ANALYSIS OF COVID-19: SOLUTIONS ON THE FORUM



MENDING A BROKEN SUPPLY CHAIN AND DEALING WITH LABOUR SHORTAGES

In April 2020, a topic was launched on the SmartAgriHubs Innovation Portal to harness the power of our network and expertise for finding solutions to agrifood problems caused by to Covid-19 pandemic. Here we give a high-level overview of the solutions provided. NB: A suggestion was given to incorporate the agrifood-related results from the EUvsCorona hackaton, similar to the SAH IP forum. These results are included in this report, as well.

MOST SOLUTIONS EVOLVE AROUND THE SUPPLY CHAIN OR LABOUR SHORTAGES

Supply chain

The Food and Agriculture Organization of the United Nations (FAO) identified that the COVID-19 pandemic crisis quickly put a strain on the food supply chains; a complex web of interactions involving farmers, agricultural inputs, processing plants, shipping, retailers and more. The hospitality sector had to, almost fully, close and is only now slowly starting up. In addition, vulnerable citizens, especially the elderly, find it unsafe to shop for the necessary supplies. The creation of a platform/ marketplace, where supply and demand can meet in alternative (digital) ways, is thus central to a large number of the mentioned solutions.

Labour shortages

Covid-19 has struck right in the middle of important harvest times. Social distancing measures and travel restrictions have caused immense labour shortages, since seasonal immigrant harvesters could not move across EU borders. The second largest group of ideas, hence, provides solutions to this problem, ranging from robotics solutions to identifying potential local labourers and connecting them to farms.

The role for SmartAgriHubs

It is hardly surprising that most solutions encompass in first instance a technological/digital application. Establishment of data-driven platforms are dominant, next to AI-based tools and matchmaking algorithms. Understandably, a promising product/ prototype does not mean it is already a widely adopted solution. The provided solutions/ideas can thus very well profit from the broader range of Innovation Services offered by our SAH network of Digital Innovation Hubs. In the overview below, a distinction is made between what is already offered by the solutions; what is explicitly requested by them; and what SAH foresees is needed to bring these promising ideas to market.

What SAH can do for the community

SAH is about connecting the dots, also in crisis times. The proposed solutions could obviously benefit from SAH's strengths. We thus encourage you to visit the SmartAgriHubs website – COVID-19 section where a specific list of the solutions is available. This information can help you identify which initiatives may be applicable in your region; find opportunities to partner; or if you already have developed or are aware of a comparable service or application and you would like to share experiences. It is a distinct chance to cultivate our network of Digital Innovation Hubs, Competence Centers, Flagship Innovation Experiments and community of SMEs, startups and other organisations.

DIH Innovation Services



Ecosystem

Community building Strategy development Ecosystem learning Representation/promotion



Technology

Strategic RDI Contract research Technical support on scale-up <u>Provision of technology infrastructure</u> <u>Testing and validation</u>



Business

Incubator/accelerator support

Access to finance Skills and education Project development Offering housing

Provided

Requested

Needed





SmartAgriHubs thanks all participants who contributed to our taskforce covid-19

APPENDIX



OVERVIEW OF EXAMPLES OF COVID-19 SOLUTIONS MENTIONED ON THE SMARTAGRIHUBS FORUM

SOURCE: SAH FORUM

Imaging COVID-19 AI

Keywords: Al; CT scans; clinical validation

> ountry FII

NEED/CHALLENGE

Analysis and quantification of abnormalities on CT images made with patients suspect of COVID-19 infection and prioritisation of individual cases to save lives. It's important for the healthcare team to have a precise measurement of the area infected by Covid.

SOLUTION PROVIDED

Al technology will be used as support for the radiologists by assisting them in the detection and prioritisation of COVID-19 infections. An online AI platform with specific 3D deep learning dicom detection algorithm will be trained to recognise the COVID-19 features in lung scans in the first phase and additionally prioritise the individual cases.

