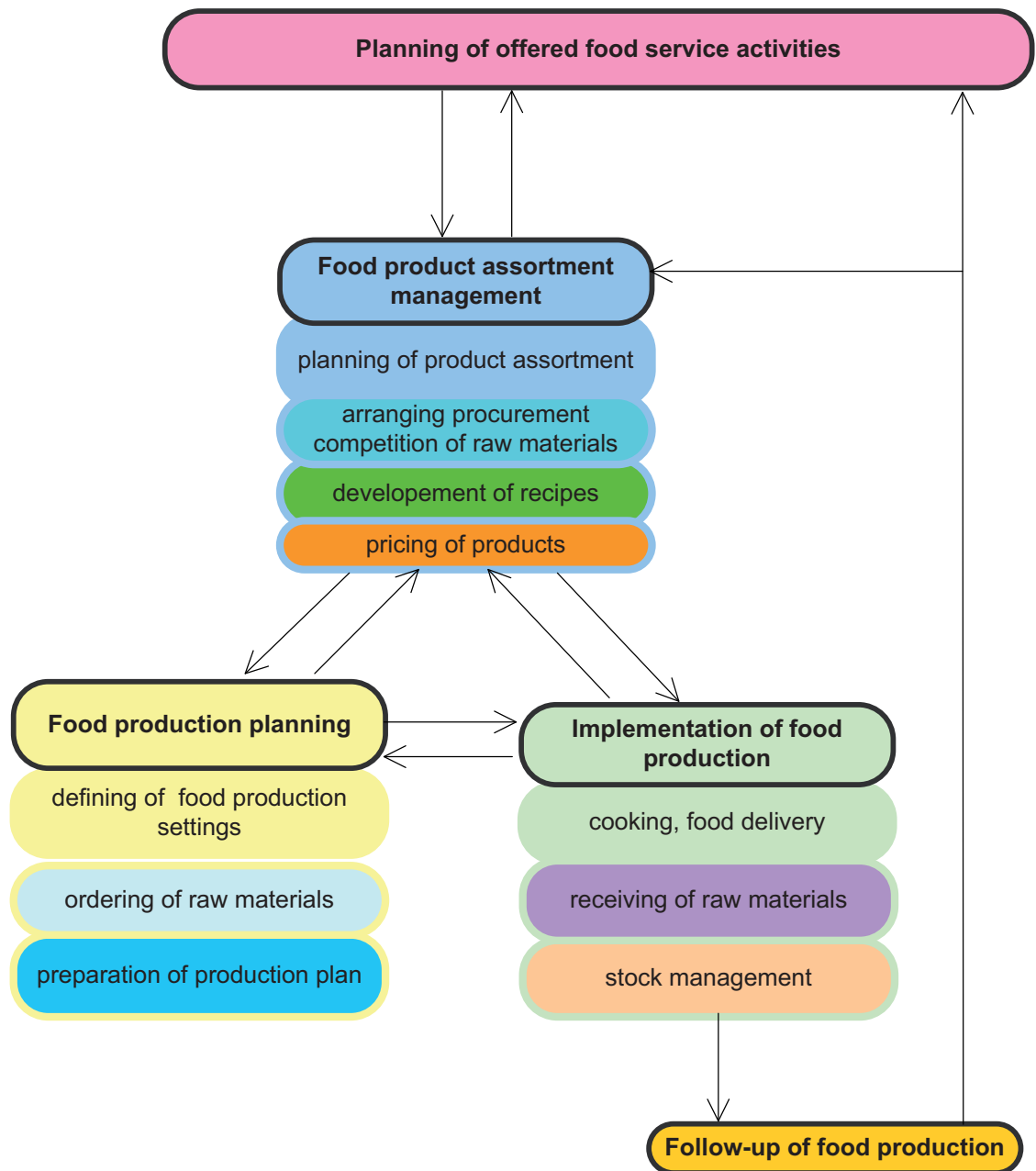


FIGURE 1. Food production processes in professional kitchens. Original model was drawn by Pertti Harju.

The raw material information, as an example of one data flow, was essentially dependent on food production planning, instruction provision, implementation, and follow-up data collected from production. The raw material data consists of items that the kitchen receives from various suppliers, for example. The kitchen combines the raw material data items into recipes. The recipe data items undergo changing specifications up until the food preparation moment. The recipes are converted into meals during the food production

implementation phase. Following this, the raw material data items constitute a portion of the follow-up data that is collected based on the meals prepared.

Iterative Character of Planning Process

The information obtained is processed and handled in an iterative manner in professional kitchens' food production processes. Some of the information flows reverted to the beginning of the process in a specified form, constituting additional information for the subsequent planning round. During food production implementation, the plans were adjusted in accordance with changing situations and more detailed information. The kitchens use an iterative approach on two levels: in long-term planning on the one hand, and almost simultaneously during food preparation, on the other hand. The kitchen personnel participate in the food production planning and implementation processes in the capacity of an information provider.

The nature of the food service industry, as a service industry, requires that the production processes are very flexible. Flexibility is needed throughout the food production process. It has to be possible to adjust the production process to fit the changes: e.g. menus have to be modified in cases of customers' feedback and the recipes have to be brought up to date.

One of the principal findings of this study was that professional kitchens' information flows are built through interaction between people and processes. Process-generated information, people's skills and competence are used to steer the subsequent process cycle, to make the processes increasingly effective in accordance with the clients' needs and requirements. The generation of information flows requires people's skills and competence, as well as their tacit knowledge to a significant degree. These skills and competencies are partly converted into a visible form with the aid of information systems. In addition, the implementation of an iterative food production process requires the use of tacit knowledge, as well as its manifestation into a visible form. Regardless of the fact that the personnel play an important role, they convey

their expertise-related knowledge face-to-face to the management, not through the IT systems. Furthermore, it is the supervisor who can decide how to apply the employees' knowledge to the process.

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Sivonen, S., & Työppönen, K. (2006). Ruokapalvelujen toimintajärjestelmä. Efeko. Helsinki, Finland.

HUMANS - HOUSEHOLD TECHNOLOGY - COMPUTER TECHNOLOGY: THE PROJECT "INTELLIGENT COOKING TECHNOLOGY"

Wolfgang Schmidberger

One area of research and teaching activities at the Institute of Facility Management is human behaviour with reference to nutrition and home economics. The interface between computer technology, household technology and human beings is a very interesting and exciting research field. Several projects have started in this field. The project 'Intelligent cooking technology' is presented here.

Intelligent cooking technology means the possibility of automating cooking processes by using software controlled kitchen appliances. Intelligent cooking technology is a complex and technically mature control system based on the intelligence of specialised experts. Its application leads to optimal process and product results, due to the latest technologies being used and all usability aspects of user-interface-design being considered.

Consumers and professionals use intelligent cooking technology to make their everyday life easier. Intelligent cooking technology supports them in creating good, healthy food through the use of computer technology. Three items of information are required: I) What do you want to cook? II) When do you want to eat? 3) What quality do you want to have?

In future, cooking appliances will have a personalised user interface. They will learn while being used.

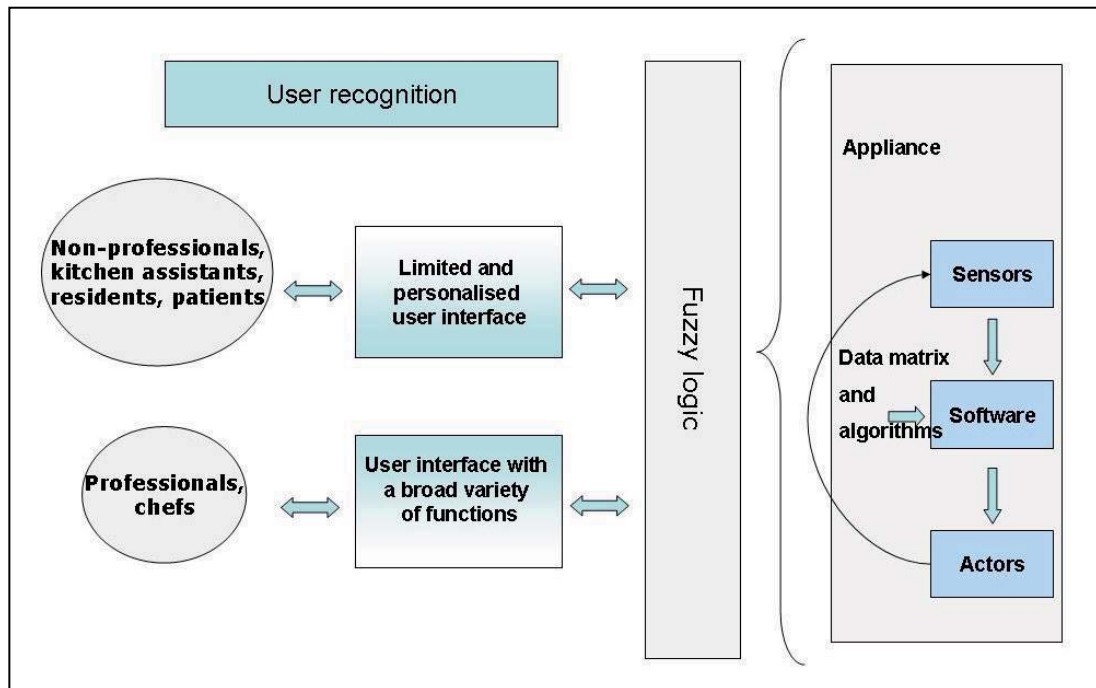


FIGURE 1. User recognition process

“NEW TECHNOLOGY AND CHANGE IN KITCHEN PROCESSES

Juha Jokinen

Since discovering fire, man has known how to cook good food. At that time there were no cooking appliances. Cooking was controlled through continuous monitoring and use of one's senses.

