



Living lab NL



ZLTO

Connecting frontrunners, early adaptors and followers





© ZLTO







Le
de TOUR
France

GRAND
DÉPART

UTRECHT
2015

© ZLTO





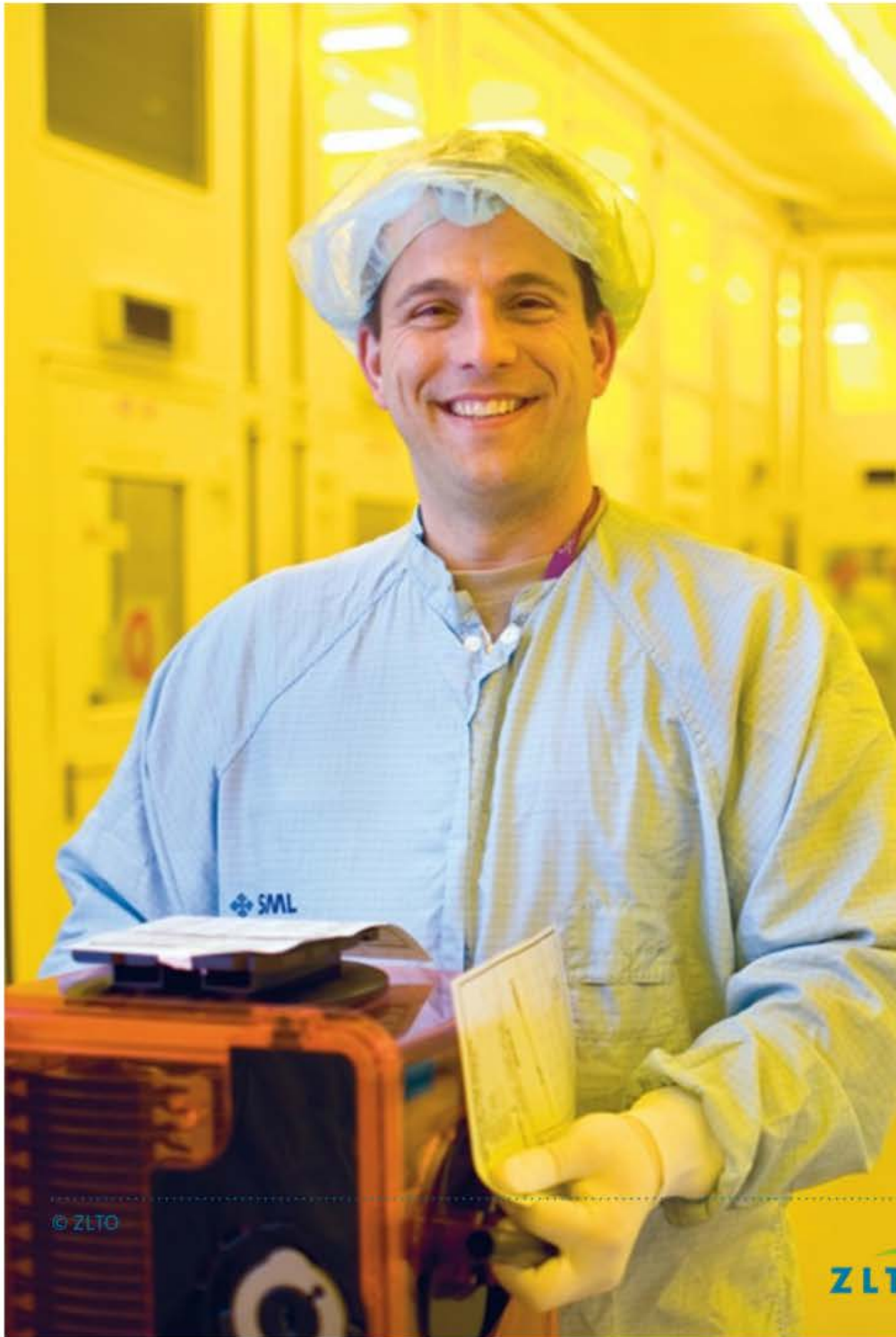
THE
WORLD'S
SMARTEST




Brainport
REGION
Eindhoven

© ZLTO





Outline

-  association for farmers and growers
- Precision agriculture; policies, practices and processes
- Challenges and chances

The logo for ZLTO, featuring the letters 'ZLTO' in a bold, blue, sans-serif font. To the right of the text is a stylized green graphic consisting of two overlapping, curved lines that resemble a leaf or a swoosh.

ZLTO

The Association for 16,000 Farmers and Growers in the South of the Netherlands

- initiates, invests, innovates, connects, communicates and cooperates;
- explores new opportunities and markets, together with our members;
- the linking pin to universities, governments and other creative thinkers;
- intends to increase productivity, while respecting human, animal and environmental well-being.

The logo for 'Farmers connect & innovate', featuring the text in a white, sans-serif font inside an orange circle. Below the text is a stylized blue bird icon.

**Farmers
connect &
innovate**

A yellow map of the Netherlands is shown within a yellow circular frame. A yellow line connects this frame to a larger green world map on the left, which has a small yellow circle around the Netherlands' location. The text 'THE NETHERLANDS' is written in blue on the map.

