

Thomas Högman



The European Region for Innovation in Agriculture, Food
and Forestry (ERIAFF)

Network Conference on Smart Specialisation Strategy (S3)
Theme: Agrifood Platform Activities
Focus area: High Tech Farming

Florence 26–29 March 2019



**“A new
agricultural
technology
initiative”**





Agtech 2030



powered by

VINNOVA



Region
Östergötland



Vreta Kluster

AgroÖst

SCIENCE
PARK
MJÄRDEVI



LINKÖPING
UNIVERSITY

...and partners

The background of the image is a clear, bright blue sky filled with soft, white, fluffy clouds. The clouds are scattered across the frame, with a larger, more prominent cloud cluster in the center where the text is located. The overall atmosphere is bright and open.

Why?

The background of the image is a clear blue sky with several white, fluffy clouds. A large, prominent cloud is centered behind the text, while smaller, wispy clouds are scattered across the rest of the sky.

**We all know agriculture
is changing a lot**



**Bosch
robot**

The background of the image is a clear, bright blue sky filled with soft, white, fluffy clouds. The clouds are scattered across the frame, with a larger, more prominent cloud cluster in the upper center. The overall atmosphere is bright and airy.

**We are all aware of the
(partly new) challenges:**



**Need for
fossil-free
fuel and
fibres**



**Limited
agricultural
land**



**New
food
habits**



**Demand
for more
sustainable
methods**



**Yes,
population
growth!**



**Drought
and extreme
weather**



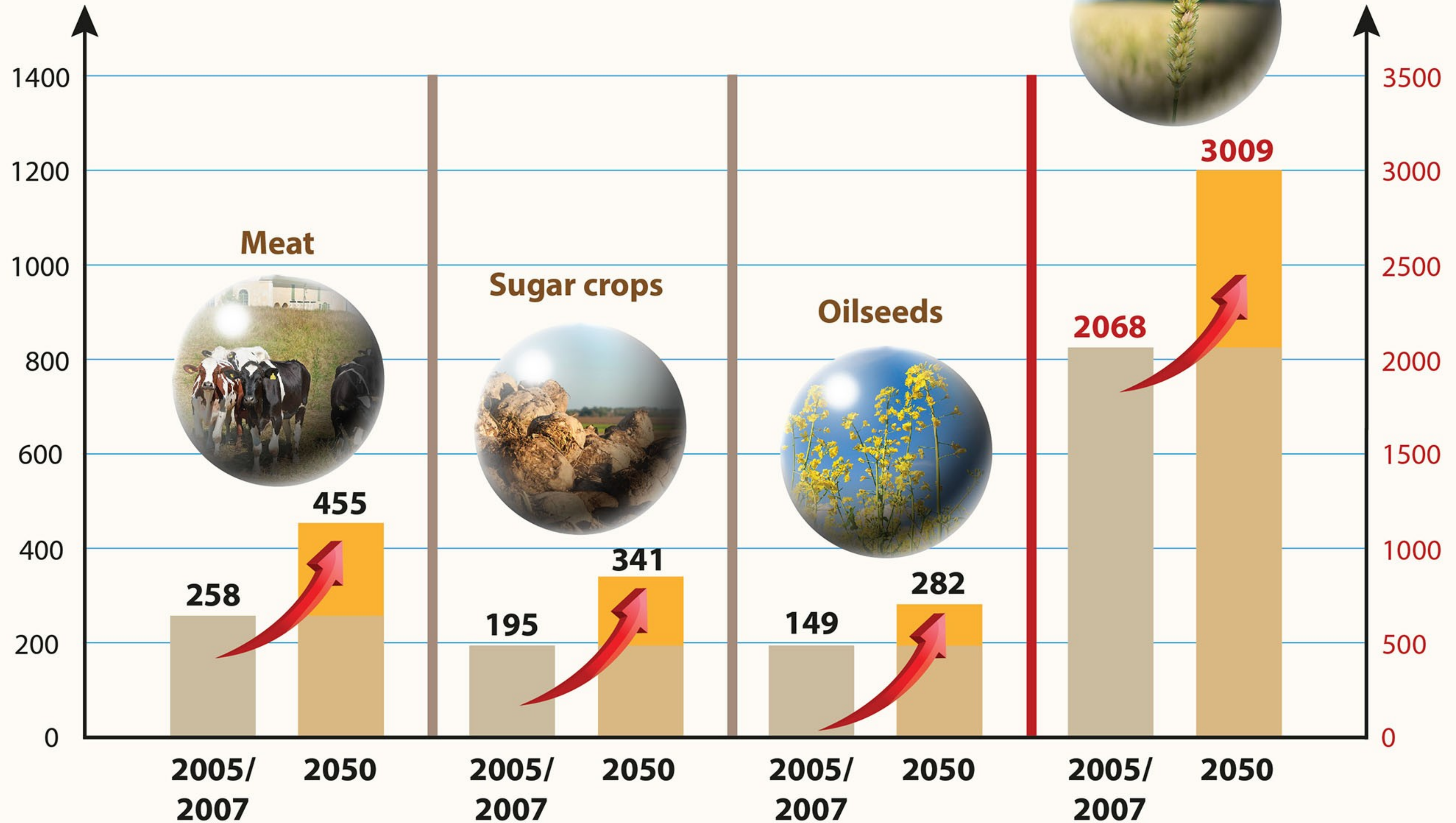


**More food needed 2050
according to the United Nations:**

Million tonnes

Cereals

Million tonnes



**Food
shortages is
a root cause
of conflicts**

THE
LANCET

Back to the root causes of war: food shortages

In their brilliant Article, Zachary Wagner and colleagues (Sept 8, 2018, p 857)¹ estimated that, between 1995 and 2015, about 5 million children younger than 5 years died in Africa because of armed conflict.