In modern kitchens of Today, there are not enough people or time for manual cooking and constant monitoring. Cooking, in other words, transferring heat to food is a task of the cooking appliance. Chefs don't want to produce food. They want to present it. Modern cooking appliances really free chefs to do essential work like menu planning, finding quality raw materials, recipe development and customer service. Modern kitchen appliances and cooking technology helps professional kitchens to response challenges of today and tomorrow.

It is essential for us, who supply eating experiences, to know trends and what our customers think. Obesity is a growing challenge. People want to feel good, to be in a good physical shape, and have a better sense of Well-being. Eating must be easy. The same bulk food can't be served to everybody. People want to be individuals. Certainly global warming and energy consumption savings have to be taken into consideration.

How do we offer food services that people want to buy, and how do we do it cost efficiently? Proper, modern cooking appliances are investments that can ensure level food quality, preserve better nutritional value. They consume 10-40% less energy compared to traditional appliances and can produce larger volume of food in less space and in less time. Modern cooking appliances are suitable for multiple tasks: for example: pizzas and hamburgers can be prepared with a very same appliance that steams gently our vegetables or cook the most expensive joints of meat.

Processes in kitchens have changed. New technologies ensure better process control and higher levels of quality. Clever technologies make technically challenging cooking processes very easy to use. It is possible to succeed and fulfil customer expectations cost efficiently and in an environmentally friendly way. More product can be produced automatically, using less time and space. Cooking, cleaning and caring of cooking appliances have been automated. Freedom and time for the essentials, has been given back to the professional food artists – kitchen chefs.

WHY NEW TECHNOLOGY IS A CHANCE IN KITCHEN PROCESS

Jari Korhonen

First we have to look around and try to find answer to a few questions. For example, why the public catering service has a very important role? What kind of role the municipality will have in public services in the future? What is your mission of public catering service? Do we need Sustainable Catering and environmentally sustainable kitchen facility in the future and for what reason?

It is very interesting to learn from the facility management. Studies of facility management have opened my mind. Now I can consider new kitchen process and technology by using the Three – Dimensional Model familiar from facility management. The theory of Three – Dimensional Model consists orientations of accommodation, people and process. I consider on this case only process-orientation. When we like to develop kitchen process we have to do research.

How well do you know technologies and processes of your own kitchen? Do you know how much electricity, water and energy per of meal is used in your kitchen? What are the costs? How much of refuse does your kitchen process generate? Do you know how much refuse water is produced in chilling process when you chill dessert, for example when making berry fool and milk curd? And what is your plan to change the situation?

In Juankoski Town Catering Services we know how long it takes to drive one process and what the temperatures are during the whole process. For example we know how long it takes to cook 120 kg of broiler sauce or cook and chill 80 kg of berry fool or milk curd. We are doing studies by Safe temp program and have meters for water and electricity. We have average how many cook and chill process can be driven daily. But we also have challenges; we don't know what the nutritional quality of food or single dish is in the proc-

ess and what the nutritional quality is when we have changed the processes. We need facts about what kind of environmental effects we have now and how pro-environmental our new processes will be. We need new public national studies about new technologies and changes in kitchen processes. Our public national studies in Finland are too old and the kitchen technology has been altered. We need new essential facts of different catering service technologies and what is the best way to reach the goal.

Today new kitchen technology gives many possibilities. First we have to recognize our present kitchen processes. When we know the facts of production process, we can change it. Only after recognizing our own mission it is easy to make plan on strategic level.

For example we can plan the cooking and cooling process to the direction what it should be. Then we can continue to work on tactical level and finally on operational level.

Van den Ende Marco has written "Facility management is the effective and integral management of all facilities, thus enabling organizations to continuously meet their objectives and achieve an optimum feeling of wellbeing for people in their workplace". We have to think of our processes in an innovative and new way, we can make changes in kitchen process and make use of the new technology! The new process and technology is better for employee wellbeing than the old one. Processes are effective and economic. So processes are part of accommodation orientation and people orientation. When we are open mind and team worker, we can do best kitchen process and best services.

Our main focus in catering services is to help our municipality to find better and more effective practice and lower cost in outgoing the local primary health care and the local primary social welfare.

NETWORKS OF FOOD SAFETY INFORMATION SYSTEMS IN FINLAND

Pirjo-Liisa Penttilä

Food safety information is handled with several separate information systems. The food chain information based on idea “from farm to fork” has developed during last ten years rapidly. Responsibilities of food quality and safety have changed from the official food control to business operators. Official food control is only support but the main work is done in the in-house or own check systems. Better cooperation between food chain and official control is also needed. Other remarkable change is that specially with EU cooperation, more information is needed from identified risks and the status of food safety. Changes in the food control systems have added pressures also to IT-systems. Earlier built separate information systems should be linked to networks in order to facilitate information change between different systems and to improve data collection.

Development of “Networks of Food Safety Information Systems” (ELATI) started in Finland already in 2001 with special program. New model was: working together with food chain and authorities. All new data systems are planned so that they can be linked with each others. Network is build step-wised with modules. Basic modules for registers, control systems, laboratory information system (LIMS), risk assessment support and reporting are build so that they can be used for several purposes for in-house control or official control. Modular systems can be described with “legos”. These modules have standardised surfaces and they can be combined together making different data systems for different purposes.

New ways of building IT systems has not been easy. Old systems are not flexible enough for changes. However, the main problem has been data structure and missing of standardisation in this area. Technical solutions can more easily be solved and IT companies have numerous solutions for technical

networking of systems. Standardisation of data is necessary at the international level because finally data is reported to the EU or other international levels. Cooperation with standardisation of data has started between Eurostat, EFSA and Commission. We are waiting results from international standardisation but before that we have solve problems nationally.

Building of ELATI network is divided to two main sectors. IT systems for the official food control are developed with the National Food Safety Authority (Evira). Systems for the food chain operators are developed and partly financed by the Finnish Food Quality Chain. Linking of in-house control systems with municipal official control systems is almost finished. All Finnish retail chains are using same in-house IT system. Data from this system can be delivered electrically to municipal food control systems. Inspection reports from the official control can similarly be sent to business operators. All parts of the networking have been done so that technical solutions can be used in the Future for linking other parts of the food chain to official control.

Professional kitchens are obviously the next part of food chain to be linked with official food control. A lot of work in this area has already been done. Modular building of IT-systems is effective way also on this sector. That has been seen from excellent surveys of Mikkeli University of Applied Sciences. Everything is ready for huge development in this area. But without financial support from the Finnish Government we cannot build these systems. Ministry of Agriculture and Forestry is now making reorganisation of IT- development. Quite soon we know how our work with ELATI-networking will be continued.

NORDIC ID MONITOR - ENSURING COLD CHAIN QUALITY WITH MOBILE TECHNOLOGY

Teemu Ainasoja

INTRODUCTION

Nordic ID Monitor is a holistic and automatic system for foodstuff self monitoring. It includes wireless sensors for monitoring cold and warm equipment temperatures. It is used for managing timed tasks related to food quality. And it provides uniform user interface to and reporting of all self monitoring related tasks.

This article describes backgrounds of the system development, provides an overview of the system itself and discusses some results found in the systems tests.

BACKGROUNDS

A set of new legislation has increased demands for self monitoring. At the same time development of new technologies has enables new kind of practices.

These legislative push and technology pull motivated also Nordic ID to study possibilities to help food quality monitoring with mobile technology.

Nordic ID participated into a joint research project led by Mikkeli University of Applied Sciences and independently conducted a number of customer interviews.

Legislation, recommendations and information of customer needs clarified the main requirements for the self monitoring system.

Legislation pull

European Union and member countries have introduced a bulk of legislation that has changed the approach to cold chain quality ensuring. This legislation is supported by number of standards and recommendations.

The legislation concerns the self monitoring principle, food specific quality limits and monitoring practices and tools.

EU Commission regulation No 37/2005, of 12 January 2005,

“on the monitoring of temperatures in the means of transport, warehousing and storage of quickfrozen foodstuffs intended for human consumption” is the main piece of legislation concerning food stuff temperature monitoring. Several details of the temperature monitoring equipments are defined in EU standards: EN12830, EN13485 and EN13486.

EU regulations have been complemented with national regulations. Examples of national legislation from Finland are Foodstuff law - Elintarvikelaki 13.1.2006/23 and regulation about apartments for food and food sales 28/2009.

