SWG AKIS

What's keeping the Dutch busy on digitisation knowledge for agriculture?

Overview and research by Wageningen UR

Bonn Meeting: 30-31 May 2017

ANNEMIEK CANJELS, FLOOR GEERLING-EIFF, MARTIJN PLANTINGA

Ambitions in the Netherlands

- Ministry of Economic Affairs (MEA):

  - the transition of the agricultural sector towards a sustainable, robust, climate smart, healthy, nature inclusive and economic viable sector

- Digitisation of the sector as an important accelerator to reach these goals:

  - 'smart farming' (or precision farming) based on data-driven smart decision making, robotics/mechanisation and ICT-solutions

Initiatives in the Netherlands by MEA

New impulses for SMART farming:

- Analyses State of Play Smart farming in NL:

  - reflect on Smart farming as an Innovation System and identifies changes and obstacles for an acceleration of adoption and upscaling smart farming practices in daily operations at farm level

- National Fieldlab Precision Farming (NPPL) - as a response to recommendations of the analyses,

  - to promote the uptake of smart farming methods

  - to strengthen the collaboration among local and regional smart farming initiatives

  - to offer additional services and advice for maturing smart farming practices in daily circumstances, at farm level

- AgriDatacube (part of NPPL):

  - an open / big data ICT playground for agri data-analyses by agricultural entrepreneurs and start-ups, experimenting with public and private data

Initiatives in the Netherlands by MEA

New impulses for SMART farming:

- National Satellite Portal (NSP):

  - a portfolio of open satellite data to observe crop growth and field conditions

- National Soil & Models Database:

  - information on real world measurements of structure and composition of soil, groundwater levels and geomorphological descriptions

- Blockchain Agri Pilot:

  - a technique to register transactions in agri-food chains, in a secure and immutable way on the internet through smart contracts

- ICT AGRI-2 (3):

  - MEA supports the EraNet Initative ICT AGRI-2 and 3, with a budget of 750.000 € in 2017