This kind of research is important for understanding the magnitude of war effects. However, studies like this do not contribute much to the understanding of the root causes of wars. Various theories have been presented.² One common explanation is religion. Others say war is caused by crazy rulers. It can be triggered by an error that is responded to with disproportionate retaliation, which escalates in a violent circle (such as the security failure preceding the assassination of



Per Frankelius

Food shortage is one of the root causes of war. Increased food needs in the future can be met by, for example, innovation in agriculture.

Submissions should be made via our electronic submission system at <http://ees.elsevier.com/thelancet/>

Extract from: Per Frankelius: Back to the root causes of war: food shortages. The Lancet, Vol. 393, March 9, 2019, pp. 981–982.

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Vision

”Creating a proactive and collaborative innovation environment for agricultural technology – dedicated to coop with the new challenges”

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Collaboration philosophy:



**Vreta
Kluster**

A group of people, mostly men in business attire, are gathered in front of a decorative wall featuring a pattern of circular cutouts. Some individuals are holding cameras, suggesting a media or press event. A woman in a yellow jacket is prominently featured on the right, holding a camera. The scene is brightly lit, and the overall atmosphere appears to be professional and focused.

**Peter Larsson
and
Sten Gunnar
Johansson in
Holland**

The background of the image is a clear blue sky with several white, fluffy clouds. A large, bright cloud is positioned behind the text, creating a soft glow effect.