The new legislation has also sparked a quantity of guidelines about self monitoring practices published by profit and non-profit organizations. In Finland for example several cities and The Finnish Grocery Trade Association have published recommendations for self monitoring.

Technology push

Two main developments have been utilized in the Nordic ID's self monitoring system.

New kind of wireless technology standard: 802.15.4 has been introduced. The technology enables a connection of very large number of devices in to one

system. Band width of the radio technology is narrow – only small amounts of data can be transmitted. The technology is however ideal for sensor networks – only sensor data is transmitted, but from potentially high amount of sensors.

Technology integration has gradually improved over the past decades. Integrating communications technologies, sensor technologies and identification technologies to one mobile device enables user friendly approach to self monitoring.

Market research – goals for the system

In the joint research project and customer interviews three main requirements for the successful self monitoring system were clarified.

The system should be holistic. There are several partial systems – manual and automatic – around. The whole self monitoring field is often fragmented and complicated for the users. Nordic ID's system should combine cold chain equipment monitoring with periodical temperature measurements, sensory perceptions and other periodical tasks. The system should provide one user interface to all the tasks, provide uniform reports and overview of the quality of the entire site.

The system should also be closely integrated to other systems and processes, this self monitoring doesn't remain as a separate- often an extra – task, but becomes as a natural part of retail, restaurant and kitchen work.

The system should be easy. Employees in professional kitchens, restaurants and retail stores are professionals, but not IT professionals. The system should be easy enough to these workers to install, commission and use it – without need for IT specialists.

In addition to the three main requirements several details were found out. The sensors should be machine washable, they should store data in memory when not connected to network etc.

All these requirements were implemented to the self monitoring system - Nordic ID Monitor.

NORDIC ID MONITOR

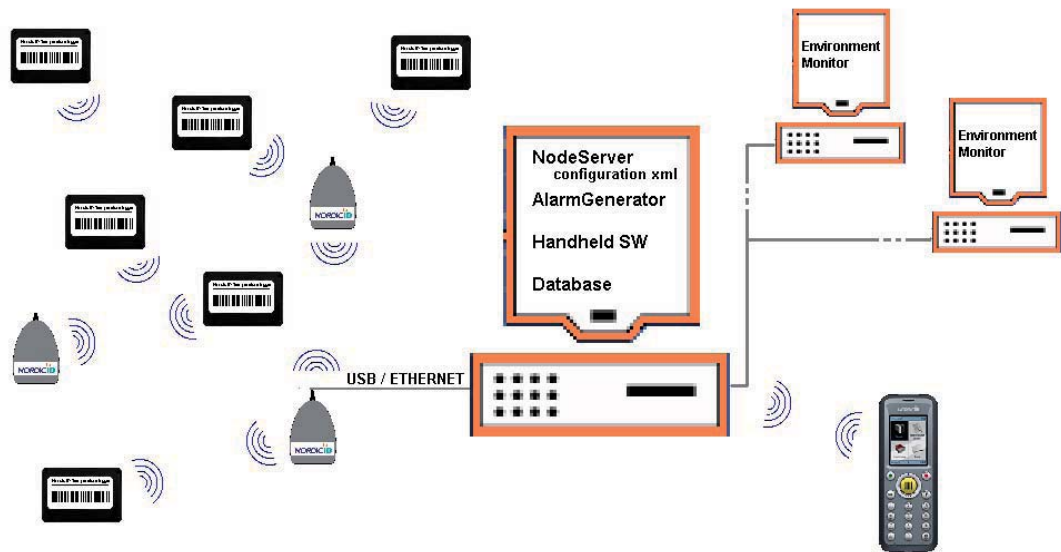
Nordic ID monitor is a system that automates most of food quality monitoring routines. It uses wireless sensors for temperature monitoring of cold and warm chain equipment – freezers, fridges etc.

It improves manageability of periodical tasks. The system notifies when it is time to check, clean or disinfect a machine or location.

Mobile device is used as a user interface, the employee does not have to leave the working location for preparing daily tasks, or for creating reports – these are generated automatically.

System overview

The system overview is shown in picture below.



PICTURE 1. Overview of Nordic ID Monitor

Wireless sensors

The System's includes wireless sensor that are placed to cold and warm equipment. If the sensors are outside the radio network they collect temperature data with time stamp into their memory, and upload the information to database when arrive to networks range.

The sensors do not require user actions, once they are activated they configure themselves automatically and alert in case of any problems.

The sensors don't need any external power or wired connections. They are completely movable.

The sensors are machine washable. If needed, they can be placed among the foodstuff, and cleaned afterwards for further use.

Radio network

In each location one radio base station must be connected to USB or Ethernet. This base station acts as a network coordinator, it forwards data from each sensor to database and forwards correct settings from the system to individual sensors.

Depending on the area of the site, and amount of sensors more base stations can be added. These additional base stations just forward information from sensors to coordinator and back. The additional base stations only need power supply to function.

Database and main software

The main software includes components for controlling the sensor network, receiving data from network, storing it into a database, checking if temperatures are within set range and generating alarms.

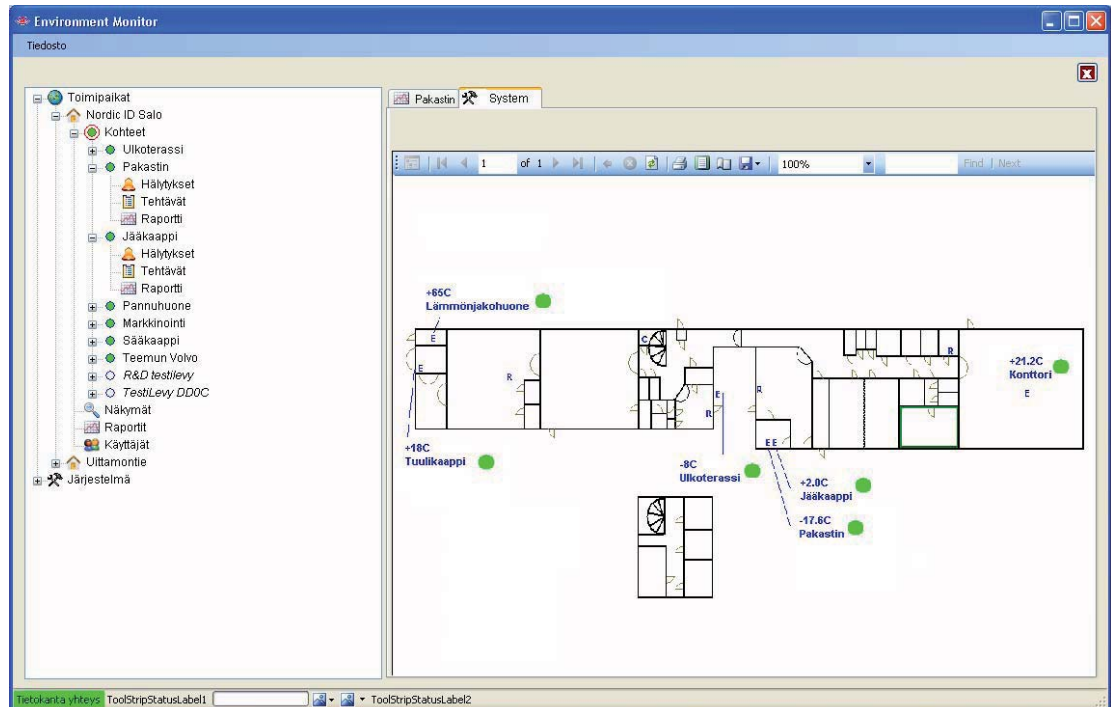
These components are in practice invisible to user, the user only sees specific parts of the application – Remote viewing application: Environment Monitor (Emo) and handheld application.

EMo – Remote viewing application

Environment application is used as a PC interface to the system. It can be used remotely and several EMo applications can connect into a system – for example locally at a site, and at the headquarters.

