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Accelerating System Development for the Food Chain: a Portfolio of over 30 Projects, Aiming at Impact and Growth

Harald Sundmaeker

ATB Institut für angewandte Systemtechnik Bremen GmbH, Germany
(ATB Institute for Applied Systems Technology Bremen GmbH)
Wiener Str. 1; D-28359 Bremen; Germany
Sundmaeker@atb-bremen.de

ABSTRACT

Supply of fresh food is of vital importance to feed Europe in a healthy way, while Europe has also an important role in feeding the world. Food products and other perishables such as flowers impose very challenging demands on the management of its supply chains. Food networks are struggling with an integrated usage of information and communication technology (ICT) that enables the heterogeneous stakeholders in the food chain to exchange information in real-time and control workflows based on requirements with respect to quality, costs and schedule. Innovative ICT systems that are addressing such challenges are currently being developed by a large European initiative, called FIWARE. Within this paper, we will discuss a portfolio of 31 projects that are realising solutions for the food chain in close collaboration with supporting business partners. Diverse food related topics are addressed, such as logistics, transport, planning & control, tracking & tracing, information management as well as new ways to realise e-commerce within the chain as well as for consumers.

The FIWARE initiative is accelerating startups and supporting SME type technology developers that are realising solutions for real world business cases, which are serving as reference customers and test cases to assure an end-user acceptance and valid business models. This paper discusses the main food chain related topics and innovation potentials that are addressed as well as outlining the related methodological and technological approaches that are used to facilitate the realisation of impact and growth for commercial exploitation.

Keywords: *Acceleration; Business Models; Minimum Viable Product; Food Chain; App Development; FIWARE; Future Internet*

1 Introduction

The development of systems that are making use of Information and Communication Technology (ICT) is an activity that is "complex in itself". System developers and business architects are facing the challenge of coordinating the most appropriate system architecture in combination with an appropriate usage of enabling technologies for being able to realise the relevant features of the envisaged system. As presented in Sundmaeker (2015), for the development of software applications, so called "Apps", the prioritisation of costs, user experience (UX), performance, reuse and expertise required is the baseline to coordinate the realisation of system development. Since this can help to overcome the poor level of an integrated usage of data and technology potentials in agri-food chains as outlined in Verdouw (2013) and Sundmaeker (2014).

Based on those assumptions, an international and interdisciplinary team from agri-food related organisations that are active in research, service provision and technology development joined its forces. The basic idea was to support a number of technology providers to develop a collection of systems for the usage in the agri-food chain. Those systems were supposed to be innovative as well as serving real needs of the business sector. Therefore, an innovation coaching approach was developed that is specifically suitable for startups and small and medium sized enterprises (SMEs) as well as aiming at the realisation of synergies between different development teams. The reuse of enabling technologies was the underlying paradigm, while an incremental and evolutionary development

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was promoted for being able to launch the solution with real end-users as soon as possible as well as open the interoperability with other innovative solutions to avoid monolithic system architectures and push an “app” based paradigm allowing a loosely coupled interaction of small system increments.

This system development approach was based on experimental settings, combining system developers, end-users, mentors from the business domain and experts from different technological fields. Based on a step-wise approach, first ideas were refined and finally over 30 teams were selected that received financial, business and technological support during system development.

This paper is presenting the underlying methodology applied, the technological background that was facilitating the development of systems as well as outlining the portfolio of over 30 teams that realised innovative systems in close collaboration with end-users from the agri-food domain, while those solutions are grouped according to different criteria either with respect to certain business characteristics or key features that are provided.

2 Methodology

The acceleration of system development was realised in the scope of an international and EU funded research programme. The so called FIWARE initiative was providing the technological and financial prerequisites to aim at the development of innovative systems that are making use of new technological enablers that provide features for Internet based solutions – towards the realisation of a “Future Internet”. At the same time, the basic idea was to test and validate those enabling technologies, for facilitating their wide and global uptake, also realising an open source community. Equipped with funds of 80 Mio. Euro for application development, the FIWARE was assembling 16 individual accelerators addressing different business domains and support approaches as outlined in the following section 2.1. Based on this, over 1,000 teams were selected to receive support and to develop systems making use of innovative technologies.

