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FoodE

D3.7

App prototype available online

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Version	2

Project consortium

No.	Institution Short name	Institution Full name	Country
1	UNIBO	ALMA MATER STUDIORUM – UNIVERSITÀ DI BOLOGNA	IT
2	APT	INSTITUT DES SCIENCES ET INDUSTRIES DU VIVANT ET DE L'ENVIRONNEMENT - AGRO PARIS TECH	FR
3	RMN	COMMUNE DE ROMAINVILLE	FR
4	SWUAS	FACHHOCHSCHULE SUDWESTFALEN	DE
5	ILS	INSTITUT FUR LANDES- UND STADTENTWICKLUNGSFORSCHUNG GMBH	DE
6	FLY	FLYTECH SRL	IT
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16	POL	POLAR PERMACULTURE SOLUTIONS AS	NO
17	TAS	TASEN MICROGREENS AS	NO
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26	NBL AS	NABOLAGSHAGER AS	NO

Document Control Sheet

Version	Date	Summary of changes	Author(s)
3	19/11/2021	Final revised version after the General Project Review Consolidated Report	UAB, UNIBO, RMN
2	29/7/2021	Final draft reviewed by PC, WP3 leader, WP3 Participants and members of the GA.	UAB, UNIBO, ULL, RMN, ILS
1	23/7/2021	First draft	UAB

Executive Summary

The current document is used as a supplementary material that describes the process undergone to have the FoodE App prototype available online and how the app is contextualized within a bigger environment. The contribution is part of the T3.2 in WP3 – Cross Pollination. The app is currently available through the following download link for mobile phones that have an Android operating system: DOWNLOAD LINK.

The present deliverable, T3.2.2 and T3.2.3 are led by UAB after the partner ARCTUR left the consortium in March 2021. From there on, the UAB team has been coordinating the tasks to meet the deadline for the present deliverable, participating in WP3 meetings to define the contents of the FoodE app prototype.

Background

FoodE – Food Systems in European Cities - Objective

The main objective of FoodE is to involve European Union local initiatives in the design, implementation, and monitoring of environmentally, economically, and socially sustainable City/Region Food Systems (from now on CRFS). The key challenge of the project is to improve food and nutrition security of European citizens by shaping a sustainable environment able to increase accessibility and availability of affordable, safe, and nutritious food. This challenge is tackled by setting a co-created mechanism, based on Citizen Science and Responsible Research & Innovation principles, where public authorities, citizens, SMEs, and non-profit organisations can share ideas, tools, best practices, and new models, supporting cities and regions in developing innovative and sustainable food systems.

WP3 Objective

This WP aims to build and nourish healthy, active and sustainable relationships between food chain actors, thanks to the definition and implementation of networking opportunities and tools. The project will involve and stimulate active participation and promote knowledge exchange between European CRFS, involving public decision makers, companies, consumers, and other citizens. This WP will develop a theory-based and evidence-based set of tools for networking and will implement effective tested initiatives and instruments for the creation of an interactive community of actors contributing to an active CRFS. More specifically, WP3 will:

- Create an inventory of networking initiatives in the domain of urban food systems, to identify and comparatively assess most relevant experiences in Europe and initiate the MyLocalFoodE initiative.
- **Develop an online app to mobilise and interconnect the different categories of users/stakeholders**
- Promote awareness and engage school pupils in co-designing and monitoring of sustainable CRFS.

T3.2 Objective

The FoodE app will be a major outcome of the project and will ease citizen active engagement in identifying, monitoring and assessing CRFS initiatives. A theory-based framework (T3.2.1.) for the app development was elaborated in the early stages of FoodE implementation (already submitted in D3.8), and the app is released in M18 (T3.2.2.). The FoodE app includes a mobile app for the interaction between citizens and CRFS and a web app to ease the CRFS data introduction. Furthermore, a continuous update and amelioration of the FoodE app will be guaranteed until M30, building on the user feedbacks. Citizen engagement to the FoodE app will be actively addressed by promoting the tool in the FoodE public/dissemination events (e.g. T3.1) and overall project communication strategy (T7.2), but also passively fostered by word-of-mouth between CRFS stakeholders that through the app can access a loyalty programme

(FoodE ZeroMiles), special benefits and awards (FoodE Hero) and relevant information on CRFS sustainability and FoodE outputs.