The partnership

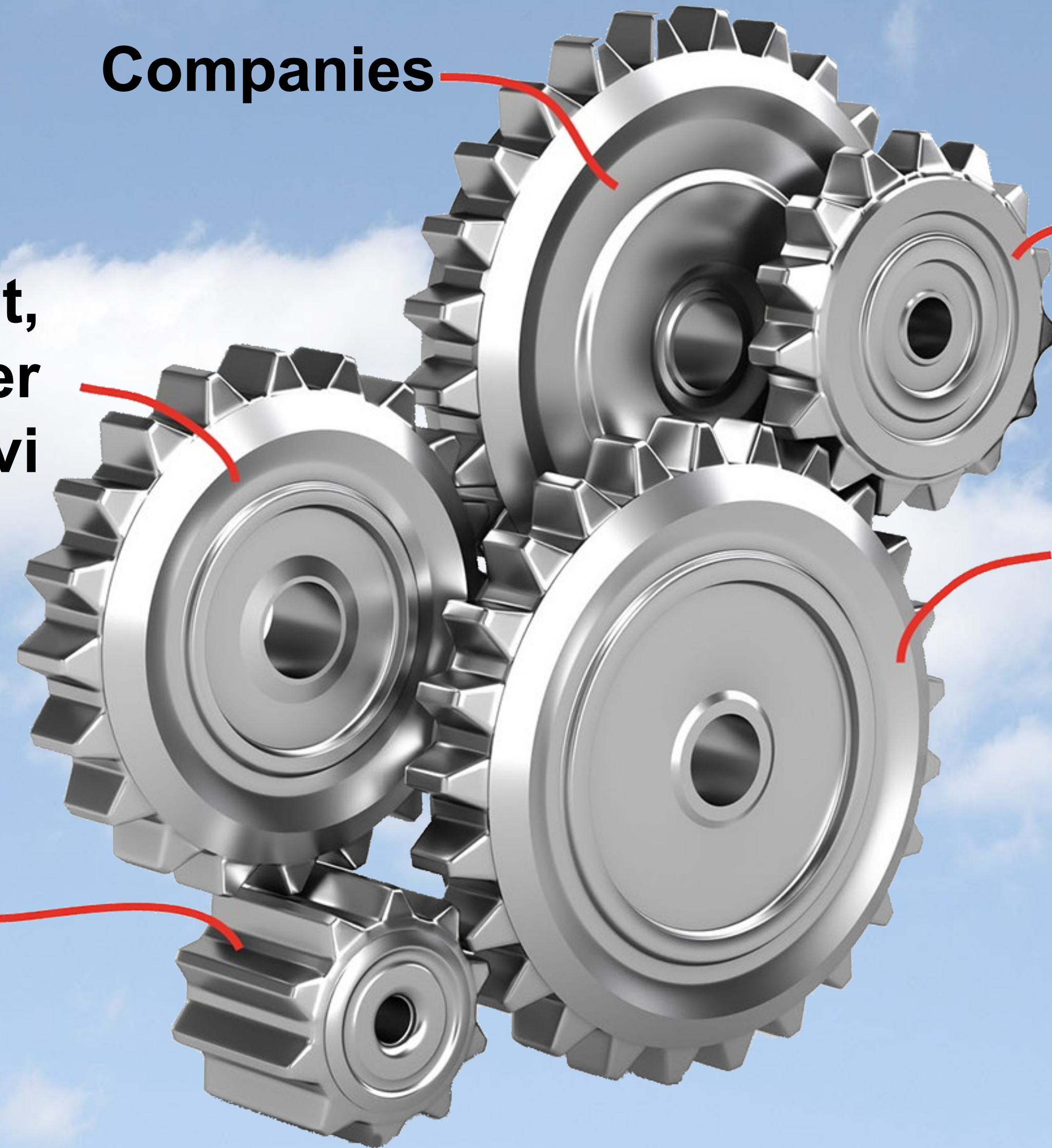
Companies

**Linköping
University**

**AgroÖst,
Vreta Kluster
Science Park Mjärdevi**

**Region
Östergötland**

Vinnova



Tech companies:

Actia Nordic

Saab

Glana Sensors

Svenska Mätanalys

Farming companies:

Tolefors Gård

RS Agrotec

Åbylund Säteri

Högåsa Gård

Farm machinery companies:

Medin Maskin

Väderstad

Åhmans Traktorcentrum (John Deere)

Gothia Redskap

Kverneland

Value chain companies:

Lantmännen

Advisors and consultants:

Hushållningssällskapet

Lovang Lantbrukskonsult

Weather companies:

