agrirouter

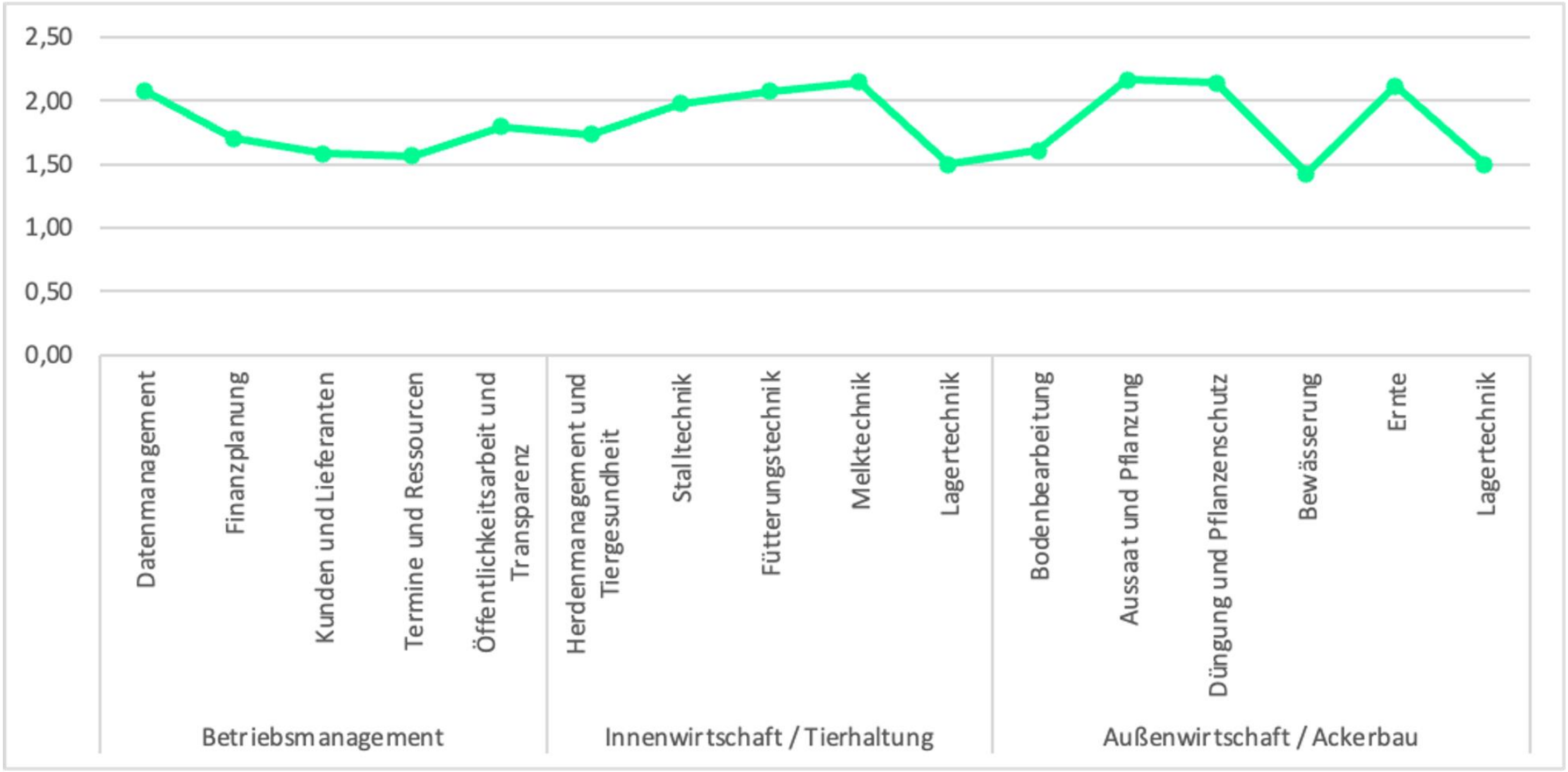
powered by Agricultural Industry

Wie schaffen wir es gemeinsam Anreize zur Nutzung von Smart Farming Technologien zu generieren; hilft uns die sich stetig vergrößernde Interoperabilität im landwirtschaftlichen Datenmanagement?

VDI-Fachnetzwerk Bau- und Landmaschinentechnik / TH-Köln

6th December 2023

Digitalisierungsgrad der deutschen Landwirtschaft



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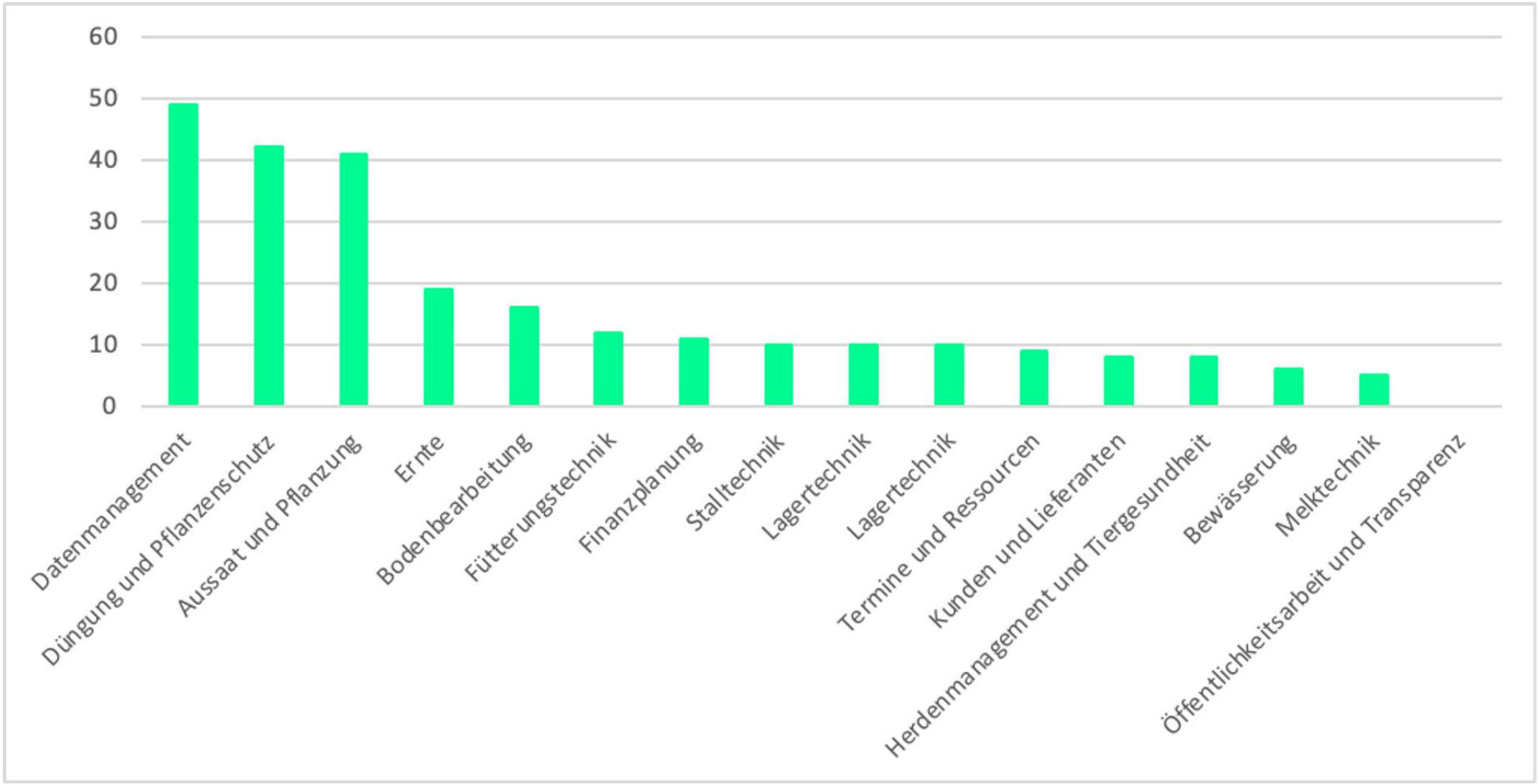
Investment Bereiche zur Digitalisierung von landw. Betrieben



