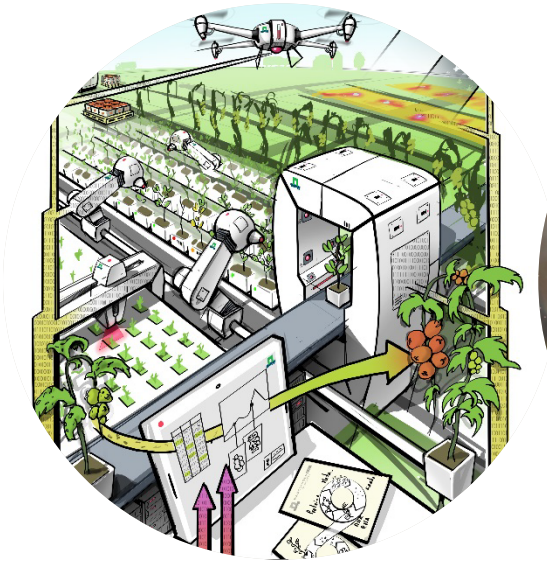
New trends in robotics, automation and data analysis in agrifood

A research perspective

Seminar Netherlands' Economic Mission to Hokkaido - Sapporo, Japan
17 October 2018, Rick van de Zedde



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Introduction

- Rick van de Zedde, 14 years at Wageningen University & Research.

  Senior scientist/ business developer Phenomics and Automation.

- Background: Artificial Intelligence.
  Focus: computer vision/ robotics

- Aim of this presentation:
  To offer inspiration by sharing research results.

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Contact: rick.vandezedde@wur.nl

Wageningen University & Research

Link

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Wageningen University & Research

- 2 organisations:
  - Wageningen University & 9 contract research institutes
- Turnover > € 700 mln
- 6,500 employees

  Ca. 65 researchers on Automation & Robotics
- 12,000 students
  > 125 countries !

Wageningen UR - campus

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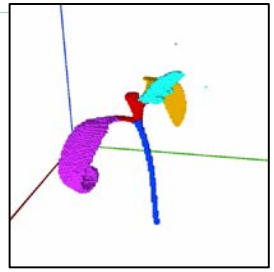
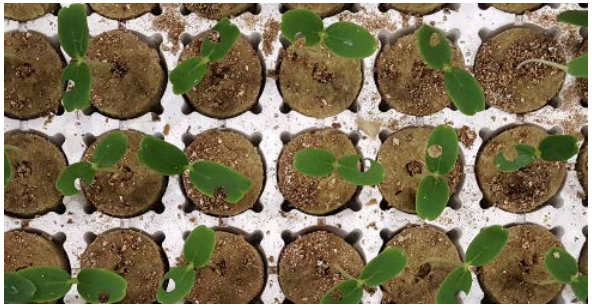
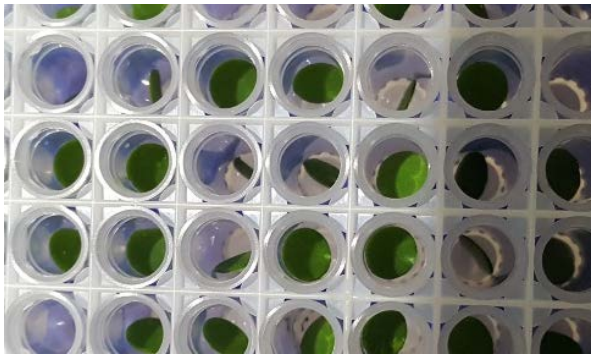
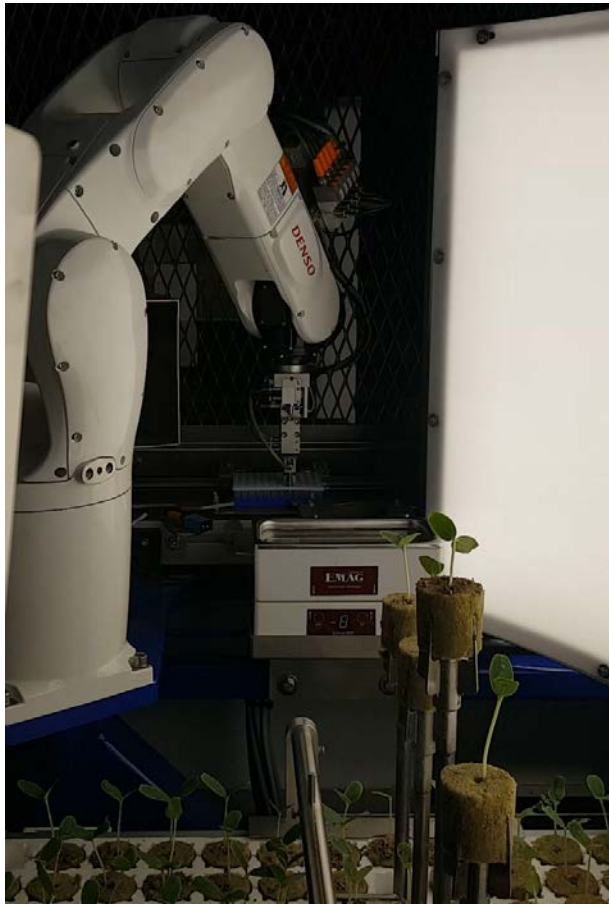
PlantSampler robot for DNA analysis



