The Digital Transformation of Agriculture:
Scandinavian Best Practice of Industry 4.0

II European Latvian Economic Forum

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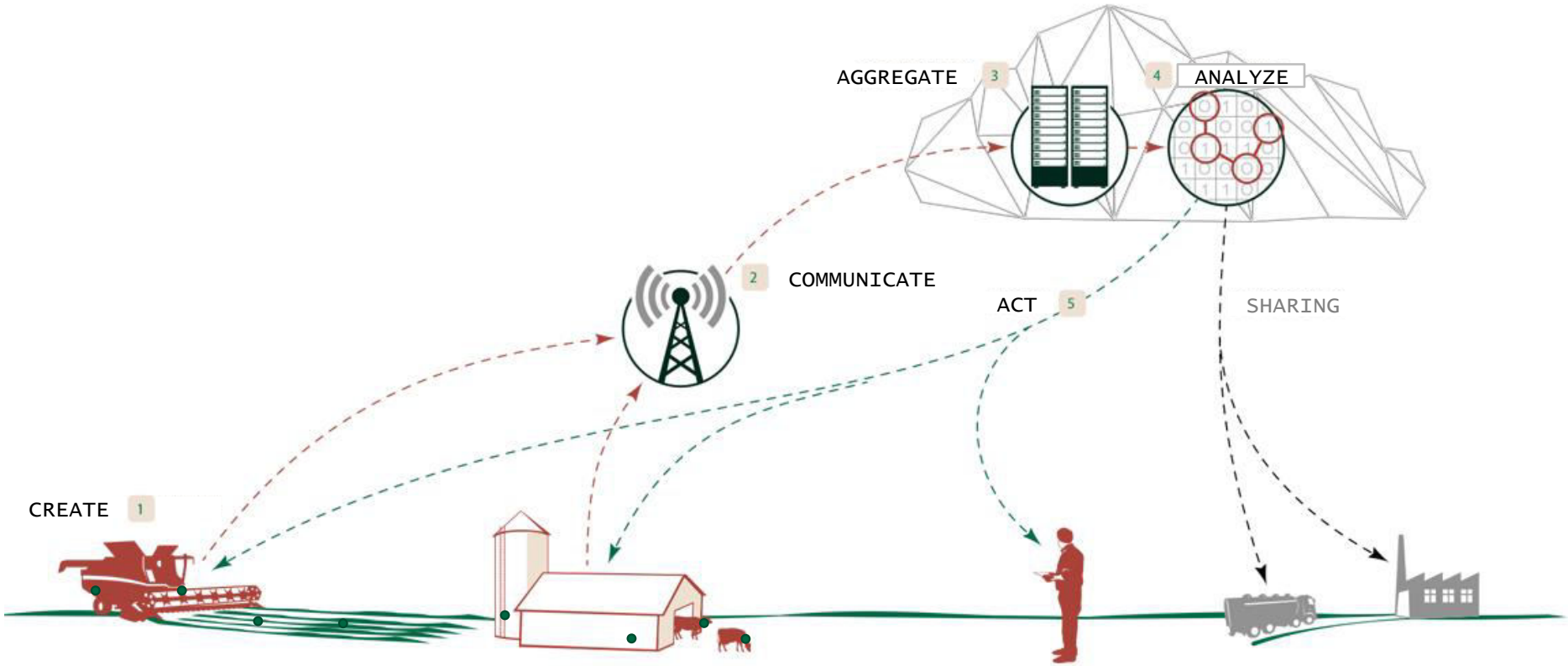
Multiple technologies are converging – creating value by digitizing physical and biological farm-level processes