THE NETHERLANDS

- World class agriculture
- World smartest high tech region Brainport



ZLTO

Farmers
connect &
innovate

© ZLTO

ZLTO





Knowledge



Entrepreneurs

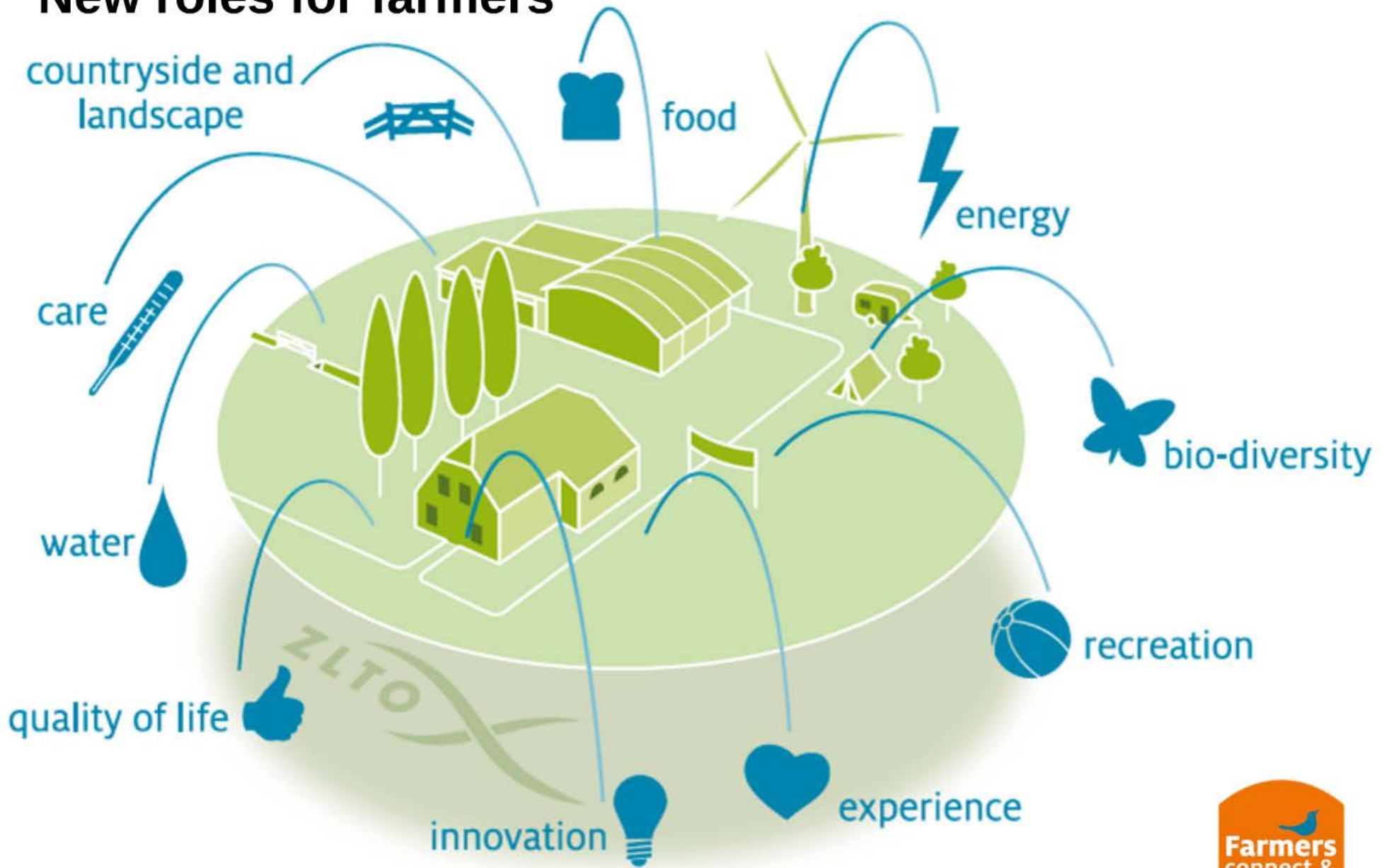


Network



Investment

New roles for farmers





Farmers
connect &
innovate

© ZLTO

ZLTO



Cooperative innovative farming

Smart farming

Social farming



Social farming

Through connecting with society

Environment

Health

Healthy food
Parks/Green in the city

Countryside

Biodiversity
Landscape
Water quality

Energy

Biomass
Solar/sun
Wind

Accommodation

Relaxation
Recreation

Society

Care

Sheltered farms
Better food

Education

Klasseboeren
Social traineeship

Food

Neighbourhood allotments
City farmers
Fresh produce centres
Regional products

Culture

Design
Quality of life
Cooperatives

Smart farming

Through connecting e.g. energy, high tech, chemistry and design

Agri

High tech, design

Precision agriculture

Employing robots
Remote sensing
Tracking & tracing

Grow-tech horticulture

Cultivation technology

Agri-food chain

Logistics, marketing

Chains

Sustainable foods
Distribution
Market concepts
Packaging

New products

chemistry, energy

Bio-based

Raw materials

Agro-biotech

Breeding improvements
Coating
Basic materials

Life science

Functional food
Green medicine



Our region

- Broadband: NL in Top 5, fastest and most widespread broadband connection
- Our region: even better!
- 94% of the inhabitants have broadband internet connection
- Smartest region in the world
- Most innovations per inhabitant
- Most patents per inhabitant
- Ready for Big Data and Internet of Things

© ZLTO

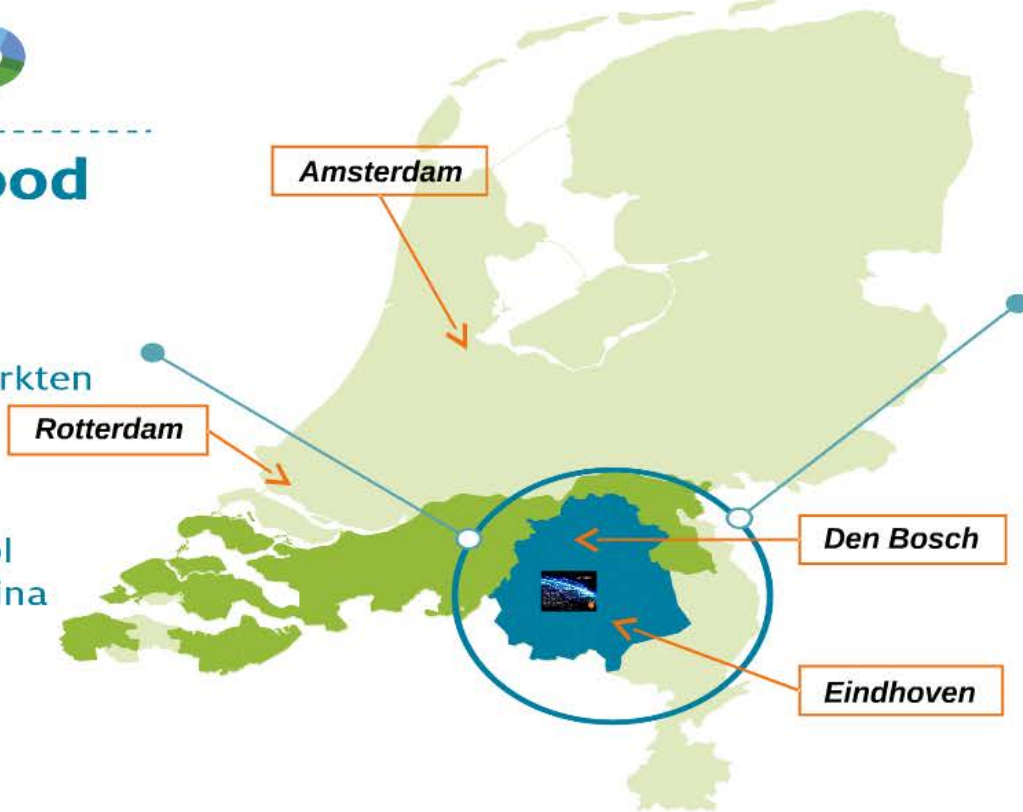




Agri & food

Nutricia
 Sligro
 Heineken
 Jumbo supermarkten
 Heijmans
 Masterfoods
 Vion
 HAS Hogeschool
 Friesland Campina
 Essent
 Unilever

...



