

Progress Report – FoodSMART - H2020 MSCA RISE [643999 FoodSMART]

1. General Progress of the action

1.1 Please indicate the progress of the action during the period covered by this report:

- The action has fully achieved its objectives for the period.
- The action has achieved most of its objectives for the period with relatively minor deviations.
- The action has achieved some of its objectives but corrective action is required.
- The action has failed to achieve critical objectives and/or is severely delayed.

1.2 Please describe the general scientific progress of the action during the period covered by this report (including by giving qualitative indicators and by describing deliverables and milestones achieved):

Work Package 3 – Cloud computing; development of semantic technology, Big-Data analysis and data mining; providing an open source tool and predictive capacity for Industry:

The objective of WP3 was to identify the key information that can be provided by operators and the challenges it entails. It was also to develop a system for storage and management of that data that syncs both industry and consumer. The purpose of the system will be twofold:

1. Centralised storage of industry data; Industry data will be either stored directly in the system or temporarily cached to accelerate incoming requests. The system will allow a smartphone/tablet interface to request data in a uniform manner from a single storage point instead of potentially having to connect and interact with several diverse remote services.
2. Storage of user data; To provide users with personalized information it is necessary to store data and link them to the user. This information could be demographical data but also user preferences as well as records of consumption episodes etc. A database has been designed that will allow within the functionality the ability to offer personalised food recommendation, with feedback to the operator allowing for predictive capacity. Innovation is evident in the technical sophistication required that will enable both the industry database and personal database to communicate with each other. This is **Deliverable 3**.

A video demonstrating the device has been uploaded onto FoodSMART social media YouTube channel, the link is provided;

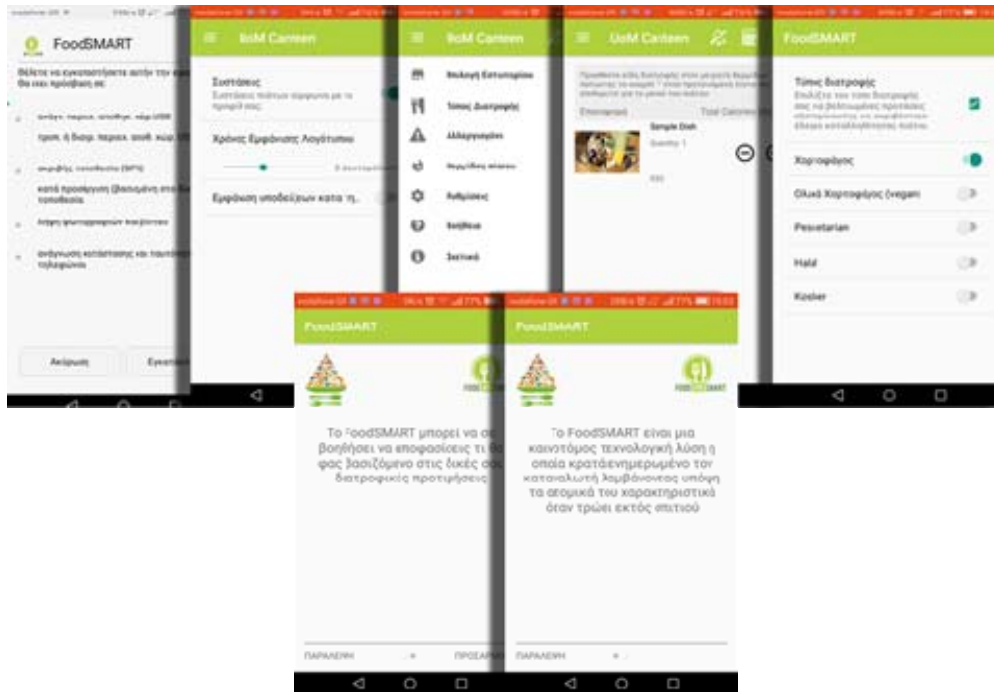
<https://www.youtube.com/watch?v=xfcPKIjZV1o&feature=youtu.be&a>

