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Kathrine Hauge Madsen

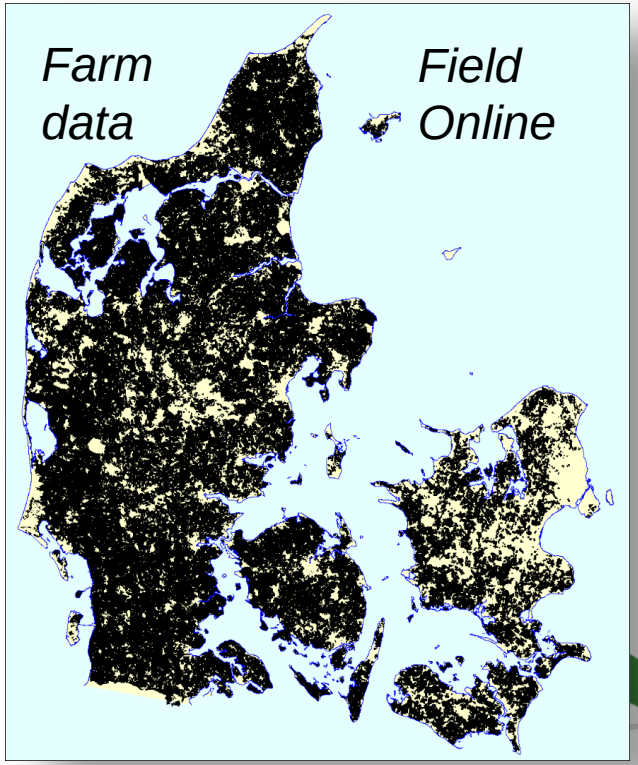
khm@seges.dk

”DIGITIZING THE AGRI-FOOD SECTOR”

SEGES
Crop & Environment

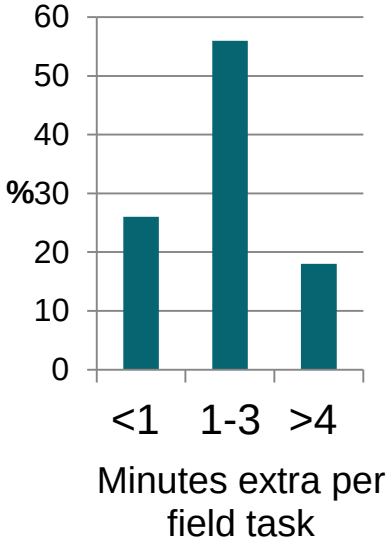
INTRODUCTION TO MY ORGANIZATION

- Kathrine Hauge Madsen
  - Project manager for Future Cropping 2015-2020.
- SEGES is part of DLBR
  - A collaboration of 31 independent agricultural advisory companies with approx. 3.300 employees
  - DLBR is owned by Danish farmers
  - Collected farm data for 30-40 years
    - Data from 85% of the Danish fields



CHALLENGES DANISH FARMERS ARE FACING

- Difficult to invest in precision ag. technologies
  - Farm economy under pressure (low prices, depth, high salaries)
  - New technology – lack of studies showing return of investment
- Structural change towards larger farms
  - Difficult to keep updated at the field level (many fields…)
  - Foreign employees– language difficulties
- Extensive regulation
  - Affected crop yield and quality
    - 2016 → New targeted regulation on nitrogen fertilization
  - High level of documentation at the farm level
- Increasing amount of data collected but value not determined?
  - Poor infrastructure for access to data from various sources
  - Slow or unreliable mobile internet in some areas

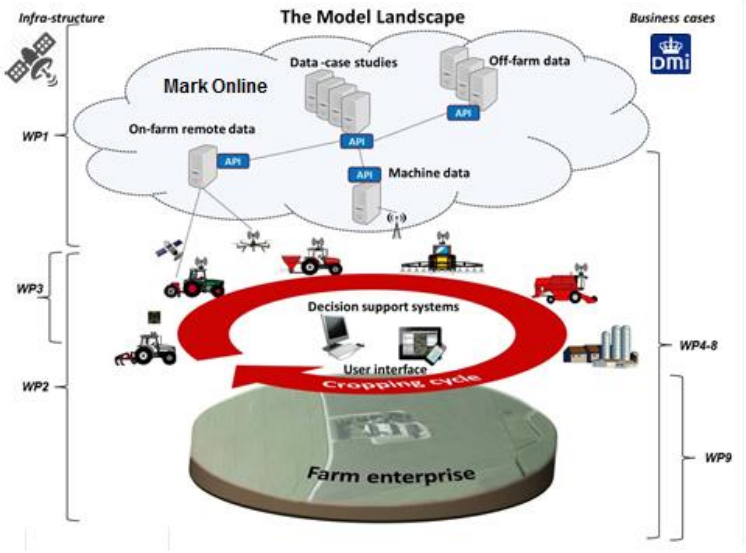


Source: GeoWebAgri, 2012, approx 200 farmers from Finland, Germany and Denmark,

NEEDS, 1

- Facilitate use of data
  - Infrastructure for data exchange between ‘clouds’
  - Standards for data storage and exchange
  - Clear rules for ownership and use of data
    - Farmers owns their own data
    - Incentive to share farm data
  - Easy and free access to public data
    - E.g. free data from satellites – more like this!
  - Data-mining
- Investment in joint innovation projects with public and private partners
  - Research/innovation for new “Intelligent” solutions
    - Automated monitoring and analysis
    - Site-specific action (existing/on-the-go data)
    - Robots to reduce costs and soil compaction
  - New business models
    - Combine big-data, agronomic science and commercial knowhow in the value chain

Example: The Danish Future Cropping societal partnership 2015-2020



NEEDS, 2.

- Include the end-user (farmer) in the innovation process and design of the digitized solutions
  - New intelligent technologies that solve important challenges
  - Plug-and-play
  - Integrated, easy to use, online software for farm management
- Demonstrate value of precision farming and use of data
  - Test, validation and demonstration
  - Easy, reliable and automated documentation
    - Fulfil the regulatory requirements
    - Traceability and transparency regarding the production method (consumers)
- Create change at the farm level
  - Technology interested farmers as ‘role-models’
  - Training of farmers and advisors
    - Implementation of digital technologies
    - Use of IoT-tools, data-analysis and interpretation, integrated decision support systems…

Photo: Jesper Rasmussen, Copenhagen University

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HOW TECHNOLOGY CAN HELP MEET THE CHALLENGES AND NEEDS

- Increase crop yield and quality without increasing input
  - Automatic monitoring and analysis of each field
  - Better models for decision support
  - Site-specific optimization of input factors
  - Automated variable rate field treatment
- Reduce input and emission
  - Optimized use of nutrient use with less leaching to costal waters (or groundwater)
  - Pesticide use minimized, patch-spraying
  - Less use of fossil fuel (CO_2)
- Ensure reliable and trustworthy documentation
  - Consumer
  - Public authorities
- Pave-the-way for new innovation and businesses in the agricultural sector

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