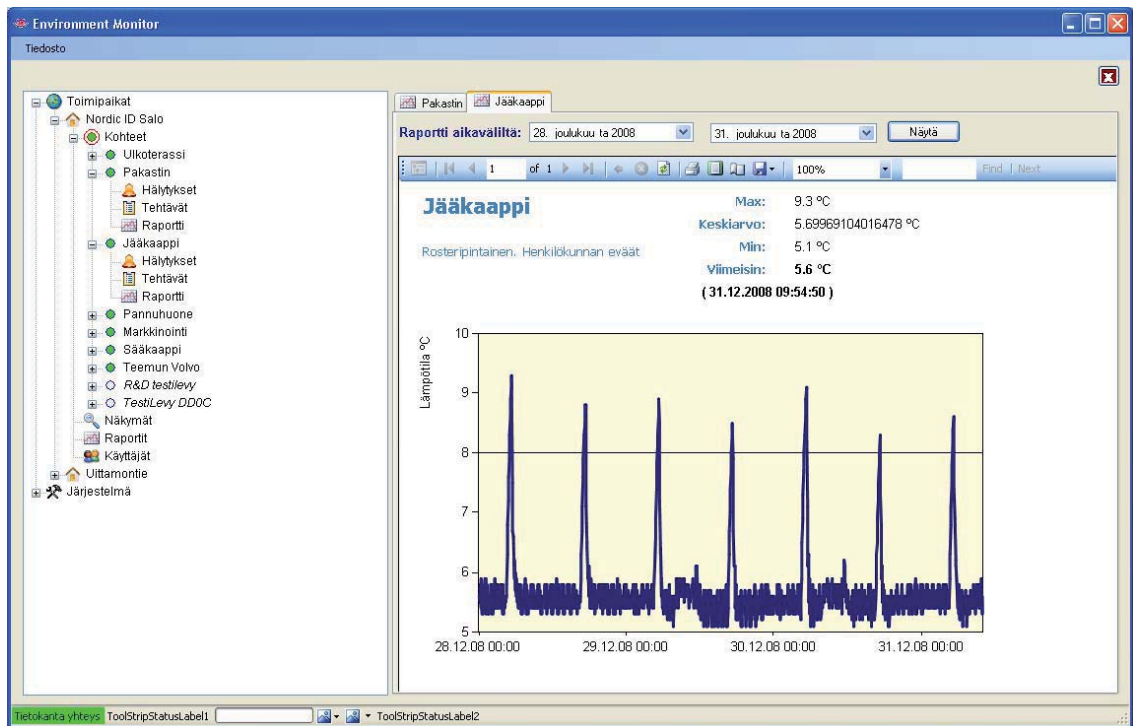
The Environment Monitor includes views for looking at the situation of entire site, graphs for looking details of individual piece of equipment as well as report views that list all notifications, tasks and user notes of an equipment or the site.

First picture show example of a view that provides status information of a site. If all the dots are green everything is in order, if there is a task that needs to be done, or a temperature is out of range, the dot turns into yellow or red.



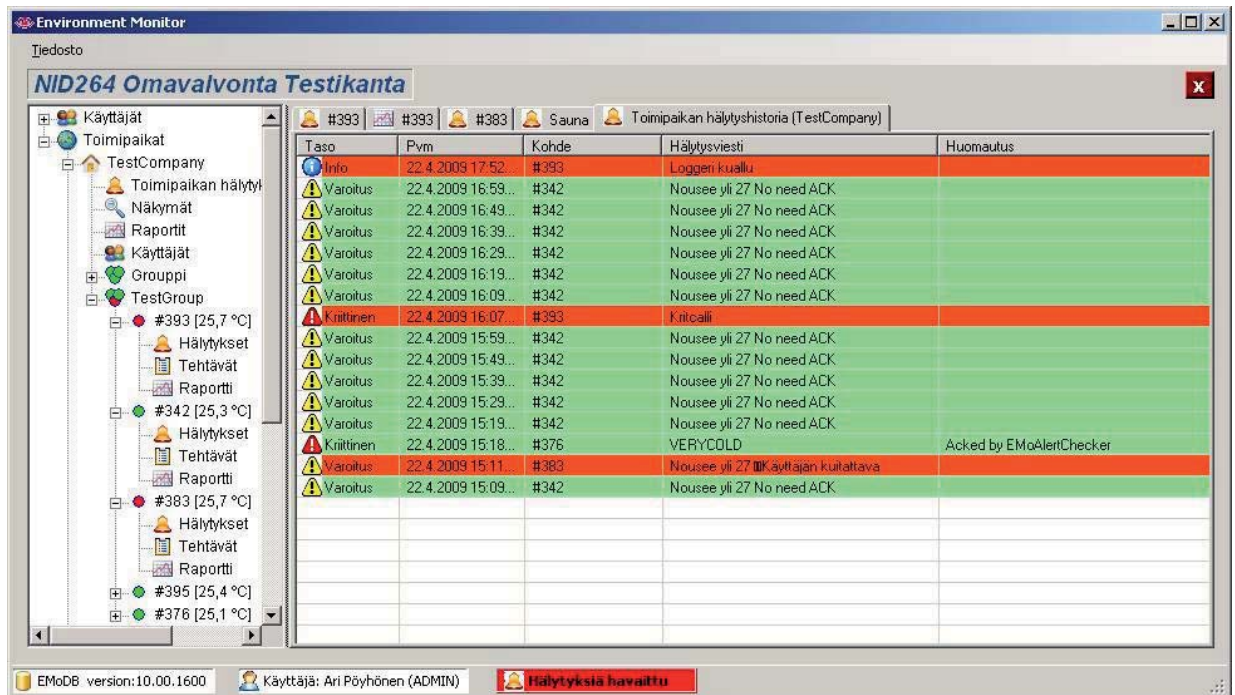
PICTURE 2. Site overview

The second picture shows example of a temperature graph of a piece of equipment. The graph can be looked from a set time frame. In the picture the spikes are result of a defrost cycle in the fridge.



PICTURE 3. Graph view

Third example is of a view that lists activities of a site. In the list there are all alarms, notifications of timed tasks and their acknowledgements. Items requiring attention are shown as red, and information only items and acknowledged items are shown as green.



PICTURE 4. Report view

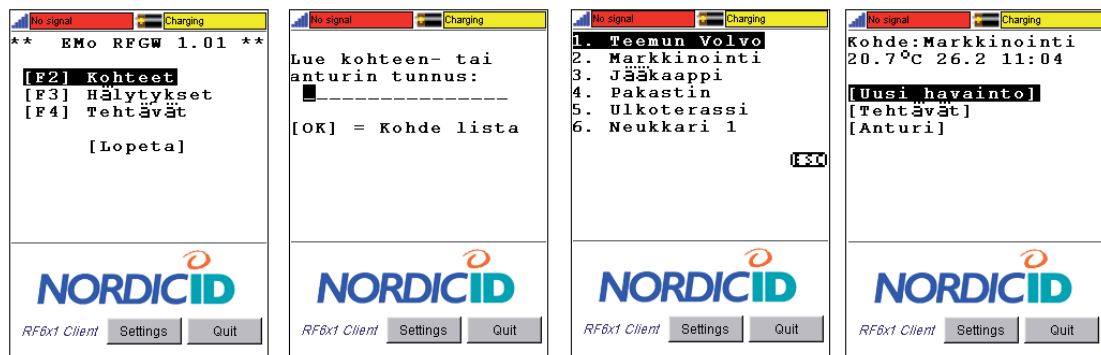
Handheld Computer and mobile application

The system can be used with any of the Nordic ID's handheld computers.

The handheld interface is used for checking current temperature of a piece of equipment. When the equipment's or the sensor's barcode is read, the handheld displays current temperature. User can also report notes, for example inform of a compressor sound and suspected upcoming failure. These reports are then shown at site's summary reports.

Handheld also notifies the user, when there is time to perform a timed task, such as clean a piece of machinery. Handheld also alarms if temperature of a piece of equipment is out of range. User's actions are reported with the handheld computer.

In pictures below are some displays of the mobile application as well as Nordic ID Morphic handheld.



PICTURE 5. Displays of mobile interface



PICTURE 6. Nordic ID Morphic handheld computer

The same handheld can also be used in other systems. Typically it is used as a barcode reader in inventory management and customer service.

Functionality

Three main functionality groups of the Nordic ID Monitor system are automatic temperature monitoring, task management and information handling.

Wireless sensors measure and transmit temperature continuously to the system from cold and warm devices. The data is analyzed and stored into a database. If exceptions are noticed in the information, a notification or an alarm is generated. There can be several alarm generation rules and alarm handling ways for each measurement. For example at first a notification is sent to handheld device, if corrective action is not taken in a set time, an e-mail is sent to site manager, if action is still not taken and SMS message or e-mail can be sent to service provider or headquarters. Entirely automatic temperature monitoring provides significant savings in working time and improves job satisfaction.

Tasks are saved to the database, for each task the interval is set. When it is time to perform the task, the system notifies the user through handheld. Handheld is used also for reporting the task, it is also possible to use barcode

acknowledgment – in the location there is a barcode, reporting the task, requires also reading the barcode.

All the information -temperature data, alarms, notes etc is stored to one database. This information can be accessed with mobile device or with PC. Reports are generated and stored automatically; no time is wasted for paperwork. If everything goes as planned, the system stays silent, if attention is needed the system provokes action.

Role of mobility

Handheld computer has a central role in the system. It is the main user interface. PC interface is mostly used in analyzing data in details in problem situations, and in setting up the system.

Idea in the mobility is to take the work from back office to the spot – to kitchen, to restaurant or to the retail shop floor.

Mobile device is the first point of contact and only interface in day-to-day activities; it is used for receiving information of tasks, checking equipment status and for reporting activities.

UNIQUE ADVANTAGES

Nordic ID Monitor provides some unique advantages. It is extremely easy to install, use and maintain. It is completely movable, it is holistic and the components are multi-usable.

Easy

The Nordic ID Monitor system's installation is easy. It is "plug and play". When software is installed, radio base stations are just powered up and sen-

sors taken to the location. There is no need for more “installing”, “setting up” etc.

The system is designed to be self maintaining. It has been made retail stores, restaurants and professional kitchens and their personnel in mind. There are no activities requiring specific IT skills.