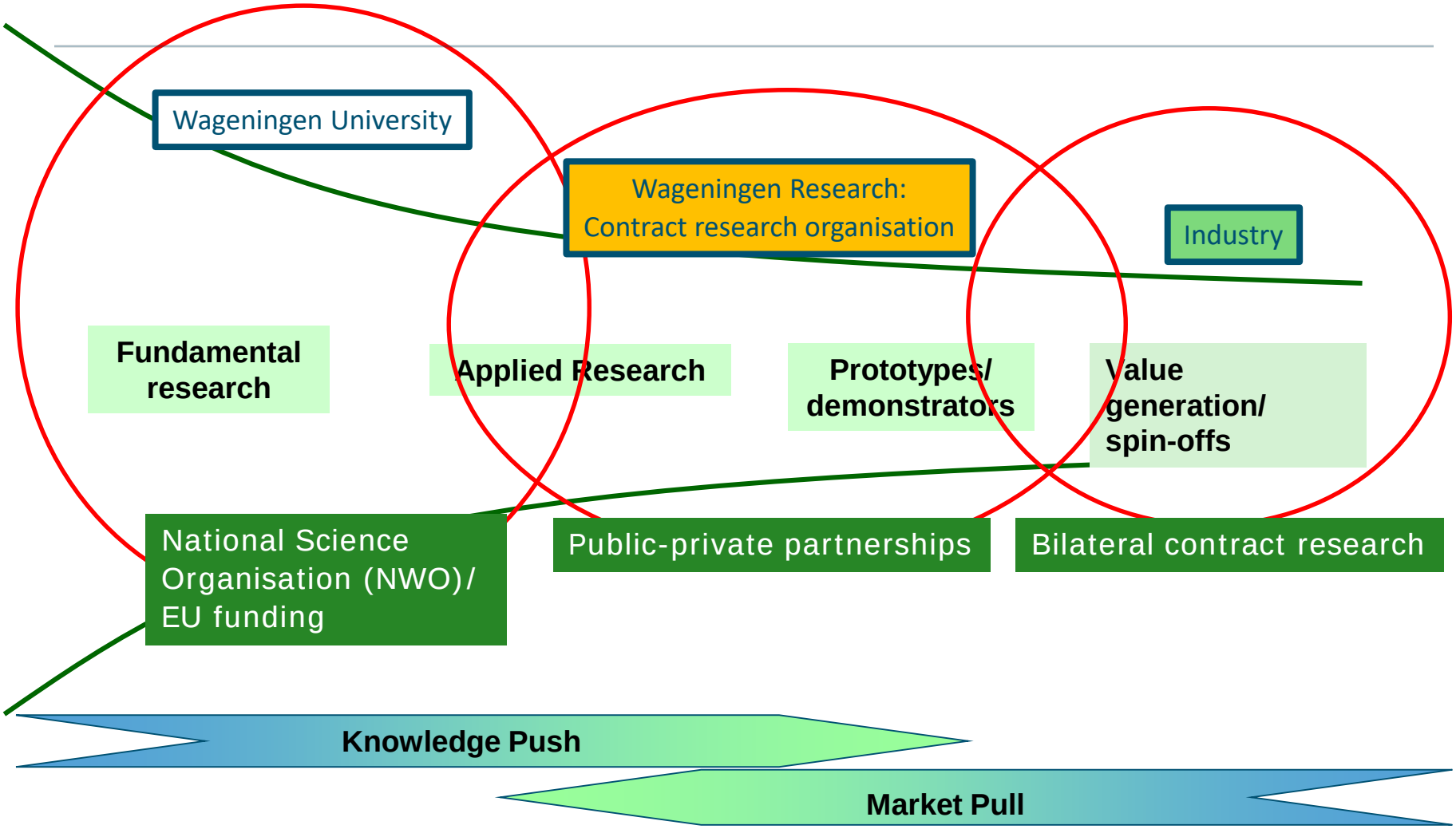






Franck Golbach, Lydia Meesters, Rick van de Zedde, Gerwoud Otten

Wageningen – Way of working



