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ACRONYMS LIST

DoA	Description of Actions
EFSA	European Food Safety Authority
EOSC	European Open Science Cloud
EU	European Union
FAIR	Findable Accessible Interoperable Reusable
FP7	Framework Programme 7
KPI	Key Performance Indicator
MoU	Memorandum of Understanding
PHIS	Plant Phenotyping Information System
RDA	Research Data Alliance
SME	Small or Medium Enterprise
USA	United States of America
VRE	Virtual Research Environment
WG	Working Group

EXECUTIVE SUMMARY

AGINFRA PLUS aspired to provide a sustainable channel addressing adjacent but not fully connected user communities around Food & Agriculture, by exploiting core European e-infrastructures such as EGI.eu, OpenAIRE and D4Science. To this end, the project developed, extended and provided the necessary specifications and components for allowing the rapid and intuitive development of variegating data analysis workflows, where the functionalities for data storage and indexing, algorithm execution, results visualization and deployment are provided by specialized services utilizing European large-scale, cloud-based infrastructure assets.

Furthermore, AGINFRA PLUS aspired to establish a framework facilitating the transparent documentation, exploitation and publication of research assets (datasets, mathematical models, software components result and publications), in order to enable their reuse and repurposing from the wider research community. Thus, the vision of AGINFRA PLUS project was to develop a common technical infrastructure that could initially serve three user communities (namely, Agro-climatic and Economic Modelling, Food Safety & Risk Assessment and Food Security) and it could be evolved to an AGINFRA food cloud demonstrator that could be positioned as the European Open Science Cloud (EOSC)¹ agri-food thematic cloud.

WP8 concentrates on the dissemination of the project and its results among the identified target groups by using online and offline dissemination channels and activities. More specifically, WP8 focused on creating awareness and engaging further the scientific communities that are related to each one of the three user communities of the project (namely, Agro-climatic and Economic Modelling, Food Safety & Risk Assessment and Food Security) and (b) creating general awareness about AGINFRA PLUS and the types of innovative services that scientists may use, in other scientific communities and networks (Task 8.2). Moreover, linking AGINFRA PLUS with international initiatives and networks that are working on open, big and interoperable data for agriculture and nutrition towards contributing to the corresponding standardisation work falls within the scope of WP8 under Task 8.3. Additionally, alignment of the work held in AGINFRA PLUS with the conception, development and deployment of the European Open Science Cloud (EOSC) and its integration with the existing core e-infrastructures is part of Task 8.4. Furthermore, adopting a more sustainable plan for engaging SMEs in the project falls within the recommendations and instructions that we received after the Mid-Term review regarding the number of engaged to our project SMEs. Finally, WP8 managed to establish a sustainable legal entity form (through a not-for-profit association) for the further operation and evolution of AGINFRA PLUS as a joint venture of involved stakeholders of innovative services that scientists may use, in other scientific communities and network (Task 8.5).

WP8 has created an online platform (including project website and social media channels) and a set of printed dissemination materials to promote the project (Annex E). By the end of the project, the project website has been visited by **2.257** people (unique visitors). The social media channels count 265 community members (Facebook), 987 followers (Twitter) and 777 readers (Medium).

Finally, the project has organized 32 major events with selected group of researchers and practitioners (see Section 4.1 and Annex A, Annex B and Annex C). Moreover, the project has conducted 85 AGINFRA PLUS presentations and panel participations at scientific conferences, workshops and other events and was represented at 8 conferences and fairs with a booth or distributing leaflets (see Section 4 and Annex

¹ <https://ec.europa.eu/research/openscience/index.cfm?pg=open-science-cloud>

D). In total, more than 5.000 stakeholders have been reached and 21 scientific publications were published (See Section 6).

This deliverable describes online and offline dissemination channels, as well as activities, which were conducted until the end of the project. Moreover, it provides an outlook of the dissemination activities that were implemented in order to increase project's engagement with SMEs. The collaboration of AGINFRA project with other EU and international projects by providing tools and services is demonstrated along with a description of the data journals created for the project. Finally, Key Performance Indicators are described and applied to measure the effectiveness of dissemination.

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1 INTRODUCTION

1.1 OUR INTENDED IMPACT

The agricultural business landscape is rapidly changing. Established brands in agriculture such as John Deere, Monsanto, and DuPont are now as much data-technology companies² as they are makers of equipment and seeds. Even though agriculture has been slower and more cautious to adopt big data than other industries, Silicon Valley and other investors are taking notice. Popular, business and tech press keep on highlighting the evolution that (big) data brings into the agriculture³, food^{4,5} and water⁶ business sectors – but also into helping feed 9 billion people⁷. For instance, in the farming sector, data collection, management, aggregation and analytics introduce a wide variety of innovative applications and solutions which is also creating an investment environment with a tremendous potential for startups and companies that are focusing on data-intensive applications. It also points out that this should not be considered as a new *tech bubble*, even though the majority of agriculture and food market sectors is still facing challenges.

In comparison to the size of the global agriculture market (\$7.8 trillion), AgTech investment (with less than 0.5% of it) seems to be very modest and with amazing prospects. **AGINFRA PLUS** particularly aims to take advantage of this investment trend by targeting and involving agriculture and food data-powered companies (and especially startups and SMEs). It has a dedicated work activity on getting such companies involved, and it will align its efforts with the business outreach (through data challenges, hackathons, incubators and accelerators) of its European (e.g. ODI⁸, Big Data Value Association⁹) and global networks (e.g. GODAN¹⁰). Moreover, based on the G-8 Open Data Action plan, “Open access to publicly funded agriculturally relevant data”, and through its representation and active contribution to international networks like GODAN, the Research Data Alliance (RDA) and the Coherence in Information for Agricultural Research and Development (CIARD¹¹), AGINFRA PLUS aims to continue supporting the global outreach and collaboration of European agriculture and food data stakeholders with their international counterparts. In the next section are described the actions that AGINFRA PLUS project aims to realise for supporting.

1.2 OUR HIGH-LEVEL IMPACT INDICATORS

The table below illustrates all the **Key performance indicators** that AGINFRA PLUS partners were expected to implement to contribute to the anticipated impacts set out in the Work Programme of the call along with their targeted and achieved goals.

² <http://techcrunch.com/2013/10/02/monsanto-acquires-weather-big-data-company-climate-corporation-for-930m/>

³ <http://www.businessinsider.com/big-data-and-farming-2015-8>

⁴ <http://www.wired.com/2014/09/ex-googler-using-big-data-model-creation-new-foods/>

⁵ <http://www.wired.com/insights/2014/02/big-data-revolutionizing-food-industry/>

⁶ www.nytimes.com/2016/03/17/opinion/the-water-data-drought.html

⁷ <http://www.techrepublic.com/article/how-big-data-is-going-to-help-feed-9-billion-people-by-2050/>

⁸ <http://theodi.org/>

⁹ <http://www.bdva.eu/>

¹⁰ <http://godan.info/>

¹¹ <http://ciard.info/>

Table 1: AGINFRA PLUS KPIs

Work Programme aim	AGINFRA PLUS contribution	Key performance indicators
Accelerate the development of innovative data and computing intensive services in areas of social relevance.	Will provide to scientists, access to prototypes of innovative data and computing intensive applications and services that they can use in their research workflows & experimentation.	1) <i># of innovative software tools & services (target: >6 VS achieved: 34)</i>
	Will involve and expose to e-infrastructure resources and services core groups of software developers developing data and computing intensive applications for researchers.	2) <i># of communities to be directly engaged & exposed (target: >3 VS achieved: 17)</i>
It will foster the use of open einfrastructures eco-systems promoting smooth collaboration among and between the large European Policy data intensive initiatives	Will liaise with other research infrastructures and e-infrastructure clusters to share, discover & reuse data and software with other communities.	3) <i># of events organised or joined to liaise with other e-infrastructures (target:>5 VS achieved: 30)</i>
	Will participate and promote the use of e infrastructures to large data intensive initiatives related to sustainable development, agriculture and nutrition (such as ICT-AGRI, EIP-AGRI, SCAR, GODAN, IODC community)	4) <i># of linked data intensive policy initiatives (target: >5 VS achieved: 12)</i>
It will bridge the gap between adjacent but not connected scientific communities and promote wide dissemination of data, including to the citizens engaged in science	Will provide to scientists, access to data types and sources that they have not been using so far in their research workflows & experimentation.	5) <i># of new data types & sources made available to researchers through appropriate licensing (target: >10 VS achieved: 10)</i>
	Will carry out activities to engage adjacent but not connected scientific communities and promote the take up of the AGINFRA data & services.	6) <i># of events organised to engage and support new audiences (target: >10 VS achieved: 25)</i>
It will support collaboration in data provision and exchange across regional and national related infrastructures allowing the integration of data from a myriad of resources and research communities	Will federate and interconnect existing registries of data sets of relevance to agriculture, food and environmental research, by extending the global meta-registry of AGINFRA called CIARD RING.	7) <i># of data sources made easier to discover, access & re-use (target: >100 VS achieved: 23.093)</i> <i>*23.093 with incorporated numbers from all partners.</i>
		8) <i># of federated data set registries (target: >5 VS achieved: 13)</i>
	Will engage and expand existing groups of scientists and data managers working on datasets provision, interoperability and exchange, such as the RDA IGAD and the GODAN WGs.	9) <i># of people involved in groups working on data provision & exchange (target:>100 VS achieved: 1.412)</i>

It will increase the number of SMEs that are aware of available e-infrastructures resources and services and become active innovators and or suppliers of einfrastructures	Will invite and introduce startups and SMEs to the resources, services and data available through AGINFRA in project activities & events	10) # of SME representatives participating in project events (target: >30 VS achieved: 32)
	Will create a mechanism to disseminate, present and showcase AGINFRA data and services to new and existing companies.	11) # of tech/data events attended to engage and involve companies (target:>10 VS achieved: 15)
	Will rganize focused social media marketing campaigns & actions to specifically target SMEs and startups	12) # of SME-oriented marketing campaigns & actions (target: >5 VS achieved: 6)
Stronger links between einfrastructure operators and other actors in the innovation chain, such as independent software vendors, innovation clusters and Research and technology organisations, will be put in place	Will give emphasis in reaching out to H2020 SC1, SC2, and SC5 research & innovation projects, in order to support their open access and data management activities and needs.	13) # projects in network (target: >50 VS achieved: 169) <i>*We supported 15 projects directly & the rest 154 (ANNEX G) indirect.</i>
	Will liaise with the European and global actors in the agricultural innovation chain, in order to promote the AGINFRA data & services.	14) # of events organised or joined to liaise with agricultural innovation stakeholders (target: >5 VS achieved: 14)
The value of existing scientific information infrastructures will increase with the addition of new interoperable and/or integrated services	Will include advanced data provision & exchange services that will enable heterogeneous and distributed data fusion, integration and discovery	15) # of data provision & exchange services deployed (target: >5 VS achieved: 15)
	Will particularly focus on prototyping innovative data and computing research workflows that were envisaged but not possible before the project.	16) # of innovative data processing and visualisation workflows prototyped (target: >5 VS achieved: 9)

Based on the provided effort, it seems that in all cases AGINFRA PLUS partners have not only succeeded in achieving the set goals, but in overcoming them.

Further analysis of the partners' contribution to the expected impacts is provided in ANNEX H.

1.3 OUR WAY TO MAXIMIZE IMPACT

AGINFRA PLUS includes in its workplan a dedicated dissemination task that particularly focus on the way in which the project's work and outcomes will be communicated to its key targeted stakeholders:

a) *Research infrastructures' stakeholders*: representatives of both funding and policy making bodies, as well as of other relevant research infrastructures and e-infrastructure providers. Also includes representatives of existing sites and services of infrastructures that are serving agriculture, food and environmental research, including both physical and digital ones.

b) *Targeted beneficiaries/users*: beneficiary scientific communities working on the variety of agricultural, food and environmental sciences' topics, as researchers, academics, data managers, software developers or research support staff.

c) *Technology providers*: private and public organisations of various sizes (from large IT and agri-food industry players to young dynamic AgriTech and IT startups) that develop technology solutions of relevance to the agriculture and food markets and their value chains.

d) *Data providers*: various types of public and private institutions that are collecting, managing, using and publishing agriculture and food data. Includes a wide range of institutions (and people working in these institutions), from agricultural research institutes and ministries of agriculture, to food agencies and authorities.

This dedicated dissemination task regards all partners involvement in the realization of the predetermined KPIs and more particularly, in the realization of KPIs targets, as highlighted in red colour in Table 1.

2 DISSEMINATION OF PROJECT RESULTS

2.1 OUR DISSEMINATION AIMS

Our approach to dissemination will be layered, starting from the partner organisations themselves, moving out to the whole consortium, to the directly connected networks, and then other relevant stakeholders. Since we have defined the initial version of the core concept, its unique value proposition, and the key messages to be used/tested, we have started working on this dissemination approach. This is particularly important in **AGINFRA PLUS** because the consortium includes three (3) very important and major research stakeholders (**INRA**, **BfR**, **ALTERRA**) that have several departments, labs and teams that should be informed about the project and get involved in it. Furthermore, since the consortium includes partners that participate in several strategic networks, as the dissemination activities moved to the outer layer more and more relevant stakeholders have been engaged. The table that follows briefly outlines the aims, methods and stakeholders of each level.

2.2 OUR SELECTION OF DISSEMINATION

In Table 2, all five (5) dissemination levels that we have approached during AGINFRA PLUS operation are illustrated. For each level, special dissemination objectives are described and some suggested methods and activities for implementation are provided. The list of methods and activities has been enriched with the suggestions of project's partners. Finally, each project's partner has declared whether & why has chosen to utilize one of the listed methods/ activities in order to implement the described aim.

Table 2: Demonstration of the dissemination aims and of the methods & activities that project's partners have chosen to utilize

Dissemination Aims	Methods & Activities	Which methods & activities we have chosen to implement each aim	
LEVEL 1: Within own organisations			
Discover people, departments & initiatives within partner organisations that are relevant to project and that should be aware about progress & outcomes.	<ol style="list-style-type: none">1. Review organisational websites about relevant people, depts., initiatives2. Regularly set up internal informal & formal meetings3. Use internal mailing & communication lists4. Take advantage of internal knowledge sharing & training events5. Inviting to project meetings, workshops & events	Partner	Choices
		Agroknow	2,4 & 5
		INRA	2 & 5
		BfR	4 & 5
		CNR	2, 3 & 4
		PENSOFT	2 & 5
		WUR	2, 3, 4 & 5
		UoA	1, 3 & 4
		EGI	2, 3 & 4
		Partner	Choices

Set up continuous communication mechanisms & channels to share AGINFRA PLUS progress with relevant people.		Agroknow	2
		INRA	2
		BfR	2
		CNR	2 & 3
		PENSOFT	2
		WUR	2
		UoA	3
		EGI	2
Involve relevant people from other departments and initiatives even if not directly contributing to AGINFRA PLUS implementation.		Partner	Choices
		Agroknow	2,3,4
		INRA	2 & 4
		BfR	3 & 4
		CNR	2, 3 & 4
		PENSOFT	2 & 5
		WUR	2, 3, 4 & 5
		UoA	n.a.
Create awareness to internal decision makers that can help AGINFRA PLUS achieve implementation, impact & sustainability goals.		Partner	Choices
		Agroknow	2,3,4 & 5
		INRA	2
		BfR	2,3 & 4
		CNR	2, 3 & 4
		PENSOFT	2
		WUR	2, 3, 4 & 5
		UoA	n.a.
		EGI	2,3 & 4

LEVEL 2: Within AGINFRA PLUS partnership			
		Partner	Choices

Link and bring together people working on similar topics across consortium, in order to create working groups that will implement common activities.	<div></div> 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		<i>BfR</i>	2 & 4
		<i>CNR</i>	2, 3, 4, 5 & 6
		<i>PENSOFT</i>	n.a.
		<i>WUR</i>	2,3 & 4
		<i>UoA</i>	2 & 4
		<i>EGI</i>	n.a.
		<i>Partner</i>	Choices
		<i>Agroknow</i>	2, 4 & 6
		<i>INRA</i>	2 & 4
		<i>BfR</i>	2 & 4
		<i>CNR</i>	2, 3, 4 & 5
		<i>PENSOFT</i>	n.a.
		<i>WUR</i>	2,3 & 4
		<i>UoA</i>	n.a.
		<i>EGI</i>	n.a.
Facilitate and support direct collaboration and information sharing among partners.		<i>Partner</i>	Choices
		<i>Agroknow</i>	2, 4 & 6
		<i>INRA</i>	2 & 4
		<i>BfR</i>	2 & 4
		<i>CNR</i>	2, 3, 4 & 5
		<i>PENSOFT</i>	n.a.
		<i>WUR</i>	2,3 & 4
		<i>UoA</i>	n.a.
		<i>EGI</i>	n.a.
Provide good guidelines and materials for dissemination activities planning, implementation & reporting.		<i>Partner</i>	Choices
		<i>Agroknow</i>	6
		<i>INRA</i>	n.a.
		<i>BfR</i>	n.a.
		<i>CNR</i>	6
		<i>PENSOFT</i>	n.a.
		<i>WUR</i>	n.a.
		<i>UoA</i>	n.a.
		<i>EGI</i>	n.a.
LEVEL 3: Towards core target groups through direct networks			
Establish links with relevant networks & communities of scientists that partners are involved into.	1. Include in planned use case pilots relevant data & software tools of importance to specific networks & communities.	<i>Partner</i>	Choices
		<i>Agroknow</i>	2 & 5
		<i>INRA</i>	1 & 2
		<i>BfR</i>	1 & 2

	<ol style="list-style-type: none"> Organise special training & hands on sessions or workshops at events where communities gather. Deliver online training & awareness on topics of relevance. Create new working groups or enhance existing ones in networks of relevance. 	CNR	1, 3 & 5
		PENSOFT	n.a.
		WUR	1,2 & 4
		UoA	n.a.
		EGI	1,2,3 & 5
<p>Organise targeted actions to inform & engage scientists in the networks & communities where partners have direct access to.</p>	<ol style="list-style-type: none"> Promote AGINFRA PLUS within existing networks e infrastructure providers (esp. EGI, OpenAIRE, EUDAT) to attract interest from NRENs. 	Partner	Choices
		Agroknow	2
		INRA	1 & 2
		BfR	1 & 2
		CNR	1 & 5
		PENSOFT	n.a.
		WUR	1,2 & 4
		UoA	n.a.
		EGI	5
		Partner	Choices
<p>Create links and synergies with relevant Research Infrastructure & e infrastructure initiatives where partners are involved.</p>		Agroknow	n.a.
		INRA	n.a.
		BfR	n.a.
		CNR	5
		PENSOFT	n.a.
		WUR	n.a.
		UoA	n.a.
		EGI	5
<p>Take advantage of open data & open research initiatives & movements where partners are involved.</p>	<ol style="list-style-type: none"> Promote AGINFRA PLUS within existing open data networks. Take advantage of expertise within the IGAD and GODAN networks in order to recruit knowledge and get feedback from global experts. Use online channels and social media to create 	Partner	Choices
		Agroknow	1 & 3
		INRA	1 & 2
		BfR	1
		CNR	3
		PENSOFT	1 & 3

	awareness in existing networks.	WUR	1,2, & 3
		UoA	n.a.
		EGI	1 & 3
Engage in AGINFRA PLUS progress & decision-making representatives of stakeholders from agri-food data & repository e infrastructures.		Partner	Choices
		Agroknow	1 & 3
		INRA	n.a.
		BfR	n.a.
		CNR	n.a.
		PENSOFT	n.a.
		WUR	n.a.
		UoA	n.a.
		EGI	n.a.
LEVEL 4: Towards other stakeholders and decision makers in the field of the project			
Establish links with other research projects, institutions and communities.	<ol style="list-style-type: none">1. Join or organise clustering events with coordinators of research & innovation projects.2. Liaise with agricultural research scientific associations.3. Organise visits to key research & academic institutions.4. Organise visits & meetings with e-infrastructure project coordinators stakeholders.5. Organise meetings with national e-infrastructure stakeholders.	Partner	Choices
		Agroknow	1,2,4 & 8
		INRA	1 & 8
		BfR	1 & 8
		CNR	6
		PENSOFT	n.a.
		WUR	1,2 & 8
		UoA	n.a.
Organise targeted actions to inform & engage scientists & research institutions outside the partner networks.	<ol style="list-style-type: none">6. Follow work of ENVRIPlus.7. Liaise with Biological and Environmental Sciences Research Infrastructures of relevance such as ELIXIR, ANAEE, and LifeWatch.8. Host events where any interested stakeholder may join and discover more about project.	EGI	1 & 8
		Partner	Choices
		Agroknow	1,2,3,4,5 & 8
		INRA	1 & 8
		BfR	1 & 8
		CNR	n.a.
		PENSOFT	n.a.
WUR	1, 2 & 8		

Carry out actions targeting scientific institutions & networks of strategic importance.		<i>UoA</i>	n.a.
		<i>EGI</i>	1
		Partner	Choices
		<i>Agroknow</i>	1,2,3,4,5 & 8
		<i>INRA</i>	1 & 8
		<i>BfR</i>	1 & 8
		<i>CNR</i>	n.a.
		<i>PENSOFT</i>	n.a.
		<i>WUR</i>	2 & 8
		<i>UoA</i>	n.a.
Create links and synergies with relevant Research Infrastructure & e infrastructure stakeholders.		<i>EGI</i>	n.a.
		Partner	Choices
		<i>Agroknow</i>	1,2,3,4,5 & 8
		<i>INRA</i>	n.a.
		<i>BfR</i>	n.a.
		<i>CNR</i>	1, 4, 6
		<i>PENSOFT</i>	n.a.
		<i>WUR</i>	n.a.
		<i>UoA</i>	n.a.
		<i>EGI</i>	1

LEVEL 5: Towards other countries and sectors			
Promote project outcomes & opportunities to AgTech startups to engage further.	<ol style="list-style-type: none"> 1. Organise online challenges and social media campaigns. 2. Engage and support startups to adopt and use AGINFRA. 3. Join relevant industrial associations & corresponding working groups. 4. Participate in AgTech investor events, trade shows, exhibitions, fairs. 	Partner	Choices
		<i>Agroknow</i>	1,2,4,5,6 & 7
		<i>INRA</i>	n.a.
		<i>BfR</i>	n.a.
		<i>CNR</i>	2
		<i>PENSOFT</i>	n.a.
		<i>WUR</i>	2

	5. Arrange informal & formal meetings with donors and decision makers. 6. Prepare information material for decision makers. 7. Organise press campaigns for public media.	UoA	n.a.
		EGI	n.a.
Promote project outcomes of relevance to the AgTech sector industry stakeholders.		Partner	Choices
		Agroknow	1,4,5 & 7
		INRA	n.a.
		BfR	n.a.
		CNR	2
		PENSOFT	n.a.
		WUR	2
		UoA	n.a.
		EGI	n.a.
		Partner	Choices
Agroknow		1,4,5,6 & 7	
Promote project outcomes of relevance to the data value chain industrial networks and associations.		INRA	n.a.
		BfR	n.a.
	CNR	2	
	PENSOFT	1,6 & 7	
	WUR	2	
	UoA	n.a.	
	EGI	n.a.	
	Partner	Choices	
	Agroknow	1,5,6 & 7	
	Inform funding agencies, donors, decision makers.	INRA	n.a.
BfR		n.a.	
CNR		n.a.	
PENSOFT		n.a.	
WUR		5 & 6	
UoA		n.a.	
EGI		n.a.	

Inform general public.		Partner	Choices
		Agroknow	1 & 7
		INRA	n.a.
		BfR	n.a.
		CNR	2
		PENSOFT	1,6 & 7
		WUR	n.a.
		UoA	n.a.
		EGI	n.a.

2.3 OUR DISSEMINATION KPIS

This section describes the Key Performance Indicators (KPIs), which are used to measure the efficiency of the project dissemination activities in order to keep overview of the current status and to define (corrective) activities for the future periods. The evaluation is conducted to the end of each project year starting with the Year 1. The KPIs are based on those defined in Deliverable “D8.1 – Dissemination and Awareness Plan” and they are further analysed with planned values for each year of the project.

The following KPIs (presented also in Table 3) measure the project branding and the communication material:

K1.1 - Project Website Unique Visitors: The reach of the project website is measured based on the unique visitor number. The KPI is measured with Google Analytics.

K1.2 – Project Audience: This KPI provides the number of recipients of project announcements and includes the number of social media group members, namely the number of project Facebook page followers, the followers at the project twitter account, at the SlideShare account, at the YouTube account and the readers at both Agroknow and project’s coordinator Medium account. The DoA does not define numbers per project year. Thus, we have set our own target based on the number achieved for the first project year (i.e. 85). The KPI is measured from Facebook and Twitter analytics services.

K1.3 - Dissemination Materials: It measures the number of different dissemination materials that have been created for offline promotion activities of the project. For the all project’s lifetime the indicator equals to 4 and it includes the materials that have been described in Section 6.3.1.

K1.4 Project Videos: This KPI measures the number of project videos that have been prepared during the project lifetime, (see more in section 3.2.2).

Table 3: Branding & Communication Material KPIs (cumulative values)

Nr.	KPI	Target Source	Target	Year 1	Year 2	Year 3
K1.1	Project Website Unique Visitors	Own target setting	Annual Target	-	1000	2500

			Achieved Value	120	1.444	2.257
K1.2	Project Audience (Social Media Followers and Likes)	Own target setting	Annual Target	-	200	500
			Achieved Value	85	1100	2026
K1.3	Dissemination Materials (Brochures and Posters)	DoA	Annual Target	-	3	4
			Achieved Value	4	4	4
K1.4	Project Videos	DoA	Annual Target	-	1	4
			Achieved Value	-	3	21

The following KPIs measure the project campaigns:

K2.1 - Open Data Challenges: This KPI measures the number of data challenges have been defined by the project and shared with global open data initiatives and networks. One main open data challenge has been organised during project's lifetime (see more in section 5.2).

K2.2 - Campaigns towards H2020 project coordinators & data managers: This KPI measures the number of online campaigns targeting H2020 project coordinators & data managers. Six (6) project's digital marketing (email/ newsletters) campaigns have been implemented during project's lifetime (see more in section 3.3)

K2.3 - Outreach to general press and media: This KPI measures the number of press releases on project stories & outcomes, as well as interviews with project members and all our relevant Medium articles. For the first, the second and the third project year, this indicator equals to 4, 4 and 12 respectively, and it includes the press publications described in ANNEX D.

Table 4: Campaign KPIs (cumulative values)

Nr.	KPI	Target Source	Target	Year 1	Year 2	Year 3
K2.1	Open Data Challenges	DoA	Annual Target	-	1	3
			Achieved Value	-	-	1

K2.2	Campaigns towards H2020 project coordinators & data managers	DoA	Annual Target	-	2	5
			Achieved Value		3	3
K2.3	Outreach to general press and media	DoA	Annual Target	4	8	12
			Achieved Value	4	4	12

The following KPIs measure the project science and technology outreach:

K3.1 - Editing of special topic volumes & journal issues: This KPI measures the number of edited volumes or journal special issues. We have submitted a special issue proposed on “Data Science Frontiers for food & Agriculture” at the Computers & Electronics in Agriculture journal (<https://bit.ly/2RvrUWP>). The proposed special issue will be co-edited by Ioannis Athanassiadis (WUR), John Sulik (UoGuelph) and Nikos Manouselis (Agroknow).

K3.2 - Publication of scientific papers in journals or conferences: This KPI measures the number of scientific publications related to the project to conference proceedings, journals and book chapters. For the first, the second and the third project year, this indicator equals to 3, to 4 and to 14 respectively, and it includes the publications described in Section 6.

K3.3 - Organisation of special sessions or workshops in scientific conferences: This KPI measures the number of special sessions organized in workshops or conferences. For the first, the second and the third project year, this indicator equals to 1, to 3 and to 2 respectively, and it includes the panel sessions organized in “OpenScienceFair”, 6-8.9.2017, Athens, Greece, in “EOSC-hub week”, 16-20.04.2018, Malaga, Spain, in “AgriResearch Conference - Innovating for the future of farming and rural communities”, 02-03.05.2018, Brussels, Belgium, in “OpenScienceFair”, 16-19.9.2019, Porto, Portugal and in “EOSC-hub week”, 10-12.04.2019, Prague, Czech Republic (see ANNEX D).

K3.4 - Promotion of targeted news items for scientists and experts through specialised channels: This KPI measures the number of news items and blog posts published at the project web-site and other sites such as the GODAN Website and AIMS Website. For the first, the second and the third project year, this indicator equals to 13, to 12 and 30 respectively, and it includes the posts that have been published at the project blog at: <http://www.plus.aginfra.eu/news>.

K3.5 - Participation to training events of young scientists (e.g. summer schools, summer institutes): This KPI measures the number of lecture & hands on workshops related with the project. For the second project year, this indicator is equal to 1, and it includes the lecture under the name “Lecture given to Agronomy students on Data Science Training in Montpellier SupAgro”, Montpellier, France, 19.03.2018. While, for the third-year equals to 1 and regards the presentation in the Data Science Week in Wageningen, Holland on 3-7.02.2020.

K3.6 - Organisation of webinars for scientists: This KPI measures the organization of webinars towards presenting the project outcomes to researchers working on fields related with the project use cases. For the second year, this indicator equals to 1 and it includes the web meeting under the name “RAKIP-EFSA Webmeeting” that organized on 21.06.2018 by BfR. For the third year, this indicator equals to 6 and includes the webinars “Webinar on Galaxy & Galaxy integration with the Dataminer Service in the context

of AGINFRA PLUS Project” and “Webinar on Ontology Management using Vocbench in the context of AGINFRA PLUS Project” that organized on 21/01/2019 and on 10/01/2019 respectively by Agroknow, the “Webinar on cloud based agro-climatic modelling” that organized on 19/12/2019 by WUR, the “Webinar on how a VRE can be used for collaborative science in plant phenotyping domain and more widely in plant science research” that organized on 18/12/2019 by INRA, the “Webinar on harmonized exchange of food safety models using web-based services from RAKIP and the AGINFRA PLUS project” that organized on 09.12.2019 by BfR and one (1) webinar that Agroknow organised at Agricultural University of Athens, one on 8/1/2020 regarding the validation of demonstrator 4.

K3.7 - Open days at partner premises: This KPI measures the number of open days organized at partners’ premises regarding the project. For the first, the second and the third project year, this indicator equals to 1, to 11 and to 9 respectively and it includes the EJP One Health Kick-Off meeting, the Technical Workshop RAKIP project, both RAKIP Meetings, the ORION-Kick off Meeting, the ORION VRE workshop, the EFSA-BfR Workshop on QMRA Model Repository, the RAKIP-EFSA Webmeeting, the RAKIP Workshop, the DEMETER Workshop, the How to benefit from the Risk Assessment Modelling and Knowledge Integration Platform (RAKIP) Workshop and the Harmonized exchange of food safety models using web-based services from RAKIP and the AGINFRA PLUS project workshop that were coordinated by BfR, the Food Security VRE workshop and the Webinar on how a VRE can be used for collaborative science in plant phenotyping domain and more widely in plant science research workshop that was coordinated by INRA, the AgroDataCube Sprint, the 1st Agro-climatic Modelling Evaluation workshop, the WUR Big Data Network, the 2nd Agro-climatic Modelling Evaluation workshop and the 4th Agro-climatic Modelling Evaluation workshop - webinar cloud based agricultural modeling that was coordinated by WUR, the Joint Workshop on Food Risk Assessment Research & Practice that was organised in collaboration by BfR, Agroknow and WUR, the Joint workshop on data science in agri-food with virtual research environments that was organised in collaboration by INRA and WUR.

K3.8 - Special interest groups in specialised forums, standardisation groups, global networks: This KPI measures the number of working groups or special interest groups that the project participates. For the first and second project year, this indicator equals to 2 and it includes the IGAD/RDA Agrisemantics Working Group and the GODAN Data Ecosystem Working Group while for the third year is equal to 1 and regards only the IGAD/RDA Agrisemantics Working Group.

K3.9 - Preparation of articles in general science communication & publication outlets: This KPI measures the number of articles published in journals and conferences. For the second year, this indicator equals to 6 and it includes the 2 journal papers under the names “Harmonized terms, concepts and metadata for microbiological risk assessment models: the basis for knowledge integration and exchange” and “FSK-Lab - an open source Food Safety Model integration tool” and the 4 conferences papers under the names “Serving Scientist in Agri-food area by Virtual Research Environments”, “Semantics for Data in Agriculture: a Community-based Wish List”, “AgroDataCube and AGINFRA PLUS: Operationalising Big Data for Agricultural Informatics” and “RAKIP: Resources for harmonized annotation and efficient exchange of risk assessment models”. For the third year is equal to 10 and it includes the 5 journal papers under the names “Enacting open science by D4Science”, “Open Science meets Food Modelling: Introducing the Food Modelling Journal (FMJ)”, “Establishment of a prototypic Quantitative Microbial Risk Assessment (QMRA) food and feed safety model repository”, “The gCube System: Delivering Virtual Research Environments as-a-Service” and “Opening data and research objects in viticulture: The Viticulture Data Journal (VDJ)” and the 4 conferences papers under the names “Enabling Efficient Food Safety Knowledge Exchange with FSK-Lab”, “Introducing AGINFRA PLUS Based Virtual Research Environments Supporting Scientific Collaboration and Knowledge Exchange in the Food Safety Domain”, “Virtual Research Environments (VRE): Supporting One Health Research Communities - the ORION Experience”, “How to

benefit from the Risk Assessment Modelling and Knowledge Integration Platform (RAKIP)“ and “Enacting Open Science by gCube“. There are four more conferences papers that have been either accepted or are forthcoming. Particularly, the “Using virtual research environments for agro-environmental research” and “Realising a Science Gateway for the Agri-food: the AGINFRA PLUS Experience” have been accepted and “Using virtual research environments in agro-environmental research” and “Using virtual research environments in agro-environmental research” are forthcoming. While, there are three more forthcoming journal papers by the names “Global Foodsource Identifier (GFI): collaborative virtual research environment and shared data catalogue for the foodborne outbreak investigation international community“, “Food Safety Knowledge Markup Language (FSK-ML)” and “Food Safety Knowledge Markup Language (FSK-ML)”.

