ECHORD++

The European Coordination Hub for Open Robotics Development

SAGA
Swarm Robotics for Agricultural Applications

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BLUE OCEAN ROBOTICS
– for humans

RUROBOTS
Cognitive Science at Work

SEVENTH FRAMEWORK PROGRAMME

Brief Experiment Description

Application Scenario

Weed control (volunteer potatoes in sugar beet fields)

parallel, decentralised monitoring and mapping with UAV swarms

Novelty and Objectives

UAV Platform

Integrate novel modules:

- On-board vision
  TRL4 → TRL 8

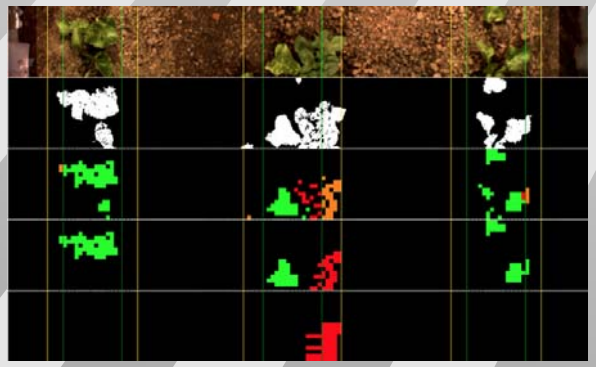
- Communication
  TRL3 → TRL 7

Produce a UAV swarm

Machine Vision

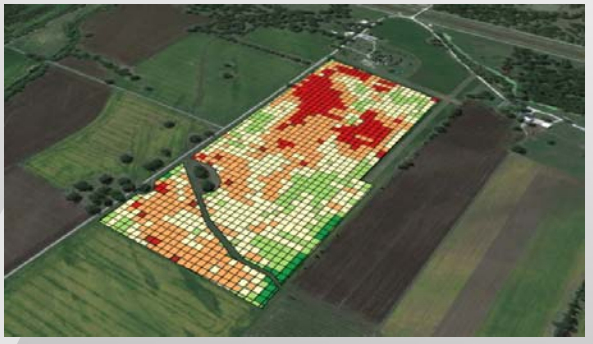
Weed detection in field conditions
TRL3 → TRL 6

- Features extraction
- Machine learning
- Adapt algorithms to UAVs



Collective Behaviour

Monitoring and semantic mapping
TRL2 → TRL 6



- Collective field coverage
- Collective categorisation
- Deployment in the field

Impact

Swarm-enabled UAVs

- No similar products + large existing market
- Possibility to integrate micro-spraying for weed control

Weed Control

- Benchmarking test bed
- End-users involvement

van den borne aardappelen

- Re-use for different crops and weed (@RIF Peccioli)

Swarm Operations

- Scalable solutions to field dimensions
- Solution adaptable to various domains (search & rescue, inspection, surveillance)

Jun-Dec 2016
Prototype
(HW + Vision)

Jan-Jun 2017
Swarm development

Jul-Nov 2017
Field tests &
assessment

Economic assessment of swarm robotics solutions (@RIF Peccioli)