Agriculture 4.0 needs GNSS-data for economic and sustainable farming

Klaus-Herbert Rolf

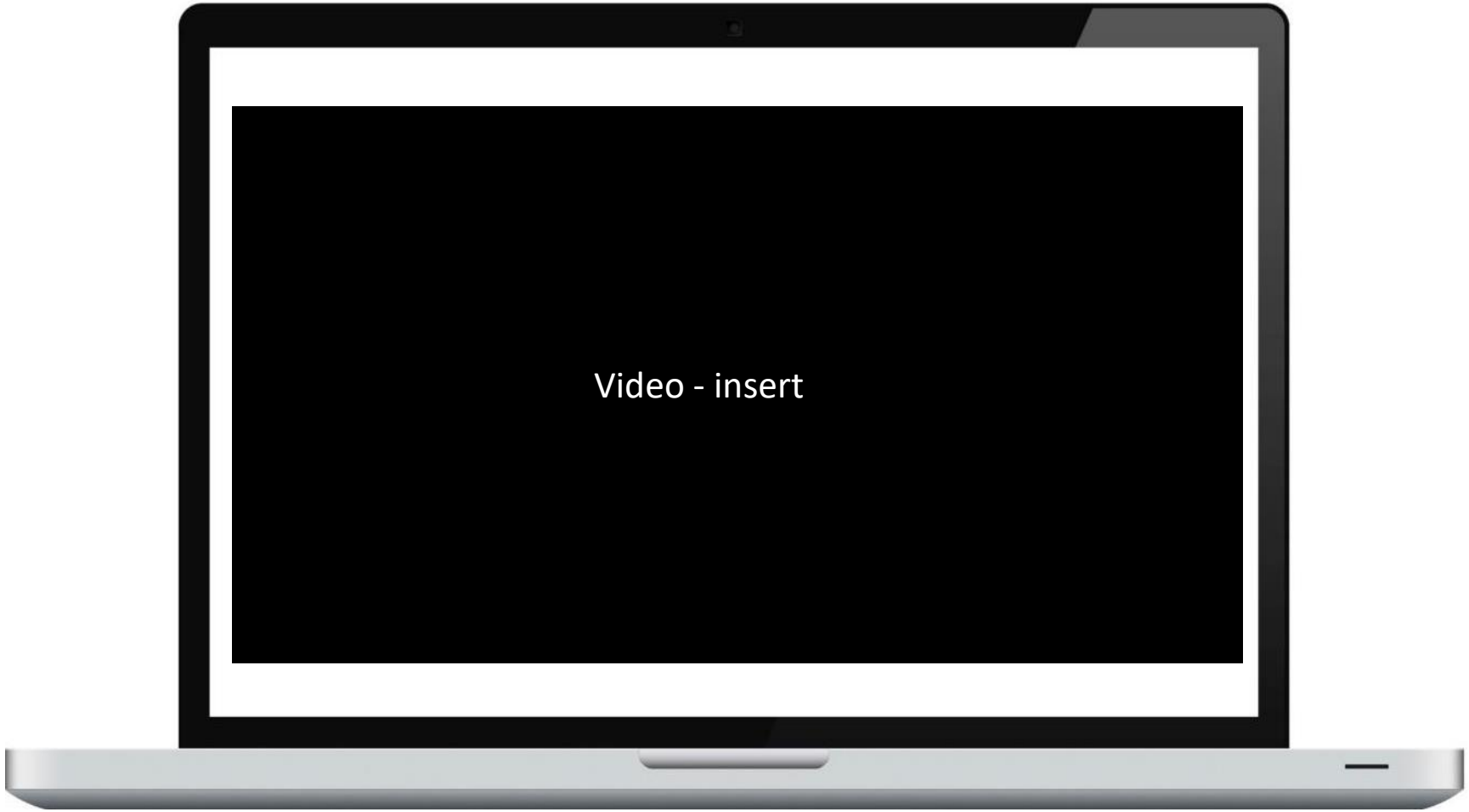
Sales & Governmental Affairs Manager

365FarmNet

Digitial agriculture

Data Management 1982

Today



Technical challenge – Limitations

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Social challenge – Transparency

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Challenges – Networking of the entire farm