✓ Click here for more

Provide local food supply

<u>Keywords:</u> Proximity; online shop; collaboration; local food

> Country: France

NEED/CHALLENGE

1) Markets, restaurants, schools closure has led to farmers being left with no outlet & 2) Find local food for consumers

SOLUTION PROVIDED

Create online shops where consumers can buy their food from the local farmers + communication on these shops thanks to a website launched a couple of years ago ("approximate") by the DIH which already references all farmers who sell directly on their farms. This is a collaborative action that associate a DIH, 2 start-up in the field of logistic and web development and the public authorities (local and regional).

✓ Click here for more

Transparency is a Must

Keywords: Re-prioritize; traceability; transparency

> <u>Country:</u> Portugal

NEED/CHALLENGE

With COVID-19 wine businesses suffered an abrupt change and several were not prepared. The issue is the fact that the wine market relies deeply on hospitality and catering industry, tourism and international trade. Wine sales suffered a severe turnover drop which placed numerous wine companies into a vulnerable position. Consequently, this sales decline situation is affecting the existing product stocks of the wine producers, which will most probably advance into a serious decrease of the fruit price for this coming vintage.

SOLUTION PROVIDED

We can no longer depend on a single strategic route to assure wine businesses viability - such as international commerce, hospitality or tourism. Furthermore, there is a higher chance that after Covid-19 an even-more demanding consumer will emerge on the market, eager to know WHERE and HOW that product or service came from, and WHO or WHAT were the associated burdens and impacts. Therefore, blockchain technology can provide a suitable traceability solution.

Click here for more

Moving meetings online

virtual meetings

<u>ountry:</u>

AGROTAREO

labour; employment; worker; farm;

crop; characterization; features

NEED/CHALLENGE

NEED/CHALLENGE

Farmers cannot visit other farms, advisors cannot enter farms unless emergency due to COVID 19 restrictions, we cannot carry out KE effectively without face-to-face interaction so we needed to find ways to meet these gaps virtually without being present in person.

SOLUTION PROVIDED

Offering digital/virtual meetings online for farmers/advisors to connect and communicate and to carry on with KE.

✓ Click here for more

Characterization of workers features related to COVID-19 symptoms in order to decide where and how to work in the farms. In addition, linking to farmers associations (now, ASAJA) for promoting the employment in the farms. Nowadays there is a need in the farms related to employment.

SOLUTION PROVIDED

Mobile Application for managing the agricultural workers. Workers are registered by the managers. This solution offers the possibility of registering data related to COVID-19 symptoms as a worker features. In addition, this solution has a link to ASAJA (Farmers association) in order to promote employment in the farms.

- ✓ Click here for more
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- 🛪 Click here for a video

Al row weeder

row weeding; organic farming;

<u>Country</u>

NEED/CHALLENGE

Weed removal now that there are less workers available. Also makes organic food more affordable

SOLUTION PROVIDED

Al weed rower

#IOCOMPROFVG campaign

<u>Keywords:</u> supply chain; local (fresh) food; awareness;

> <u>Country</u> Italy

NEED/CHALLENGE

Mitigate lockdown-effects on local food chains

SOLUTION PROVIDED

A viral campaign inviting consumers to buy "locally" from farmers. Activating a series of small adjustments on regional administrative law we supported a quick transition of small producers from supporting professional chefs and canteens to local home delivery service





Companies and other agents of the Andalusian Knowledge System can be compiled, identified

and analysed.



Job in country

<u>Keywords:</u> Labour deficit; connection; employment

> <u>lountry:</u> Italy

NEED/CHALLENGE

In Italy there is a big problem linked to the lack of labour in agriculture.

SOLUTION PROVIDED

Coldiretti (that is the biggest farmers' organization in Italy and in SAH co-leader of the RC-Italy and Malta) created a platform named Job in Country (https://lavoro.coldiretti.it/Pagine/default.aspx 1) to help farmers find workers and workers find a job. The platform borns as private pilot activity of Coldiretti in the Veneto Region (in the North of Italy) but then the Minister of Agriculture authorized it formally and now it works for the entire Italian territory. As any employment service, farmers publish the job description and people can upload its Cv and the description of availability to work. Both can see the offers and contact the other part.