All the user interfaces are designed together with the final users to serve their needs.

Movable

When there are changes, for example a new site or equipment replaces old one, the monitoring system can be updated with normal user actions. Sensor is moved to new location by reading it's barcode and associating with new location. The whole system can be moved and changed with normal user actions.

Holistic

Nordic ID Monitor combines different aspects of food quality ensuring. It is used for monitoring temperatures in cold and warm equipment, it is used for managing timed tasks and it forms uniform reports of entire area of food quality monitoring.

Handheld computer is a single user interface to the system, there is no need to learn different equipments, software applications and forms. All is done with one user interface.

All information is stored into one system that provides clear overview and complete reports.

Multi usable

The system components are also multi-usable. Software is installed to normal PC or server and handheld computers can be used for performing other tasks also.

The handheld has barcode reader that can be used for inventory management and customer service. Some models can also be used as communication tools such as calls and SMS messages.

Multi-usability ensures efficiency of the investment.

RESULTS

In the tests the system has been found successful and results have proven it as a good investment.

One important benefit is achieved from time savings. When temperature measuring, or recording of the temperatures, is fully automatic 3 hour working time is saved weekly in a typical restaurant. In typical location there are 20 measuring points that are manually checked twice a week. Total time for each measurement is 3 minutes (fetching equipment, measuring temperature and recording it), weekly reporting consumes 1 hour.

Another time and effort saving comes from reclamation handling. A customer has eaten a sandwich in a restaurant, later becomes sick and complains to the restaurant. Replying to the reclamation is easier, when a detailed temperature curve can be shown, instead of just twice a week measurements. Store personnel can show temperature of the sandwich stand at the said day and prove that the sandwiches were stored properly.

Continuous temperature monitoring and alarms that are sent to personnel on site, and escalated if necessary enable faster reaction. Faster reaction is shown as less lost goods. Typically one incident per three years can be prevented.

In addition savings are reached from energy efficiency: Better temperature control enables optimizing equipment temperature.

Less time used in discussions with authorities: The system provides overview and reports automatically, there is no need to maintain comprehensive paper archive.

Job satisfaction improves. Often the temperature measurement routines are considered to be additional work – something that is needed for the regulations only. Automatizing these tasks allows workers to concentrate into their main work and improves job satisfaction.

Detailed information of the temperature provides better understanding of cold chain equipment. Employees learn how temperature behaves normally and during defrost; and it is possible to study how temperatures differ in various parts of the equipment.

All together these savings add up to savings of over 7000 Euros per year per site. This corresponds to investment payback time of significantly below 1 year.

FURTHER READINGS:

SFS-EN 12830 - Kuljetettavan, varastoitavan ja jakelun tarkoitetun jäähdytetyn/pakastetun ruuan ja jäätelön lämpörekisterilaitteet. Testaukset, suorituskyky ja sopivuus

SFS-EN 13486 - Jäähdytetyn, pakastetun, syväjäädetytyn/pikajäädetytyn ruuan ja jäätelön kuljetuksessa, varastoinnissa ja jakelussa ilman ja tuotteen mittaamiseen käytettävät lämpömittarit. Jaksottainen varmistus.

SFS-EN 13485 - Jäähdytetyn, pakastetun, syväjäädetytyn/pikajäädetytyn ruuan ja jäätelön kuljetuksessa, varastoinnissa ja jakelussa ilman ja tuotteen mittaamiseen käytettävät lämpömittarit. Testaus, suoritus, sopivuus.

EU Komission asetus n:o 37/2005 Pakastettujen elintarvikkeiden lämpötilojen seurannasta kuljetuksen, välivarastoinnin ja varastoinnin aikana

Elintarvikelaki 13.1.2006/23.

KTM:n asetus elintarvikelakiin 2.helmikuuta 2006

MMM Asetus Eräiden Elintarvikehuoneistojen Elintarvikehygieniasta
28/2009

Sosiaali- ja terveysministeriön asetus eräiden elintarvikehuoneistojen elintarvikehygieniasta 9. lokakuuta 2007

Elintarvikeviraston tietopaketti omavalvonnasta (web)

Elintarvikevirasto - Lämpötilojen valvonta suurtaloudessa

Elintarvikevirasto - Lämpötilojen valvonta kaupassa

PTY - Vähittäiskaupan elintarviketurvallisuuden kehittäminen (Web)

Elintarvikevirasto: Myymälän omavalvonnan toimivuuden arviointi

FOODSERVICE AND NUTRITION SECURITY FOR OLD PEOPLE

Ylva Mattsson Sydner

In public elderly care, food and meals constitute a part of everyday work and care in both home-help service and various types of sheltered housing, i.e. institution-based care. Help with shopping, cooking, delivery of ready-prepared dishes and arranging meals are common tasks in different care settings. Besides this kind of foodwork that took part close to every care taker a more overarching administrative job has to be done – a social organization is needed for this. Providing old people who are to some extent dependent on care and help with food and meals entails helping them with an important part of their everyday lives. Receiving culturally appropriate food as well as nutritional service in relation to different levels of functional ability and disease is an important part of care. Food security is the availability of affordable, nutritious, and culturally acceptable food. The provision of food may either be an issue of health promotion, i.e. helping old people remain as healthy as possible as long as possible, or one of medical care, including special diets and extensive help with eating and drinking. Irrespective of these issues, food and meals are strongly tied to every individual's social and cultural life and identity; thus, food and meals are also a question of dignity.

I CAN SEE THE ECOLIGHT – THE GASTRONOMIC GREEN ENLIGHTENMENT

V.A. Heikkinen

(Translated by Carla-Rose Häkkinen English translation checked by Zoë Koivu)

Introduction

A green revolution is beginning to spring up in Scandinavian restaurants. Natural disasters and other extreme phenomena caused by climate change have made enlightened restaurant owners and chefs fully grasp their role as preservers or destroyers of nature. Environmentally conscious gastronomes are willing to do their part, too, in decreasing carbon dioxide emissions and thereby global warming. In addition, the EU's requirements for decreasing carbon dioxide emissions, as well as the stricter emission legislation currently being drafted, are going to force primarily industry, but also the field of services and all citizens in general, to shrink their ecological footprints.

The starting point of this essay is the challenge and hypothesis that we as experts of the restaurant industry and as enlightened gastronomes cannot escape our responsibility to save resources, to decrease emissions, and to care for the environment. In the background lies the knowledge that the ecological footprints of the Finns, Swedes, Estonians, Danes and Norwegians are among the largest in the world, which means that also Northern European consumers must reduce their carbon footprints significantly. (http://assets.panda.org/downloads/living_planet_report.pdf, 24.3.2008.) In other words, a green enlightenment must take place!

My main objective is to describe and interpret the Scandinavian and Estonian experts of culinary and restaurant culture and the gastronomes who must alter their global, ethical and gastronomic behaviour and develop their ecological wisdom (ecosophia) (on the concept of sophia, see Aristotle 2005). I shall investigate the complex role of the gastronome and their inability to make their customer and consumer behaviour greener when faced by the

world of postmodern food and experiences. Another aim of this discussion is to describe and reflect on the possibilities of the gastronome for ethically and environmentally conscious food and restaurant experiences and choices. I close the discussion by giving recommendations to the educational institutions in the industry for educating gastronomes and for creating ecological feasts, so that future professionals would learn how to construct green ecstasies for their increasingly critical customers.

I shall limit my search for environmentally conscious food and restaurant cultural wisdom to Finland, Estonia, Norway and Sweden. I shall overlook low-price mass food production and concentrate on clear-cut, simple, 'genuine' consumption styles and on experiences offered by our Northern nature. I shall not take a stance regarding the ethics of meat-eating or vegetarianism.

The main concept in the discussion is the gastronomic green enlightenment, manifested as ecological common sense (ecofronesis), as an ethical-aesthetic ecological life style, and as behaviour which is as 'pure' as possible, consisting of actions that respect the environment (on the concepts of pure economy and fronesis, see e.g. Aristotle 2005). Another important concept is ecological gourmandise, expressed in the gastronome's environmental consciousness and high-minded respect for nature, in simple habits in food and experience consumption, and above all, in practical eco-deeds such as the reduction of one's own carbon dioxide footprint. Ecological gastronomes are persons with a sense of social responsibility who are aware of the size of their ecological footprints, and who aim to minimize their own carbon dioxide emissions.

The ecological footprint measures humanity's demand on the biosphere in terms of the area of biologically productive land and sea required to provide the resources we use and to absorb our waste. The footprint of a country includes all the cropland, grazing land, forests, and fishing grounds required to produce the food, fibre, and timber it consumes, to absorb the wastes emitted in generating the energy it uses, and to provide space for its infrastructure. People consume resources and ecological services from all over the world, so

their footprint is the sum of these areas, wherever they may be on the planet (Rees & Wackernagel 1996).

The main method of gathering information for the discussion has been the document analysis of two magazines for restaurant professionals, *Aromi* (2000–2006) and *Viisi Tähteä* (2002–2007), with the added method of (ecologically) constructive writing. My information travels are not based on googling or conference-hopping, but instead on using books and the library, analysing locally produced raw materials, and on the menus and food aesthetics of local high-quality food restaurants. My environmentally-oriented writing experiences have been created by as small expenses as possible and as economical as possible, in dialogue with other gastronomes.