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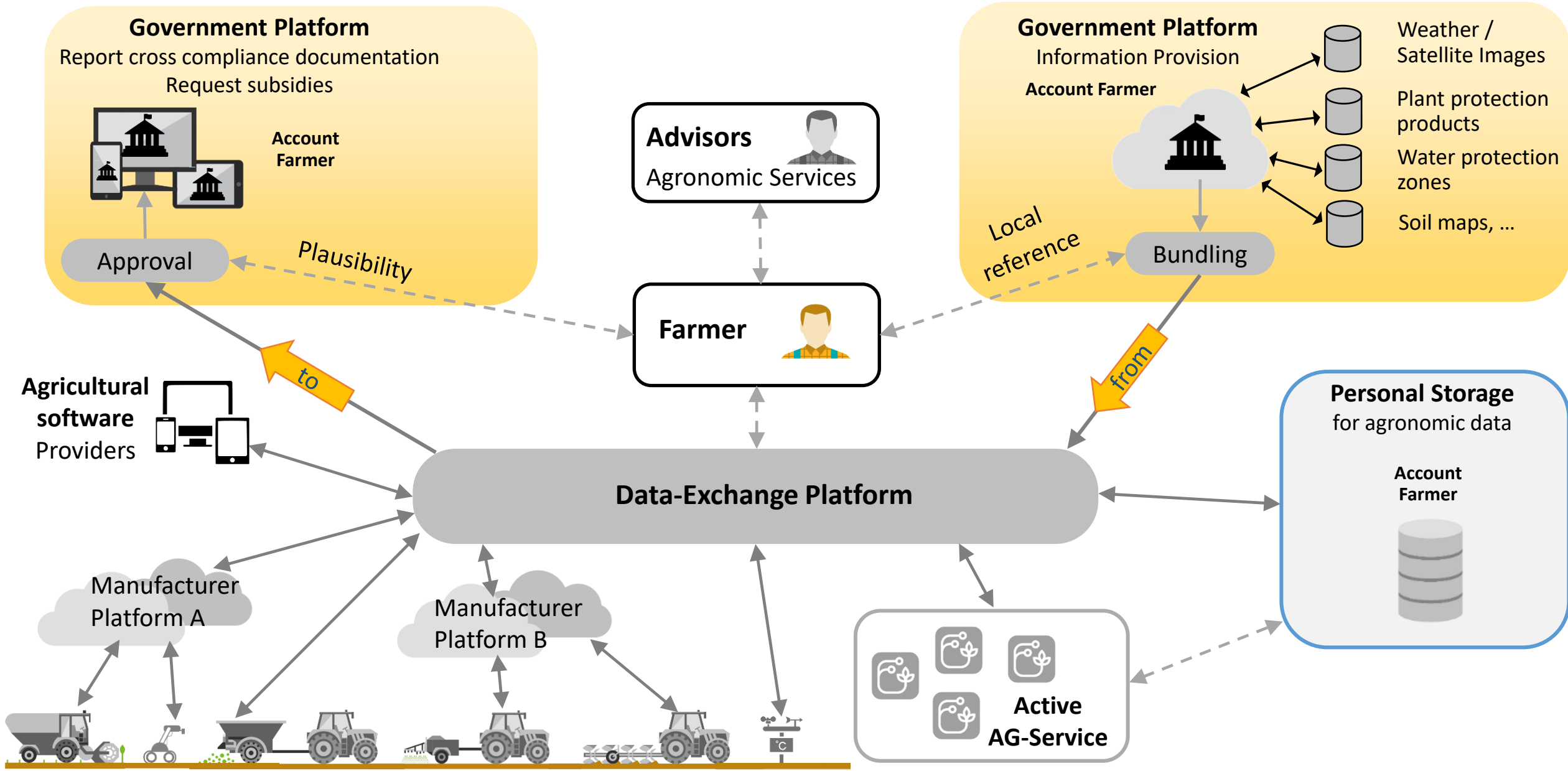
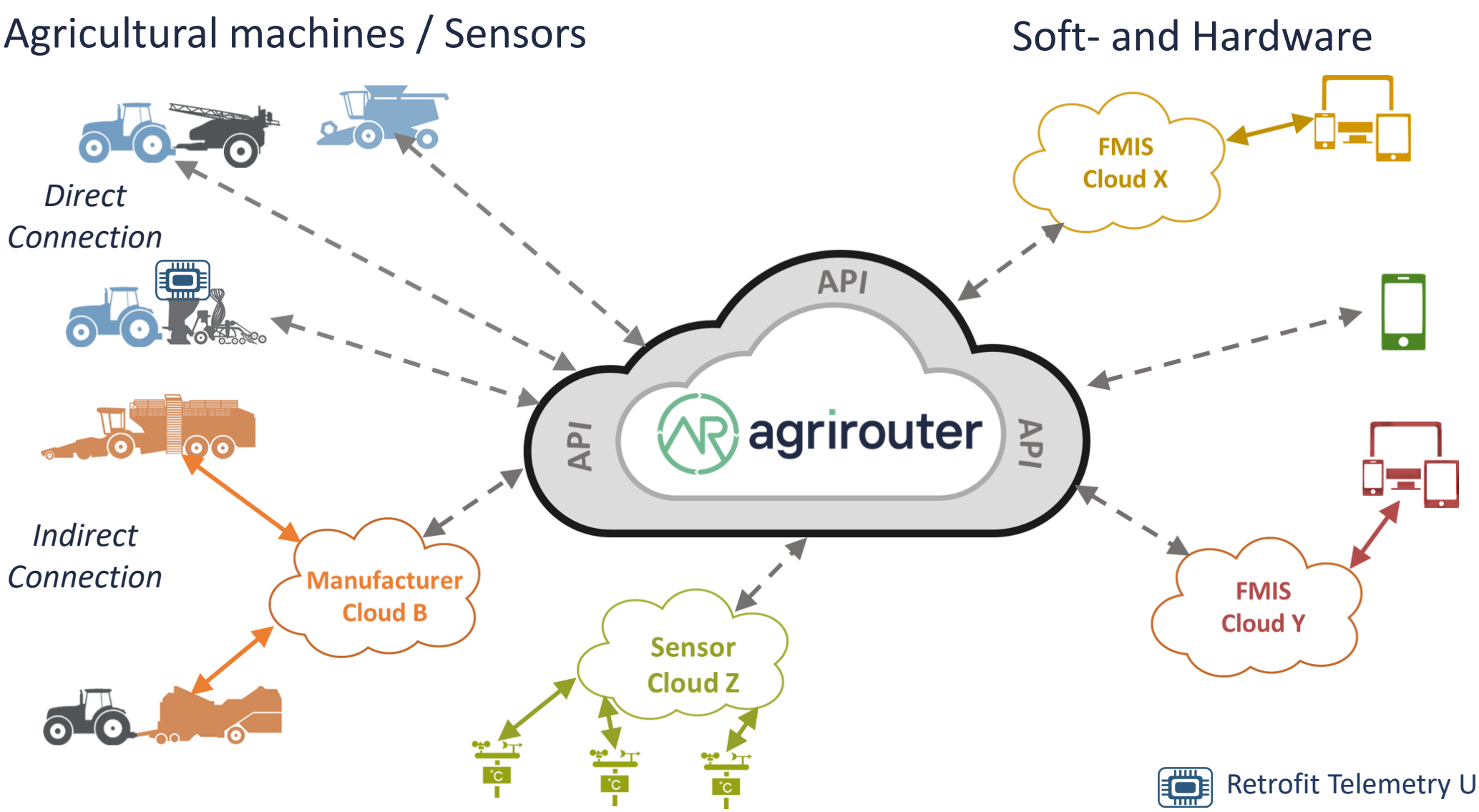
Big Picture AG-Data-Management



