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ABSTRACT

Apart from the eHealth area further use areas and new uses of food composition data can be identified, especially according to some requirements of the European Commission. More consumer information related to nutrition and health can be reached in the fields of tourism, entertainment, nutrition education and through information platforms for specific target groups.
# INTRODUCTION

# NEW USERS AND NEW USES OF FOOD COMPOSITION DATABASES

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1 Introduction

As described in the previous report (D1.8.9), the aim of Task Group 4 on Data Interfaces of EuroFIR’s Work Package 1.8 is to demonstrate how food composition databases (FCDB) could be used in the future and who will be their users. Specifically, the previous report focused on existing innovative tools within the eHealth area which already include food information or in which food information might be included. This report concentrates on new FCDB uses and users.

Apart from the eHealth area and the technologies already developed for several kinds of implementations, where food information can be part of, further users and new uses of food composition data can also be identified. The world of travel including the travellers themselves, airlines, employers, navigation systems, and travel guides could be a promising area. In addition, some attention can be drawn to dishes being consumed in the cafeterias of larger companies or universities. Although the Internet is the third most important information source (1) following TV and radio, it provides so much information that a search can often be really time consuming. The use of portals offering selected information for special areas and target groups have become a popular tool and information source, saving time and therefore providing information in a more efficient way. EuroFIR’s eSearch facility will be such a portal and it is likely to become a leading food information source. Furthermore, contents provided in a playful way are usually learnt more efficiently; therefore, tools like video games and educational software as well as other activities in the field of nutrition education can also be identified as a potential data medium to get food information across.

2 New users and new uses of food composition databases

The second EuroFIR Synthesis Report identified different users and uses of food composition databases like clinical practice, epidemiological research, public health and education, the food industry and many others (2). Improving public knowledge on the relationship between diet and health (i.e. of diets that lower the risk of chronic diseases) or between energy intake and output is a prerequisite for the success of any nutrition policy, whether at international, national or community level. Consistent, coherent, simple and clear messages need to be developed and disseminated through multiple channels and in forms appropriate to local culture, age and gender. Considering this
need of dissemination described in a report of the European Commission in 2005 (3) and the fact that nutrition is part of everyone’s life, almost all people can be identified as potential users of food composition data. However, splitting the users in different target groups as described in the following sections shows that different communication channels / approaches (Figure 1) are likely required in order to deliver food information in a way that complies best with their needs and interests. The box at the beginning of each of the following chapters shows for which target group the activity is aimed at.

![Figure 1. Several approaches to communicate food information to the different target groups](image)

2.1 Food information "On the go"

**Target group:** Travellers/tourists in general, frequent travellers and travellers suffering from diet-related diseases

According to the European Commission the tourism sector in Europe consists of 20 % business tourism and 80 % leisure/recreation tourism (4). The World Tourism Organization (UNWTO) defines tourists as people who travel to and stay in places outside their usual environment for not more than one consecutive year for leisure, business and other purposes not related to the exercise of an activity remunerated from within the place visited (5). According to the UNWTO, in 2006 there were more than 842 million international tourist arrivals worldwide. International arrivals in Europe rose from
25.3 million in 1950 to about 414 million in 2003 and are forecasted to reach 717 million in 2020, which means they will have nearly doubled in two decades (2000–2020) (4). When looking for fields, where food information can become part of, the world of travel seems to be promising not only because of the given figures, but also because it unites the person, business, leisure, pleasure, nutrition and health. Food information including food composition, origin and history of food as well as health aspects related to foods can be offered to travellers/tourists almost everywhere.

However, travel could become a challenge for people who suffer from diet-related diseases. Using high quality food information linked through an appropriate technology to different existing services could present a good solution for improving the quality of life of this group of travellers. For example, by linking transport information such as train / airplane schedules or airplane e-ticket issuing with food information of the destination country, the travellers could be easily helped to inform themselves about any food-related information relevant to them. From information about ingredients usually contained in a recipe, to be able to avoid foods containing ingredients/substances one does not tolerate such as gluten or milk protein, to the identification of food items containing ingredients or components favourable for specific situations such as folic acid for pregnant women, any possible food information could be delivered.

2.1.1 Airlines and airports
The link to provide passengers with food information including food composition data could be placed in a special area of the airline’s website. On the basis of the website of LUFTHANSA, it could be placed under the category “travel preparation”.

Passengers could be informed about the possibility of getting this information via e-mail when receiving their booking confirmation. Furthermore, a video could be shown during the flights (Figure 2) indicating the information described above for the destination country or providing nutrition facts about the menus served on board. Special features could be offered to frequent travellers, who usually have a privileged status and are entitled to obtaining more service.