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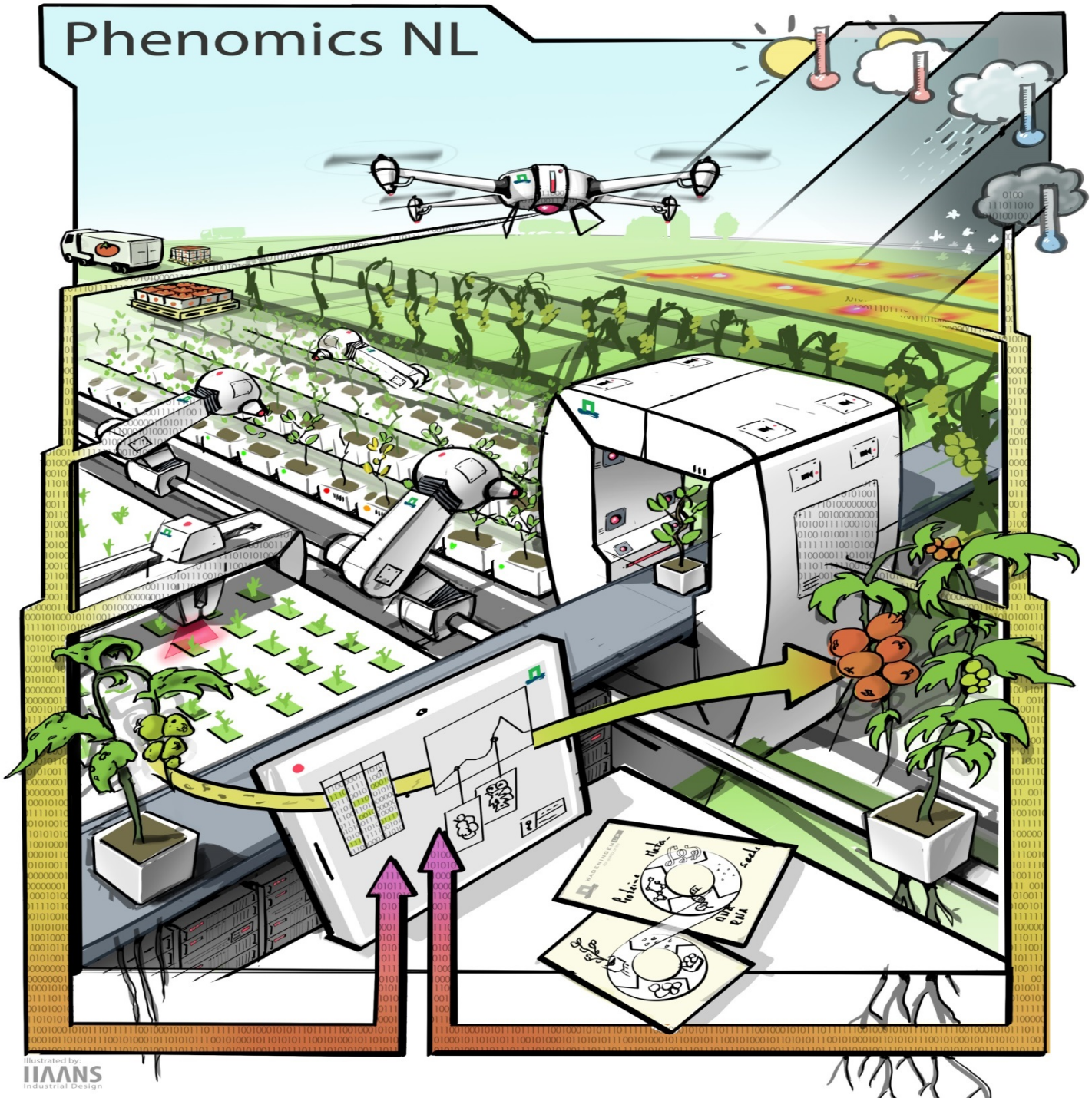
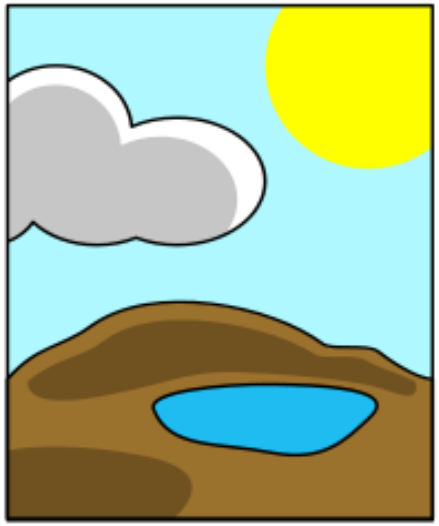