Hightech

ASML
 Philips
 Brainport Region
 Eindhoven University of Technology
 Royal DSM
 NXP
 Océ
 DAF Trucks
 VDL groep
 Vanderlande Industries
 Fei Company
 Sioux Group
 Neways Technologies

...



157



United States
of America

101



The Netherlands

93



Germany

83



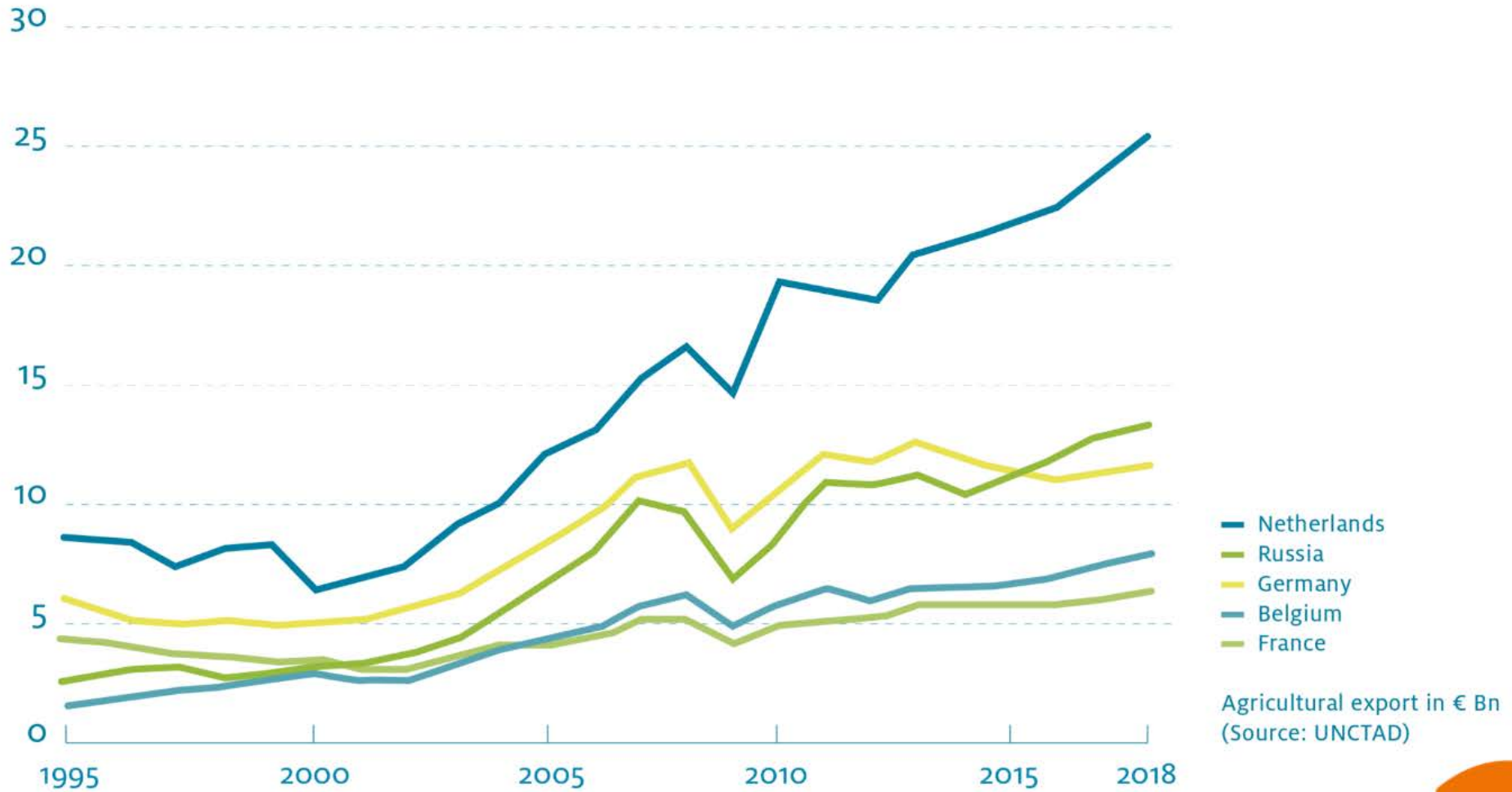
Brazil

82



France

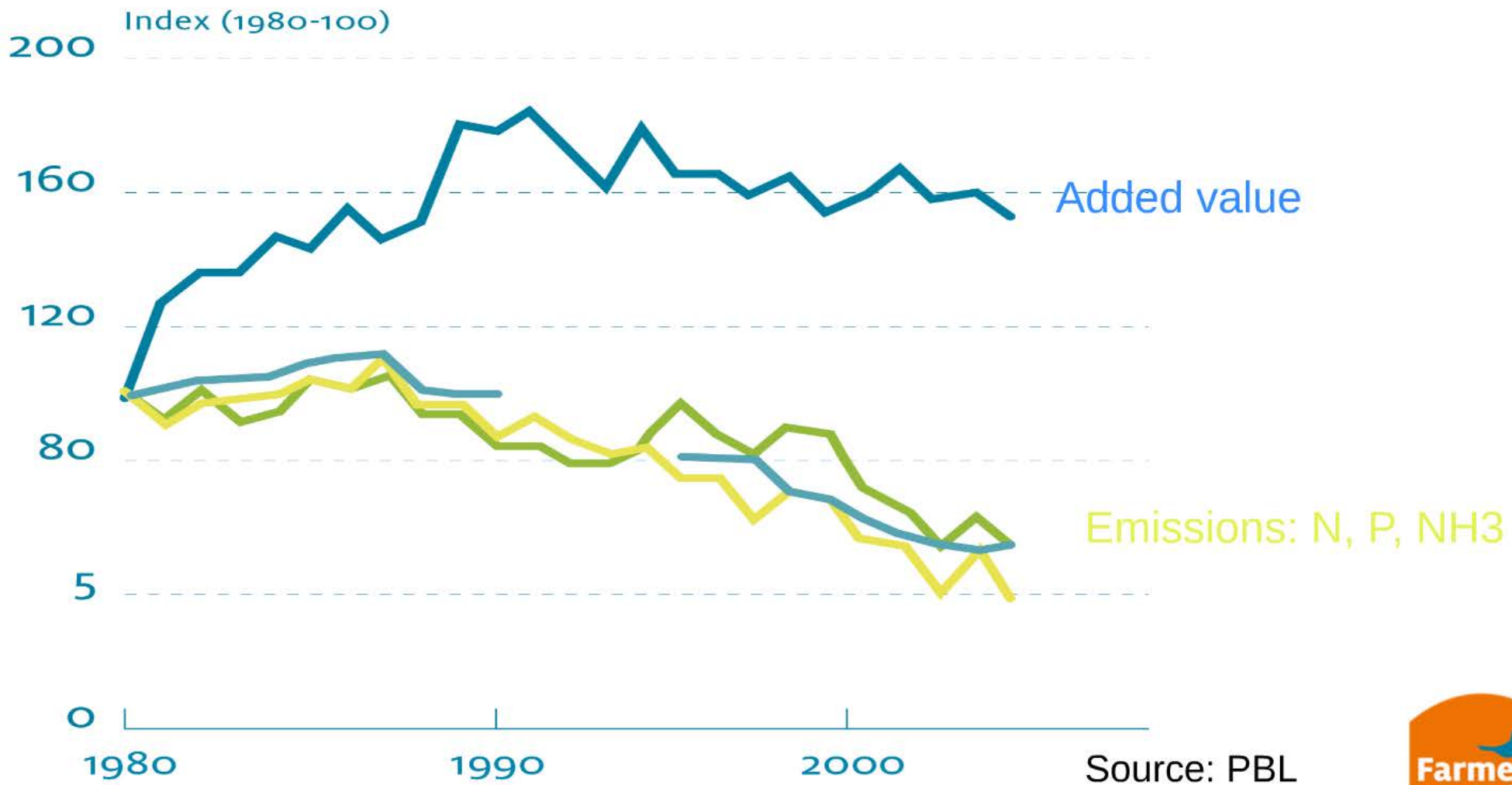
As the #1 European exporter the Netherlands is a key player in the global agrifood supply chain





