

Horizon 2020
INFRADEV-1-2014 - Design studies

RICHFIELDS Working Package 4
Deliverable D4.5

Overall Synthesis Report
Outcomes of WPs 5-10 synthesised for WP11-13

Date delivered:
M36

Authors:
Charo Hodgkins, Lada Timotijevic

Deliverable lead beneficiaries:
USURREY

Project	
Project acronym:	RICHFIELDS
Project full title:	Research Infrastructure on Consumer Health and Food Intake for E-science with Linked Data Sharing
Grant agreement no.:	654280
Project start date:	01.10.2015
Document:	
Title:	Overall Synthesis Report
Deliverable No.:	D4.5
Authors:	Charo Hodgkins, Lada Timotijevic
Reviewer:	Karin Zimmermann – Project Coordinator Pieter van 't Veer – Scientific Coordinator
Start date:	1.09.2017
Delivery date:	28.09.2018
Due date of deliverable:	30.06.2018
Dissemination level:	PU
Status:	Final

Change history:		
Version	Notes	Date
001	First draft submitted for review	28.08.2017
002	Revised document post Quality Control	27/09/2018



Karin Zimmermann
Project Coordinator



Prof Pieter van 't Veer
Scientific Coordinator

Summary

The purpose of this deliverable, being prepared as part of the WP4 workplan, is to provide input to Phase 3 for the final design of the proposed RICHFIELDS RI/data platform and insight for the development of the wider roadmap proposal for the FNH-RI by synthesising the findings across the three work streams within Phases 1 and 2 and identifying potential opportunities/issues that are relevant for the final design of the RICHFIELDS RI/data platform by Phase 3.

The recommendations arising from this synthesis report are summarised under three main areas:

1 Scientific usefulness of consumer generated data:

Whilst there are scientific limitations surrounding the use of consumer-generated purchase and preparation data these are possible to overcome by linking to data from consumer-generated consumption APPS. Better understanding of the possible drivers and barriers for people's food purchase, preparation and consumption behaviour will also be facilitated by associating these data with other relevant social, health and lifestyle data. However, there is a need to establish best practice guidelines, quality standards and protocols for effective integration of consumer generated food purchase, preparation and consumption data in a scientifically meaningful way.

2 Data, standardisation and technical considerations:

The RICHFIELDS data platform must be flexible by design to be able to respond to a dynamic ICT environment and facilitate linkage with new data streams as they emerge in the commercial world. Links need to be built between existing RIs in the food and health domain and the RICHFIELDS RI/data platform facilitated by the development of ontologies to harmonize entities, food classification and description systems. This is fundamental to facilitate future data access/exchange between existing and new RIs. Authoritative materials and standards for research data relevant to the food and health domain need to be established to ensure best practice and to help shape the research community moving forward with data sharing activities. Support and training should be provided to laboratories and experimental facilities operating in the food and health domain in order to maximise future sharing opportunities of standardized data.

3 Business model, governance and ethical considerations:

It is essential that the data sharing activities RICHFIELDS promotes are legally and ethically compliant and that intellectual property rights and competitive advantage are not compromised. Without this trust, the willingness to share data with the proposed RI/data

platform will be severely impacted. Re-purposing of data needs to be carefully scrutinized and controlled such that ethical compliance with the original participants' consent is always maintained.

To further engender trust the resultant governance structure for the RI/data platform must be fully transparent and the roles and responsibilities within it well-defined. This is especially important in a public-private business model scenario when there is often differing drivers and a different set of guiding principles in terms of ethics. It is imperative that sufficient incentives/services are offered to motivate data providers from the various business stakeholder groups (retail, public procurement, market research, APPS and AGGREGATORS) to share their data with the proposed RI/data platform.

In order to ensure its success and sustainability, there is a need to establish RICHFIELDS as the authoritative, 'go-to' resource for research materials and data within the domain of food behavior determinants. This can be facilitated by provision of training and consultancy, effective feedback and engagement mechanisms for the proposed user community and dissemination of the benefits of utilizing the proposed data platform in research activities.