The concept of agrirouter



About DKE-Data GmbH & Co. KG

- The company was founded in July 2016 and is located in Osnabrück
- DKE-Data GmbH & Co KG, together with the consortium companies and donors, developed the manufacturer-neutral and cross-product Data-Exchange Platform agrirouter
- DKE-Data is responsible for the operation and further development of agrirouter as well as for the admission of new partners.
- DKE-Data GmbH & Co. KG is a manufacturer-neutral, non-discriminatory R&D joint venture
- The company operates as a non-profit company on a cost center basis.

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DKE-Data Organisation

J. Sonnen

Managing Director

- Contracts
- Legal Aspects

C. Apke

Business & Product Management

- Partner Management
- Business & Product Development

O. Rahner

IT Technical Management

- Development Tools & Support
- Requirements Management
- Software Architecture

F. Lammers

IT Service Management

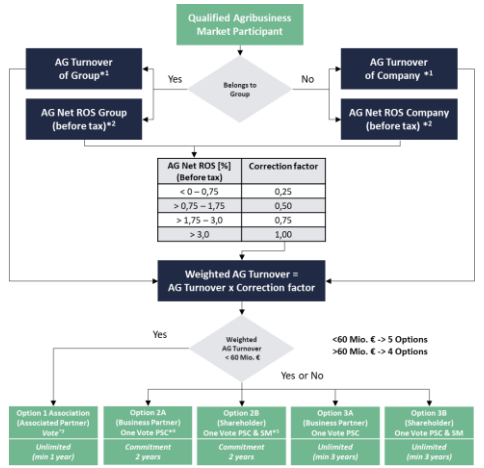
- Operations
- Administration
- Release Management
- Marketplace
- Billing

For the development and operation of the agrirouter, as well as for general company tasks, we use various service providers.

Basic Conditions to become a “Member” of DKE-Data

- Each “Qualified Agribusiness Market Participant” along the entire Agricultural Value Chain can join DKE-Data on a non-discriminatory basis as:

  - **Association member** (Status 09/23 = 41 Member)
  - **Business-Partner** (Status 09/23 = 16 Business Partner)
  - **Shareholder** (Status 09/23 = 18 Shareholder)



- Financial commitment is calculated based on a fair “Cost Contribution Model” – accepted in the Market

- One Vote principle (irrespective of its financial commitment) for Business Partner and Shareholder

DKE-Data Shareholder

Shareholders Status April 2023	
1. AGCO	10. KRONE
2. AMAZONE	11. KUHN
3. BERGMANN	12. LEMKEN
4. BRIRI	13. PÖTTINGER
5. CNH-Industrial	14. RAUCH
6. EXEL Industries	15. SDF
7. GRIMME	16. ZUNHAMMER
8. HORSCH	17. AGRICOLUS
9. KOTTE	18. xFarm

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ALL FOR ONE FOR ALL
Agdata
ISARIA
KUHN
TOPCON Agriculture
FARM
KRONE
dev4 AGRICULTURE
garant Kotte
SDF
RAUCH
arvato BERTELSMANN
RWZ Raiffeisen
AgForce
DSA
CNH INDUSTRIAL
ANEDO Erfolg steuern
DEUTZ FAHR
top agrar
BayWa
DACOM
geo-konzept
LEMKEN
Farm Facts
Landwirtschaftsverlag
exatrek
Lamborghini
Plantivo Agrarsoftware
Vineyard Cloud
BRIRI
CropManager
AGRAVIS
COMBINED POWERS
Farmplan
TTControl HYDAC INTERNATIONAL
ACTIA
GRIMME
REICHHARDT electronic • innovations
STEYR TRAKTOREN
Vicon
POTTINGER
ZUNHAMMER GÜLLE-TECHNIK
Kverneland
CAFFINI
xarvio Digital Farming Solutions powered by BASF
seppi m
farmmaps
CCISOBUS team play works.
CASE IH AGRICULTURE
FarmBlick
Mtech Digital Solutions
HORSCH Farming with passion
vantage
agrometius
TRIOLIET
traktorpool
AGRARMONITOR
MASSEY FERGUSON
FENDT
MASCAR
DCM SPREADERS
My Data Plant
KWS
ABACO
SAME
kverneland group
AGCO Your Agriculture Company
HARDI
AVR
AGROTECH VALLEY
Nordzucker
ProFlura Schlagkartei
AMAZONE
Wochenblatt
Solorrow
HOLMER
AGRICOLUS
schmiede one
MyEasy Farm
VALTRA
ALPEGO
PFN PRECISION FARMING NETWORK
osb connagtive
Farming Fox
Trimble
NEW HOLLAND AGRICULTURE
profi
ANNABURGER Competence in Agriculture
DATAVÄXT FOR EFFICIENT FARMING
BERGMANN
Soft.Farm

Companies from all areas of the agricultural value chain can become a Shareholder, Business-Partner or Association member