Table 5: AGINFRA PLUS Science & Technology Outreach (cumulative values)

Nr.	KPI	Target Source	Target	Year 1	Year 2	Year 3
K3.1	Editing of special topic volumes & journal issues	DoA	Annual Target	-	-	1
			Achieved Value	-	-	1
K3.2	Publication of scientific papers in journals or conferences	DoA	Annual Target	-	8	15
			Achieved Value	3	4	14
K3.3	Organisation of special sessions or workshops in scientific conferences	DoA	Annual Target	-	3	6
			Achieved Value	1	3	2
K3.4	Promotion of targeted news items for scientists and experts through specialised channels	DoA	Annual Target	10	20	30
			Achieved Value	13	12	30
K3.5	Participation to training events of young scientists (e.g. summer schools, summer institutes)	DoA	Annual Target	-	3	6
			Achieved Value	-	1	1
K3.6	Organisation of webinars for scientists	DoA	Annual Target	2	4	6

			Achieved Value	0	1	6
K3.7	Open days at partner premises	DoA	Annual Target	-	4	8
			Achieved Value	1	11	9
K3.8	Special interest groups in specialised forums, standardisation groups, global networks	DoA	Annual Target	-	3	5
			Achieved Value	2	2	1
K3.9	Preparation of articles in general science communication & publication outlets	DoA	Annual Target	-	0	2
			Achieved Value	-	6	10

The following KPIs measure the project business outreach:

K4.1 - Organise national opened hackathons & meetups: This KPI measures the number of hackathons that the project organized or participated in. For the first, the second and the third project year, this indicator equals to 4, 1 and 2 respectively, and it includes the participation of the project to the 2nd AgroHackathon, Montpellier, France, 1-2.7.2017, to SuikerUnie Hackathon, Wageningen, Netherlands, 07.04.2017, to AgriVision FarmHack, Noordwijk, Netherlands, 14.06.2017, to Smart Dairy Farming Hackathon, Dairy Campus, Leeuwarden, Netherlands, 30.11.2017, to Rewarding Nature Hack, Amersfoort, Netherlands, 10.04.2018, to Wageningen Data Science Week, Budapest, Hungary, 2-4.2.2020 and N (Nitrogen) SCRUM, Apeldoorn, Netherlands, 24.01.2020 as they are described in ANNEX D.

K4.2 – AGINFRA PLUS early-stage incubation of innovative start-ups: This KPI measures the number of incubation activities for innovative start-ups building on the project infrastructure. The only incubation activity that realised during the three years of the project is the Data Science Challenge.

K4.3 – AGINFRA PLUS representation at AgTech commercial exhibitions and trade fairs: This KPI measures the number of commercial exhibitions and trade fairs that the project has participated in. For the first project year, this indicator equals to 2 and it includes the Thessaloniki International Fair, Thessaloniki, Greece, 15-17.9.2017 and the Horizon 2020 Societal Challenge 2 Infoweek, Brussels, Belgium, 14-17.11.2017 while for the third year to 1 and includes the World Agri-Tech Innovation Summit in San Francisco on March 17-18, 2020.

Table 6: Business outreach KPIs (cumulative values)

Nr.	KPI	Target Source	Target	Year 1	Year 2	Year 3
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K4.1	Organise national opened hackathons & meetups	DoA	Annual Target	-	2	3
			Achieved Value	4	1	2
K4.2	AGINFRA PLUS early-stage incubation of innovative startups	DoA	Annual Target	-	-	1
			Achieved Value	-	-	1
K4.3	AGINFRA PLUS representation at AgTech commercial exhibitions and trade fairs	DoA	Annual Target	-	2	3
			Achieved Value	2	-	1

The following KPIs measure the project business outreach:

K5.1 - Outreach of policy & decision makers informing about project activities, outcomes, successes, societal impact: This KPI measures the number of policy events that the project has participated in. For the first and the second project year, this indicator equals to 4 and to 2 respectively, and it includes the 1st eROSA Policy Workshop, Brussels, Belgium, 31.3.2017, the NET FUTURES 2017, Brussels, Belgium, 28-29.6.2017, the MACS-G20 workshop in Berlin, "Linked Open Data in Agriculture, Berlin, Germany, 27-28.9.2017, the 2nd eROSA Policy Workshop, Brussels, Belgium, 15.12.2017 and the 3rd eROSA Policy Workshop, Brussels, Belgium, 19.06.2018. During the third project year, we did not participate at any policy event.

K5.2 - White paper to inform funding agencies, decision makers etc: This KPI measures the number of white papers that the project has prepared towards informing funding agencies, decision makers, etc. During 2017, we prepared the "2nd Chania Declaration for the Open Harvest 2017" white paper, during 2018 we prepared the "Roadmap for a pan-European e-Infrastructure for Open Science in Agricultural and Food Sciences" white paper by the end of eROSA project and during 2019 the last version of D8.3 AGINFRA Future Science Recommendations has been published as a discussion (white) paper on Digital Science Recommendations for Food & Agriculture (see section 6.1).

K5.3 - Hosting or session organisation in events related to agricultural data e-infrastructures: This KPI measures the number of events that the project will organize related to agricultural data e-infrastructures. For the first and the second project year, this indicator is equal to 1, and 10 respectively, and it includes the "Open Harvest 2017", "the Technical Workshop for the RAKIP project", "the RAKIP Meeting", "the ORION-Kick off Meeting", "the ORION VRE workshop", "the EFSA-BfR Workshop on QMRA Model Repository", "the AgroDataCube Sprint", "the Lecture given to Agronomy students on Data Science Training in Montpellier SupAgro", "the RAKIP Meeting", "the RAKIP-EFSA Webmeeting events", "the 1st Agro-climatic Modelling Evaluation workshop" and "the WUR Big Data Network". While for the third project year it is equal to 8 and it includes "the Agro-climatic Modelling Evaluation workshop", "the Joint workshop on data science in agri-food with virtual research environments", "the RAKIP Workshop", "the DEMETER Workshop", "the Demonstrating of the agro-environmental use case and high performance crop modelling to the AGRI4CAST unit of EC-JRC policy event", "the How to benefit from the Risk

Assessment Modelling and Knowledge Integration Platform (RAKIP) workshop”, “the AgTech Innovators Meetup” and “the How a VRE can be used for collaborative science in plant phenotyping domain and more widely in plant science research workshop”.

K5.4 - Organise relevant H2020 project coordinators’ information day in collaboration with the H2020 Big Data Europe Coordination Action: This KPI measures the number of H2020 project coordinators’ information days to be organized by the project.

Table 7: Policy Outreach KPIs (cumulative values)

Nr.	KPI	Target Source	Target	Year 1	Year 2	Year 3
K5.1	Outreach of policy & decision makers informing about project activities, outcomes, successes, societal impact	DoA	Annual Target	2	2	2
			Achieved Value	4	2	-
K5.2	White paper to inform funding agencies, decision makers etc	DoA	Annual Target	-	-	3
			Achieved Value	1	1	1
K5.3	Hosting or session organisation in events related to agricultural data e-infrastructures	DoA	Annual Target	1	2	3
			Achieved Value	1	10	8
K5.4	Organise relevant H2020 project coordinators’ information day	DoA	Annual Target	-	-	1
			Achieved Value	-	-	1

3 DIGITAL DISSEMINATION CHANNELS

This section provides the list of the project's online dissemination channels that are used to promote its main outcomes and to attract the targeted stakeholders to actively participate in its activities. The main online dissemination mean is the project website that presents all the project information and the progress so far. Additionally, the project social media are the key online channels for informing the target groups about the project outcomes and the project dissemination activities, like the presence in key events (workshops and conferences) and the organization of project's workshops. For the dissemination of these activities some digital marketing campaigns have also been implemented and several blog posts have been published in project's news blog. Last but not least, have been selected and recorded all top contacts that could help to increase visitors' traffic to both project website and social media.

3.1 PROJECT WEBSITE

The project website (<http://www.plus.aginfra.eu>) is the main online dissemination channel used to promote the project and increase the stakeholders' awareness of the project activities. It provides general information about the project vision and objectives, research activities and important results, workshops and other project events. Furthermore, the project website establishes connection to offline dissemination activities promoting them and providing print materials, scientific papers and official deliverables for download. Contact information of consortium partners is also available on the website. Moreover, the project website provides access to the online map of the data ecosystem in agriculture and food sciences that is being developed by the H2020 EINFRA foresight project, namely eROSA (<http://www.erosa.aginfra.eu/>), which aims to set-up an e-infrastructure roadmap for open science in agriculture and food. Finally, it provides links to the dedicated Virtual Research Environments (VREs) that encapsulate the technical solutions for serving the three different communities of the project (i.e. agroclimatic and economic modelling, food safety risk assessment and food security).

The project website was launched on March 2017 (M3). Additionally, at the end of October 2017 (M10), the project news blog (<http://www.plus.aginfra.eu/news>) has been launched. The main purpose of this blog is to inform stakeholders about the latest news (e.g. new developments, project materials, announcements about events organized and impressions from past events, etc). Notes on scientific outcomes of the project, implementation results, as well as particularities of technical realizations can also be published on the blog.

To measure the dissemination rate of the website and to collect general information about the users, the project website has been connected to Google Analytics since the 8th of October 2017 (M10). During the whole lifetime of the project, the website was visited by 2.247 unique users coming from France (16.97%), Greece (16.23%), United States (8.01%), Germany (6.65%), India (6.15%), Italy (5.69%), India (5.38%), Netherlands (4.46%), Spain (3.81%), Belgium (2.76), UK (2.36%) and other countries. 87.1% of visitors are new, and 12.9% are returning visitors. Figure 1 represents the number of visitors who accessed the website for the period between 08.10.2017 to 31.12.2019

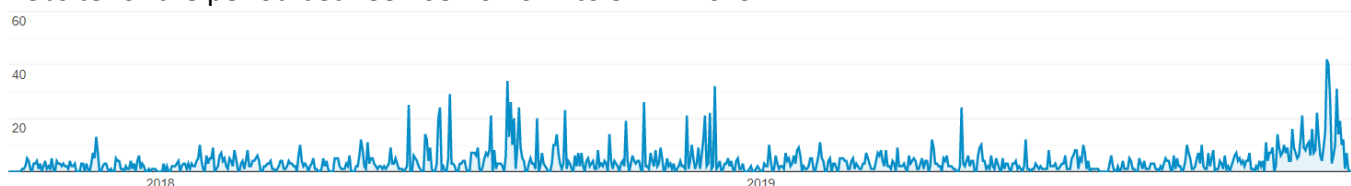


Figure 1: the number of visitors who accessed the website for the period between 08.10.2017 to 31.12.2019

The most prominent peak on the chart is appeared on 31 July 2018 when we informed everyone through our social media that we have launched a new website (<http://www.aginfra.eu/>) that combines both AGINFRA PLUS and eROSA projects. It should be mentioned that the project website received increased traffic during dissemination activities that took place within June 2018, namely (a) the FoodMicro2018 event in Berlin on 01/06/2018, (b) the RAKIP Meeting in Copenhagen, Denmark on 08/06/2018, (c) the FIT4FOOD2030 Workshop, in Athens, Greece on 12/06/2018, (d) the “Workshop: Towards Open Science in Agriculture & Food” in Plovdiv, Bulgaria on 13/06/2018, (e) the RAKIP-EFSA Web meeting on 21/06/2018, (f) the AGINFRA PLUS dissemination event in Parma on 25/06/2018, (g) the Horizon 2020 Info Day on Societal Challenge 2 in Brussels, Belgium on 25/06/2018 and (h) the preparation for the EFSA-BfR Workshop on QMRA Model Repository on 27/06/2018. Other important peaks are on 23/10/2018 one day before our 5th PMB Meeting, on 10/12/2018 a few days before the Wageningen Data Competence Center takes place and on 04/05/2019 two days before the realisation of EGI Conference 2019 in Amsterdam, Netherlands. During the last year the most prominent peaks were on 7 May 2019 during the EGI Conference 2019 conference in Amsterdam, Netherlands where we presented the project and during the third week of December (16-22/12/2019) when Agroknow organised the AgTech Innovators Meetup at 17/12/2019 in Athens, Greece, INRA organised the Webinar on how a VRE can be used for collaborative science in plant phenotyping domain and more widely in plant science research and WUR the 4th Agro-climatic Modelling Evaluation workshop - webinar cloud based agricultural modelling. The last two mentioned events were the last evaluation workshops that INRA and WUR implemented in order to validate their demonstrators.

The traffic sources are represented as follows: 30.28% organic search (coming directly from the Google search), 42.44% direct traffic, 4.04% social traffic (through social media) and 23.02% referral (redirection from other websites). Most of the users, land on the homepage (42.40%), whereas other frequent landing pages are the pages related to project partners (4.98%), project vision (5.07%), project coordinators (2.53%), project deliverables (3.98%), objectives (3.75%), news (2.53%) and use cases (2.13%).

3.2 SOCIAL MEDIA CHANNELS

To support communication between the project (represented by particular consortium members) and external stakeholders from the targeted project communities, AGINFRA PLUS provides pages to two (4) main social media platforms, namely Twitter, YouTube, SlideShare and Facebook and have prepared digital science oriented articles in Medium online platform.

3.2.1 Twitter

In the project it is exploited as AGINFRA PLUS Twitter account the account (<https://twitter.com/AGINFRA/>) that was created in November 2011 in the context of the FP7 AGINFRA project. From the beginning of the project by its end on December of 2019 (M36), the twitter account included **987 followers**, **77 tweets** and **281 likes**. Additionally, AGINFRA tweets were appeared to other twitter accounts' timelines for **38.600 times** (i.e. tweet impression), **5.224** users visited AGINFRA Twitter account and the username @aginfra was mentioned **53** times in other tweets.

3.2.2 YouTube

The AGINFRA PLUS Youtube account (<https://bit.ly/2ObIU14>) was created on January 2019. At this media channel, stakeholders will have the chance to view recordings of the project webinars and other project promotional videos. Until the end of December 2019 (M36) the YouTube account includes the recording of four (7) webinars and seventeen (17) event videos organised by the project with 239 views, 3 likes and 5 followers.

3.2.3 SlideShare

The AGINFRA PLUS SlideShare account (<https://www.slideshare.net/aginfra>) was created on June 2018. At this media channel, stakeholders will have the chance to check all the presentations of AGINFRA PLUS partners that have been presented in Conferences, Workshops, Meetups, Networking sessions and Trade Fairs. Until the end of December 2019 (M36) the SlideShare account includes 14 presentations, which have received 1.109 views and 4 followers.

3.2.4 Facebook

The AGINFRA PLUS Facebook Page (<https://www.facebook.com/AGINFRA/>) was launched in October 2011 in the context of the FP7 AGINFRA project. The total number of AGINFRA Facebook page followers is **265**. The AGINFRA facebook page has **253** likes and the AGINFRA facebook page posts were appeared in other Facebook accounts timeline **863 times** (page reach).

3.2.5 Medium

For general public articles we used Agroknow Medium platform (<https://medium.com/@AgroKnow>) and AGINFRA PLUS coordinators', Nikos Manouselis, account (<https://medium.com/@ngmanouselis>). From both accounts the total number of views is **1.971**, of reads is **777** and of likes is **16**. For Medium, views are the number of visitors who clicked on a story's page, while reads tells you how many viewers have read the entire story. Regarding the Medium articles that have been published in Agroknow's LinkedIn, for the article by the name "Big data: The next frontier for food safety risk assessment" the number of impressions is **768**, of reactions **10**, of clicks **26** and of shares **3** while for the article by the name "Can big data predict food fraud?" the number of impressions is **586**, of reactions **14**, of clicks **23** and of shares **1**.

3.3 DIGITAL CAMPAIGNS

Following the Mid-Term report recommendations on engaging more SMEs in project's outcomes, after M18 we decided to start organizing digital campaigns. The main aim of these campaigns was to put effort in order to drive engagement, conversions and traffic to our project. The majority of digital campaigns were about writing and sending email/ newsletters. This approach was chosen since the database that we have is a very big one and the use of newsletters was the only economically feasible way to share our outcomes and activities with our relevant stakeholders all around the world in regular way. The core subjects of the campaigns regarded the open science. The names of the campaigns are demonstrated bellow. The number of recipients of each campaign, the unique opens and the open rate of each campaign show the impact these campaigns have had on the researchers.

In the following table are illustrated all six (6) project's digital campaigns that have been implemented during its lifetime.

Table 8: Digital campaigns that have been implemented during project's lifetime

Title	Send Date	Recipients	Unique Opens	Open Rate
Guess what is new on AGINFRA +	Aug 28, 2018	180	83	46,11%

The most critical event for Open Science in Europe and our CGIAR Project	Nov 27, 2018	1585	450	28,39%
What a year!	Dec 30, 2018	1595	437	27,4%
Meet our Director of Technology and our new service for GODAN	Feb 05, 2019	1594	27	60%
Our team at the European Parliament, sensors, IoT and vineyards and why we want to work together	Feb 18, 2019	1649	11	40%
The latest updates in Big Data and agriculture	Nov 22, 2019	2576	718	27,87%

Form the Table 8 above, it seems that in most cases almost 50% of the recipients opened the sent newsletters while regarding the clicks rate, it seems that just a few recipients activated the buttons in the newsletters.

Examples of the newsletters are available at ANNEX J.

Regarding the Facebook campaigns, two digital campaigns have been implemented during the months of September and October 2019. The first one had 3.946 reach and 29 clicks and the second one 7.916 reach and 92 clicks. Both of them concerned open science issues.

In all cases, the stakeholders that have been chosen to be included in the list of recipients are people who can influence the media since they are writing several articles every year and have many references from stakeholders in our networks.

3.4 CONTENT GENERATED

As mentioned before in “4.1 Project Website” section, along to the main online dissemination channel, was launched the project’s news blog (<http://www.plus.aginfra.eu/news>). The main purpose of this blog is to inform the stakeholders about the latest news (e.g. new developments, project materials, announcements about events organized and impressions from past events, etc). Notes on scientific outcomes of the project, implementation results, as well as particularities of technical realizations can also be published on the blog.

In the following table, are demonstrated all the 55 articles/blog posts that have been published in project’s news blog by the end of the project (M36).

Table 9: The 55 articles/blog posts that have been published in project’s news blog by the end of the project (M36).

	Title	Year	Available at
1	Network Graphs: Visualization through Animation	20 JAN 2020	http://www.plus.aginfra.eu/content/network-graphs-visualization-through-animation

2	AGINFRA PLUS Data Science Challenge Interviews	15 JAN 2020	http://www.plus.aginfra.eu/content/aginfraplus-data-science-challenge-interviews
3	Viticulture Data Journal (VDJ) published its editorial opening paper	03 JAN 2020	http://www.plus.aginfra.eu/content/viticulture-data-journal-vdj-published-its-editorial-opening-paper
4	Agroknow Participation At The 13th International Symposium On Environmental Software Systems	28 DEC 2019	http://www.plus.aginfra.eu/content/agroknow-participation-13th-international-symposium-environmental-software-systems
5	Wageningen University & Research will organise the Nitrogen ('Stikstof') Scrum event	26 DEC 2019	http://www.plus.aginfra.eu/content/wageningen-university-research-will-organise-nitrogen-%E2%80%98stikstof%E2%80%99-scrum-event
6	Solar-vibes highlighted as a Farmer Lookout	16 DEC 2019	http://www.plus.aginfra.eu/content/solar-vibes-highlighted-farmer-lookout
7	BIOCOS is the winner of the AGINFRA PLUS data science challenge	13 DEC 2019	http://www.plus.aginfra.eu/content/biocos%C2%A0-winner-aginfraplus-data-science-challenge
8	Cropt Highlighted As An Agrochem Industry Lookout	13 DEC 2019	http://www.plus.aginfra.eu/content/cropt-highlighted-agrochem-industry-lookout
9	VAERENS highlighted as an artificial intelligence champion	13 DEC 2019	http://www.plus.aginfra.eu/content/vaerens-highlighted-artificial-intelligence-champion
10	AUGMENTA highlighted as an extreme computing champion	13 DEC 2019	http://www.plus.aginfra.eu/content/augmenta-highlighted-extreme-computing-champion
11	OLIVEEX highlighted as a food industry lookout	13 DEC 2019	http://www.plus.aginfra.eu/content/oliveex-highlighted-food-industry-lookout
12	Webinar on cloud based agro-climatic modelling	12 DEC 2019	http://www.plus.aginfra.eu/content/webinar-cloud-based-agro-climatic-modelling
13	Webinar on how a VRE can be used for collaborative science in plant phenotyping domain and more widely in plant science research.	12 DEC 2019	http://www.plus.aginfra.eu/content/webinar-how-vre-can-be-used-collaborative-science-plant-phenotyping-domain-and-more-widely
14	AGINFRA PLUS data science challenge results	09 DEC 2019	http://www.plus.aginfra.eu/content/aginfraplus-data-science-challenge-results
15	Providing agri-food researchers and practitioners with the	29 NOV 2019	http://www.plus.aginfra.eu/content/providing-agri-food-researchers-and-practitioners-working-environments-they-deserve

	working environments they deserve		
16	Can big data simulate how plants grow?	22 NOV 2019	http://www.plus.aginfra.eu/content/can-big-data-simulate-how-plants-grow
17	Distributed simulation of arable crops at farm & field scale	22 NOV 2019	http://www.plus.aginfra.eu/content/distributed-simulation-arable-crops-farm-field-scale
18	A good reason to get Open Science people in Budapest this November	20 NOV 2019	http://www.plus.aginfra.eu/content/good-reason-get-open-science-people-budapest-november
19	Open science visualization technologies in the AGINFRA PLUS project	14 NOV 2019	http://www.plus.aginfra.eu/content/open-science-visualization-technologies-aginfra-project
20	The AGINFRA PLUS Data science challenge	11 NOV 2019	http://www.plus.aginfra.eu/content/aginfraplus-data-science-challenge
20	Participation at building eosc through the h2020 projects current status and future directions event	12 SEP 2019	http://www.plus.aginfra.eu/content/participation-building-eosc-through-h2020-projects-current-status-and-future-directions
21	Presentation of AGINFRA PLUS project at 11th international workshop on science gateways	17 JUN 2019	http://www.plus.aginfra.eu/content/presentation-aginfra-project-11th-international-workshop-science-gateways
22	INRA participation at EGI conference 2019	10 MAY 2019	http://www.plus.aginfra.eu/content/inra-participation-egi-conference-2019
23	Presentation of AGINFRA PLUS poster at EOSC-hub week 2019	15 APR 2019	http://www.plus.aginfra.eu/content/presentation-aginfra-poster-eosc-hub-week-2019
24	Presentation of AGINFRA PLUS project at EGI conference 2019	05 APR 2019	http://www.plus.aginfra.eu/content/presentation-aginfra-project-egi-conference-2019
25	Evaluation workshop of DEMETER and RAKIP VRES	26 MAR 2019	http://www.plus.aginfra.eu/content/evaluation-workshop-demeter-and-rakip-vres
26	BFR participation at the 12th KNIME spring summit	22 MAR 2019	http://www.plus.aginfra.eu/content/bfr-participation-12th-knime-spring-summit
27	Presentation of ORION project at the one health European joint programme conference	15 MAR 2019	http://www.plus.aginfra.eu/content/presentation-orion-project-one-health-european-joint-programme-conference
28	Presentation of AGINFRA PLUS project at EOSC-hub week 2019	13 MAR 2019	http://www.plus.aginfra.eu/content/presentation-aginfra-project-eosc-hub-week-2019-0

29	Webinar on GALAXY & GALAXY Integration with the DATAMINER service in the context of AGINFRA PLUS project	21 JAN 2019	http://www.plus.aginfra.eu/content/webinar-galaxy-galaxy-integration-dataminer-service-context-aginfra-project
30	AGINFRA PLUS project webinar on GALAXY and GALAXY Integration with the DATAMINER service	18 JAN 2019	http://www.plus.aginfra.eu/content/aginfra-project-webinar-galaxy-and-galaxy-integration%C2%A0-dataminer-service
31	Presentation of AGINFRA PLUS project at the scientific symposium: FAIR data science for green life sciences	13 DEC 2018	http://www.plus.aginfra.eu/content/presentation-aginfra-project-scientific-symposium-fair-data-science-green-life-sciences-0
32	Webinar on ontology management using Vocbench in the context of AGINFRA PLUS PROJECT	04 DEC 2018	http://www.plus.aginfra.eu/content/webinar-ontology-management-using-vocbench-context-aginfra-project
33	European Open Science Cloud (EOSC) official launch	26 NOV 2018	http://www.plus.aginfra.eu/content/european-open-science-cloud-eosc-official-launch
34	Participation of AGINFRA PLUS in the digital infrastructures for research 2018 (DI4R 2018)	15 OCT 2018	http://www.plus.aginfra.eu/content/participation-aginfra-plus-digital-infrastructures-research-2018-di4r-2018
35	AGINFRA'S PLUS project first book chapter	04 JUL 2018	http://www.plus.aginfra.eu/content/aginfras-plus-project-first-book-chapter
36	AGINFRA PLUS in 2nd FOOD 2030 high level event	19 JUN 2018	http://www.plus.aginfra.eu/content/aginfra-plus-2nd-food-2030-high-level-event
37	AGINFRA PLUS project published its first journal article	15 JUN 2018	http://www.plus.aginfra.eu/content/aginfra-plus-project-published-its-first-journal-article
38	Participation of AGINFRA PLUS in Fit4Food2030 workshop	15 JUN 2018	http://www.plus.aginfra.eu/content/participation-aginfra-plus-fit4food2030-workshop
39	AGINFRA PLUS in AgriResearch conference - innovating for the future of farming and rural communities	07 MAY 2018	http://www.plus.aginfra.eu/content/aginfra-plus-agriresearch-conference-innovating-future-farming-and-rural-communities
40	AGINFRA PLUS in the EOSC-hub week	22 APR 2018	http://www.plus.aginfra.eu/content/aginfra-plus-eosc-hub-week
41	AGINFRA PLUS and the CAPIGI rewarding nature hackathon	15 APR 2018	http://www.plus.aginfra.eu/content/aginfra-plus-and-capigi-rewarding-nature-hackathon

42	The concept of AGINFRA PLUS Virtual Research Environments has been presented to agronomy students during data science training	26 MAR 2018	http://www.plus.aginfra.eu/content/concept-agnifra-plus-virtual-research-environments-has-been-presented-agronomy-students
43	Participation of AGINFRA PLUS in the digital infrastructures for research 2017 (DI4R 2017)	04 DEC 2017	http://www.plus.aginfra.eu/content/participation-agnifra-plus-digital-infrastructures-research-2017-di4r-2017
44	AGINFRA PLUS in joint international symposium “Global Past, Present and Future Challenges in Risk Assessment – Strengthening Consumer Health Protection ”	04 DEC 2017	http://www.plus.aginfra.eu/content/agnifra-plus-joint-international-symposium-%E2%80%9Cglobal-past-present-and-future-challenges-risk
45	AGINFRA PLUS in EOSCPILOT 1st Stakeholder Engagement event	02 DEC 2017	http://www.plus.aginfra.eu/content/agnifra-plus-eoscpilot-1st-stakeholder-engagement-event
46	Participation of AGINFRA PLUS in the plant phenotyping forum: integrating European plant phenotyping community	29 NOV 2017	http://www.plus.aginfra.eu/content/participation-agnifra-plus-plant-phenotyping-forum-integrating-european-plant-phenotyping
47	AGINFRA PLUS in HORIZON 2020 societal challenge 2 infoweek	22 NOV 2017	http://www.plus.aginfra.eu/content/agnifra-plus-horizon-2020-societal-challenge-2-infoweek
48	AGINFRA PLUS first hands-on workshop on 24th November!	31 OCT 2017	http://www.plus.aginfra.eu/content/agnifra-plus-first-hands-workshop-24th-november
49	Participation of AGINFRA PLUS in the agri-innovation summit 2017	17 OCT 2017	http://www.plus.aginfra.eu/content/participation-agnifra-plus-agri-innovation-summit-2017
50	AGINFRA PLUS in the second international open research cloud congress	02 OCT 2017	http://www.plus.aginfra.eu/content/agnifra-plus-second-international-open-research-cloud-congress
51	Participation of AGINFRA PLUS in the macs-g20 workshop in berlin, “Linked Open Data In Agriculture”	02 OCT 2017	http://www.plus.aginfra.eu/content/participation-agnifra-plus-macs-g20-workshop-berlin-linked-open-data-agriculture%E2%80%9D
52	AGINFRA PLUS in the OpenScienceFair	15 SEP 2017	http://www.plus.aginfra.eu/content/agnifra-plus-opensciencefair
53	AGINFRA PLUS in the 2nd Agrohackathon	04 JUL 2017	http://www.plus.aginfra.eu/content/agnifra-plus-2nd-agrohackathon

54	Participation of AGINFRA PLUS in the AgriVision farmhack	18 JUN 2017	http://www.plus.aginfra.eu/content/participation-agnifra-plus-agrivation-farmhack
55	Organization of Open Harvest 2017 by AGINFRA PLUS	05 JUN 2017	http://www.plus.aginfra.eu/content/organization-open-harvest-2017-agnifra-plus

Along to the published articles/blog posts, there are videos that have been produced during the project's lifetime. In particular, have been produced five (5) webinars (on Galaxy & Galaxy integration with the Dataminer Service, on Ontology Management using Vocbench, on Cloud based Agro-Climatic Modelling, on management, access & visualisation of plant phenotyping resources and on simulations of harmonized food risk assessment models), four (4) videos that concern the Open Harvest 2017 event, five (5) videos that concern the AgTech Innovators Meetup that organised on 17/12/2019, Athens, Greece and eight (8) step by step videos that concern the executable paper for agriculture & food scientists. All these videos are available at AGINFRA PLUS YouTube account (<https://bit.ly/2ObIU14>).

3.5 CONTACT LISTS CREATED

Our goal is to select and record all top contacts, within the targeted stakeholders' segments, that will help us increase the number of visitors to the project's social media. These contacts include existing but also potential researchers of interest, including agri-food scientists and technology partners who influence each stakeholders segment, decision makers or other policy makers, etc.

The first step we took is to record and filter all the contacts we have in the 5 major stakeholders segments we are currently looking at: (1) European funding & projects in our area, (2) agribusiness, seed & fertilizer companies, (3) the International agricultural scientific community, (4) the people involved in International food safety networks, and (5) the people involved in agri-food sector in North American stakeholders. The next step was to filter and select from these lists the top people with whom we need to build a perfect relationship.

In the first list, namely European funding & projects in our area, we had by M (36) 138 listed stakeholders. In this list are included coordinators of important projects (see ANNEX G) & their key partners, EU community employees & partners at the Units of interest, participants in our EU events (e.g. eROSA stakeholder workshops), politicians & government officials in the EU, etc.

In the second list, agribusiness, seed & fertilizer companies, we managed to include 58 registered stakeholders. This list consists of the contacts that will impact those who have budgets within agribusiness companies to become AGINFRA PLUS subscribers and collaborate with us in future proposals. Particularly includes, the existing contacts & partners within agrochemical companies, new potential contacts that can allocate money in digital science in the agrochemical companies, senior decision makers who can influence them, their critical suppliers, analysts, science forums & expert groups discussing related issues, etc.

The third list, the International agricultural scientific community consists of 19 registries. This list is consisted by existing contacts within projects like CGIAR, new potential contacts that can allocate money for digital and open science in CRPs, centers etc, senior decision makers in CRPs & centers that can influence them, their critical suppliers, communications & marketing people at CGIAR, communities of

practice & expert groups discussing related issues, etc. We aim these contacts to impact those within international agricultural research companies to become AGINFRA PLUS subscribers and economically support and participate in future proposals.

The fourth list, people involved in International food safety networks, consists of 792 registries from the GFSI & food safety networks. These stakeholders are the ones that will influence those who have budgets within food companies, scientists, and associations such as GMA to become aware of AGINFRA PLUS. These were contacts & partners within the GFSI networks, leading influential food safety scientists, critical technology partners, food safety news sites, communities of practice & expert groups discussing related issues, etc.

The last list, North American stakeholders, regards people in research institutes in USA that consists of 11 people. The list includes existing contacts & partners within Canada, new potential contacts that can allocate money for digital and open science in the country, critical technology partners, communications & marketing people, communities of practice & expert groups discussing related issues, etc.

In total, 1.018 stakeholders have been included in project's dissemination list and got familiar with AGINFRA PLUS project objectives and outcomes.

*Based on the new EU regulation on personal data, AGINFRA PLUS project is committed that is in full compliance and processes stakeholders' personal data in accordance with all the EU General Data Protection Regulation (Regulation 2016/679) requirements.

4 EVENTS ORGANISED/ ATTENDED

4.1 EVENTS ORGANIZED

During the project lifetime, AGINFRA PLUS consortium organised thirty-two (32) major events. The first key event, namely Open Harvest 2017 was a general event co-organized with eROSA Project and brought together a selected group of prominent researchers and practitioners in the field of agriculture and food for discussing the main aspects of “a scientific data commons”, which provided input to the basic pillars for the AGINFRA PLUS project data e-infrastructure. The second key event was organized in collaboration with DEMETER (DEtermination of METrics of Emerging Risk), an EFSA4-funded project towards enhancing the collaboration of both projects and contributing to a common open data e-infrastructure data for Food Safety Risk Assessment research community of the project. The last key event, namely the AgTech Innovators Meetup was organised in order many more SMEs to be engaged with AGINFRA PLUS project (see 5.3).