The Netherlands, high productivity compared to

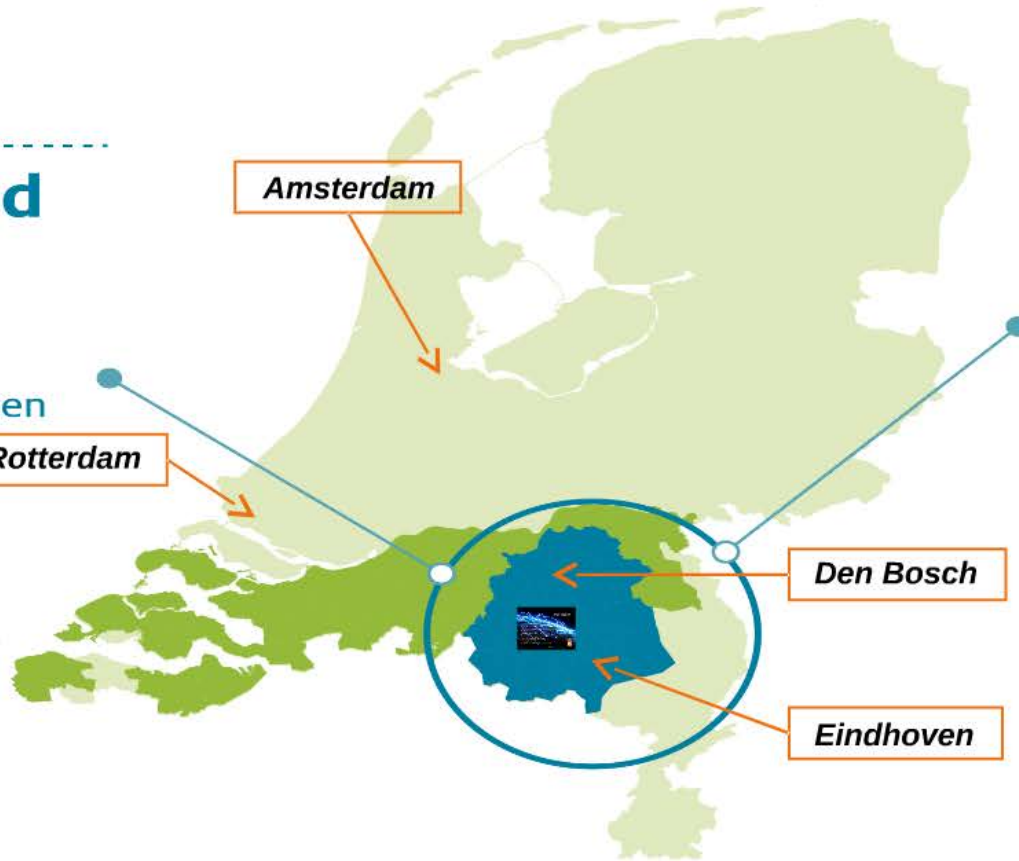
China	80,3
Mexico	15
Brazil	11,3
Germany	1,9
United States	1,2