At the same time, the underlying motivation was to foster impact and growth for future employment and competitiveness of the European industries. A focus was put on the support of SMEs and specifically on the support of Internet related startups that could grow very fast and generate an immediate return in employment and revenue. Examples like Google and Facebook were often showcased, stemming from the Silicon Valley environment that continues to dominate as also highlighted by COMPASS (2015); they are summarising that the Bay Area is practically synonymous with high growth technology startups, and has again achieved top rankings in performance, funding, and talent, making for an overall ranking of the first place, while the only component where it is not ranked #1 is Market Reach, where it is #4. One might put into question that it is feasible to use the bay area or Silicon Valley as a blueprint that can be easily copied to other cultural and business environments. Nevertheless, taking into account the potentials of a Future Internet and four key reasons for the startup explosion as outlined by COMPASS (2015):

1. Startups can now be built for thousands, rather than millions of dollars,
2. New type of venture finance industry with a higher resolution,
3. Entrepreneurship developing its own management science, and
4. Speed of consumer adoption of new technology

one needs to carefully analyse examples like Silicon Valley for being able to exploit the lessons learnt and to test this experience also in other regions and cultural settings. Therefore, section 2.2 is specifically highlighting the lean startup approach that was promoted as methodology for an early validation and maximising the UX.

2.1 Acceleration

One of the 16 FIWARE accelerators is called FInish. It is compiling a core team that already started collaboration in 2007. At that time, the strategic objective was to realise innovative solutions based on an ambient intelligence that are assisting the human operator to make optimal and timely decisions in business processes/ workflows. This was one initiative of the European efforts on realising an Internet of Things as outlined in the first strategic research agenda of the IoT European Research Cluster as presented in Sundmaeker (2010). The real-world usage of those solutions mostly failed due to limitations in technology and specifically with respect to costs, size and energy constraints of available devices. However, the work was continued and different concepts elaborated towards virtualisation of objects and modularisation of technological solutions, especially addressing an incremental and app based delivery of features requested by business end-users. This underlying objective was specifically

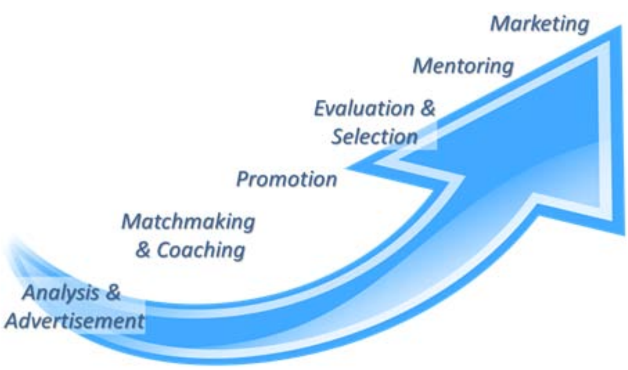

Figure 1: Acceleration approach – system development for food chain scenarios.

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addressed by the team's work on the FIspace platform development (see also FIspace (2013, 2014 & 2015)) that represents one of the early use cases of several components of the FIWARE technologies, also listed in the FIWARE software catalogue (i.e. open source components available at http://catalogue.fiware.org/). Subsequently, the FIWARE initiative was extended by a use and test phase. Some 80 Mio. Euro were mobilised to support innovative teams that are testing and validating the available enabling technologies in the scope of their development of Internet based systems.

The 16 accelerators are supporting this test and validation of FIWARE enabling technologies. FInish (www.finish-project.eu) as one of those, is aiming at the support of teams that are developing systems with a focus on the agri-food chain. The financial and mentoring support was offered to any SME, while taking into account the growth potentials of startups, it was decided to give some preference on startup acceleration. Therefore, FInish designed an approach that is based on several phases that clearly goes beyond classical call for tender mechanisms when developing new systems as presented in Figure 1.