The rest twenty-nine (29) events took place during the last twenty-four (24) months, were organized by the three use cases’ responsible partners and were primarily aimed at disseminating the concept of the VREs that have been deployed by the project. In particular, the Federal Institute for Risk Assessment (BfR) who is AGINFRA’s + responsible partner regarding the second use case, namely Food Safety Risk Assessment organized fourteen (14) events. Additionally, the Wageningen University & Research (WUR) that is AGINFRA’s + responsible partner regarding the first use case, namely Agro-climatic & Economic Modelling, organized seven (7) events and the National Institute of Agricultural Research (INRA) that is AGINFRA’s + responsible partner regarding the third use case, namely Food Security, organized four (4) events. Finally, INRA in collaboration with WUR organised one joint workshop on data science in agri-food with virtual research environments. Last but not least, Agroknow organised five (5) more events. More details about these events are presented in Annex D.

4.1.1 Open Harvest 2017

The Open Harvest 2017 event was organized from the 31st of May until the 1st of June in Chania, Greece. The event brought together a selected group of prominent researchers and practitioners in the field of agriculture and food for discussing the main aspects of “a scientific data commons” and it was co-organized with eROSA Project that aims to elaborate a vision and a roadmap to develop e-infrastructures in agricultural research. The event was also supported by the GODAN Data Ecosystem Working Groups. The detailed agenda of the event and the list of participants are presented in Annex A. The main outcomes of the Open Harvest 2017 were the following:

- A position paper explaining what we mean as “a scientific data commons”, why it is necessary and relevant for agri-food communities, and which are the core components and services that should be part of it.
- A number of Working Groups (WGs) that will eventually brainstorm & discuss about common topics of interest, identify collaboration opportunities, and define (if relevant and possible) concrete action points.

All participants of the event Partners agreed on the need for capacity-building and shared guidance and methods in the field of data management and FAIRification. They highlighted the need to rely on semantic resources and business models for sustainable openness as part of the “commons” of the community in order to envision the future of our e-infrastructure ecosystem.

The main outcome of the event was the “The 2nd Chania Declaration”, which was signed by all participants of the event.

4.1.2 Joint Workshop on Food Risk Assessment Research & Practice

The workshop was organized on the 24th of November 2017 in Wageningen, Netherlands and it was hosted by RIKILT-WUR7 and ALTERRA-WUR8. The detailed agenda of the workshop, as well as the list of participants are presented in Annex B. The workshop was organized in collaboration with the EFSA research project DEMETER (DEtermination of METrics of Emerging Risk). The scope of the workshop was to enhance the collaboration of both projects towards contributing to a common open e-infrastructure data eco-system on Emerging Food Safety Risks Identification. The results and the recommendations that came up from the workshop will be used by the AGINFRA PLUS consortium at the relevant strategic discussions with the key players, who try to shape the thematic cloud on agri-food as part of the EOSC. It should be mentioned also that the DEMETER project is exploiting the AGINFRA PLUS VREs.

All presentations from the workshop are available at the AGINFRA PLUS slideshare account: <https://www.slideshare.net/aginfra>

4.2 EVENTS ATTENDED

The sum of the events that AGINFRA PLUS partners have been participated in is sixty-seven (67) (thirty-one (31) conferences, six (6) policy events, six (6) hackathon, twenty-one (21) workshops and three (3) forums). At ANNEX D there is an analytic list of them.

The most important one, namely the Elastic{ON} Tour Amsterdam took place on 29th of October 2019 at the EYE Film museum, Amsterdam, Holland. The conference was only one day, but it was packed with all the latest and greatest from Elastic.

Agroknow was there along with 400 other Elastic enthusiasts to disseminate the objectives and the outcomes of AGINFRA PLUS project. The goal was to establish a link to a non-agrifood sector, which presents thematic overlaps with research communities already engaged in the scope of AGINFRA PLUS activities.

The attendees of this symposium were mostly researchers and young professionals of various affiliations focusing on using data-powered technologies & frameworks to empower their work in the fields of modelling associated health risks, treatment and disinfection, water management in disaster situations and extreme events, antimicrobial resistance, as well as livestock waste and infection control in health care facilities. Given its involvement in AGINFRA PLUS project, Agroknow intended to further be engaged with research communities and health and quality SMEs, which were present there either as sponsors or as attendees with their own booths. Particularly, during the two days event, Agroknow implemented bilateral meeting with SMEs and companies, namely AMPATH, Bayer AG, imec, Department for Work and Pensions UK and Wamasys.

At this point, it is of particular importance to mention that we received an award from Elastic at this event for the technology used for the deployment of the new, revamped version of the AGINFRA Smart Search for indexing, publishing and discovery of all scientific resources within the AGINFRA infrastructure that we managed during the second period of the project. This technology has been evolved from an old Apache SOLR implementation of FP7 agINFRA to a state-of-art open source implementation using Elastic Search. This powers both the Smart Search API that has been integrated in the infrastructure to support any user community scenario that wishes to test search & discovery of data, model, software and other resources. It also powers the global AGINFRA Discovery Service that is made available at the AGINFRA Web port.

In the following two photos are illustrated the award and the representatives of the Agroknow team while receiving it.



Figure 2: Elastic award



Figure 3: Agroknow team with Elastic award

5 ENGAGEMENT WITH SMES

5.1 PORTFOLIO OF SMES WE WORK WITH

The project has created a very good dissemination and awareness plan. The implemented activities have contributed to stakeholders (including innovators and SMEs) awareness about the project's results. The results can have a positive impact on SMEs (in the agriculture and food sectors), through facilitating them to access e-infrastructures and resources (i.e. datasets, models, analytics workflows, services) as part of their R&D activities. At the same time, the project can facilitate SMEs to become suppliers of novel methods and resources for the food and agriculture sectors i.e. to act as added-value suppliers of e-infrastructures and relevant resources. In order to substantiate these impacts, the partners have addressed and been engaged effectively with SMEs during the last 18 months of the project.

The goal was to establish a link to a non-necessarily-agrifood sector, which presents thematic overlaps with research communities already engaged in the scope of AGINFRA PLUS activities.

All the engaged SMEs are briefly presented below.



Agroknow presented AGINFRA PLUS objectives and outcomes to City Crop during the summer of 2018.

City Crop is a startup company that manufactures and sells automated indoor systems of hydroponic cultivation which you can control using a Smartphone technology. In this specific device you can grow fruits, vegetables, herbs and even flowers. You can control the temperature, the humidity, the lighting and observe the cultivation progress using the Smartphone App. You can share your experience (photos and videos) by being a member of the City Crop community on the web and use all the help from the City Crop experts.

Thanks to its modern, attractive and practical design, the device can easily be placed in all areas (from kitchen to living room). Also, you can expand it as many times as you like, building a bigger construction. It matches not only to individuals, but also professionals in the area of catering, accommodation, preparation and packaging of food products, etc. The vision of City Crop is to raise consumer's awareness regarding healthy eating habits which contribute not only to health and longevity but also to the value of the environment itself.

The website of City Crop is available [here](#) and its main representative is Christos Raftogiannis.



BioCos got familiar with our project's outcomes during its participation in AGINFRA PLUS Data Challenge on December 2019.

BioCoS has developed a novel bioinformatics tool, namely "TRUE PLANT" Biomarkers Computational System ("TRUE-PLANT" BioCoS), capable to identify potential genetic markers (SNPs, SSR, etc) and/or species-specific genomic loci to be applied as artificial markers. The tool elaborates DNA information from thousands of publicly available complete genomes to assess short sequences of specific length not tolerated in the pan-genome, but evolutionary conserved in the species/organism of interest. Post-processing of these sequences leads to the isolation of potential genetic markers to be used in DNA authenticity solutions, as well as artificial ones to be applied as tags in DNA traceability.

BioCoS activities comprehend research collaborations with national and international research institutes, universities and private companies for the development of innovative biotech solutions.

The website of BioCoS is available [here](#) and its main representative is Stelios Archontakis.



3)

During Agroknow's participation on Elastic Conference a two (2) hours B2B meeting realised in order the objectives and the outcomes of AGINFRA PLUS project to be disseminated to Wamasys company.

Wamasys can help in management of water distribution operations. From meter reading to payment collection, they help social businesses deliver safe water and other services to all populations thanks to our intuitive and flexible solution. They aim to design the best tool to improve your efficiency, so that you can focus on your mission. Smartphone app to assist in water meter reading (or remote reading with IoT network), multiple payment options (online, mobile money or even door-to-door collection), big data tool for real-time analysis and reporting, they thrive by innovating every day and identifying the best IT options to help deliver essential services to all populations, all over the world.

The website of Wamasys is available [here](#) and its main representative is Laure d'Azemar.



4)

During Agroknow's participation on Elastic Conference a two (2) hours B2B meeting realised in order the objectives and the outcomes of AGINFRA PLUS project to be disseminated to Ampath company.

Ampath provides comprehensive support services to the incorporated Pathology Laboratory practices of: Drs Du Buisson, Kramer, Swart, Bouwer Inc

Their primary goal is to provide pathology related services to health care practitioners and their patients. They are reputed for their innovation, professionalism and quality of service.

They are committed to remain Southern Africa's foremost laboratory, Ampath have consistently served the medical community with quality results and careful attention to client needs and requests. They are well-known for the accuracy of testing, rapid turn-around time and industry leading data-processing support systems.

The website of Ampath is available [here](#) and its main representative is Laure d'Azemar.



Agroknow presented AGINFRA PLUS objectives and outcomes to Ex Machina during the summer of 2019.

Ex Machina is a company founded in 2015 focusing on weather analytics and forecasting for the energy sector. By using a unique combination of highly accurate weather data, our own weather sensor technology and artificial intelligence, we deliver unique services to our weather-sensitive customers. We see a world where new inventions in weather-related technologies have a direct positive impact on the lives of millions of people around the world and do good for our planet. We strive to build this world. Our mission is to provide better weather insights to our customers equipping them with the information they need to achieve their goals. We envision a world where people, communities and businesses prosper, no matter the weather.

The website of Ex Machina is available [here](#) and its main representative is Vassilis Chryssos.



During Agroknow's participation on 20th Symposium of Health-Related Water Microbiology a two (2) hours B2B meeting realised in order the objectives and the outcomes of AGINFRA PLUS project to be disseminated to rqmicro's company.

Pathogens in drinking water and food can lead to large-scale outbreaks of potentially lethal diseases. Microbiological contamination is the single largest cause for food recalls. Early and reliable identification of contamination is therefore vital to the prevention of human, economic and environmental damage.

rqmicro's vision is to significantly increase water and food safety worldwide.

rqmicro AG, based in Zurich, Switzerland, develops and markets proprietary reagents and innovative instruments for rapid microbiological tests for water and food safety. rqmicro's solution detects dangerous bacteria in water and food. The new used separation and detection technology is based on immunomagnetic separation and microfluidics and delivers accurate results, is easy to operate, highly quantitative and precise, and faster than any other solution on the market.

Common methods in microbiology need up to 14 days to give you semi-quantitative data. A waiting time that takes time and money. rqmicro reduces this delay significantly by providing precise quantitative results. With rqmicro instruments you can quantify Legionella in water samples in 1-2 hours.

In conclusion, their rapid pathogen detection solution creates significant value for water and food labs, water infrastructures and consumers:

- Faster - only one hour instead of several days
- More precise - we count every single cell
- Mobile - our instruments can measure on-site
- Convenient - our test cartridge assures easy and safe handling

The website of rqmicro is available [here](#) and its main representative is Dr. Dominic Mills.



During Agroknow's participation on 20th Symposium of Health-Related Water Microbiology a two (2) hours B2B meeting realised in order the objectives and the outcomes of AGINFRA PLUS project to be disseminated to bNovate Technologies start-up.

bNovate Technologies SA develops robust and innovative instruments to set new standards in the field of rapid microbiological monitoring for pharmaceutical and drinking water. bNovate Technologies SA was founded in 2011 with the goal to be the best in the field of automated cells analysis. The company is based at the Innovation Park of the Swiss Federal Institute of Technology of Lausanne (EPFL). Today, bNovate Technologies SA can address the challenge of developing the most demanding, fully automated analysis instruments. Develops instruments for clients, but also creates its own cell detection instruments for drinking water that are distributed through partnering companies.

The website of bNovate Technologies SA is available [here](#).



During Agroknow's participation on 20th Symposium of Health-Related Water Microbiology a two (2) hours B2B meeting realised in order the objectives and the outcomes of AGINFRA PLUS project to be disseminated to Sartorius company.

Sartorius is a leading international partner for the biopharma sector. Their solutions are supporting their customers to develop and produce drugs safely, timely and economically. The Group has been annually growing by double digits on average and has been regularly expanding its portfolio by acquisitions of complementary technologies.

Leverage Sartorius expertise built on a foundation of long-standing knowledge and continual innovation. With customized solutions for our application area, they provide everything we need for success in the Life Science, Biopharmaceutical Manufacturing, Quality Control and Testing, and Applied Industries.

The website of Sartorius is available [here](#) and its main representative is Florenz Sartorius.



During Agroknow's participation on 20th Symposium of Health-Related Water Microbiology a two (2) hours B2B meeting realised in order the objectives and the outcomes of AGINFRA PLUS project to be disseminated to VWM's company.

VWM's technology is the first capable of providing rapid microbiological water quality monitoring as parameter for real-time process control and early warning applications. Total Bacteria, E.coli, Coliform Bacteria can be measured fully automated with a 30 min. measurement cycle. Typical applications are process water monitoring and control in food and beverage production, cooling water monitoring, raw water monitoring in drinking water purification, desalination and process control in all kinds of water treatment processes from ultra pure water to sewage processing. The Coliminder offers Fast Integration with existing Water and Security systems. Easy to install and maintain. Quick ROI and Long Lifetime. Vienna Water Monitoring (VWM) is founded in 2013 by Wolfgang Vogl and is moved forward by an exceptional team of professionals.

The website of VWM's technology is available [here](#).



During Agroknow's participation on 20th Symposium of Health-Related Water Microbiology a two (2) hours B2B meeting realised in order the objectives and the outcomes of AGINFRA PLUS project to be disseminated to Xebios company.

Xebios manufactures high-quality ready to use culture media for microbiological diagnostics. They are dedicated to be our system partner in securing the quality of our laboratory services.

As our system partner they do not only reliably provide us with their ready to use culture media, they also offer support for our internal quality control system and help us to sustainably reduce your cost for quality control. We make sure that all necessary materials are provided at all times to secure smooth processes at your laboratory.

They have 25 years of experience with diagnostics work in the microbiological laboratory and therefore know the requirements and daily challenges of our customers by heart. They understand our needs and know how important a good supplier for diagnostics culture media is for our work. This is why they can provide us more comfort supplying our ready to use culture media and contribute to our success.

The website of Xebios is available [here](#).

Efforts towards engaging communities in the use of this innovative scientific environment for the agro-food domain (VREs) and the reception of relevant feedback could provide a useful e-infrastructure and important benefits for the different stakeholders, such as agricultural producers, policy makers, SMES, working on the agro-food domain to freely and openly operate so that societal challenges such as food security and climate change can be mitigated.



Centaur Analytics got familiar with our project's outcomes during its participation in AGINFRA PLUS Data Challenge on December 2019.

At Centaur, they are perfecting quality of food and farm products, enabling abundance and reducing waste.

Founded by leading experts and entrepreneurs in the fields of electronics, agronomy and cognitive technologies, Centaur is proud to provide award-winning, innovative technology to transform the traditional agriproduct supply chain into a Trusted, Digital, Post-Harvest Quality Chain.

Centaur Analytics provides technologies that power a global post-harvest quality chain, deploying smart wireless sensors and Artificial Intelligence methods for safe & abundant crops and foods. Their Internet-of-Crops™ cloud platform provides real-time monitoring of the condition of stored commodities, fusing information from our signature Smart Crop Sensors with weather forecasts. They rolled out their first cognitive and predictive analytics use cases in precision fumigation and grain spoilage prediction.

Centaur's cloud-based solution provides traceability from farm to shelf with end-to-end quality management, which can feed to customer ERP systems as well as blockchain ledgers. This brings unique and unprecedented benefits. End users can now track, trace and monitor stored and transported product quality in real time, with customized alerts and notifications.

The website of Centaur Analytics is available [here](#).



12)

Agroknow presented AGINFRA PLUS objectives and outcomes to Lentera during the October of 2019.

Lentera is an Kenyan agriculture technology startup focused on enabling African farmers – both large scale and small holders – customised and accessible solutions to adapt to climate change and increase their productivity by - integrating data and analytics with practical crop science.

They believe that innovation in farming has a role to play in ensuring food security in developing economies. Their portfolio not only ensures well-nourished plants, but also timely farm decisions through our farm sensor, satellite enabled farm imaging services and customised inputs.

Lentera uses remote weather sensors, satellite data and drone imagery to enable farmers to adapt to climate change through smart inputs, precision agriculture and conservation tillage. Its precision agriculture product uses sensor beacons to transmit farm data enabling timely decisions.

The startup was founded in 2017 as a soil health and crop nutrition provider, offering thousands of farmers across Kenya a range of specially formulated organic fertilisers; but quickly pivoted to a broad scope of farm support services.

The website of Lentera is available [here](#).



12)

Agroknow presented AGINFRA PLUS objectives and outcomes to DevicePilot during the November of 2019.

DevicePilot is the IoT dashboarding and analytics tool for every member of the business - so we can visualize data, see patterns and trends, and deliver projects faster. With our zero code integrations and click and pick query builders, everyone can get to market faster, create proactive customer solutions and drive efficiency improvements with IoT.

DevicePilot can ingest, analyse and visualize the data coming from different IoT devices. DevicePilot is more of a platform in the sense that the user can create layers of analytics which are then visualised through dashboards. The analytics are made to be intuitive so they can be created and used by anyone in the business as well as used to quickly create PoCs and deploy solutions.

The website of DevicePilot is available [here](#).

Deepfield Robotics

14)

Agroknow presented AGINFRA PLUS objectives and outcomes to Deepfield Robotics during the November of 2019.

Their goal is to sustainably increase agricultural production whilst minimising environmental impact. Their machines use AI to detect and remove weeds from fields. They've been incubated by Bosch and are generating data with robots. They have some historical data sets with photos of fields that have weeds already annotated on them and use a very big plant image database (50+ fields, 5 yrs, 12 M annotated images) to train their nets. No training is done on the fly, the user just needs to pick the type of his plant that is the crop. Also, the robots are collecting a wealth of data as they operate, and they have several in-house methods to transfer the data to their servers. Data storage and training is done in-house using various methods for data annotation (some in-house, some external).

The website of Deepfield Robotics is available [here](#).

5.2 NETWORKS



1)

Agroknow presented AGINFRA PLUS objectives and outcomes to Join the Dots during the November of 2019.

The Join the Dots helps mission-driven entrepreneurs scale their businesses. It is a network providing advices, opportunities, connections and training. They have spent almost 20 years in building and championing emerging tech StartUps and ScaleUps. They have a keen eye for how to develop and communicate value propositions and quickly identify and close opportunities. They have a track record of joining startups when they have no salespeople, helping to get traction and pave the way for an established sales team. They are a natural connector and partnership builder. They focus on supporting owners and boards of companies to devise and implement growth strategies to create shareholder value.

The website of Join the Dots is available [here](#).



2)

Agroknow presented AGINFRA PLUS objectives and outcomes to Entrepreneur' Organization during the November of 2019.

EO is the only global network exclusively for entrepreneurs. EO helps leading entrepreneurs learn and grow through peer-to-peer learning, once-in-a-lifetime experiences, and connections to experts. EO is a peer-to-peer network of over 13,000 influential business owners in 188 chapters and 58 countries. Founded in 1987, EO is the catalyst that enables leading entrepreneurs to learn and grow, leading to greater success in business and beyond.

They educate, transform, inspire and offer invaluable resources in the form of global events, leadership-development programs, an online entrepreneur forum and executive education opportunities, among other offerings designed for personal and professional growth.

At its core, EO is a collection of like-minded entrepreneurs focused on business growth, personal development and community engagement. In addition to their mission, vision and core values, their global makeup is comprised of nearly 14,000+ individual member stories.

The website of Entrepreneur' Organization is available [here](#).

5.3 SMES – ORIENTED CAMPAIGN

In terms of engaging SMEs, Agroknow, organized a challenge prize that supported teams to develop products or services using open data for social good. Data science start-ups working in food and agriculture were invited to participate in a competition to win 10,000 euros. The challenge showed the impact that data made open by governments can have through developing real-life social businesses that put it to good use. The invitation to participate is available here <https://medium.com/@AgroKnow/call-to-european-data-science-startups-who-is-going-to-win-the-10-000-prize-c90be1899f4b>. In this link information on why one should participate and who can participate is provided.

From the beginning of the challenge, Agroknow clarified the criteria by which entries will be judged. This came with the form of the application, that all SMEs wanted to participate in challenge had to fill. Particularly, in the application participants, apart of providing details on the name, the website and the industry on which their SME is related to, had to provide information on the years that their company is active and their origin country. Moreover, they had to describe the goals that their company expects to achieve along with their Data Science Innovation. Finally, they had to answer a few questions on whether they are using publicly available data and public or commercial cloud services to store and manage their data and on whether they execute some computationally demanding software algorithm.

The start-ups that showcased interest for participating in the challenge are:

1. Augmenta Agriculture Technologies (Greece)
2. CROPT / Biosense (Serbia)
3. Vaerens (The Netherlands)
4. BioCos (Greece)
5. Solar vibes (Germany)
6. Oliveex (Greece)

From those SMEs, BioCos is the start-up that won the challenge.

In the following photo is illustrated CEO BioCoS Stelios Arhondakis with Agroknow CEO Nikos Manouselis



Figure 4: Agroknow CEO Nikos Manouselis with CEO BioCoS Stelios Arhondakis, the winner of the AGINFRA PLUS Data Science Challenge.

BioCoS is a Bioinformatics & Biotech company operating in Greece, solving food fraud using DNA.

Their technology relies on a novel bioinformatics tool, namely “TRUE PLANT” Biomarkers Computational System (“TRUE-PLANT” BioCoS). The tool elaborates DNA information from thousands of publicly available genomes in order to identify short sequences that reflect novel potential biomarkers (“elements” existing in different forms in a genome) for an organism of interest. In silico post-processing allows isolating the most prominent ones that are subsequently experimentally verified and applied in DNA authenticity and traceability solutions of natural raw materials in the food supply chain.

Apart of winning the amount of 10,000 euros in order to further develop its innovation, will be hosted at Agroknow's offices for a month to work together in the first quarter of 2020. By this way, Agroknow will have the opportunity to help BioCos in exploiting AGINFRA tools and services. A very special award is also the set-up of a dedicated BioCos VRE that will be setup and operated by CNR. This is an SME case study that we will present at the final review meeting in algorithm, together with their evaluation of our service.

It is important to mention that all six companies that participated in the competition, was decided to be received special individual distinctions. This means that all participating companies will be announced as AGINFRA PLUS Champions and will be promoted through AGINFRA PLUS extensive international network through a variety of channels and media. A digital badge has also been provided to each company, which they may use to list this distinction on their web site, pitch deck or other promotional material.

The distinctions that each company received follows:

- BioCoS is the winner of the AGINFRA PLUS Data Science Challenge



- Solar-vibes is highlighted as a Farmer Lookout



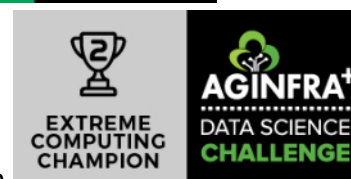
- CROPT is highlighted as an Agrochem Industry Lookout



- Oliveex is highlighted as a Food Industry Lookout



- Augmenta is highlighted as an Extreme Computing Champion



- Vaerens is highlighted as an Artificial Intelligence Champion



5.4 AGTECH INNOVATORS MEETUP

According to the set-out Work Programme aim related to project's engagement with SMEs and based on the reviewers recommendations on Mid-Term report, partners had to increase the number of SMEs that are aware of available e-infrastructures resources and services and become active innovators and or suppliers of e-infrastructures. One of the three obligated ways based on our KPIs, for implementing this

aim, consists the invitation and introduction of start-ups and SMEs to the resources, services and data available through AGINFRA in project activities & events.

In the frame of the obligated contribution, Agroknow in collaboration with Deloitte, organized on 17 of December 2019 the first AgTech Innovators Meetup in Athens, Greece. In the event participated 53 people from 36 start-ups, scaleups, SMEs, Investors, Funds, VCs and representatives from Food & Ag Industry. Particularly, twelve (12) SMEs and Scaleups participated, the names of which are illustrated in the following table.

The purpose of this event was representatives to share their experiences and views during panels focusing on opportunities and challenges around Yield Prediction, Food Fraud Mitigation and Food Traceability. The developed discussions regarded innovation, technology, big data, approaches in this area and hot topics that have attracted interest on the exploitation of open data in the last years.

Table 10: SMEs and Scaleups participated in the first AgTech Innovators Meetup in Athens, Greece

Number	start-ups
1.	InAgros
2.	CitiCrop
3.	Ex Machina
4.	BioCos
5.	Evanfoods
6.	Agrologies
7.	Centaur Analytics
8.	Airbots
9.	AgroApps
	Scaleups
10.	Synelixis
11.	Draxis Technologies
12.	Space Hellas

The video of the event is available [here](#) while the agenda of the event is available in Annex C



Agroknow realised interviews with four of the aforementioned start-ups/ scaleups. The questions that were asked regarded the use of publicly available data and public or commercial cloud services for storage and management of data and the execution of computationally demanding software algorithm.

The interviews are available in AGINFRA PLUS YouTube channel and are provided in the links below

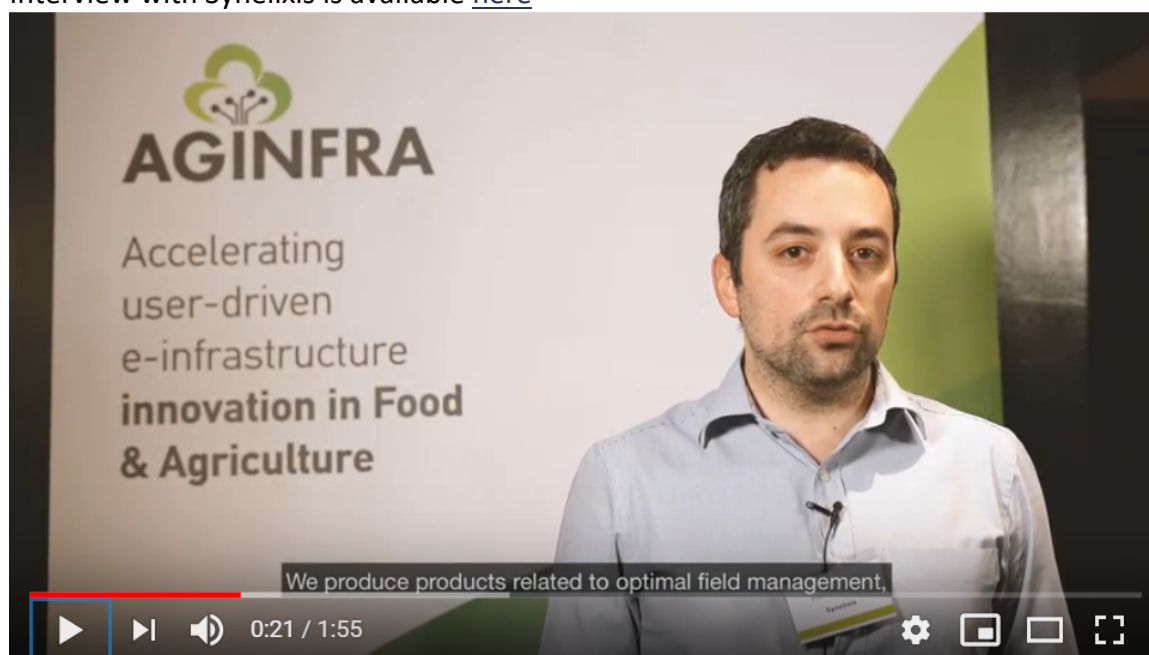
Interview with BioCos is available [here](#)



Interview with Centaur Analytics is available [here](#)



Interview with Synelixis is available [here](#)



Interview with CitiCrop is available [here](#)



6 SCIENTIFIC PUBLICATIONS AND OUTLETS

6.1 WHITE PAPER PREPARATION TOWARDS INFORMING FUNDING AGENCIES AND DECISION MAKERS

During the three (3) years lifetime of the project, three white papers have been prepared, one for each year.

In 2017, after the realization of Open Harvest 2017 event in Chania, Greece, all participants agreed on the need for capacity-building and shared guidance and methods in the field of data management and FAIRification. They highlighted the need to rely on semantic resources and business models for sustainable openness as part of the “commons” of the community in order to envision the future of our e-infrastructure ecosystem. Open Harvest participants have spoken with one voice through the white paper by the name “Open Harvest 2nd Chania Declaration and Call to Action” (see ANNEX I), that Agroknow team prepared, mapping out a way forward on creating a shared environment for science and innovation throughout the agrifood chain.

In 2018, after the end of eROSA project, the final version of the eROSA roadmap published in the form of a white paper (see more here <https://bit.ly/2slyu2A>). This white paper is the main output of the project in which more than 100 stakeholders were involved in elaborating this roadmap through three main workshops, which facilitated to build a common knowledge, as well as a foresight for the next 10 years.

While, during the last year of the project, the last version of D8.3 AGINFRA Future Science Recommendations has been published as a discussion paper on Digital Science Recommendations for Food & Agriculture. In this discussion paper, we wanted to particularly focus on whether it was still relevant and possible to develop such digital science infrastructures as collaborative, community-driven resources. Also, to give the perspective that a number of public and private sector stakeholders from around the world have. Contributors included INRA, WUR, CNR, UoA, FNH-RI, FNS-Cloud, Syngenta, OpenAIRE, EOSC, UoGuelph and AAI CAAS.

6.2 THE DATA JOURNALS

6.2.1 The AGINFRA PLUS data journals

Binding together the principles of Open Access and Open Data publishing and presenting a wide array of new perspectives, the concept of Open Science transforms research into a collaborative rather than a primarily competitive process, while ensuring re-use, reproducibility and transparency in science. Inspired by these principles [Pensoft Publishers](#) has developed the [ARPHA Platform](#) - a next-generation publishing solution technologically empowered to supply domain-adaptable next-generation Open Science workflows. ARPHA Platform is the first publishing platform ever to support the full life cycle of a manuscript, from authoring through submission, peer-review, publication and dissemination, within a single online collaborative environment.

Based on extensive expertise in semantic data publishing, Pensoft decided to apply this knowledge and promote Open Science within other domains. The Food Modelling Journal (<https://fmj.pensoft.net/>) and the Viticulture Data Journal (<https://vdj.pensoft.net/>) are two of main AGINFRA PLUS project’s results that have been set up based on the ARPHA journal publishing platform.

Food Modelling Journal (FMJ) is an innovative open access journal which facilitates the publication of mathematical models, datasets and software solutions in the area of food science. The journal focuses on submissions documenting the following outcomes of the research cycle: data, models, model validation studies, software, data analytics pipelines and visualisation methods. The journal considers manuscripts for publication, related (but not limited) to the following topics: food safety, food quality, food control, food defence and food design.

FMJ is a peer-reviewed, open-access journal for descriptions of scientifically valuable models, methods, and datasets that advances the sharing and reuse of scientific knowledge from farm to fork research field. FMJ helps you to publish the essential details of a method or dataset, with the minimum of detailed background and contextual information.

FMJ will consider the following categories of papers for publication:

- Models on food safety and defence, food quality and control, food properties, design and production

A scholarly article describing a mathematical model, following a pre-defined, formal structure of the content, often derived from extended metadata descriptions or automatically converted from an FSKX (food safety knowledge) metadata file. Model papers are designed to provide scientific work and credit for the work of modellers and data scientists, and such, do not require sections on validation/testing of the model.

- Methods, for example data analytics methods & algorithms, workflows and pipelines

This article type includes descriptions of novel methods, workflows or algorithms. Data and results from the testing or implementation of the methods are desirable but not mandatory.

- Model validation studies

A publication that describes the process and results of testing a model with real data or through specially designed experiments.

- Data papers and databases, e.g. on food processing or food supply chains

A data paper is a scholarly journal article whose primary purpose is to describe a dataset or a group of datasets, rather than report a research investigation. As such, it contains facts about data, rather than hypotheses and arguments in support of those hypotheses based upon data, as found in a conventional research article. Data papers should contain a link to a trusted data repository where the actual are deposited and available in open access.

- Software descriptions including software design concepts, description of tools and services

A publication that describes software or an online tool/platform. It should contain a link to an openly accessible code, or as a minimum, sufficient information on the framework, programming languages and structure of the code.

Viticulture Data Journal (VDJ) is an innovative open access peer-reviewed journal which facilitates the publication of data, research articles and other research objects in the area of viticulture. The journal is focussed on submissions documenting the following outcomes of the research cycle: data, models, software, data analytics pipelines and visualisation methods in viticulture research area.

Viticultural research covers a wide range of topics, from genetic research, food safety of viticultural products to climate change adaptation of grapevine varieties through grape specific research. The journal will consider manuscripts for publication related (but not limited) to the following topics:

- Phenotyping and genotyping
- Vine growth and development
- Vine ecophysiology
- Berry yield and composition
- Genetic resources and breeding
- Vine adaptation to climate change, abiotic and biotic stress
- Vine propagation
- Rootstock and clonal evaluation
- Effects of field practices (pruning, fertilization etc.) on vine growth and quality
- Sustainable viticulture and environmental impact
- Ampelography
- Plant pathology, diseases and pests of grapevine
- Microbiology and microbiological risk assessment
- Food safety related to table grapes, raisins, wine, etc

6.2.2 Open Data Journal for Agricultural Research

Apart of the two journals that have been produced from Pensoft for our project, one of our partners, WUR, provides the ability of publishing our articles in their Open Data journal for Agricultural Research (<https://odjar.org/about>).