Table of Contents

1 Introduction	6
1.1 Aim.....	7
2 Method	7
3 Results and Conclusions	7
3.1 Scientific usefulness of consumer generated data.....	7
3.2 Data, standardisation and technical considerations.....	8
3.3 Business model, governance and ethical considerations.....	9



1 Introduction

The vision of the RICHFIELDS project is to design a Research Infrastructure (RI) to collect, align and share consumer, business and research data in order to provide the scientific research community access to innovative data sets and the ability to generate new knowledge and breakthroughs in the consumer food and health domain. This will enable policymakers and other stakeholders to develop, evaluate and implement effective food and health strategies at the level of both individuals and populations.

It is proposed that the RI will provide an unprecedented opportunity to address the determinants of consumer behaviour relevant to food and health across three distinct instances of behaviour: purchase, preparation and consumption. By building on determinants and intake ('DI' components) of the proposed DISH-RI (www.eurodish.eu), the design proposal arising from the RICHFIELDS project will be an important building block for subsequently constructing an ESFRI roadmap proposal for a pan-European Food Nutrition and Health Research Infrastructure (FNH-RI).

The workplans were separated into 3 phases; Phase 1 was tasked with exploring the range of consumer-generated data currently collected, mainly via smart phone applications and tools (APPS) in terms of

- the type and quality of consumer-generated data collected
- consumers' perspectives on willingness to share their data with researchers.

In order to identify and fully exploit all additional connections and possible linkages towards the design of the proposed RI/Consumer Data Platform and the data it could potentially harness, Phase 2 explored

- best practices for extracting purchase and procurement behaviour from existing business data sources and the potential use of new technologies and devices in the farm to fork supply chain: retail, food service and E-commerce that could be potentially useful (WP8).
- potential linkages and data sharing opportunities with
 - existing RIs and (European) projects that generate and monitor the data on EU consumers in the food and health domain (WP9).
 - research related laboratory and experimental settings and the data they generate (WP10)

Phase 3 was then responsible for the developing the design of the proposed RICHFIELDS RI/data platform.

1.1 Aim

The purpose of this deliverable, being prepared as part of the WP4 workplan, is to provide input to Phase 3 for the final design of the proposed RICHFIELDS RI/data platform and insight for the development of the wider roadmap proposal for the FNH-RI by

- 1) synthesising the findings across the three work streams within Phases 1 and 2
- 2) identifying potential opportunities/issues that are relevant for the final design of the RICHFIELDS RI/data platform (Phase 3), but which may not be covered specifically in the Phase 1 or 2 deliverables.

2 Method

To develop this deliverable, a desk-based review of the deliverables arising from the Phases 1 and 2 activities was performed by WP4 which resulted in the development of the phase specific synthesis deliverables D4.2 and D4.3. The outcomes of these were then further integrated and synthesised to produce this deliverable.

3 Results and Conclusions

The main recommendations arising from the results and outcomes of Phases 1 and 2 are synthesised below under three separate areas:

- Scientific usefulness of consumer generated data
- Data, standardisation and technical considerations
- Business model, governance and ethical considerations

3.1 Scientific usefulness of consumer generated data

3.1.1 The scientific limitations for consumer-generated purchase and preparation data identified by Phase 1 are potentially possible to overcome by linking to data from consumer-generated consumption APPS allowing a more extensive mapping of food choice and eating behaviour from preparation through to consumption for an individual.

3.1.2 Best practice guidelines, quality standards and protocols are needed for the effective integration of consumer-generated food purchase, preparation and particularly composition data in a scientifically meaningful way. Unstandardized or undocumented food intake assessment procedures, data exchange protocols and formats, terms of use and privacy regulations, limit possibilities to integrate, process and share user-documented food consumption data in a scientifically robust way.

3.1.3 A vital source for better understanding the possible drivers and barriers for people's food purchase, preparation and consumption behaviour is likely to come from associations between these data and other relevant social, health and lifestyle data. For example, to gain domestic food purchase, preparation and consumption data from dedicated APPS and link this with health and lifestyle APPS for an individual. This combined data could be further enriched with demographic, situational and social context data collected through APPS such as Facebook, Twitter and Instagram.

