NIVA

NEW IACS VISION IN ACTION

Digital Innovations in IACS systems and their relevance for monitoring and evaluation

Sander Janssen (WR, coordinator) with contributions from many

Presentation for European Evaluation Helpdesk, March 2021

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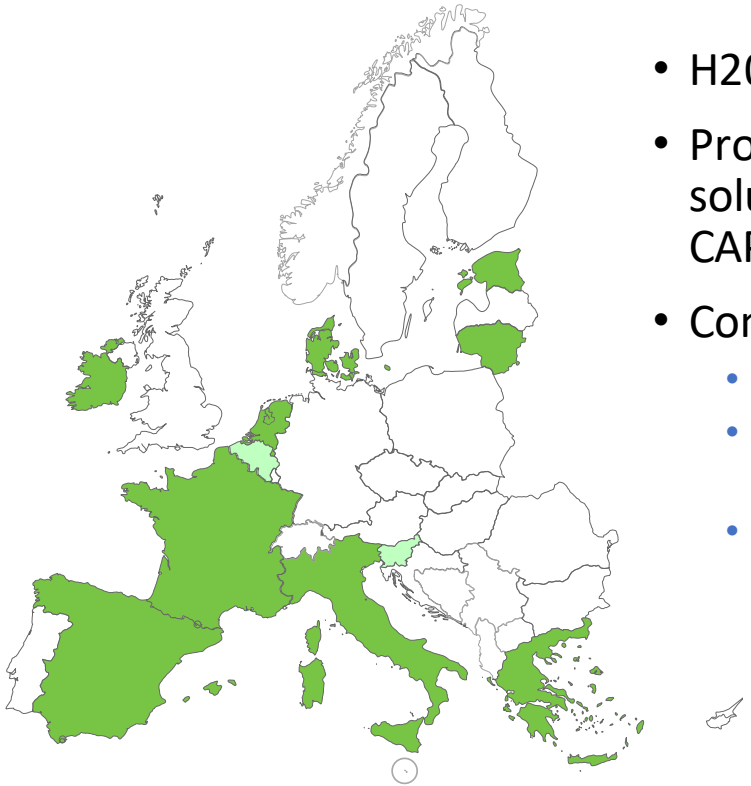
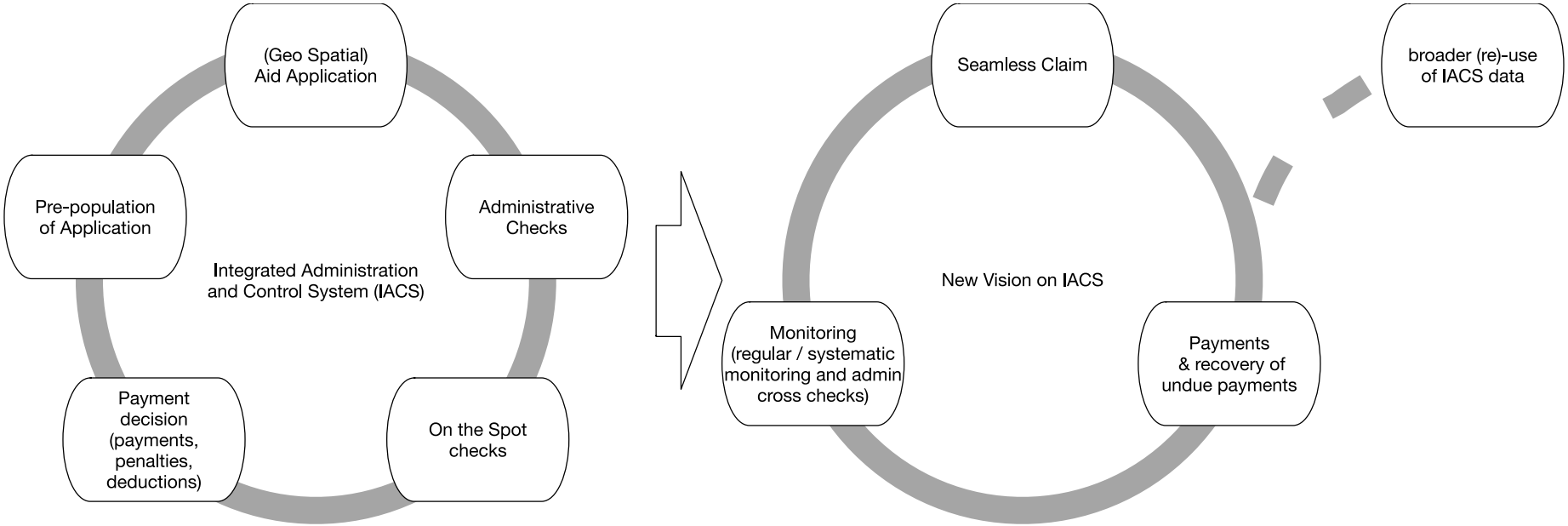
NEW IACS VISION in ACTION - NIVA



