Data Management Challenges in Arable Farming while heading towards higher Degree of Autonomy

Workshop: Agri-food robotics: state of the art and future challenges

Thilo Steckel, CLAAS E-Systems

ERF 2017, Edinburgh

Our Business …

Combine harvesters

Forage harvesters

Tractors

Forage harvesting machines

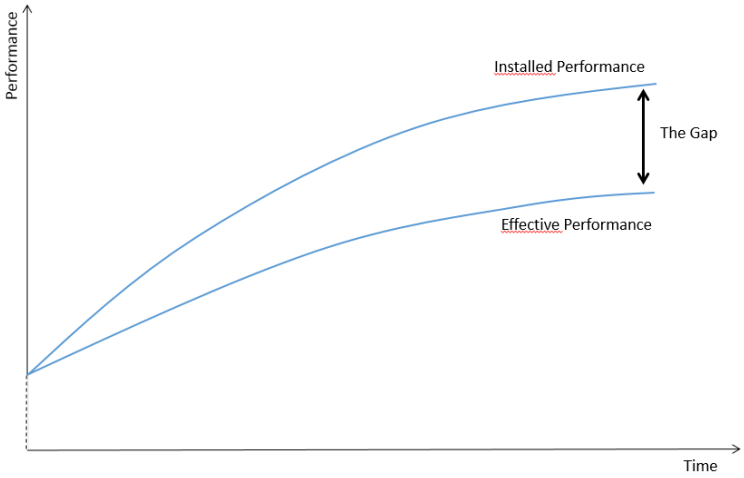
Telehandler

Balers

Service & Parts

Software and systems

… and our main challenge



Challenges Overview

Technology:

- Sensors: Hyperspectral, view of vision
- Machine: robustness, self-learning, scale level

Organisation:

- Mixed environments
- Plan, control, optimize, document, identification of collaborating systems
- Competences, qualification
- Seasonality
- Connectivity
- Variability of environment versus specifity of tools
- Heurstic, quantitative approaches

Economy:

- Small lot sizes
- Labour cost
- Seasonality
- Redundancy

Legal:

- Safety levels, liability
- Privacy
- Public space

Data Management adresses all categories and is a challenge itself

Data Management Issues

Machine:
- Machine models
- Data quality
- Data understanding
- M2M, M2X, 5G

Environment:
- Environment models
- Semantics

Process:
- Process models
- Semantics
- Anticipation

Infrastructure:
- Standards

Methods:
- Context
- Semantics
- Artificial Intelligence
- Connectivity (DTN, MANET)
- Predictions

Business:
- Privacy, acceptance
- Cyberphysical Systems, System of systems
- Business Models

Final Remarks

Robots in agriculture are just another useless toy, please convince us of the contrary.

Robots in agriculture are not a technology issue, but economical and organisational.