T3.2.2 Objective
The FoodE app will constitute the tool to create direct interaction between citizens and CRFS initiatives, including a web app (for CRFS manager to upload their data) and a mobile app (interactive platform between stakeholders). Given the long-term perspective and exploitation potentialities of the FoodE app, it is foreseen that the FoodE website and the FoodE app will be developed separately, with a different backend. However, the FoodE website will include external links that will redirect users to both the FoodE web app and to the FoodE mobile app. The main structure of the FoodE App is described in the present deliverable and will allow for easy accessibility and immediate interaction from users. The CRFS review system will be accessible to CRFS users through QR code embedded in product and services receipts and attendance ticket. Based on the number and completeness of reviews, users will be able to access dedicated reward programs (e.g. FoodE ZeroMiles) for accessing discounts and benefits in CRFS projects. On the other hand, CRFS projects will be ranked based on both the user feedback on the app and the score received on sustainability indicators (T2.3 and T2.4) and awarded with the FoodE Hero award during the MyLocalFoodE initiative (T3.1.3).

Linkages with other WP3 contributions
Synergies and/or potential risks of duplication/overlapping with other WP3 activities have been explored and discussed. Within T3.2 it is important to differentiate between:

- **Theory-based framework development for a CRFS-oriented app (T3.2.1):** the aim of this task was to review the theoretical foundations incorporated into existing CRFS apps' design. The task identified available literature on the topic and existing relevant apps from Google Play and iTunes App Store. Moreover, the task assessed the existing apps against the available theoretical framework. The outcome of the framework was already submitted in D3.8 – Review of theories and techniques for app designs, led by the University of Bologna (UNIBO).
- **Development of an online app to mobilise and interconnect users and stakeholders (T3.2.2):** The FoodE app will constitute the tool to create direct interaction between citizens and CRFS initiatives, including a web app (for CRFS manager to upload their data) and a mobile app (interactive platform between stakeholders). The aim of this task is to release the FoodE app and its environment. The outcome of this task is the core of D3.7 – App prototype available online.
- **FoodE App updates and improvement (T3.2.3):** the aim of this task is to update and evolve the app in line with detected limitations and parallel findings in other WPs. This task starts immediately after the ending of T3.2.2 and D3.7 submission.

Linkages with other tasks in other WPs
Since the FoodE App will be the tool to ease the interaction between citizens and CRFS initiatives, the present contribution has several linkages with other WPs. These linkages are summarized below:

- **WP2 – Methodological framework development and case studies sustainability assessment**: during the first stages of the app development, the link with WP2 will be strictly in terms of data collection and inventory processing (T2.3) to gain insights on the best way to proceed. At later stages of project, the app will be one of the major tools to collect data from the CRFSI. Based on this data filled by CRFSI owners through the

back-office web, key indicators identified in T2.2, T2.3 and T2.4 will be integrated in the app.

- **WP4 – Pilot implementation**: pilots' data will be integrated in the app as they were what in the project is called a CRFS initiative. However, the linkage between the app and the pilots within WP4 is planned for later stages of the project, adapting it to the development of WP4 and WP2 joint tasks.
- **WP5 – Business models and validation of CRFS**: The specific environmental, social and economic sustainability indicators identified in WP2 will be integrated with the business models of CRFS initiatives (defined in WP5) and integrated in the app to allow a holistic assessment of CRFS initiatives. Moreover, the standard certification scheme (FoodE Label) described in T5.4 will be easily integrated within the app.
- **WP7 – Dissemination and exploitation:** apart from the intrinsic dissemination link with the FoodE App, this tool will be linked to the planned exploitation strategy (T7.3) and specifically to the exploitation plan (T7.3.1), developed in terms of expected future needs of the different stakeholders' group.