Agri & food

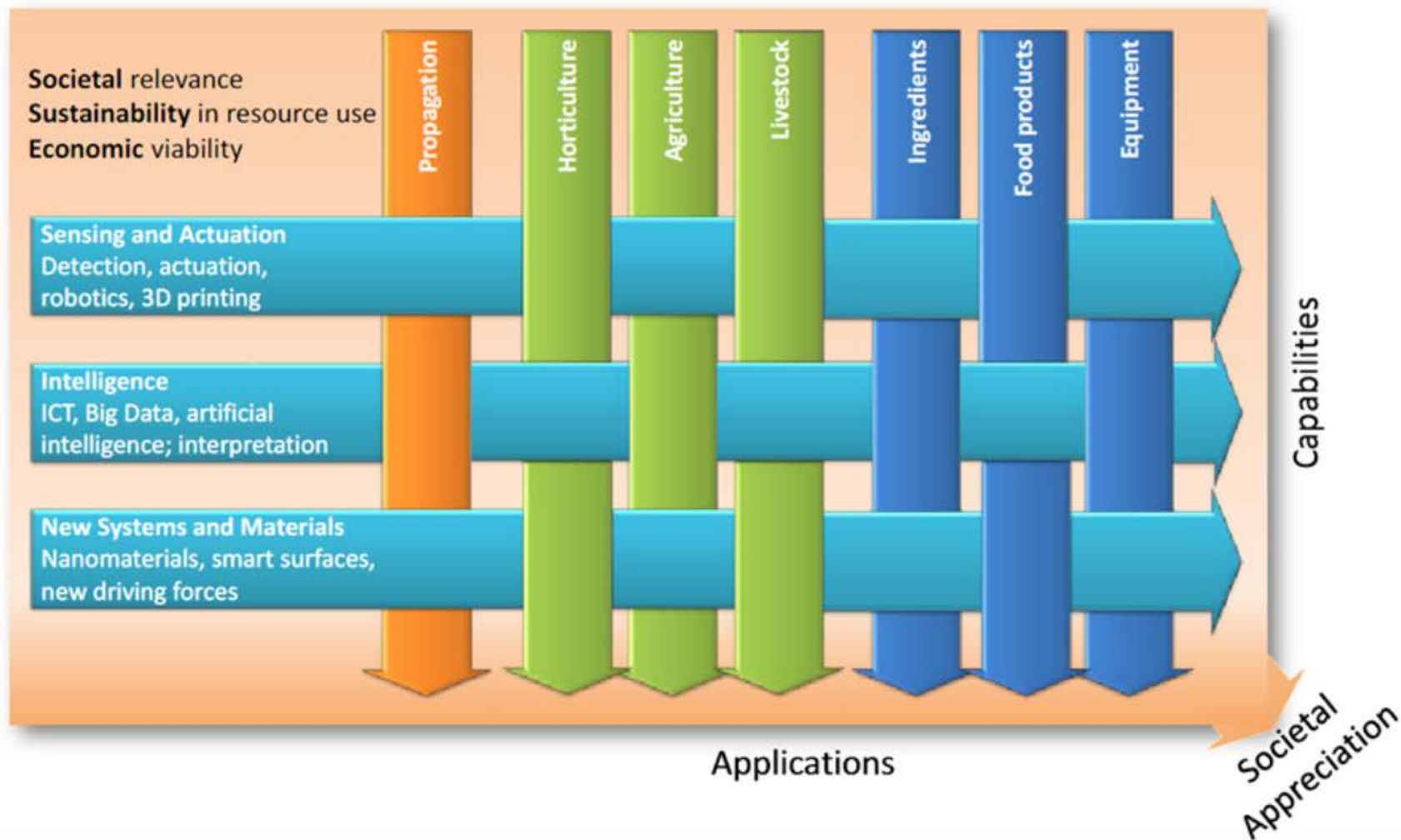
- Nutricia
- Sligro
- Heineken
- Jumbo supermarkten
- Heijmans
- Masterfoods
- Vion
- HAS Hogeschool
- Friesland Campina
- Essent
- Unilever
- ...

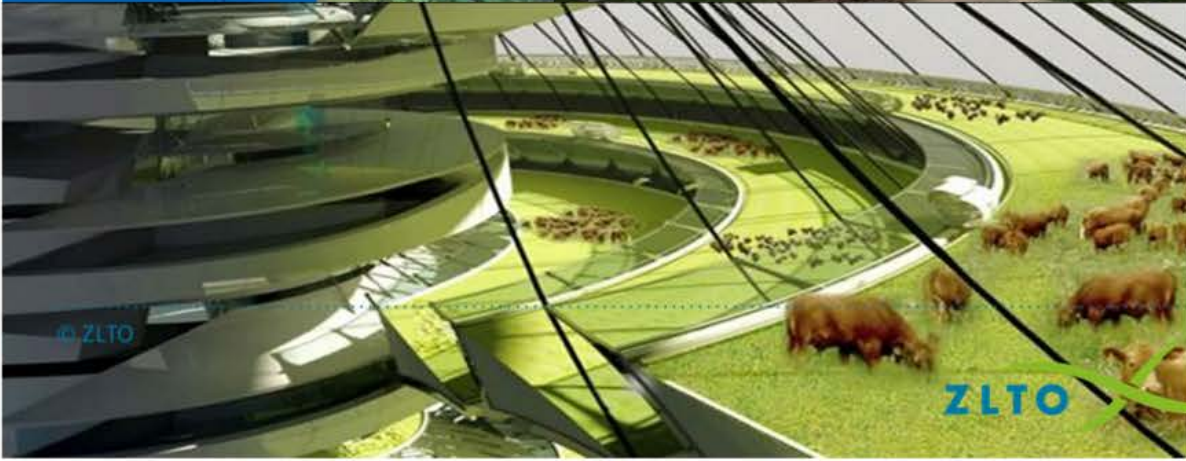


Hightech

- ASML
- Philips
- Brainport Region
- Eindhoven University of Technology
- Royal DSM
- NXP
- Océ
- DAF Trucks
- VDL groep
- Vanderlande Industries
- Fei Company
- Sioux Group
- Neways Technologies
- ...











STT 81



VAN AUTONOME ROBOTS TOT ZILTE AARDAPPELS

Toekomstverkenning naar de invloed van
technologische ontwikkelingen op de
agri- & foodsector tot 2050