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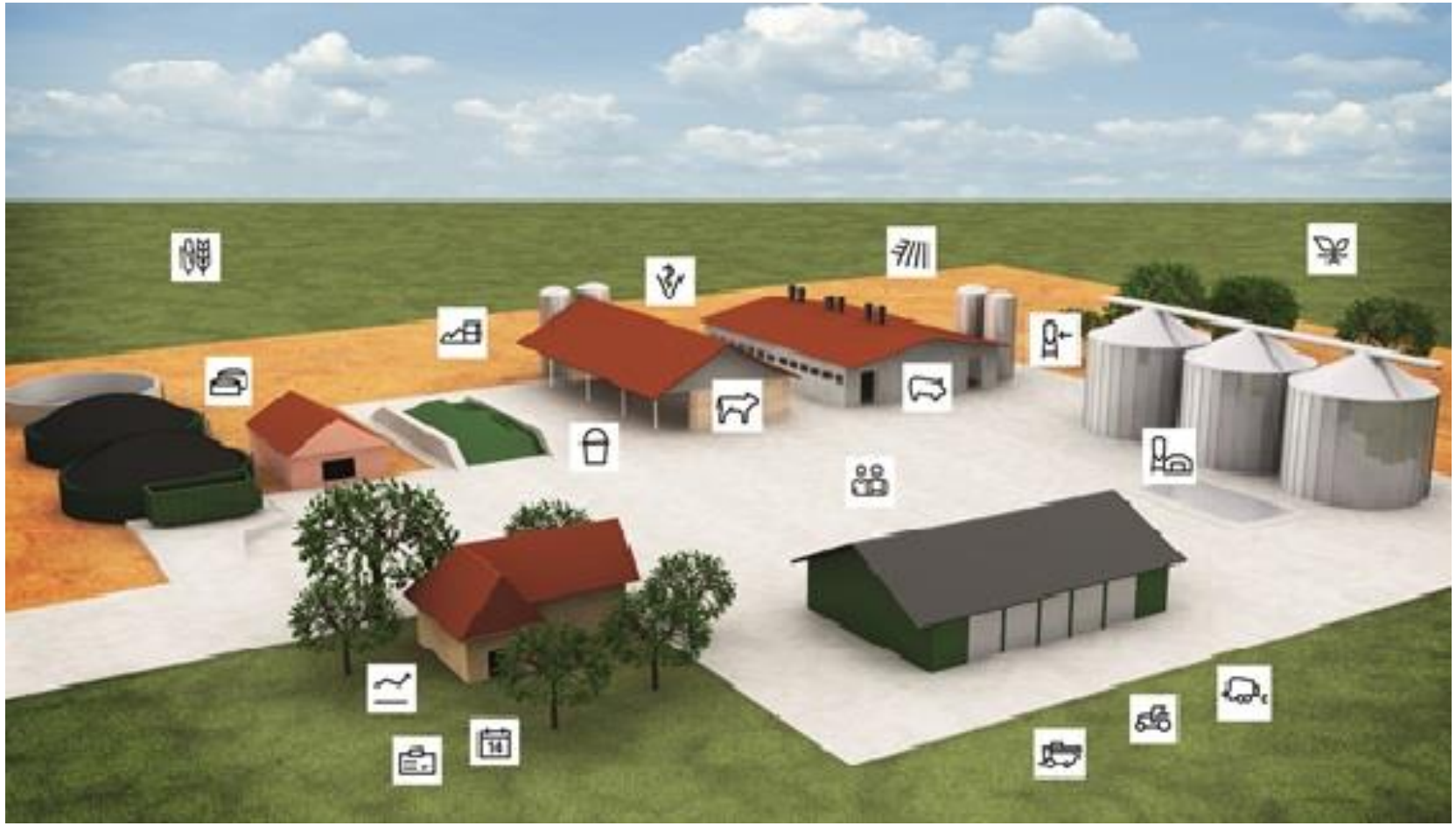

