Interreg North-West Europe REAMIT

European Regional Development Fund

Potential for REAMIT use cases and expected results and benefits

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By

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Overview

Potential use case and expected results from	German pilot
	Dutch pilot
	UK pilot 1
Linking REAMIT to climate change	
REAMIT benefits	

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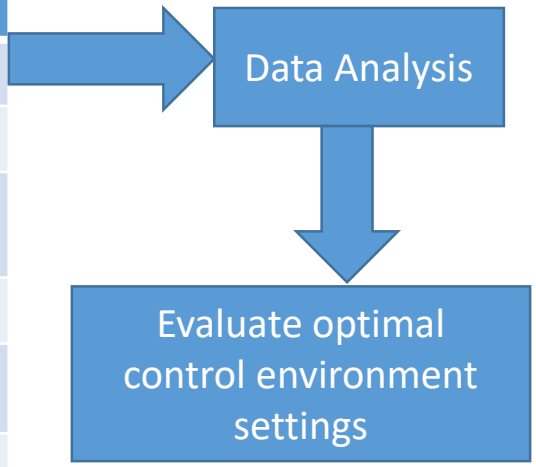
German Use Case

- Inspired from German pilot
- Aims to capture sensor data, weather data, identify discrepancy points, suggest process changes/corrective action

Grower → *Warehouse* → *Supermarket*

Sensor data	Weather Data
CO2 level	Apparent Temperature, Cloud average
Humidity, Temperature	Dew point, Humidity
Light intensity	Ozone, Precipitation, Precipitation probability
Pressure	Temperature, Pressure
VOC (Volatile organic compound) level	uvIndex, Visibility
Battery voltage	Wind direction, Wind gust, Wind speed,



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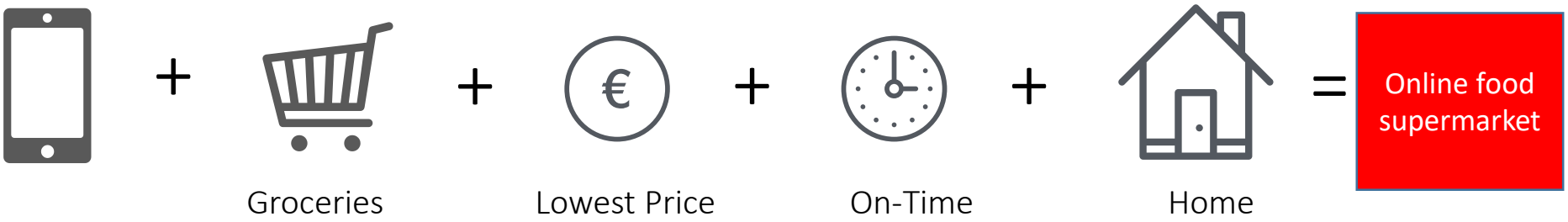
Dutch Use Case

- Inspired from Dutch pilot
- Aims to capture sensor data and routing data



Sensor data	Other Data
Temperature	Routing data without revealing customer addresses
Humidity	
Battery voltage	
Acceleration X, Y, Z	
Motion Acceleration	

Recommendations

- Suggest customised temperature profiles for each crate to maintain food quality by analysing sensor and final food quality data.
- Map customer complaints with vehicle motion data and routing profiles to identify points of improper food handling

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UK pilot 1

- Inspired from WD Meats – Dry aging pilot
- Aims to capture sensor data from dry aging chamber

Sensor data	Other Data
Temperature	Weight Measurements
Humidity	Quality measurements (either by bacterial swabbing or fresh detect device)

Recommendations

- Quality detection for meat samples
- Weight loss prediction, if any of dry aging meat in different locations of the dry-aging chambers. Consequent fan positioning/additional cooling/exhaust fan installation points for achieving uniform temperature/humidity gradients

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Measurement of impact on environment

- Inspired from WD Meats – Dry aging pilot
- Aims to capture sensor data from dry aging chamber

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Linking REAMIT Results to Climate Change