Agricultural research uses and produces many relevant data sets in studying agricultural systems across the globe, through its efforts in investigating conditions of global food (in)security at different spatial scales (from regional to national to continental). These data sets have a value to the specific research as these are analysed and investigated, leading to results and conclusions, that are published in peer-reviewed scientific journals or presented at scientific conferences. These data have a longer-term value as a resource for the future than the specific research in which they are collected. Other researchers or experts can use these data in new analysis, meta-analysis, or different applications of modelling or statistical tools, leading to new insights for the future. The Open Data Journal for Agriculture Research (ODJAR) acts as a central hub for storing, curating and publishing the data sets as a resource for the future where publications and their authors get appropriate credit through citations and digital object identifiers for future reference.

In the following two (2) pictures are illustrated the manual options of the journal and an example of the articles that have been published in the journal.

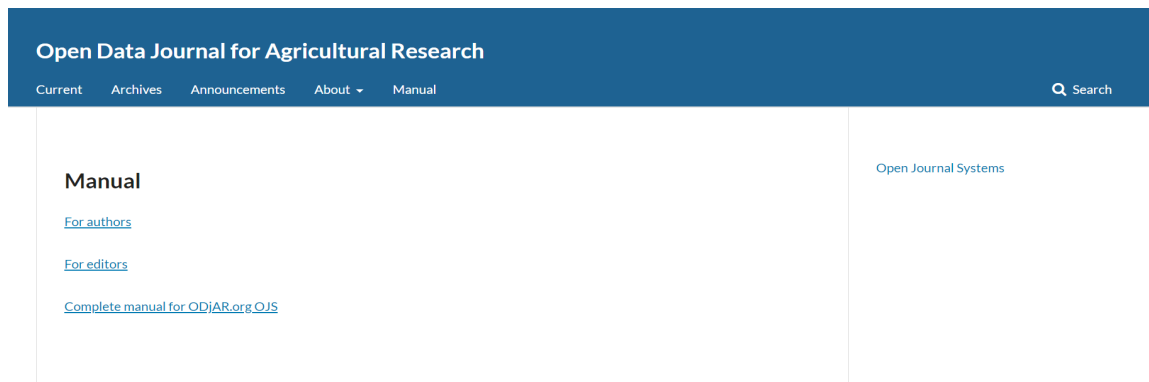


Figure 5: The manual options of The Open Data Journal for Agriculture Research

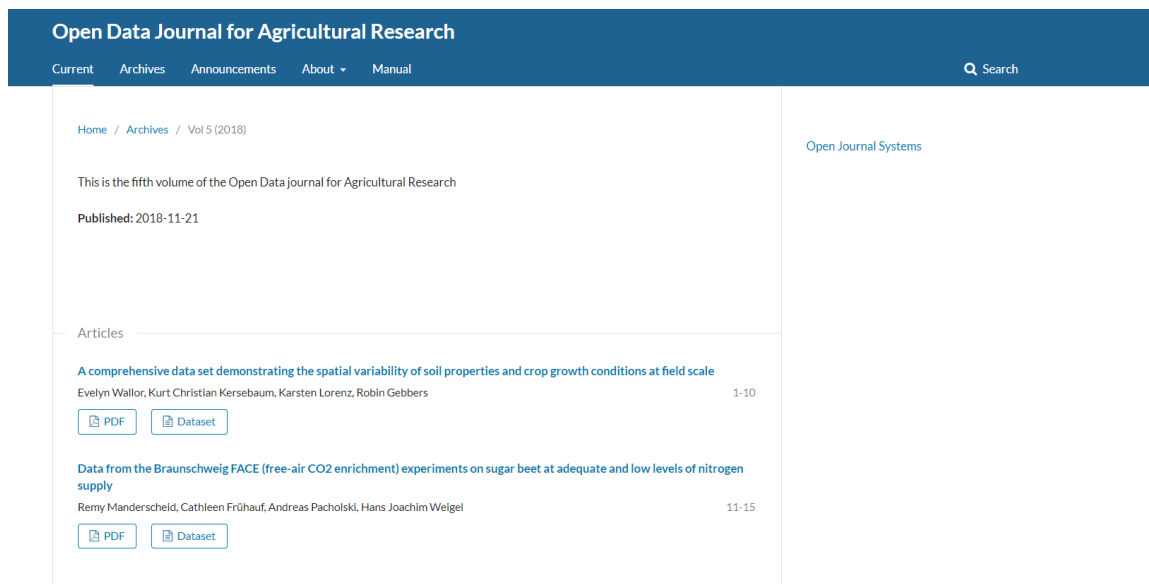


Figure 6: Example of the published articles in The Open Data Journal for Agriculture Research

6.3 THE AGINFRA PLUS PUBLICATIONS/PAPERS

As a research and innovation action (RIA) project, the AGINFRA PLUS project seeks to have a significant impact on international research in the areas of agriculture and food, as well as in the area of Computer Science. During the lifetime of the project, AGINFRA PLUS published/submitted for publication nine (9) papers Scientific Journals, eleven (11) conference papers at International Conferences, as well one book chapter to the Book “Big Data for the Greater Good” published by Springer, as follows:

1. **[Book Chapter]** P. Karampiperis, R. Lokers, P. Neveu, O. Hologne, G. Kakalettris, L. Candela, M. Filter, N. Manouselis, M. Stavrakaki, and P. Zervas: “Big Data in Agricultural and Food Research: Challenges and Opportunities of an integrated Big Data e-Infrastructure”. In: Big Data for the Greater Good (Springer);

2. **[Journal Paper]** M. Assante, L. Candela, D. Castelli, R. Cirillo, G. Coro, L. Frosini, L. Lelii, F. Mangiacrapa, V. Marioli, P. Pagano, G. Panichi, C. Perciante, and F. Sinibaldi: "The gCube System: Delivering Virtual Research Environments as-a-Service". In: Future Generation Computer Systems (Elsevier);
3. **[Journal Paper]** Leticia Ungaretti Haberbeck, Carolina Plaza Rodríguez, Virginie Desvignes, Paw Dalgaard, Moez Sanaa, Laurent Guillier, Maarten Nauta and Matthias Filter: "Harmonized terms, concepts and metadata for microbiological risk assessment models: the basis for knowledge integration and exchange". In: Microbial Risk Analysis (Elsevier);
4. **[Journal Paper]** Miguel de Alba Aparicio, Tasja Buschhardt, Ahmad Swaid, Lars Valentin, Octavio Mesa-Varona, Taras Günther, Carolina Plaza-Rodriguez and Matthias Filter: "FSK-Lab - an open source Food Safety Model integration tool". In: Microbial Risk Analysis (Elsevier);
5. **[Journal Paper]** M. Filter, L. Candela, L. Guillier, M. Nauta, T. Georgiev, P. Stoev and L. Penev: "Open Science meets Food Modelling: Introducing the Food Modelling Journal (FMJ)". In: Food Modeling Journal (Pensoft);
6. **[Journal Paper]** E. Lopez de Abechuco, O. Mesa Varona, L. Valentin, M. Alba Aparicio, T. Schöler, T. Günther, A. Swaid, T. Buschhardt and M. Filter: "Establishment of a prototypic Quantitative Microbial Risk Assessment (QMRA) food and feed safety model repository". In: EFSA supporting publication (EFSA);
7. **[Journal Paper]** M. Alba Aparicio, E.M. Sundermann, C. Plaza-Rodriguez, M. Filter: "Food Safety Knowledge Markup Language (FSK-ML)". In: KNIME Summit;
8. **[Journal Paper]** M. Filter, O. Mesa-Varona, T. Buschhardt, E. M. Sundermann, E. Lopez de Abechuco and M. Georgiadis: "Minimum Information Required to Annotate food safety Risk Assessment Models (MIRARAM)".
9. **[Journal Paper]** M. Assantea, L. Candela, D. Castella, R. Cirillo, G. Coroa, L. Frosini, L. Lelii, F. Mangiacrapa, P. Pagano, G. Panichi and F. Sinibaldi: "Enacting open science by D4Science".
10. **[Journal Paper]** M. Assante, L. Candela, D. Castelli, R. Cirillo, G. Coro, L. Frosini, L. Lelii, F. Mangiacrapa, P. Pagano, G. Panichi and F. Sinibaldi: "Enacting open science by D4Science" In: Future Generation Computer Systems (Elsevier).
11. **[Conference paper]** A. Ballis, A. Boizet, L. Candela, D. Castelli, E. Fernández, M. Filter, T. Günther, G. Kakalettris, P. Karampiperis, D. Katris, M.J.R. Knapen, R.M. Lokers, L. Penev, G. Sipos, P. Zervas: "Serving Scientist in Agri-food area by Virtual Research Environments". In: 14th IEEE International Conference on e-Science, Amsterdam, Netherlands (eScience 2018), 29 Oct.- 1 Nov. 2019;
12. **[Conference paper]** C. Caracciolo, S. Aubin, B. Whitehead, P. Zervas: "Semantics for Data in Agriculture: a Community-based Wish List". In: Semantics for Data in Agriculture, 29 Oct.;
13. **[Conference paper]** R.Knapen, R. Lokers, Y. van Randen, S. Janssen, H. Janssen: "AgroDataCube and AGINFRA PLUS: Operationalising Big Data for Agricultural Informatics". In: Scientific Symposium FAIR Data Sciences for Green Life Sciences, 10 Dec. 2018;
14. **[Conference paper]** M. Filter, V. Desvignes, L. Guillier, M. Nauta: "RAKIP: Resources for harmonized annotation and efficient exchange of risk assessment models". In: Foodborne pathogens and whole genome sequencing, 26-26 March 2019;
15. **[Conference paper]** M. Assante et al.: "Realising a Science Gateway for the Agri-food: the AGINFRA PLUS Experience". In: 11th International Workshop on Science Gateways (IWSG 2019), 12-14 June 2019;
16. **[Conference paper]** M. Filter: "Enabling Efficient Food Safety Knowledge Exchange with FSK-Lab". In: KNIME Summit, 21 March 2019;
17. **[Conference paper]** M. Filter: "Introducing AGINFRA PLUS Based Virtual Research Environments Supporting Scientific Collaboration and Knowledge Exchange in the Food Safety Domain". In: IAFP European Symposium, 24-26 Apr. 2019;
18. **[Conference paper]** M. Filter: "Virtual Research Environments (VRE): Supporting One Health Research Communities - the ORION Experience". In: ASM Conference, 22-24 May 2019;

19. **[Conference paper]** M. Filter, V. Desvignes, L. Guillier, E. Lopez de Abechuco Garrido, L. Valentin, T. Buschhardt, M. Nauta: "How to benefit from the Risk Assessment Modelling and Knowledge Integration Platform (RAKIP)", ICPMF11, 17 Sept. 2019.
20. **[Conference paper]** R. Lokers, R. Knapen, L. Candela, S. Hoek and W. Meijninger: "Using virtual research environments in agro-environmental research", ISESS 2020.
21. **[Conference paper]** R. Knapen, R. Lokers, L. Candela and S. Janssen: "AGINFRA PLUS: Running crop simulations on the D4Science distributed e-Infrastructure", ISESS 2020.

6.3.1 DISSEMINATION MATERIALS

To support the offline promotion activities of the project, a number of dissemination materials have been prepared, in order to be distributed by the project partners in the scope of conferences, workshops, fairs and other events:

- **AGINFRA PLUS project poster roll-up** (see Annex E) presents the main project motto, as well as the project consortium and links to the project social media and website. It can be used to present the project on conferences and exhibitions.
- **AGINFRA PLUS project EOSC brochure** (see Annex E) presents the AGINFRA PLUS vision towards an AGINFRA Food Cloud Demonstrator. It can be used to present the AGINFRA PLUS vision in EOSC-related events where relevant discussions are taking place.
- **AGINFRA PLUS project general brochure** (see Annex E) presents an overview of the AGINFRA PLUS project, its main objectives, as well as the project consortium and links to the project social media and website. It can be used to present the project on conferences, workshops and exhibitions.
- **AGINFRA PLUS project data journals brochures** (see Annex E) these are two brochures which present scope and the objectives of the two data journals that have been set-up, namely the Viticulture Data Journal and the Food Modelling Journal.

7 COLLABORATION WITH OTHER INITIATIVES

Collaboration is essential to thriving in an ever-changing environment. It has been a big issue the past several years, as organizations realize that effective collaboration is key to innovation. New methods have emerged to extend the meaning of collaboration from the simple act of working together to a more complex function of inter-relating diverse teams to achieve new ideas, innovative practices and to yield superior results. These methods include practices and tools that promote communication, idea sharing and transparency for local and distributed teams.

During the project's lifetime, we have communicated and incorporated the developed project's tools and data to several EU and international projects.

7.1 EU PROJECTS



1)

BigDataGrapes aims to help European companies in the wine and natural cosmetics industries become more competitive in the international markets. It specifically tries to help companies across the grapevine-powered value chain ride the big data wave, supporting business decisions with real time and cross-stream analysis of very large, diverse and multimodal data sources.

BigDataGrapes wants to build upon the rich historical, cultural and artisan heritage of Europe, aiming to support all European companies active in two key industries powered by grapevines: the wine industry and the natural cosmetics one. It will help them respond to the significant opportunity that big data is creating in their relevant markets, by pursuing two ambitious goals:

- To develop and demonstrate powerful data processing technologies that will increase the efficiency of companies that need to take important business decisions dependent on access to vast and complex amounts of data.
- To catalyse the creation of a data ecosystem and economy that will increase the competitive advantage of companies that serve with IT solutions these sectors.

BigDataGrapes is targeting technology challenges of the grapevine-powered data economy as its business problems and decisions requires processing, analysis and visualisation of data with rapidly increasing volume, velocity and variety: satellite and weather data, environmental and geological data, phenotypic and genetic plant data, food supply chain data, economic and financial data and more. It therefore makes a perfectly suitable cross-sector and cross-country combination of industries that are of high European significance and value.

BigDataGrapes capitalizes on existing technologies that have been developed or extended -among others- in the scope of AGINFRA PLUS activities. Specifically, the envisioned BigDataGrapes Big Data Platform (described [here](#)) features back-end components of Data Harvesting and Semantic Enrichment that have been prototyped by Agroknow as part of AGINFRA PLUS WP2 activities, but also front-end tools that will allow the interfacing of users with the wealth of gathered data (Data Integration and Dashboard tools). As mentioned in D2.3, a plan for further exploitation, adaption and extension of said components in BigDataGrapes is already established.

The website of BigDataGrapes is available [here](#) and its coordinator is Agroknow (<https://www.agroknow.com/>).

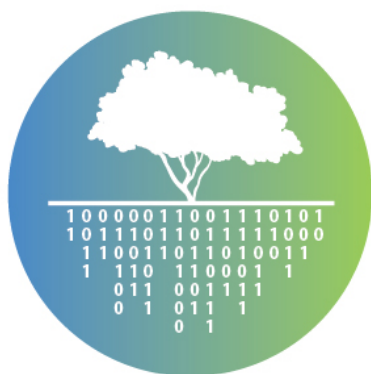


2)

The DIVERSify project aims to optimise the performance of crop species mixtures or ‘plant teams’ to improve yield stability, reduce pest and disease damage, and enhance stress resilience in agricultural systems. It focuses on improving the productivity and sustainability of European agriculture using an approach that has global relevance, learning from the experience of international researchers and stakeholders.

DIVERSify envisions its own data e-infrastructure (mentioned [here](#)), which features components of data collection (via harvesting) and publishing. Among others, will be put in place to facilitate the flow of data in the proposed agronomic data e-infrastructure.

The website of DIVERSify is available [here](#) and its coordinator is the James Hutton Institute (<https://www.hutton.ac.uk/>)



3) **CYBELE**

The vision of CYBELE is to generate innovation and create value in the domain of agri-food in general, and several of its verticals in the sub-domains of PA and PLF in specific, as demonstrated by the real-life industrial cases to be supported, empowering capacity building within the industrial (mainly) but also the research community associated with these domains.

Precision Agriculture (PA) and Precision Livestock Farming (PLF) come to assist in optimising agricultural and livestock production and minimising the wastes and costs. Sensors on fields and crops are starting to provide literally granular data points on soil conditions. Satellites can be at the service of precision agriculture. GPS units on tractors can help determine optimal usage of heavy equipment. Unmanned aerial vehicles, or drones, can patrol fields and alert farmers to crop ripeness or potential problems.

CYBELE proposes a set of a HPC-powered solutions that supports the processing of very large datasets. Part of the Data Harvesting and Linking Workflows, will be further adapted and tested on particular big data processing use-cases in the domain of food safety. In addition, the process, methodology and evaluation materials (eg. guidelines, questionnaire) tested in AGINFRA PLUS use-case validation activities will also be used in CYBELE.

The website of CYBELE is available [here](https://www.wit.ie/) and its coordinator is the Waterford Institute of Technology (<https://www.wit.ie/>)



4)

The strategic goal of e-ROSA was to provide guidance to EU policies by designing and laying the groundwork for a long-term programme aiming at achieving an e-infrastructure for open science in agriculture that would position Europe as a major global player at the forefront of research and innovation in this area.

Through a foresight approach, the project built a shared vision of a future sustainable e-infrastructure for research and education in agriculture and made it operable through pragmatic recommendations that reflected in a common roadmap.

This achieved through a process of co-design, involving mainly research and education communities but also practitioners and EU policy makers, and built on the existing projects, networks, international alliances or initiatives that the project systematically mapped and integrated in the analysis of grand challenges and the identification of priorities and solutions towards an open, digital and data-intensive science in agriculture.

The website of e-ROSA is available [here](https://www.agroknow.eu/) and its coordinator is Agroknow.



5) MARS-OP

The public-private partnership (PPP) Monitoring Agricultural ResourceS – Operational (MARS-OP) has been commissioned by the EC Joint Research Centre to predict crop yields worldwide.

MARS-OP bases its predictions on worldwide meteorological data which are collected every day and on various instruments including crop growth models, visualisation tools and statistical procedures. When the MARS-OP project first started in 1988 the aim was to map out crops and yields in Europe. Since then, its activities and working domain have been increasingly extended. Accordingly, the importance of the project has been recognised at the European level. MARS-OP is an operational project.

EC-JRC is interested in improving their crop yield monitoring system and using new technologies to improve performance and resolution of this system. They have demonstrated the VRE work and particularly the distributed crop growth modelling.

Alterra, part of Wageningen University & Research, has been project leader since the inception. The website of MARS-OP is available [here](#).



6)

SmartAgriHubs is a €20 M EU project under the Horizon 2020 instrument and brings together a consortium of well over 164 partners in the European agri-food sector. The project aims to realise the digitisation of European agriculture by fostering an agricultural innovation ecosystem dedicated to excellence, sustainability and success.

To this end, SmartAgriHubs employs a multi-stakeholder approach and covers a broad value-chain network across all EU member states. The consortium includes a diverse network of start-ups, SMEs, business and service providers, technology experts and end-users. The end-users form the core of the project are the driving force behind digital transformation. The development and adoption of digital solutions is achieved by a tight ecosystem of 140 Digital Innovation Hubs embedded within 9 Regional

Clusters, which are led by organisations that are closely involved in regional digitisation initiatives and funds.

The SmartAgriHubs project serves as a catalyst for game-changing innovations in smart farming techniques. It aims to deliver 80 new digital solutions to the market, raise €30M additional funding from public, regional, national and private sources, and plans to help digitise over 2 million farms spread across Europe. End-users will be trained and informed throughout the lifespan of SmartAgriHubs (2018-2022), through for instance an innovation portal where information will be easily accessible to farmers and their businesses, thereby creating an efficient and satisfactory user-experience. Similarly, a catalogue for farmers and agribusinesses will map the existing digital technology field and facilitates the exchange of best practices among the network.

Representatives of SmartAgriHubs project has been invited for evaluations and validation of simulation of arable crops at farm field scale and has attended the validation webinar on Cloud based Agro-Climatic Modelling.

The website of SmartAgriHubs is available [here](#) and its coordinator is Wageningen UR.



7)

The internet of things (IoT) has revolutionary potential. A smart web of sensors, actuators, cameras, robots, drones and other connected devices allows for an unprecedented level of control and automated decision-making. The project Internet of Food & Farm 2020 (IoF2020) explores the potential of IoT-technologies for the European food and farming industry.

The goal is ambitious: to make precision farming a reality and to take a vital step towards a more sustainable food value chain. With the help of IoT technologies higher yields and better-quality produce are within reach. Pesticide and fertilizer use will drop, and overall efficiency is optimized. IoT technologies also enable better traceability of food, leading to increased food safety.

IoF2020 is part of Horizon 2020 Industrial Leadership and supported by the European Commission with a budget of EUR 30 million. The aim of IoF2020 is to build a lasting innovation ecosystem that fosters the uptake of IoT technologies. For this purpose, key stakeholders along the food value chain are involved in IoF2020 together with technology service providers, software companies and academic research institutions.

Representatives of Internet of Food & Farm 2020 (IoF2020) project has been invited for evaluations and validation of simulation of arable crops at farm field scale and has attended the validation webinar on Cloud based Agro-Climatic Modelling.

The website of Internet of Food & Farm 2020 (IoF2020) is available [here](#) and its coordinator is Wageningen UR.



8) The One Health European Joint Programme (EJP)

The ORION project aims at establishing and strengthening inter-institutional collaboration and transdisciplinary knowledge transfer in the area of surveillance data integration and interpretation, along the One Health (OH) objective of improving health and well-being. This will be achieved through an interdisciplinary collaboration of 13 veterinary and/or public health institutes from 7 European countries. These agencies are committed to adopt best practice One Health Surveillance (OHS) solutions (guidelines, methods, tools and knowledge). Specifically, this project will create:

- an “OH Surveillance Codex” (WP1) – a high level framework for harmonised, cross-sectional description and categorisation of surveillance data covering all surveillance phases and all knowledge types.
- an “OHS Knowledge Hub” (WP2) – a cross-domain inventory of currently available data sources, methods / algorithms / tools, that support OH surveillance data generation, data analysis, modelling and decision support
- “OHS Infrastructural Resources” (WP3) – that are practical, infrastructural resources forming the basis for successful harmonization and integration of surveillance data and methods. Developed solutions will be exemplified and validated during several One Health pilot studies in which other EJP research projects may join in. These pilot studies will support the operationalization and implementation of OH surveillance solutions on a national level and provide crucial feedback for future development and dissemination actions. An open web-based OHS Knowledge Hub will facilitate this knowledge exchange. Trainings and workshops will be offered to support and integrate with other EJP projects in their data harmonization efforts.

The ORIONKnowledgeHub-VRE hosts the first OneHealth EJP Glossary and serves as project management and communication facility for the EJP ORION project (link to the EJP Glossary: <https://aginfra.d4science.org/web/orionknowledgehub/catalogue>). The OHEJP Glossary is a freely available online resource that comprises an extensive list of OH-related terms and definitions.

The website of Internet of One Health European Joint Programme (EJP) is available [here](#) and its coordinator is Matthias Filter.



9)

The PHENOME project aimed to equip the French scientific community with an infrastructure able to measure the agronomic characteristics of plants subjected to various climate scenarios and technical itineraries associated with global change, using precise and high throughput methods.

High throughput phenotyping is a technological lock to be lifted to allow the selection of varieties that consume less inputs (water, nitrogen or pesticides) in the context of competitive and more environmentally friendly agriculture.

In this context, PHENOME aimed to federate a network of phenotyping platforms already existing or under development at five sites in France. The network served French and European research and also was open to private partners (seed companies, technical institutes, etc.).

This 8-year project associated INRA (in particular the BIA unit through the PhenoChem platform), Arvalis-Institut-du-Végétal and Cetiom. A strong investment in the development of sensors and data analysis methods were pursued.

The website of Internet of PHENOME is available [here](#) and its coordinator is François Tardieu.

Regarding the way on which this project was supported by AGINFRA PLUS project. The members of this community can now benefit from an environment that implements standard APIs for accessing plant phenotyping data. The AGINFRA PLUS project also confirmed the importance of integrating services dedicated to semantic resources management or data visualization in e-infrastructures.

10)



The EPPN2020 is a research infrastructure project funded by Horizon 2020 Programme of the EU that will provide European public and private scientific sectors with access to a wide range of state-of-the-art plant phenotyping facilities, techniques and methods, and help boost the exploitation of genetic and genomic resources available for crop improvement that represents a major scientific challenge for this coming decade. EPPN2020 specifically aims to facilitate the community progressing across the whole phenotyping pipeline, involving sensors and imaging techniques, data analysis in relation to environmental conditions, data organization and storage, data interpretation in a biological context and meta-analyses of experiments carried out on different organs at different scales of plant organization.

The website of Internet of EPPN2020 is available [here](#) and its coordinator is François Tardieu.

Regarding the way on which this project was supported by AGINFRA PLUS project. The members of this community can now benefit from an environment that implements standard APIs for accessing plant phenotyping data. The AGINFRA PLUS project also confirmed the importance of integrating services dedicated to semantic resources management or data visualization in e-infrastructures.



11)

The Preparatory Phase of EMPHASIS is a H2020 supported project EMPHASIS-PREP (Grant Agreement number 739514). The project started in 2017 to bring EMPHASIS to the level of legal, financial, and technical maturity required for implementation. EMPHASIS-PREP provides the basis for the establishment of the legal framework, the business plan and the preparation of an information system for a sustainable and innovative pan-European infrastructure for plant phenotyping.

EMPHASIS aims to address the technological and organisational limits of European plant phenotyping to make the most of genetic and genomic resources available and essential for crop improvement in times of a changing climate.

EMPHASIS as a sustainable pan-European Research Infrastructure fills an important gap in the Health & Food ESFRI landscape.

The website of Internet of EMPHASIS Preparatory Phase is available [here](#) and its coordinator is François Tardieu.

Regarding the way on which this project was supported by AGINFRA PLUS project. The members of this community can now benefit from an environment that implements standard APIs for accessing plant phenotyping data. The AGINFRA PLUS project also confirmed the importance of integrating services dedicated to semantic resources management or data visualization in e-infrastructures.

7.2 INTERNATIONAL PROJECTS



1)

Platform for
Big Data
in Agriculture

The ultimate goal of the CGIAR Platform for Big Data in Agriculture is to harness the capabilities of big data to accelerate and enhance the impact of international agricultural research. This 5-year platform (2017 - 2021) will provide global leadership in organizing open data, convening partners to develop innovative ideas, and demonstrating the power of big data analytics through inspiring projects.

The Platform embraces the power of big data analytics, supporting CGIAR as it becomes a leader in generating actionable data-driven insights for stakeholders.

It builds capacity throughout CGIAR to generate and manage big data, assisting CGIAR and its partners' efforts to comply with open access / open data principles to unlock important research and datasets. It empowers researchers to strengthen data analytical capacity, developing practical big data tools and services in a coordinated way. It also addresses critical gaps, both organizational and technical, expanding the horizon of CGIAR research.

Agroknow's involvement in the CGIAR Platform for Big Data in Agriculture has centered around the development of GARDIAN, the first pan-CGIAR data discovery engine (mentioned [here](#)). This involvement included the Data Harvesting Workflow that has been put in place to support the harvesting of more than a 100.000 publications and datasets from CGIAR repositories around the world.

The website of CGIAR Platform for Big Data in Agriculture is available [here](#) and CGIAR GARDIAN is available [here](#).



2)

The Global Water Pathogen Project (GWPP) aims at developing a knowledge resource to reduce mortality linked to water pathogens and the lack of safe drinking water and basic sanitation through creating the state-of-the-art knowledge hub on water-related disease risks and intervention measures, including new and emerging pathogens and updated scientific data replacing the current benchmark reference work of Feachem et al. The knowledge gathered through the project will be available through a UNESCO book in English, French, and Spanish, both in printed and electronic format following the open access policy of UNESCO, as well as an online data base and knowledge platform, for broad international access and ongoing updates via a global higher education network.

As part of the AGINFRA PLUS activities, the GWPP network (shown [here](#)) has been approached, in order to test the applicability of the proposed AGINFRA PLUS e-infrastructure in another domain. Particularly, instances of Data Publishing and Semantic Enrichment have been communicated to the community, in order to attract new potential researchers to test and evaluate the developed tools.

The website of GWPP is available [here](#) and its coordinator is Michigan State University (MSU), in collaboration with UNESCO.



3)

The Global Open Data for Agriculture and Nutrition (GODAN) initiative seeks to support global efforts to make agricultural and nutritionally relevant data available, accessible, and usable for unrestricted use worldwide. The initiative focuses on building high-level policy, and public and private institutional support for open data. The initiative encourages cooperation among existing agriculture and open data activities, bringing stakeholders together to solve long-standing global problems. On a practical level, GODAN lends its expertise to advising on open data policy and funding proposals and, where appropriate, submitting joint proposals with members and partners.

One of GODAN's initiatives, GODAN Action, is a three-and-a-half-year programme launched by the UK's Department for International Development (DFID). GODAN Action brings together agriculture and nutrition specialists and open data experts and will support GODAN in its mission by building people's capacity to engage with open data. In the scope of GODAN Action activities, a primary version of data integration front-end tools has been developed to support the adoption of open standards in the data publishing process. The developed concept was later generalized in the scope of AGINFRA PLUS WP2 activities and gave birth to a friendlier user-facing Data Integration tool (described in D2.3).

The website of GODAN is available [here](#) and its coordinator is Wageningen UR.

GBADs

4)

The Global Burden of Animal Diseases (GBADs)¹² will “measure to improve” animal health at a local, national and global level. It will provide information for evidence-based investment plans for veterinary services, allow allocation of resources to key social, economic and environmental problems and support high quality evaluation of existing animal health investments demonstrating the value of veterinary services.

With the Informatics Working Group of the project, Agroknow shared AGINFRA PLUS technology and expertise on WP2 topics (semantic discovery and ontologies), to inform the design of the GBADs digital infrastructure. Agroknow experts hosted the 10 members of the Informatics WG at an experience sharing workshop in Athens, on February 27th & 28th, 2019.

¹² <https://animalhealthmetrics.org/>

8 COLLABORATION WITH EOSC

The vision behind the European Open Science Cloud (EOSC), a trusted digital platform for the scientific community, providing seamless access to data and interoperable services that address the whole research data cycle is to make available to everyone, for free all European research could. By this way all scientific outcomes that EU taxpayers fund will be a common, shared resource that may fuel [innovation from the public and private sector](#).

The alignment of the work in AGINFRA PLUS with the conception, development and deployment of the EOSC and its integration with the existing core e-infrastructures during the reporting period is demonstrated below:

- AGINFRA PLUS had a very active involvement and contribution to EOSC-related projects. EGI and other partners have been contributing our use cases and software services at projects such as EOSCPilot and EOSC-hub. We have also incorporated the proposed EOSC architecture and Rules of Participation to ensure AGINFRA PLUS follows best practices and can be integrated in the service offerings.
- AGINFRA PLUS has also been actively contributing to the community events and actions of all EOSC projects that the EC has been facilitating. More specifically:
 - We have participated and contributed to the meeting of over 30 projects contributing to building EOSC through H2020, which took place in Brussels on 9-10 September 2019. This meeting included representatives of the EOSC Executive and Governance Boards, the relevant staff of the European Commission (CNECT.C.1 - eInfrastructure and Science Cloud; RTD.G.4 - Open Science) and the EOSC Secretariat project;
 - We have participated and contributed the EOSC Symposium 2019 “Where the EOSC Makers and Shakers Meet”, the largest EOSC event of 2019 that took place in Budapest on November 28th & 29th. We have contributed to the session on Health and Food that the EOSC-Life initiative coordinated, talking about the complexity, heterogeneity and dependability that the various food and agriculture-related sciences have with the wider life and health sciences. We also presented at the plenary session on Use Cases about our key Software Demonstrators;
 - We are actively contributing to the information exchange among EOSC projects and the EOSC Secretariat, the public EOSC Project list webpage (at EOSCsecretariat.eu), and the public page listing deliverables, milestones, and relevant outputs of each EOSC project. We will also participate to one or more volunteer Interest Groups that are going to be set up, including “Service Onboarding & Catalogues of services and research results”, “Researcher Engagement and Use cases”, “Federating Core”, and “Glossary”.

9 SUMMARY

The work of WP8 during the whole project's lifetime was focused on the development of an infrastructure to conduct online dissemination activities and on the creation of the offline dissemination materials to promote AGINFRA PLUS during various presence events like conferences and workshops. The project website was developed representing the project and consortium, providing an overview of the use cases supported by the three research communities of the project. Social media channels like Facebook and Twitter offer the possibility to stay in contact with multiple stakeholders and attract attention to the project.

Multiple events (workshops, conference presentations and policy events) were organised to address the research communities of the project, as well as to align with agri-food global data initiatives and networks and open data initiatives. The AGINFRA PLUS project has been promoted in 12 European countries and in USA targeting both representatives from European research communities and stakeholders from USA. In sum, more than 74 presentations and panel participations have been conducted and thirty-five 35 major events have been organized. By means of these activities a total number of about 4000 stakeholders have been reached. Finally, 20 scientific publications were published.

Moreover, during the whole project's lifetime, AGINFRA PLUS managed to get engaged with agri-food global data initiatives and networks such as the Interest Group on Agricultural Data (IGAD) of the Research Data Alliance (RDA)¹³, the FAO's Agricultural Information Management Standards¹⁴, the GODAN Data Ecosystem Working Group and the Entrepreneur' Organization.