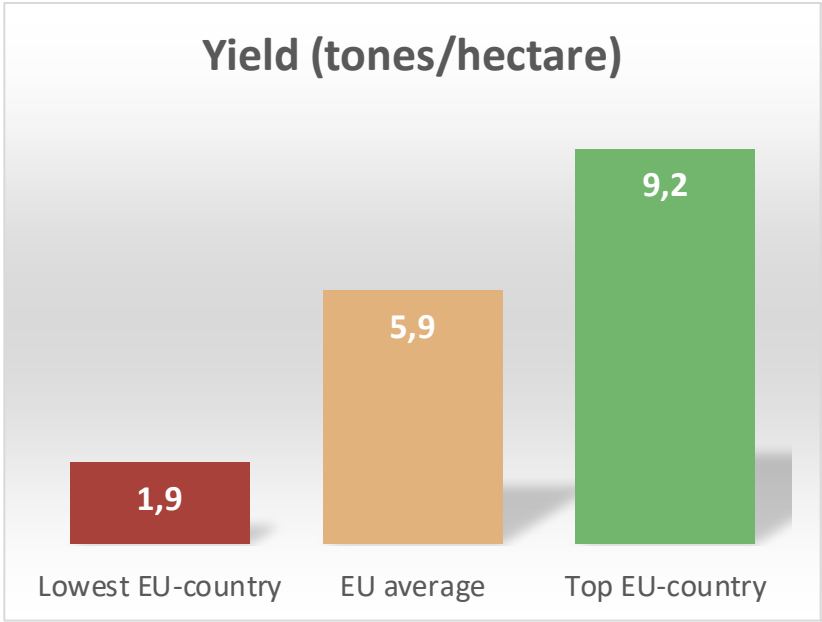


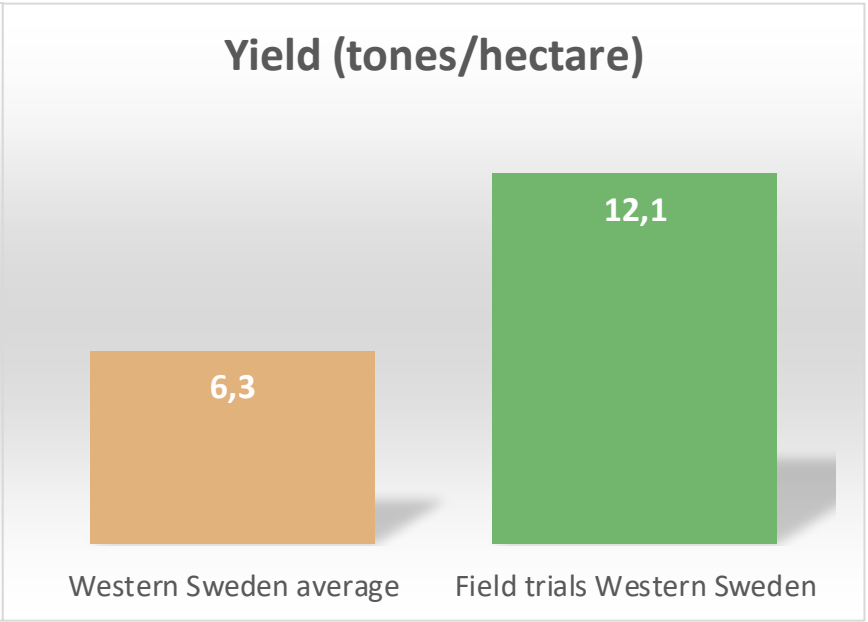
THE DEFINITION OF IoT

*Small **sensors** are placed in "things", such as machines, green houses, animals and the ground. The sensors enable a situational behavior, given that the "things" can register and communicate with the environment.*

*The sensors are generating large amounts of cloud based data, which is aggregated and analyzed in order to **automatically instruct** machines or facilitate farm-level **decision making***

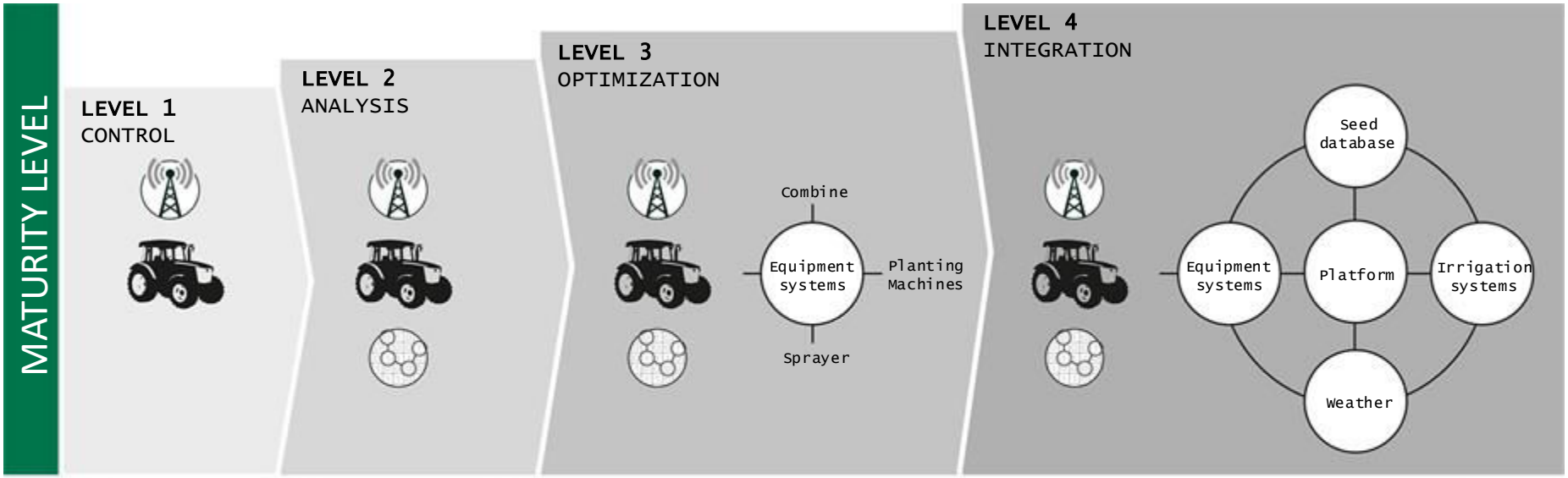
The crop yield gap – one of the reasons why investments are pouring into the ag-space