2.1.2 Trains, train stations and public transport
Other examples where many travellers circulate every day are train stations, trains (Figure 3) or other means of public transportation. Flat screens (Figure 4) are used more and more in these means of transportation and in the stations so that people can inform themselves about travel details and many other issues. Food or recipes information could be well placed here, in particular during the later morning or later after-
2.1.3 Personal navigation assistant with electronic travel guide

From the standard navigation to individual travel guide navigation!

Navigation systems provide already plenty of information like addresses of hospitals, hotels and restaurants as well as up-to-date suggestions to arrange a trip according to one’s individual needs. A further nice feature would be created combining a restaurant’s address, its most common recipes (provided by the restaurant) and food information. A Personal Navigation Assistant (PNA) (Figure 5) also known as Personal Navigation Device (PND) is a portable electronic product, which combines a positioning capability (such as GPS) and navigation functions (6).

With the new navigation equipment of the Falk m-series "Marco Polo edition", for example, one owns not only a navigation device and a travel guide (travellers find up to 1 million points of interest) for hundreds of cities and regions of Europe informing about restaurants and sightseeing), but this navigation device is also useful offering a curren-
Cy calculator and translation software for the vacation or business travel (7). Picture viewer, video player, MP3 player and games are also available.

2.1.4 Big hotel chains
Videos to be shown on the TV in the rooms could offer food composition data as well as origin, history and health aspects about the traditional foods in the visited country. When hotels offer the possibility, for example during the on-line booking of the hotel, travellers could inform the hotel in advance about any diet-related wishes and the hotel could prepare the customized information and dishes for this guest.

2.1.5 Travel related websites
Travel related websites offer likewise a good platform where food information related to specific countries could be made available. GOOGLE MAPS (8) and all other kinds of websites offering route planners as well as travel planners like EXPEDIA (9) (Figure 6) and official tourism information portals are all good possibilities to achieve the aim to disseminate food information as wide as possible. In the case of the German tourism portal (10) (Figure 7), the category “culinary” is already available.

Figure 6. Expedia UK

Figure 7. Germany Tourism
2.1.6 Travel guides
Food information could also be offered in printed travel guides. Often the travel guides have a mini dictionary for the destination as an annex. Recipes or most important single food items could be placed here in the form of a small food composition table with data for traditional foods.

2.1.7 Employers and companies
The companies themselves could be the first to offer information about food composition in foreign countries for their employees, when they are leaving for business trips. The food information could be downloaded from the company's website/intranet and uploaded onto the employee’s mobile phone, MP3-player, navigation device or notebook.

2.2 It’s lunchtime
2.2.1 Companies and universities and their cafeterias

Target group: Students, employees of universities and companies

Cafeterias of universities nowadays provide their menu plans not only in the cafeteria itself, but also on the university’s website from where it can be requested from the mobile phone or even as a RSS feed like in the example of the University of Cologne in Germany. The ETH in Zurich goes farther and provides information all around nutrition at the university’s website (Figure 8) in addition to the information about the menus served in the various cafeterias on campus. Another upcoming information path in cafeterias are screens placed close to the point of serving (Figure 9). All this information could be complemented with food composition data, origin and history of food as well as with health aspects.

Figure 8. Nutrition and Health, Website ETHZ Zurich

Figure 9. Cafeteria in the Ruhr University of Bochum, Germany
2.3 Innovation within mobile phones and online platforms

2.3.1 Google Cell Phone & Android

**Target group:** All age groups

Google is about to create the first standard platform for mobile phones with Android (11). The Open Handset Alliance, a group of more than 30 technology and mobile companies, is now developing the first complete, open, and free mobile platform Android allows one to access core mobile device functionality through standard application programming interface calls and combines information from the web with data on the phone (Figure 10) such as contacts or geographic location to create new user experiences. Internet and mobile phone are united in one. All functionalities, which one uses in the Web, are available also on the mobile phone: social networks, television, e-mail, "wi-fi" etc (Figure 11).

However, manufacturers will still be able to use their own design. The integration of any adjustments in Android should not represent a problem, since the operating system is open for modifications. So each company can hang on to the standards of Android and intersperse its own Look & Feel.

2.3.2 Google Health

Google Health is an online documentation platform, which enables US consumers to store and administer medical diagnoses, laboratory values and other health information. Among other things, users can register used medicines, existing allergies and their health stories. Having stored data at the platform, users can ask physicians for advice or allow pharmaceutical enterprises to take a look at their data. The enterprises can then send new tablets if the packing is nearly empty and provide users with background information about medicines and diseases. The users’ health information can also be sent to pharmacies, hospitals and laboratories. All this service is free of charge for users, and they also determine, who may see their data (12,13).
2.3.3 **Microsoft HealthVault**

**Target group:** Elderly people, adults

Microsoft HealthVault is designed very similar to Google Health. The aim is to put people in control of their health information (14). A free HealthVault account helps them to collect, store and share information with family members, and gives the user a choice of applications and devices to help manage their fitness, diet and health (Figure 12).