Finally, AGINFRA PLUS realised strategic discussions with the key players trying to shape the thematic cloud on agri-food as part of the European Open Science Cloud (EOSC). More specifically, AGINFRA PLUS (with the support of EGI, which is leading this activity) participated to public events organized by EOSC-related H2020-funded projects such as EOSCpilot (<https://eoscpiot.eu/>) and EOSC-hub (<http://eosc-hub.eu/>). Moreover AGINFRA PLUS contributed to the e-infrastructure roadmap for Open Science in agricultural research as the one that has been designed by the eROSA Project (<http://www.erosa.aginfra.eu/>)

¹³ <https://www.rd-alliance.org/groups/agriculture-data-interest-group-igad.html>

¹⁴ <http://aims.fao.org/>

1. ANNEX A: OPEN HARVEST 2017 (AGENDA AND PARTICIPANTS)

Agenda (24/11/2017)		
Time	Session Title	Session Chairs
9:00 - 9:30	<i>Arrival, registration, morning coffee</i>	-
9:30 - 11:00	Introduction and Context: <ul style="list-style-type: none"> Speed talks per participant <ul style="list-style-type: none"> Who are we? Why are we here? Form breakout Groups	Nikos Manouselis
11.00 - 11.30	Coffee Break	
11.30 - 12.30	Breakout Group Session <u>Question 1:</u> How does your group define this beast that we refer to as a “scientific data commons” or “shared scientific data infrastructure”? <i>Think a bit, write down your main ideas, share with your group, cluster ideas, brainstorm, reflect upon, negotiate, come up with your group’s position.</i>	Facilitated by WG Leaders
12:00 - 13:00	Groups Report on Question 1 to Plenary (10’ per WG) <ul style="list-style-type: none"> One sentence starting with “For our group, this thing is...” The top-5 components or parts that your group believes that such a thing should have. 	WG leaders & Rapporteurs
13:00 – 14:30	Lunch Break	
14.30 - 15.30	Breakout Group Session <u>Question 2:</u> Why do we need something like a “scientific data commons” or “shared scientific data infrastructure”? <i>Think a bit, write down your main ideas, share with your group, cluster ideas, brainstorm, reflect upon, negotiate, come up with your group’s position.</i>	Facilitated by WG Leaders
15:30 – 16:00	Coffee Break (grab your coffee & continue working)	
16:00 - 17:00	Groups Report on Question 2 to Plenary (10’ per WG) <ul style="list-style-type: none"> The 3 reasons that your group sees as most important. One sentence starting with “For our group, we need this because...” 	WG leaders & Rapporteurs
17:00 - 18:00	Synthesising input to 1-pager on the concept & the need	Johannes Keizer (synthesising)

Day 2 (1/6/2017)

11:30 - 12:30	Groups Report on Question 3 to Plenary (10' per WG) <ul style="list-style-type: none"> A list of the initiatives represented in the group & why this concept is relevant to each one of them. One sentence per initiative with the message they want to include in the position paper to push this concept forward. 	WG leaders & Rapporteurs
12.30 - 13.30	Breakout Group Session <u>Question 4</u> : Which are the priority actions that you would like to work on next? <i>Think a bit, write down your main ideas, share with your group, cluster ideas, brainstorm, reflect upon, negotiate, come up with your group's position.</i>	Facilitated by WG Leaders
13:30 – 15:00	Lunch Break	
15:00 - 15:30	Groups Report on Question 4 to Plenary (10' per WG) <ul style="list-style-type: none"> A list of the key actions that your group agrees that it would like to focus on and follow up after the event. Who will do what, when. 	WG leaders & Rapporteurs
15:30 – 16:00	Synthesis of key actions, revision of position document, publication of declaration/statement	

2. ANNEX B: JOINT WORKSHOP ON FOOD RISK ASSESSMENT RESEARCH & PRACTICE (AGENDA AND PARTICIPANTS)

Agenda (24/11/2017)

Time	Presentation Title	Presenter
14:00 - 14:10	Welcome and introductions of the participants	Panagiotis Zervas (Agroknow)
14:10 - 14:30	The AGINFRA PLUS Vision: Serving the European Scientists Across Food Systems	Panagiotis Zervas (Agroknow)
14:30 - 14:50	The AGINFRA PLUS Virtual Research Environment (VRE)	Massimiliano Assante (CNR)
14:50 - 15:40	Session I: Emerging Food Safety Risks Identification Systems	
14:50 - 15:10	Inventory among DEMETER Stakeholders on EMERGING RISKS Systems	Hans Marvin (WUR-RIKILT)
15:10 - 15:30	ERIS-Emerging Risk Identification Support System	Niels Lucas Luijckx (TNO)
15:30 - 15:50	Implementing a platform for the food-chain ecosystem to provide trust, transparency and provenance	Walter Stiers (IBM)
15:50 - 16:10	Coffee Break	
16:10 - 16:50	Session II: Emerging Food Safety Risks Identification Methods	
16:10 - 16:30	DEMETER - Development of Methodologies and Systems for the Identification of Emerging Food Safety Risks	Hans Marvin (WUR-RIKILT)
16:30 - 16:50	DEMETER - ERKEP and Current Status of the ERKEP Concept Note	Matthias Filter & Michal Czyz (BfR)
16:50 - 17:30	Discussion - Wrap up	

3. ANNEX C: AGTECH INNOVATORS MEETUP

Deloitte.



AgTech Innovators Meetup

Tuesday, December 17, 2019

Agenda

Time	Topic	Speaker
17:00-17:15	Intro	Nikos Manouselis CEO, Agroknow
		Alexis Damalas Partner, Financial Advisory Leader, Deloitte
17:15-18:05	Discussion Agriculture + Tech	Panel discussion moderator Thanos Kosmidis Foundation
		Stelios Kotsopoulos , Chief Scientific Officer, AgroApps+Draxis
		Alkis Alexandrou , Deputy General Manager, Agribusiness Sector, Piraeus Bank
		Christos Stamatis , CEO, Stevia Hellas Coop
		Lola Bilimpini , Marketing Director, Green Cola
		Ioannis Mavroudis , CEO, C-Gaia
18:05-18:50	Discussion Food + Tech	Panel discussion moderator Theo Kontogiannis Agroknow
		Stelios Arhondakis , CEO, Founder, BioCoS
		Sotiris Bantas , Co-Founder, President & CEO, Centaur Analytics
		Nikos Boucaouris , IGNITE Program Manager, Nestle Hellas
		Valvis Giannis , Partner, Consulting, Deloitte
		Ion Tsakonas , CEO, PJ Tech Catalyst
18:50-19:40	Discussion Critical parameters for the establishment of an AgTech ecosystem in Greece	Panel discussion moderator Alexis Damalas Deloitte
		Stelios Sbrvakis , Principal, Tax & Legal, Deloitte
		Giannis Stoitsis , Partner & Director of Technology, Agroknow
		Dimitris Kalavros-Gousiou , General Partner, Velocity Partners
		George Karantonis , Partner, Metavallon
		Dimitra Papandreou , Principal Manager, Advice for Small Businesses, EBRD
19:40-21:00	Networking drinks	

4. ANNEX D: OVERVIEW OF DISSEMINATION ACTIVITIES

Events Organized									
Event Name	Event URL	Partners Participated	Event Type	Nature of Contribution	Location (City)	Location (Country)	Date(s)	Audience	Participants
Open Harvest 2017	http://www.godan.info/news/2nd-ghania-declaration-released-after-open-harvest-2017	Agroknow	Workshop	Presentation	Chania	Greece	31.5-1.6.2017	Research, Industry and Policy Makers	36
Joint Workshop on Food Risk Assessment Research & Practice	http://www.plus.aginfra.eu/node/69	BfR, Agroknow, ALTERRA	Workshop	Presentation	Wageningen	Netherlands	24.11.2017	Research	17
2nd Year									
EJP One Health Kick-Off meeting	https://www.anses.fr/en/content/h2020-one-health-ejp-kick-meeting	BfR	Workshop	Presentation	Paris	France	30-31.01.2018	Research, Governmental Agencies	100
Technical Workshop RAKIP project	N/A	BfR	Workshop	Presentation	Berlin	Germany	22.03.2018	Developers	15
RAKIP Meeting	N/A	BfR	Workshop	Presentation	Paris	France	30.03.2018	Research	10
ORION-Kick off Meeting	N/A	BfR	Workshop	Presentation	Berlin	Germany	18-20.04.2018	Research	30
ORION VRE workshop	N/A	BfR	Workshop	Presentation	Web		28.05.2018	Research	8
EFSA-BfR Workshop on QMRA Model Repository	N/A	BfR	Workshop	Presentation	Parma	Italy	27.06.2018	Research	10
AgroDataCube Sprint	https://www.wur.nl/nl/nieuws/AgroDataCube-Sprint-Samen-landbouwapplicaties-ontwikkelen-op-basis-van-big-en-open-data.htm	ALTERRA	Workshop	Presentation	Wageningen	Netherlands	14-16.03.2018	Research, Industry and Policy Makers	20
Food Security VRE workshop	N/A	INRA	Workshop	Presentation	Montpellier	France	17.04.2018	Research	7
Lecture given to Agronomy students on Data Science Training in Montpellier SupAgro	N/A	INRA	Conference	Presentation	Montpellier	France	19.03.2018	Research	12
RAKIP Meeting	N/A	BfR	Conference	Presentation	Kopenhagen	Denmark	08.06.2018	Research	10
RAKIP-EFSA Webmeeting	N/A	BfR	Workshop	Presentation	Web		21.06.2018	Research	6
1st Agro-climatic Modelling Evaluation workshop	N/A	ALTERRA	Workshop	Presentation	Wageningen	Netherlands	10.07.2018	Research	2
WUR Big Data Network	N/A	ALTERRA	Workshop	Presentation	Wageningen	Netherlands	01.10.2018	Research	25
3rd Year									
2nd Agro-climatic Modelling Evaluation workshop	https://www.wur.nl/en/activity/Workshop-data-science-	ALTERRA	Workshop	Presentation	Wageningen	Netherlands	02.07.2019	Research	16

	in-agri-food-with-virtual-research-environments.htm								
Food Security VRE workshop	N/A	INRA	Workshop	Presentation	Montpellier	France	20.06.2019	Research	5
Joint (3rd) evaluation workshop on data science in agri-food with virtual research environments	N/A	ALTERRA, INRA	Workshop	Presentation	Paris	France	18.09.2019	Research	11
RAKIP Workshop	N/A	BfR	Workshop	Presentation	Berlin	Germany	25.03.2019	Research	19
DEMETER Workshop	N/A	BfR	Workshop	Presentation	Berlin	Germany	01.04.2019	Research	17
How to benefit from the Risk Assessment Modelling and Knowledge Integration Platform (RAKIP)	N/A	BfR	Workshop	Presentation	Braganza	Portugal	17.09.2019	Research	40
Demonstrating the agro-environmental use case and high performance crop modelling to the AGRI4CAST unit of EC-JRC	N/A	ALTERRA	Policy event	Presentation	Ispira	Italy	07.11.2019	Research, Policy Makers	15
4th Agro-climatic Modelling Evaluation workshop - webinar cloud based agricultural modeling	https://channel.royalcast.com/webcast/wur/20191219_1/	ALTERRA	Workshop	Presentation	Wageningen	Netherlands	19.12.2019	Research, Governmental Agencies, Industry, Policy makers	133
N (Nitrogen) SCRUM	N/A	ALTERRA	Hackathon	Software development	Apeldoorn	Netherlands	24.01.2020	Research, Industry, Developers, Data Scientists, Farmers	30
Workshop "Harmonized exchange of food safety models using web-based services from RAKIP and the AGINFRA PLUS project"	N/A	BfR	Workshop	Presentation	Berlin	Germany	09.12.2019	Research	14
AgTech Innovators Meetup		Agroknow	Meetup	Presentation	Athens	Greece	17.12.2019	Research, Industry and Policy Makers	
Webinar on how a VRE can be used for collaborative science in plant phenotyping domain and more		INRA	Workshop	Presentation	Montpellier	France	18.12.2019	Research, Governmental Agencies, Industry,	

widely in plant science research.								Policy makers	
Webinar OHEJP Glossary	https://svasweden.adobeconnect.com/pm7lzofijogo/	BfR	Workshop	Presentation	Web		04.09.2019	Research	21
ORION Knowledge Hub webinar	https://svasweden.adobeconnect.com/p90575ar1eht/	BfR	Workshop	Presentation	Web		06.12.2019	Research	19
1st demonstrator 1 validation at AUA		Agroknow	Workshop	Presentation	Athens	Greece	10.1.2020	Research	13
1st demonstrator 2 validation at AUA		Agroknow	Workshop	Presentation	Athens	Greece	10.1.2020	Research	41
1st demonstrator 3 validation at AUA		Agroknow	Workshop	Presentation	Athens	Greece	8.1.2020	Research	22

Events attended

Event Name	Event URL	Partners Participated	Event Type	Nature of Contribution	Location (City)	Location (Country)	Date(s)	Audience	Estimated Participants
1st eROSA Policy Workshop	http://www.erosa.aginfra.eu/node/45	Agroknow, INRA, ALTERRA	Policy event	Presentation	Brussels	Belgium	31.03.2017	Policy makers	25
Interest Group on Agricultural Data (IGAD) Pre-meeting of the RDA 9th Plenary Meeting	https://www.rd-alliance.org/plenari/es/rda-ninth-plenary-meeting-barcelona	Agroknow, ALTERRA	Conference	Panel	Barcelona	Spain	5-7.4.2017	Research	250
NET FUTURES 2017	https://www.netfuturesconference.eu/	Agroknow	Policy event	Presentation	Brussels	Belgium	28.29.6.2017	Policy makers	300
SuikerUnie Hackathon	N/A	ALTERRA	Hackathon	Software development	Wageningen	Netherlands	07.04.2017	Research, Industry and Policy Makers	15
AgriVision FarmHack	https://www.farmhack.nl/activiteiten/agrivationhackathon/	ALTERRA	Hackathon	Software development	Noordwijk	Netherlands	14.06.2017	Research, Industry and Policy Makers	25
2nd AgroHackathon	https://www.meetup.com/AgroHackathon/events/236852702/	Agroknow	Hackathon	Presentation	Montpellier	France	1-2.7.2017	Developers	20
International workshop on Open Land Data: Mobile Apps and Geo-services for Open Soil Data	http://gsif.isric.org/doku.php/wiki:workshop_2017	ALTERRA	Workshop	Presentation	Wageningen	Netherlands	3.7.2017	Research	30
1st eROSA Stakeholders Workshop	http://www.erosa.aginfra.eu/node/47	Agroknow, INRA, ALTERRA	Workshop	Presentation	Montpellier	France	6-7.7.2017	Research, Industry and Policy Makers	50
RAKIP Workshop	N/A	BfR	Workshop	Panel	Berlin	Germany	12.7.2017	Research	20
BfR Workshop – FoodRisk-Labs	N/A	BfR	Workshop	Presentation	Berlin	Germany	10-11.7.2017	Research	30
OpenScienceFair	http://www.opensciencefair.eu/workshops/parallel-day-1-1/the-roadmap-to-better-food-using-ict-and-open-data-to-overcome-	UoA	Workshop	Panel	Athens	Greece	6-8.9.2017	Research, Industry and Policy Makers	60

	barriers-in-the-agriculture-value-chain								
Thessaloniki International Fair	http://tif.helexpo.gr/en	UoA	Forum	Brochure distribution	Thessaloniki	Greece	15-17.9.2017	Research, Industry and Policy Makers	100
MACS-G20 workshop in Berlin, "Linked Open Data in Agriculture"	https://www.ktbl.de/inhalte/themen/ueber-projekte/macsg20-loda/lectures/	ALTERRA	Policy event	Presentation	Berlin	Germany	27-28.9.2017	Policy makers	100
2nd Open Research Cloud Congress	https://indico.egi.eu/indico/event/3414/	EGI	Conference	Presentation	Amsterdam	Netherlands	27-28.9.2017	Developers	40
Agri-Innovation Summit 2017	http://aislisbon2017.com	Agroknow	Conference	Presentation	Lisbon	Portugal	11-12.10.2017	Research, Industry and Policy Makers	300
COMBINE 2017	http://co.mbine.org/events/COMBINE_2017	BfR	Forum	Presentation	Milan	Italy	9-13.10.2017	Developers	
Phenome workshop	https://www.phenome-fppn.fr/	INRA	Workshop	Presentation	Montpellier	France	9.11.2017	Research	20
Horizon 2020 Societal Challenge 2 Infoweek	https://ec.europa.eu/programmes/horizon2020/en/news/horizon-2020-societal-challenge-2-infoweek-including-high-level-policy-events	Agroknow	Forum	Booth	Brussels	Belgium	14-17.11.2017	Research, Industry and Policy Makers	800
Emphasis workshop	https://emphasis.plant-phenotyping.eu/Tartu2017	INRA	Workshop	Presentation	Tartu	Estonia	22.11.2017	Research	20
BfR Minisymposium Globale Warenketten	N/A	BfR	Workshop	Presentation	Berlin	Germany	22.11.2017	Research	40
2nd eROSA Stakeholders Workshop	http://www.erosa.aginfra.eu/node/54	Agroknow, INRA, ALTERRA, BfR	Workshop	Presentation	Wageningen	Netherlands	27-28.11.2017	Research	30
EOSC Stakeholder forum	https://eosc-pilot.eu/events/eosc-stakeholder-forum-shaping-future-eosc	BfR	Workshop	Panel	Brussels	Belgium	28-29.11.2017	Research, Industry and Policy Makers	400
Digital Infrastructures for Research 2017 (DI4R 2017)	https://www.digitalinfrastructures.eu/	EGI	Conference	Presentation	Brussels	Belgium	30.11-1.12.2107	Research, Industry and Policy Makers	400
Joint International Symposium	https://www.bfr-akademie.de/media/wysiwyg/Programme_Joint_International_Symposium.pdf	BfR	Conference	Presentation	Berlin	Germany	30.11-1.12.2107	Research, Governmental Agencies	250
Smart Dairy Farming Hackathon	https://www.farmhack.nl/activiteiten/smart-dairy-farming-hackathon/	ALTERRA	Hackathon	Software development	Dairy Campus, Leeuwarden	Netherlands	30.11.2017	Research, Industry and Policy Makers	25
Technical Workshop FDA-iRISK	N/A	BfR	Workshop	Presentation	Greenbelt, MD	USA	7-8.12.2017	Research, Governmental Agencies, Industry	40
EJP One Health Pre-Kick-Off-Meeting	N/A	BfR	Workshop	Panel	Brussels	Belgium	15.12.2017	Research, Government	40

								al Agencies, Industry	
2nd eROSA Policy Workshop	N/A	Agroknow, INRA, ALTERRA	Policy event	Presentation	Brussels	Belgium	15.12.2017	Policy makers	15
2nd Year									
Rewarding Nature Hack	https://www.farmhack.nl/activiteiten/rewarding-nature-hack/	ALTERRA	Hackathon	Software development	Amersfoort	Netherlands	10.04.2018	Research, Industry and Policy Makers	20
EOSC-hub week	https://www.eosc-hub.eu/events/eosc-hub-week-16-20-april-2018-malaga-spain	EGI	Conference	Presentation	Malaga	Spain	16-20.04.2018	Research, Industry and Policy Makers	150
AgriResearch Conference - Innovating for the future of farming and rural communities	http://ec.europa.eu/programmes/horizon2020/en/news/agriresearch-conference-innovating-future-farming-and-rural-communities	Agroknow	Conference	Presentation	Brussels	Belgium	02-03.05.2018	Research, Industry and Policy Makers	250
eROSA 3rd Stakeholder Workshop	N/A	Agroknow, INRA, ALTERRA, BfR	Workshop	Presentation	Athens	Greece	21-22.05.2018	Research	20
FIT4FOOD2030 Workshop	https://fit4food2030.eu/	Agroknow	Workshop	Presentation	Athens	Greece	12.06.2018	Research	30
Towards Open Science in Agriculture & Food	https://www.eventbrite.com/e/towards-open-science-in-agriculture-food-tickets-45533972337?utm_source=eb_email&utm_medium=email&utm_campaign=event_reminder&utm_term=eventname	CNR	Workshop	Presentation	Plovdiv	Bulgaria	13.06.2018	Research, Industry and Policy Makers	40
2nd FOOD 2030 High Level Event	http://food2030plovdiv.eu/	Agroknow	Conference	Brochure distribution	Plovdiv	Bulgaria	14-15.06.2018	Research, Industry and Policy Makers	150
3rd eROSA Policy Workshop	N/A	Agroknow, INRA, ALTERRA	Policy event	Presentation	Brussels	Belgium	19.06.2018	Policy makers	10
Horizon 2020 Info Day on Societal Challenge 2	https://ec.europa.eu/programmes/horizon2020/en/news/horizon-2020-info-day-societal-challenge-2-calls-proposals-2019	Agroknow	Policy event	Brochure distribution	Brussels	Belgium	25.06.2018	Research, Governmental Agencies, Industry	300
FoodMicro2018	https://www.foodmicro2018.com/	BfR	Conference	Presentation	Berlin	Germany	03-06.09.2018	Research, Governmental Agencies, Industry	200
5th European Congress of Conservation Biology (ECCB2018)	https://conbio.org/minisites/eccb2018/	PENSOFT	Conference	Brochure distribution	Jyväskylä	Finland	12-15.06.2018	Research, Governmental Agencies, Industry	>500
TDWG 2018 Annual Conference	http://spnhc-tdwg2018.nz/	PENSOFT	Conference	Brochure distribution	Dunedin	New Zealand	25.08.-01.09.2018	Research, Industry and Policy Makers	>300
Digital Infrastructure	https://www.digitali	EGI	Conference	Presentation	Lisbon	Portugal	9-10.10.2018	Research,	

for Research (DI4R2018)	nfastructures.eu/							Industry and Policy Makers	
ESP regional conference Europe 2018	https://www.espcconference.org/eu2018	PENSOFT	Conference	Brochure distribution	San Sebastián	Spain	15-19.10.2018	Research, Governmental Agencies, Industry	>500
Wageningen Data Competence Center	https://library.wur.nl/ojs/index.php/FAIRdata2018	ALTERRA	Workshop	Presentation	Wageningen	Netherlands	12.12.2018	Research, Industry and Policy Makers	
IEEE eScience 2018	https://www.escience2018.com/	CNR	Conference	Presentation	Amsterdam	Netherlands	31.10.18	Research	350
3rd Year									
CYBELE kickoff meeting - demonstrator presentation	N/A	ALTERRA	Workshop	Presentation	Barcelona	Spain	28.01.2019 - 30.01.2019	Research	40
CYBELE plenary meeting	N/A	ALTERRA	Workshop	Presentation	Dublin	Ireland	21-21.05.2019	Research	35
KNIME Spring Summit 2019	https://www.knime.com/about/events/knime-spring-summit-2019-berlin	BfR	Conference	Presentation	Berlin	Germany	18.3.-22.3.2019	Developers	300
11th International Conference of Predictive Modelling in Food(ICPMF11)	https://esa.ipb.pt/icpmf11/welcome/	BfR	Conference	Presentation	Braganza	Portugal	17-20.9.2019	Research	200
Open Science Fair 2019	https://www.opensciencefair.eu/	UoA	Conference	Panel	Porto	Portugal	16-19.9.2019	Research, Industry and Policy Makers	
EOSC-hub week 2019	https://www.eosc-hub.eu/events/eosc-hub-week-2019	EGI	Conference	Presentation	Prague	Czech Republic	10-12.04.2019	Research, Industry and Policy Makers	200
EGI Conference 2019	https://indico.egi.eu/indico/event/4431/	EGI	Conference	Presentation	Amsterdam	The Netherlands	6-8.5.2019	Research	150
Design your e-Infrastructure workshop	https://indico.egi.eu/indico/event/4431/page/0	EGI	Workshop	Presentation	Amsterdam	The Netherlands	9.5.2019	Research	25
HORIZON 2020 CONTRIBUTIONS TO BUILDING THE EOSC. Joint CNECT-RTD project meeting and workshop	https://www.eoscsecretariat.eu/events/building-eosc-through-h2020-projects-current-status-and-future-directions	EGI	Workshop	Presentation	Brussels	Belgium	9-10.09.2019	Policy makers	
10th ESP World Conference 2019	https://www.espartnership.org/esp-conferences/world-conference-2019/	PENSOFT	Conference	Brochure distribution	Hanover	Germany	21-25.10.2019	Research, Industry and Policy Makers	800
Biodiversity Next	https://biodiversitynext.org/	PENSOFT	Conference	Presentation	Leiden	The Netherlands	20-25.10.2019	Research, Industry and	>700

						ds		Policy Makers	
Foodborne pathogens & whole genome sequencing: impact on public health protection	https://www.anses.fr/en/content/joint-scientific-conference-ansesbfrdtufoodnifds	BfR	Conference	Presentation	Paris	France	26-28.03-2019	Research	200
IAFP European Symposium	https://www.foodprotection.org/europeansymposium/archive/2019/	BfR	Conference	Presentation	Nantes	France	24. - 26.04.2019	Research, Governmental Agencies, Industry	300
One Health EJP ASM Conference	https://onehealth.ejp.eu/event/one-health-ejp-asm-2019/	BfR	Conference	Presentation	Dublin	Ireland	24.05.2019	Research	300
Phenome workshop		INRA	Workshop	Presentation	Nantes	France	30.10.2019	Research	30
EOSC-Symposium	https://www.eoscsecretariat.eu/eosc-symposium	EGI	Conference	Presentation	Budapest	Hungary	26.11.2019	Research, Industry and Policy Makers	300
ISESS conference	http://www.ises.net/	ALTERRA	Conference	Presentation	Wageningen	The Netherlands	05-07.02.2020	Research	
Wageningen Data Science Week	https://www.eoscsecretariat.eu/eosc-symposium	ALTERRA	Hackathon	Presentation	Wageningen	The Netherlands	02-04.02.2020	Research, Industry and Policy Makers	
iCrop conference	https://www.icropm2020.org/	ALTERRA	Conference	Presentation	Montpellier	France	03-05.02.2020	Research	
EGI Conference 2019	https://indico.eui.eu/indico/event/4431/	INRA	Conference	Presentation	Amsterdam	The Netherlands	08-05-2019	Research	150
Elastic{ON} Tour Amsterdam	N/A	Agroknow	Conference	Presentation	Amsterdam	The Netherlands	29.11.2019	Research, Industry and Policy Makers	400
One Health For The Mediterranean Region In The Age Of Big Data	https://www.oie.int/onehealthconference2019/?lang=en	Agroknow	Conference	Presentation	Cagliari, Sardinia	Italy	30.10-1.11.2019	Research, Industry and Policy Makers	250
20th Symposium of Health-Related Water Microbiology	https://www.jomay.at/hrwm/wp-content/uploads/2019/03/HRWM_2019_WATE	Agroknow	Conference	Presentation	Vienna	Austria	15-16.10.2019	Research	250

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Scientific publications

Authors	Paper Title	Publication Type	Publication Venue	Publisher	Status	Publication Date	URL	Lead Partner
Pythagoras Karampiperis, Rob Lokers, Pascal Neveu, Odile Hologne, George Kakaletis, Leonardo Candela, Matthias Filter, Nikos Manouselis Maritina Stavrakaki, Panagiotis Zervas	Big Data in Agricultural and Food Research: Challenges and Opportunities of an integrated Big Data e-Infrastructure	Book chapter	Big Data for the Greater Good	Springer	Published	March 2018	"https://www.springer.com/us/book/9783319930602"	Agroknow
M. Assante, L. Candela, D. Castelli, R. Cirillo, G. Coro, L. Frosini, L. Lelii, F. Mangiacrapa, V. Marioli, P. Pagano, G. Panichi, C. Perciante, F. Sinibaldi	The gCube System: Delivering Virtual Research Environments as-a-Service	Journal paper	Future Generation Computer Systems	Elsevier	Published	June 2019	https://doi.org/10.1016/j.future.2018.10.035	CNR
Massimiliano Assante, Leonardo Candela, Donatella Castelli, Gianpaolo Coro, Francesco Mangiacrapa, Pasquale Pagano, Costantino Perciante	Enacting Open Science by gCube	Conference paper	9th International Workshop on Science Gateways (IWSG 2017), 19-21 June 2017	CEUR-WS.org	Published	2019	http://ceur-ws.org/Vol-2363/paper3.pdf	CNR
2nd Year								
Leticia Ungaretti Haberbeck, Carolina Plaza Rodríguez, Virginie Desvignes, Paw Dalgaard, Moez Sanaa, Laurent Guillier, Maarten Nauta, Matthias Filter	Harmonized terms, concepts and metadata for microbiological risk assessment models: the basis for knowledge integration and exchange	Journal paper	Microbial Risk Analysis	Elsevier	Published	June 2018	https://www.sciencedirect.com/science/article/pii/S23522183001000100	BfR
Miguel de Alba Aparicio, Tasja Buschhardt, Ahmad Swaid, Lars Valentin, Octavio Mesa-Varona, Taras Günther, Carolina Plaza-Rodríguez, Matthias Filter	FSK-Lab - an open source Food Safety Model integration tool	Journal paper	Microbial Risk Analysis	Elsevier	Published	Sept. 2018	https://doi.org/10.1016/j.mran.2018.09.001	BfR
A. Ballis, A. Boizet, L. Candela, D. Castelli, E. Fernández, M. Filter, T. Günther, G. Kakaletis, P. Karampiperis, D. Katris, M.J.R. Knapen, R.M. Lokers, L. Penev, G. Sipos, P. Zervas	Serving Scientist in Agri-food area by Virtual Research Environments	Conference paper	The 14th IEEE International Conference on e-Science, Amsterdam, Netherlands (eScience 2018)	IEEE	Published	Dec. 2018	https://doi.org/10.1109/eScience.2018.00124	CNR
C. Caracciolo, S. Aubin, B. Whitehead, P. Zervas	Semantics for Data in Agriculture: a Community-based Wish List	Conference paper	Semantics for Data in Agriculture	AgriXiv Preprints	Published	October 2018	https://agrxiv.org/eapdv	Agroknow
R.Knapen, R. Lokers, Y. van Randen, S. Janssen, H. Janssen	AgroDataCube and AGINFRA PLUS: Operationalising Big Data for Agricultural Informatics	Conference paper	FAIR Data Sciences for Green Life Sciences		Published	December 2018	https://doi.org/10.18174/FAIRdata2018.16273	ALTERRA

M. Filter, V. Desvignes, L. Guillier, M. Nauta	RAKIP: Resources for harmonized annotation and efficient exchange of risk assessment models	Conference paper	FoodMicro, Berlin	FoodMicro	Published	September 2018		BfR
3rd Year								
M. Assante, L. Candela, D. Castelli, G. Coro, L. Frosini, F. Mangiacrapa, P. Pagano, G. Panichi	Enacting Open Science by D4Science	Journal paper	Future Generation Computer Systems	Elsevier	Published	May 2019	https://doi.org/10.1016/j.future.2019.05.063	CNR
M. Assante et al.	Realising a Science Gateway for the Agri-food: the AGINFRA PLUS Experience	Conference paper	11th International Workshop on Science Gateways (IWSG 2019), 12-14 June 2019		Accepted			CNR
Matthias Filter, Leonardo Candela, Laurent Guillier, Maarten Nauta, Teodor Georgiev, Pavel Stoev, Lyubomir Penev	Open Science meets Food Modelling: Introducing the Food Modelling Journal (FMJ)	Journal paper	Food Modeling Journal	Pensoft Publishers	Published	Sept 2019	https://doi.org/10.3897/fmj.1.46561	PENSOFT
A. S. Ribeiro Duarte, ... L. Candela, ...	Global Foodsource Identifier (GFI): collaborative virtual research environment and shared data catalogue for the foodborne outbreak investigation international community	Journal paper	Food Control	Elsevier	Forthcoming			CNR
Matthias Filter et al	Enabling Efficient Food Safety Knowledge Exchange with FSK-Lab	Conference paper	KNIME Summit, Berlin	KNIME	Published	March 2019	https://files.knime.com/sites/default/files/03_bfr_20190321_knime-summit_mf_e.pdf	BfR
Matthias Filter	Introducing AGINFRA PLUS Based Virtual Research Environments Supporting Scientific Collaboration and Knowledge Exchange in the Food Safety Domain	Conference paper	IAFP European Symposium, Nantes	IAFP	Published	April 2019	https://www.foodprotection.org/upl/downloads/meeting/archive/5d49ac1eafc8805492763.pdf	BfR
Matthias Filter	Virtual Research Environments (VRE): Supporting One Health Research Communities - the ORION Experience	Conference paper	ASM Conference, Bublin	EJP	Published	May 2019	https://docs.wixstatic.com/ugd/c416fd_ab7cf6709f424a0ca26b4f1c	BfR

							3cd73b22.pdf	
Matthias Filter, Virginie Desvignes, Laurent Guillier, Estibaliz Lopez de Abechuco Garrido, Lars Valentin, Tasja Buschhardt, Maarten Nauta	How to benefit from the Risk Assessment Modelling and Knowledge Integration Platform (RAKIP)	Conference paper	ICPMF11, Braganza 2019	ICPMF	Published	September 2019	http://data.d4science.org/workspace-explorer-app?folderId=QzE5MHBTdIVkRnpNTINFSGs5WEtQditoUEJXbGRJZU9uU2huVjhIcmZEU9lWXdCKzhBSklZUXFTQXY4L01jcA	BfR
Lopez de Abechuco, E, Mesa Varona, O, Valentin, L, Alba Aparicio, M, Schüller, T, Günter, T, Swaid, A, Buschhardt, T and Filter, M	Establishment of a prototypic Quantitative Microbial Risk Assessment (QMRA) food and feed safety model repository	Journal paper	EFSA supporting publication	EFSA	Published	September 2019	https://efsa.onlinelibrary.wiley.com/doi/10.2903/sp.efsa.2019.EN-1701	BfR
Alba Aparicio, M; Sundermann, E.M.; Carolina Plaza-Rodriguez; Filter, M	Food Safety Knowledge Markup Language (FSK-ML)	Journal paper	N/A	N/A	Forthcoming	N/A	N/A	BfR
Matthias Filter, Octavio Mesa-Varona, Tasja Buschhardt, Esther M. Sundermann, Estibaliz Lopez de Abechuco and Marios Georgiadis	Minimum Information Required to Annotate food safety Risk Assessment Models (MIRARAM)	Journal paper	N/A	N/A	Forthcoming	N/A	N/A	BfR
Rob Lokers, Rob Knapen, Leonardo Candela, Steven Hoek, Wouter Meijninger	Using virtual research environments in agro-environmental research	Conference paper	ISESS 2020	Elsevier	Forthcoming	February 2020	N/A	ALTERRA
Penev L, Stavrakaki M, Georgiev T, Candela L, Ponis S, Savé R, Rusjan D, Biniari K, Pezzotti M, Neveu P, Stoev P	Opening data and research objects in viticulture: The Viticulture Data Journal (VDJ)	Journal paper	Viticulture Data Journal	Pensoft Publishers	Published	December 2019	https://doi.org/10.3897/vdj.1.e49717	PENSOFT
Rob Knapen, Rob Lokers, Leonardo Candela, Sander Janssen	AGINFRA PLUS: Running crop simulations on the D4Science distributed e-Infrastructure	Conference paper	ISESS 2020	Elsevier	Forthcoming	February 2020	N/A	ALTERRA
M. Assante, L. Candela, D. Castelli, R. Cirillo, G. Coro, L. Frosini, L. Lelii, F. Mangiacrapa, V. Marioli, P. Pagano, G. Panichi, C. Perciante, F. Sinibaldi	The gCube System: Delivering Virtual Research Environments as-a-Service	Journal paper	Future Generation Computer Systems	Elsevier	Published	June 2019	https://doi.org/10.1016/j.future.2018.10.035	CNR
Massimiliano Assante, Leonardo Candela, Donatella Castelli,	Enacting Open Science by gCube	Conference paper	9th International Workshop on	CEUR-WS.org	Published	2019	http://ceur-ws.org/Vol-	CNR