FoodE app Environment

The main objective of the online app is to mobilize and interconnect users and stakeholders (Figure 1). Specifically, the tool will:

- Ease citizen active engagement in identifying, monitoring and assessing CRFS initiatives.
- Create a meeting place and an interactive platform for CRFS stakeholders.
- Promote communication and cross-pollination between CRFS initiatives across Europe.
- Ease and foster participatory evaluation of the (social, economic, environmental) value of CRFS
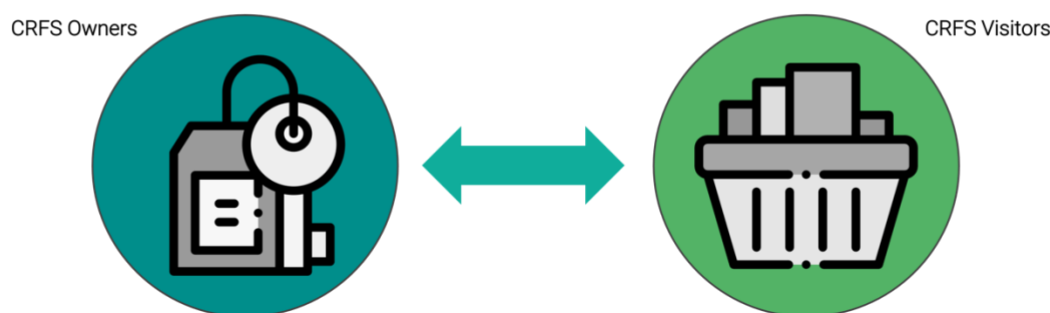

Figure 1. Graphical objective of the FoodE app.

To ensure that these objectives are achieved, the FoodE app will be a part of a bigger environment that encompasses different elements to ease its usage and comfortability (Figure 2). Within the framework of this deliverable, the app and its environment are not fully developed: some of the functions, such as the computing engine or the different profile buttons are not still operating. A fully operational app will be developed based on the present prototype within the framework of T3.2.3 – FoodE App Updates and improvement, kicking-off July 2021.
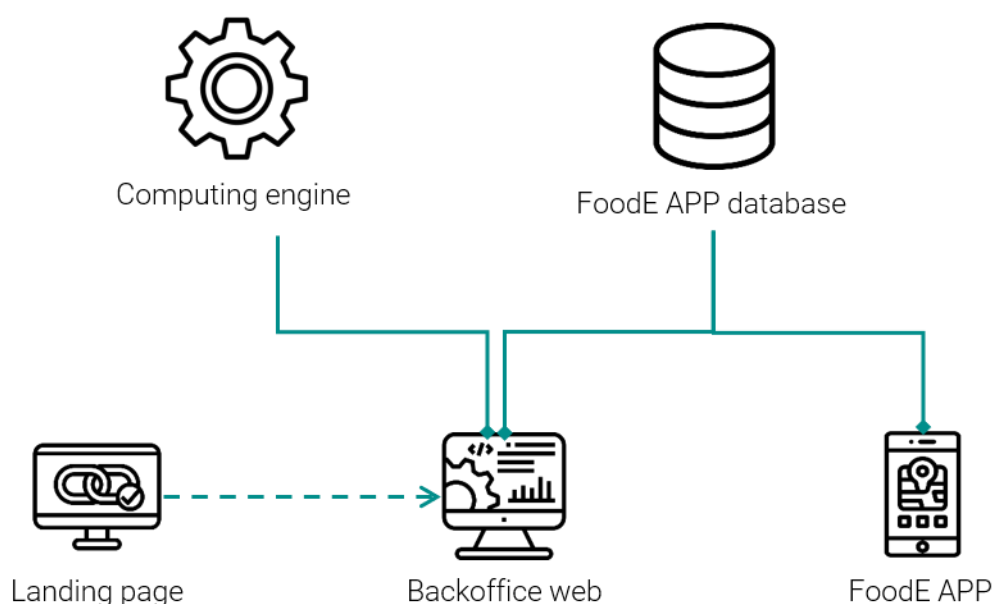
Figure 2. Elements of the FoodE app environment

FoodE App

The "FoodE App" is now available through this [download link](#) for Android devices (Figure 3). A new version with updated requirements will be available in both the Android Market and iOS App Store by December 2021. The app is the core of the environment since is the basis for the interaction among CRFS stakeholders. The bottom menu is the only app feature (apart from the FoodE logo) that is static across the 5 differents tabs: Home, Explore, Scan, CRFS and Profile. The functions of these tabs are summarized below:

- **Home**: general information on the relevant aspects of the project, app, CRFS, etc.
- **Explore**: map and search engine of nearby CRFS.
- **Scan**: opens the camera to scan QR codes in CRFS that redirects the user to a page to fill parameters related to the Customer's feedback score.
- **CRFS**: list of CRFS that can be sorted/filtered based on different parameters such as sustainability score, distance to our location, CRFS typology, etc.
- **Profile**: option to log-in or sign-up (before logging in) and tab with different information related to the profile such as reviews made, rewards gained, favourite CRFS, settings, etc.