Silke de Wilde red.
Stichting Toekomstbeeld der Techniek



Stichting
Toekomstbeeld
der Techniek





2.1 3D-printing



2.2 4D-printing



2.3 Smart materials



2.4 Robotics



2.5 Autonomous minidrones & microbots



2.6 Sensor technology



2.7 Information technology & IT infrastructure



2.8 Biotechnology



2.9 Precision agriculture



2.10 Renewable energy



2.11 Biorefinery & biofuels



2.12 Gentech



2.13 Synthetic biology



2.14 Protein transition



2.15 Food design



2.16 Aquaculture



2.17 Vertical farming



2.18 Conservation technology



2.19 Transport technology



2.20 Weather manipulation

Next five to ten years



Animal
specific treatment



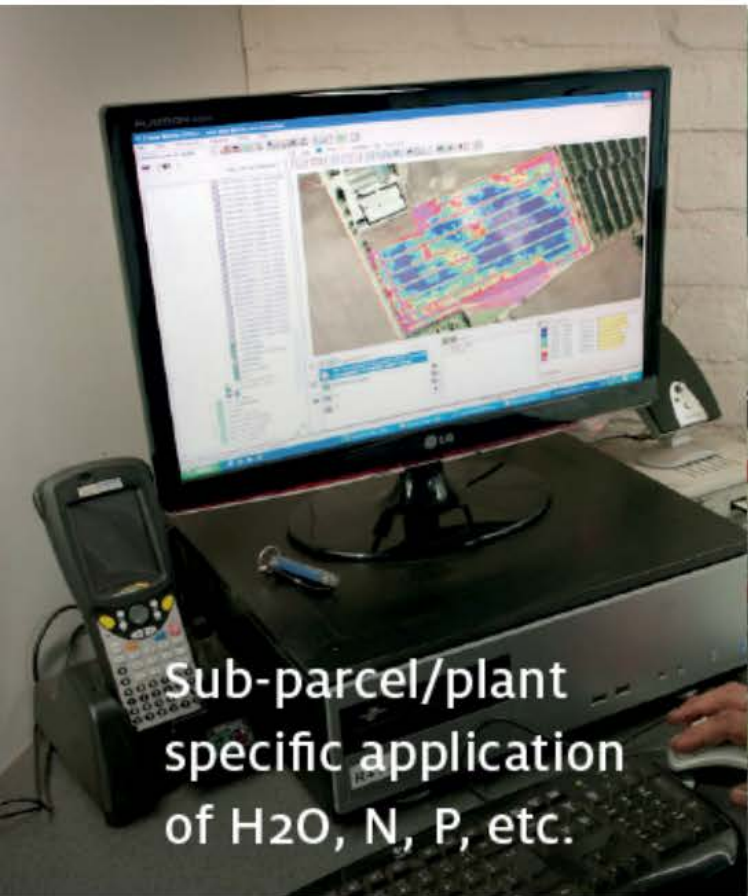
Group to animal
specific treatment



House specific
to group specific
treatment



Next five to ten years





GPS-satelliet

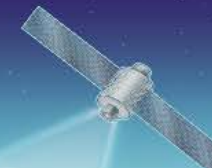
Cooperative Innovative Farming

Our mission: Ensure continuity of the agricultural livelihood through technology. The future is Smart & Ecological

Our vision

- Efficiency (with digital, less waste)
- Transparency (sharing information & knowledge)
- Living responsibly towards stakeholders and society

Data-satelliet



Beregenen



Datameting



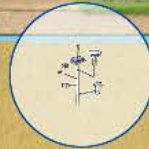
RTK-paal

Datameting

Mini-robots



Mini-robots



Datameting



Cooperative Innovative Farming

Our mission

- Ensure continuity of the agricultural livelihood through technology.
The future is Techno-Ecology!

Our vision

Enhancing:

- efficiency (more output, less input)
- transparency (sharing information & knowledge)
- taking responsibility (towards environment and society)





Section wide
per ha

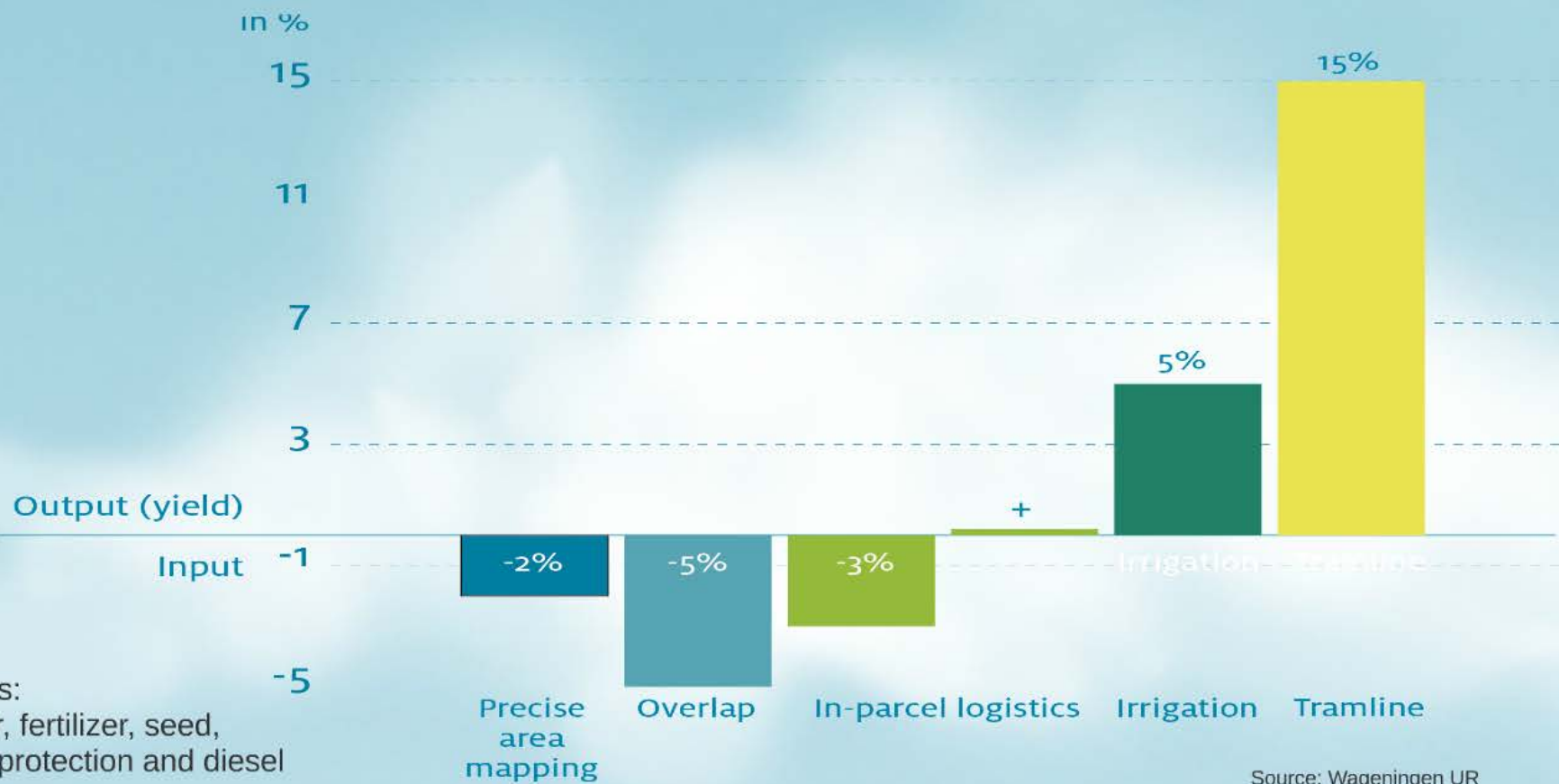


Variable
10m² to 30m²
20%-50% reduction



Plant specific
2 cm²
50% to 90% reduction

Source: Wageningen (UR)



Inputs:
water, fertilizer, seed,
crop protection and diesel

Source: Wageningen UR

© ZLTO



The Netherlands

 **50-65%**
Aided guidance/GPS

8%
(Move)RTK

2-5%
Variable Rate Application

EU wide

10%
Aided guidance/GPS

<1%
(Move)RTK

<1%
Variable Rate Application







Advice

Focus Groups

Information
Dissemination

Farmers
connect &
innovate

ZILTO

On a leasehold, but nowadays we own
more land and we cultivate potatoes.