Gianpaolo Coro, Francesco Mangiacrapa, Pasquale Pagano, Costantino Perciante			Science Gateways (IWSG 2017), 19-21 June 2017				2363/paper 3.pdf	
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Press publications

Publication Title	Publication Venue	URL	Type	Lead Partner
Open Science Data for Food Systems Researcher - AGINFRA PLUS	Bioeconomy Innovation Magazine	https://commbebiz.eu/?page=3117	Online article	Agroknow
Open data can secure our food supply	Horizon: The EU Research and Innovation Magazine	https://horizon-magazine.eu/article/future-proofing-europes-food-supply-relies-sharing-research-data-dr-panagiotis-zervas_en	Online article	Agroknow
AGINFRA PLUS: food and agriculture research	EGI newsletter	https://www.egi.eu/about/newsletters/aginfra-food-and-agriculture-research/	Newletter	EGI
How AGINFRA PLUS serves the Agriculture and Food scientific domain	EGI newsletter	https://www.egi.eu/about/newsletters/how-aginfra-serves-the-agriculture-and-food-scientific-domain/	Newletter	Agroknow
2nd Year				
Supporting Agriculture and Food Research Communities by Virtual Research Environments: The AGINFRA PLUS Project	ERCIM News 113	https://ercim-news.ercim.eu/en113/special/virtual-research-environments-to-support-agriculture-and-food-research-communities-the-aginfra-project	Online article	Agroknow, CNR
Supporting virtual research environments for agriculture and food	WUR Big Data programme	https://www.wur.nl/en/article/AGINFRA-Supporting-virtual-research-environments-for-agriculture-and-food.htm	Online article	ALTERRA
Why Friday, the 23rd of November, is an important date for Open Science	Medium	https://medium.com/@margarita_61301/why-friday-the-23rd-of-november-is-an-important-date-for-open-science-ced483694d19	Online article	Agroknow
A scientific data engine for global food security: 3 challenges ahead	Medium	https://medium.com/@ngmanouselis/a-scientific-data-engine-for-global-food-security-3-challenges-ahead-b2a63220f2fe	Online article	Agroknow
3rd Year				
Can big data simulate how plants grow?	Medium	https://medium.com/@AgroKnow/can-big-data-simulate-how-plants-grow-11708efb0611	Online article	Agroknow
Big data: The next frontier for food safety risk assessment	Medium	https://medium.com/@AgroKnow/big-data-the-next-generation-of-food-safety-risk-assessment-656dbb74a845	Online article	Agroknow
What's so exciting about solving data problems in the agrifood sector?	Medium	https://medium.com/@AgroKnow/whats-so-exciting-about-solving-data-problems-in-the-agrifood-sector-a162c301a7d3	Online article	Agroknow
Can big data simulate how plants grow?	Medium	https://medium.com/@AgroKnow/can-big-data-simulate-how-plants-grow-11708efb0611	Online article	Agroknow
A good reason to get Open Science people in Budapest this November	Medium	https://medium.com/@AgroKnow/a-good-reason-to-get-open-science-people-in-budapest-this-november-4efd08fbce2	Online article	Agroknow
Call to European data science startups: who is going to win the €10,000 prize?	Medium	https://medium.com/@AgroKnow/call-to-european-data-science-startups-who-is-going-to-win-the-10-000-prize-c90be1899f4b	Online article	Agroknow
Can big data predict food fraud?	Medium	https://medium.com/@AgroKnow/can-big-data-predict-food-fraud-3e8861c9aa18	Online article	Agroknow
Food Modelling Journal: New	EurekAlert!	https://www.eurekalert.org/pub_releases/2020-01/pp-	Other	PENSOFT

open-access venue provides a platform for food scientists		fmi010820.php		
Food Modelling Journal: New open-access venue provides a platform for food scientists	ARPHA blog	http://blog.arphahub.com/2020/01/08/food-modelling-journal-new-open-access-venue-provides-a-platform-for-food-scientists/	Blogpost	PENSOFT
Food Modelling Journal: New open-access venue provides a platform for food scientists	PENSOFT blog	https://blog.pensoft.net/2020/01/08/food-modelling-journal-new-open-access-venue-provides-a-platform-for-food-scientists/?preview=true&thumbnail_id=4818	Blogpost	PENSOFT
Open Science Visualisation Technologies in the AGINFRA PLUS project	AGINFRA PLUS blog	http://www.plus.aginfra.eu/content/open-science-visualization-technologies-aginfra-project	Blogpost	UoA
What did 9 million scientific publications teach us?	Medium	https://medium.com/@ngmanouselis/what-did-9-million-scientific-publications-teach-us-401302700136	Online article	Agroknow

5. ANNEX E: PRINTED AND DIGITAL DISSEMINATION MATERIALS

A. E1 AGINFRA PLUS POSTER



Figure 7: AGINFRA PLUS Project Poster Roll-up

B. E2 AGINFRA PLUS VISION BROCHURE

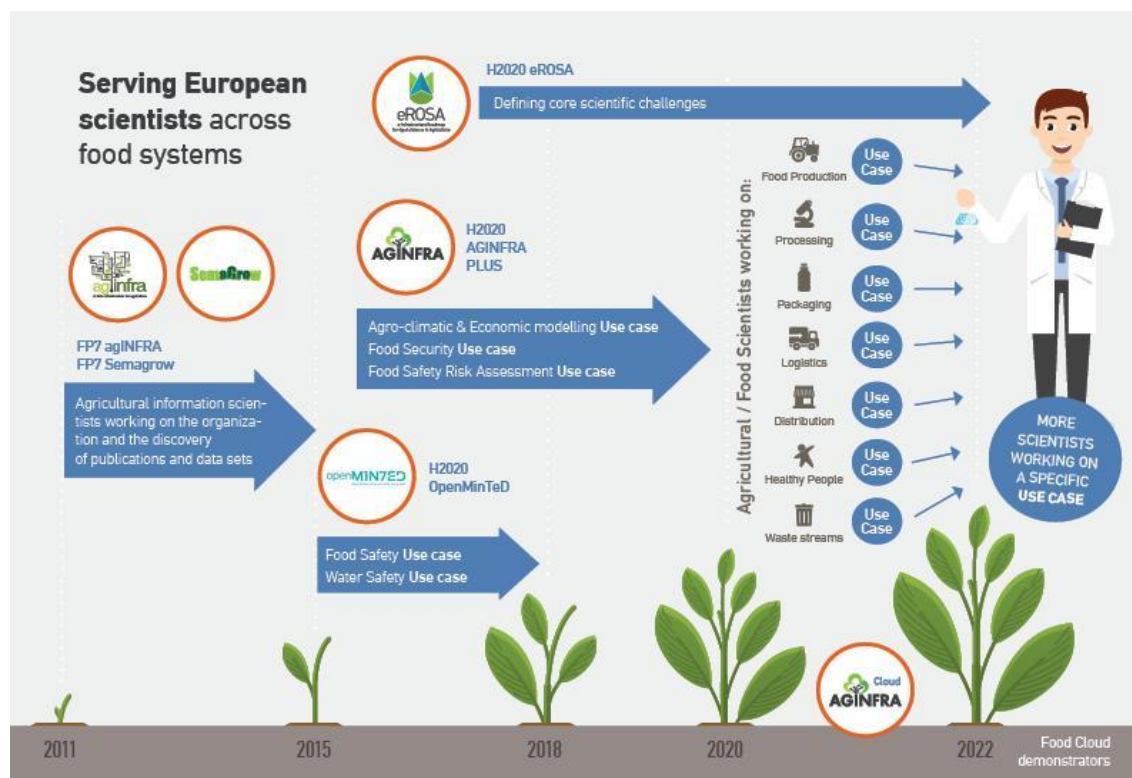


Figure 8: AGINFRA PLUS Brochure for demonstrating the AGINFRA PLUS vision towards an AGINFRA Food Cloud Demonstrator [1st page]

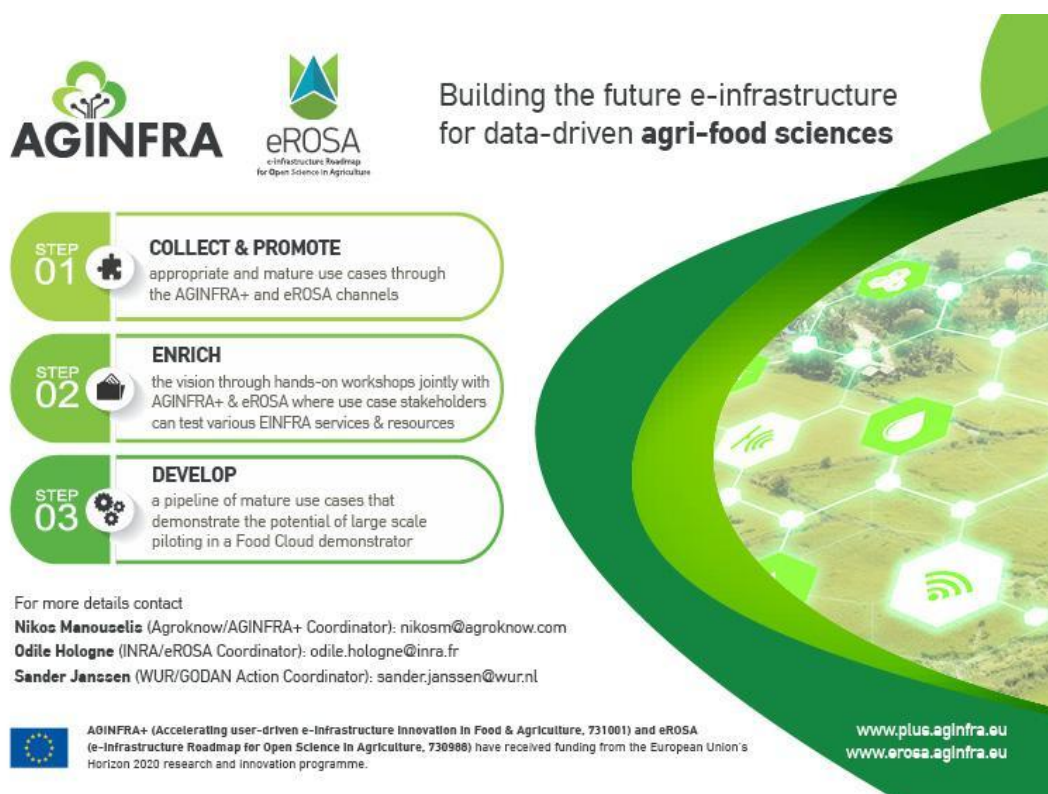


Figure 9: AGINFRA PLUS Brochure for demonstrating the AGINFRA PLUS vision towards an AGINFRA Food Cloud Demonstrator [2nd page]

C. E3 AGINFRA PLUS PROJECT BROCHURE



Figure 10: AGINFRA PLUS Project Brochure [Front Page]

PROJECT AT A GLANCE

AGINFRA+ aims to exploit core e-infrastructures such as EGI.eu, OpenAIRE, EUDAT and D4Science, towards the evolution of the **AGINFRA** data infrastructure, so as to provide a sustainable channel addressing adjacent but not fully connected user communities around Agriculture and Food.

To this end, the project will develop and provide the necessary specifications and components for allowing the rapid and intuitive development of variegating data analysis workflows, where the functionalities for data storage and indexing, algorithm execution, results visualization and deployment are provided by specialized services utilizing cloud based infrastructure(s). Furthermore, **AGINFRA+** aspires to establish a framework facilitating the transparent documentation and exploitation and publication of research assets (datasets, mathematical models, software components results and publications) within **AGINFRA**, in order to enable their reuse and repurposing from the wider research community.



VISION

AGINFRA is the European research hub and thematic aggregator that catalogues and makes discoverable publications, data sets and software services developed by Horizon 2020 research projects on topics related to agriculture, food and the environment.

It is part of the broader vision of the European research e-infrastructure "European Open Science Cloud", a synergy between OpenAIRE, EUDAT, GEANT, EGI, LIBER.

PROJECT OBJECTIVES

AGINFRA+ addresses the challenge of supporting user-driven design and prototyping of innovative e-infrastructure services and applications. It particularly tries to meet the needs of the scientific and technological communities that work on the multi-disciplinary and multi-domain problems related to agriculture and food. It will use, adapt and evolve existing open e-infrastructure resources and services, in order to demonstrate how fast prototyping and development of innovative data- and computing-intensive applications can take place.

AGINFRA+ will achieve the following objectives






-  **Identify** the requirements of the specific scientific and technical communities working in the targeted areas, abstracting (wherever possible) to new **AGINFRA** services that can serve all users.
-  **Design** and implement components that serve such requirements, by exploiting, adapting and extending existing open e-infrastructures (namely, OpenAIRE, EUDAT, EGI, and D4Science), where required.
-  **Define** or extend standards facilitating interoperability, reuse, and repurposing of components in the wider context of **AGINFRA**.
-  **Establish** mechanisms for documenting and sharing data, mathematical models, methods and components for the selected application areas, in ways that allow their discovery and reuse within and across **AGINFRA** and served software applications.
-  **Increase** the number of stakeholders, innovators and SMEs aware of **AGINFRA** services through domain specific demonstration and dissemination activities.

Figure 11: AGINFRA PLUS Project Brochure [Back View]

D. E4 AGINFRA PLUS FOOD MODELLING JOURNAL BROCHURE



Figure 12: AGINFRA PLUS Food Modelling Journal Brochure [1st page]



Figure 13: AGINFRA PLUS Food Modelling Journal Brochure [2nd page]


E. E5 AGINFRA PLUS VITICULTURE DATA JOURNAL BROCHURE



Figure 14: AGINFRA PLUS Viticulture Data Journal Brochure [1st page]



VitiCulture Data Journal

Launched with the support of the EU Horizon2020 project 

Publication topics

- Phenotyping and genotyping • Vine growth and development • Vine ecophysiology • Berry yield and composition • Genetic resources and breeding • Vine adaptation to climate change, abiotic and biotic stress • Vine propagation, Rootstock and clonal evaluation • Effects of field practices (pruning, fertilization etc.) on vine growth and quality • Sustainable viticulture and environmental impact • Ampelography • Plant pathology, diseases and pests of grapevine • Microbiology and microbiological risk assessment

Publication types

- Data Paper
- Methods
- Emerging Technique
- Applied Study
- Monitoring Schema
- Model
- Software Description
- R Package
- Research Article
- Opinion Paper

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Figure 15: AGINFRA PLUS Viticulture Data Journal Brochure [2nd page]

ANNEX F: REPORTS ON THE RESULTS OF REVIEWING THE SUBMISSIONS TO THE AGINFRA PLUS DATA SCIENCE CHALLENGE 2019

Review Report of AGINFRA PLUS Data Science Challenge 2019

This document reports on the results of reviewing the submissions to the AGINFRA PLUS Data Science Challenge 2019 (<http://www.plus.aginfra.eu/challenge>). The aim of the competition was to bring to light data science innovators working in food and agriculture that could benefit from the AGINFRA digital infrastructure. The competition invited submission of business cases that use data science and that would benefit from public e-infrastructures to do something different, faster, better. The winner of the challenge would be awarded a contract of 10,000 euros to showcase their work over the AGINFRA PLUS software tools and services. All participants would be promoted through the project's prestigious network, around Europe and the world.

The following six (6) submissions have been made to the challenge:

1. Augmenta Agriculture Technologies (Greece), <https://www.augmenta.ag/>
2. CROPT / Biosense (Serbia), smartseeds.biosense.rs
3. Vaerens (The Netherlands), www.vaerens.com
4. BioCos (Greece), <http://www.biocos.gr/>
5. Solar-vibes (Germany), www.solar-vibes.com
6. Oliveex (Greece), oliveex.io

The materials accompanying the submissions can be found in this Google Drive folder: https://drive.google.com/drive/folders/19lw_22sGGrsHI9F1DIaDWFo9ehMmdcbo

Agroknow has assembled an expert committee to review all submissions and decide on the winner. This committee included:

- Nikos Manouselis (PhD), Agroknow CEO & AGINFRA PLUS Project Coordinator [<https://www.linkedin.com/in/nikos-manouselis-6a381b103/>]. Brought in the agri-food digital innovation perspective.
- Demi Markogiannaki, Entrepreneur (Co-founder WeTeachMe) & 2018's Australian Financial Review's Top 100 Women of Influence [<https://www.linkedin.com/in/demi-markogiannaki/>]. Brought in the global perspective and innovation potential assessment.
- Konstantinos Mavros (MSc), Partner at Velocity Venture Capital & CEO/VP of PPC Renewables [<https://www.linkedin.com/in/konstantinos-mavros-6b05038/>]. Brought in the investors' perspective and experience from a wide range of business models.

The committee has met on Thursday December 12th 2019 and has reviewed all submissions and their supportive materials.

According to the scope of the competition, the criteria chosen for the evaluation of the submissions were:

1. If the company has less than 1MEuros annual revenue and is headquartered in the European Union [Mark: Yes / No].
2. The importance that the scientific computation components parts have for the business model of the company [Rating from 1 (not so important) to 5 (very important)].
3. The degree in which participants may transfer and test their data science components over the computing infrastructure of AGINFRA PLUS [Rating from 1 (not relevant or doable) to 5 (very relevant and doable)].
4. The degree in which participants may directly benefit from accessing and processing additional open data sources from European science institutions [Rating from 1 (not relevant or useful) to 5 (very relevant and useful)].

The table that follows includes the evaluation comments and marks.

Company Name	Is eligible? [Y/N]	Is data science core in	Can be tested over	Will benefit from open
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		business model? [1..5]	AGINFRA? [1..5]	science data? [1..5]
Augmenta Agriculture Technologies	Y: startup, based in Greece	5: Data processing & analysis is core. It aligns, processes and evaluates a huge stream of data in real time to control agricultural applications/treatment.	3: Image processing takes place in real time by using GPU's & CPU's that are embedded in camera device. Also web platform where farm data can be uploaded to calculate virtuale fertilisation maps and other data products. Would like to know more about how offline execution of machine learning models is executed. Computational parts could be ported to AGINFRA to run faster calculations of crop patterns and stress indices.	3: Could benefit from sources like open satellite images, soil maps, scientific models to simulate plant stress. Would require refactoring of the existing solution.
CROPT	Y: spin off, based in Serbia	5: Data analysis to calculate yield & profit predictions for specific seed variations. It combines agricultural field records with open soil, elevation and climate datasets. It uses a model to predict the yield of different crops and seed varieties at the location of the field.	3: Calculation of predictions taking place online, during user interactions with the system. Would like to know more about whether offline computational tasks exist that could be ported over AGINFRA to pre-calculate yield and profitability under different scenarios.	3: Already uses open data such as soil, elevation and climate data sets. Would like to know more about how these are taken into consideration within the prediction model & which type of open scientific data sets could enhance prediction accuracy or coverage.
Vaerens	Y: startup, based in The Netherlands	5: Data collection & processing from controlled growth environments to trail prediction algorithms and inform lighting strategies. For every new crop or trait, a new predictive model is being trained.	5: Demanding training process that carries out experimental testing of various algorithms to select and/or train an algorithm that may provide the best prediction results. Repeated every time that a new crop or trait is studied, using a new data set from a controlled growth environment. Would like to know more about how the training process is executed.	2: Mostly uses data collected from its controlled experiments with each different type of crop. Would like to know more about whether an open farm growth simulation model (like WOFOST) could be used for indoor farming.
BioCos	Y: startup, based in Greece	5: A biomarkers computational approach to identify potential genetic markers and/or species-specific genomic loci to be applied as artificial markers, using DNA information from thousands of publicly available complete genomes. Identifies short sequences of specific length not tolerated in the pan-genome, but evolutionary conserved in the species/organism of interest. Post-processing to isolate potential genetic markers to be used in DNA	5: Despite the already performed optimization of the algorithms behind the tool, different stages of the process are computationally demanding. Indicatively, in the case of the Olive genome to complete the first stage of the process (extraction of the non-tolerant sequences from the pan-genome; ~15.000 complete genomes) it required 6 days using ~250GB RAM and 8Tb storage disk. Its application to several other species of high commercial interest in	4: Taking advantage of publicly available plant and food genomes that have been sequenced around the world. Could significantly enhance its analytical and predictive capabilities by expanding its coverage of genome databases from more scientific institutions. Would like to know more about its current coverage of genome databases, as well as how adding more open databases could extend its predictive capabilities.

		authenticity solutions, as well as artificial ones to be applied as tags in DNA traceability.	the food industry would increase computational needs e.g., for 100 organisms using the same computational set-up would require ~600 days. In the case of an intra-variety analyses (different genomes of the same species), pilot analyses have shown that in order to elaborate 8 genomes of different varieties/strains of the same plant, with a genome size 787 Mb, the output reaches up to ~200 million of DNA sequences per variety/strain, despite the detection of non-tolerant DNA sequences for each strain takes few hours.	
Solar-vibes	Y: startup, based in Germany	5: Real-time data collection and processing from their core sensor product to calculate predicted plant health and nutrient deficiencies. Using over 70,000 expert observations of pest & nutrient deficiencies to train the prediction/regression models.	4: Training process demanding experimental testing of various algorithms to select and/or train an algorithm that may provide the best prediction results. Would like to know more about desired re-training & re-calibration method: if it takes place offline or on a real-time basis, how often it is repeated, etc.	2: Mostly uses real-time data collected sensors and expert observations to train the models. Would like to know more about whether existing open data sets on plant health diagnosis could be used as a source of training data.
Oliveex	Y: startup, based in Greece	4: Real-time data collection and analysis from IoT devices attached at storage tank. Early warning about possible production threats and corrective actions. Would like to know more about the models used to predict possible risks.	3: Data collection and analysis takes place in real time, as analytics are provided on the spot. Would like to know more about whether offline computational tasks exist that could be ported over AGINFRA to pre-calculate the probability of possible threats under different storage scenarios.	2: Mostly uses real-time data collected sensors and expert observations to train the models. Would like to know more about whether scientific models about food safety risks during the fermentation process could enrich its predictive capabilities.

According to the review comments and results, the committee decided to give the following awards:

- A. Winner of the **AGINFRA PLUS Data Science Challenge** (awarded also the 10KEuros contract): *BioCos (GR)*, also given the opportunity to port its computational tasks over the AGINFRA digital infrastructure & assess possible improvements (a BioCos VRE).
- B. Two participants are given two AGINFRA PLUS Champion Awards for very relevant submissions:
 - a. Award of the **AGINFRA PLUS Extreme Computing Champion**: *Augmenta (GR)*
 - b. Award of the **AGINFRA PLUS Artificial Intelligence Champion**: *Vaerens (NL)*
- C. Three participants are given special distinctions as AGINFRA PLUS highly recommends them as interesting for specific audiences:
 - a. Recipient of the **AGINFRA PLUS Agrochem Industry Lookout Distinction**: *CROPT (RS)*
 - b. Recipient of the **AGINFRA PLUS Farmer Lookout Distinction**: *Solar Vibes (DE)*
 - c. Recipient of the **Food Industry Lookout Distinction**: *Oliveex (GR)*

6. ANNEX G: LIST OF ENGAGED PROJECTS

In this list are presented all the projects that we had indirect cooperation by presenting AGINFRA PLUS objectives and outcomes in events we participated in, such as the AgriResearch Conference - Innovating for the future of farming and rural communities in Brussels, Belgium and Horizon 2020 Societal Challenge 2 Info week in in Brussels, Belgium.

No	Framework/ Programme	Tittle	Call
1	H2020	Healthy crop, Healthy environment, Healthy finances ... through Optimization	H2020-SMEINST-2-2014
2	H2020	Ecosystem Approach to making Space for Aquaculture	H2020-SFS-2014-2
3	H2020	Advanced Tools and Research Strategies for Parasite Control in European farmed fish	H2020-SFS-2014-2
4	H2020	Eco-efficient high-yield production of antioxidant compounds from microalgae	H2020-SMEINST-1-2015
5	H2020	Drone-based integrated monitoring system for early detection of crop pathology and pest control in high tech greenhouse agriculture.	H2020-SMEINST-1-2015
6	H2020	Development and demonstration of an innovative FT-NIR-based system for food content analysis	H2020-SMEINST-2-2015
7	H2020	Real time and online monitoring of the debittering stage in the table olive processing	H2020-SMEINST-1-2015
8	H2020	Vegetable ozone therapy for the defense of greenhouse crops	H2020-SMEINST-1-2015
9	H2020	Functional ingredient from fermented vegetable waste streams to diminish the use of antibiotics in pig husbandry	H2020-SMEINST-1-2015
10	H2020	Bio-pesticide from a strain of <i>Bacillus licheniformis</i> for the control of major pests in different cultures	H2020-SMEINST-1-2015
11	H2020	Development and market launch of novel technology for production of nutritionally complete plant proteins called FIDOs - "Functional (Protein) Isolates Derived from Oilseeds".	H2020-SMEINST-1-2015
12	H2020	Actiwhey based microencapsulation solution for sustainable food manufacturing	H2020-SMEINST-2-2015
13	H2020	BLUE HEALTH	H2020-SMEINST-1-2015
14	H2020	Genetic markers assisted selection for improvement of swine breeding productivity.	H2020-SMEINST-1-2015

15	H2020	RLTProFood - Remote Lighting Technology for processing and production of food	H2020-SMEINST-1-2015
16	H2020	An integrated high throughput robot and a new multi-rootstock grafting technology to improve plant/crop yield	H2020-SMEINST-1-2015
17	H2020	Food treatment process based on high voltage nanopulsed electric discharges in liquid phase	H2020-SMEINST-1-2015
18	H2020	A Sustainable Soil Solution: Scaling up Novihum, an innovation to convert bad soil into better, make brown coal clean and barren land green, and profitably advance food security in Europe and beyond	H2020-SMEINST-2-2015
19	H2020	Sustainable agricultural eco-system: business and technological solution for eco-conscious vegetable cultivation using on-site produced algae fertilizer	H2020-SMEINST-2-2014
20	H2020	Design of an agricultural greenhouse for intensive growing of microalgae in fresh / sea water with a syngas production plant and organic farming of chickens and pigs outdoors.	H2020-SMEINST-2-2015
21	H2020	Validation and market uptake of a natural disinfection whey-based formula for whole and fresh-cut fruits and vegetables	H2020-SMEINST-2-2014
22	H2020	Antiseptic kaolin-silver complex for substituting the use of sulfites in winemaking	H2020-SMEINST-1-2015
23	H2020	Natural Food formulation for the prevention and treatment the Obesity and Metabolic syndrome obtained with herbal extracts	H2020-SMEINST-1-2015
24	H2020	Proposal for innovative and sustainable polyculture greenhouse system Polydome	H2020-SMEINST-1-2015
25	H2020	Solar Energy for Food Industry	H2020-SMEINST-1-2015
26	H2020	Environmentally friendly fungicide based on new endophytic Biological Control Agent Trichoderma asperellum strain T18	H2020-SMEINST-1-2015
27	H2020	Rapid on-site detection of Mycotoxin in wheat	H2020-SMEINST-1-2015
28	H2020	Sales and production acceleration of EU saffron through an innovative cultivation and crop system that allows European producers to increase eco-efficiency, production and processing	H2020-SMEINST-1-2015
29	H2020	Innovative active-uptake foliar nutrition technology capable of significantly reducing pesticide rates	H2020-SMEINST-1-2015

30	H2020	DEMONstrators of microwaves efficiency for agrifood industry	H2020-SMEINST-2-2014
31	H2020	Innovative highly concentrated Omega 3 food supplement	H2020-SMEINST-1-2015
32	H2020	Food Retail Industry Supply Chain Optimization (FRISCO): Food Discount Intelligence to Reduce Food Waste through the implementation of the FoodLoop Platform	H2020-SMEINST-1-2014
33	H2020	Jellyfish Barge - A floating greenhouse	H2020-SMEINST-1-2014
34	H2020	BUSINESS INTELLIGENCE SERVICE FOR THE MANAGEMENT OF CROPS BASED ON CLOUD AND BIG DATA	H2020-SMEINST-1-2014
35	H2020	Low-energy leak-proof double seat control valve based on a water hydraulic actuator system	H2020-SMEINST-2-2014
36	H2020	Fodder for for HEALTHier animals and improved liveSTOCK production	H2020-SMEINST-1-2015
37	H2020	ECO-INNOVATE-AQUACULTURE-SYSTEM	H2020-SMEINST-1-2015
38	H2020	UltraCLEAN thermoforming equipment for ultraclean PACKaging of foods, and in-situ production of aseptic trays.	H2020-SMEINST-1-2015
39	H2020	UV cleaning for beverage tanks eliminating the need for water and chemicals	H2020-SMEINST-1-2014
40	H2020	HISPOB- High Speed Potato Breeding: securing healthy food for the future	H2020-SMEINST-2-2014
41	H2020	Novel Ozone and Thermal Shock Conservation Process for Vegetables	H2020-SMEINST-1-2014
42	H2020	SUStainable Tunnel Agriculture with light cascade techNology	H2020-SMEINST-1-2014
43	H2020	Strawberry Processing Machine	H2020-SMEINST-1-2014
44	H2020	A novel vision based orchard system to maximize fruit tree yields and Class 1 quality by 20% while reducing waste by 50%	H2020-SMEINST-1-2014
45	H2020	Non-thermal treatment to delay the onset of honey crystallization	H2020-SMEINST-1-2014
46	H2020	AUTOMATIC VERTICAL SCANNER FOR DETERMINING LEAN DISTRIBUTION IN ANIMAL CARCASSES (AVSCAN)	H2020-SMEINST-1-2014
47	H2020	Eco-innovative housing solution for efficient production of slaughterpigs with limited environmental impact.	H2020-SMEINST-2-2014

48	H2020	Demonstration of a cloud-based precision farming management system for a sustainable and intensive agriculture to secure long-term food supply in Europe	H2020-SMEINST-1-2014
49	H2020	NEW GENERATION OF HIGH VALUE-ADDED ANTIOXIDANT FOOD INGREDIENTS FOR THE GOURMET CUISINE	H2020-SMEINST-1-2014
50	H2020	MicroLAB lab-on-a-cartridge, a disruptive concept. Towards an innovative solution for food safety	H2020-SMEINST-1-2014
51	H2020	Sustainable and efficient food processing and cooking system	H2020-SMEINST-1-2014
52	H2020	Transitioning to microalgae as a sustainable, high-quality large-scale food source through launching the first daily drink containing spirulina	H2020-SMEINST-1-2014
53	H2020	FOOD SAFETY CONTROLS FOR ALL	H2020-SMEINST-1-2014
54	H2020	Camelina Oil for Sustainable Salmon Aquafeed	H2020-SMEINST-1-2014
55	H2020	A truly-rapid, one-minute test system for the dairy industry to assess raw milk quality, detect sub-clinical mastitis and monitor udder health, reducing antibiotic usage and environmental impact	H2020-SMEINST-1-2014
56	H2020	An innovative fruit ripeness checker, to offer non-destructive testing in order to ensure resource efficient fruit processing - Ripesense	H2020-SMEINST-1-2014
57	H2020	PlotLab - Plot combines with integrated lab equipment for lean breeding	H2020-SMEINST-1-2014
58	H2020	Fermentation processes for functional foods from RAPeseed, Sunflower and Other EU matrices Devoted to Young animals.Zero-miles model boosting safety and competitiveness of livestock sector	H2020-SMEINST-1-2014
59	H2020	Antibiotics reduction with early mastitis pathogens detection for @ point of animal care usages	H2020-SMEINST-1-2014
60	H2020	Colour-code labelling for continuous monitoring of quality and safety of packed chicken meat	H2020-SMEINST-1-2014
61	H2020	BeadCAP-DNA: 30-minute on-site DNA test kit	H2020-SMEINST-1-2014
62	H2020	NATURHEALTH FOOD: NEW GENERATION OF NATURAL BIOPRESERVATIVE SUBSTITUTE OF CURRENT E-NUMBERS IN FOOD PRODUCTS	H2020-SMEINST-1-2014
63	H2020	Improved machine vision for guidance of optical system for cost-effective and environmentally safe in-situ removal of ectoparasites from farmed fish	H2020-SMEINST-1-2014