Landing Page

Basic login / sign-up static web page to get access to the backoffice web for CRFS and administrator users and a link to download the FoodE app.

Backoffice Web

"Form" page to add data for the sustainability score and KPIs. Data can be added directly into the online tool or by uploading a spreadsheet file. Both raw (inputs, outputs, characterization parameters, etc.) and calculated (through the computing engine) data will be easily downloaded. Moreover, the backoffice web acts as the coordination panel for the administrators to manage the information that appears in the app in a comfortable way.

Figure 3. Design of the FoodE app.

Database

Data repository that contains all the information related to the FoodE App. Both the backoffice web and the FoodE App are connected to the database to check and store information.

Computing engine

The computing engine acts a second backoffice, collecting CRFS raw data and converting it to KPIs for all sustainability dimensions. It is part of and interacts with the database described above. The computing engine is expected to be released by December 2021, aligned with relevant findings derived from WP2 – Methodological framework development and case studies sustainability assessment. After the release date, the computing engine will constantly evolve based on the definition of new relevant KPIs or updates on background inventory data.

The computing engine is based on an existing software that was designed to automatically calculate environmental indicators such as carbon and water footprints from a life cycle perspective. From the existing software, the version used for the FoodE App will be adapted to the necessities generated by the tool and its stakeholders.

A second database is included in the computing engine that stores the basic data to translate the raw data introduced by CRFs into KPIs. An example of this information are characterisation factors for LCA midpoint categories. To ensure that the objectiveness and transparency of the assessment is preserved, a document will be prepared with a detailed explanation on how the methodological framework for the sustainability assessment was prepared and how the indicators shown in the app are being calculated.

Data storage, data privacy and informed consent

Most of the environment elements (FoodE App, Backoffice web, Landing page and database) are stored in a commercial server (*Nominalia*) rented by the Sostenipra research group (UAB). In this sense, all data regarding the CRFS will be stored in this server. Only accessing rights will be granted to the subcontracted company for T3.2.3 and based on the planned works linked to this task. On the other hand, the computing engine is stored in the server owned by the company providing it. To avoid access to personal data by third parties, only raw data explicitly required for the computing engine (i.e. identification of the initiative and answers to the question that have an specific value to calculate KPIs) will be transferred.

Data protection and privacy policy will be developed before the public release of the FoodE app. UAB is working internally with its own Data Privacy Delegate and Ethical Committee to ensure that all aspects regarding these issues will be correctly addressed during the sign-up process, both for CRFS initiatives and regular users (for a detailed description of the different user types see the section below "User Registration and Management"). To proceed with the registration,

users will have to accept an informed consent document that will be prepared jointly with the Data Privacy Delegate in the UAB, informing the user of different issues such as: data will be conserved during the time necessary for the purpose of its processing; processing of data does not involve automatic decisions, nor the production of profiles for the prediction of personal preferences, behaviours or attitudes; where and to who does the user may revoke this consent; that the app owners and developers aren't responsible for results of sustainability indicators that don't comply with the user expectations; that the responsibility for the data published the app, including the scores of the indicators, lies entirely with the publishing CRFSI; that data application is handled uniquely by the CRFSI, who owns and is also fully responsible for the data provided and that the FoodE App guide explains how data is managed and indicators accounted, etc.

At this stage of the app development, an auditing process to check the data from initiatives is not planned. However, a certification scheme is planned for later stages of the project (T5.4).

User Registration and Management

The system will contemplate different types of users:

- **Administrator**: users with special permissions that can introduce, modify and delete CRFS as well as delete regular users' comments (in case of inappropriate content). These users will have direct access to the administration panel of the backoffice web.
- **CRFS**: representative of a CRFS initiative that will introduce the data for the characterisation, mapping and evaluation of its activity. Their user type will be classified according to pre-established CRFS categories.
- **Regular Users** or just **Users**: users of the mobile phone app, mainly CRFS customers or visitors.