Phenomics NL
Illustrated by:
IIAANS
Industrial Design

Genotype ≠ phenotype

Genotype

+



Environment

=

Phenotype

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NPEC link

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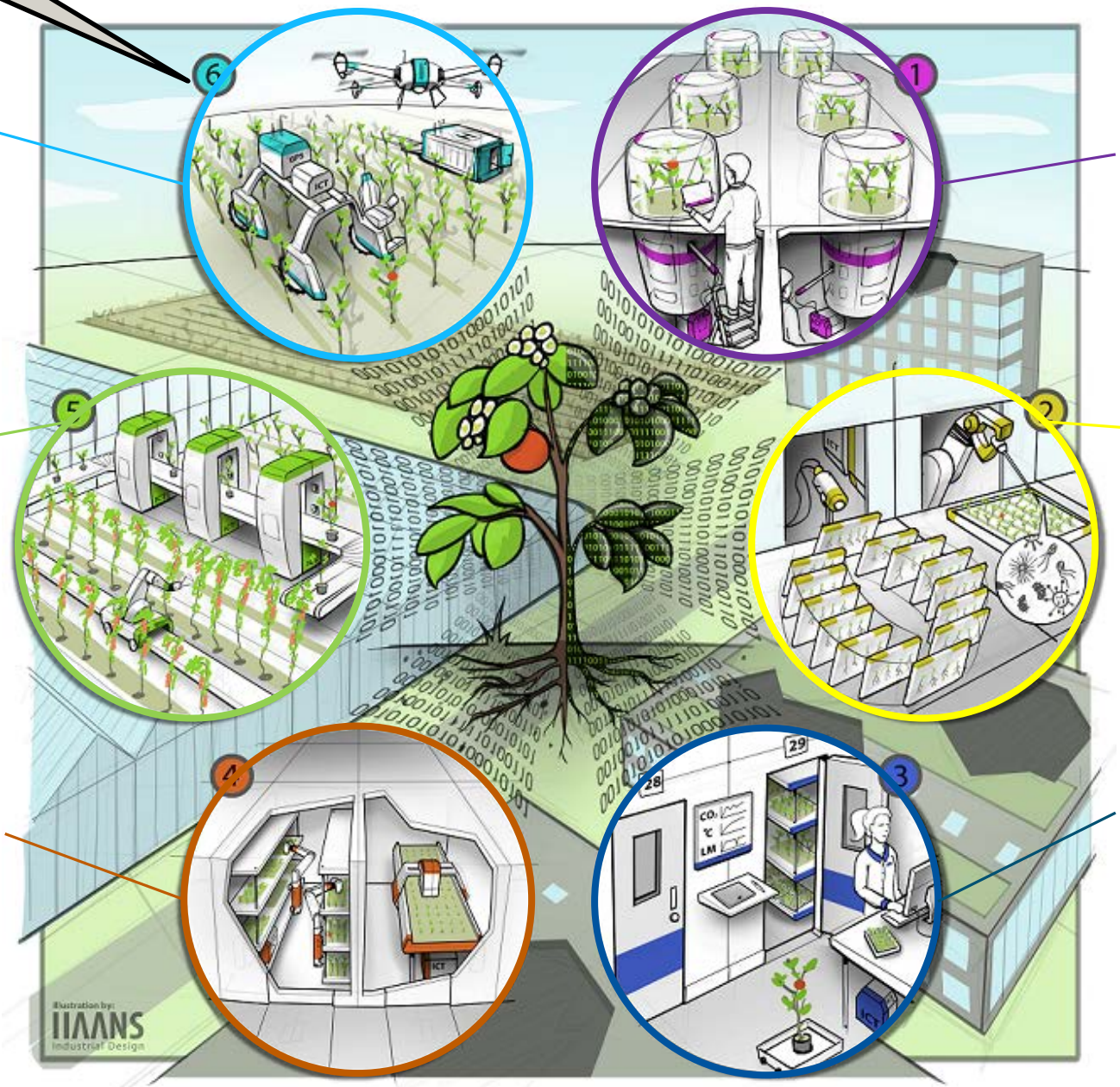
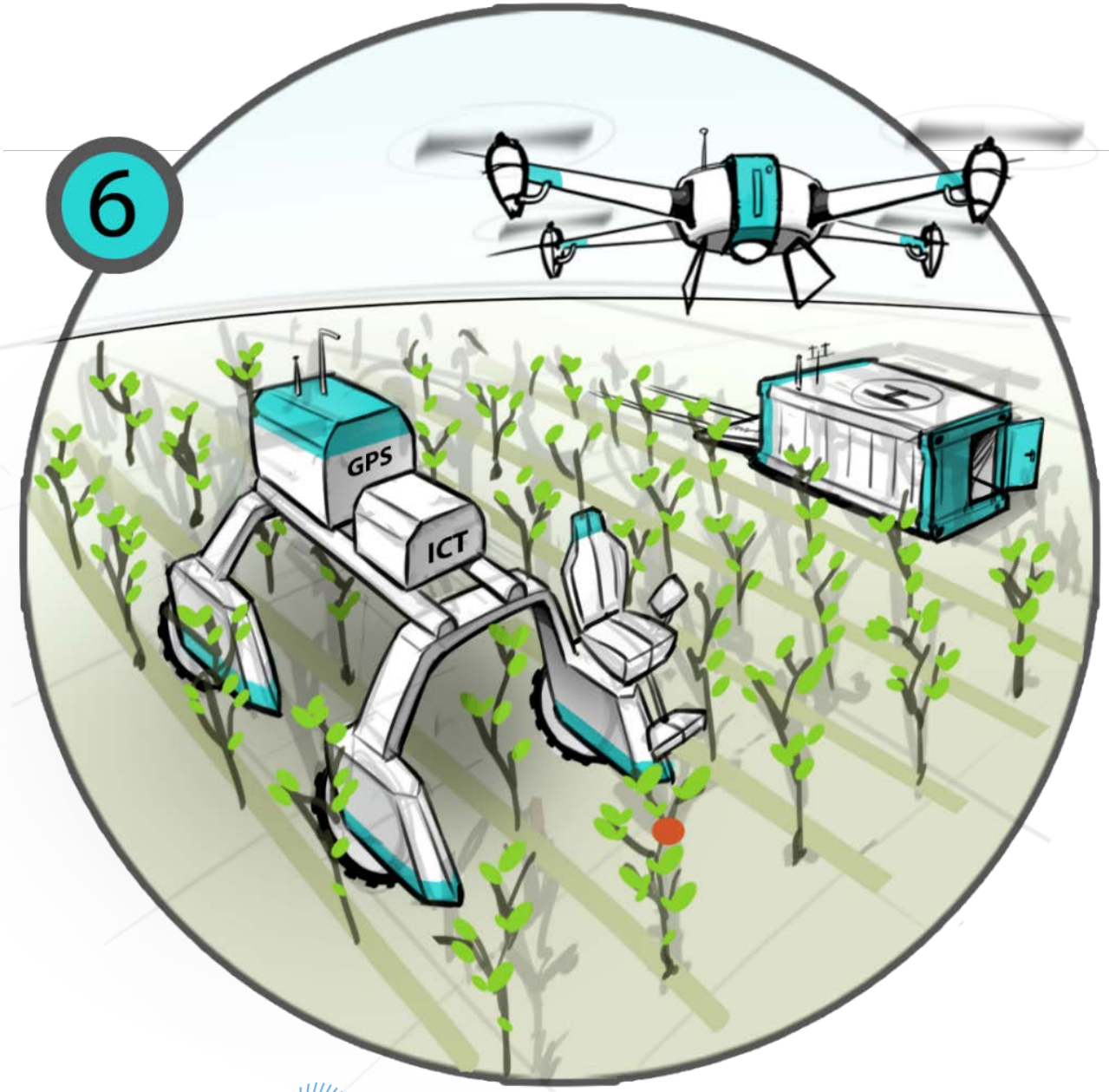
NPEC