64	H2020	Towards a long-term Africa-EU partnership to raise sustainable food and nutrition security in Africa	H2020-SFS-2014-1
65	H2020	High Pressure Processing (HPP) equipment for large beverage productions	H2020-SMEINST-1-2014
66	H2020	Increasing grain quality through advanced oxidation treatment during storage	H2020-SMEINST-1-2014
67	H2020	Electrochemical Oxidation in the Recirculating Aquaculture Systems Industry	H2020-SMEINST-1-2014
68	H2020	Biopolus Aero Green - Feasibility Study	H2020-SMEINST-1-2014
69	H2020	New eco-efficient and healthy professional espresso coffee machine	H2020-SMEINST-1-2014
70	H2020	Monitoring Meat Texture To Optimize Slicing Yield And Reduce Wasted Meat In High-Speed Slicing Lines	H2020-SMEINST-1-2014
71	H2020	EU-CHINA Lever for IPM Demonstration	H2020-SFS-2014-2
72	H2020	Faster Upcoming Technology Uptake Relevant for the Environment in FOODs Drying	H2020-SFS-2014-2
73	H2020	Traditional tomato varieties and cultural practices: a case for agricultural diversification with impact on food security and health of European population	H2020-SFS-2014-2
74	H2020	Effective Management of Pests and Harmful Alien Species - Integrated Solutions	H2020-SFS-2014-2
75	H2020	Novel biocontrol agents for insect pests from neuroendocrinology	H2020-SFS-2014-2
76	H2020	Interactive Soil Quality Assessment in Europe and China for Agricultural Productivity and Environmental Resilience	H2020-SFS-2014-2
77	H2020	Process integration for rapid implementation of sustainable innovative food processing	H2020-SFS-2014-2
78	H2020	Sustainable finance for sustainable agriculture and fisheries	H2020-SFS-2014-2
79	H2020	Development of high quality food protein through sustainable production and processing	H2020-SFS-2014-2
90	H2020	Deployment of high pressure and temperature food processing for sustainable, safe and nutritious foods with fresh-like quality	H2020-SFS-2014-2
91	H2020	Integration of PEF in food processing for improving food quality, safety and competitiveness	H2020-SFS-2014-2

92	H2020	DIVERSITY OF LOCAL PIG BREEDS AND PRODUCTION SYSTEMS FOR HIGH QUALITY TRADITIONAL PRODUCTS AND SUSTAINABLE PORK CHAINS	H2020-SFS-2014-2
99	H2020	PARAGONE: vaccines for animal parasites	H2020-SFS-2014-2
94	H2020	Waste reduction and quality improvement of fruits and vegetables via an innovative and energy-efficient humidification/disinfection technology	H2020-SFS-2014-2
95	H2020	LAND Management: Assessment, Research, Knowledge base	H2020-SFS-2014-2
96	H2020	Science, Technology, and Society Initiative to minimize Unwanted Catches in European Fisheries	H2020-SFS-2014-2
97	H2020	Ecofriendly PROcessing System for the full exploitation of the OLIVE health potential in products of added value	H2020-SFS-2014-2
98	H2020	Metrics, Models and Foresight for European Sustainable Food and Nutrition Security	H2020-SFS-2014-2
100	H2020	Embedding crop diversity and networking for local high-quality food systems	H2020-SFS-2014-2
101	H2020	Farming Tools for external nutrient Inputs and water MAnagement	H2020-SFS-2014-2
102	H2020	Adapting the feed, the animal and the feeding techniques to improve the efficiency and sustainability of monogastric livestock production systems	H2020-SFS-2014-2
103	H2020	Strengthening Animal Production and Health through the Immune Response	H2020-SFS-2014-2
104	H2020	DiscardLess – Strategies for the gradual elimination of discards in European fisheries	H2020-SFS-2014-2
105	H2020	EuroMix	H2020-SFS-2014-2
106	H2020	Creating links to speed-up innovation in the bio economy	H2020-ISIB-2014-1
107	H2020	PROViding smart DELivery of public goods by EU agriculture and forestry	H2020-ISIB-2014-2
108	H2020	FACCE-Evolve - Agriculture, Food Security and Climate Change Coordination and Support Action 2	H2020-ISIB-2014-1
109	H2020	Professional support to the uptake of bioeconomy RD results towards market, further research and policy for a more competitive European bioeconomy	H2020-ISIB-2014-1
110	H2020	Network for the exchange and transfer of innovative knowledge between European wine-growing regions to	H2020-ISIB-2014-1

		increase the productivity and sustainability of the sector	
111	H2020	Sustainable and Resilient agriculture for food and non-food systems	H2020-ISIB-2014-1
112	H2020	Platform of bioeconomy ERA-NET Actions	H2020-ISIB-2014-1
113	H2020	Practice-led innovation supported by science and market-driven actors in the laying hen and other livestock sectors	H2020-ISIB-2014-1
114	H2020	CommBeBiz - Communicating and Bridging BioEconomy Research to Business	H2020-ISIB-2014-1
115	H2020	Forum for Bio-Based Innovation in Public Procurement	H2020-ISIB-2014-1
116	H2020	Space for Agricultural Innovation	H2020-ISIB-2014-1
117	H2020	Cooperation between NCPs for Horizon 2020 Societal Challenge 2 on “Food security, Sustainable Agriculture, Marine and Maritime Research and the Bioeconomy” and the Key Enabling Technology (H2020-ISIB-2014-1
118	H2020	Promoting stakeholder engagement and public awareness for a participative governance of the European bioeconomy	H2020-ISIB-2014-1
119	H2020	Organic Knowledge Network Arable	H2020-ISIB-2014-1
120	H2020	Camelina & crambe Oil crops as Sources for Medium-chain Oils for Specialty oleochemicals	H2020-ISIB-2014-2
121	H2020	Public Ecosystem Goods And Services from land management - Unlocking the Synergies	H2020-ISIB-2014-2
122	H2020	Distributed, integrated and harmonised forest information for bioeconomy outlooks	H2020-ISIB-2014-2
123	H2020	Sea Change	H2020-BG-2014-1
124	H2020	Atlantic Ocean Research Alliance Support Action	H2020-BG-2014-1
125	H2020	Sustainable oceans : our collective responsibility, our common interest. Building on real-life knowledge knowledge systems for developing interactive and mutual learning media	H2020-BG-2014-1
126	H2020	Optimizing and Enhancing the Integrated Atlantic Ocean Observing System	H2020-BG-2014-2
127	H2020	Industrial Applications of Marine Enzymes: Innovative screening and expression platforms to discover and use the functional protein diversity from the sea	H2020-BG-2014-2
128	H2020	Nematodes as the world first pathogen free, ready-to-	H2020-SMEINST-1-2015

		use and sustainable live feed for larval aquaculture industry	
129	H2020	Open Ocean Fish farms	H2020-SMEINST-2-2015
130	H2020	Continual Acoustic Based Multifunctional Cage Mounted Fish estimator Deigned To Reduce Feed Waste, Fish Mortality, and Predator and Fish Escape Control	H2020-SMEINST-1-2015
131	H2020	Reference standards for a specific, reliable and early detection of the marine toxins that causes ciguatera disease	H2020-SMEINST-1-2015
132	H2020	A replacement of the sub-optimal live feeds used at hatcheries today with a new cryopreserved live diet for the improved and efficient production of juveniles in marine aquaculture	H2020-SMEINST-1-2014
133	H2020	Connecting Science with Society	H2020-BG-2014-1
134	H2020	Development of a Novel, Intelligent Down the Hole Disconnect Tool	H2020-SMEINST-2-2014
135	H2020	Slimming Microalgae Extract: Development of a new highly effective microalgae-based slimming ingredient for nutraceutical applications	H2020-SMEINST-1-2014
136	H2020	Developing a multispectral volume scattering meter for measuring the optical properties of sea and ocean water	H2020-SMEINST-1-2014
137	H2020	Remote Controllable Devices	H2020-SMEINST-1-2014
138	H2020	Boost BLUE economy trough market uptake an innovative seaweed bioextract for IODINE fortification	H2020-SMEINST-1-2014
139	H2020	Sonar INtegrated Advanced Navigation	H2020-SMEINST-1-2014
140	H2020	Designing waves for the people	H2020-SMEINST-1-2014
141	H2020	Coastal and shallow-water monitoring through innovative low-cost technologies for blue growth in the Mediterranean	H2020-SMEINST-1-2014
142	H2020	The untapped potential of omega-3; from fish oil to healthy bowels	H2020-SMEINST-1-2014
143	H2020	Marine Investment for the Blue Economy	H2020-BG-2014-1
144	H2020	Sea-More-Yield: A Blue Biotechnology Solution for the Reduction of Pod Shatter in Bio-Oil Producing Crops	H2020-SMEINST-1-2014
145	H2020	COLUMBUS - Monitoring, Managing and Transferring Marine and Maritime Knowledge for Sustainable Blue	H2020-BG-2014-1

		Growth	
146	H2020	Floating Offshore Photovoltaic systems	H2020-SMEINST-1-2014
147	H2020	Strategic Use of Competitiveness towards Consolidating the Economic Sustainability of the european Seafood sector	H2020-BG-2014-2
148	H2020	Bringing together Research and Industry for the Development of Glider Environmental Services	H2020-BG-2014-2
149	H2020	NOVEL, SUSTAINABLE MARINE BIO-SURFACTANT / BIO-EMULSIFIERS FOR COMMERCIAL EXPLOITATION	H2020-BG-2014-2
150	H2020	Novel marine biomolecules against biofilm. Application to medical devices.	H2020-BG-2014-2
151	H2020	Tools And Strategies to access to original bioactive compounds from Cultivation of MARine invertebrates and associated symbionts	H2020-BG-2014-2
152	H2020	Sensors for Large scale HydrodynaMic Imaging of ocean floor	H2020-BG-2014-2
153	H2020	Dexterous ROV: effective dexterous ROV operations in presence of communication latencies.	H2020-BG-2014-2
154	H2020	Developing Innovative Market Orientated Prediction Toolbox to Strengthen the Economic Sustainability and Competitiveness of European Seafood on Local and Global markets	H2020-BG-2014-2
155	H2020	Underwater Time Of Flight Image Acquisition system	H2020-BG-2014-2
156	H2020	Processing Underutilised Low value sugarbeet Pulp into VALUE added products (PULP2VALUE)	H2020-BBI-PPP-2014-1
157	H2020	ValChem - Value added Chemical building blocks and lignin from wood	H2020-BBI-PPP-2014-1
158	H2020	Combined Ultrasonic and Enzyme treatment of Lignocellulosic Feedstock as Substrate for Sugar Based Biotechnological Applications	H2020-BBI-PPP-2014-1
160	H2020	Flagship demonstration of an integrated biorefinery for dry crops sustainable exploitation towards biobased materials production	H2020-BBI-PPP-2014-1
161	H2020	PROcesses for Value added fibres by Innovative Deep Eutectic Solvents	H2020-BBI-PPP-2014-1
162	H2020	Protein Mining of Cereal side-streams Exploring Novel Technological Concepts	H2020-BBI-PPP-2014-1
163	H2020	Smart Technologies for the Conversion of Industrial	H2020-BBI-PPP-2014-1

		Lignins into Sustainable Materials	
164	H2020	Nutrient recovery from biobased Waste for Fertilizer production	H2020-BBI-PPP-2014-1
165	H2020	Cost effective lignin-based carbon fibres for innovative light-weight applications	H2020-BBI-PPP-2014-1

7. ANNEX H: ANALYSIS OF CONTRIBUTIONS TO EXPECTED IMPACTS IN THE WORK PROGRAM

A. PROVIDED EFFORT TO EXPECTED IMPACT INDICATORS

During the three years lifetime of the project, all 8 project partners (Agroknow, WUR, BfR, INRA, UoA, CNR, Pensoft and EGI) had to implement a series of specific dissemination activities in order project's targeted stakeholders to get familiar with project's outcomes. The main purpose was in each of the 16 KPIs the set target to be reached.

In this section, partners' contribution in the implementation of the aforementioned KPIs is provided. Particularly, in Table 11, all the AGINFRA PLUS KPIs are allocated based on the period that were implemented and only the names of the partners that realised each KPI is mentioned along with the achieved score. The first period refers to M1-M18, hence, 1st of January 2017 to 30th of June 2018 and the second period refers to M19-M36, hence 1st of July 2018 to 31st of December 2019. Then in Table 12, all KPIs are listed by their names next to the name of the partner that implemented them.

Table 11: AGINFRA PLUS KPIs allocation based on the implementation year

AGINFRA PLUS contribution	Key performance indicators	
Will provide to scientists, access to prototypes of innovative data and computing intensive applications and services that they can use in their research workflows & experimentation.	1) # of innovative software tools & services (target: >6 VS achieved: 34)	
	M1-M18	M19-M36
	WUR: 1 BfR: 3 INRA: 1 Pensoft: 1 Agroknow: 5 CNR: 4 EGI: 1 UoA: 2	BfR: 2 CNR: 1 Pensoft: 1 Agroknow: 5 UoA: 3 WUR: 2 EGI: 1
Will involve and expose to e-infrastructure resources and services core groups of software developers developing data and computing intensive applications for researchers.	2) # of communities to be directly engaged & exposed (target: >3 VS achieved: 17)	
	M1-M18	M19-M36
	Agroknow: 1 WUR: 2 INRA: 2 BfR: 4	Agroknow: 3 WUR: 4 INRA: 1
Will liaise with other research infrastructures and e-infrastructure clusters to share, discover & reuse data and software with other communities.	3) # of events organised or joined to liaise with other e-infrastructures (target:>5 VS achieved: 30)	

	*there are duplications in the attended events	
	M1-M18	2019
	EGI: 4 Agroknow: 10 UoA: 1 WUR: 8 BfR: 1 INRA: 6	Agroknow: 1 UoA: 1 BfR: 1 INRA:1 EGI:6 WUR: 5
Will participate and promote the use of e infrastructures to large data intensive initiatives related to sustainable development, agriculture and nutrition (such as ICT-AGRI, EIP-AGRI, SCAR, GODAN, IODC community).	4) # of linked data intensive policy initiatives (target: >5 VS achieved: 12)	
	M1-M18	M19-M36
	Agroknow:4 WUR: 2 BfR: 3 INRA: 1 Pensoft:2	
Will provide to scientists, access to data types and sources that they have not been using so far in their research workflows & experimentation.	5) # of new data types & sources made available to researchers through appropriate licensing (target: >10 VS achieved: 10)	
	M1-M18	M19-M36
	Agroknow: 1 WUR: 2 Pensoft: 1	Agroknow: 2 BfR: 2 INRA:2
Will carry out activities to engage adjacent but not connected scientific communities and promote the take up of the AGINFRA data & services.	6) # of events organised to engage and support new audiences (target: >10 VS achieved: 25)	
	M1-M18	M19-M36
	Agroknow:2 BfR: 7 INRA: 1 WUR: 2	Agroknow: 3 BfR: 4 WUR: 6
Will federate and interconnect existing registries of data sets of relevance to agriculture, food and environmental research, by extending the global meta-registry of AGINFRA called CIARD RING.	7) # of data sources made easier to discover, access & re-use (target >100 VS achieved: 23.093) *BfR, Pensoft numbers are incorporated in the total sum	
	M1-M18	M19-M36
	WUR: 3 BfR: 5	INRA:2 BfR:2

	Pensoft: 1	Agroknow: 23.088
	8) # of federated data set registries (target: >5 VS achieved: 13)	
	M1-M18	M19-M36
	WUR: 2	INRA:2 Agroknow: 9
Will engage and expand existing groups of scientists and data managers working on datasets provision, interoperability and exchange, such as the RDA IGAD and the GODAN WGs.	9) # of people involved in groups working on data provision & exchange (target:>100 VS achieved: 1.412)	
	M1-M18	M19-M36
	Agroknow: 269 WUR: 933 BfR: 149 INRA: 61	
Will invite and introduce startups and SMEs to the resources, services and data available through AGINFRA in project activities & events.	10) # of SME representatives participating in project events (target: >30 VS achieved: 32)	
	M1-M18	M19-M36
	Agroknow: 25 WUR: 3 BfR: 3 INRA:1	
Will create a mechanism to disseminate, present and showcase AGINFRA data and services to new and existing companies.	11) # of tech/data events attended to engage and involve companies (target:>10 VS achieved: 15)	
	M1-M18	M19-M36
	Agroknow:5 BfR:1	Agroknow:2 BfR: 4 WUR: 1 Pensoft:2
Will organise focused social media marketing campaigns & actions to specifically target SMEs and startups.	12) # of SME-oriented marketing campaigns & actions (target: >5 VS achieved: 6)	
	M1-M18	M19-M36
		Agroknow:6

Will give emphasis in reaching out to H2020 SC1, SC2, and SC5 research & innovation projects, in order to support their open access and data management activities and needs.	13) # projects in network (target: >50 VS achieved: 169) <i>*We supported 15 projects directly & the rest 154 (ANNEX G) indirectly. Common participation is recorded.</i>	
	M1-M18	M19-M36
	WUR: 2 BfR: 1 Agroknow: 4 WUR: 2 INRA:2	INRA:2 Agroknow: 3 WUR: 3
Will liaise with the European and global actors in the agricultural innovation chain, in order to promote the AGINFRA data & services.	14) # of events organised or joined to liaise with agricultural innovation stakeholders (target: >5 VS achieved: 14)	
	M1-M18	M19-M36
	Agroknow:3 WUR: 4	INRA:1 BfR:3 WUR: 3
Will include advanced data provision & exchange services that will enable heterogeneous and distributed data fusion, integration and discovery.	15) # of data provision & exchange services deployed (target: >5 VS achieved: 15)	
	M1-M18	M19-M36
	Agroknow: 1 CNR: 1 UoA: 1 WUR: 1	Agroknow: 3 UoA: 1 BfR: 3 Pensoft: 2 INRA: 2
Will particularly focus on prototyping innovative data and computing research workflows that were envisaged but not possible before the project.	16) # of innovative data processing and visualisation workflows prototyped (target: >5 VS achieved: 9)	
	M1-M18	M19-M36
	WUR: 2 Agroknow: 1 EGI: 1	BfR:2 INRA: 1 WUR: 2 EGI: 1

Table 3: AGINFRA PLUS KPIs analysis and demonstration

AGINFRA PLUS contribution		Key performance indicators	
1st KPI <			

	UoA	<ol style="list-style-type: none"> Geoanalytics Framework Visualisation Framework 	<ol style="list-style-type: none"> AgroDataCube Dashboard Application Network Graph Application Mind Map portlet
	WUR	<ol style="list-style-type: none"> AgroClimatic Modelling VRE <ul style="list-style-type: none"> AgroDataCube SoilGrids Crop phenology estimation notebooks 	<ol style="list-style-type: none"> WOFOST CLOUD Crop phenology estimation as a service
	BfR	<ol style="list-style-type: none"> RAKIP_portal VRE <ul style="list-style-type: none"> RAKIP Model Repository ORION VRE <ul style="list-style-type: none"> OHEJP Glossary DEMETER VRE 	<ol style="list-style-type: none"> GFI VRE Integrated KNIME extensions <ul style="list-style-type: none"> FSK-Lab PMM-Lab Food Chain-Lab
	INRA	<ol style="list-style-type: none"> Food Security VRE <ul style="list-style-type: none"> Rpackage phisClientR to call PHIS1 prototype API DM algorithms to get PHIS1 prototype data R-Shiny data discovery application DM algorithms to get BRAPI servers data DM algorithm to detect outliers DM algorithms for image analysis R package for analytics 	
	Pensoft	<ol style="list-style-type: none"> ReFindit Reference Tool <ul style="list-style-type: none"> Integration with AGRIS 	<ol style="list-style-type: none"> ARPHA Publishing Platform <ul style="list-style-type: none"> Viticulture Data Journal Food Modelling Journal Import & conversion of FSKX models into

			<i>manuscripts in AWT</i> <ul style="list-style-type: none"> • <i>Import & conversion from GCat of manuscripts into AWT</i>
	<i>EGI</i>	1. <i>Galaxy as a service</i>	2. <i>Jupyter as a service</i>

2nd KPI

Will involve and expose to e-infrastructure resources and services core groups of software developers developing data and computing intensive applications for researchers.	# of communities to be directly engaged & exposed (target: >3 VS achieved: 17)		
	Partner	Names of communities	
		M1-M18	M19-M36
	Agroknow	1. <i>Global Water Pathogens Project (GWPP)</i>	1. <i>Agricultural University of Athens</i> <ul style="list-style-type: none"> • <i>Laboratory of Foods Microbiology and Biotechnology of Agricultural University of Athens</i> • <i>Laboratory of Viticulture</i> • <i>Department of Natural Resources and Agricultural Engineering</i> 2. <i>OneHealth</i> 3. <i>Global Burden of Animal Diseases (GBADs)</i>
	CNR	<i>n.a.</i>	
	UoA	<i>n.a.</i>	
	WUR	1. <i>WUR big data network</i> 2. <i>GODAN network</i>	1. <i>AGMIP community</i> 2. <i>IEMSS community</i> 3. <i>CTA - capacity development</i>

			group on data management 4. H2020 CYBELE network
	BfR	<ol style="list-style-type: none"> 1. RAKIP 2. DEMETER 3. ORION 4. GFI 	
	INRA	<ol style="list-style-type: none"> 1. Plant Phenotyping community 2. Plant science community 	1. Breeder community
	Pensoft	<i>n.a.</i>	
	EGI	<i>n.a.</i>	

3rd KPI

	# of events organised or joined to liaise with other e-infrastructures (target:>5 VS achieved: 20) *there are duplications in the attended events		
	Partner	Names of events	
		M1-M18	M19-M36
	Agroknow	<ol style="list-style-type: none"> 1. Open Harvest 2017 2. 1st eROSA Policy Workshop 3. 1st eROSA Stakeholders Workshop 4. 2nd eROSA Stakeholders Workshop 5. 2nd eROSA Policy Workshop 6. 3rd eROSA Stakeholders Workshop 7. 3rd eROSA Policy Workshop 8. 2nd AgroHackathon 9. Agri-Innovation Summit 2017 10. AgriResearch Conference - Innovating for 	1. Elastic{ON} Tour Amsterdam

Will liaise with other research infrastructures and e-infrastructure clusters to share, discover & reuse data and software with other communities.

		<i>the future of farming and rural communities</i>	
	CNR	-	
	UoA	1. OSFAIR 2017	1. OSFAIR 2019
	WUR	<ol style="list-style-type: none"> 1. Interest Group on Agricultural Data (IGAD) Pre-meeting of the RDA 9th Plenary Meeting 2. MACS-G20 workshop in Berlin, "Linked Open Data in Agriculture" 3. 1st eROSA Policy Workshop 4. 1st eROSA Stakeholders Workshop 5. 2nd eROSA Stakeholders Workshop 6. 2nd eROSA Policy Workshop 7. 3rd eROSA Stakeholders Workshop 8. 3rd eROSA Policy Workshop 	<ol style="list-style-type: none"> 1. WUR Big Data Network seminar 2. H2020 CYBELE kick-off meeting 3. H2020 CYBELE 1st plenary meeting 4. ISESS conference 5. WUR Data Science Week
	BfR	1. EOSC Stakeholder forum, 2017	1. KNIME Summit 2019
	INRA	<ol style="list-style-type: none"> 1. 1st eROSA Policy Workshop 2. 1st eROSA Stakeholders Workshop 3. 2nd eROSA Stakeholders Workshop 	1. EGI conference 2019

		4. 2nd eROSA Policy Workshop 5. 3rd eROSA Stakeholders Worksho 6. 3rd eROSA Policy Workshop	
	Pensoft	n.a.	
	EGI	1. 1st eROSA Policy Workshop, 2017 2. DI4R 2017 3. EOSC-hub week 2018 4. AgriResearch Conference - Innovating for the future of farming and rural communities	1. DI4R 2018 2. EOSC-hub week 2019 3. EGI Conference 2019 4. Design your e-Infrastructure workshop 5. HORIZON 2020 CONTRIBUTIONS TO BUILDING THE EOSC. Joint CNECT-RTD project meeting and workshop 6. EOSC-Symposium 2019
4th KPI			
Will participate and promote the use of e-infrastructures to large data intensive initiatives related to sustainable development, agriculture and nutrition (such as ICT-AGRI, EIP-AGRI24, SCAR25, GODAN, IODC community).	# of linked data intensive policy initiatives (target: >5 VS achieved: 12)		
	Partner	Names of initiatives	
	Agroknow	1. GBADs Informatics Working Group 2. CGIAR Platform for Big Data in Agriculture 3. DG RTD Food2030 Initiative 4. Interest Group on Agricultural Data (IGAD)	
	CNR	n.a.	
	UoA	n.a.	
	WUR	1. MACS-G20 workshop in Berlin, "Linked Open Data in Agriculture 2. GODAN Action	
	BfR	1. EJP ONE HEALTH INITIATIVE 2. EFSA 3. COMBINE (Computational Modeling in Biology Network)	

	INRA	1. INRA dataverse	
	Pensoft	1. TDWG 2018 Annual Conference 2. BioDiversity_Next	
	EGI	n.a	
5th KPI			
Will provide to scientists’ access to data types and sources that they have not been using so far in their research workflows & experimentation.	# of new data types & sources made available to researchers through appropriate licensing (target: >10 VS achieved: 10)		
	Partner	Names of Data types & Data sources	
	Agroknow	1. AGINFRA Registry of Semantic Resources (exposing 6 data types: ontologies, vocabularies, classes, concepts, concept schemes and properties)	1. AGINFRA Data Registry (exposing 9 data types: publications, semantic resources, datasets, research objects, models & algorithms, software & services, organizations, projects & initiatives, data sources) 2. AGINFRA Map of Data Ecosystem (exposing 4 data types: Organizations, Initiatives, Data Sources, Facilities)
	CNR	n.a.	
	UoA	n.a.	
	WUR	1. AgroDataCube (exposing 6 different data types: parcels, soil, weather, crop, NDVI, altitude)	

		2. SoilGrids (exposing GeoTIFF tiles)	
	BfR		1. openFSMR data repository (exposing food safety risk assessment models) 2. RAKIP model repository (exposing food safety risk assessment models)
	INRA		1. PHIS open experiments (exposing 3 data types: images, variable observations measurement, events) 2. any Brapi server public data
	Pensoft	1. ReFindit (exposing publications)	
	EGI	n.a.	

6th KPI

Will carry out activities to engage adjacent but not connected scientific communities and promote the take up of the AGINFRA data & services.	# of events organised to engage and support new audiences (target: >10 VS achieved: 25)		
	Partner	Names of events	
		M1-M18	M19-M36
	Agroknow	1. Open Harvest 2017 2. AgTech Innovators Meetup	1. 1st demonstrator 1 validation at AUA 2. 1st demonstrator 2 validation at AUA 3. 1st demonstrator 3 validation at AUA

	CNR	<i>n.a</i>	
	UoA	<i>n.a.</i>	
	WUR	<ol style="list-style-type: none"> 1. 1st Agro-climatic Modelling Evaluation workshop 2. AgroDataCube Sprint 	<ol style="list-style-type: none"> 1. 2nd Agro-climatic Modelling Evaluation workshop 2. WUR Big Data Network seminar 3. Joint 3rd evaluation workshop on data science in agri-food with virtual research environments 4. Demonstration high performance crop modelling to the AGRI4CAST unit of EC-JRC 5. 4th Evaluation workshop / webinar cloud based agricultural modelling 6. N (Nitrogen) SCRUM
	BfR	<ol style="list-style-type: none"> 1. EJP One Health Kick-Off meeting, 2017 2. Technical Workshop RAKIP project, 2018 3. RAKIP Meeting, 2018 4. ORION-Kick off Meeting, 2018 5. ORION VRE workshop, 2018 6. EFSA-BfR Workshop on QMRA Model Repository, 2018 7. RAKIP-EFSA Webmeeting, 2018 	<ol style="list-style-type: none"> 1. RAKIP Workshop, 2019 2. DEMETER Workshop, 2019 3. How to benefit from the Risk Assessment Modelling and Knowledge Integration Platform (RAKIP), 2019 4. Workshop "Harmonized exchange of food safety models using web-based services from RAKIP and the

			AGINFRA PLUS project”, 2019
	INRA	1. Lecture to Agronomy students	
	Pensoft	n.a.	
	EGI	n.a.	

7th & 8th KPI

Will federate and interconnect existing registries of data sets of relevance to agriculture, food and environmental research, by extending the global meta-registry of AGINFRA called CIARD RING.	# of data sources made easier to discover, access & re-use (target: >100 VS achieved: 23.093) *BfR, Pensoft numbers are incorporated in the total sum		
	Partner	Names of data sources	
		M1-18	M19-M36
	Agroknow		23.088, browsable online .
	CNR	n.a.	
	UoA	n.a.	
	WUR	1. AgroDataCube 2. SentinelHub NDVI feeds through VRE notebooks 3. SoilGrids	
	BfR	1. RAKIP Terms 2. OHEJP Terms 3. PubMed (DEMETER) 4. EPPO Database (DEMETER) 5. RSS feed from community information and emerging risk identifications (DEMETER)	1. openFSMR a. ComBase b. GroPIN 2. RAKIP Model Repository
	INRA		1. PHIS 2. Discovery application for any BrAPI

			<i>compliant database</i>
	<i>Pensoft</i>	1. <i>AGRIS (through the ReFindit integration)</i>	
	<i>EGI</i>	<i>n.a.</i>	
	# of federated data set registries (target: >5 VS achieved: 13)		
		Name of data set registries	
		<i>M1-M18</i>	<i>M19-M36</i>
	<i>Agroknow</i>		1. <i>AGRIS</i> 2. <i>Agroportal</i> 3. <i>USDA</i> 4. <i>CGIAR GARDIAN</i> 5. <i>OpenAIRE</i> 6. <i>ZENODO</i> 7. <i>eROSA</i> 8. <i>Unpaywall</i> 9. <i>AGINFRA VREs</i>
	<i>CNR</i>	<i>n.a.</i>	
	<i>UoA</i>	<i>n.a.</i>	
	<i>WUR</i>	1. <i>AgroDataCube services for different data types (parcels, soil, weather, crop, NDVI, altitude)</i> 2. <i>SentinelHub</i>	
	<i>BfR</i>	<i>n.a.</i>	
	<i>INRA</i>		1. <i>PHIS</i> 2. <i>INRA dataverse</i>
	<i>Pensoft</i>	<i>n.a.</i>	
	<i>EGI</i>	<i>n.a.</i>	

9th KPI

<p>Will engage and expand existing groups of scientists and data managers working on datasets provision, interoperability and exchange, such as the RDA IGAD and the GODAN WGs.</p>	# of people involved in groups working on data provision & exchange (target:>100 VS achieved: 1.412)	
	Partner	Names of groups
	Agroknow	<ol style="list-style-type: none"> 1. RDA IGAD Interest Group (242) 2. GBADs Informatics Working Group (12) 3. Land Portal (2) 4. CGSpace (4) 5. CGIAR Platform for Big Data (2) 6. Agroportal (1) 7. FAO (2) 8. OntoText (4)
	CNR	n.a.
	UoA	n.a.
	WUR	<ol style="list-style-type: none"> 1. AGMIP (500) 2. IEMSS (200) 3. GODAN ACTION members (33) 4. CTA capacity development group on data management (200)
	BfR	<ol style="list-style-type: none"> 1. RAKIP (55) 2. DEMETER (36) 3. ORION (46) 4. GFI (12)
	INRA	<ol style="list-style-type: none"> 1. RDA IGAD : Wheat Data Interoperability WG (61)
	Pensoft	n.a.
	EGI	n.a.