The challenge of the future – More intelligence on the m2 or the cow

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Technologies

Optimization and application

Sensors of the new generation

Pesticides and biopesticides

GNSS-data

Sentinal-data

No- and low-till farming approaches and tools

Applications

Increased yield

Increased agricultural efficiency

Increased crop resistance to stressors like heat and drought

Increased water use efficiency

Reduced carbon footprint

Improved storage process

Targeted fertilizer and pesticide use

Process of milking – Reduce pressure of work and foster animal health

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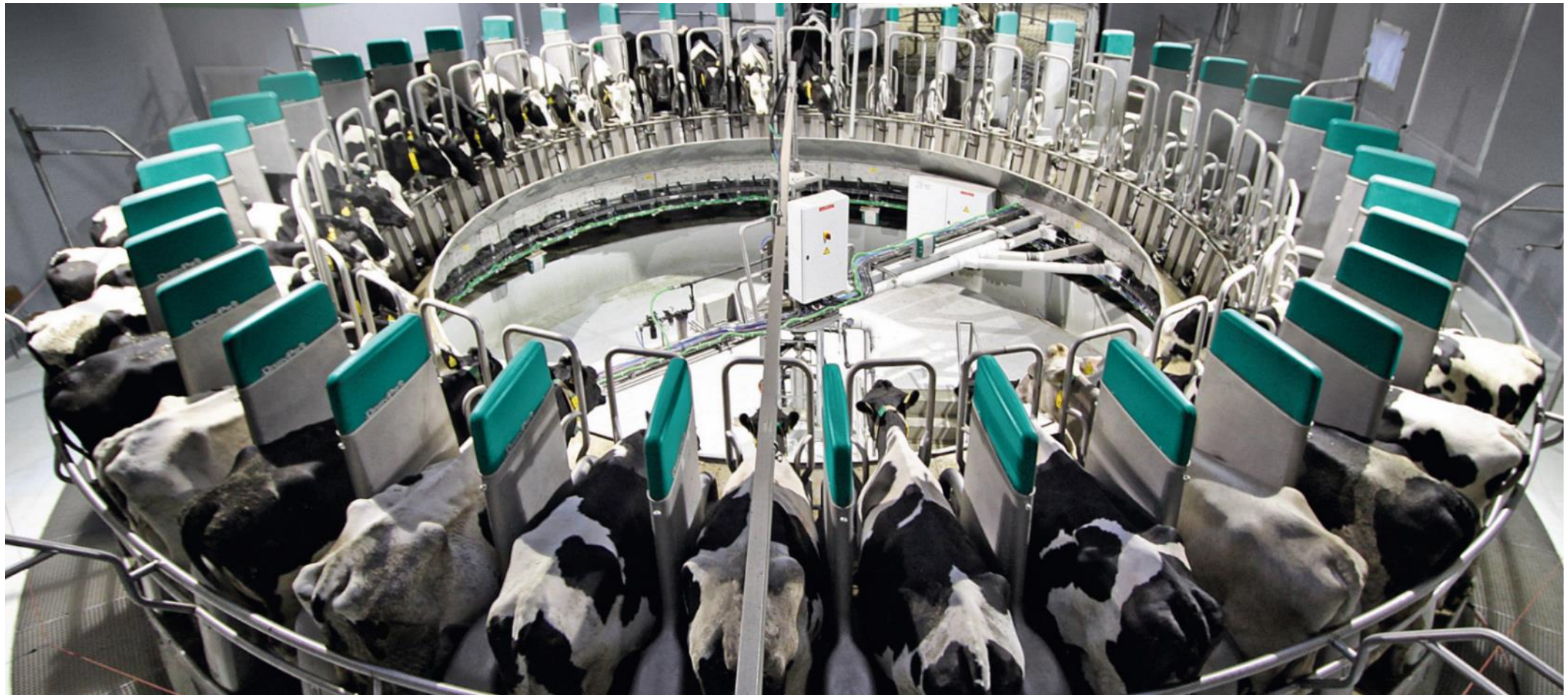

What does is mean with regard to data management?

Everything that can be automated,

will be automated.

Everything that can be networked,

will be networked.

Everything that can be digitised,

will be digitised.

Everything that can be located,

will be located.