Universiteit Utrecht

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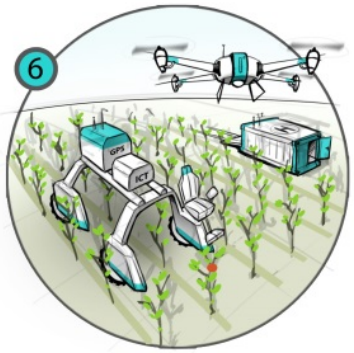
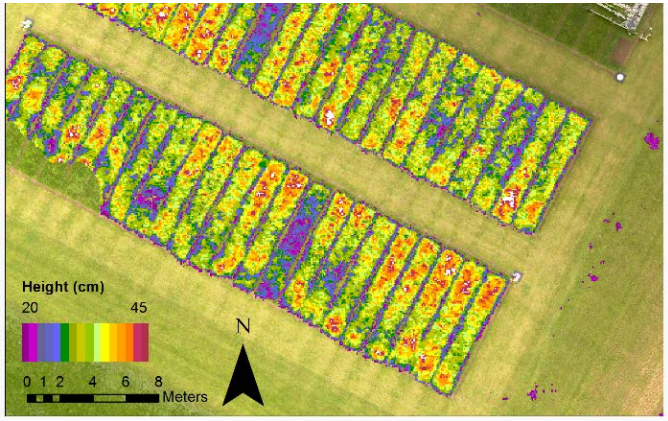
GPS
ICT