- Change in life cycle emissions from different waste management options

Route for management or disposal	Emissions incurred (+) or avoided (-) CO2 equivalent emissions per tonne of food waste	Place in waste hierarchy
Redistribute to people from manufacture / retail	-3090 kg	Prevention
Redistribute to animals from manufacture	-220 kg	Prevention / Recovery
Anaerobic Digestion (AD)	-162 kg	Recovery
Incineration (with energy recovery)	-89 kg	Recovery
Composting	-39 kg	Recovery
Land spreading	-39 kg	Recovery
Incineration (without energy recovery)	0 kg6	Disposal
Landfill	+536 kg	Disposal

Source: Parry, A., James, K. and LeRoux, S. (2015), *Strategies to achieve economic and environmental gains by reducing food waste*, Waste & Resources Action Programme (WRAP), ISBN: 978-1-84405-473-2. Available online: https://www.wrap.org.uk/sites/files/wrap/WRAP-NCE_Economic-environmental-gains-food-waste.pdf, accessed on 26Sep18..

REAMIT Measurement Framework

- Amount of equivalent CO2 emissions avoided are not uniform across all food types

Product	CF per kg bone-free meat [kg CO2e]
Beef	29
Beef-EU	29
Beef-South America	41
Pork	6
Pork-imported	6.5
Chicken	2.8
Chicken-imported	3.7
Turkey	3.6
Lamb	21
Lamb-imported	17
Game	0.5

Product	CF per kg product [kg CO2e]
Eggs	1.5
Milk, whole	1.1
Milk, semi-skimmed	1
Milk, skimmed	0.9
Cream	5.2
Cream, low fat	2.5
Yoghurt	1.2
Yoghurt, low fat	1.0
Crème fraiche	4.8
Crème fraiche, low fat	2.7
Cottage cheese	3.1

(CF = Carbon Footprint)

Product	Country of origin	CF cradle to farm gate [kg CO2e]
Apple	Sweden	0.13
Apple	Other countries	0.13
Banana	Costa Rica	0.14
Carrot	Sweden	0.08
Cucumber	Sweden	1.05
Cucumber	Spain	0.25
Eggplant	Spain	0.25
Eggplant	Netherlands	2
Garden radish	Netherlands	2
Herbs	Sweden	1.05
Lettuce	Sweden, greenhouse	1.05
Lettuce	Sweden, open field	0.14
Lettuce	Spain	0.26
Melon	Spain, greenhouse	1
Melon	Brazil	0.3
Melon (watermelon)	Other countries, open field	0.3
Orange	Spain	0.25
Orange	Other countries	0.25
Other citrus fruit	all	0.25
Pepper	Spain	0.48
Pepper	Netherlands	3.5
Potato	Sweden	0.12
Tomato	Netherlands	2
Tomato	Morocco	0.25
Tomato	Spain	0.25
Tomato	Sweden	0.66
Other vegetables	All, open field	0.2
Other fruit	All	0.2

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Some rough estimates of avoided Carbon emissions from REAMIT Technologies

Companies from across agri-business supply chains

- We estimate that each technology demonstration will save up to £100,000 for the company (equivalent in carbon emissions).
  - Online food supermarket – The NL (Medium)
  - Fresh food (ready to eat/frozen) producer company – France (High)
  - Beef producer company (WD Meats) – UK (High)
  - Online food distributor company – Germany (Medium)
  - Fresh vegetable producer company – Ireland (Low)
- More companies are expected join the consortium in the next few months which will inspire further case studies.

Benefits to end-users

Benefits for companies in agri-food supply chains participating in REAMIT technology demonstrations

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FINGERPRINT

Establish food 'fingerprint' as enabling decision making on redirecting food to the nearest consumer

SAVE MONEY & TIME

REAMIT technology testing will maximize value & is cost free, delivered entirely by REAMIT's expert team

MONITORING

Monitor quality of food instantly, contactless and when food is on-the-go

Participation in REAMIT allows food producers & transporters to:

IMPROVE REVENUE

Decision support on how best to sell food & maximize revenue while reducing waste