Opportunities: Optimization of the production process

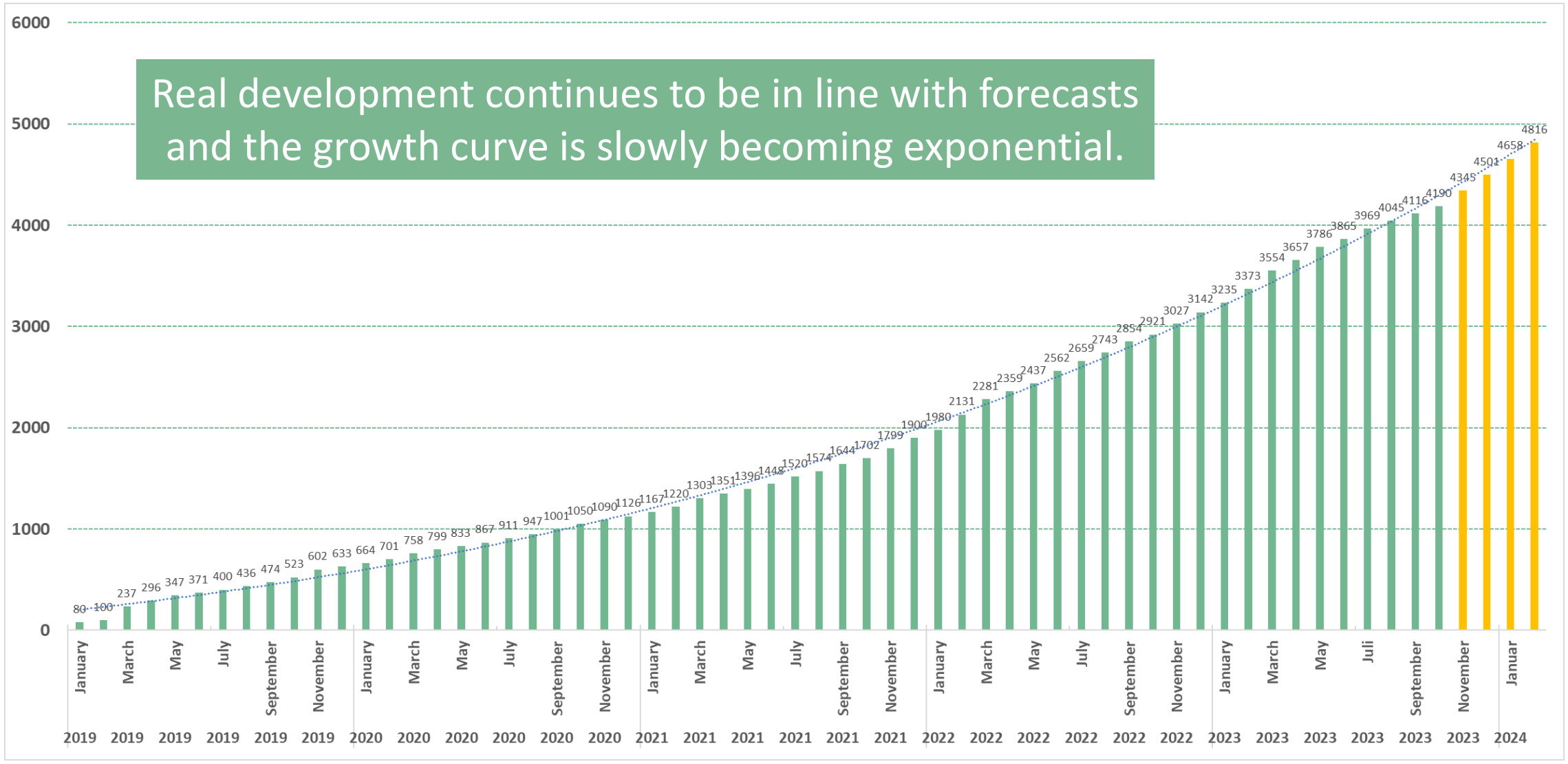
Farmer‘s (agriroiuter‘s) Point of View

Seed, fertilizer, plant protection | Farm | Field | Machine | Storage | Food processing

Data Exchange

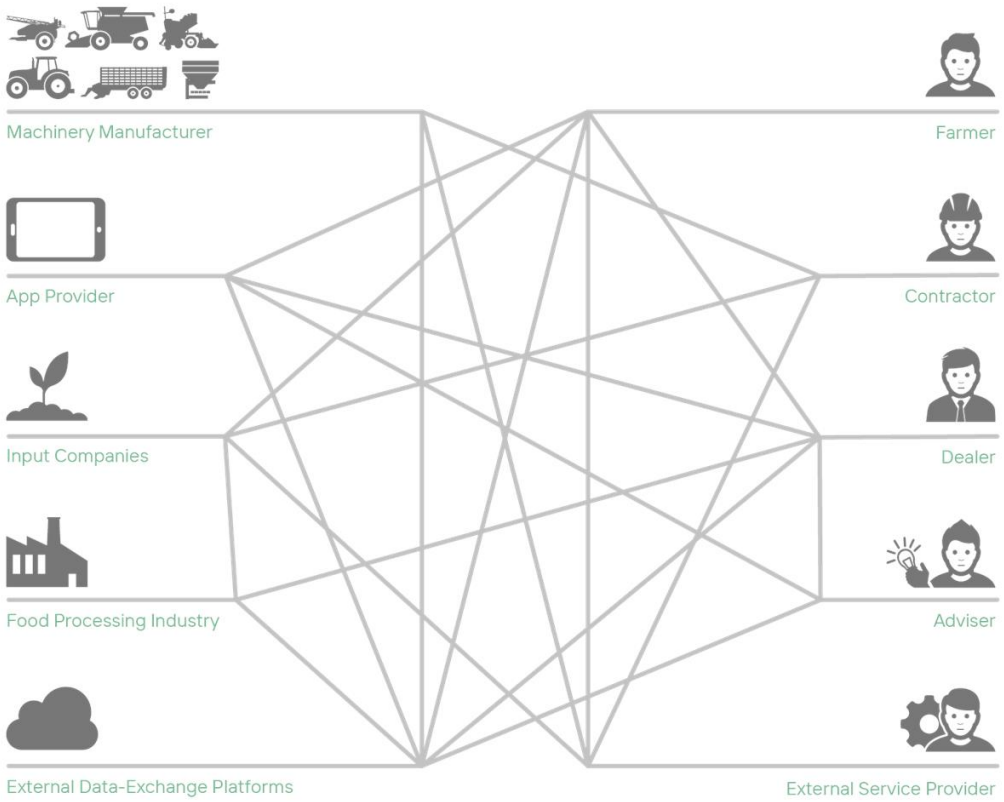
Farmer‘s (agriroiuter‘s) Point of View

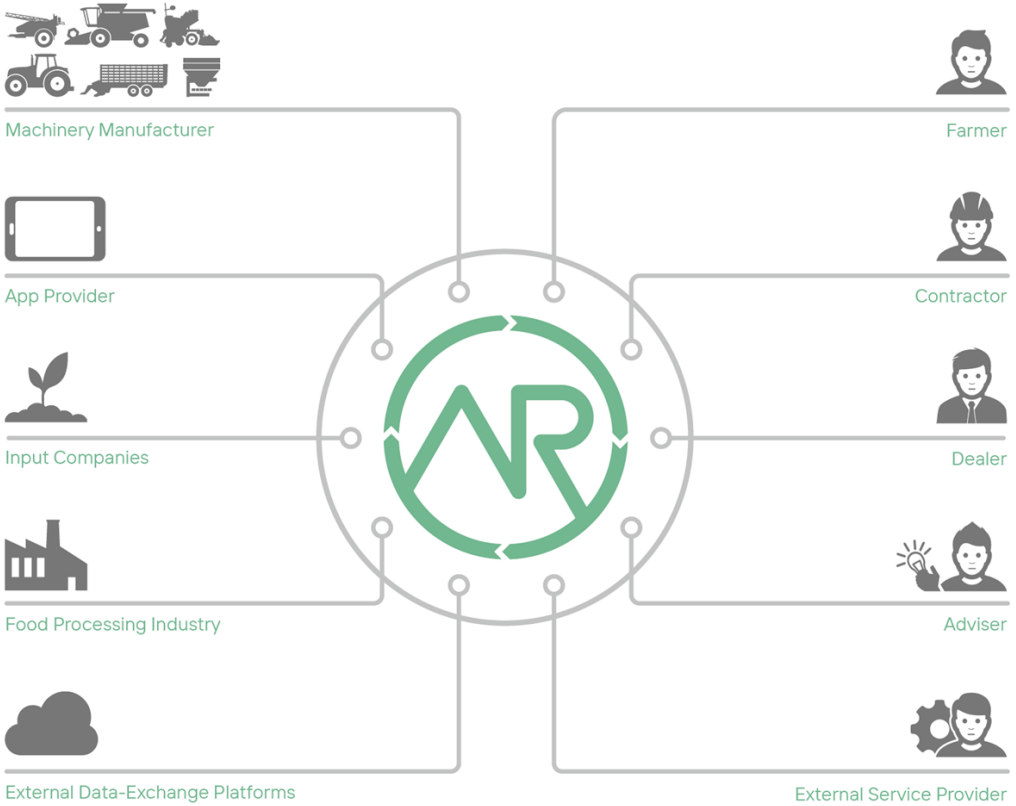
Account growth since 2019



Product Description

Without and with agrirouter





What is agrirouter about?