Both platforms are still only available in the USA. Considering the fact that health platforms are predestined to be linked to food information, it remains to be seen whether and when this service will also be offered in Europe.

2.4 **Compact Information**

The Internet is the third most important information source (1) following TV and radio. However it provides so much information that search is likely to be time consuming. The use of portals and RSS Feeds, which offer selected information for specialist areas and target groups, have become a popular information source saving time and therefore providing information in a more efficient way.

2.4.1 **The Portal DOCCHECK**

**Target group:** Health professionals, students and people interested in health issues

DOCCHECK is a single sign-on service for medical professionals on the Internet. The free DOCCHECK password grants access to doctors-only (resp. medical professionals') areas of many medical websites. With more than 530,000 registered users DOCCHECK is the portal (Figure 13) for medical professionals in Europe with the highest number of members (15). Special services are offered to users and pharmaceutical companies...
like the international newsletter, the e-mail information service DOCCHECK MAIL and online market research. DOCCHECK Pro is a new service subscription, which provides entrance to premium services and high-quality medicine contents.

2.4.2 RSS Feeds

RSS (Really Simple Syndication) is a family of web feed formats used to publish frequently updated content such as blog entries and news headlines in a standardized format. An RSS document (which is called a "feed") contains either a summary of content from an associated web site or the full text. RSS makes it possible for people to keep up with web sites in an automated manner that can be piped into special programs or filtered displays. The benefit of RSS is the aggregation of content from multiple web sources in one place. This content can be read using software called "RSS reader" or an "aggregator", which can be web-based or desktop-based. A standardized XML file format allows the information to be published once and viewed by many different programs. The user subscribes to a feed by entering the feed's link into the reader or by clicking an RSS icon (Figure 14) in a browser that initiates the subscription process. The RSS reader checks the user's subscribed feeds regularly for new content, downloading any updates that it finds and provides a user interface to monitor and read the feeds (16).

Websites containing food information could offer RSS and enable people to be constantly informed about news in the field of food composition.

2.5 Nutrition Education and Entertainment

**Target group:** Children, teachers and professionals acting in the field of nutrition education

Food information is already partially integrated in the educational area; however, there is further potential of application. Food composition tables and databases are an important educational resource at all levels of education and help in the development of an understanding of the role of foods in the provisioning of nutrients (2). Within primary
and secondary education, food composition data are used to prepare educational materials such as software packages and specialist texts. They are also used in the teaching of subjects such as food technology and home economics. Within undergraduate and postgraduate education, food composition databases and tables are used in the teaching of courses in a range of nutrition-related subjects, including nutrition and dietetics, public health nutrition, and food science and technology courses.

Special attention might be drawn to this kind of use of food composition data considering some reports at European level. In November 2006 the WHO European Ministerial Conference in Istanbul concluded the European Charter on Counteracting Obesity for the European WHO region (17). Previously, in December 2005, a broad consultation process began, when the European Commission published the Green Paper - “Promoting healthy diets and physical activity: a European dimension for the prevention of overweight, obesity and chronic diseases” (3). In the spring 2007 the European Commission submitted the “White Paper” On A Strategy for Europe on Nutrition, Overweight and Obesity Related Health Issues, a publication with concrete proposals for activities of the European Union in the fields of nutrition, physical activity and health (18). A common denominator of these publications is the call for dissemination and development of new activities in the fields of nutrition, physical activities and health.

Considering the possible communication channels in the field of nutrition education for children, also video games, their popularity and potential as educational tool should be mentioned. They are certainly able to support the efforts in the three areas (nutrition, physical activity and health) identified by the European Commission and to communicate knowledge in these fields. Many software publishers now combine entertainment with education in order to capture a child’s attention. Simple games and engaging characters help kids enjoy learning and maintain interest in educational activities. Children’s software can be divided into three broad categories: titles that entertain, titles that educate, and titles that both educate and entertain (19). However, a primary search going through the available games showed that food information is still not part of them.

2.5.1 Games for children

FoodMan

The idea of combining food composition data and nutrition education for children was used already many years ago. The game FOODMAN was developed for the Danish Cancer Society in 1986 and released in 1987. The PC version (Figure 15) was
launched some years later. It is intended for the use in the field of children education and a manual for teachers is available in Danish. The nutrient content of 120 foods including information about energy, fat, carbohydrate, sugar, dietary fibre, alcohol, vitamin A, vitamin C and serving size originates from the Danish food composition database. For this reason some researchers from the Danish Institute for Food and Veterinary Research were involved in the game development. The game play is basically that the player is a customer in a supermarket who will get energy buying foods and by this be able to get to the next level and to move around. Energy intake and activity are monitored and the player will only gain points if he is nutritionally within certain limits. He meets annoying customers in the supermarket, greasy spots, where he can bump into unhealthy foods and questions on food and activity. It still finds use in schools nowadays, but it was most popular until the end of the 90es. The installation for the game can be found in the Internet (20).