Sources: RISE, SCB, EUROSTAT, SLU

The production systems are getting more intelligent – forming complex eco systems



WHERE ARE WE GOING?

Goal

- Higher yield in the production (productivity per hectare, yield per hectare)
- Less inputs in the production (diesel, oil, seeds, chemicals)

Implications

- From: optimizing the machine
- To: optimizing the treatment of the individual tree, plant, crop, animal, m^2 land etc.

*Partly inspired by Porter

Agriculture machinery & software intelligence is accelerating rapidly

80 sensors and advanced software enable:

- High degree of production automation and effectiveness
- Up to 80% reduction in crop chemical use
- Increased driver comfort
- Real time service & optimization

IR camera and advanced software enable:

- Real time monitoring
- Up to 50% reduction in mastitis and antibiotics use
- Up to 10% increased production
- Fewer veterinary visits and costs

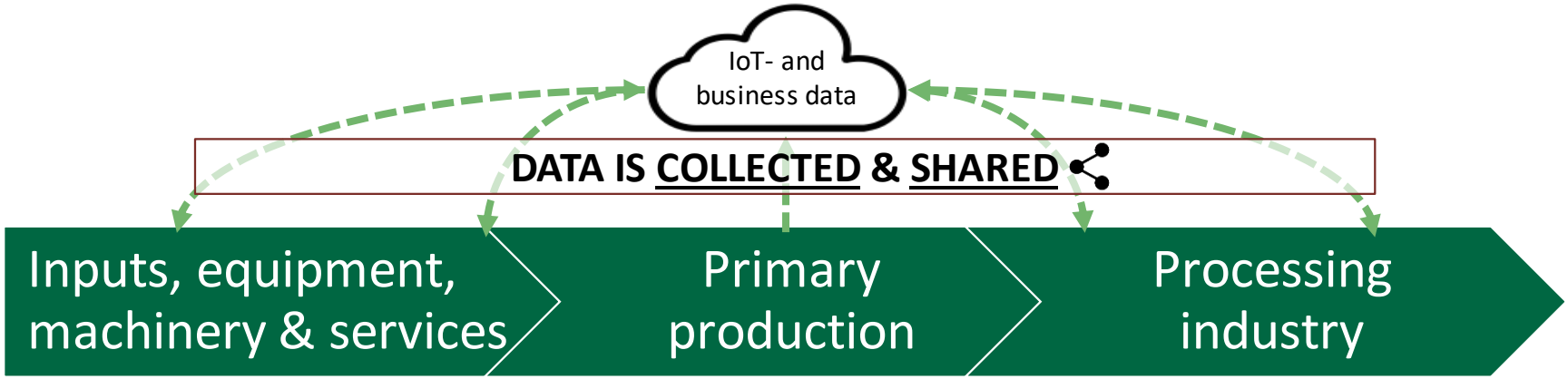
Satellite data and advanced software enable:

- Up to 40% reduction in fertilizers used
- Precision agriculture machinery log files
- Integrations with farm management systems
- Plant health monitoring

Farm data and advanced software enable:

- Improved farm level planning & efficiency
- Simplified compliance reporting
- Integrations with farm management systems
- Farm performance benchmarking

Multiple Scandinavian cross-value chain initiatives are driven in order to capitalize on the digital transformation



Arlagården+

- Digital milk QA-system allowing Arla to prove that their milk is sustainably produced and safe

Viljatori/Spannmålstorget

- Fully digital information flow platform for finish cereal production and trade

LM^2

- A farm management platform including: machine data, production, trading, advisor data etc.

THANK YOU!