- The agrirouter is a web-based software application and can be used to exchange data between:
  - machines and agricultural software products
  - machine and machine
  - agricultural software and agricultural software
  - agrirouter and agrirouter

  from many different agricultural machinery manufacturers and soft- and hardware Providers (Partner).

- The agrirouter has only 2 main functions:
  - Provision of central connectivity
  - User dependent exchange of agricultural data

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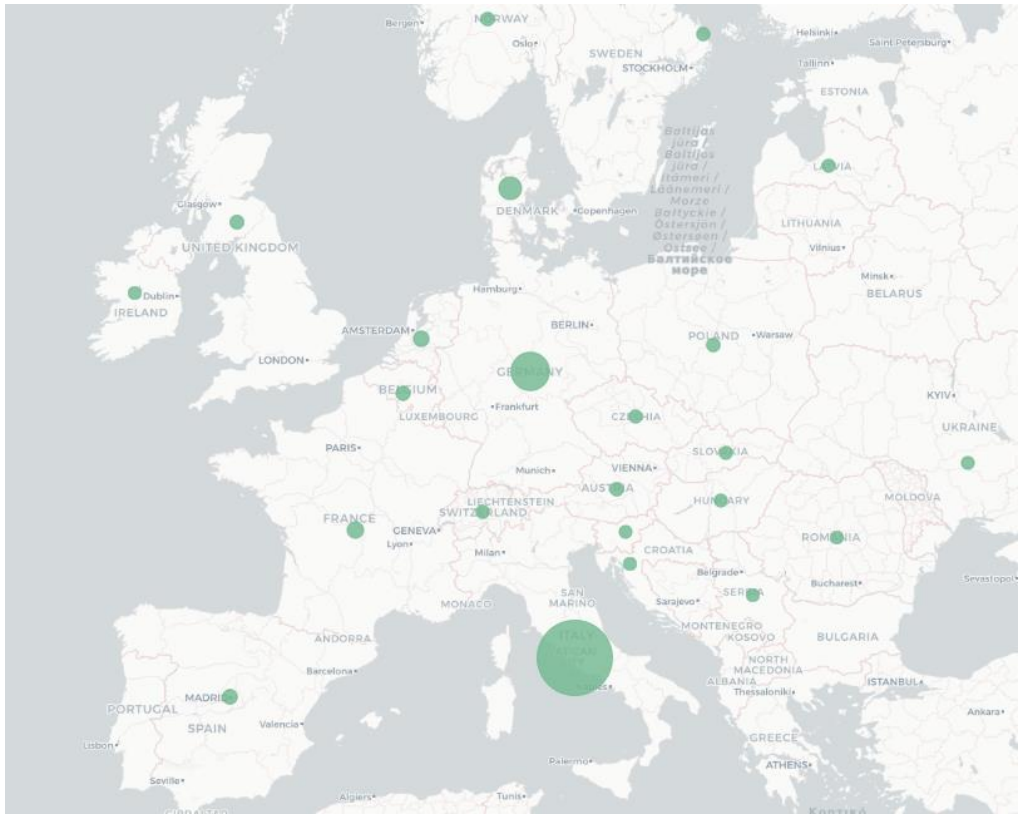
agrirouter international approach

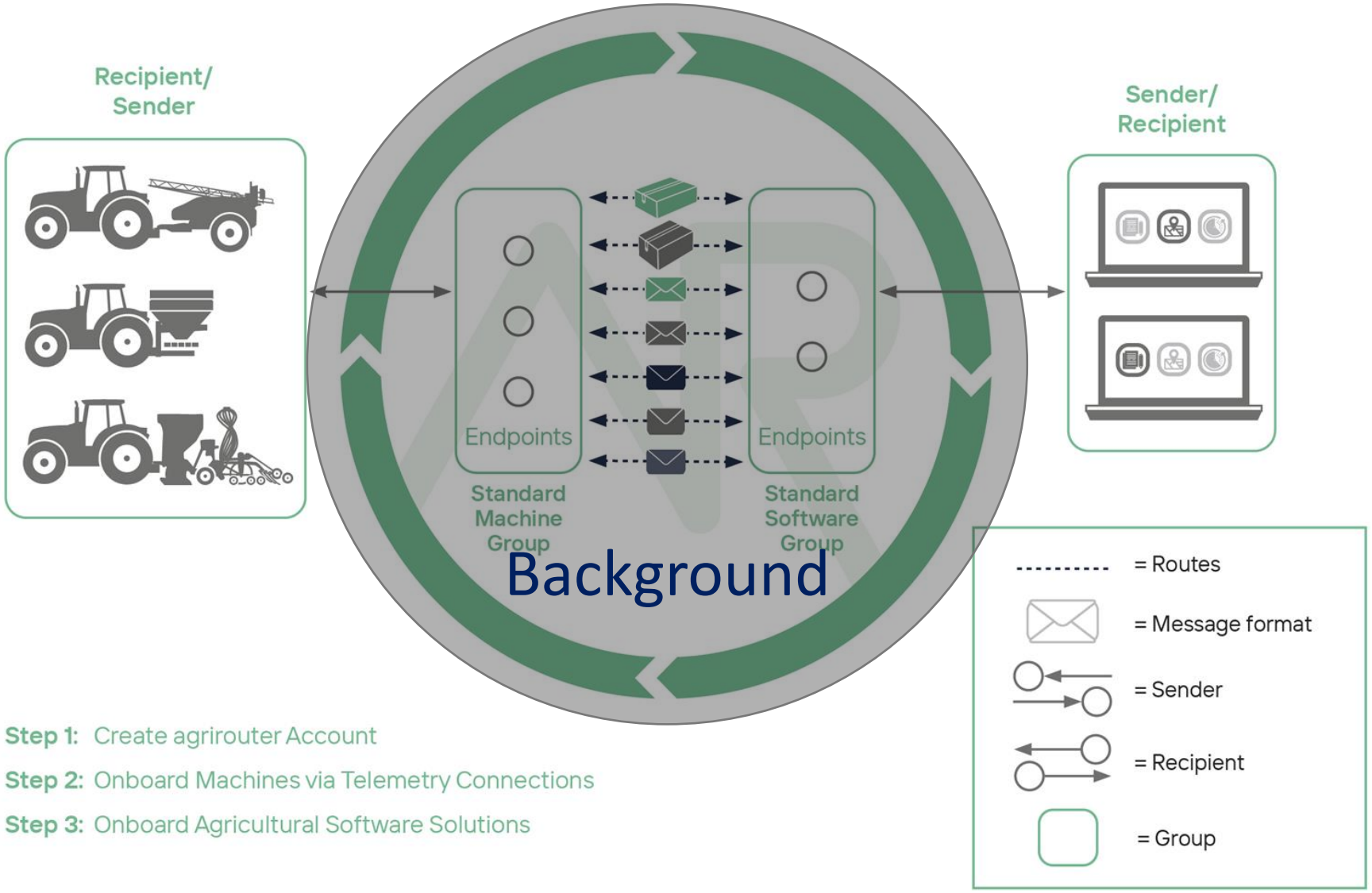
Top 10 agrirouter user countries:

1. Italy
2. Germany
3. Denmark
4. France
5. Netherland
6. United Kingdom
7. Austria
8. USA
9. Belgium
10. Spain



- The agrirouter user interface is available in the following languages:
- The agrirouter application is hosted on aws in Frankfurt.