In its initial phase, FInish was advertising the innovation potentials in the food chain, based on a thorough analysis that was done in different agri-food sectors (Verdouw 2014) and further validated in direct collaboration with stakeholders from the agri-food chain. Those were also matched with software developers having an innovative idea. At the same time, developers and potential business partners were coached to elaborate on the initial idea for being able to have an early end-user feedback. Subsequently, such teams of system developers, teaming up with a so called business partner for early validation, could ask for an additional support in the scope of open calls for proposals. 4.8 Mio. Euro of sub-grants was offered for the realisation of innovative solutions. In total over 40 teams were selected to get also a financial support. On one hand, they got a grant of up to 150 kEuro. On the other, a final mentoring phase was launched that represents the most intense support. Diverse communication channels and regular milestones were used to incrementally support the solution development, while also addressing marketing activities in terms of business model development and initiating an access to the market. In general, those proposed solutions had to target at new ways to facilitate the seamless business to business collaboration in complex supply chains and networks for the benefit of all actors as well as directly or indirectly providing benefits for consumers. Proposed solutions had to specifically allow end-users (majority are SMEs in this business domain) to easily and quickly set up and participate in new regional, horizontal, and vertical collaboration at minimal costs.

2.2 Lean Startup Approach

The lean startup approach was specifically promoted by Ries 2011, highlighting the potentials of an early requirements validation and a focus on a business model satisfaction. The latter was also promoted by the business model CANVAS (Osterwalder 2010) that is widely used for system development nowadays. Especially the simplicity as well as the result that can be elaborated with limited amount of efforts and time represents a key added value when aiming at a very early validation of user requirements. Especially this is of vital importance when aiming at the realisation of systems with a rather limited amount of budget. Since a continued work on not valid system features as well as their incorrect prioritisation can jeopardise the overall success of a system development. It is instead of utmost importance to fail as fast as possible with incorrect assumptions that are guiding the development process.

Therefore, in the FInish acceleration scheme, we asked the teams as one of their first activities to define a one page business model CANVAS. It was the key focus to create a complete picture of end-user driven requirements, while limiting the analysis effort. At the same time, the requirement was to team up with a business partner that is representing a potential future customer of the envisaged system. To materialise this collaboration, those business partners had to sign a letter of intent, expressing their willingness to invest one part of the investments from their own pocket, while FInish would give some other 5 parts of the required investment. Therefore, the system developers had to convince their future customer already from the very beginning, even before starting the practical development efforts.

After starting individual projects, mentors and technology experts were assigned to the

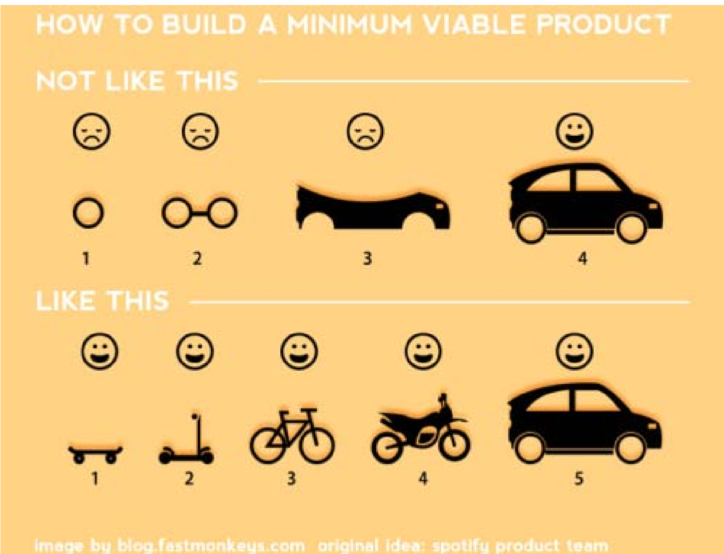

Figure 2: How to build an MVP (Spotify product team). Available at: http://blog.fastmonkeys.com/014/06/18/minimum-viable-product-your-ultimate-guide-to-mvp-great-examples/

teams. In regular cycles, mentors were discussing latest progress and next steps with the teams as well as with the involved business partners. This helped to understand the envisaged impact and growth potentials. The teams were also challenged to join competitions and workshops to continue with system validation. On top of that, the teams were encouraged to further apply the lean startup methodology and specifically build their development cycles on the realisation of a so called "minimum viable product" (MVP). This is considered as a powerful approach that can be implicitly practiced along the system development process, since it is not a matter of effort, but a matter of defining and prioritising development increments.