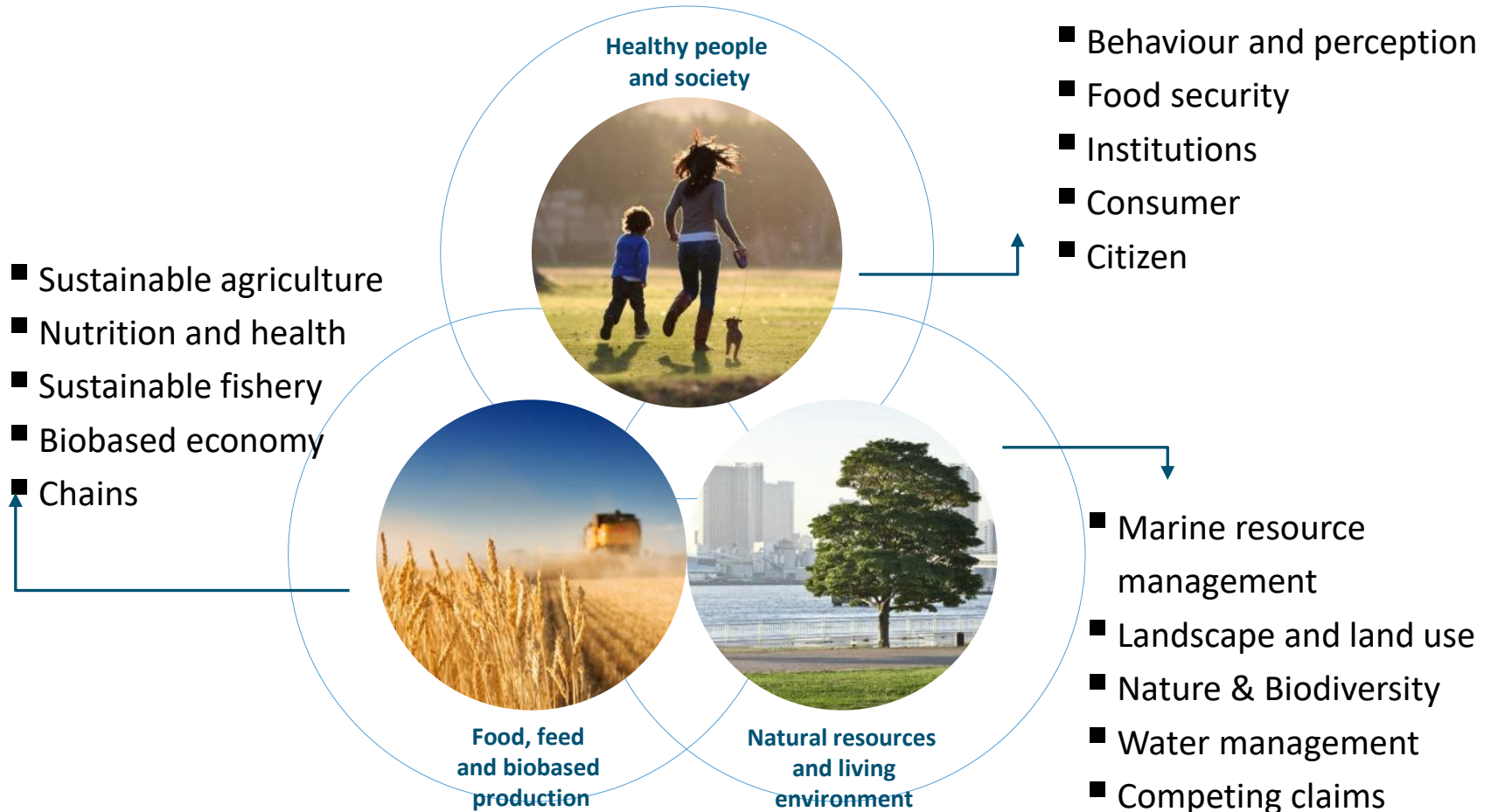# Global challenges

Climate change

Food security

Biodiversity

Agro-food system

Health and nutrition

Biobased Economy

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The WUR domain: healthy food and living environment

Healthy people and society

Food, feed and biobased production

Natural resources and living environment

- Sustainable agriculture
- Nutrition and health
- Sustainable fishery
- Biobased economy
- Chains

- Behaviour and perception
- Food security
- Institutions
- Consumer
- Citizen

- Marine resource management
- Landscape and land use
- Nature & Biodiversity
- Water management
- Competing claims

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Call	Project	Type	Duration	Budget ME
Wageningen Applied Research				
FP7	MODAP	CSA	2009-2013	1,1
FP7	SmartAgriFood	CP	2011-2013	7,4
FP7	E-AGRI	CP	2011-2013	2,3
FP7	FoodMicroSystems	CSA	2011-2013	1,1
FP7	**FIspace**	**CP**	**2013-2014**	**20,1**
FP7	FOODSNIFFER	CP	2012-2015	4,0
FP7	SemaGrow	CP	2012-2015	3,1
FP7	FInish	CP-CSA	2014-2016	6,4
FP7	SmartAgriFood2	CP-CSA	2014-2016	5,1
FP7	FRACTALS	CP-CSA	2014-2016	7,3
FP7	C-IPM	CSA	2014-2017	2,7
FP7	HI-LED	CP	2014-2017	4,7
FP7	ICT-AGRI 2	CSA	2014-2018	2,4
H2020	SWEEPER	IA	2015-2017	4,5
H2020	AUDITOR	IA	2016-2018	1,2
H2020	EMPHASIS	RIA	2015-2019	6,6
H2020	TrimBot2020	RIA	2016-2019	6,4
H2020	SIM4NEXUS	RIA	2016-2020	7,9
H2020	PhasmaFOOD	RIA	2017-2020	3,1
H2020	G2P-SOL	RIA	2016-2021	6,9
H2020	FoodSmartphone	MSCA-ITN-ETN	2017-2021	2,8
H2020	**IoF2020**	**IA**	**2017-2021**	**34,8**
H2020	ACTTiVAte	IA	2016-....	5,1
H2020	AGINFRA PLUS	RIA	2017-....	2,8