Easy Initial Set-up of agrirouter ECO System in 3 Steps



Background

Step 1: Create agrirouter Account

Step 2: Onboard Machines via Telemetry Connections

Step 3: Onboard Agricultural Software Solutions

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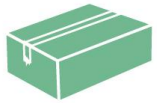
List of Message Formats

Taskdata ISO 11783 (ISOXML)	Package A	
Shape	Package B	
Telemetry Data based on ISO 5231 (EFDI)	Letter A	
Documents	Letter C	
Images	Letter D	
Video	Letter E	

- Further message formats can be added to the agrirouter.
- DKE-Data will only add message formats that have a high significance and acceptance in the industry

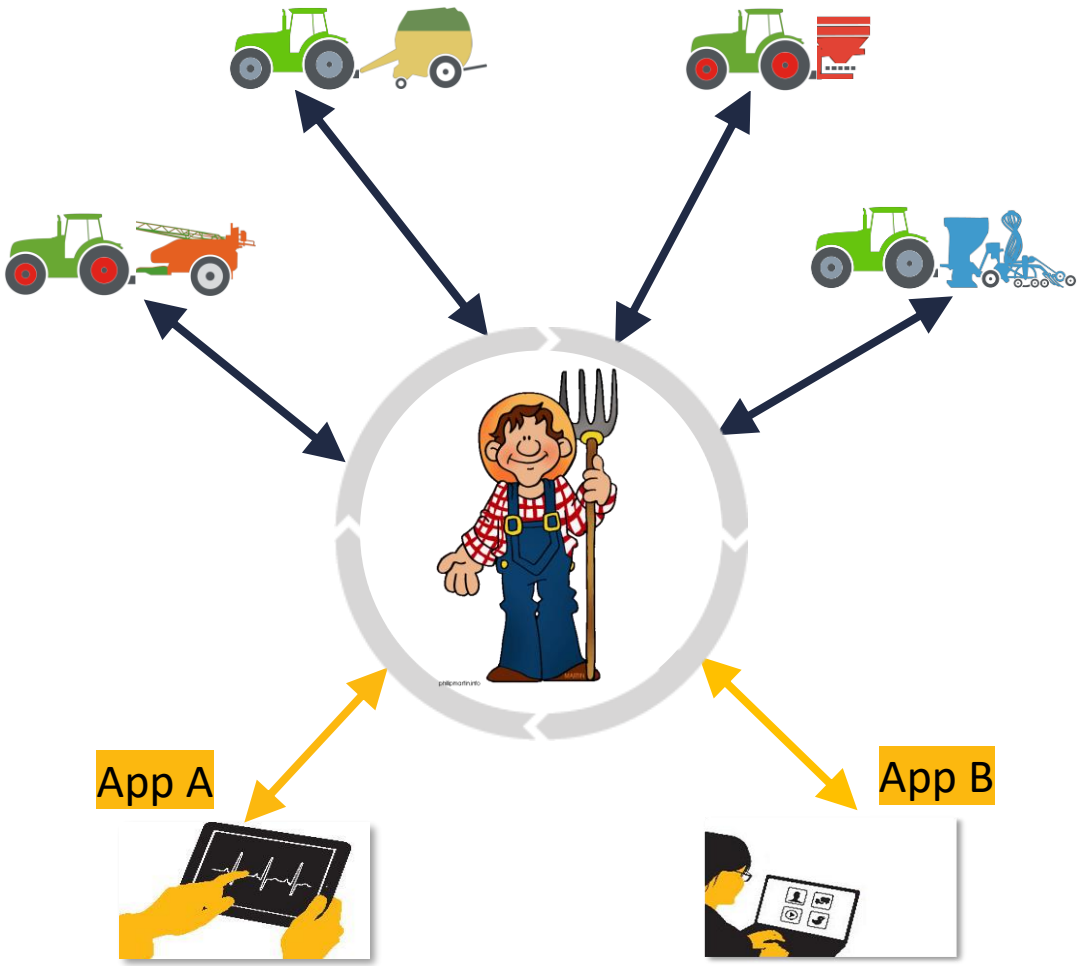
AEF

Develop & Maintain Standards

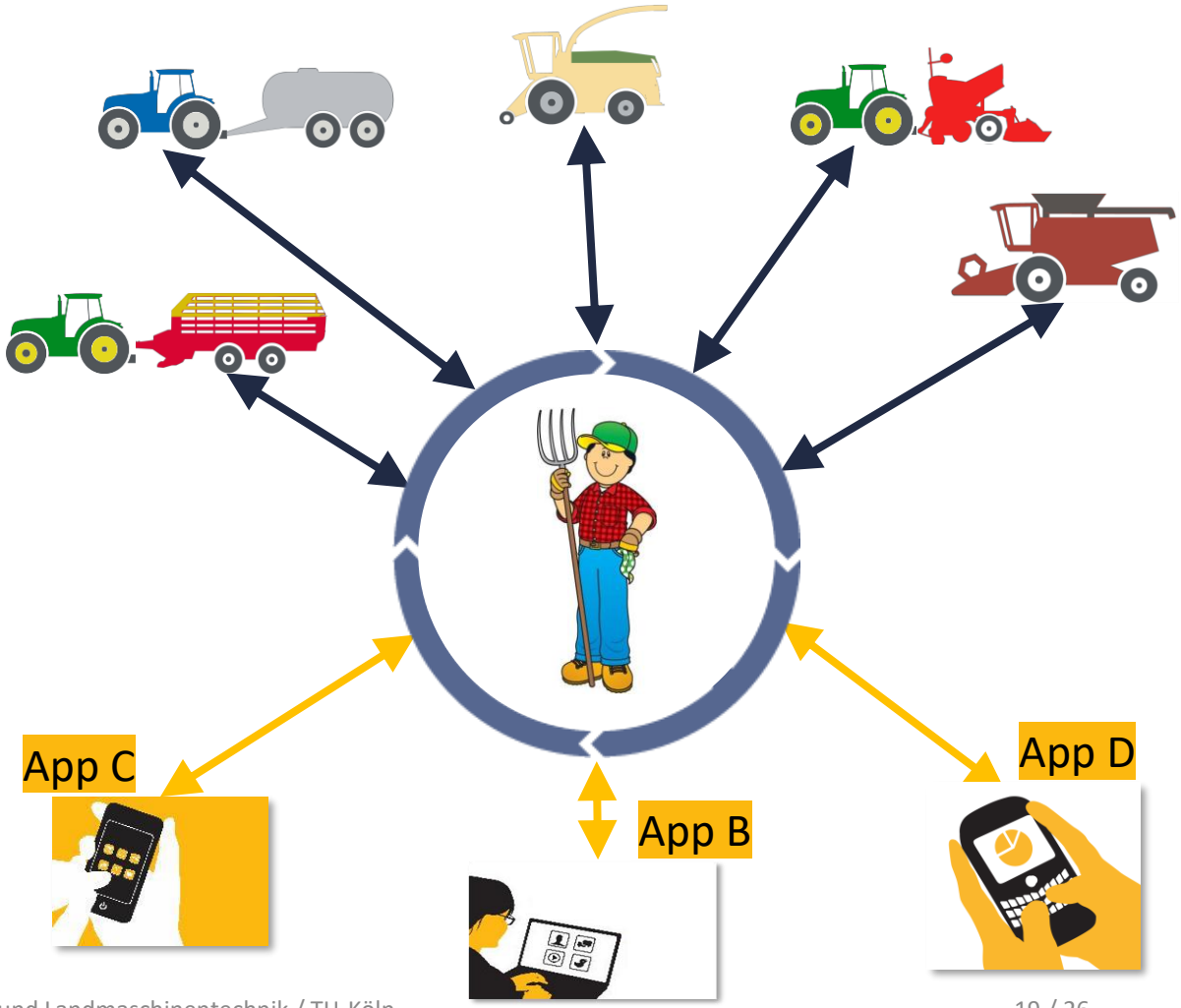
Use & Push Standards

Farmers and contractors can connect their agrirouters to exchange data

Farmer Frank's agrirouter



Contractor John's agrirouter