Functional requirements

Functional requireements define specific behaviours of the tool. The FoodE app include three functional requirements (RQ) coded as RQ1, RQ2 and RQ3, described in the following sections.

RQ1. Map CRFS initiatives

CRFS are introduced by their representatives through the following process:
1) A CRFS registers as CRFS owner and fills the following information:
   <u>Identifying information</u>: name, location, category, picture, contact name, e-mail.
   <u>Categories refer to the CRFS categorisation</u>: Agriculture & fishing, food processing, food distribution, food service and consumption, food waste, education and services, others.
   <u>Sustainability assessment</u>: raw data introduced by CRFS is converted into KPIs defined in WP2 (see section *CRFS Scoring – Sustainability Score*)
2) The new user is assigned a 'Pending to validate' state.
3) The administrator user reviews the information and validates or deletes the CRFS initiative.

After a CRFS is validated, a series of actions are automatically generated by the FoodE App environment:

- A QR code is assigned, which will be used in RQ2 and RQ3.
- An individual site for the CRFS initiative is generated to include collected information.
- The CRFS initiative is spatially located in an interactive 2D map.

- Users can search and find this CRFS through specific keywords or by filtering the CRFS list.

RQ2. Provide feedback

To provide feedback, users will need to register as regular users to use this feature (name, email and location. Regular users will be able to provide reviews for CRFS initiatives using the QR code:

1) A CRFS owner or representative will physically provide its QR code to the customers/visitors.
2) If they are registered in the app, they will be able to read the QR code through the SCAN option in the bottom menu.
3) The user will be able to provide a review to the CRFS.
4) For every review, the regular user will obtain FoodE Zero Miles for the CRFS loyalty programme (RQ3).

RQ2. Reward consumers

CRFS customers/visitors can access the loyalty programme FoodE ZeroMiles, which is awarded based on the calculation of their food miles, through the QR code provided by the CRFS representative. The most practical way to reward consumers is under discussion.

CRFS Scoring and Ranking

CRFS will be scored and ranked based on two different parameters: the Sustainability Score and the Customer's Score (Figure 4). Both reviews will be used to decide the winners of the FoodE Hero award, given to the winning CRFS initiatives during MyLocalFoodE events (WP3).

Sustainability Score

The sustainability Score will be calculated based on the outcomes generated by WP2 – Methodological framework development and case studies sustainability assessment. The computing engine integrated in the app database will allow not only to calculate the sustainability score, but also any other KPIs that are considered relevant for CRFS in general or for a specific CRFS category, based on raw data introduced by CRFS owners in the backoffice web.

Customers' Score

To ensure that customers play a big part in ranked CRFS, a customer's score will be calculated based on the feedback provided by CRFS customers. Once customers visit or buy a product from a CRFS, they will be able to scan a QR code through the FoodE App that will be redirected to a page to review the CRFS from a customer's perspective. Once the feedback is introduced, the customer will be able to leave a qualitative comment on other relevant aspects of the experience for buying/visiting that specific CRFS. This comment will be reviewed by the FoodE App administrator to check that it falls within the scope of the tool and to avoid deceptive language.

Figure 4. Summary of the CRFS ranking: sustainability and customer score.