Call	Project	Type	Duration	Budget ME
Wageningen University				
FP7	eFlux	CP	2009-2011	3,1
FP7	UncertWeb	CP	2010-2012	3,7
FP7	MODAP	CSA	2010-2013	1,1
FP7	eCUTE	CP	2010-2013	3,3
FP7	SmartAgriFood	CP	2011-2013	7,4
FP7	E-TRACK	CP	2012-2013	0,7
FP7	**ECHORD**	**CP**	**2009-2014**	**25,8**
FP7	FoodMicroSystems	CSA	2012-2014	1,1
FP7	NutriTech	CP	2012-2015	7,8
FP7	**FIspace**	**CP**	**2013-2015**	**20,1**
FP7	BIOFOS	CP	2013-2016	3,7
FP7	SPLENDID	CP	2013-2016	3,6
FP7	**ECHORD Plus Plus**	**CP**	**2013-2018**	**25,8**
CIP	PhysioDom-HDIM	CIP-ICT-PSP-P	2014-2018	5,0
H2020	TrimBot2020	RIA	2016-2019	6,4
H2020	IoF2020	IA	Con. to WR	C t WR

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Additionally (to be added to the WR-list):

- DISH-RI & Richfields (FP7): EU design studies for citizen science in food, lifestyle and health for a research infrastructure based on consumers donating data from their apps

- VALERIE (FP7): VALorising European Research for Innovation in agriculturE and forestry; WUR coordinates

- E-Rosa (H2020): roadmapping the development of E-infrastructures for agro-environmental research

- NextGeoss (H2020): big data analysis on remote sensing data for various applications, including agro

- EFFIDRIP (H2020): building smart irrigation systems

- EU-PLF (H2020): value creation through precision livestock farming

- Data Driven Dairy Decisions 4 Farmers (H2020): to inform and involve dairy farmers in the use of sensors

Some other EU (related) projects/networks - WUR:

- EIP-Focusgroup on 'Mainstreaming Precision Farming'

- Animal Task Force on precision farming

- ERANET ICT AGRI 2.0

- Optimove (ERANET ICT-AGRI): optimisation of paths planning and routing on agricultural fields

- BioBusiness (Marie-Curie ITN): development of a prototype to score locomotion of dairy cows by using camera technology

- Spectors (Interreg): drone applications for agriculture and biodiversty

- PAT-GHG (EC-JRC): contribution of precision agriculture to (reduction of) agro GHG emissions

- MARS-OP (EC-JRC): operational services for yield forecasting

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(1) Examples of national projects: WUR – most of them PPPs

- LGN – land use database of NL:
  - national mapping of land cover based on satellite imagery and additional data
- Farm Digital:
  - a data platform to make compliance for food safety easy
- Horticulture Digital:
  - links firms with chain data, open data and big data
- Data-FAIR:
  - invites farmers and others to share data for new services with explicit attention to data governance, business models
- Blockchain:
  - application of blockchain technology, precision agriculture and satelite data for sustainable value chains
- BIGTU:
  - stimulating big data in horticulture through enhancing easier access
- Fruit 4.0:
  - Facilitates the use of multiple data for farmers to enhance fruit production

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(2) Examples of national projects: WUR – most of them PPPs

- Big Data Governance:
    - to accelerate the development of Big Data applications, guidelines for governance of data sharing in agri-food networks
- Smart Dairy Farming:
    - developing a cooperation for a data hub
- Big data voor Smart Farming:
    - explorational study
- Precision agriculture 2.0:
    - to enhance the application in divers agri sectors
- Grazing Space:
    - exploring the use of satelite data for dairy farming
- Smart Tools for vital pigs
- Green monitor:
    - processing satellite data for tracking nature in NL
- AgroDatacube:
    - big data collection based on open data for agricultural parcels in NL