The complex and self-deceiving choices of the gastronome

Gastronomes are complex in their behaviour (for references on the concept of gastronomy see particularly Brillat-Savarin 1996; Guy 1985; Migliari & Azzola 1983, 223–225). In general, their customer and consumer behaviour is post-modernly chameleon-like and unprincipled. This shows in their ever-changing taste landscapes, varying taste hierarchies and hedonistic search for new food and restaurant experiences (See Taste Nagel 2006, 141–143). Regular meals are fragmented into brunches, dinner-cum-suppers and constant, 24-hour-a-day nibbling and tippling. The communal everyday culture of food, customs and table manners has disintegrated, and an element of the ordinary has entered the culture of festivities. (Heikkinen 2006a; Moulin 2002, 61–65.)

The complexity is apparent in the gastronomes' choice of foods and in the way they wield symbolic power in the realm of taste and food, which are illogical and environmentally unethical. Gastronomes may criticize the taste and the whole idea of rainbow trout farmed in the Baltic Sea, but accept, without a blink, Norwegian farmed salmon, or gravlax or smoked 'salmon' paste made of rainbow trout, served with Finnish 'Timo' potatoes, if the time, place and company are suitable and pleasant. They may wonder why mutton imported

from New Zealand replaces Finnish produce and ponder whether it is reasonable to fly lamb from such a distance, but at the same time white wine from the Marlborough area, Argentinean fillet of beef, and bottled water from Alaska do not cause a problem for a Scandinavian. Goose and duck liver are acceptable, but elk or reindeer liver are too dangerous to be consumed even in soups because of the possible high toxicity of offal. The conditions of raising poultry or slaughter animals do not evoke any interest either, but instead the taste, tenderness, cooking process and appearance of the meat.

In their search for the postmodern gastro-experience and their delirious race through extravagant menus and wine lists, many gastronomes have forgotten the true purpose of a delicious meal, as well as how to respect the act of having a meal. True gastronomic cultivation has disappeared due to the abundance of food demanded and offered nowadays, and the mixing of the low and the high in food culture (Heikkinen 2006a). At the same time, the most sublime experience possible for the gastronome, the enjoyment of Scandinavian food made of 'pure', high quality raw materials, has lost ground in restaurants and given way to pizza, kebab, pasta and steak on plates, serving lines and menus.

The use of organic products in restaurants has not increased because the raw materials, and therefore the meals, cost more for the consumer than the ones produced by the machinery of the basic foodstuffs industry. The appreciation for traditional food and restaurant culture has sunk while the requirements for excitement and entertainment have grown. Reasonable consumption, a harmonious relationship between the everyday and the festive, and moderation in eating and enjoyment are losing their standing. Some gastronomes, too, have been blinded by extravagant meals and abundant tables groaning with food, and have forgotten the art of slow eating and moderate consumption of drink.

Even climate change has not caused the postmodern Scandinavian experts of high quality food and restaurant culture to turn their marionette-like, envi-

ronmentally burdening life style into a transmodern, ecological-ethical one that includes caring for the environment and respect for nature, beauty and careful handiwork.

The Scandinavian gastronome may claim to prize and favour pure, local and fresh raw materials, grown as ecologically as possible in small production units, but in reality their choice of foodstuffs, their narrow range of fine dining restaurants, even their gastronomy, constitute a case of green wash, a self-deceiving, partly dishonest, and unsymmetrical dialogue (on the concept of unsymmetrical and dialogical monologue see Itkonen 2007). The true motive behind the gastronome's statements is social ostentation and the construction of a gastronomic image in which one can and indeed must say anything to defend local production and organic food, but which does not lead to practical measures or responsible choices.

The gourmand claims to prefer small, high quality restaurants (in other words, local kitchens) as well as fine dining restaurants, in which the chefs choose their raw materials carefully and purchase exact amounts from select, trusted suppliers. In reality, there are no gastronomes able to act according to this high ideal, but instead they seek social acceptance with such remarks and with occasional choices of certain restaurants and foods, wishing thereby to emphasize their taste for high culinary culture. No fine dining restaurant in Northern Europe can base its operations solely on local products, for the growing season is so short and the amount of produce so small that a year-round supply of locally produced food simply cannot be guaranteed. Even the chef de cuisine of a gastronomic kitchen cannot have perfect knowledge of all the production stages and possible toxic residues of the foodstuffs, but nevertheless attempts to construct, in collaboration with the headwaiters, plausible production process stories on their menus.

It is essential for all cultivated gastronomes to admit their own ecological inaptitude, even self-deceit, at the outset since most Northern European consumers do recognize environmental problems but do not perceive them as

their own fault and/or are not concerned about them and/or have not fully grasped the seriousness of environmental change. We deceive ourselves when we assume that our choices of food have no impact on biodiversity.

Introspection and the green enlightenment

Today's Scandinavian or Estonian gastronomes are unable to demonstrate the same kind of nobility towards the environment and nature as for example does Brillat-Savarin in his requirements concerning gastronomy (1996, French original *Physiologie du Goût* published in 1825). The change in gastronomic green thinking requires, first and foremost, self-education. This entails that gastronomes admit their role as resource-wasting consumers and aim to steer their behaviour towards a more ecologically transparent direction. Gastronomes supervise themselves and observe their own energy and water consumption habits. At the restaurant, their choices are not influenced by the opinions of the chef or by the other members of the dinner company.

Ecological-educational gastronomic introspection is, above all, an in-depth dialogic monologue: a contemplative and reflective look at one's own behaviour (on the dialogic monologue, see Itkonen 2007). It means that one lets go of trivialities, ecologically unsustainable experiences, and of a lifestyle based on spending. These are replaced by reverence towards basic gastronomic values and towards the hallmarks of cultivated dining as defined by Brillat-Savarin in 1825. Appreciation for history, stories, origins, handiwork and quality are ingredients of luxury today as well as 200 years ago.

The green enlightenment entails, first and foremost, the self-recognition that as a gastronome I have been unable to resist the power of the food market, because the global food and experience industry has rendered me helpless. This does not, however, have to lead automatically to the loss of one's cultivation and high-mindedness concerning food when faced by the international operational environment. Gourmands cannot influence the supply chains and the purchases of large retailers, now or in the future, but they can always try

to hunt for more information about where, how and when the food has been produced. What size are its carbon footprints? Have GMOs (genetically modified organisms) been used in the foodstuffs? Already such 'greenish' question formulations increase the environmental consciousness and responsibility of the gourmards, even if they have not given up eating red meat.

The path to green enlightenment is long and it requires an enormous change in one's life attitude. A thoroughgoing green gastronomic understanding is a learned and internalized ethical and sublimated mode of living. It is both an insight and a sum total of deeds manifested as highly select expressions of gastronomic beauty both in everyday life as well as in travelling for work and leisure. What is essential in the green enlightenment is abstinence and letting go of hyper-experiences, extremes. It is a reconstruction of the art of eating after deconstructing the burden of postmodernism.

In gastronomy, to let go of the extreme means to follow Brillat-Savarin's (1996, 164) teaching no. 74 to the fullest: "Enjoyment at the table does not involve rapture, ecstasy or any other intense emotions." It is a demonstration of Spartan self-discipline and Augustinian attitude, but within the frame of a balanced, Epicurean life in which enjoyment is replaced by moderation. The journey back into that mode of being is not long, for the traditional Scandinavian-Estonian functional cuisine actually represents green, sustainable eating – transmodern gastronomy in other words. It does not involve overblown revelling with food and wine, but instead respect for the production chain from field to table and for the fine principles of sublimity and long duration of shared meals. Let us eat what there is and enjoy what we eat!

Brillat-Savarin (ibid.) actually proceeds to claim that culinary enjoyment is about duration, not intensity. What is essential is the time consumed in cooking and eating; it is a time that feeds thought, lengthens the duration of pleasure and deepens the disciplined spatialisation of temporality. Green eating becomes a representation of a holistic time stream which sets limits to postmodern timelessness and absence of natural cycles while dynamising

transmodern durability. At best, the preparation of Karelian stew, waiting for the rye porridge cooking in the oven, nibbling a tender chicken leg or sucking the cheekbones of an oven-baked springtime burbot creates a gastronomic evolution in which time simultaneously goes on and halts.

The green-enlightened gastronome does not yield to the sublimity of art or to the romanticized environmental aesthetics used by the food industry in its brand marketing, in which nature and its gifts are concealed and turned into commercial concepts, and which generates an aesthetic of the seemingly authentic and an ethics of self-deceit (Heldke 2005, 385–394). Real ecological enlightenment actually approaches the traditional bourgeois-Christian lifestyle which emphasizes virtue, wisdom and diligence.