As highlighted by Blank (2013), an MVP is not a smaller or de-featured version of the big product, but a shortcut to learning and it is a concise summary of the smallest possible group of features that will work as a stand-alone product while still solving at least the "core" problem and demonstrating the product's value, that is also presented in the approach outlined in Figure 2 that highlights the role of the potential customer and its related experience. Since only by delivering an experience to the customer that can be considered as self-sustaining, he/she will consider it as a product and would be willing to pay for the envisaged feature(s) to be used. As a consequence, the developer can directly assess the willingness to pay for a system and/or service not requiring additional theoretical assumptions, while also the experience for the potential customers is complete and can provide a binding contractual agreement that is connected to payment and future use. Therefore, the main challenge for the development team is to realise an MVP that is minimum and viable at the same time.

3 Addressed Needs in relation to the Agri-Food Business Domain

Underlying idea of the FIWARE initiative was to realise a technology stack that can facilitate solution development as well as to reduce efforts and costs for system implementation. This is considered as basic prerequisite to increase the competitiveness of European ICT businesses. At the same time, it was considered crucial to address a business challenge to get attention by a critical mass of potential customers. Therefore, FInish was defining the following list of potential challenges to ensure a business impact.

Collaboration of business actors in the food chain to exchange information for the purpose of

- Facilitating traceability,
- Avoiding waste,
- Optimising logistics,
- Assuring produce quality,
- Documenting ingredients,
- Assuring animal welfare,
- Detection of contaminations,
- Increasing shelf-life,
- Advertising and selling products,
- Uniquely identifying objects.

Health related applications in combination to food topics, like

- Managing the individual shopping preferences based on health constraints,
- Learning about ingredients to improve health,
- Alerting consumers in case of health related hazards,
- Minimising usage of pharmaceuticals in food related production.

Environmental impact with respect to food and flowers production like

- Soil analysis, monitoring and management,
- Reducing waste of resources,
- Weather forecasting,
- Simulation/prediction of growth,
- Minimising the usage of pesticides,
- Sustainable usage of water,
- Minimisation of CO_2 emissions,

Manufacturing of our food, like

- New ways of producing food like 3D printing,
- Functional food,
- The food production itself, like the food factory of the future, supporting new models for design, demand, delivery,
- Exploitation of synergies that are possible by sharing resources,
- New software supported features for packaging,

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- Intelligent transport items,
- Innovative Internet based features in equipment and machines.

Improving society/organisations' learning and social abilities about perishables to enable effects on

- Food waste in any stage of its lifecycle,
- Sustainable and organic production models,
- Potential alternatives to prepare and consume food,
- Understand the impact of nutrition and production alternatives on the availability of food for all.

Evolution of smart cities towards intelligent urban centres for living and working,

- New food delivery models for urban areas,
- Urban and distributed food production within smart cities,
- Facilitating innovative consumption models based on new lifestyles,
- Making use of open data for demand and delivery prediction,
- Regional sourcing,
- Innovative shopping and retail support,
- Treatment of waste and how to reuse resources.

Production of energy and reducing the demand,

- Usage of perishables for production of energy,
- Sustainable models for production,
- Reuse energy previously wasted in production,
- Increasing usage of returnable transport items.

Using multimedia and gaming to

- Change the perception of food itself,
- Enable awareness on production methods,
- Enable consumer driven design of food,
- New ways of buying food with added-value information & location independent interaction,
- Facilitate food preparation & perishables usage,
- Realise new UX as added value to consumption,
- Help to understand impact of production and consumption patterns.

All proposed ideas had to address such a relevant topic. However, for being able to assess the proposals properly, the team was involving different types of expertise. Experts with an agri-food related background were assessing the potential impact and FIWARE experts were assessing the proper usage of the enabling technology. Key aspects for selecting the best ideas was the envisaged overall impact with respect to competitiveness of the business sector and the creativity and quality of using FIWARE Future Internet technology.