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(3) Examples of national projects: WUR – most of them PPPs

- Soil passport:
    - registration and monitoring tool on chemical and physical soil conditions
- Data Quality Centre:
    - expert centre for data quality assessment of big and open data
- Wageningen UR Unmanned Aerial Remote Sensing Facility (UARSF):
    - drones and drone-borne cameras' research facility for precision agriculture
- CoolData:
    - big data technology to ensure optimal product quality and availability in a sustainable and cost efficient manner, in the food supply chain

International projects - WUR:

- AgMIP: a visualization platform for climate change impacts on small holder farmers in Sub Saharan Africa
- CommonSense: remote sensing services for smallholder farmers in Ethiopia
- Geobis: remote sensing services for smallholder farmers in Bangladesh

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Vision Wageningen Economic Research
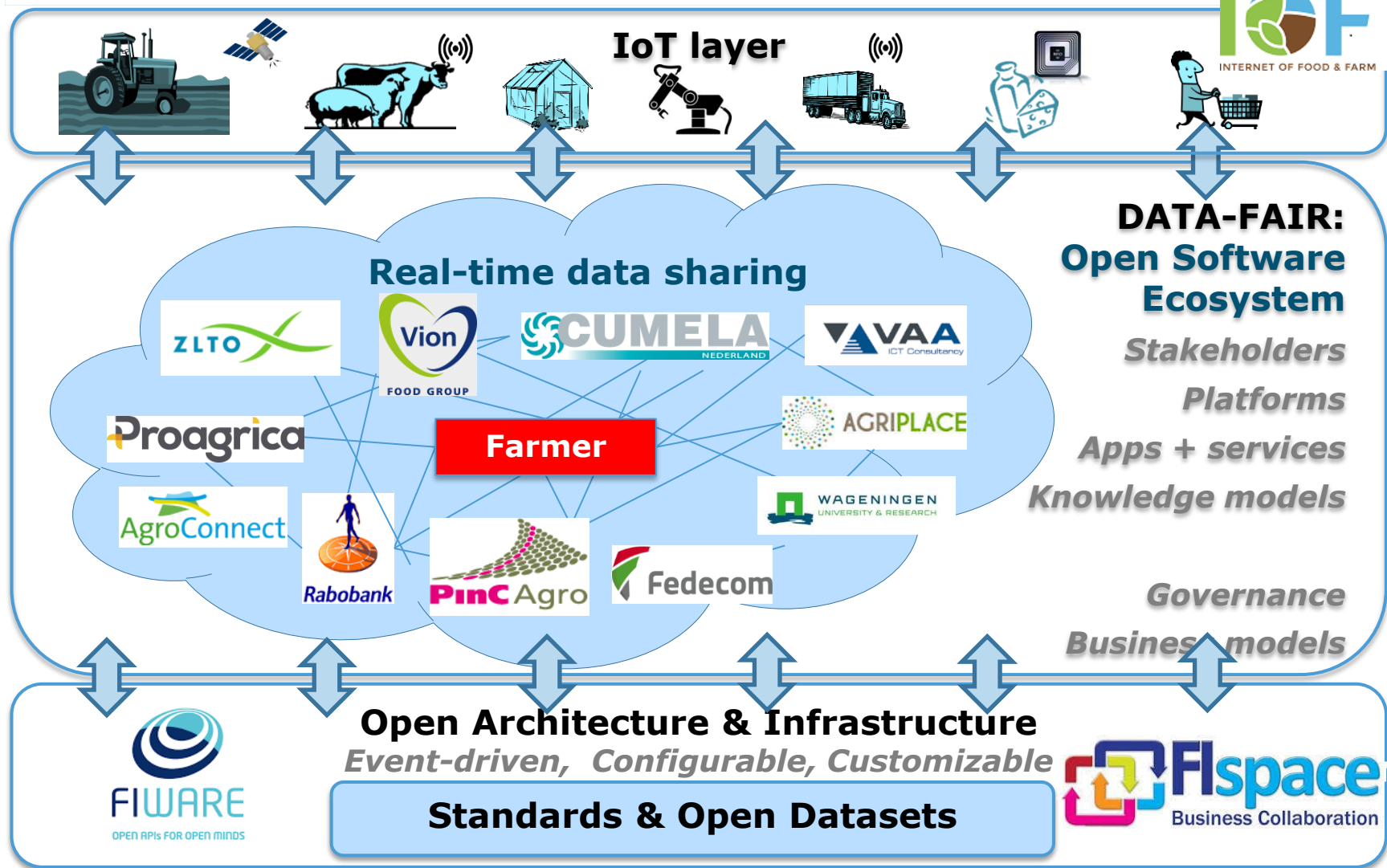
Our generic project approach and structure
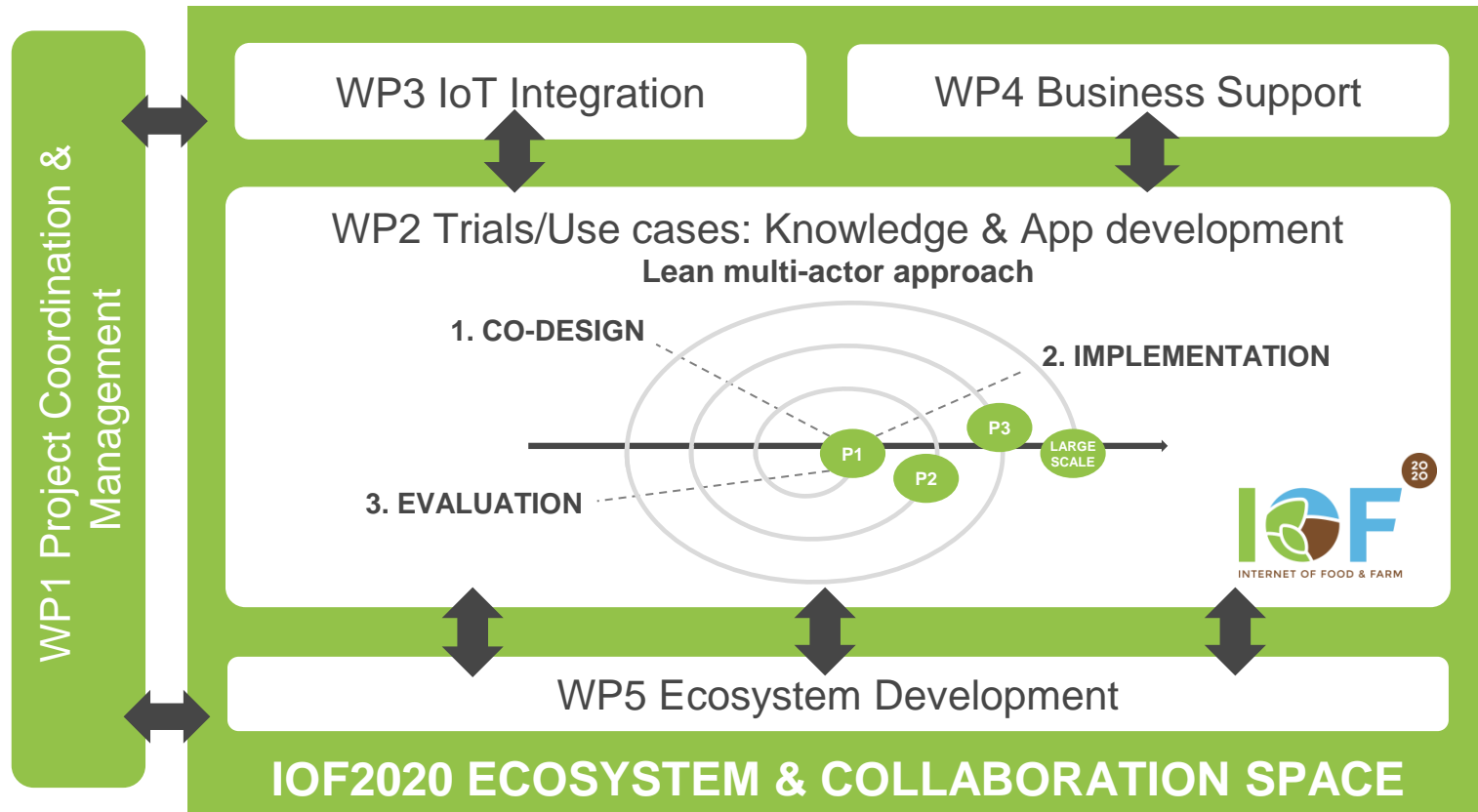
We are looking
forward to
working
with you!