The eco-gastronomic and eco-rational ecstasy

Eco-gastronomy and ecological fronesis are educational, communal and social assets which create communal well-being and pleasure (on pleasure Simha 2004 and on transmodern well-being, see Heikkinen 2004, (566–569). Eco-fronesis is based primarily on a sustainable and balanced politics of the gastro-self in relation to the environment (on politics of the self, see Eerikäinen 2003 and Itkonen 2001). The transmodern gastro-self simply will not eat poorly or live in a state of ill-being. Eating well does not only mean the consumption of expensive meals and tasting of wines, but also sociality, symmetry, balance, and the use of the senses. The eco-gastro-self is not constituted by another new merging of reality and representation. Instead, nature defines the new mode of being and provides the real-life stage for the ecological gastro-enthusiast.

Gourmands renounce their selfishness and even their self-conscious taste. They give up their experience-seeking infantilism, and with a new mature attitude set out to secure what is “genuine” and tasty for future generations as well. They demonstrate their 'economy' and ecological food wisdom by trying to guide their close ones, too, in outgrowing complex mass tastes,

smells and hodgepodge foods. The gastronome follows a politically red and green culinary path by means of ecological consumption.

The new aim must be that the extravagant taste competition of gourmands and food professionals, the quasi-aesthetic comparisons of food, and the boasting about food experiences come to an end and are replaced by genuine aesthetic and ethical reflexivity in which the gastronomical indicators are for example genuineness, naturalness, functionality, enjoyability, simplicity and locality. Thus the genuine raw materials, produced as near as possible, such as high quality vegetables, picked berries, grain, fish, meat and milk products become gastronomic qualities, even ends in themselves, instead of bragging with one's cultivated taste and linguistic bravado. Skilled, artistic and environmentally conscious cooks and chefs, restaurant managers, maitre d's and sommeliers, and above all, conversational partners with gastronomically cultivated palates, become the most important culinary companions.

Ecofronesis also entails a sense of social responsibility, for example respect for the work, skills and choices of food and restaurant experts, and the discreet sharing and verbalization of one's own skills and knowledge. It does not mean a complete denial of culinary 'WOW' effects or feasts, but the moderation of them. The sublimity of the meal comes from the realization that 'less is more' when enjoyed together. The sublimity of the festive meal consists of the preparation for the meal, delving into the unique culinary oeuvres together, table conversation, atmosphere-building, and sheer enjoyment of life. No gourmand wants to eat alone and everybody needs company in which to share their culinary language. The aim of a sustainable meal should not be satiety but instead full noema, a self-projection of experience, a holistic state of fulfilment (Itkonen 2001).

For the ecological gastronome, nature functions as an important factor shaping the dialogue in aesthetic experiences, food-ideological experience and gastronomic flow (for more on the concept gastronomic flow see Csikszentmihalyi 1990; Csikszentmihalyi 1996; Csikszentmihalyi 1998; Heikkinen

2006a). Unfortunately, it is only those with sufficient buying power, and extremely green vegans, who favour the organic kitchen. The wealthy express their green values and sense of fashion by choosing eco-luxury, retro, and by picking restaurants that are highly-designed oases of well-being, whereas the vegan student of small means cannot find balanced vegetarian meals anywhere except at student restaurants or vegetarian restaurants.

The gastronomic, ecological new selfhood is created most of all in the consciousness. There must be innovative new loves for nature, and we must have time reserved for experiences in nature. Even the simple act of eating outdoors, which is an important element of tourism in Lapland, heightens the consciousness of tourists, and it is also a liberating experience. Strong ecological currents and genuine releases from the burden of the mass, spectacle and entertainment culture are taking place. An ecological-gastronomic ecstasy is being brought about, one in which the question is not whether the Australian Balnaves is the world's best Cabernet, or whether the most aromatic cardamom comes from East Usambaran farms. The traveller experiences moments of green enlightenment when having gravlax, smoked flounder, whitebait roe, veal and dill stew, leg of lamb, braised turnips, cranberry soup, traditional pies, coffee brewed in a kettle on the open fire, and cinnamon buns. Environmentally responsible tourism companies, and restaurant owners in particular, favour local farmers and gardeners and encourage their ecological operations.

The ecofronesis of the gastronomes can also be seen on their travels, on which meals must include experiments with the products of the local kitchens instead of resorting to the widely distributed Mediterranean kitchen concept, or the hamburger or pizza culture. Basic, global-concept restaurants cannot necessarily offer the same kind of socio-cultural revelations as the local bistro, tavern or inn can.

Hence, the modern, trendy, ecological exaltation springs from and is supported by local and sustainable cultural phenomena in which knowledge of glo-

bal food phenomena is replaced by knowledge of phenomena peculiar to a certain locality. The unique food experience conquers the ready formatted food experience. The local "cheap&chic" service turns into luxury and the polished five-star gastronomic construction becomes artificial. Shared experience takes the place of individual ecstasy. The gastronomic experience can also be a meditative journey or pilgrimage, for example in the form of fishing, berry picking and for some, even hunting amid rugged scenery.

The construction of eco-ecstasy requires, first of all, a haptic approach and acts of hospitality in various circumstances, be it outside by the campfire, in the forest, out in a boat, in the fells, in the archipelago, or indoors (restaurants, wilderness huts, cottages, camping sites). It is not easy to verbalise the value of discreet and detailed service, and the state of rapture created by the environment is difficult to interpret and explain. Instead, it is possible to sense the dignity of handiwork and personal service: to taste, smell, touch, hear and feel it. The ecological rapture shows precisely the versatility of reality and the reality of versatility.

In the ecological gastro-experience there is no postmodern liminality, intermediary space, no upward curve followed by a slump, but instead a meaningful and durable state of being. For example, in fine dining restaurants, on wilderness programmes organized by tourism businesses, and at lookout restaurants, the consumers restrain themselves as they notice that time and place stand still, the spirit of the place speaks to them and they are the object of good intentions. They want the whole atmosphere of the meal to linger on. There is no hurry, only the experience of flow.

Carrying out green strategies and promoting greenness

In Scandinavia and Estonia, it is the restaurant chains and the chefs of ordinary food restaurants, the concept designers and the purchasing managers who occupy the key role when the green strategies of companies are being implemented. Unfortunately they often do not have enough time to develop

the environmental programmes of their workplaces. In the near future, they will be more or less forced to include meals made of vegetarian, organic and local ingredients on their menus. Ordinary food restaurants, pizzerias, lunch restaurants and restaurants located in travelling, transport and shopping centres may also try and complement their menus by local products and improve the ecological efficiency of their kitchens.

In the higher education in the fields of tourism, catering and business, there have not yet been sufficiently hegemonic projects for constructing green curricula. The primary objective in the teaching is still to seek competitiveness and competitive advantages. Money has empowered the heroes of professional kitchen work.

In Northern European professional education in the field, and in higher professional education in particular, it would be essentially important to develop the students' ecological common sense by teaching them to question and to be conscious of current practices. Another important task would be to teach the student the art of eating and enjoyment first, and the skill of constructing gastronomic experiences after that. A culinary, restaurant-cultural education guides one in the art of aesthetic perception, and the construction of beauty and atmosphere can only follow this basic insight. An aesthetic education promotes customer-orientation and also business, as the future restaurant workers learn to appreciate cleanliness and order in the course of their studies.

For the management of companies in the tourism and catering industry, green enlightenment and ecofronesis is a part of cultivated business involving such measures as the suppression of supercapitalistic greed and the promotion and moderation of sustainable profit (Oltanski & Chiapello 1999). At best, the green enlightenment of managers is manifested in lucid strategic thought regardless of the complexity of the market, in their satisfaction with the spiritual gains of the operations, in their resistance to complacency, and in a practice of rewarding the employees who achieved the good results.

The ecological attitude of large restaurant chains in particular could help in releasing the pressures of the increasingly complex economy. Environmental crises render governments unable to guarantee the sustenance of harmony in the society. The system integration cannot be self-regulating because the outside world is too complex. Moreover, in the realm of ecology, neither the power elite nor the ordinary citizen have any prerogatives: there are only the circumstances (For more on the concept of system integration see Habermas 1994).

Whether we look at food and restaurant culture through postmodern or transmodern theories, food does not only belong in the spectacle and experience economy, but is also a form of art (Debord 2005). So far, the intellectual capital and arguments of chefs and gourmards have not, in Finland or Estonia at least, reached the level of art or cultural theoretical discussion. There is not enough dialogue about the environmental impact of our restaurant choices or about the social responsibility of professional kitchens either.

Generally speaking, the hospitality industry has not been able to influence the power structures or economic policies of societies, but instead has remained in the role of the supplier of experiences (modern bread and circuses) and as one of the distribution channels for the foodstuffs, hygiene and entertainment industries. Entrepreneurs in the field, even learned gastronomes, have been satisfied with describing income models, the toughness of the competition, the profitability and productivity of the operations, and the product worlds, without fully realizing how the restaurant industry itself functions as an employer, entertainment machinery, and a consumer of the environment.