10th KPI

<p>Will invite and introduce start-ups and SMEs to the resources, services and data available through AGINFRA in project activities & events.</p>	# of SME representatives participating in project events (target: >30 VS achieved: 32)	
	Partner	Names of start-ups and SMEs
	Agroknow	<ol style="list-style-type: none"> 1. Augmenta Agriculture Technologies (Greece) 2. BioCos (Greece) 3. Solar-vibes (Germany) 4. Oliveex (Greece) First Athens 5. InAgros (Greece) 6. CitiCrop (Greece) 7. Ex Machina (Greece) 8. Agrovim (Greece) 9. Evanfoods (Greece) 10. Agrologies (Greece)

		11. Centaur Analytics (Greece) 12. Synelixis (Greece) 13. Inspiring earth (Greece) 14. Gaia Epixeirein (Greece) 15. Legendary Food (Greece) 16. Draxis Technologies (Greece) 17. AgroApps (Greece) 18. Space Hellas (Greece) 19. Foodwealth LTD (Greece) 20. Digital Tree (Greece) 21. CROPT / Biosense (Serbia) 22. Vaerens (The Netherlands) 23. Deepfield Robotics (Germany) 24. Lentera (Kenya) 25. DevicePilot (United Kingdom)	
	CNR	-	
	UoA	n.a.	
	WUR	1. WAM (NL) 2. Aerovision (NL) 3. FarmHack (NL)	
	BfR	1. KNIME (Switzerland) 2. tsenso (Germany) 3. Frutarom (Germany)	
	INRA	1. Arvalis (FR)	
	Pensoft	n.a.	
	EGI	n.a.	
11th KPI			
Will create a mechanism to disseminate, present and showcase AGINFRA data and services to new and existing companies.	# of tech/data events attended to engage and involve companies (target:>10 VS achieved: 15)		
	Partner	Name of tech/data events attended	
		M1-M18	M19-M36
	Agroknow	1. NET FUTURES 2017 2. 2nd AgroHackathon 3. Agri-Innovation Summit 2017 4. FIT4FOOD2030 Workshop 5. AgriResearch Conference - Innovating for the future of farming and rural communities	1. Opportunities for startups in Cretan Entrepreneurial Ecosystem 2. The Global Alliance for Improved Nutrition (GAIN)

	CNR	<i>n.a.</i>	
	UoA	<i>n.a.</i>	
	WUR		1. Wageningen Data Science Week FAIR Hackathon
	BfR	1. EOSC Stakeholder forum, 2017	1. FoodMicro, 2018 2. ICPMF11, 2019 3. IAFP European Symposium, 2019 4. KNIME Summit, 2019
	INRA	<i>n.a.</i>	
	Pensoft		1. TDWG 2018 Annual ConferenceBioDiversity_Next 2. Biodiversity Next
	EGI	<i>n.a.</i>	

12th KPI

Will organise focused social media marketing campaigns & actions to specifically target SMEs and startups.	# of SME-oriented marketing campaigns & actions (target: >5 VS achieved: 6)		
	Partner	Name of SME-oriented marketing campaigns & actions	
		M1-M18	M19-M36
	Agroknow		1. The most critical event for Open Science in Europe and our CGIAR Project 2. What a year! 3. Meet our Director of Technology and our new service for GODAN 4. Our team at the European

			Parliament, sensors, IoT and vineyards and why we want to work together 5. Big Data + Food Competition 6. Guess what is new on AGINFRA +
	CNR	<i>n.a.</i>	
	UoA	<i>n.a.</i>	
	WUR	<i>n.a.</i>	
	BfR	<i>n.a.</i>	
	INRA	<i>n.a.</i>	
	Pensoft	<i>n.a.</i>	
	EGI	<i>n.a.</i>	

13th KPI

Will give emphasis in reaching out to H2020 SC1, SC2, and SC5 research & innovation projects, in order to support their open access and data management activities and needs.	# projects in network (target: >50 VS achieved: 169) *We supported 15 distinct projects directly & the rest 154 (ANNEX G) indirectly. Common participation is recorded.		
	Partner	Name of projects in network	
		M1-M18	M19-M36
	Agroknow	1. eROSA 2. DIVERSify 3. The Global Water Pathogen Project (GWPP) 4. GODAN Action	1. CYBELE 2. BigDataGrapes 3. CGIAR Platform for Big Data in Agriculture 4. The Global Burden of Animal Diseases (GBADs)
	CNR	<i>n.a.</i>	
	UoA	<i>n.a.</i>	
	WUR	1. eROSA 2. MARSOP	1. SmartAgriHubs 2. Internet of Food 3. CYBELE

	BfR	1. EJP ONE HEALTH	
	INRA	2. <i>Phenome</i> 3. <i>Emphasis-prep</i>	1. <i>EPPN2020</i> 2. <i>BigDataGrapes</i>
	Pensoft	<i>n.a.</i>	
	EGI	<i>n.a.</i>	

14th KPI

<p>Will liaise with the European and global actors in the agricultural innovation chain, in order to promote the AGINFRA data & services.</p>	# of events organised or joined to liaise with agricultural innovation stakeholders (target: >5 VS achieved: 14)		
	Partner	Name of events organised or joined	
		M1-M18	M19-M36
	Agroknow	1. <i>Open Harvest 2017</i> 2. <i>AgriResearch Conference - Innovating for the future of farming and rural communities</i> 3. <i>FIT4FOOD2030 Workshop</i>	
	CNR	<i>n.a.</i>	
	UoA	<i>n.a.</i>	
	WUR	1. <i>AgroDataCube Sprint</i> 2. <i>Smart Dairy Farming Hackathon</i> 3. <i>International workshop on Open Land Data: Mobile Apps and Geo-services for Open Soil Data</i> 4. <i>Rewarding Nature Hack</i>	1. <i>Demonstration of high-performance crop modelling to the AGRI4CAST unit of EC-JRC</i> 2. <i>N (Nitrogen) SCRUM</i> 3. <i>Wageningen Data Science Week FAIR Hackathon</i>
	BfR		1. <i>ICPMF11</i> 2. <i>FoodMicro 2018</i> 3. <i>Workshop with DEMETER in Wageningen</i>

	INRA		1. Phenome workshop
	Pensoft	n.a.	
	EGI	n.a.	
15th KPI			
Will include advanced data provision & exchanged services that will enable heterogeneous and distributed data fusion, integration and discovery.	# of provided data & exchanged services (target: >5 VS achieved: 15)		
	Partner	Name of provided data & exchanged services	
		M1-M18	M19-M36
	Agroknow	1. AGINFRA Data Harvesting Workflow	1. AGINFRA Search API 2. AGINFRA Semantic API 3. AGINFRA Data Integration API
	CNR	1. gCube Catalogues	
	UoA	1. Geospatial Visualisation Framework	1. AgroDataCube Dashboard Application
	WUR	1. AgroDataCube	
	BfR		1. RAKIP-workspace exchange 2. FSKX-model online creation 3. FSKX-model online editing
	INRA		1. BRAPI compliant services implementation into PHIS 2. RShiny discovery application
	Pensoft		1. FSKX conversion to manuscript

			2. Creation of manuscript from GCat
	EGI	n.a.	
16th KPI			
Will particularly focus on prototyping innovative data and computing research workflows that were envisaged but not possible before the project.	# of innovative data processing and visualisation workflows prototyped (target: >5 VS achieved: 9)		
	Partner	Name of innovative data processing and visualisation workflows prototyped	
		M1-M18	M19-M36
	Agroknow	1. AGINFRA Data Harvesting Workflow	
	CNR	n.a.	
	UoA	n.a.	
	WUR	1. Field based crop growth modelling 2. Field based crop phenology estimation	1. Distributed crop growth modelling 2. Large scale distributed crop phenology estimation
	BfR		1. Food risk assessment model sharing 2. Food risk assessment model simulation running & publishing
	INRA		1. Management , access & visualization of plant phenotyping resources
	Pensoft	n.a	

	<i>EGI</i>	1. <i>Jupyter integration with DataMiner</i>	1. <i>Galaxy integration with DataMiner</i>

B. ANALYSIS OF THE PROVIDED EFFORT TO EXPECTED IMPACT INDICATORS

The **1st KPI** regards the innovative software tools & services that have been provided to scientists in order to facilitate them in their research workflows & experimentation. Through the contribution of all partners, the target of this KPI has been able to go far beyond. For use-case partners, an effort in organizing bundles of tools together resulted in the notion of community VREs being the “final” product for each use-case, while other development novelties were recorded separately or as sub-components of the generic VRE-based solution, based on their developed TRL and general adoption by other communities. At the same time, software tools & services developed by technical partners were recorded individually to capture the full potentiality of the proposed tooling.

In general, partners had to provide at least six (6) innovative software tools & services and we managed to provide **thirty-three (33)**. Eighteen (18) of them were provided during the first period of the project (WUR:1, BfR:3, INRA:1, Pensoft:1, Agroknow:5, EGI:1, CNR:4, UoA:2) and fifteen (15) (WUR:2, BfR:2, Pensoft:1, Agroknow:5, CNR: 1, UoA: 4, EGI: 1) during the second period of the project. In total, **Agroknow** provided nine (10) (VocBench, WebVOWL, OpenRefine+RDF Extension, YAM++ Matcher, SKOS Play!, the AGINFRA Data Harvesting Workflow, the Data Integration tool, the AGINFRA Web portal and respective services, the AGINFRA Data Registry and web services and the AGINFRA Registry of Semantic Resources and web services), **WUR** three (3) (the AgroClimatic Modelling VRE and underlying tools, the WOFOST CLOUD Distributed crop growth modelling architecture as a Service, and Crop phenology estimation as a service), **BfR** five (5) (four community-specific VREs and underlying tools and services: RAKIP, DEMETER, ORION, GFI and KNIME extension-based services: FSK-Lab, PMM Lab, Food Chain-Lab), **INRA** one (1) (the Food Security VRE with its underlying tools and integrated services), **Pensoft** two (2) (the ReFindit Reference Tool and the ARPHA Publishing Platform), **EGI** two (2) (Jupyter as a service and Galaxy as a service), **UoA** five (5) (the Geoanalytics Framework, the Visualisation Framework, the AgroDataCube Dashboard Application, the Network Graph Application, the Mind Map portlet) and **CNR** three (5) (D4Science-powered VREs, gCube Analytics, the gCube Statistical Algorithm Importer, the gCube Catalogue and a series of gCube extensions).

The **2nd KPI** is related to the communities that have been directly engaged and exposed to project's e-infrastructure resources and services. In this case, partners managed to exceed the set target by far. Particularly, the target was at least three (3) and we managed to engage **seventeen (17)** communities. Nine (9) (Agroknow: 1, WUR:2, BfR:4 and INRA:2) of them was engaged during the first period of the project and five (5) (Agroknow: 1, WUR:4, INRA:1) during the second period. In total, **Agroknow** engaged *four (4) (members of the Global Water Pathogens Project community, three communities from the wider research community of the Agricultural University of Athens, the OneHealth community and members of the Global Burden of Animal Diseases network)*, **WUR** engaged four (4) (AGMIP community, IEMSS community, the WUR big data network, the H2020 CYBELE network, the CTA - capacity development group on data management and GODAN network), **BfR** engaged four (4) (RAKIP, DEMETER, ORION and GFI) and **INRA** three (3) (Plant Phenotyping community, Breeder community and Plant science community).

The **3rd KPI** concerns all the events that partners have organised or attended to liaise with other e-infrastructures in order to share, discover & reuse data and softwares with other communities. The target in this KPI was to organise/ attend at least five (5) events and we managed in sum **thirty (30)**. Sixteen (16) occurred during the first period of the project, while fourteen (14) in the second one. During the project's life **EGI** organised/ attended ten (10) (1st eROSA Policy Workshop 2017, EOSC-hub week 2018, AgriResearch Conference - Innovating for the future of farming and rural communities, DI4R 2018, EOSC-hub week 2019, *EGI* Conference 2019, Design your e-Infrastructure workshop, HORIZON 2020 contributions to building the EOSC. Joint CNECT-RTD project meeting and workshop, and EOSC-Symposium 2019), **INRA** seven (7) (three eROSA Policy Workshops, three eROSA Stakeholders Workshops and the EGI conference 2019), **UoA** two (2) (OSFAIR 2017 and OSFAIR 2019), **WUR** thirteen (13) (1st eROSA Policy Workshop, WUR Big Data Network seminar, Interest Group on Agricultural Data (IGAD) Pre-meeting of the RDA 9th Plenary Meeting, 1st eROSA Policy Workshop, MACS-G20 workshop in Berlin, "Linked Open Data in Agriculture", 2nd eROSA Stakeholders Workshop, 2nd eROSA Policy Workshop, 3rd eROSA Stakeholders Workshop, Scientific symposium on FAIR Data Science for Green Life Sciences, 3rd eROSA Policy Workshop, H2020 CYBELE kick-off meeting, H2020 CYBELE 1st plenary meeting, ISESS conference, and WUR Data Science Week), **BfR** two (2) (EOSC Stakeholder forum 2017 and the KNIME Summit 2019) and **Agroknow** ten (10) (OpenHarvest 2017, three eROSA Policy Workshops and three eROSA Stakeholders Workshops, the 2nd AgroHackathon, the Agri-Innovation Summit 2017, the AgriResearch Conference for the future of farming and rural communities and the Elastic{ON} Tour Amsterdam). It is obvious that joint participations occurred in the eROSA Policy and Stakeholders workshops and the EGI Conference 2019, which were subtracted from the total number of events.

The **4th KPI** illustrates the linked data intensive policy initiatives that partners participated in order to promote the use of e-infrastructures. The aimed target in this case was five (5) but we managed to participate in **twelve (12)** initiatives. As most initiatives have been ongoing, an aggregate view on the participations is provided for the two periods of project activities. In total Three (3) partners (BfR:1, Agroknow:1, WUR:2) participated in four (4) initiatives in 2017, four more (4) (BfR:2, INRA:1, Pensoft:1, Agroknow:2) in six (6) in 2018 and one (1) (Pensoft:1) in 2019. In sum, **BfR** participated in three (3) (EJP One Health initiative, EFSA and COMBINE 2017), **INRA** in one (INRA dataverse), **Pensoft** in two (2) (TDWG 2018 Annual Conference, and BioDiversity Next), **WUR** in two (2) (MACS-G20 workshop in Berlin, "Linked Open Data in Agriculture" and GODAN Action) and **Agroknow** in three (GBADs Informatics Working Group, the CGIAR Platform for Big Data in Agriculture, the DG RTD Food2030 Initiative and the Interest Group on Agricultural Data - IGAD).

The **5th KPI** regards the provision of new data types & sources that made available through the project's lifetime to researchers. In this KPI, we record the novel data sources that have been developed or integrated as part of the AGINFRA PLUS infrastructure, along with the number of underlying data types they expose to end users. Here we present the target adjusted to measure the sources themselves, although the number of actual data types is **much higher** than the target. In this context, the target was to provide at least ten (10) data sources and we managed to provide **sixteen (16)**. Agroknow provided three novel sources of data, covering the metadata harvested in the AGINFRA Data Registry (covering 9 data types), the semantic resources from the Ontological Engineering layer in the AGINFRA Registry of Semantic Resources (covering 6 data types) and lastly, the API-based service of the AGINFRA Map of Data Ecosystem (covering 4 data types). **INRA** provided two new data sources: ports to two open experiments from PHIS, with the 3 underlying data types (images, observations and measurements) and (3) (2 public plant phenotyping experiments data (images, variable observations measurement, events), and a port for any Brapi server public data. **BfR** offered two different sources of food safety risk assessment models (openFSMR and the RAKIP model repository). **WUR** provided access to AgroDataCube (covering 6 data types) and SoilGrids (covering GeoTIFF tiles). Lastly, **Pensoft** provided the ReFindit reference tool that links to indices of open publications (1).

For the **6th KPI** partners had to organise events to engage and support new audiences in order to promote AGINFRA data & services. We had to organise at least ten (10) events, and we managed **twenty-five (25)** (Agroknow: 5, WUR: 8, BfR: 11, INRA: 1). In the first period of the project, a total of twelve (12) events were organized, while in the second period thirteen (13). In particular, **Agroknow** organised five (5) (Open Harvest 2017, the AgTech Innovators Meetup and three demonstrator validation events at the Agricultural University of Athens), **INRA** one (1) (Lecture to Agronomy students), **BfR** eleven (11) (EJP One Health Kick-Off meeting 2017, Technical Workshop RAKIP project 2018, RAKIP Meeting 2018, ORION-Kick off Meeting 2018, ORION VRE workshop 2018, EFSA-BfR Workshop on QMRA Model Repository 2018, RAKIP-EFSA Webmeeting 2018, RAKIP Workshop 2019, DEMETER Workshop 2019, How to benefit from the Risk Assessment Modelling and Knowledge Integration Platform (RAKIP) 2019 and Workshop "Harmonized exchange of food safety models using web-based services from RAKIP and the AGINFRA PLUS project" 2019), **WUR** eight (8) (1st Agro-climatic Modelling Evaluation workshop, WUR Big Data Network seminar, AgroDataCube Sprint, 2nd Agro-climatic Modelling Evaluation workshop, Joint 3rd evaluation workshop on data science in agri-food with virtual research environments, Demonstration high performance crop modelling to the AGRI4CAST unit of EC-JRC, 4th Evaluation workshop / webinar cloud based agricultural modelling and N (Nitrogen) SCRUM, and **EGI** one (1) (RDA Notebooks BoF 2019).

For the **7th KPI** partners had to make easier to discover, access & re-use relevant to agriculture, food and environmental research data sources. The goal here was not expose the sources of data (meaning the initial publishers or distributors of data assets) in the harvested/integrated data registries, along with *their underlying data assets*, so that they are made *reusable*. The target was at least one hundred (100), however the total number of data sources made available and reusable through the AGINFRA PLUS infrastructure was twenty-three thousand and ninety three (**23.093**). This significant difference in number was achieved mainly due to the adaption and execution of the AGINFRA Data Harvesting Workflow, which -among others- harvested the five (5) data sources integrated by **BfR** and was responsible for the AGRIS integration of **Pensoft's** ReFindit tool (1). The complete list of harvested sources can found as an option (facet) in the online AGINFRA Semantic Search tool¹⁵. At the same time, **INRA** offered two (2) new sources in the AGINFRA PLUS infrastructure (PHIS and potentially any BrAPI-compliant database. Respectively,

¹⁵ <https://plus.aginfra.eu/semantic-search>

WUR offered two (2) (AgroDataCube - 6 agricultural data services and SentinelHub NDVI feeds through VRE notebooks).

For the **8th KPI** partners had to federate data set registries relevant to agriculture, food and environmental research. According to the target we had to federate a least five (5) data set registries and we managed **thirteen (13)**. For **Agroknow**'s part, although some were experimented with earlier, nine (9) were formalized in the second period of project activities (AGRIS, Agroportal, USDA, CGIAR GARDIAN, OpenAIRE, ZENODO, eROSA, Unpaywall and of course, the content of the AGINFRA VREs Catalogues). At the same time, **INRA** federated two (2) (PHIS public server and the INRA dataverse) and **WUR** two (2) (AgroDataCube and SentinelHub).

The **9th KPI** is related to scientists and data managers, working on datasets provision; interoperability and exchange, involvement in AGINFRA project. The target was to engage at least one hundred (100) people and we managed in sum **1.412**. Since the groups' activity is ongoing, an aggregate estimation of people involved is presented. Specifically, **BfR** engaged 149 (from the RAKIP, DEMETER, ORION and GFI communities), **WUR** engaged roughly 1,233 (from the AGMIP, IEMSS, GODAN Action and CTA capacity development group on data management), **INRA** engaged 61 (from RDA IGAD's Wheat Data Interoperability Working Group), **Agroknow** 269 (from RDA IGAD's Interest Group, the GBADs Informatics Working Group, the LandPortal foundation, CGSpace, the CGIAR Platform for Big Data, Agroportal, FAO and OntoText).

The **10th KPI** concerns the invitation of start-ups and SMEs to the resources, services and data available through AGINFRA in project activities & events. The targeted start-ups and SMEs number was at least thirty (30) and we managed to invite **thirty-two (32)**. Since most of the SME engagement activities happened in the second period of the project, a mostly aggregate view of the SMEs engaged is presented. In total **Agroknow**, engaged with twenty-five (25) (Augmenta Agriculture Technologies (Greece), CROPT / Biosense (Serbia), Vaerens (The Netherlands) Solar-vibes (Germany), Oliveex (Greece), InAgros (Greece), CitiCrop (Greece), Ex Machina (Greece), Agrovim (Greece), Evanfoods (Greece), Agrolologies (Greece), Centaur Analytics (Greece), Synelixix (Greece), Inspiring earth (Greece), Gaia Epixeirein (Greece), Legendary Food (Greece), Draxis Technologies (Greece), AgroApps (Greece), Space Hellas (Greece), Foodwealth LTD (Greece), Digital Tree (Greece), CROPT / Biosense (Serbia), Vaerens (The Netherlands), Deepfield Robotics (Germany), Lentera (Kenya) and DevicePilot (United Kingdom), **BfR** three (3) (KNIME (Switzerland), tsenso (Germany) and Frutarom (Germany) **WUR** three (3) (WAM (NL), Aerovision (NL) and FarmHack (NL)) and **INRA** one (Arvalis (FR)).

For the **11th KPI**, partners had to attend tech/data events to disseminate, present and showcase AGINFRA data and services to new and existing companies. We had in total to attend in at least ten (10) events and we managed to attend in **fifteen (15)**. During the three years of the project, **Agroknow** attended in seven (7) events (NET FUTURES 2017, the 2nd AgroHackathon, the Agri-Innovation Summit 2017, the AgriResearch Conference - Innovating for the future of farming and rural communities, the Opportunities for startups in Cretan Entrepreneurial Ecosystem and the Global Alliance of Improved Nutrition (GAIN)), **BfR** in five (5) events (EOSC Stakeholder forum 2017, FoodMicro 2018, ICPMF11 2019, IAFP European Symposium 2019 and KNIME Summit 2019), **Pensoft** in two (2) (TDWG and BioDiversity Next) and **WUR** in one (1) (the Wageningen Data Science Week FAIR Hackathon).

The **12th KPI** regards the organisation of focused social media marketing campaigns & actions to specifically target SMEs and start-ups. The target was to organise at least five (5) campaigns and **Agroknow** managed to write in total exactly **six (6)** newsletters and distribute them among several SMEs

and start-ups. Particularly, Agroknow wrote and sent the newsletters by the names: “The most critical event for Open Science in Europe and our CGIAR Project”, “What a year!”, “Mondays for CEOs”, “Our first product and 2019 for our Director of Technology”, “Our team at the European Parliament, sensors, IoT and vineyards why we want to work together and Big Data + Food Competition” and “Guess what is new on AGINFRA +”.

The **13th KPI** concerns the emphasis that partners had to give in reaching out to H2020 SC1, SC2, and SC5 research & innovation projects, in order to support their open access and data management activities and needs. In our network partners had to emphasize on fifty (50) projects, managing to directly support thirteen (15) of them, through close and continuous cooperation and another 154 through indirect cooperation in sum **169**. With these 154 we managed to get in touch through the digital marketing campaigns that Agroknow organised during the three (3) years of the project and through the participation at international events that representatives of these projects were there. Particularly, **Agroknow** managed to directly emphasize on eight (8) (eROSA, DIVERSify, CYBELE, BigDataGrapes, CGIAR Platform for Big Data in Agriculture, The Global Water Pathogen Project (GWPP), the Global Open Data for Agriculture and Nutrition (GODAN) and the Global Burden of Animal Diseases (GBADs)), **INRA** four (4) (Phenome, EPPN2020, Emphasis-prep and BigDataGrapes), **BfR** to one (1) (EJP ONE HEALTH), **WUR** to five (5) (eROSA, MARSOP, CYBELE, SmartAgriHubs, Internet of Food and CYBELE). Common participation of partners in the same projects is reflected on the final number. Regarding the 154 projects, a complete list can be found under ANNEX G.

The **14th KPI** is related in the organisation/ attendance of events to promote the AGINFRA data & services and to liaise with agricultural innovation stakeholders. The target in this case was to organise/ attend at least five (5) events and we organised/ attended, in total, in **fourteen (14)**. During the first period of the project, a total of seven events were held. **Agroknow** organised/attended three (3) events (Open Harvest 2017, AgriResearch Conference - Innovating for the future of farming and rural communities and FIT4FOOD2030 Workshop), and **WUR** four (4) (AgroDataCube Sprint, Smart Dairy Farming Hackathon, International workshop on Open Land Data: Mobile Apps and Geo-services for Open Soil Data, Rewarding Nature Hack). In the second period of the project, **WUR** attended 3 (AGRI4CAST unit of EC-JRC, N (Nitrogen) SCRUM and the Wageningen Data Science Week FAIR Hackathon), **INRA** one (1) (Phenome workshop), **BfR** three (3) (Workshop with DEMETER in Wageningen, FoodMicro 2018 and ICPMF11).

The **15th KPI** regards AGINFRA provided data and exchanged services that will enable heterogeneous and distributed data fusion, integration and discovery. Partners had to provide and exchange at least five (5) data and services respectively and we managed **fourteen (15)**. In the first period of the project, **UoA** managed one (1) (Geospatial Visualisation Framework), **CNR** managed two (2) (gCube Catalogues), **WUR** managed one (1) (AgroDataCube) and **Agroknow** one (1) (the AGINFRA Data Harvesting Workflow). In the second period, **Agroknow** provided three (3), **UoA** provided the AgroDataCube Dashboard Application (1), **BfR** provided three (3) (implementing the RAKIP-gCube workspace exchange, the online creation of FSKX models, and the online editing of FSKX models), **INRA** provided three (3) (BrAPI-compliant services implementation into PHIS and the Rshiny Discovery application) and **Pensoft** provided two (2) (the FSKX conversion to manuscript and the creation of manuscript from gCat).

The **16th and last KPI** is focusing on prototyping innovative data and computing research workflows that were envisaged but not possible before the project. The main target was to prototype at least five (5) innovative data and visualisation workflows but we managed **fifteen (15)**. In the first period of the project, **Agroknow** prototyped the AGINFRA Data Harvesting Workflow (1), **WUR** introduced two (2) scientific data processing workflows (Field based crop growth modelling and field based crop phenology estimation),

while **EGI** provided Jupyter integration with DataMiner (1). In the second year of the project, **WUR** extended its proposed workflows and introduced two (2) new ones (Distributed crop growth modelling and Large scale distributed crop phenology estimation), **BfR** introduced two workflows as part of its Demonstrator Scenario (#2) (Food risk assessment model sharing and Food risk assessment model simulation running & publishing), **INRA** introduced its own (1) Demonstrator Scenario (#3), based on a data processing workflow (Management, access & visualization of plant phenotyping resources) and lastly, **EGI** integrated Galaxy into DataMiner (1).

Based on the provided effort, it seems that in all cases AGINFRA partners have not only succeeded in achieving the set goals, but in overcoming them.

8. ANNEX I: 2ND CHANIA DECLARATION: A CALL TO ACTION



2nd Chania Declaration: a Call to Action

Executive Summary

- We have come together in Open Harvest 2017 to reflect upon grand challenges in the agrifood chain and ways to address them by combining data with technology.
- We have reiterated the need stated in the 2016 Chania Declaration: to work together in order to create a powerful data ecosystem and increase the pace of knowledge production for agricultural innovation.
- We believe that collaboration must be inclusive, global and based on a good understanding of real needs in this community and the people they work with.
- We understand that there is value in making data open, in a way that will enable various degrees of openness across the whole data spectrum, respecting and enabling individual and collective rights.
- We see the need to build an overall data ecosystem, beyond what we may have traditionally call a data infrastructure - and this requires considered policies, practices, and social and business models.
- We acknowledge that 'open' and 'shared' requires investment and wish to collaborate to seek and secure funding for collaborative and individual (but aligned) initiatives.
- We believe that investing in 'open' should enable advocacy, capacity development, research, interoperability, and improved understanding of how to achieve impact.
- We recognise the efforts of key community networks and multi-stakeholder initiatives in building the data ecosystem, including (but not limited to) GODAN, CGIAR Big Data Platform, eROSA, Food From Thought and others.
- We agree on a common Call to Action that may help us catalyse the creation of the data ecosystem for agriculture and food.

A 2017 Call to Action

1. Participants of Open Harvest 2017 agree to intensify collaboration to create a shared environment for science and innovation throughout the agrifood chain. Sharing of knowledge and underlying data is a prerequisite to accelerate development to address global challenges. Data for agricultural development is not only data from academic research or government - much data is now produced by agricultural activity, commercial organisations and the food system itself including related sectors such as water, and in social media. Data-driven and data-supported science and innovation in combination with other new technologies can transform the sector.

2. A shared environment or 'data ecosystem' requires that data, standards and infrastructure be as "open" as possible. Degrees of openness may be based on principles such as Creative Commons and/or the FAIR principles. Principles can support rights, and rules for responsible use negotiated and set by the wider community. It is broadly accepted that much data produced with public money needs to be free for everyone. Data produced by the private sector can also have value in being fully open when it supports business value, trust, innovation, reputation and social good.
3. This shared environment should be supported by policies and practices that incentivize people to generate social and economic value as well as develop new business models. It should be highly decentralized. It should be a collaborative approach to sharing knowledge, data, analytics and technology across a network of distributed platforms. It should have social, economical and technical dimensions that enhance the impact and efficiency of our work.
4. We pledge to collaborate on coordinated approaches to donors to advocate for the principles outlined here and to seek project funding through:
 - a. existing projects,
 - b. bilateral and multilateral agreements
 - c. international bodies like the GODAN Secretariat and the Agricultural Data Interest Group of RDA
5. We confirm that the scope of this initiative should be international and global. Without a strong role for organizations from emerging economies, including but not limited to EMBRAPA (Brazil), CAAS (China) and ICAR (India), there is no real global Science Commons in Agriculture and Nutrition. The participants came from 21 organizations, the majority of which are already collaborating to create a de facto community of practice.
6. We support ongoing activities which contribute to the creation of a common sharing environment
 - a. GODAN, its Secretariat, and GODAN Action have become important facilitators, accelerators for open data and its applications, and an international voice for open data. They have created collaborative working groups to address key gaps and challenges in this space, including interoperability issues via support for open standards and evidence to demonstrate the impact of open data. The participants ask existing and new donors to support the GODAN initiative.
 - b. Large steps have been made in recent years to improve the semantic support environment for open access and open data including the GACS project, Agroportal, the Vest Registry and other initiatives. We support the idea of bringing these initiatives closer together in an Agrisemantics framework.
 - c. The CGIAR Big Data Platform is one of the most advanced pilots to release the power of open and shared data in the sector. We ask CGIAR to make this an open community and encourage the community to use and invest in the CGIAR platform as appropriate. This platform could become for the agricultural community what NCBI is for the life sciences community.
 - d. We appreciate the value of the EOSC initiative of the European Commission, and suggest that participants volunteer to be EOSC nodes and develop standards and

methodologies. Mapping the European scientific data infrastructure through eROSA will inform how nodes (competence centres), principles, models and practice can support agrifood science in the sector to address societal challenges.

- e. We support a collaborative and integrative approach to the different initiatives and propose strong collaboration between the CGIAR Big Data Platform, the EC-funded Food Cloud demonstrators, the Canadian Food From Thought initiative, and other relevant global actions.
7. We confirm the need to invest in 'open'. We discussed a number of possible collaboration areas of which we list a selection:
- a. To discuss and better define data rights and responsible use of data. Whereas it remains undisputed that much data in the public domain created with public money should be open without restrictions, guidelines are necessary for types of data generated by, with and about individuals (farmers, consumers etc.), enterprises or communities. We recognise the importance of understanding local context in framing what responsible use of data looks like.
 - b. New understanding of and advocacy for incentives to promote data sharing, openness and development of common infrastructures; and new or enhanced business models that can coexist with, support or enable this sharing culture and ecosystem.
 - c. Capacity development including but not limited to training to promote data sharing, openness, and business models that include a focus on social goods.
 - d. To integrate data from different sources we need technical and semantic interoperability between metadata, data and data repositories. We have to invest in making the emerging Agrisemantics framework powerful enough to support this.
 - e. Better and more open data-driven provenance in food supply chains and linking of food supply chains to scientific information.
 - f. The participants agree that there is a need to identify and develop pre-competitive spaces that meet well-defined scientific and business needs. Thematic foci might include: weather data; nutritional content of commodities; toxicological data; raw geospatial data; social and political events.
 - g. Recognizing that important technical and cultural developments are happening in communities with different notions of "open" and "collaborative", the participants agree to engage widely, and in particular with private sector partners
8. We call on all institutions, organisations and individuals working on agricultural development and innovation to commit to this common effort to enable openly shared, interoperable and reusable knowledge resources, stating their "haves" and "needs" and taking the next steps to develop and benefit from a shared data ecosystem

Chania, 02.06.2017

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Janssen Sander (WUR, Netherlands)

Keizer Johannes (GODAN, Italy)

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Madalli Devika (ISI/ DRTC, India)

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Xian Guojian (CAAS, China)

Yossinger Nili (Georgetown University, USA)

Zhang Xuefu (CAAS, China)

Zhou Guomin (CAAS, China)

9. ANNEX J: EXAMPLES OF THE NEWSLETTERS

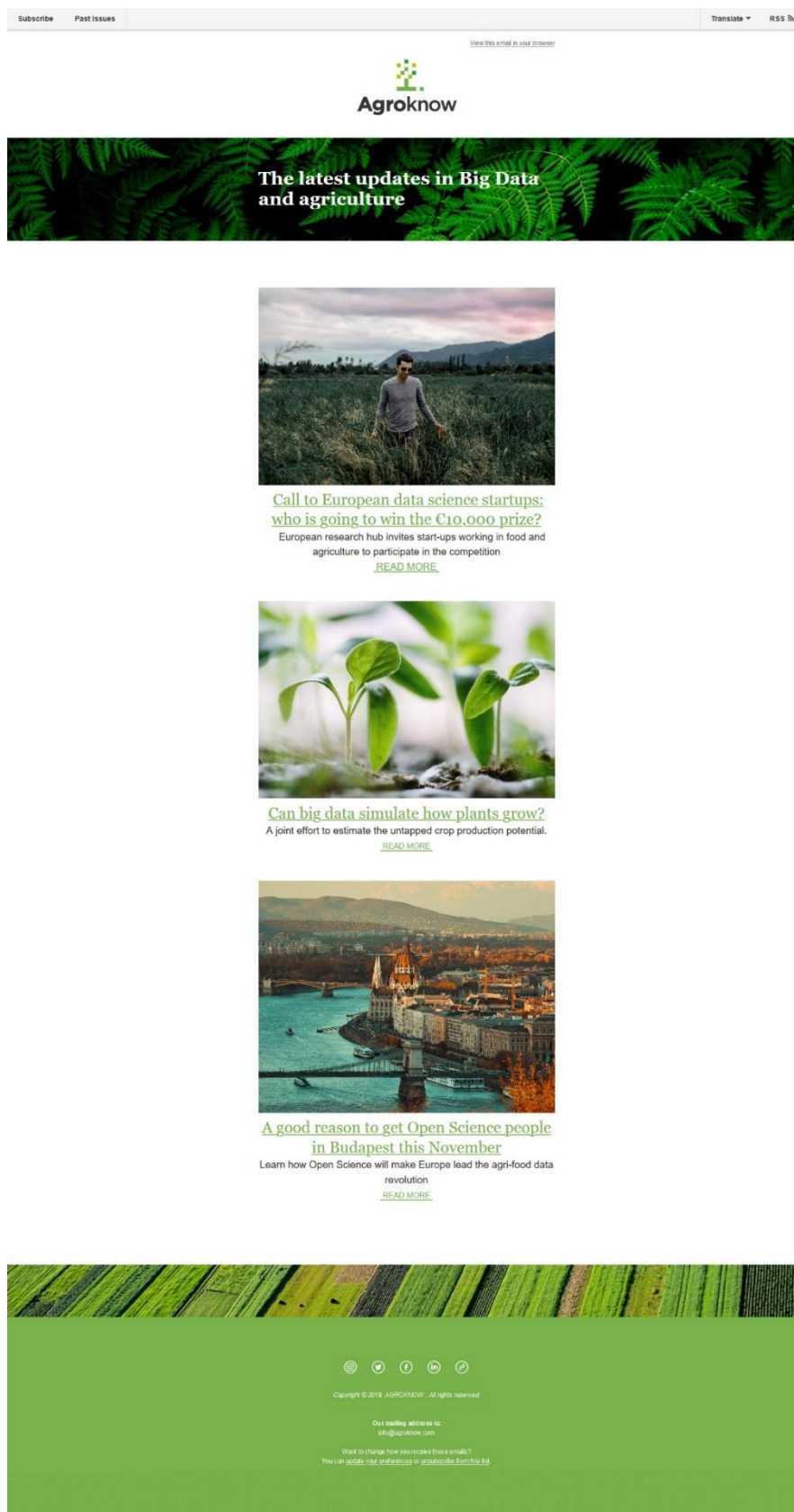




Figure 7: The latest updates in Big Data and agriculture

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Figure 8: The most critical event for Open Science in Europe and our CGIAR Project



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Figure 9: Guess what is new on AGINFRA +