SMHI

Cooperative platforms:

AgroÖst*

Vreta Kluster

Science Park Mjärdevi

Regional actors:

Region Östergötland

Financial sponsor, special:

Sankt Kors

Academia:

Linköping University

(and SLU via AgroÖst)



Tolefors
Farm



**Saab
Ventures**

**Bound for
4 kinds of results**

**Technology
development**



**Business
development**



**Competence
development**



**Knowledge
development**



**3 lighthouse
project areas**



**Decision
systems**



**Sensor
applications**



**Remote
service**





**Process
leading team**

**Per Frankelius: Process leader
(Linköping University)**

**Charlotte Norrman: Deputy process leader
(Linköping University)**

**Uno Wennergren: Scientific leader, sustainable development
(Linköping University)**

**Fredrik Gustafsson: Scientific leader, technology and digitalization
(Linköping University)**

**Helen Oscarsson: Green industry representative
(Vreta Kluster)**

**Nils Gabrielsson: Controller and strategist
(Region Östergötland)**



A photograph of two people, Charlotte Norrman and Per Frankelius, standing in front of a large red Volvo BM 7664 truck at an exhibition. The truck is a heavy-duty model with a large grille and the number 7664 on the side. The background shows other vehicles and exhibition lights. A green circular graphic is overlaid on the left side of the image, containing the names Charlotte Norrman and Per Frankelius.

**Charlotte
Norrman
Per
Frankelius**



Uno
Wennnergren

A photograph of two men standing on a reddish-brown dirt road in a savanna landscape. The man on the left is wearing a dark polo shirt, dark trousers, a black cap, and glasses. The man on the right is wearing a camouflage military uniform. They are engaged in a conversation, with the man in camouflage gesturing with his hands. The background features a large, leafy tree on the right, a dirt road leading into the distance, and a horizon with small houses and mountains under a blue sky with white clouds.

**Fredrik
Gustafsson**



Helene
Oscarsson

A portrait of a middle-aged man with grey hair and glasses, smiling. He is wearing a dark blue suit jacket over a white button-down shirt. A red patterned pocket square is visible in his jacket. The background is a modern office interior with glass partitions, indoor plants, and contemporary furniture like a blue sofa and yellow chairs.

**Nils
Gabrielsson**

The background of the image is a clear, bright blue sky filled with soft, white, fluffy clouds. The clouds are scattered across the frame, with a larger, more prominent cloud cluster in the upper-middle section where the text is located. The overall lighting is bright and even, suggesting a clear day.

Funding

**Vinnova
Region Östergötland
Linköpings University
and partners
More than 10 Million Euro
Timeframe: 10 years**



A young boy with light brown hair, wearing a white long-sleeved shirt and blue jeans, is in a gym. He is bent over, holding a heavy barbell with both hands. The barbell has two large green weight plates on each end. He has a strained expression on his face, with his brow furrowed and mouth slightly open, indicating he is struggling. The gym background is dimly lit, with various pieces of exercise equipment visible in the shadows. The floor is a dark, polished surface.

Alone is not strong enough



**Get in touch
with us!**

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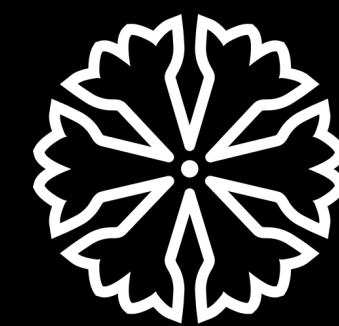


Thanks!