Ambitions in the Netherlands – regional level

- **Dutch Regions:**
  - Transition of the agricultural sector towards a sustainable supplier of food, and more: health, well-being, energy, biobased materials, high tech grow systems, substances and grow / breed management
  - Transition of the agricultural sector into cross-connected party in e number of product chains
  - Transition of the agricultural entrepreneurs from expert single producers into expert supply managing cooperatives

- Digitisation of the sector as big accelerator to reach these goals:
  - 'smart farming' (or precision farming) based on data-driven smart decision making, robotics/mechanisation and ICT-solutions
  - A SMART food chain an food system

Ambitions in the Netherlands – regional level

- Dutch Regions:
  - Dutch regions (provinces) have determined four S3 Strategies – S/E/W/N
  - Projects are financed with EFRD and cofinanced by the regions, MS and initiating companies and knowledge institutions
  - Dutch regions participate in the national "Top Sector Policy"
  - Key is to create cross-over business models

Research & Innovation Strategy for SMART Specialization South NL

1. High Tech Systems & Materials (with application to fields health, life sciences, energy, agrofood)

2. AgroFood (incl. Agritech, Horticulture, Seeds, Feed, Agrobiotech)

3. Chemistry (incl. New and Bio-Materials)

4. Logistics - Life Sciences & Health – Biobased - ICT

RIS-3

S3 – The Art of Connecting

- Smart High Tech Systems
- Smart Biobased
- Smart Materials
- Smart Food
- Smart Logistics
- Smart Technology

Initiative example approach Limburg - Brightlands

What?

Four campuses,
four areas of expertise

Brightlands Chemelot Campus
Smart materials and sustainable
production of chemicals

- 77
- 1.900
- 660
- 216.000 m^2

Brightlands Campus Greenport Venlo
Food and healthy nutrition

- 17
- 300
- 830
- 170.000 m^2

Brightlands Smart Services Campus
Data science and smart servicess

- 40
- 350
- 100
- 21.000 m^2

Brightlands Maastricht Health Campus
Regenerative and precision medicine,
innovative diagnostics

- 73
- 9.174
- 6.608
- 720.000 m^2

Brightlands

Brightlands Campus Greenport Venlo & Agri - digitisation

- Food production

- Research, shared facilities field labs,

- High Tech grow systems – sensoring – climate control – seed & propagation material development