The impact of digital agriculture

Top Focus

- Farm to fork
- Carbon footprint
- Reduce environmental impact

Scope of application in agriculture

Major use cases

- Manage machinery
- Reduce the input of fertilizier and chemicals
- Obtain best possible price
- Comply with regulations

Variety of european farming

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Machines

Pesticides

Advice

365FarmNet for the entire farm

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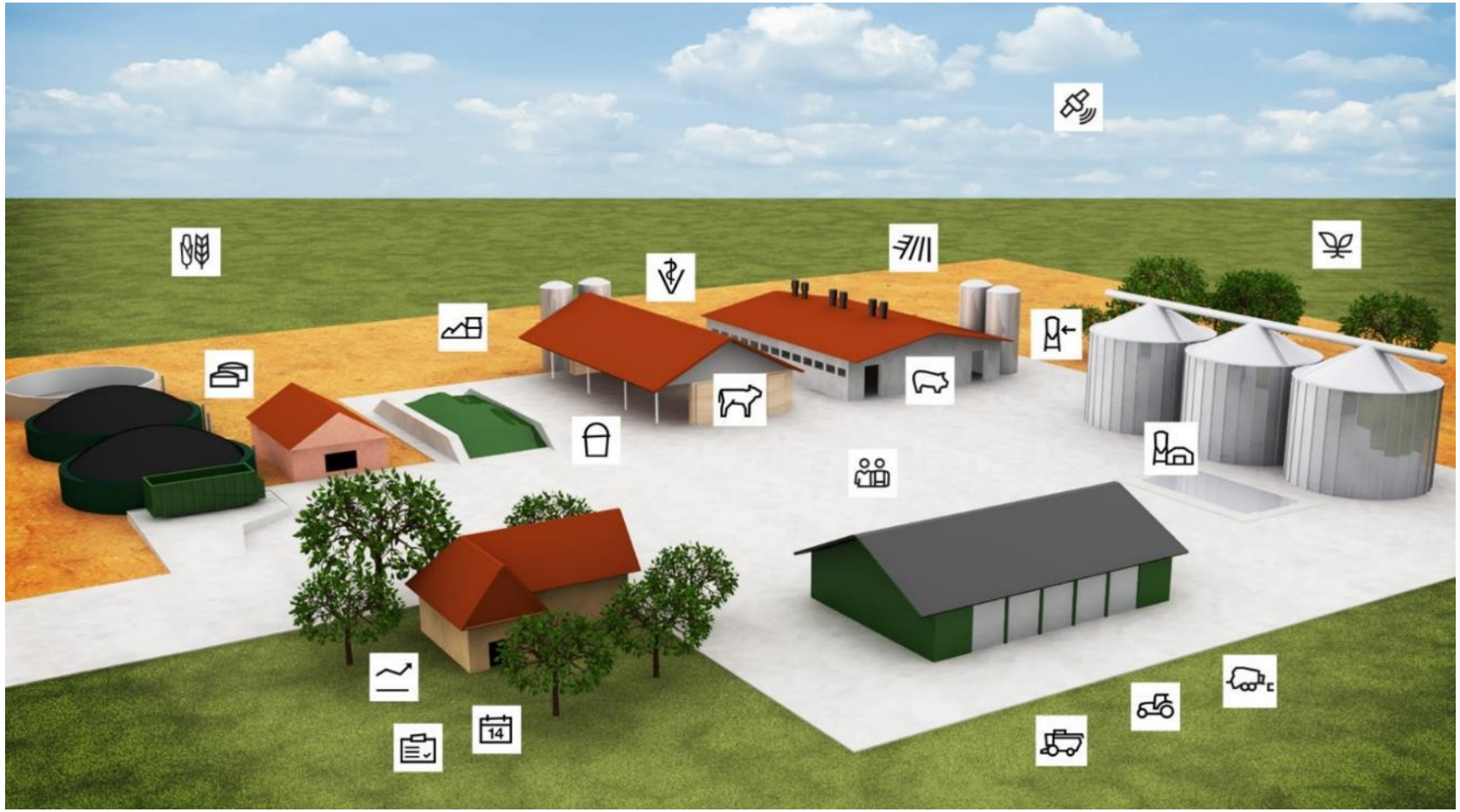