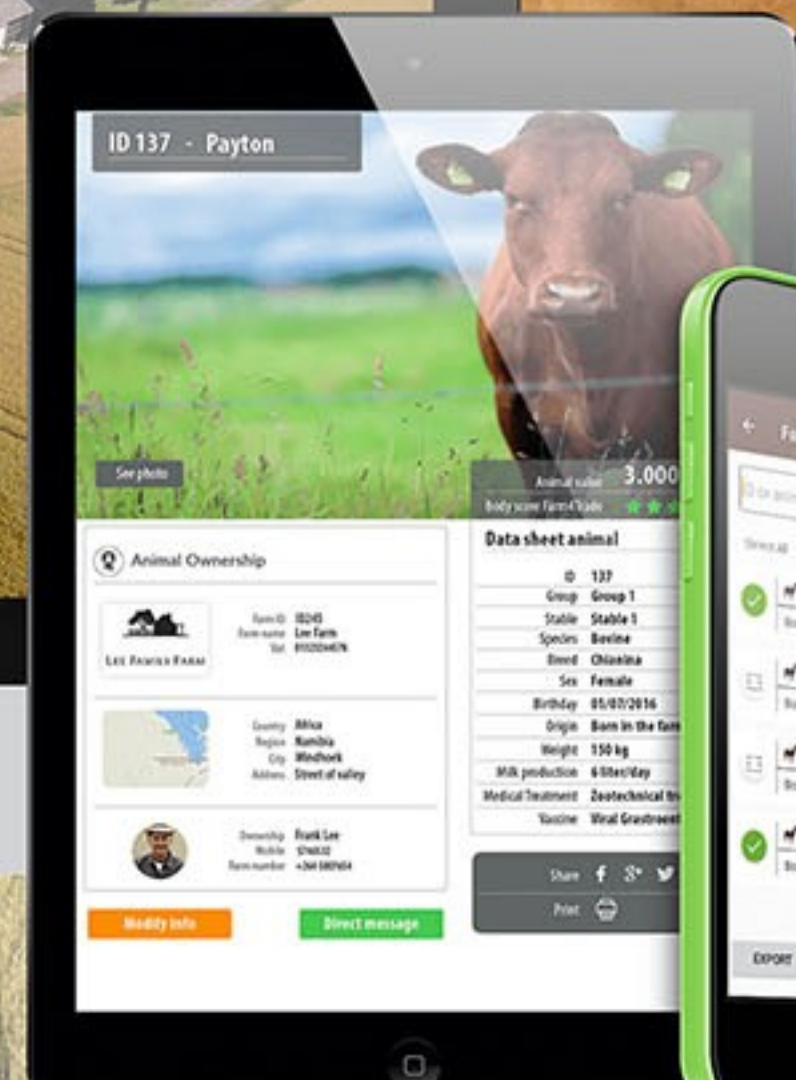
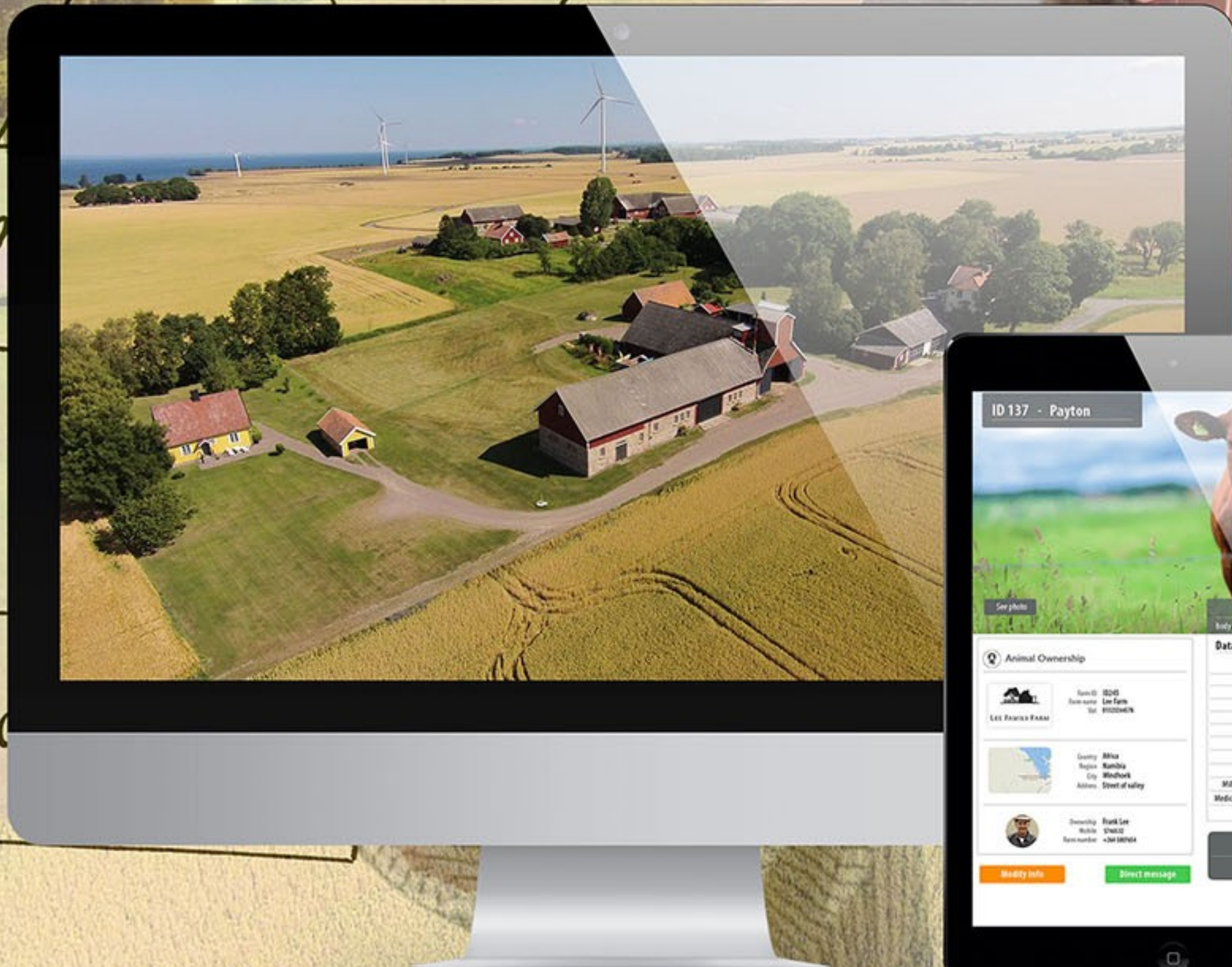