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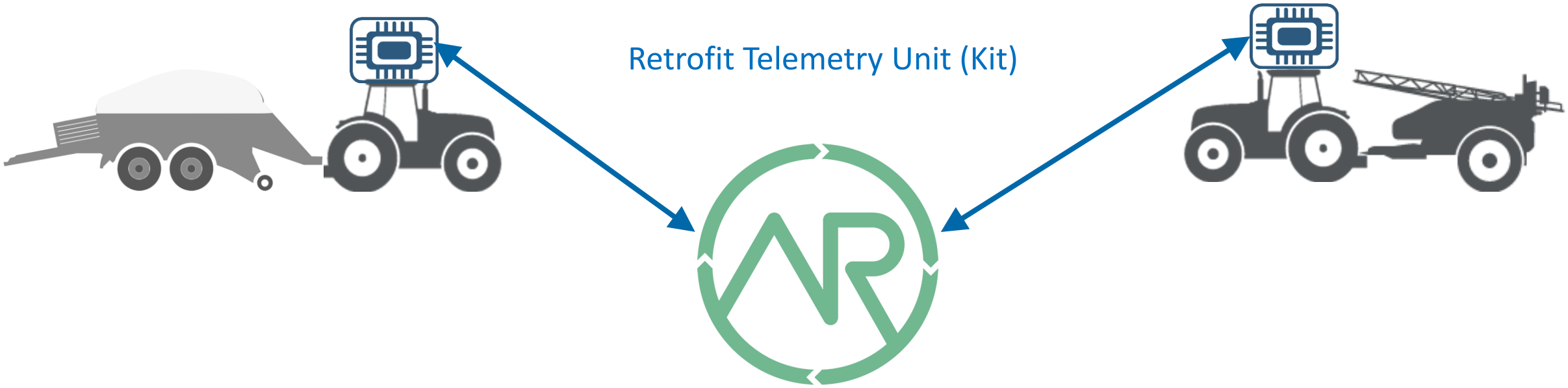
Even machines without connectivity units can be connected to the agrirouter



Machines that are already on the market can be connected to the agrirouter with available Retrofit Kits offered by several after market vendors.

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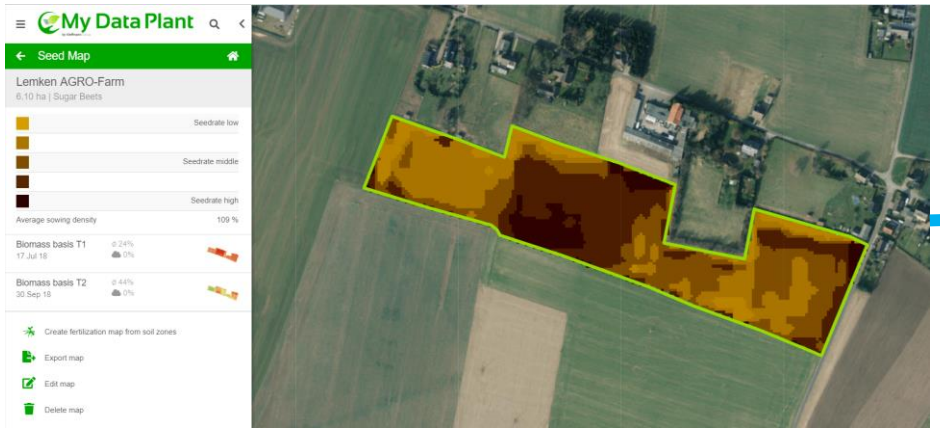
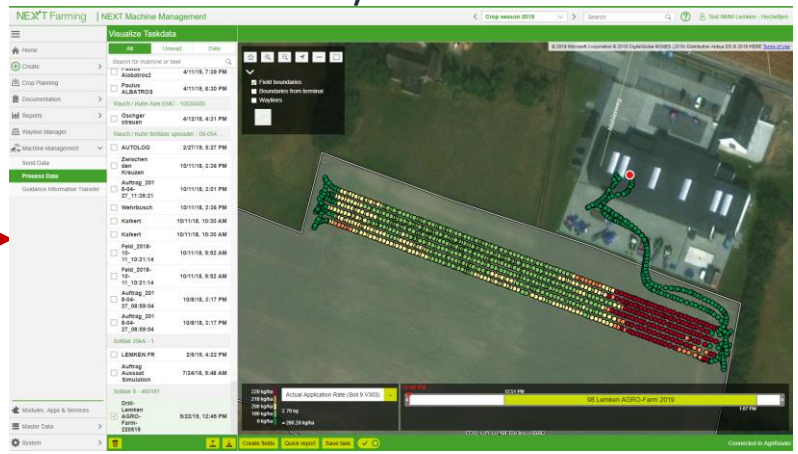
Example Use-Case: Data transportation via agrirouter

Creating Application map / Partner Product A

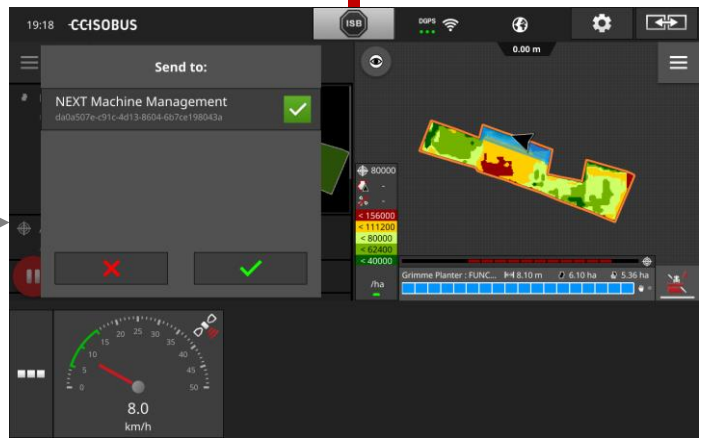


Data Routing / Transfer

Documentation / Partner Product B



Receiving / Working on the field



Data Management / Partner Product C

Current Projects

Feed Mixer Data Exchange Project

The Working-Group defined **the following** data-items to exchange between the software systems (Feed Management System) and the feeding-mixer.