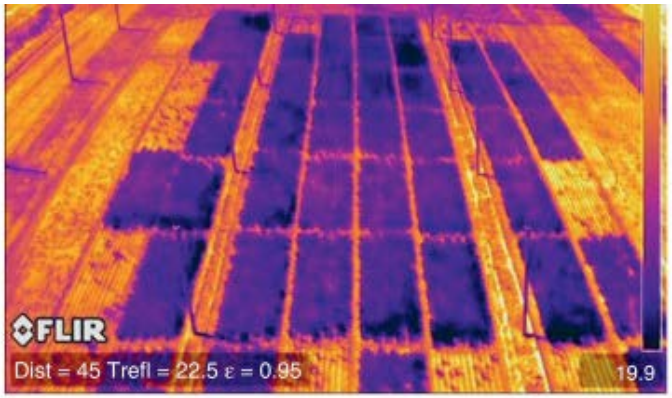
Practical advantages of phenotyping

Example: To automatically collect large scale field performance: Plot height (RGB/ LIDAR), plant stress (thermal) & diseases (hyperspectral).

Unmanned aerial and ground vehicles:







Disease detection on potato field

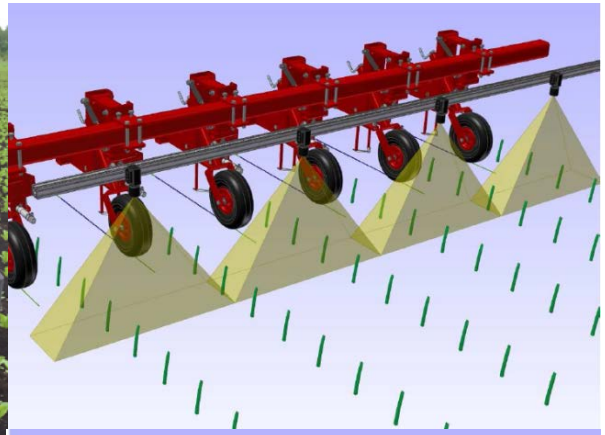
- Cabinet contains:
  - Hyperspectral camera and halogen lighting
  - 3D Ensenso camera
  - RGB camera.
  - RTK GPS
- Advantage: module box has no sun light issues and can be mounted on any tractor/ cart.

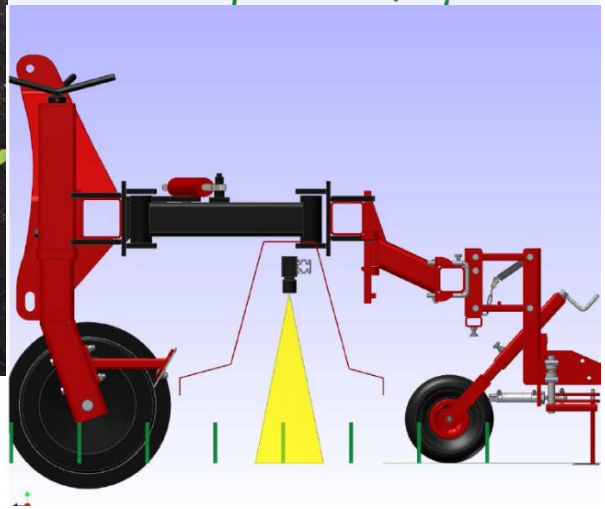
Selective broccoli harvesting robot

- Labour shortage
- Selective harvesting of broccoli based on minimum diameter of head.
- Deep-learning for better and more robust image classification

Contact: Pieter Blok

Automated weeding





AIJA-POTU project

- **A**utomated **I**nspection of **JA**panese **PO**tato **TU**ber quality
- Seed money project funded by Dutch government
- Project coordinator: Rick van de Zedde
- The aim of the **AIJA-POTU** project is to investigate the extent to which NL knowledge and products / technology can be applied in the **Japanese potato sector**, and to identify what has to be done to make this happen (ie. research, promotion, demonstration etc).