- Trade

- Reefer technology

- JIT agri-logistics & ditribution

- Food Safety

- Import – Export documents

- Customer intel

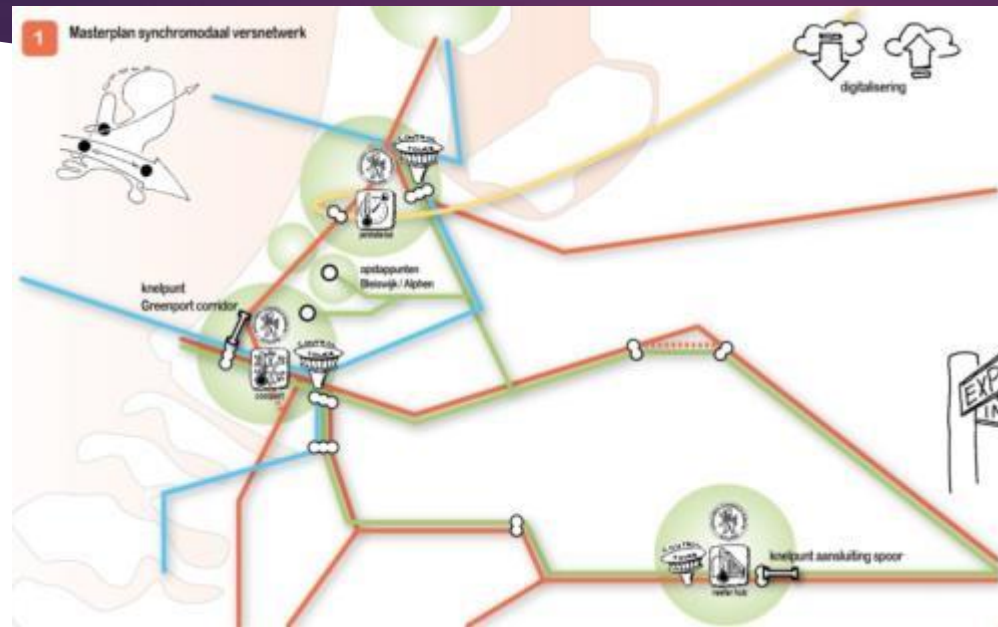Smart Food Farming Expo

Jun 28-29 , 2017
Villa Flora, Venlo
The Netherlands

www.smartfoodfarmingexpo.com

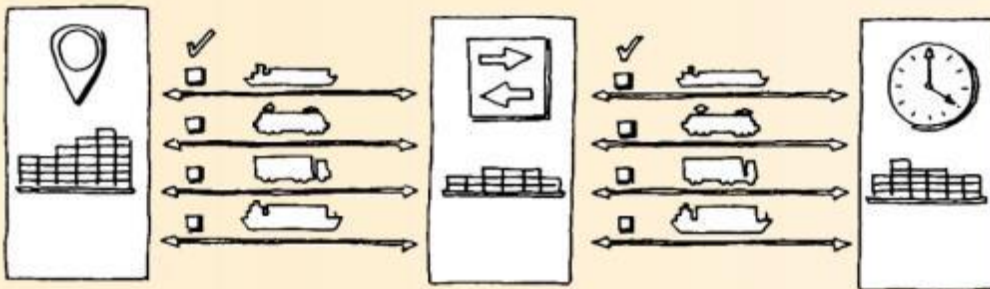# Synchromodal Fresh Logistics

Synchromodal Transportation

Mainport Rotterdam
Mainport Amsterdam
Greenports

Digitalization transportation of fresh products

Data Reefer transport
Customs Import – Export
Services
Food Safety data

Brightlands Smart Services Campus

- Dutch Institute for Data & Statistics CBS
- Dutch Tax Agency
- BISS Brightlands Institute for Smart Services

BISS

- Data-ecosystems
- Data-analysis
- Decision making & Impact

Initiative example approach Limburg - Brightlands

▶ Partner in S3 Platform Agri & Food

▶ S3 Consortium High Tech Farming

▶ S3 Consortium SMARTFOOD – Traceability & Big Data in Agriculture (Andalucia)

EIP-AGRI WORKSHOP DATA SHARING
ENSURING FAIR SHARING OF DIGITISATION BENEFITS IN AGRICULTURE
4-5 APRIL 2017 - BRATISLAVA, SLOVAKIA

eip-agri
AGRICULTURE & INNOVATION

funded by European Commission

Issues investment capacity & coverage

- ► Cohesion fund EFRD and INTERREG
- ► National funding "topsectors" and Precison Farming
- ► European Innovation Partnership AGRI – EAFRD
- ► Brightlands investment programme Limburg
- ► Agriculture investment programme Limburg
- ► Regional Investment Bank LIOF