4 Selected Teams and Challenges Addressed

The accelerator called FInish was selecting its name on purpose, since it is aiming at the transition of research results towards further exploitation and commercialisation. The finish line after successful research is intended to be passed by the selected teams very soon, while the additional support for preparing commercialisation is considered as direct help to reduce the time for bridging the so called valley of death. Since as also Zwilling (2013) highlights, marketing, manufacturing, and sales, can still add up to $500K, on up to $1 million or more, before a startup will be attractive to Angel investors or venture capital and the financing of the valley of death tests the commitment, determination, and problem solving ability of every entrepreneur.

FInish received over 200 proposals in the scope of the open calls[1] and a software developer challenge[2]. From all those proposals, a total of 41 projects or prizes were given to the applicants. This results in a proposal success rate of about 20%. The proposals were usually prepared by a leading team of software developers that are often members of one SME[3]. Around a third of the project teams involved an additional software development SME to realise the system development. Therefore, some 52 software development SMEs are active in the 41 projects that are receiving a so called "sub-grant". On top of that, there are some 60 business partners actively involved that are supporting the requirements analysis, integration, test and validation in their role as potential end-users of the developed systems. Overall, there are some 112 organisations involved in those 41 projects as presented in the following Figure 3.

[1] The first call for proposals was published in the end of 2014, the second in March 2015 and a third open call in summer 2015 that was a 2nd chance for all those that delivered a proposal in the calls before, but did not succeed at first hand. The final selection in this 2nd chance was realised as competition, collocated with the 3rd European Conference on the Future Internet that was held in November 2015 in Hamburg, Germany.

[2] Software developer challenge organised in combination with the Net Futures Conference 2015 and a FIWARE developer week in March 2015 in Brussels

[3] The term SME is used for the general interpretation of small and medium sized enterprises as well as for startups and web-entrepreneurs that are active as legal entities in the funded projects.

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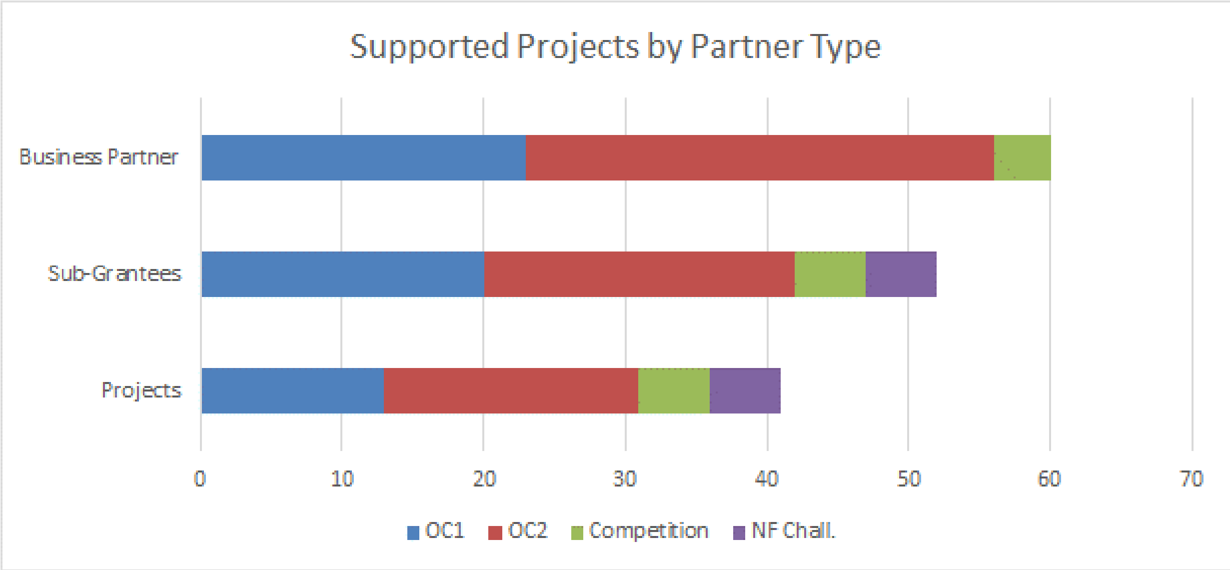

Figure 3: Projects and teams that were selected for the system development with FIWARE technologies.