3.2 Data, standardisation and technical considerations

3.2.1 The RICHFIELDS data platform must be flexible by design to be able to respond to a dynamic ICT environment (e.g. developments in consumer location sensing technologies, neuromarketing technologies). This will ensure it is able to link with new data streams as they emerge in the commercial world.

3.2.2 Build links between existing RIs in the food and health domain and the RICHFIELDS RI/data platform.

3.2.3 Develop a RICHFIELDS ontology and harmonize entities, food classification and description systems. This is fundamental to facilitate future data access/exchange between existing and new RIs.

3.2.4 Establish authoritative materials and standards for research data relevant to the food and health domain e.g. data catalogues, data management protocols, research protocols etc. This is essential to ensure best practice and to help shape the research community moving forward with data sharing activities.

3.2.5 Establish relationships with developers/owners of AGGREGATORS already in the marketplace (e.g. Fitnesssyncer, GoogleFit etc.) to facilitate access to a wider breadth of consumer data. As part of the RICHFIELDS design, consideration might also be given to the development of a RICHFIELDS specific APP that could not only act as an AGGREGATOR to link with other APPS used by an individual, but also as a means of collecting additional standardised data from a cohort of individuals that are of interest for research purposes.

3.2.6 Develop a means of capturing and describing new APPS and AGGREGATORS that are being used by consumers in the food and wellbeing domain so that researchers can easily see what data is being created by consumers that might best inform future research designs.

3.2.7 Create quick wins for the RICHFIELDS RI for data acquisition from business by exploiting the existing APIs (Application Programming Interfaces) for sharing data between businesses (e.g. Tesco in the UK).

3.2.8 Provide sufficient support and training to laboratories and experimental facilities operating in the food and health domain in order to maximise future sharing opportunities of standardized data.

3.3 Business model, governance and ethical considerations

3.3.1 Ensure that the data sharing activities RICHFIELDS promotes are legally and ethically compliant (e.g. with GDPR and the Helsinki Principles etc.), and that intellectual property rights and competitive advantage are not compromised. Without this trust, the willingness to share data with the proposed RI/data platform will be severely impacted.

3.3.2 Appropriate metadata must be assigned to data such that the possibility of non-compliant sharing from either a legal/ethical or data owner requirement is eliminated. The variety of data sources potentially involved and the varying levels of consent they carry with them present significant challenges to the open access vision of RICHFIELDS.

3.3.3 Re-purposing of data needs to be carefully scrutinized and controlled such that ethical compliance with the original participants' consent is always maintained.

3.3.4 The governance structure must be fully transparent and the roles and responsibilities within it well-defined. This is especially important in a public-private business model scenario when there is often differing drivers and a different set of guiding principles in terms of ethics.

3.3.5 Establish processes for the appropriate academic acknowledgement of the original data owner within any research publications arising from data acquired.

3.3.6 Due to the increased trust and reduced risk associated with universities when compared to government or commercial organisations the RICHFIELDS RI Governance Model may benefit from clearly identifying a university/universities as the lead rather than a more diverse model where all stakeholders have equal leadership.

3.3.7 It is imperative that sufficient incentives/services are offered to motivate data providers from the various business stakeholder groups (retail, public procurement, market research, APPS and AGGREGATORS) to share their data with the proposed RI/data platform.

3.3.8 Establish RICHFIELDS as the authoritative, 'go-to' resource for research materials and data within the domain of food behavior determinants. In order to achieve this, provision of authoritative and best-practice materials must be considered equally as important as the provision of the data connectivity.

3.3.9 Provide training services (online or physical courses) and consultancy on a one-to-one basis to enhance RICHFIELDS future potential to support high quality research.

3.3.10 Establish feedback and engagement mechanisms from users/stakeholders to ensure RICHFIELDS continues to satisfy ever-changing needs.

3.3.11 Establish an annual conference to disseminate the benefits of utilizing the proposed data platform in research activities. By communicating successful outcomes of research utilizing RICHFIELDS to the wider research community, the impact and credibility of the RI/data platform will be substantially increased. The visibility of the proposed RI/data platform with its stakeholders is key to its success and sustainability.