✓ Click here for more

The country helps

Keywords: Labour deficit; connection; employment

> <u>Country:</u> iermany

NEED/CHALLENGE

Due to the limited freedom of travel in Europe, farmers in Germany lack up to 300,000 workers. At the same time, many people who are employed in the catering or retail trade cannot work. Others, like students, are doomed to stay home.

SOLUTION PROVIDED

In order to bring employers (farmers, but also companies in the agro-food chain) and employees together - quickly and unbureaucratically - to talk to each other, there is the placement platform. Answers to questions related to the placement and use of farm workers are provided on the platform

https://www.ruv.de/ratgeber/unternehmen/landwirtschaft/erntehelfer

Pickle Hub

Keywords. food processing; food waste; fresh produce

> <u>Country:</u> EU (Germany-based)

NEED/CHALLENGE

A network of physical food processing labs spread across European countries. The fresh products are not wasted, but processed in an alternative way (eg dehydration) for other use. Also labor may shift from gastronomy to processing.

SOLUTION PROVIDED

A digital system that makes suggestions for processing according to available facilities and market demand in the region.

- ✓ Click here for more
- ✓ Or click here for more

FeedFarms.eu

Keywords: labour; employment; seasonal;

<u>Country</u>

NEED/CHALLENGE

The disruption in the sector can probably account for over 1 000 000 seasonal workers across the EU. In consequence, these labour shortages could have a very negative impact on the income of farms and food availability across the supply chain.

SOLUTION PROVIDED

A digital system that matches farms with seasonal workers. Also accommodation offers and career opportunities (planned).

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Transient

Keywords: (short-term) employment; volunteering; elderly;

> <u>Country</u> FU

NEED/CHALLENGE

People are losing jobs; the food supply and agriculture sectors are strained due to excessive demand and limited work force; businesses will face a sudden spike of demand as soon as market opens which will be struggling with reduced workforce; NGO's not able to find volunteers; the elderly taking risk of going to crowded place like supermarkets as they have no other option; Stringent government rules in some countries to get a short term job...makes it hard for the employers to find people on short notice.

SOLUTION PROVIDED

A quick and reliable job posting and application process using smartphone, meanwhile reducing the burden of generating contracts by automating the contract generation process

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Who hid the ethanol?

Keywords: supply chain; ethanol; framework; blockchain; transparency;

> <u>Country</u> EU

NEED/CHALLENGE

Supply chain interruptions, shortages of essential products e.g. for combating virus such as PPE

SOLUTION PROVIDED

Standard Framework – Transparent Digital Smart Logistics/Supply Chain 4.0 Platform >> fully digital and transparent supply chain for critical (COVID-19 related) products ... EU-wide framework "{...] to provide supply chain actors with tools and financial stimulus to operate with 100% transparency without causing financial or legal impacts on their customers or suppliers. The framework would require digitization of approvals and exclusion of paperwork (...) which would hugely increase productivity and facilitate commerce"

Digital CFM

Keywords: SMEs; cash-flow management digitization;

NEED/CHALLENGE

SMEs need to have better insight into cash flows and working capital. For farmers to buy raw materials

SOLUTION PROVIDED

Digital module for real-time insight into receivables, payables and cash flow, also with historic benchmark e.g. for task

ClicKoala's sustainable small business wizard tool. A digital search engine that only finds products with eco-social seals validated by sustainability experts from 25 European universities. SMEs and customers are also supported with (scientific) information and guidelines

✓ Click here for more

🛪 Click here for a video

Clickoala: ecosocial search engine

Keywords: SMEs; sustainability; digitization;

> <u>Country:</u> Spain/Global

NEED/CHALLENGE

help SMEs to achieve a sustainable digital transformation

SOLUTION PROVIDED

ClicKoala's sustainable small business wizard tool. A digital search engine that only finds products with eco-social seals validated by sustainability experts from 25 European universities. SMEs and customers are also supported with (scientific) information and guidelines