Up to now, the supported projects were asking for an overall amount of ca. 4.6 Mio. Euro of funding, while the projects selected in the open calls one and two are of larger size. They were asking in average for a funding of 139 kEuro and were committing approximately some 30 kEuro by the investment of their business partners that were either assigning budget or person months to the projects. Proposals were received from diverse European countries, while a majority was received from Germany, Greece, Italy and the Netherlands, while the selected teams are representing 11 different countries as presented in Figure 4. On top of that, also business partners from the US and Africa were committing themselves to use the envisaged systems to be developed.

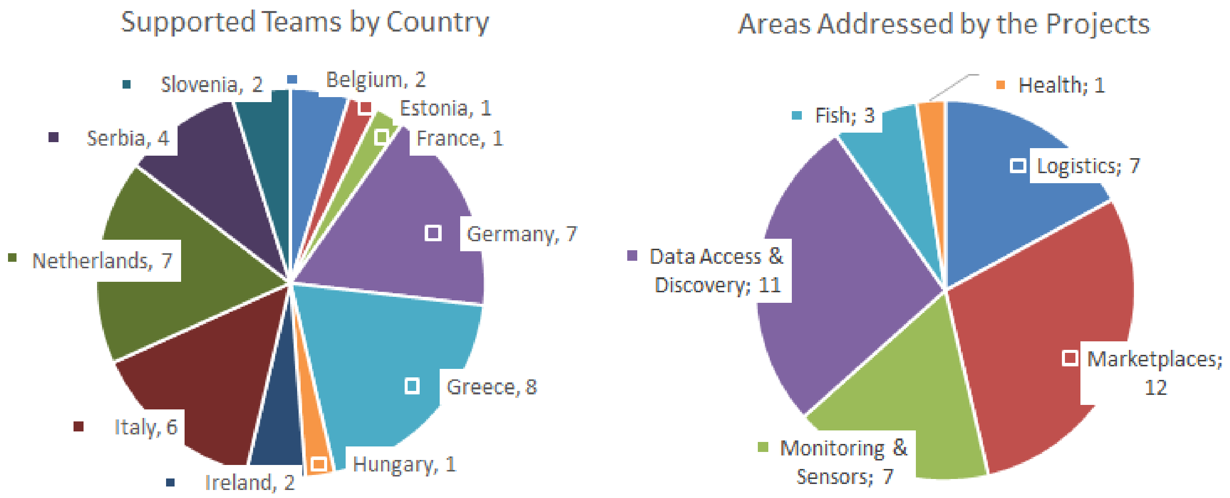

Figure 4: Selected teams by country and addressed areas.

Moreover, as shown above, the different projects were grouped in 6 different areas that are addressed by the supported projects. All those areas are representing a relation to the agri-food chain, while the solutions with respect to fish and health were separated, due to their individual solution type. The following sections 4.1 to 4.6are outlining key characteristics of a selection of the supported solutions under development, while focusing on the larger projects funded in the two open calls.

4.1 Monitoring and Sensor based Solutions

There are seven teams that are addressing monitoring and sensor based solutions. One major trend is to combine food or flower related shipments with sensors to monitor parameters like temperature, humidity, or specific gas concentration. As it could also be identified in the Internet of Things (IoT) initiatives (e.g. IERC, AIoT), mobile monitoring seems to become also feasible for real-world applications at low costs scenarios, since the related equipment and available baseline technologies are converging in terms of costs, size, communication distance and energy demand. At the same time, mobile communication enters also a new era with respect to features offered by small mobile devices, combined with an increased bandwidth for Internet based applications. Therefore, the

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developed solutions that are monitoring specific parameters at a remote location or during transport can easily communicate and interact with end-users. This opens new potentials to:

- Make better shelf-life predictions and predict critical conditions before they occur
- Optimise the logistic chain in terms of quality controlled workflows and transport
- Improving the product quality by avoiding a negative influence of the environmental conditions
- Identify cause-effect relations and enable the stakeholders to share the related responsibility
- Facilitate the tracking and tracing of shipments and even individual products
- Securing environmental conditions to assure safe food and reduce costs for last mile deliveries especially of cooled products

The supported teams are addressing solutions that can be used along the supply chain, while FInish is focusing on ideas that are addressing the food chain to support those business stakeholders that are providing, trading and manufacturing perishable[4] food and flowers.