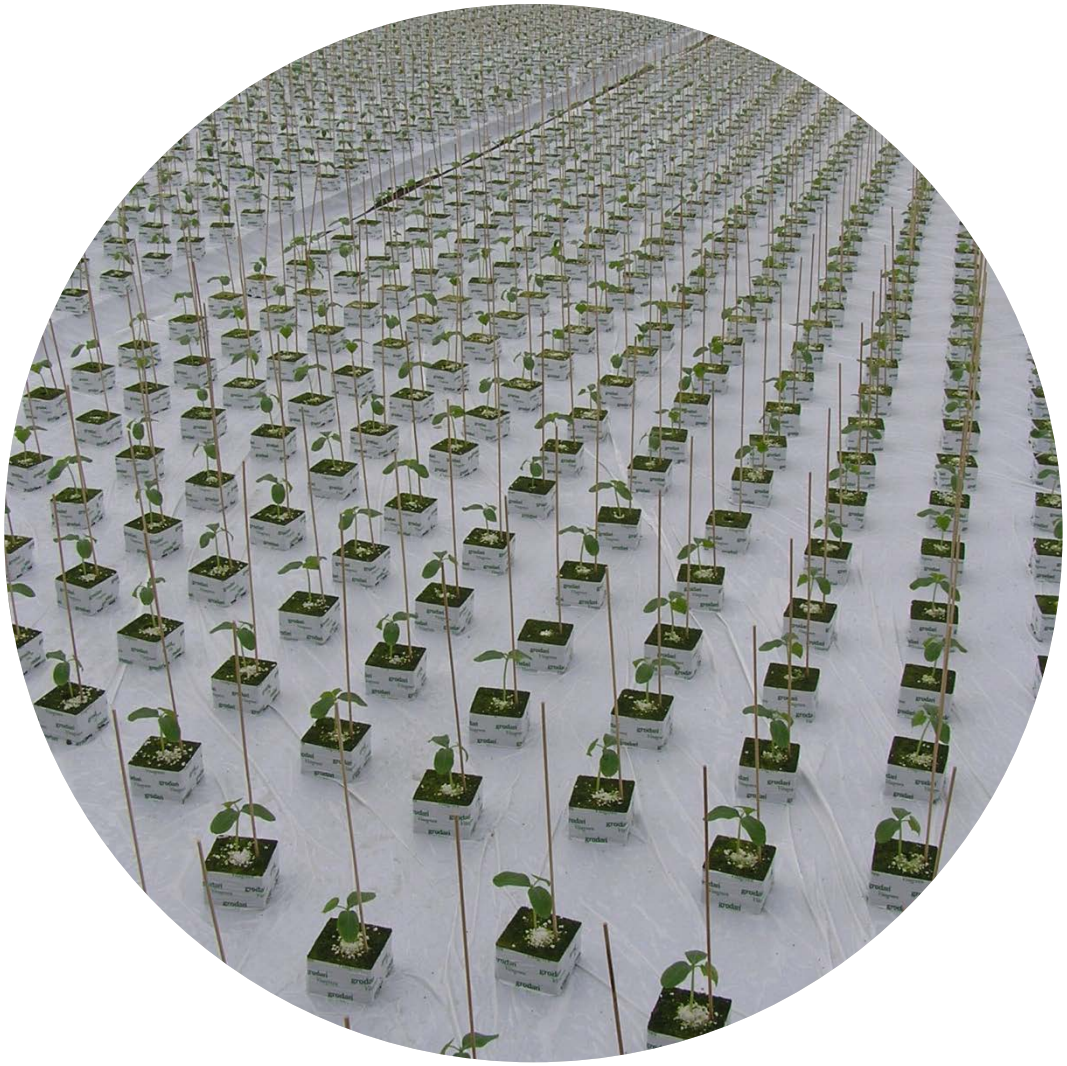
AIJA-POTU project

- To enable knowledge and technology exchange between the Netherlands and Japan.
- Goal: setup consortium with Dutch/ Japanese partners in 2019 in a public-private partnership:
  - Scope: breeding, growing, storage and processing.
  - To introduce automation/ more data-driven tools to attract young modern generation of Japanese farmers
  - Training and education high-tech tools for Japanese farmers
  - Adapt selected Dutch technology to Japanese market

The end !

Thank you!

Questions?



LINE id: phenotyping

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www.phenomics.nl