- DVC (Devices)
- CTR (Customer)
- WRK (Worker)
- ARS (Areas of animal groups)
- CMP (Components)
- RCP (Recipes)
- GPR (Groups of animals)
- PLL (Planed Load List)
- CLL (Completed Load List)
- RFL (Refusal)

The data should exchange based on the existing patterns of the Extended FMIS data interface (EFDI) - ISO5231.


```
"PLL": [
    {
        "id": "PLL1",
        "type": "planned",
        "RCPRef": "RCP1",
        "startTime": "2023-01-31T14:30+01:00",
        "globalFeedingFactor": 100,
        "GRP": [
            {
                "GRPRef": "GRP1",
                "dischargeTime": "2023-01-31T15:47+01:00",
                "order": 1
            },
            {
                "GRPRef": "GRP2",
                "dischargeTime": "2023-01-31T16:15+01:00",
                "order": 2
            }
        ]
    },
    {
        "id": "PLL2",
        "type": "planned",
        "RCPRef": "RCP45",
        "startTime": "2023-01-31T07:30+01:00",
        "globalFeedingFactor": 100,
        "GRP": [
            {
                "GRPRef": "GRP3",
                "dischargeTime": "2023-01-31T08:00+01:00",
                "order": 1
            }
        ]
    }
],
"CLL": [
    {
        "id": "CLL1",
        "DVCRef": "DVC1",
        "PLLRef": "PLL1",
        "startTime": "2023-01-31T14:30+01:00",
        "endTime": "2023-01-31T15:45+01:00",
        "totalTheoreticalQty": 7500,
        "totalQty": 7480,
        "WRKRef": "WRK1",
        "ING": [
            {
                "INGRef": "ING1",
```


"Element based" - The terminal of the mixer stores the master data in a database. When the farmer plans a new Load List in the Feed management System, only the "PLL" element needs to exchange with the terminal. The terminal loads the necessary master data from its database via the references. To update master data, only the corresponding element must be exchanged.

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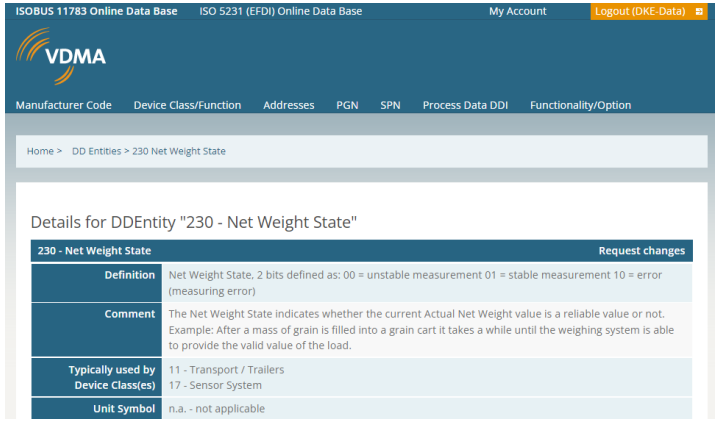
Stationary or mobile scales Data Exchange Project

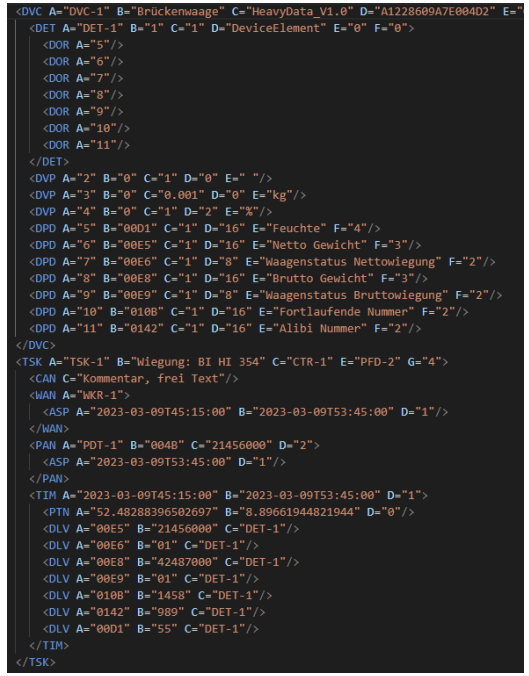
The data exchange based on the ISO 11783 (ISOXML) Standard

All necessary DDI Entities are available in the VDMA Database



HEAVYDATA
Die Waagen-Cloud

Agricultural software Providers



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Weather Stations Data Exchange Project

The data should be exchanged according to the **ISO 5231 (EFDI)** standard.

The ongoing task is to check which values should be transferred and if all required DDI entities are available. If not, the required DDI entities needs to be requested.

Transfer low energy based

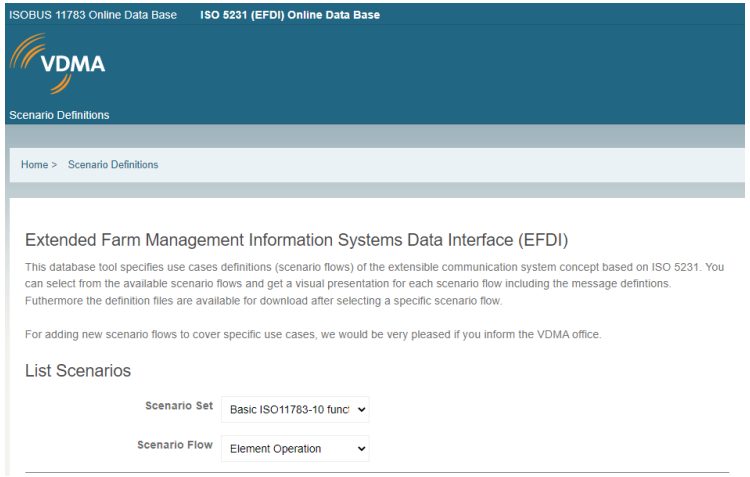
Transfer low energy based

Manufacturer Platform A

Manufacturer Platform B

Manufacturer Platform C

Agricultural software Providers



The goal is to transmit weather information in **a uniform format** (EFDI). Therefore, the agricultural software providers do not need to handle x different data formats and x different interfaces of the weather station providers platforms.

KeyFacts agrirouter

Partner

- One Fee per company per year
- Each company along the AG-Value Chain can join
- Participants only need to implement one interface in their products.
- Connectivity to all machines as well as to products from other partners
- Saving cost for implement other interfaces

Customer

- Connection between agricultural machines and agricultural software or between machines and machines or Software to Software solutions
- Account Pairing
- Customer individual agrirouter account
- Basis to optimize agricultural production process
- Basis to fulfill documentation requirements

Technical

- The agrirouter has only one interface (API) and uses defined message formats
- SDK available in different programming languages
- No Storage
- No Conversion (today)
- Only Data-Transportation
- The concept of the open and Manufacturer-independent data exchange platform agrirouter is accepted

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agrirouter

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Thank You For Your Attention

Q&A