4.2 Data Access and Discovery

As highlighted in Sundmaeker (2015) as well as outlined in Verdouw (2013) and Sundmaeker (2014) based on the characteristics of the business sector handling perishables, the current state of the art of ICT in the agri-food logistics is characterized by large amounts of available data but a poor level of integration. This triggers a need for new solutions that are facilitating data access and discovery in B2B environments. In FInish, 11 teams are addressing related solution potentials that are facilitating on the one hand the exchange of data between stakeholders in the supply chain. On the other, solutions are providing information directly to the actors, automating data analysis and only displaying data/information that is relevant to the stakeholders. At the same time, such notifications are usually connected to events and represent a push type of notifications, reducing efforts for searching information. Therefore, the supported teams are targeting at the development of systems allowing to:

- Trace goods anytime, anywhere through the entire supply chain
- Secure, fast and reliable data exchange
- Immediately notify about deviations with respect to quality, workflow and processes
- Compile data from different stakeholders to generate added-value information
- Facilitating the direct data access by virtualised objects combined with an Internet based data provision
- Monitor trends of issues and its handling in the supply chain

Several of those teams are also intending to combine their systems with additional solutions/ software applications to reduce development costs and being able to focus on the key features, representing their competitive advantage. To facilitate this process, they are also validating the FIspace B2B collaboration platform[5] that is currently in its consolidation phase before pushing further commercialisation in different sectors.

4.3 Logistics

The above mentioned systems offer also certain potentials that might be used for logistic purpose. However, in FInish we grouped seven teams under logistics as they are specifically facilitating the control of transport, storage and handling of produce/ products in the supply chain. The developed systems are either facilitating the real-time data exchange for facilitating logistics decisions based e.g. on simulation or even developing systems like a seal with digital encryption or lockers for dynamic interaction of suppliers with their customers. This offers potentials like the following:

- Realising last mile delivery also for online groceries
- Minimising inventory and optimising production plans by simulating and forecasting of demands
- Real-time monitoring of shipments for different stakeholders
- Sharing shipment data via open interfaces and online acceptance of shipping orders
- Sealing and monitoring objects like containers or cars that allows the identification of unauthorized access
- Enabling real-time access to quality inspection data for stakeholders in the supply chain, facilitating an immediate reaction in transport and storage situations.

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[4] Perishability is considered in terms of short life-cycles of fresh produce/products like fresh fruit, vegetables, meat, pastries, while it can also be extended to prepared food with respect to last mile delivery challenges.

[5] The FIspace software application catalogue is available via: http://www.fispace.eu/apps.html and the FIspace experimentation environment via: http://www.fispace.eu/experimental-environment.html

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Besides the focus on food chain related scenarios in FInish, the developed systems are offering also application potentials for other business sectors. FInish considers an additional commercialisation potential that is already discussed with the developers at the current moment.

4.4 Health

One team was also supported with an idea to promote the health of consumers, connected to a rewarding system by stores selling food. The system is tracking the activities of the user. The more activity is tracked, the more offers and discount can be received from stores. The basic idea of this solution is to combine the principles of fitness trackers with sales promotion of retailers. This can offer an added value service for retailers, while being able to directly combine sales promotion for food that has only a low amount of shelf-life remaining. On top of that, it could be used as added value service for e.g. health insurances or employers.

4.5 Fish chain related applications and Aquaponics

The fish chain is characterised by high perishability and short chains between suppliers and consumers. Therefore, any information to be made available needs to be handled in real-time requiring a direct involvement of stakeholders. On top of that, aqua farms can profit from diverse potentials that can be offered by Internet based solutions:

- Control and coordinate fish production
- Automation of production steps, facilitated by alerting of events and provision of instructions
- Transparent and traceable production
- Guaranteed freshness for consumers
- High speed and precision methods for fishery product recalls

One team is even combining the fish production with plants growing in a recirculating closed loop system (i.e. aquaponics system) that circulates water from the fish tank, to bacteria, to the plant roots and then back to the fish tanks. The team reports that this system shall enable 300% better yields than soil production and decreasing the water usage by 95%. However, the need for an Internet based system for overall monitoring and control is considered of utmost importance, due to the sensitive interdependencies of ambient parameters.