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Cooperation and integration

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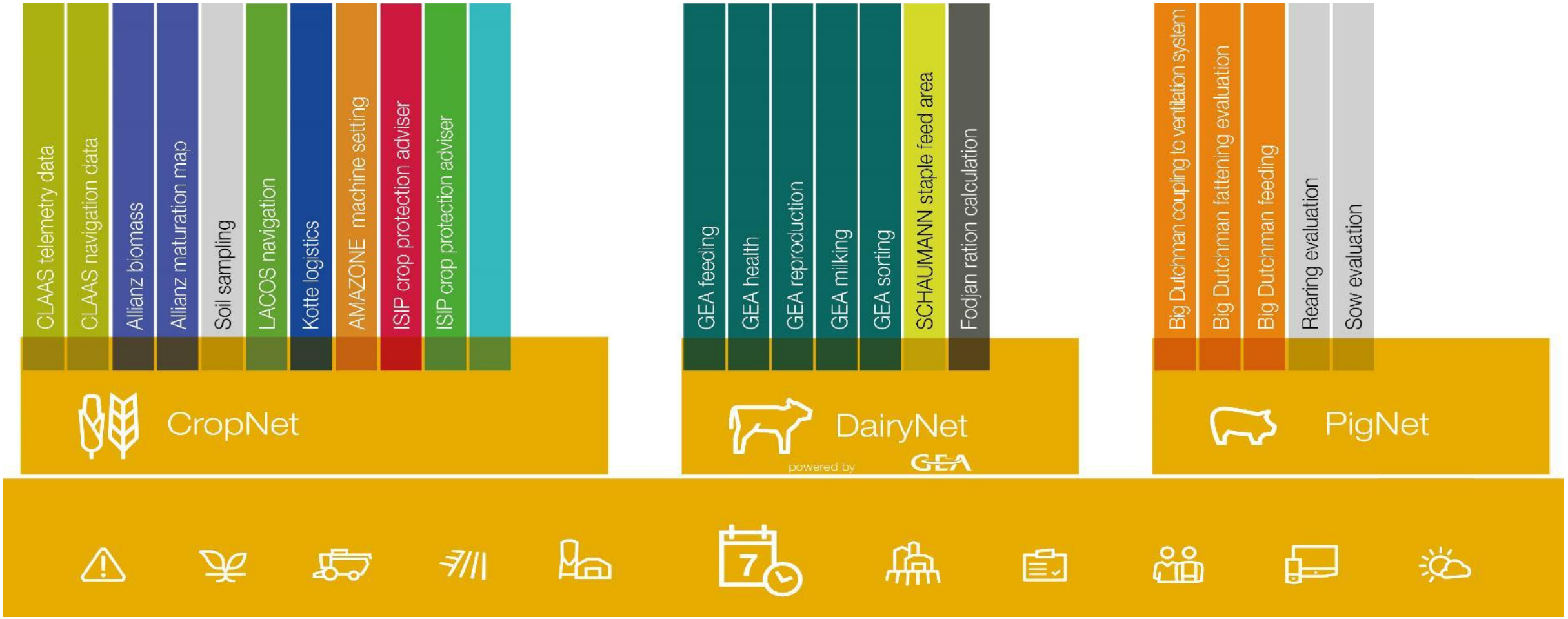