Participatory Design

Initial Design Survey

An initial design survey was distributed through mail to all members of the FoodE general assembly, which reached 29 answers. This is a second consultation with the FoodE general assembly, following the survey described in D3.8. Apart from the questions on selecting the preferable initial design among the options in Figure 5, an additional question on potential comments regarding the design was also included in the survey.
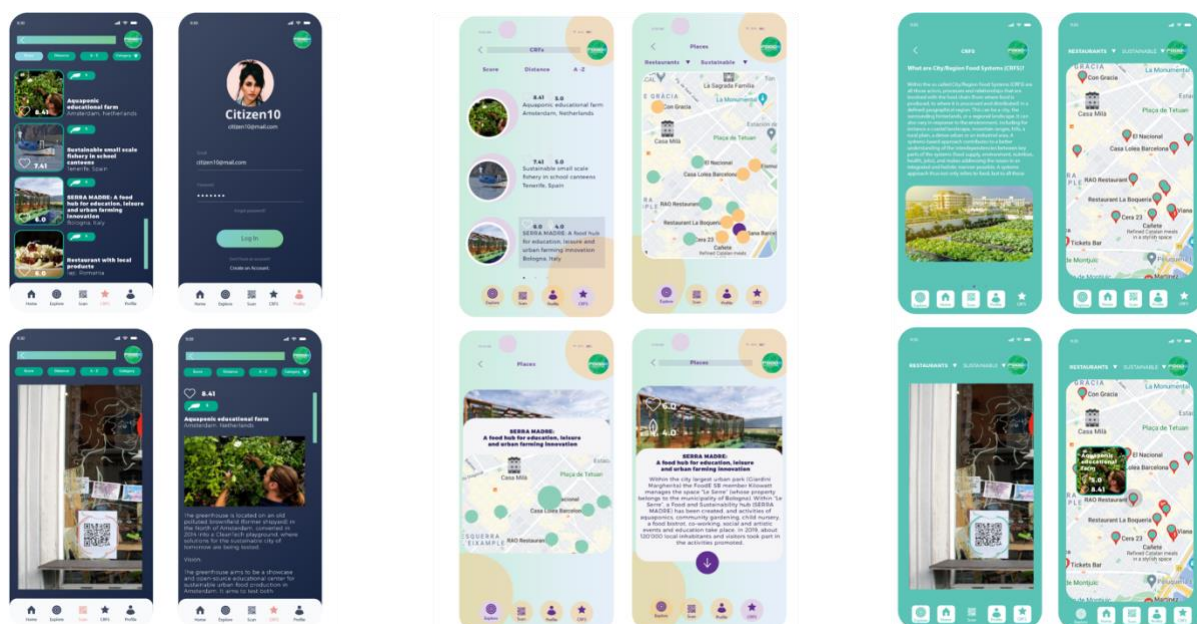

Figure 5. Three initial designs considered in the first survey.

Results from the initial survey are presented in Figure 6. As observed, more than half of participants in the survey voted for Option 1, with Option 3 and 2 coming second and third, respectively. Since this survey was entirely based on the initial design style of the app, further design workshops were organised within the framework of relevant FoodE meetings.

Design Workshops

Two design workshops were organized to engage the FoodE community in the design of the FoodE App:

- FoodE General Assembly (July 2nd 2021) – Language: English
- Sabadell Stakeholder Board Meeting (July 14th 2021) – Language: Catalan

A general app presentation was made in both workshops (see cover in Figure 7), presenting its main features, functionalities, and navigation. A graphical summary of the results from both workshops can be found in Annex 2.

Future work

Subcontracting process

T3.2.2 was entirely carried out with UAB resources, since it entailed a big part of design and conceptualization of the app and its working environment. However, T3.2.3 will include the further development of the complete FoodE App, integrating a computing engine and a fully functioning backoffice web. To carry out these technical tasks, a subcontracting process was initiated in June 3rd, published in June 10th and closed in June 28th with the official name "38/2021 Serveis de desenvolupament de la FoodE APP per a telèfons mòbils i tauletes en el marc del projecte finançat per la Unió Europea "FoodE" mercès a l'acord de subvenció n. 862663" (available through the following hyperlink). The contract with the winning company (Ecoavantis) has been signed at the end of July. From there on, Ecoavantis will continuously work with UAB WP3 researchers to ensure that the FoodE App is developed in line with the project and WP3 objectives. To do so, Ecoavantis and UAB WP3 researchers are already working on the imminent app updates, as described in the following section.

Imminent app updates

Based on the narrowed functions of the current app prototype the imminent app updates (December 2021) that will be developed jointly between UAB and the subcontracted company are:

- FoodE App and the related environment updated with the functionalities described in T3.2.2.
- Computing engine operational to calculate sustainability score and a first batch of KPIs suggested by WP2.
- Translation of contents into main languages used within the FoodE Project, including French, Italian, German, Catalan and Spanish.
- Development of the data protection and privacy policy within the app in collaboration with the ethical committee of the UAB. These issues will be developed prior to the public dissemination of the FoodE app.