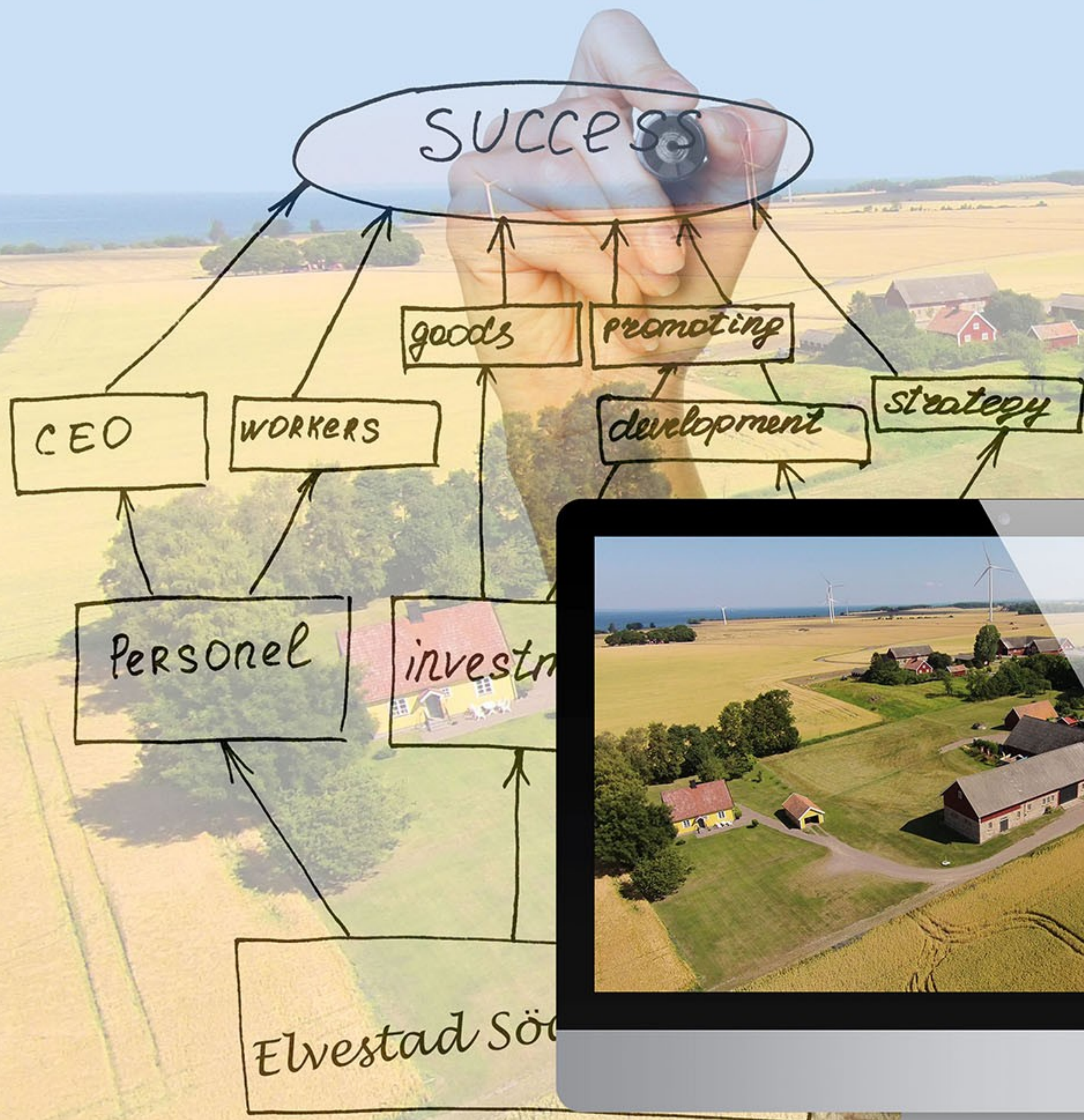