Process in agriculture – Measurement and monitoring

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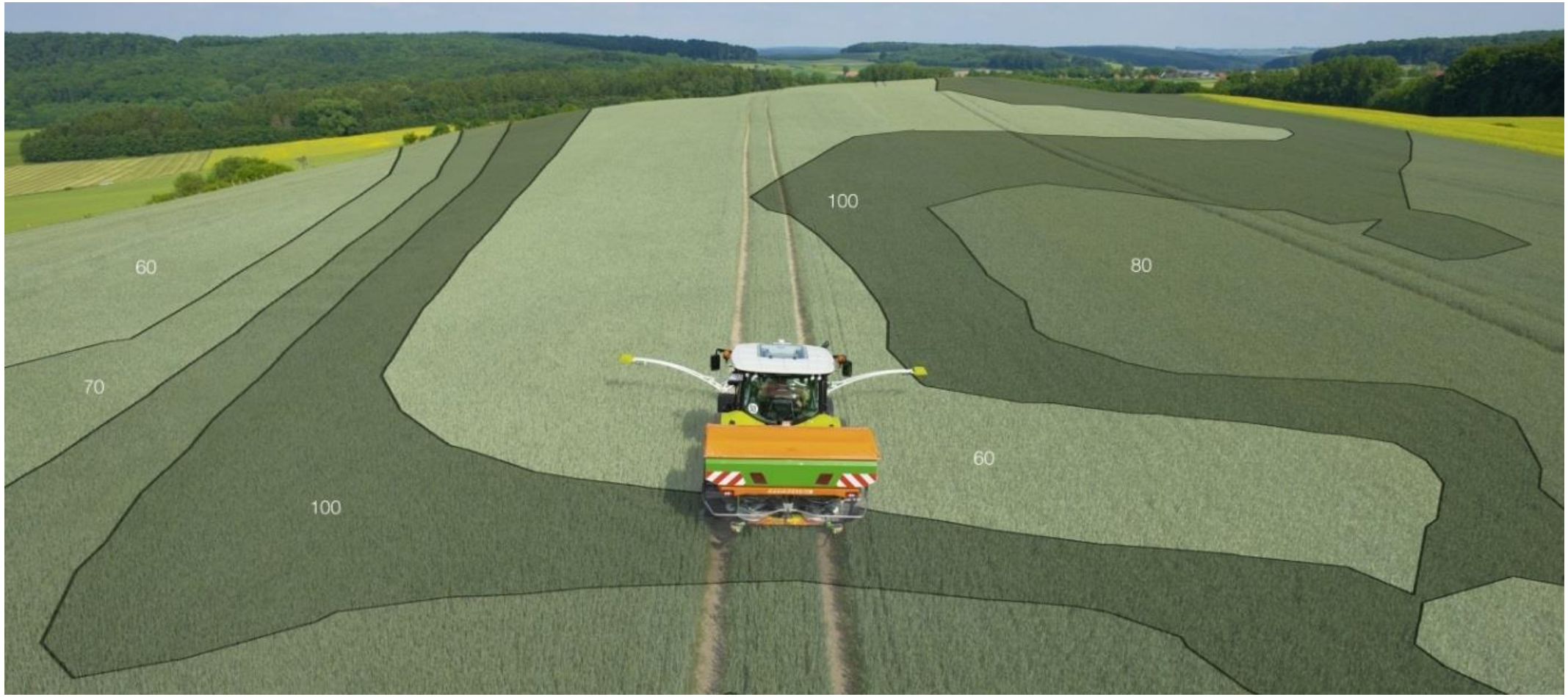
Sensors – Reduce and optimize the input



Project GEOPAL

GEOPAL is based on the Global Navigation Satellite System (GNSS) for a improved infield navigation in agriculture by leveraging GALILEO and EGNOS.

The system assists European farmers to improve the efficiency during the in-field an inter-field logistic activities such as harvesting, distribution and the bioproduction (biomass an agri-food) supply chains.

It is a European project founded by the EU as al part of the Seventh Research Framework Programme (FP7).

Partners: University Aarhus, CLAAS, LACOS, LEE

Duration of the project: 4/2011 to 10/2014.

Real-life example, with previous machining direction

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My Farm | Crops

Machines | Fieldroute optimisation | Precision Farming

Fields

no.	Name	Area (ha)
13-01	Katzbachwieden-03	6.85
14-01	Brunnen-links	0.80
14-02	Brunnen-rechts	0.61
15-00	Hinterm Wald	1.00
54-00	Elisenhöhe	4.95
57-00	Husemann	4.74
58-00	East Field	12.00

Machine	
Headland width	0.00 m
Working width	0.00 m
Headland speed	0.00 km/h
Working speed	0.00 km/h
Create partfields	☑
Display tracks	☑

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Result of a machine with a working width of 15 metres

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57-00	Husemann	4.74
58-00	East Field	12.00

Machine	Slurry Tanker
Headland width	15.00 m
Working width	15.00 m
Headland speed	8.00 km/h
Working speed	8.00 km/h
Create partfields	☑
Display tracks	☑

Route results

Working time	1.12 h
Time in the field	0.71 h
Time in the headland	0.41 h
Area	11.11 ha
Number of turns	18
Route length	8.93 km

CLAAS

- Track
- AB line
- Field
- Partfield
- Headland

Westenholzer Str.