4.6 E-Business and Marketplaces

A large number of proposals and finally also of systems to be developed are addressing e-business and marketplaces related solutions. 12 projects are supported that are developing systems to match offer and demand in the food chain. A basic trend is to realise solutions that will facilitate the offer of regional produce as well as to realise a very short supply chain from supplier to end-consumer. This even offers a new potential for producers/growers to directly merchandise their offering without the involvement of additional traders or retail. Nevertheless, it also opens a small window of opportunity for classical trade and retail to enter the emerging trend to offer fresh produce via online business channels. In addition to the sales of produce, there are also systems developed intending to avoid waste by rerouting potentially wasted food to those that are in need. The overall potentials addressed can be summarised as follows:

- Connecting farmers and producers with local customers
- Enabling an easy access to a wide range of local and healthy food
- Local and dynamic delivery structures matching offer and demand
- Avoiding waste by coordinating surplus supplies
- Identifying suppliers to generate trust and avoid middlemen
- Facilitating access to organic food
- Enabling online trade and purchase for small businesses, facilitating access independent to time and place

Teams supported in the scope of the first open call were already realising minimum viable products of their systems. This enabled them to test their solutions in a real-world settings with consumers that were electronically purchasing. Experience gained was valuated very high and enabled an immediate refinement of features and the underlying business model. As a consequence, very sophisticated features were rated with lower priority for the sake of performance and stability.

5 Next Steps and further Activities supported

The larger projects supported by FInish were starting in three different batches. The first batch of the first open call is currently in its final phase targeting at the final systems for future commercialisation, mainly integrating the business partner’s feedback and working on the business models. The second batch is at it mid-term and envisaged to finalise their systems in summer 2016. The smaller projects that were selected in the competition are generally scheduled for a 3 months period and it is envisaged that they are providing first running systems in spring 2016.

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Along to the project realisation, the FInish team is currently supporting the communication with potential customers to allow for an access to the market. This is currently combined with measuring different key performance indicators that shall be further analysed towards summer 2016. The objective is to analyse potential correlations with respect to experienced first commercial success in relation to the developed systems, used technologies and characteristics of the development teams. At the same time, a larger initiative at overall FIWARE level is analysing over 1,000 teams[6] using FIWARE technologies for system development in different business sectors. First results are available via the FI-Impact initiative (http://www.fi-impact.eu/home/).

6 Conclusions

System development for food chain oriented solutions is supported with financial grants and expert advice in terms of coaching and mentoring by the project FInish (http://www.finish-project.eu/projects-funded-by-finish/). Prerequisite to receive this support is to use technologies that are provided by the FIWARE initiative (http://catalogue.fiware.org/). Those enabling technologies shall facilitate the development of solutions for a "Future Internet". At the same time, feedback is collected to improve the technology enablers as well as to realise new solutions for different business sectors with an impact on their competitiveness.

The overall initiative is focusing on the support of Internet startups that offer a large potential for economic growth and employment, while also facilitating the global sales of developed solutions. To cope with the characteristics of startups, especially the lean startup approach is promoted to facilitate an early validation of systems by using the paradigm of minimum viable products as well as elaborating a business model CANVAS for being able to understand the market, the product potentials and to prepare the commercialisation as soon as possible.

FInish is supporting over 40 ideas, while some 30 of those are realised in the scope of larger projects. Teams from 11 European countries, involving over 110 software developing and business organisations, are receiving a financial grant and support. Selected developments are under further analysis to aim at an identification of critical success factors that might guide future initiatives and facilitate the selection of most promising ideas for investors.

FInish is supporting different types of system development for the food chain. By directly involving business partners it is assured to have an early validation of results as well as to facilitate marketing and sales for later commercialisation. The main potentials of those solutions were presented that will be available until summer 2016. Furthermore, FInish as part of the overall FIWARE initiative is contributing to the overall analysis of success factors for FIWARE based development initiatives that are published for all 16 FIWARE accelerators.

7 Acknowledgement

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