- H2020 Innovation Action
- Proposal in response to call: Digital solutions and e-tools to modernise the CAP
- Consortium
  - lead = WUR
  - 9 paying agencies (NL-DK-SP-IT-FR-GR-EE-LT-IR)
  - technical partners, total 27 partners

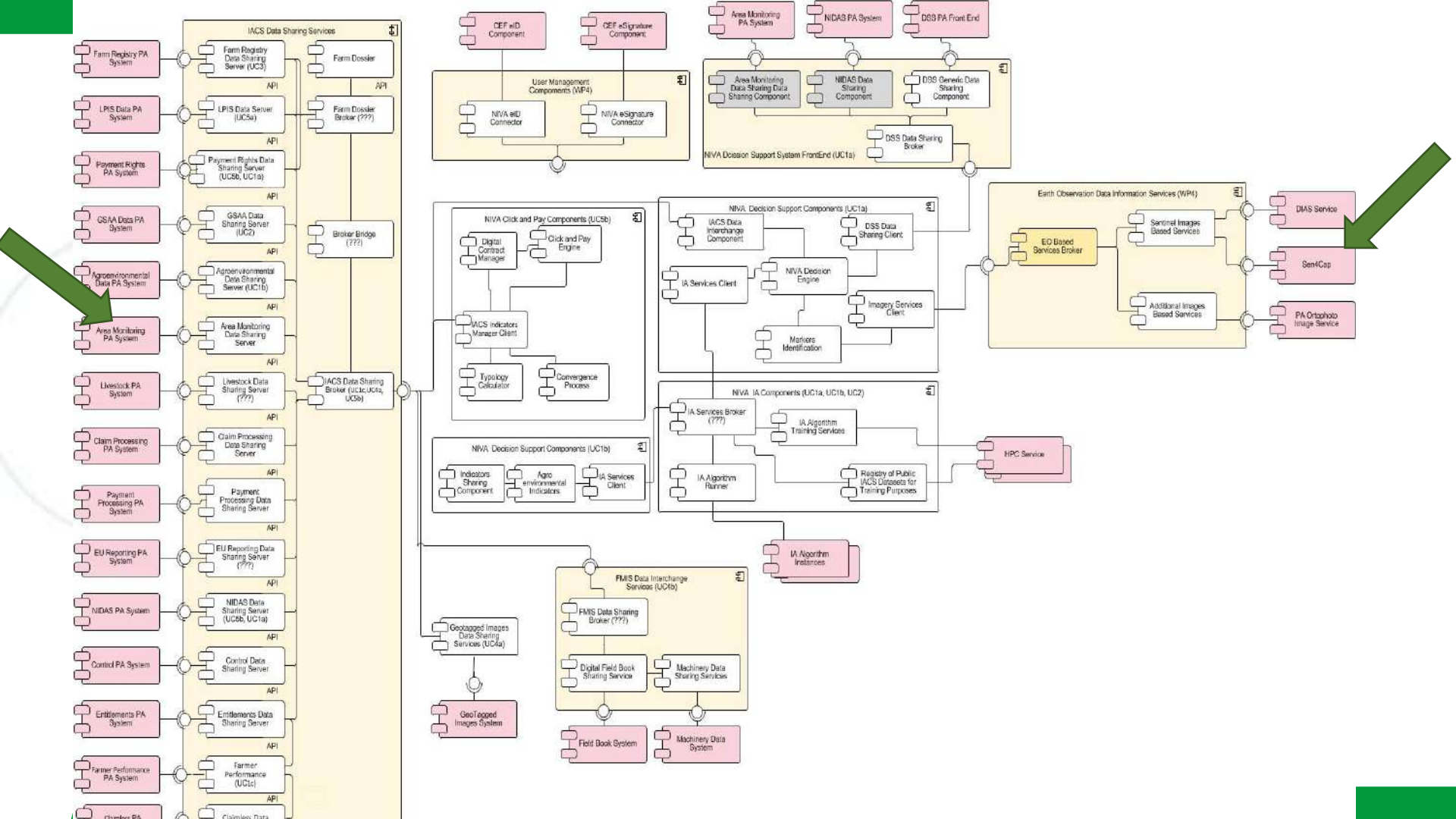
Transition in NIVA



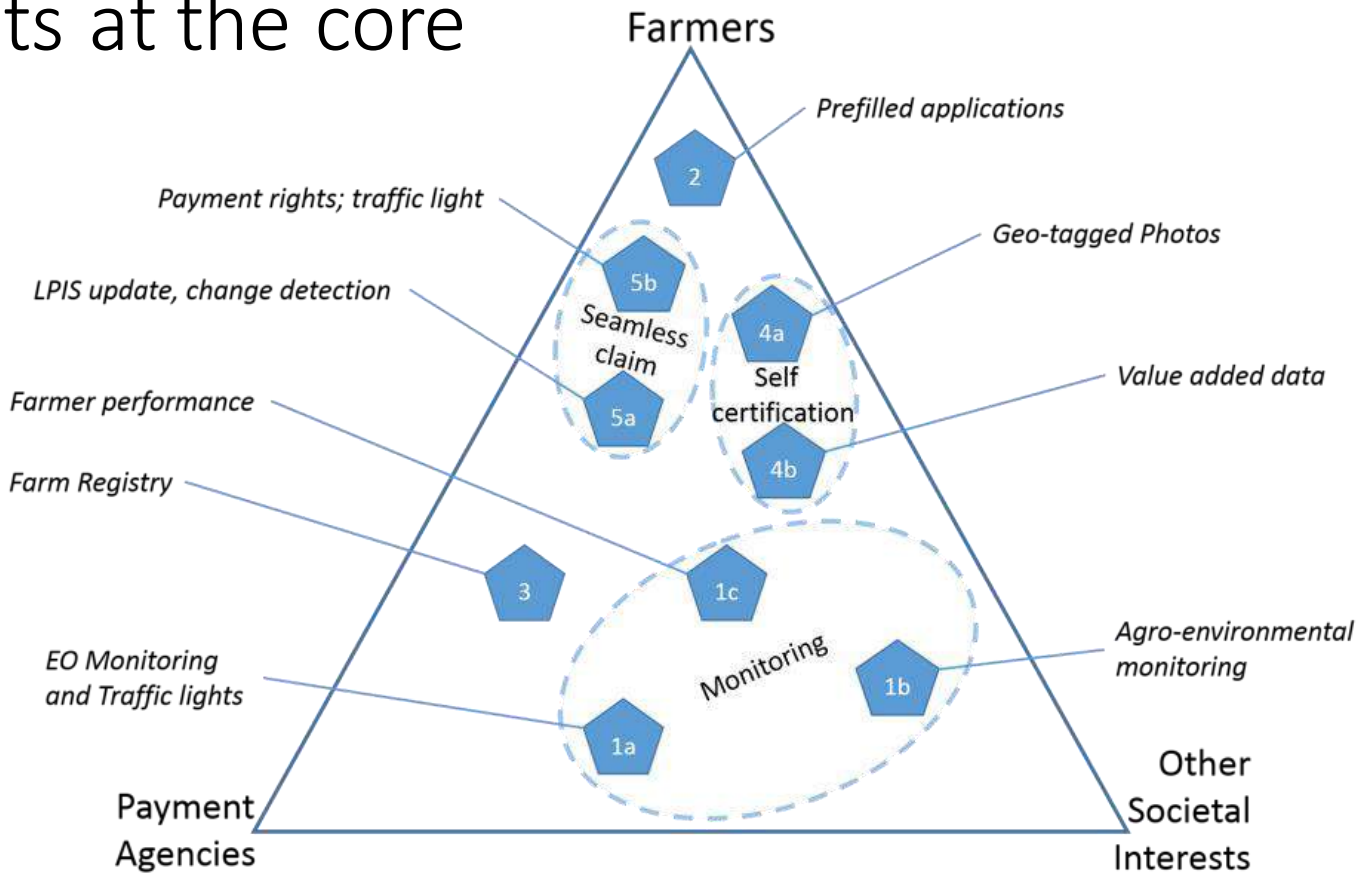
Progress on NIVA main challenges

Challenge	M0-baseline situation	M18 NIVA achievements
Absorbing innovations to simplify the governance	• Innovations implemented separately in the 41 different IACS systems in Europe • only 2 to 3 open source solutions covering small parts of IACS systems	• More than 30 components have been developed and are being tested in cross-boundary collaboration • Working modes to learn from each other in an active way, and start relying on developments implemented in different PA systems. • Methodologies for Multi-Actor development and innovation deployment in IACS specified