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Result of a machine with a working width of 4 metres

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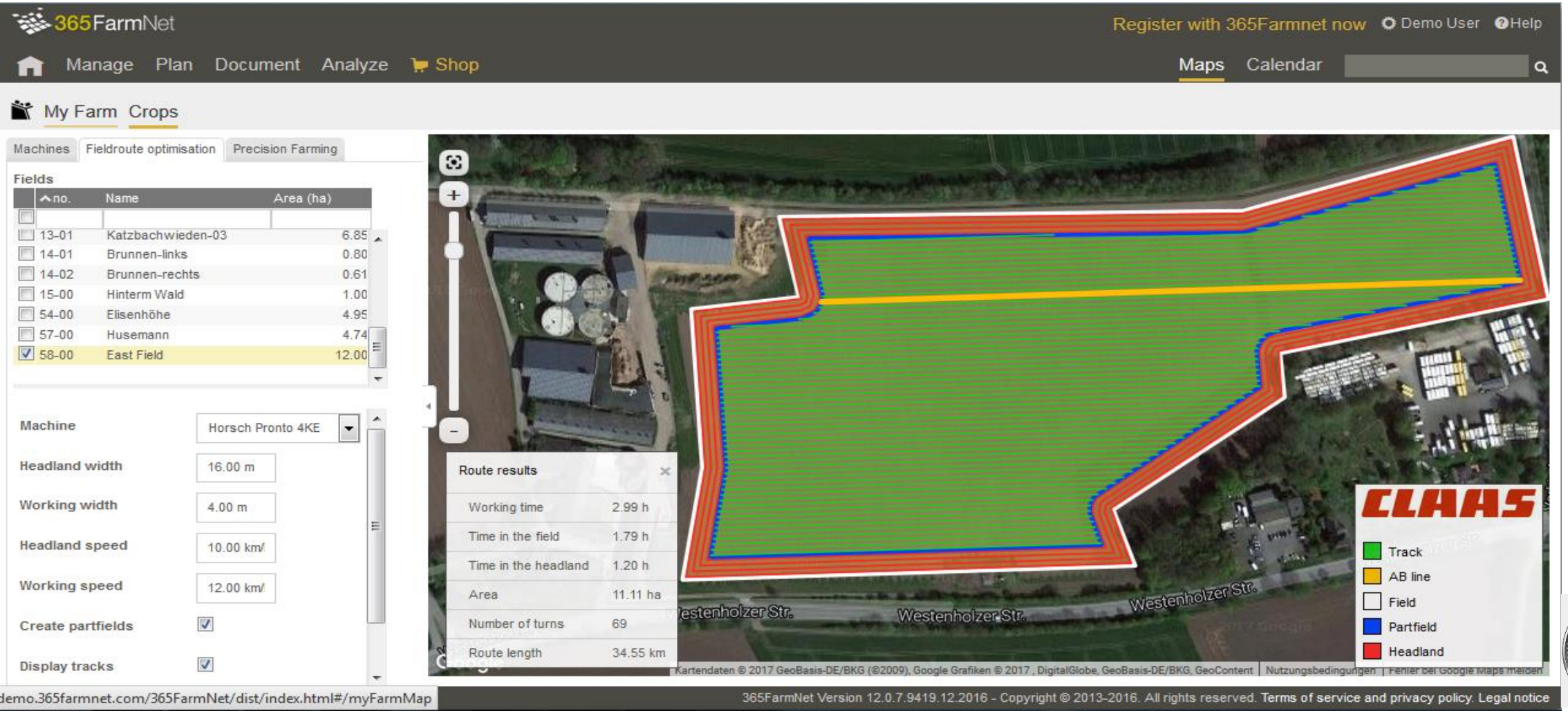

What drives farmers? From Big Data…

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…to Smart Data

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The objective – from Big Data to Smart Data

For this approach to succeed, strategies are needed for:

- Data transfer
- Data structure
- Data analysis
- Data security

Farm management systems take care of data management and offer the farmer maximum advantage with minimum effort!