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ZikuHR

labour: iob marke

<u>Country:</u> Portugal

NEED/CHALLENG

Guarantee ways to have flexibility and speed in hiring workers that ensure, the efficiency and sustainability of companies and, on the other hand, quick access by the workers to job vacancies that can give them some income, including for seasonal work and with priority for critical sectors

SOLUTION PROVIDED

EU E-employment centre

✓ Click here for more

Focol: Food Community Local

<u>Keywords:</u>

building online community; healthy cooking; support local farmers; e-commerce; food security;

NEED/CHALLENGE

Small scale farming has been getting out of business in the past decades due to increase in urbanization, globalization of trade, and increase in farming technology and investment by bigger players. Local farmers's business risk is further brought to light during Covid-19 because of specific changes and measures implemented. At the same time, we are seeing increase in demand from consumer to consume locally and building community and culture around food. We found a gap between customer's preference to locally grown produce and supply chain of local farms that needs to be added.

SOLUTION PROVIDED

By connecting local farmers to end consumers, we hope to increase local agriculture business, reduce dependence on imported goods, increase food security, and reduce CO2 emission while re-establishing land use diversity. The solution will be in form of a platform that provides customers with:Membership Access to our Local Online Community Access to Webinars and exclusive cook-along sessions with local specialties Possibility of ordering Food Boxes with locally farmed fresh ingredients for home-cooking Access to educational content on food consumption environmental impacts.

Roho Network

<u>Keywords:</u> global network; connectior supply products; PPE

> <u>Country:</u> Global

NEED/CHALLENGE

How maximize the public health impact of limited supplies of Personal Protective Equipment (PPE), sanitation and other critical goods globally

SOLUTION PROVIDED

Traditional supply chains are broken. Roho Network creates life-saving connections between manufacturers, makers, suppliers and heroes half a mile or half a world apart. Whether you are established in your industry or are pivoting to join the fight, welcome to our global connection service.

Using AI technology and a global team of One Health specialists, Roho Network maximizes the impact of PPE distribution and paves the way for further sustainable economic development.

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MooVet

<u>Keywords:</u> surveillance; farm animals; veterinarians; disease; AI; Animal health

> <u>Country:</u> Sweden

NEED/CHALLENGE

The COVID-19 epidemic caused a lot of uncertainty in the agricultural industry. Farmers dumped milk when the restaurants closed and demand was closed. How those who care for the cows and provide food for the public without much revenue to sustain themselves?

SOLUTION PROVIDED

Al-based IoT system to offer 24 hours of non-stop surveillance to farm animals in order to avoid an outbreak of the epidemic. The MooVet application can work in different scenarios:

1) Help farmers to cope with possible shortages (including co-leading farmers' illness and shortterm worker shortages).

2) Help the veterinarian to make a diagnosis/advice quickly while maintaining social distance and ensuring income.

3) Help governments and research institutions to quickly obtain suspicious information about serious diseases (such as Mad Cow Disease) so that they can respond quickly without being affected by work from home.

Click here for more

SOLUTION PROVIDED

Our mission is to make the world of work transparent and to empower both individual users and organisations to make better, faster and more effective decisions with help of an AI assistant. With Jobliebe we want to contribute by matching the shifting demands on one hand with the corona induced surpluses in the labour market on the other hand. It will for instance help organisations fix their capacity unbalance by exchanging staff temporarily or provide unemployed people new opportunities.

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JobLiebe: keep people working

Keywords: labour, worker, job opportunities, matching skills

> <u>Country:</u> Netherland and Germany

NEED/CHALLENGE

The corona crisis is currently provoking an economic and social slump of unknown magnitude, duration and impact. As part of that: Companies and organisations are suffering since they do not have enough work for their people and/or not enough income to pay their staff; Employees are short in work or even without work, facing huge financial difficulties and support from governments are helping only partially; Freelancers are short in work and income

On the other hand there are Industries and sectors desperately in the need of additional people, resources or even specific skills or competencies. There are very obvious ones such as healthcare but there a lot of not so obvious areas or projects run by any kind of organisation. [...]