Reducing socio-economic and administrative burden to farmers	• Digital innovations offer potential to reduce the burdens to farmers and PA's, • Digital innovation being tested in some research projects	• Different aspects of implementing digital solutions have been aligned through an 'As-is' analysis • Wider adoption of research products in innovations and field testing ongoing • Pilots being tested specifically focused on lowering administrative burden through technology
Reducing the gap between IACS data use and potential broader uses	• IACS derived data are shared in some member states on an 'As-is' basis • lack of standardization across claim years and common lists of relevant attributes (e.g. parcels, crops, vegetation types)	• Operational testing of IACS data use in pilots for other purposes ; • Standardization issues in IACS highlighted and recommendations provided in a stakeholder oriented way

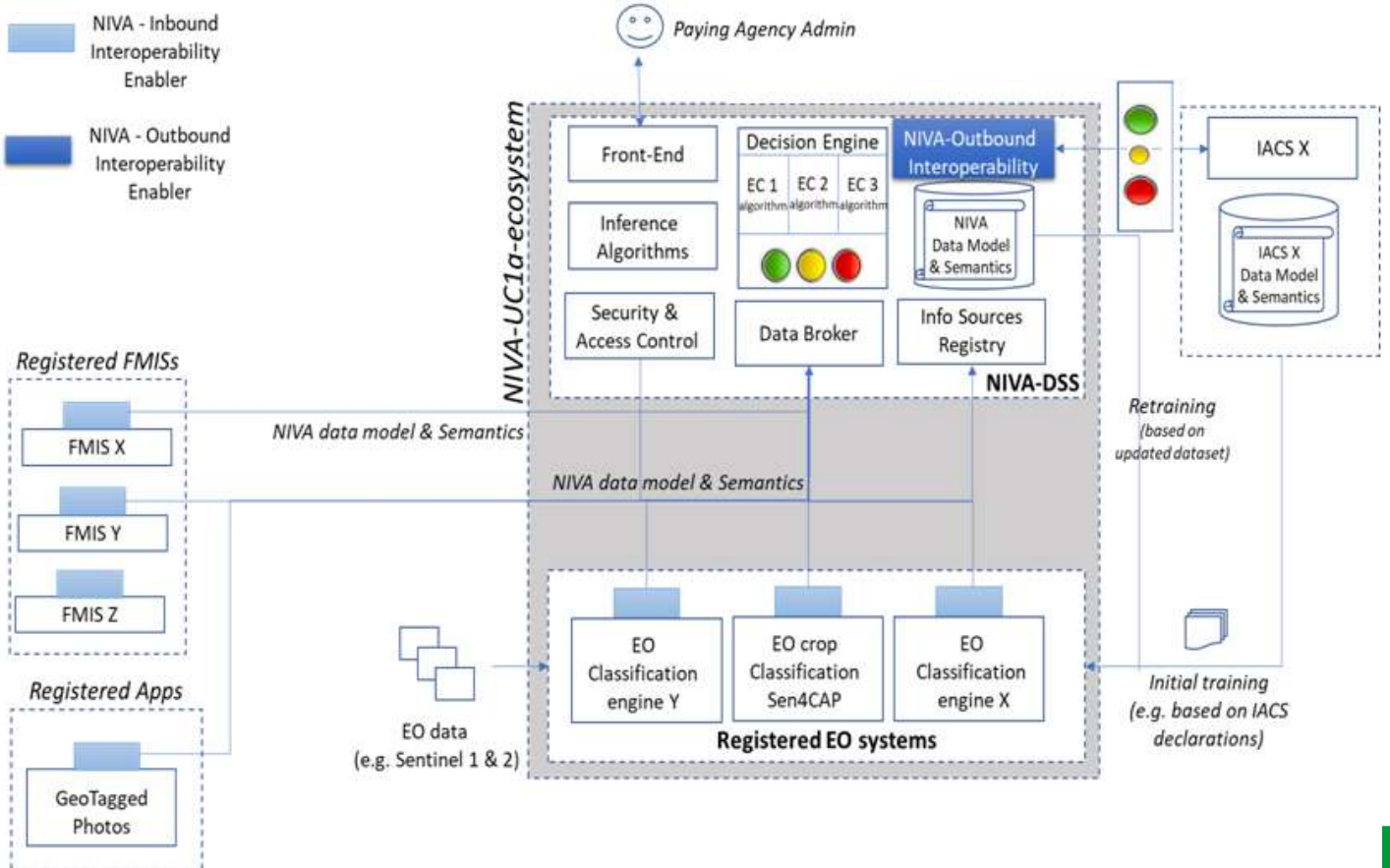
Project or initiative	Use in NIVA
SEN4CAP, ESA project on Remote Sensing processing chain for the CAP	• SEN4CAP tools are used in UC1a, 1b and 2 and further improved and validated in operational systems • NIVA highlighted the urgent need for technical documentation and source code documentation and training of such systems
EGNSS4CAP: GSAA app for positioning	• NIVA embedded these functionalities in its Geotagged Photo app, further expanding them
H2020 OpenEO : an open source collection of tools for EO data processing	• NIVA is tailoring this for CAP applications, combining it with SEN4CAP processing workflows
CEF components, DG-Connect/DG-DIGIT components and protocols for common definitions	• CEF components are being tested in NIVA UC3 • CEF components further developed as part of common components in WP4
H2020 IoF2020, large scale pilots on IoT devices	• NIVA participation in workshops around semantic interoperability of systems
H2020 OpenIACS, using LinkedOpenData and CEF components for IACS data	• NIVA provides recommendations and guidelines on standardization issues, complementary to OpenIACS technical solutions
H2020 MEF4CAP, on evaluation frameworks for the CAP	• Developing joint strategies for stakeholder engagement