![FoodMan Video Game for PC](image)

Figure 15. FoodMan Video Game for PC
“To be great...you must be fearless!”

Those words, uttered by the late (and fictional) chef Auguste Gusteau, inspire a rat named Remy to follow his passion for cooking in Pixar’s latest movie “Ratatouille” (21). That idea also pushes one to greatness as one fearlessly guides Remy through six perilous, action-packed 3D worlds and more than 30 challenging missions and mini-games (Figures 16, 17, 18). A game, where the scene set is the kitchen, is predestined to be implemented with food information and win a new character entertaining and educating children.

Contents for a new game

A video game for children to fit best some requirements from the WHO and EC papers mentioned above and also to have a touch of internationality could have the following scenario:

- The focus of this kind of game should be to transmit knowledge about food information in a playful way and to teach children about the importance of this issue and the relationships to their health and everyday’s life.

- A clear application of nutrient data and a learning effect might be reached. While playing the game the child can learn step by step which food items contain which nutrients and how they affect human health (on a simple level).

- Through the availability of a cast of international characters and scenarios representing different countries in the game, the child can every time choose “where to play” (in which scenario), having the opportunity to learn a lot about

Figure 16. Dream World. Help Remy make his way through this dreamscape while collecting stars.

Figure 17. Ratatouille – The Video Game. From APPLE

Figure 18. A Little of This, a Little of That. This mini-game tests your reflexes as you help Remy make soup.
nutrition habits abroad. Thereby, the game can be used easily in several European countries.

In a virtual supermarket the player will learn for example to buy food with low sugar content or with high vitamin content as well as to compare food items with similar energy content with the help of the purchase lists. Back “at home” the player can put the menus together, learning to combine food items in a wise way. *Children learn and appreciate the proper handling of foods, their purchase, selection and preparation and the value of joint meals in their everyday life.*

Physical activity is implemented showing the benefits of sufficient exercise and their importance for good health.

Food Information is integrated in the situations of children’s everyday lives, which also represent pleasure for them (e.g. in virtual restaurants, which belong to the scenarios).

- The state of health and the fitness of the characters depend on the decisions of the child. If the child selects the correct food for the characters, the characters are healthy and mobile, obtain good results at school, at sports etc.
- The game as an educational tool could also be installed on computers in schools involving the participation of the teachers and making it possible to reach children from different social classes.

*Information from the software to the MP3-Player*

**Target group:** Adults, young people and children

Some classes of software for children include reference titles, such as World Book Encyclopaedia (The Software MACKIEV Company) (Figure 18) that are aimed at young students. In addition to informative articles, these titles often include photos, sounds, and short movies to help children gain a better understanding of the subject (22). The advantage of this kind of software, whose model can be useful also in handling food information, is the ability to transfer with one click a me-
dia library to an iPod (Figure 19) or iPhone. Software and/or games for children in the field of nutrition education could be developed with such ability as well.

2.5.2 Audio Books

**Target group:** All age groups

Listening is “in”!

Audio books are entertaining and offer an alternative to plenty of books and digital technology. New books, which are predestined to become best sellers, are nowadays published together with the corresponding audio books at the same time. The category *education*, which is also represented, shows that audio books are not only enjoyable, but also informative. The information can be taken up in the car, at home or on the way (e.g. on the MP3-Player). A concept for audio books in the field of nutrition education including food information could be developed.

2.5.3 Other activities

**Target group:** Professionals of cuisine, teachers, people interested in food. All age groups

*“The Week of Taste” in France and in Switzerland*

Lesson of Taste: the recipe to be followed!

The aim of the event “The Week of Taste” (original: *La semaine du Gout*) is to communicate taste in a playful and interesting manner improving dietary habits and providing food information in a transparent and pedagogical way.

Professionals of cuisine and teachers know better than anybody that the taste must be educated and cultivated. Thus, they are the predestined ones to transmit the gastronomic values to the little gourmets, who always enjoy discovering the fascinating universe of savours (23,24) (Figure 20). Schools, small food producing companies, restaurants and also farmers are the participants. The week is composed of single events, where children learn about food and new food items, their taste, smell and colours. Furthermore, small food producing companies can be visited where traditional production methods are shown in comparison to industrial production methods and the produced foods can be tasted at the end of the visit.
3 Concluding remarks

The different areas presented in this report delineates that food information might be integrated in many areas of everyday's life of different users and that this is very likely to find acceptance by the different target groups. The world of travel and the nutrition education with special focus on the children are certainly areas with large potential, where new projects could be started in the near future. Offering sustainability through high quality data, data accuracy and up-to-date food information will contribute to guarantee the user's acceptance of and loyalty to the products and activities described above.

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