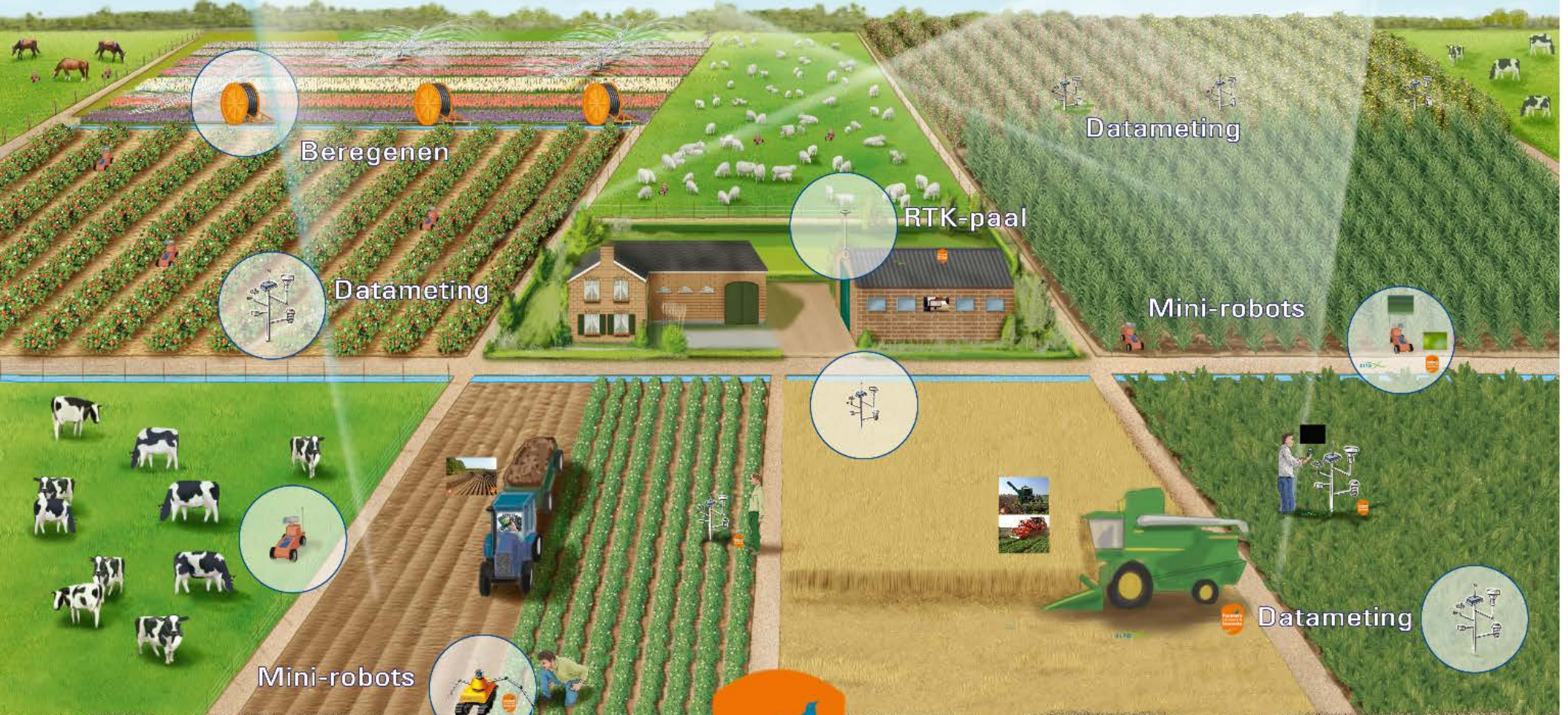
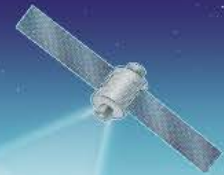
GPS-satelliet

Cooperative Innovative Farming

Our mission
 Create prosperity of the agricultural livelihood through technology.
 The Future is Technology!

Our vision
 Efficiency (time, input, risk cost)
 Sustainability (cleaning, resources & knowledge)
 Being responsible towards environment and society!

Data-satelliet



Beregenen

Datameting

RTK-paal

Datameting

Mini-robots

Mini-robots

Datameting

ZLTO VISIE OP GEOTECHNOLOGIE





© ZLTO

ZLTO 







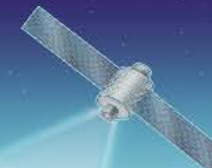
GPS-satelliet

Cooperative Innovative Farming

Our mission: Ensure continuity of the agricultural livelihood through technology. The future is Smart & Ecological

Our vision: Efficiency (with output), less waste, transparency (sharing information & knowledge), Living responsibly towards stakeholders and society

Data-satelliet



Beregenen



Datameting



RTK-paal

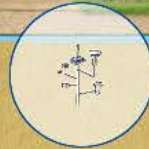


Datameting

Mini-robots



Mini-robots



Datameting



ZLTO VISIE OP GEOTECHNOLOGIE



GPS.



**HIGHTECH
SENSING**



RTK

© ZLTO









LTO

ZLTO



MINERALS MADE TO MEASURES



© ZLTO





GPS-satelliet

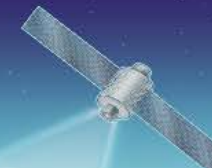
Cooperative Innovative Farming

Our mission: Ensure continuity of the agricultural livelihood through technology. The future is Smart & Ecological

Our vision

- Efficiency (with digital, less fuel)
- Transparency (sharing information & knowledge)
- Living responsibly towards shareholders and society

Data-satelliet



Beregenen



Datameting



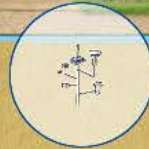
RTK-paal

Datameting

Mini-robots



Mini-robots



Datameting





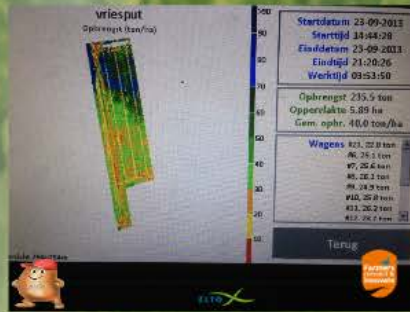
ZLTO





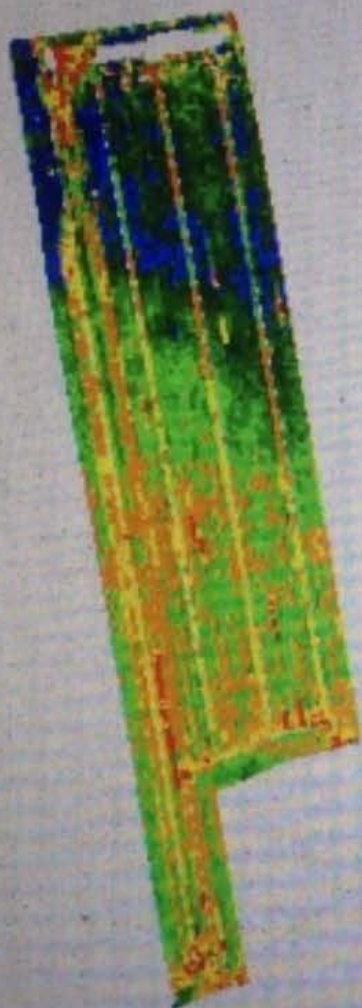
ZLTO





vriesput

Opbrengst (ton/ha)