Big Data vs. Smart Data

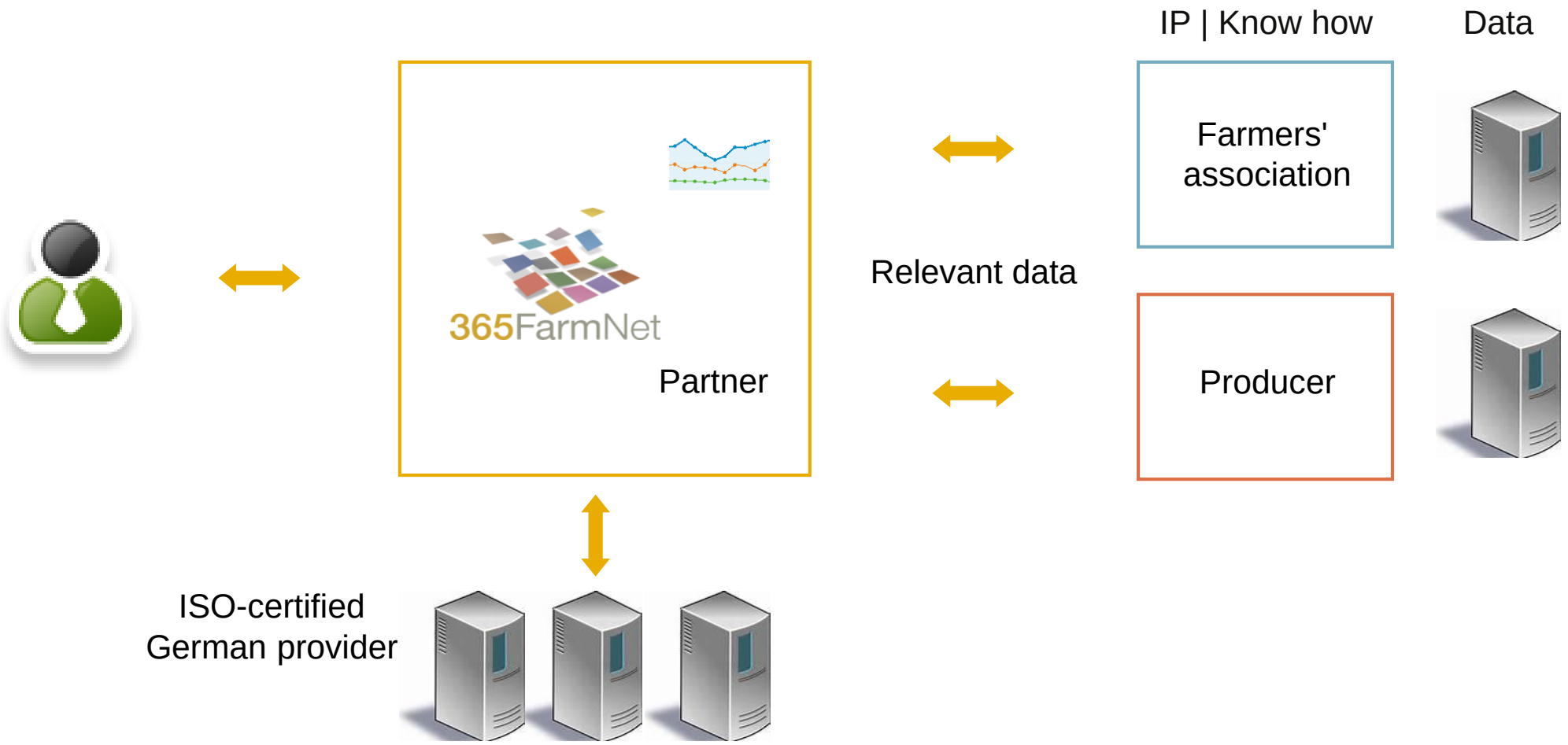
Not the sheer amount of data („Big“), but their valuable content („Smart“) is the criterion

Detailed, technical know-how of agricultural processes is a prerequisite for analysing data correctly

Only those who structure, analyse and understand data, create real added value for the farmer

The future belongs to those who are able to combine their knowledge of technologie, users and domains!

Open for a new partnership



Partner concept

Benefits

Cooperation with local „heroes“

Concept fits in perfectly with the requirements of an agricultural holding

Outlook

1. The production‘s ability for cooperation with modern software including the collected data will decide upon the future success of businesses.

2. New business models will be developed which take the opportunities offered by new technologies into account and which are geared towards agricultural requirements.

3. New engineering processes will respond to new technical evelopments and pave the way for farmers and cooperatives.

Outlook

4. The success of farmers depends on the extent to which they make use of automation and information technologies.

5. Big Data of the agricultural industry will turn into Smart Data in order to make every square metre of soil more intelligent so that the production of every litre of milk is made more effective and more animal-friendly.

6. In future, the entire food chain will communicate in a very transparent way with the consumer.

Thank you for your attention.

I am looking forward to discussing these issues with you.

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