Participatory approach: engaging FoodE Stakeholders

Based on the success of participatory approaches for the development of the FoodE App prototype, additional workshops and surveys are planned to keep engaging FoodE and CRFS stakeholders in the app development process.
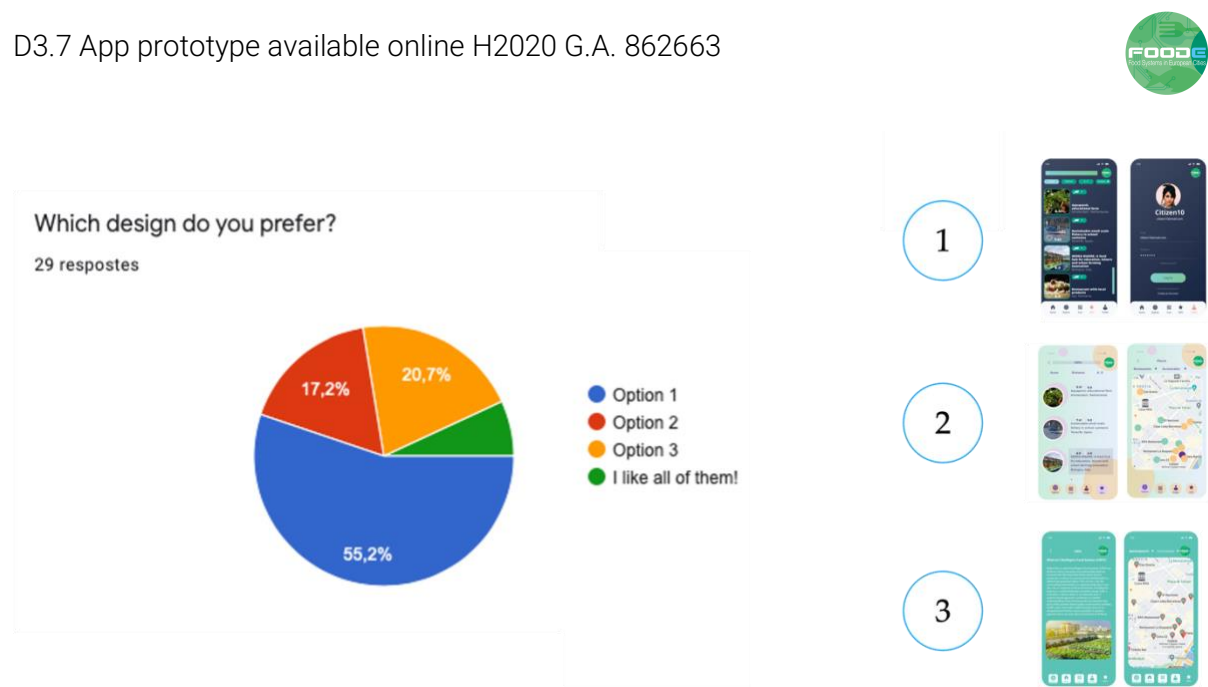
Figure 6. Results from the first design survey.

Figure 7. Cover of the presentation used for the app design workshops.

Annex 1: Graphical Summary

Graphical summary of the functional requirement of the FoodE app and description of linkages with other work packages of the FoodE project.
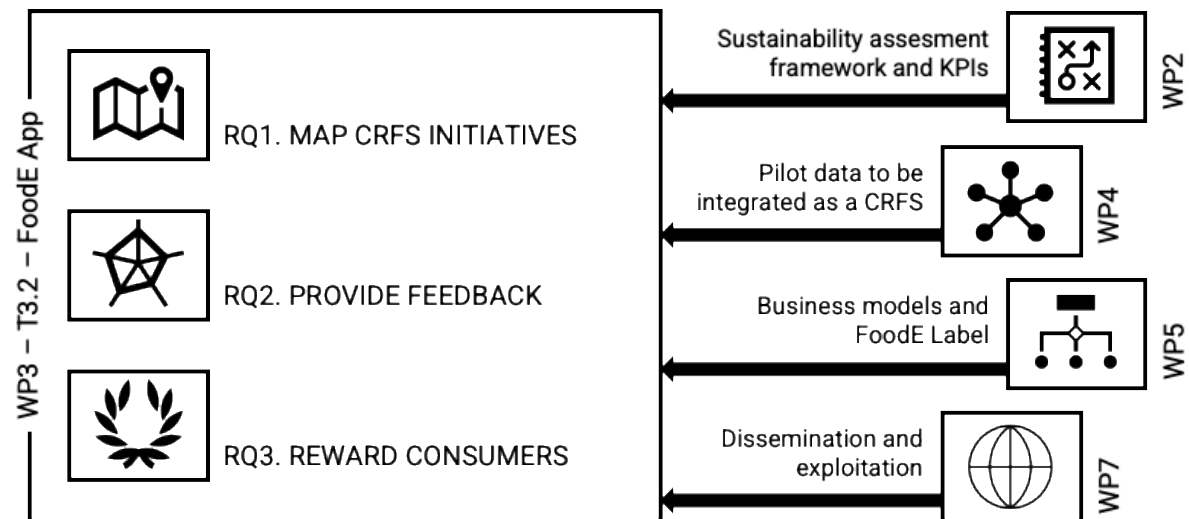
Annex 1 - Graphical Summary