How can we bring both the demand and the surplus side together on a large scale for any sector, industry or niche to support that?

CrashCovid

Keywords: health treatment; healthcare

NEED/CHALLENGE

need to develop treatment adn therapeutic tools that are easily adaptable to each of the new types of coronavirus that pose a risk to people

SOLUTION PROVIDED

tool that 'use of recombinant viral vectors based on replicative defective SARS-CoV-2 or AAV viruses to deliver CRISPR/Cas13d therapeutic tools directly in the infected cells of a COVID-19 patient'



Commurban

Keyword

urban farming; crowd-sources DYI projects; market place (still to be developed)

Global

NEED/CHALLENGE

The COVID crisis has serious consequences such as unemployment and need for expense reduction as well as ensuring mental health of the population. One solution to these problems is urban farming

SOLUTION PROVIDED

app offering a crowd-sourced repository of DIY projects with instructions regarding urban agriculture, community gardens farming techniques, etc. as well as possibility for community projects. The solution tackles impacts on the economy (helping people grow their own food and find new job opportunities) and social depression via community projects.

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Hydroponic Farming for staying Safe, Healthy and engaged

<u>Keyword</u>

soil-less gardening; hydrophonic agriculture; food production;

Global

NEED/CHALLENGE

need to ensure supply of food and allow agriculture in small spaces, using less water

SOLUTION PROVIDED

By providing constant and readily available nutrition in a water medium, hydroponics allows plants to grow up to 50% faster than they would in soil, allows for growing produce at small spaces and grow throughout the year. Communities can exchange (buy) produce, thus encouraging local production.

✓ Click here for more

Food Hack

Keywords: organic food production; network; regenerative agriculture production;

<u>Country:</u> Spain/Global

NEED/CHALLENGE

scalable integrated platform (system) produces purified water to grow an algae-based soil amendment in photobioreactors, contributing to larger harvest with possibility to connect the system to aquaponics; the concept is enriched with an idea to develop a hub for distribution of food, learning, skills (based on the system) and job development

SOLUTION PROVIDED

"a platform that connects you [end user] with local regenerative producers and knowledge to eradicate hunger and climate crisis."



Spain and Portugal

GoKa_Runa

Keywords

matching offering and search; crisis tailored; AI enabled connection

ountry:

NEED/CHALLENGE

missing a single centralized source of information, and relevant (meaningful) match of searches and offers in times of crisis

SOLUTION PROVIDED

a listing portal, highly customized for pandemic situations with the aim to connect resource Offerers and Searchers; offers are categorized keeping pandemic related priority rules in mind and the match-making algorithm offers the best matches

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BEYOND - A Covid-19 Risk Assessment Web Platform

Keywords: multi-source data fusion; integrated risk assessment and early warning

> <u>Country:</u> Global

NEED/CHALLENG

data and models that support the enhanced decision and policymaking across the entire value-added chain

SOLUTION PROVIDED

the tool enables the participation of national authorities and public administration to provide validated information on the pandemic, allowing more fine-grained and deeper level of analysis of the pandemic at NUTS₃ and greater. It delivers daily data with up to date statistics normalized at the population level and at various scales.

✓ Click here for more

MAGGY. Social distancing made easy

Keywords: social distancing

> <u>Country</u>: Global

NEED/CHALLENGE

To re-start economic and social activities safely, we will all at least need to respect social distancing for some time to come. According to the World Health Organisation, social distancing is the most effective way to slow down the spreading of infectious diseases. When restarting or rescaling their activities, organisations will need to install procedures and protocols to safely welcome employees and clients.

SOLUTION PROVIDED

How do we make sure social distancing is respected? How can companies, industrial sites, shops, museums, schools, public places, events... show their employees, clients and visitors that they take all precautions to provide a safe visit? This wearable Maggy device solves this issue, by warning the carrier of the device when he or she is moving too close to someone else. The Maggy-device is a social distancing safeguarding device.