A cloud provider survey was conducted, that led to the finding that no satisfying solution covers all defined requirements. As a result, an alternative solution was proposed and implemented in-house by UoM that took over the responsibility to host all the data center operations while offering zero operational cost, prompt implementation, in-house support and assured data confidentiality for the project. A scalable centralized system was designed and delivered to fulfil the needs of industry and consumers. Specifically, an appropriate database schema was developed and implemented in a relational database management system in order to store and manage efficiently industry data, providing nutrition information about dishes, food classification capabilities and storage for user-specific data. A group of ready-made SQL queries were delivered providing data mining analysis capabilities while at the same time offering the ability, for the industry, to make use of predictive analytics based on the results of specifically aimed SQL queries about dishes or particular ingredients. For exchanging data with the FoodSmart mobile application a number of RESTful web services were developed using Java programming language and deployed on a Glassfish Open Source Web Server. The source code of RESTful web services (with CRUD operations) and other individual components of the software solution is ready to be publicly available under an appropriate open source licence using a source code repository service (e.g. GitHub). The developed database schema is also ready as an upper level ontology, so industry can share common understanding of the structure of information and easily reuse domain knowledge.

Work Package 4– Graphical User Interface development: The objective of WP4 was to develop a smartphone/tablet human interface through user centric design using Agile User-Experience design (Agile UX) thus reflecting the needs and decision making requirements of the prospective user. From a range of multiple attributes and information the design allowed, and assists the user to make personal choices and in addition provides a comprehensive dataset for field studies. The consumer interface design process needed to focus on the use of icons to guide choice. Point of purchase within foodservice enables consumers to judge the most appropriate dish they require while contributing to consumer protection and concurrently retaining freedom of decision. Stage 1 (analysis) and stage 2 (design) produced a list of requirements from stakeholders to create a working system for audit trail of ingredients. Development included file structure to store data, validation rules and user-interface evaluation by The System Usability Scale (SUS). This provides a reliable tool for measuring the usability. It consists of a 10 item questionnaire with five response options for respondents; from Strongly agree to Strongly disagree. SUS has become an industry standard, with references in over 1300 articles and publications. The noted benefits of using SUS include it is an easy scale to administer to participants, it can be used on small sample sizes with reliable results and is valid – it can effectively differentiate between usable and unusable systems.

Extensive consumer and industry research has been conducted to fully understand requirements from both perspectives, and a mobile app prototype has been developed and evaluated by SUS. Several user workshops have been conducted (n=4) which when combined gave a sample of n=87 (Female n=49 and Male n=36). The majority of respondents were in the age range of 20-29 years which reflects the population of most university canteens where the study was conducted. 83% of consumers agree that the FoodSMART app would be useful to inform them about dishes being offered and in addition liked the full menu functionality and personalisation. There was no significant difference in response between genders. The latest version is provided at Figure 1 and includes a Greek translation of the app interface (only) that is automatically enabled based on the user's preferences in the Android device's language settings.

Figure 1; Please find attached an enlightening screenshot.



(D4); Milestone two

Work Package 5 – Prototype validation, proof of concept (IPBR): The objective of WP5 is to evaluate and validate the application with the end-user in a real-life foodservice situation. Visual search tasks largely unexplored in the research on nutrition labels within menus constitute an effective research paradigm to explore and quantify the determinants of bottom –up attention to menu information without such assessments being affected by higher order information processing. The underlying assumption is that the search task is easier (i.e. faster response and fewer mistakes) if the information stands out, having a higher salience than other information.

Field tests of the app will take place February 2017 in a controlled setting in France, **(D5); Milestone three** - before full testing in the UK, France, Denmark and Greece by industry in 2017/2018 - **(D6 and D7); Milestone four**.

2. Corrective Measures

2.1 Please explain any delays accumulated in the secondments / activities / deliverables foreseen in the Grant Agreement and the measures taken to oversee them.

Secondments; Secondment implementation is proceeding largely according to plan although the transfer of project from the Hellenic Health Foundation to the University of Macedonia has taken some time to embed for the new secondees and mobility for the established secondees. Nevertheless the richness of trans-national, inter-sector and inter-disciplinary mobility to support research training and career development of researchers is certainly being realised and we are all learning with, from, and about each other in order to work together better and produce excellent research.