IACS Data Sharing Services
Farm Registry PA System
Farm Registry Data Sharing Server (UC3)
Farm Dossier
API
LPIS Data PA System
LPIS Data Server (UC5a)
Farm Dossier Broker (???)
Payment Rights PA System
Payment Rights Data Sharing Server (UC5b, UC1a)
GSAA Data PA System
GSAA Data Sharing Server (UC2)
Broker Bridge (???)
Agroenvironmental Data PA System
Agroenvironmental Data Sharing Server (UC1b)
Area Monitoring PA System
Area Monitoring Data Sharing Server
Livestock PA System
Livestock Data Sharing Server (???)
IACS Data Sharing Broker (UC1c,UC1a, UC5b)
Claim Processing PA System
Claim Processing Data Sharing Server
Payment Processing PA System
Payment Processing Data Sharing Server
EU Reporting PA System
EU Reporting Data Sharing Server (???)
NIDAS PA System
NIDAS Data Sharing Server (UC5b, UC1a)
Control PA System
Control Data Sharing Server
Entitlements PA System
Entitlements Data Sharing Server
Farmer Performance PA System
Farmer Performance (UC1c)
CEF eID Component
CEF eSignature Component
User Management Components (WP4)
NIVA eID Connector
NIVA eSignature Connector
Area Monitoring PA System
NIDAS PA System
DSS PA Front End
Area Monitoring Data Sharing Data Sharing Component
NIDAS Data Sharing Component
DSS Generic Data Sharing Component
DSS Data Sharing Broker
NIVA Decision Support System FrontEnd (UC1a)
NIVA Click and Pay Components (UC5b)
Digital Contract Manager
Click and Pay Engine
IACS Indicators Manager Client
Typology Calculator
Convergence Process
NIVA Decision Support Components (UC1a)
IACS Data Interchange Component
DSS Data Sharing Client
IA Services Client
NIVA Decision Engine
Imagery Services Client
Markers Identification
NIVA Decision Support Components (UC1b)
Indicators Sharing Component
Agro environmental Indicators
IA Services Client
NIVA IA Components (UC1a, UC1b, UC2)
IA Services Broker (???)
IA Algorithm Training Services
IA Algorithm Runner
Registry of Public IACS Datasets for Training Purposes
HPC Service
IA Algorithm Instances
Earth Observation Data Information Services (WP4)
EO Based Services Broker
Sentinel Images Based Services
Additional Images Based Services
DIAS Service
Sen4Cap
PA Orthophoto Image Service
Geotagged Images Data Sharing Services (UC4a)
GeoTagged Images System
FMIS Data Interchange Services (UC4b)
FMIS Data Sharing Broker (???)
Digital Field Book Sharing Service
Machinery Data Sharing Services
Field Book System
Machinery Data System

Pilots at the core



UC1a Earth Observation Monitoring and Traffic Lights



UC1a: Earth Observation Monitoring and Traffic Lights -- Lessons learned

1. Importance of difference in pasture across Europe

Attention is needed for the extensively managed pastures in Southern Europe

2. Importance of detecting small parcels

Difference across Europe of presence and prevalence

3. Open source delivery and development requires a different way of working

Dependence on Sen4CAP open delivery, and learning curve to get to know the tools

UC1c – Farmer performance – (ARIB)