The construction of the ecological self

Ordinary consumers are perhaps not able to calculate their carbon dioxide emissions precisely, but what they can do is lessen their own consumption of food and thus minimize their carbon footprints. On the one hand, several consumer analyses indicate that an increasing number of tourists with buying

power, particularly conference travellers, want to carry their share of social responsibility. This type of environmentally oriented tourism can be seen particularly well in a preference for spa services, an ecological-ethical lifestyle, and behaviour that is as 'pure' as possible. On the other hand, the socially critical consumer has already been questioning the consumption habits of the majority for a long time. Ordinary consumers are being pressurized by the upper classes, the upper middle class, the red-greens, even by the radical groups, which means that they will be forced to modify their lifestyles and their grounds for choosing foods and services.

Food and dining out are cultural phenomena in which it is only natural for environmentally conscious consumers to express the might of their ecological palates. It is essential to change one's own eating habits, to create new norms for living, and to gain insights through self-reflection. The challenge is to admit that fast pleasure is not worth looking for, but instead sustainable and human-size experiences. Responsibility and moderated hunger become the new objectives.

The task of the enlightened gourmand is to come out of the food cabinets and to point out the cornerstones of ethical, durable experiences to the food experts and the media still enthralled by the experience industry. They must step completely outside the society that revolves around achievement and attention, not turn lazy or begin expounding their food opinions in the media, but instead keep up the search for sensual, environmentally friendly menus, pleasant micro-climates and enjoyable culinary circumstances.

Transmodern gastronomes do not need to criticize the fast food habits of others directly, but instead should rise above them in both their actions and words. They do not succumb to the role of the severe food aesthete, who continually blames the mass culture of eating – masculine fast food or 'dude food' – for self-repetition and lack of intellectualism. They do not need to criticize the ordinary consumers for their weak self-discipline, deceitful irresponsibility, and great ecological incredibility, but should instead demonstrate

their own green authority through their actions. It would actually be naive and dissolute for a gourmand to set culinary and restaurant culture and the 'organicity' of the menus on evaluative scales, particularly as it is actually home cooking, so underappreciated in Scandinavian cuisine, which is always prepared eco-efficiently but is considered to belong in the low culinary culture. In fact, pea soup, fish soup and meat soup, burbot stew, minced meat and hamburgers á la Lindström are precisely the kind of local delicacies that are held in very high esteem by many gastronomes.

The redesigning of homemade, local and culturally historical recipes and foods is restaurant culture at its most innovative. By offering such gastronomic pearls as Zander Walewska, lavaret à la Meunière, beef stew, and various ragouts on their menus, restaurants exhibit the kind of innovation and new gastronomic awakening that give them both culinary and publicity value.

To move away from the postmodern preference for world kitchens and careless consumption of raw materials, goods and experiences and to start using local materials is a key part of the green strategy and image of a restaurant. Currently, the choice of supplies made by restaurants constitutes a big factor in the consumption of cropland, grazing land, marine areas, energy, and land area needed for buildings and infrastructure.

In the formation of ecological gourmandise, the same food philosophical elements are needed as Wechsberg describes in his *Blue Trout and Black Truffles: the Peregrinations of an Epicure* (1953). First one must be able to understand the meaning of good food. One must first learn to eat before one can learn to cook good food. One must polish one's culinary language, learn culinary terms and nourish one's gastro-self. Simultaneously one must relinquish one's non-linear eating and drinking habits and the whole postmodern, masculine fast (food) mode of being, characterized by people queuing up to the cashier, staring at the menu board above the cashier, grabbing the grilled or fried meal greedily with bare hands and stuffing themselves, greasy-

mouthed, with the fast tidbits of life. The owners of the ecological palate are able to leave behind the competitive attitude and turn their meals into sociocultural situations of the homo ludens, in which food itself is not the most important factor.

The gastronome's search for the 'pure' palate is a part of a search for a pure consciousness. Abstinence and self-discipline require self-control, so that one does not succumb to self-deception. One must be able to put matters in proportion and liberate oneself from the inhibitions caused by high ideals. Overly ambitious aesthetical-ethical objectives may have a blinding effect; they may hem in or shrivel up features of one's essential nature, in which case gastronomy turns into theatre – and that is not what pure gastronomy is about. What ecological fronesis, gastrosophia, and ecological gourmandise are actually about is love towards oneself and one's actions, and towards one's sisters and brothers; it is a way of understanding one's real being.

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KEYNOTE SPEAKERS



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Teemu Ainasoja has master degrees in industrial engineering and in marketing. Currently Mr. Ainasoja works as a director of Nordic ID Solution Center. Nordic ID is a manufacturer of mobile computers for professional use. With his team Teemu develops new kind of mobile solutions, especially for retail companies. One of the solutions is a system for monitoring and controlling food quality in cold chain - from manufacturing to retail and restaurants.



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PhD, Home Economic Teacher, Chef Heikkinen has experience of 27 years in the tourism, hospitality and food industry, education, consulting and executive training services to industry, professional associations and academic institutions in tourism sector. In his consulting activities Heikkinen has worked in more than 20 countries.



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Juha Jokinen, M. Sc. (food economics and marketing) works as a product manager in Metos Ltd. He is specialized in innovative thermal kitchen equipment and has spent the last 13 years advising professional kitchens, in more than 10 countries. With daily international contacts his perspectives encompass a wide and well rounded view. As a member of the Research & Development team his job is to be the "customer's voice".

Behind good food is not only good chefs and good raw materials, but also right technology and logistics. Our target is to raise the performance of professional kitchen and make production cost efficient, safe and easy, day after day. Experience has shown, that both skill and determination are needed to achieve the high standards of the world's demanding kitchens. Bringing the right combination of people and technology together, makes for a successful and competitive future.



Pirjo-Liisa Penttilä

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Penttilä has long experience of food control and risk assessment, especially exposure assessment. Problems she met with information exchange and missing of IT- network in the field of food safety have influenced to her present work as IT- coordinator. Responsibility of food safety is based on solid in-house control and supported with official food control. New demands of traceability and risk based food control, all these need closer cooperation between stakeholders and authorities. IT- development cannot anymore done alone by IT-experts. Food safety experts and other end-users of data are needed for IT-development as early as possible. Networking of datasystems are needed in Finland and at international level. Penttilä has given her expert contribution to this network process



Svetlana Rogers

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Dr Svetlana Rodgers (nee Rybka) is a Professor of Food, Hospitality and Culinary Arts at the School of Service Management University of Brighton (U.K.). She developed a Bachelor of Applied Science (Food Service Operations) degree, first of its kind in Australia, and a number of subjects on food service systems for hospitality management programs at the University of Western Sydney.

From Australia Rodgers moved to the Hilton College of Hotel and Restaurant Management (U.S.) and further on to University of Brighton. In the past, she held a number of executive positions in hospitality industry including an administrator of restaurants on a board of a cruise ship with the Black Sea Shipping Company (Ukraine) and adviser to health services on food safety and quality issues with the New South Wales Health Department (Sydney, Australia).

Professor Svetlana Rodgers is a leading authority in: Product development, Functional meal design, Food production system selection and implementation, Equipment design and evaluation, Analytical tests of raw materials, Food safety and HACCP courses.



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Ylva Mattsson Sydner, Associate Professor in food, nutrition and dietetics is a senior lecture and director of studies at the Department of Food, Nutrition and Dietetics, Uppsala University, Sweden. Her research focus on food habits and especially vulnerable groups like old people, disable people and people in need of different kinds of diets. Her research on foodservice in the public sector has especially attracted attention. As part of the Scandinavian welfare state it is an important area that is taken for granted, but is in constant change and much associated with norms which was shown in her dissertation on meals in the elderly care. Different kinds of methodology have been used, but foremost qualitative methods.



Wolfgang Schmidberger

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Schmidberger is working as lecturer and researcher at Zurich University of Applied Sciences and preparing his doctoral thesis. Earlier he has worked as trainee for food technology companies Rational, Frima and Nardi Elettrodomestici.

Research interests of Schmidberger are Interface between household technology, computer technology and human being, concerning intelligent cooking programs and analysis of kitchen processes. In projects he has developed an interactive webbased exercise tool for the subject household technology and E-learning courses in subjects material science, nutrition science and household technology

CASE PRESENTERS

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Jari is member of leader team the Promotion Programme for Finnish Food Culture, member board of governors of the Health and Economy association and Chairman of The health care association of dietitians. He has worked in specialist on numbers of cases, Senior advisor of the Promotion Programme Local Food for Kitchen in public catering on 2008, Specialist in benchmarking project on catering services in the University Hospital of Kuopio. In the past he has working Food service manager in the University Hospital of Kuopio. Jari is also teacher and he has teaching in two degree programmes: catering and restaurant services and Bachelor of Hospitality Management in the degrees of catering and restaurant services, upper secondary degree in Kuopio and Joensuu. He has been on production manager in catering services in Finnish Defence Force, Finnish Air Force in Rissala.

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Teacher of Food production

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Teija Taskinen, M. of Hospitality Mangement, has been working as project manager and teacher in MUAS for several years. Publications based of her studies are: Acquiring and Using of IT, Production Processes in Food Services, Professional Kitchens in Finland in 2015, Food Production Processes of Professional Kitchens, and the latest: Use of IT based In-house Control Systems in Professional Kitchens.

In the past, Teija Taskinen has worked as Manager of food services in the local evangelical lutheran parish.

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