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AI Diagnosis



BLACK BEAN APHID
DOWNY MILDEW
BLACK SPOT DISEASE
BROAD BEAN WEEVIL
CHOCOLATE SPOT DISEASE
PEA LEAF WEEVIL
ROOT ROT

Artificial
intelligence

Agtech 20

Agricultural Innovation and the Role of Institutions: Lessons from the Game of Drones

Per Frankelius¹ · Charlotte Norrman¹ · Knut Johansen²

Accepted: 7 December 2017
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Abstract In 2015, observers argued that the fourth agricultural revolution had been initiated. This article focuses on one part of this high-tech revolution: the origin, development, applications, and user value of unmanned aerial systems (UAS). Institutional changes connected to the UAS innovation are analyzed, based on a Swedish case study. The methods included autoethnography. The theoretical frame was composed by four perspectives: innovation, institutions, sustainability, and ethics. UAS can help farmers cut costs and produce higher quantity with better quality, and also has environmental benefits. However, this promising innovation was exposed to institutional forces and suddenly became subordinated the Act of Camera Surveillance. This study illuminates how legislative institutions can inhibit responsible innovation. The study shows that different ethical perspectives can collide with each other.

Keywords Responsible innovation · Unmanned Aircraft Systems · High-tech agriculture

Introduction

The agricultural sector is under economic pressure due to intense regulation and international competition (OECD and FAO 2016). For individual farmers, this entails demands on efficiency and business development (SOU 2015). The farmer's increased demands require investments. However, the farmers'