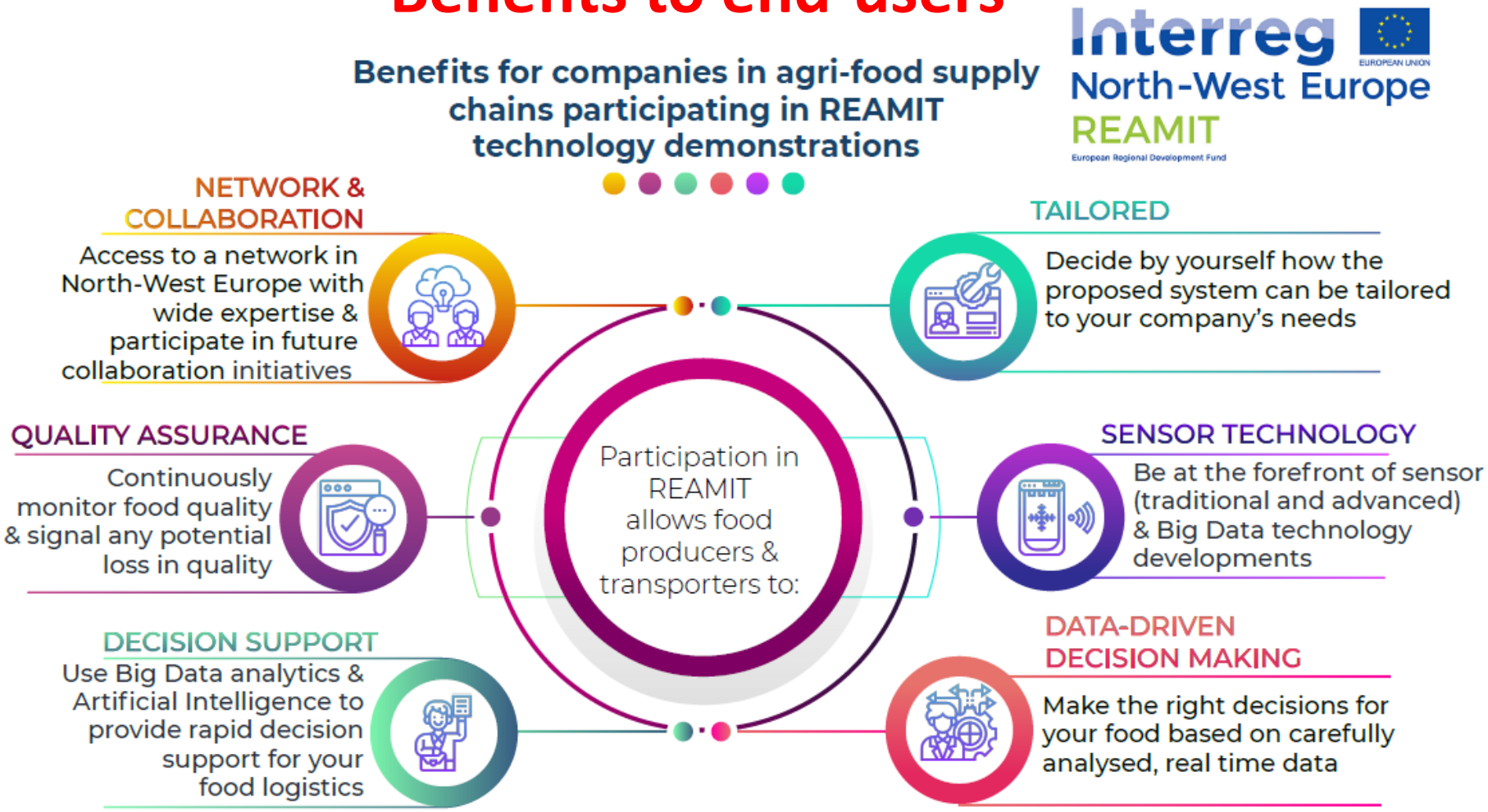
CONNECTING

Connecting the food supply chain through a dedicated smartphone app

CARBON FOOTPRINT

Decrease your company's carbon footprint: enhance 'green image' by using natural resources responsibly

Benefits to end-users



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Thank you!