Annex 2: Workshops' Results
See the next 2 pages.

FoodE App – Participatory Design

Summary of 29 answers – FoodE GA – 1-2 July 2021

Bottom Menu

From the options below, choose the ones that you think deserve a spot in the bottom menu.

EXPLORE (95%) – HOME, SCAN, CRFS (81%) – PROFILE (71%)

If all the 5 options were to be included in the Bottom Menu, how should they be ordered (from left to right)?

Most voted combination: (1) HOME / (2) EXPLORE / (3) SCAN / (4) CRFS / (5) PROFILE

Home-About

From the 3 options below, which one of them do you think should be at the top of the section (i.e. the most important position in terms of visibility)?

CRFS Definitions (46%) – FoodE Project (29%) – Sustainability-related concepts (25%)

Any additional concept to be added here?

"News", "Disclaimer", "Nothing More". Information that is permanently important to the user to make this tab as relevant as possible.

Profile

Do you think of any potential options to be added in this tab?

Merge "Change Password" and "Languages" into a Settings button. Option to change the profile picture. Option to disable notifications (if existing).

FAQS

From a user's perspective, which kind of questions should be included in the FAQS section?

Benefits of the app. How the rewards work. How can I find a CRFS. What is urban agriculture and related concepts. How the customer and sustainability scores are calculated. How the scan works. Data protection info. Specific section for new CRFS.

Sorting CRFS

From the following options to sort or filter CRFS, which one is more important in your opinion?

Distance (54%) – CRFS Category (38%) – Score (8%) – Alphabetically (0%)

Any additional parameter to add in the list above?

"Vegetarian Options". Remove the "Sort/Filter alphabetically" option

If you only could select one of the options below for the CRFS, which one would you select?

Sort+Filter, Filter (42%) – Sort (17%)

ICTA

sostenipra

UAB
Universitat Autònoma de Barcelona

FoodE App – Participatory Design

Summary of 13 answers – Sabadell Stakeholder Board – 14 July 2021

Bottom Menu

From the options below, choose the ones that you think deserve a spot in the bottom menu.

EXPLORE (92%) - HOME (83%) - SCAN, PROFILE (67%) - SCAM (58%)

If all the 5 options were to be included in the Bottom Menu, how should they be ordered (from left to right)?

Most agreed combination: (1) HOME / (2) EXPLORE / (3) SCAN / (4) CRFS / (5) PROFILE. Other comments: Merge Explore and CRFS tabs

Home-About

From the 3 options below, which one of them do you think should be at the top of the section (i.e. the most important position in terms of visibility)?

CRFS Definitions (50%) – FoodE Project, Sustainability-related concepts (25%)

Any additional concept to be added here?

"Notifications", "Nothing More".

Profile

Do you think of any potential options to be added in this tab?

"Big emphasis on CRFS and related concepts", "Change the name CRFS"

FAQS

From a user's perspective, which kind of questions should be included in the FAQS section?

Benefits of the app. What a CRFS is. Information about the project. How the customer and sustainability scores are calculated. How the scan works. How to be a CRFS. Hot does the map works and how do I look for a specific CRFS.

Sorting CRFS

From the following options to sort or filter CRFS, which one is more important in your opinion?

Distance (42%) – Score (33%) – CRFS Category (25%) – Alphabetically (0%)

Any additional parameter to add in the list above?

"Score and Distance have the same importance". "Tyoe if company or CRFS"

If you only could select one of the options below for the CRFS, which one would you select?

Sort+Filter, Filter (50%) – Filter (33%) – Sort (17%)

ICTA sostenipra UAB Universitat Autònoma de Barcelona