Startdatum 23-09-2013
Starttijd 14:44:28
Einddatum 23-09-2013
Eindtijd 21:20:26
Werktijd 03:53:50

Opbrengst 235.5 ton
Oppervlakte 5.89 ha
Gem. opbr. 40.0 ton/ha

Wagens

#21	22.0 ton
#6	25.1 ton
#7	25.6 ton
#8	26.1 ton
#9	24.9 ton
#10	25.8 ton
#11	26.3 ton
#12	23.7 ton

Terug

erzicht 754x754m



© ZLTO





ZLTO 


Farmers
connect &
innovate



© ZLTO

ZLTO





Farmers & Agro Biodiversity

the natural way



ZLTO

ZLTO





GPS-satelliet

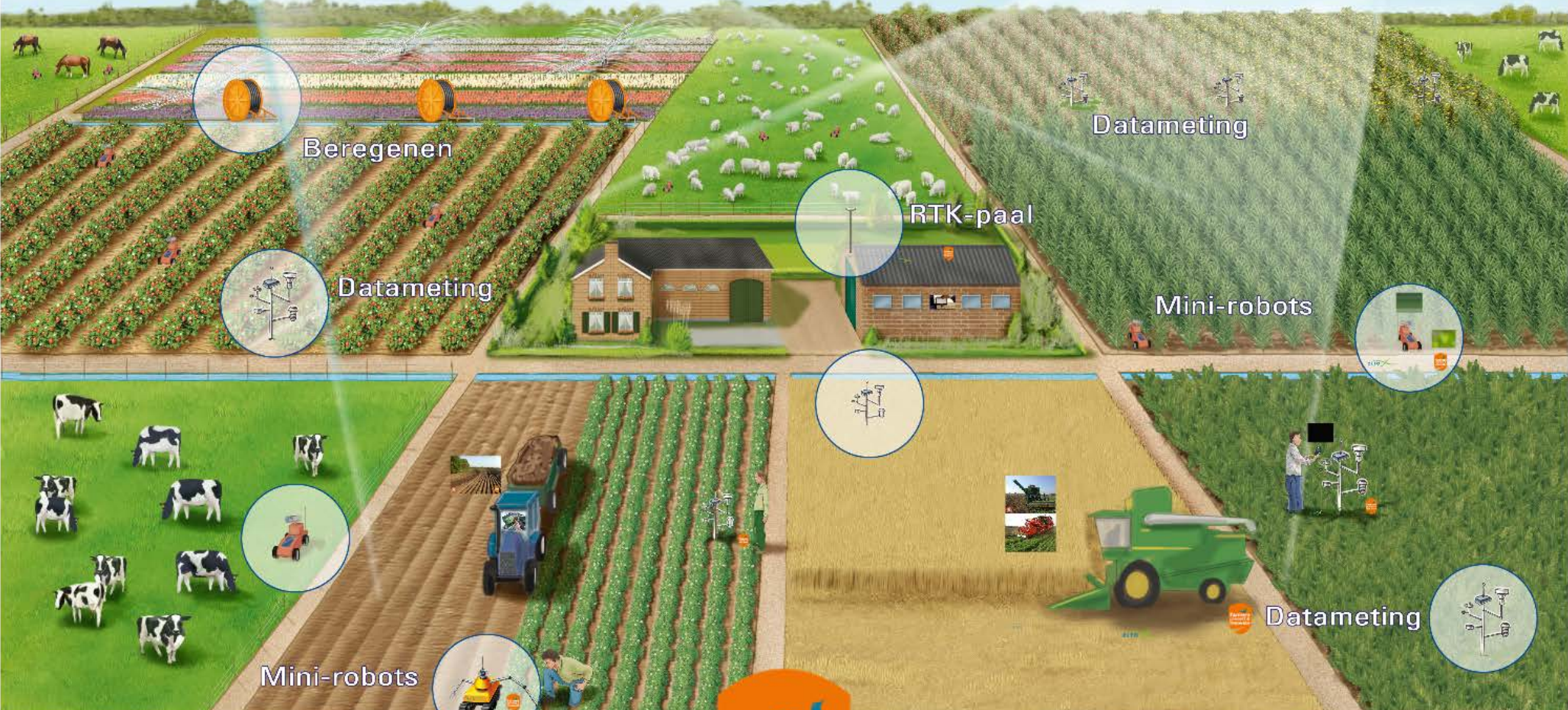
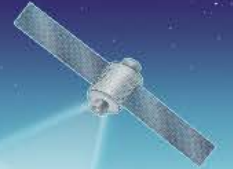
Cooperative Innovative Farming

Our mission: Increase productivity of the agricultural backbone through technology. The future is 'Smarter & Greener'!

Our vision:

- Efficiency (more output, less input)
- Sustainability (better resources & knowledge)
- Making technology (smarter, safer, greener and cooler)

Data-satelliet



Beregenen



Datameting



RTK-paal



Datameting



Mini-robots



Mini-robots



Datameting



ZLTO VISIE OP GEOTECHNOLOGIE





- System integration is a hurdle to take
- Applications with clear actions needed
- Open source has the future
- Communication with experts, colleagues and supply chain should be possible
- Plug 'n' play is what works
- Agriculture is ready for Big Data and IoT

Chances

The business case for Geospatial Businesses

Make sure that applications and services are compatible with:

- all brands;
- all machines;
- all sensors.

Farmers are creative, but very practical people.
Understand what a farmer needs!

The business model should be integration and in the numbers (farmers that is). It should be operable, understandable, straightforward and reliable.

Living Lab NL

the global Agri Tech test environment

proven policies, practices and processes

4/20





Partners



— Innovators in agriculture —



and many more...

ZLTO

PHOTOS

109

72

6.5

78°

rows 08 kernels 36 TOTAL 742

save field count