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Hypanel. Air-purifying solution to reopen Europe's restaurants

Keywords: increasing restaurants capacity ; sterilized and clean air;

> <u>Country:</u> Global

NEED/CHALLENGE

Currently, in many countries, most restaurants, bars and cafes are closed to comply with national restrictions to prevent the spread of Covid-19. To comply with the social distancing requirements, restaurants would have to remove tables and thus decrease their revenues by 38-65 %.

SOLUTION PROVIDED

This solution will allow restaurants to replace the social distancing requirements by leasing or selling air purifying Hypanels. Instead of reducing to 38-65% capacity, restaurants will be able to operate at 90-100% capacity compared to their pre-crisis situation.

Click here for a video

iERP.ai sales forescasting with Corona

Keywords: sales forecast; businesses prediction;

> <u>Country:</u> Global

NEED/CHALLENGE

The spread of covid-19 completely changed the business environment. Some sectors like travel, hospitality, and event sectors completely stopped and other sectors like agriculture, online retail, and food industries become overwhelmed.

SOLUTION PROVIDED

In order to help struggling business owners, during hackathon started to create inventory demand and sales forecasting algorithm which will take covid-19 data into consideration. This predictive algorithm will forecast sales of products with covid-19 daily updated health data as well as risk scores calculated based on government regulations in place for each country.

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WeStayLiquid/Liquinow

Keywords: financial programs; financial aid

> Country: FII

NEED/CHALLENGE

Coronavirus Pandemic has massive economic consequences on European's SMEs and Freelancers. They are most likely to go bankrupt in the upcoming months. To limit that risk of bankruptcy in the Eurozone, EU-Institutions and Member States have promptly provided financial aid and assistance measures. Yet, Freelancers and SMEs are facing a bureaucratic jungle to access them: it's terribly time-consuming and complex to find the relevant financial aid. They get lost easily.

SOLUTION PROVIDED

Users of LiquiNow reduce their application process to financial aid from 6 hours to 20 minutes. Thanks to the guidance provided and making the completion of application forms more accessible and less bureaucratic.

✓ Click here for more

Nanocapsules against Covid19

<u>Keywords:</u> respiratory symptoms;

<u>Country:</u> Global

NEED/CHALLENGE

Respiratory complications of Covid-19 are causing most deaths worldwide.

SOLUTION PROVIDED

The aim of this study is to evaluate the effect of the oral administration of resveratrol-loaded nanoparticles in patients with lung injuries (fibrosis, pneumonia...) and complications on pulmonary function.

The formulation is a reconstituting powder for oral administration. Therefore, the administration of the formulation do not require to be done at the hospital setting. In this sense, the study can be orientated to either hospitalized patients or non-hospitalized patients (e.g. patients isolated at home, in nursing home care or retirement home). A natural and safe therapy to combat the virus.

Foodopt

Keywords: local farmers market; shortening value chain; fresh produce;

> ountry FII

NEED/CHALLENGE

The Covid-19 crisis has surfaced a great dilemma between Economy v. Humanity. But we at Foodopt believe that this is an opportunity for us to have the economy and humanity go hand in hand. With this underlying thought we wish to promote 'Conscious Consumerism' towards the consumers and help them feel 'normal' as we fight through the pandemic. For the small organic farmers, we believe these efforts will help sustain the wealth and jobs generation in rural areas.

SOLUTION PROVIDED

Foodopt is a platform for consumers to adopt and buy fresh organic produce from local farmers that gets delivered at their doorstep.

The platform offers two options Direct Buying and Adoption (of a part of farmer's farm). With Direct Buying you can choose the produce that you want, from a list of farmer in your vicinity. With Adoption you can choose to adopt a tree, an animal, a beehive or a part of garden. The farmer will grow the produce, and upon completion a basket of fresh produce, straight from your adoptee, will be delivered at your door.

Present on the website is, also, a blog, 'The Experience Farm', that serves as a place for connecting with a farmer's life on farms, through photographs, livestream videos and interactive videos.