Secondment table to Jan 2017

Secondment Table				
Partner	PM total until Jan Month 24	Secondments complete (PM)	Deviation (PM)	Reason
BU	16	11	5	Bournemouth University (BU) has completed /due to complete – eleven secondments, contributing for the development of Work Packages 2/3/4. BU has a deviation of five PM which are in hand to be completed.
UCPH-FOOD	12	7	5	The slow progress in secondments is due to the PI being new at the University, and had to wait for being able to perform his secondments. Also a new team within FoodSMART is being built to bring forth the project. The catch-up of secondments has been planned and will be implemented starting on May 1 st 2016 to contribute substantially to the work in WP6 and WP7.
UoM	12	6	6	The UoM was recruited late to the project and therefore it is going to take some time for the secondments to bed in.
IPBR	7	3	4	The Institut Paul Bocese has plans to make up the secondments.
RP	10	11	-1	Ronge&Partner are fully up to date with their secondment commitments.

2.2 Please indicate any potential risks identified and suggested approaches to mitigate them.

Everything is progressing well and so far no risks have been identified, each partner is aware of their secondment deviation and have plans to catch up.

3. Ethical Issues

Please indicate how the ethical issues have been addressed during the period covered by this report and mention all the approvals/authorisations already provided to the REA (if applicable).

Full ethical approval has been given to the project. From Bournemouth University (UK) and the Inst Paul Bocuse (France) ethical committee agreements have been posted on the EU participant portal. From the Universities of Macedonia (Greece) and Copenhagen (Denmark) ethical agreement for research is provided by the Head of Department or the Vice Rector Research and letters have been written and again posted on the EU participant portal for FoodSMART.

4. Additional information

Please indicate any additional information which you may consider useful to assess the project implementation during the period covered by this report, including management issues.

Management

Management has followed guidelines as set down by the EU commission within the funding criteria and in addition has recruited an advisory board of experts to steer research direction and collaboration. FoodSMART has adopted a direct and robust organisational structure to ensure the integration of the research team while endorsing a participatory approach to management. The Steering Committee takes the major decisions concerning the work plan, and responsibilities and timeline. The web page www.FoodSMARTproject.net is the external face of the project and a twitter feed established for up to date and immediate dissemination of activity. Dissemination has been active and pan-European with press releases prepared by the University of Copenhagen and a series of short films based on the field research developed by Ronge and Partner.

Impact - FoodSMART Activity

Publications

Title	Journal	Partner
Workplace Foodservice; perception of quality and trust	Appetite 2016	Bournemouth University Price et al. (2016)
What are we eating? Consumer information requirement within a workplace canteen	Food Quality and Preference	Bournemouth University Price et al. (2016)

To note; Hartwell, Johns and Edwards (2016) E menus – managing choice options in hospital food, International Journal Hospitality Management 53, 12-16

Conferences and Presentations

Conference	Date	Title	Presenter
ICCAS, Montclair State University, NJ	2015	Criteria of importance influencing food choice in workplace canteens.	Sarah Price
IPB PhD. Summer school (FoodSMART)	2015	Criteria of importance influencing food choice in workplace canteens.	Sarah Price
International colloquium on food choice interventions, University of Copenhagen	2015	The role of choice architecture in public health nutrition and the rationale for uCare	Prof Armando Perez-Cueto
The Behavioral Economic Research Group, University of Copenhagen	2016	FoodSMART Presentation at the Food and Resource Economics Department, University of Copenhagen	Prof Armando Perez-Cueto
CAUTHE Hospitality Conference, Sydney	2016	FoodSMART-shaping smarter consumer behaviour and food choice	Prof Heather Hartwell

9th International Symposium - Social and Cross-cultural Factors of Culinary and Eating Behaviors Symposium at the Insitut Paul Bocuse	2016	FoodSMART – results from WP2	Sarah Price
BU Festival of Learning	2016	FoodSMART – Eat out smarter!	BU Team
FoodBIZ	2016	FoodBiz Festival	BU Team
Global Festival of Learning, Malaysia	2016	FoodSMART – Eat out smarter!	BU Team
BU impact	2016	FoodSMART impact	Prof Heather Hartwell
EuroCHRIE	2016		Sarah Price
ESRC Festival of Social Sciences	9 NOV 2016	Innovations in Hospitality and Travel	Prof Heather Hartwell
Tourism and Hospitality @ BU	23 NOV 2016	Food Innovation & Competitiveness	Prof Heather Hartwell

Other activity

Title	Date	Partner
News - Developing an app for smart food choices	15 April 2015	University of Copenhagen
News - Mobilen skal informere on fodevarer	01 June 2015	University of Copenhagen
FoodSMART Video	October 2015	Ronge & Partner; Bournemouth University
Research Photography Competition	January 2016	Bournemouth University
Twitter	2015-2019	All