REPUBLIC OF ESTONIA
AGRICULTURAL REGISTERS
AND INFORMATION BOARD

- Objective: indicators assessing performance at farm level (needs from EC/MSs/other stakeholders);
- Activities
  - Gathering information/requirements from farmers
    - questionnaires, 12.000 sent out, 1500 replies
  - IACS-FMIS data exchange questionnaire to Member States
  - discussions with FMIS software provider
  - Identify suitable standards: eCROP
- Products
  - API prototype for exchanging data between IACS & FMIS via eCROP – tested and documented, including description of suitable standards, at least in 3 real cases;
  - Create methodology of indicators and evaluate it with users.

UC1c – Farmer performance – (ARIB)
Lessons learned

The situation of farmers is diverse, with different attitudes to Paying Agencies

NIVA has helped to organize the stakeholders within Estonia

First need to get the data-flows working to enable next steps

Republic of Estonia
Agricultural Registers and Information Board

Operationalising agro-climatic and agro-environmental indicators for future CAP

5th Feb, ASP, Paris

https://www.niva4cap.eu/uploads/NIVA%20Policy%20Brief%20No.%202%20agri-environmental%20and%20climatic%20indicators.pdf

Key findings

- **IACS data very valuable for assessment of indicators but not ready for analysis to compute these indicators.**
  - **(hence also for the evaluation of the CAP through indicators)**
- **Achieving relevant agro-environmental and agro-climatic indicators require a development process with involvement of all stakeholders, including farmers.**
- **Indicators need to be relevant for the farmer, not just about the farmer, to monitor performance and provide timely feedback.**
- **Performance assessment reflects multi-annual land management.**

Issues in use of IACS data in agro-environmental/climatic indicators

- Different data formats;
- Different accessibility;
- Timeseries (parcels change …)
- Definitions of parcels
- Not harmonised crop coding

THÜNEN

Using LPIS and IACS data for evaluating the Greening of the CAP

- insights from Germany and technical lessons learnt

Example of harmonisation of crop lists (Laurent, et al. IGN)

	Denmark	Estonia	France	Greece	Ireland	Italy	Lituania	Netherlands	Spain	Finland	Sweden	Saxony (Germany)	Cataluña (Spain)
number	322 main crops, 29 catch crop codes	502	around 300	45 crop types, 3326 varieties	191 (including 37 non eligible)	about 500	156	375	322 (in 2019)	150	99- ish or almost 200	185	around 200

Number of national crop types

So what standards could be adopted?

Name	Description	Comment
Common catalogues of varieties of agricultural plant species and varieties of vegetable species	EU catalogue Botanical classification (plants that can be officially marketed in the EU). Detailed (up to variety) but aggregated derived extract in the JRC code list	Some missing crop types (e.g. permanent crops)
Integrated Farm Statistics (IFS)	Current Eurostat crop classification/ Mixture of concepts /Aggregated (» 100 values)	
AGRIPROD	Eurostat/ Scope wider than crops / Botanical classification (species) Detailed (» 1000 values)	Proposed for INSPIRE
LUCAS	Eurostat/ Scope wider than crops (Land Cover) Botanical classification /Aggregated (» 150 values)	Main candidate for INSPIRE
Indicative Crop Classification	Global (FAO) /Some mixture of concepts /Aggregated (» 150 values)	
LCCS crop type list	Global classification (FAO)/ Product-oriented classification. / Aggregated (200 values)	Proposed for INSPIRE
European and Mediterranean Plant Protection Organisation (EPPO)	Scope wider than crops or even plants / Botanical oriented (for plants) / Detailed classification (>5000)	Widely used by agro-business Proposed for INSPIRE
Farm Structure Survey (FSS)	Previous Eurostat classification/ Mixture of concepts / Aggregated (» 150 values)	outdated

Supporting innovations on CAP monitoring and evaluation

- Data sharing both FROM and TOWARDS IACS systems

- Broadly sharing of innovations towards multiple perspectives

NIVA policy briefs:

- Policy Brief on Agri-environmental monitoring: https://www.niva4cap.eu/uploads/NIVA%20Policy%20Brief%20No.%202%20agri-environmental%20and%20climatic%20indicators.pdf

- Modernising the CAP to help deliver the European Green Deal: https://www.niva4cap.eu/news/modernising-the-cap-to-help-deliver-the-european-green-deal

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THANK YOU

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