positioning infrastructure and location services in agriculture

Tamme van der Wal

[Website Link] www.aerovision.nl
About AeroVision

- Spatial data specialists;
- Backgrounds in surveying, photogrammetry, Remote Sensing, Geography;
- Markets are cadastres, utilities, municipalities, water boards and **agriculture**

*AeroVision provides consultancy and support services for an optimal design and utilisation of (spatial) information. Our customers strategically invest in the use of (geo-)information for decision making, cost reduction and management of risks.*

In agriculture:
- working on Remote Sensing and GNSS applications to improve farming;
- coordinating networking activities;
- contributing to applied research of satellite applications in agriculture:
Innovation with geospatial technology

In and out
safe harbours

Discover new seas,
Discover new ports.
Ask more, get smart!

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THE FARMER’S COCKPIT

20/20 Precision Monitor

Smart Phone

Planter Controls

GPS Monitor

iPad

Precision
Why are farmers investing in technology?
Targets

- Productivity (4x more efficient: double production with half the inputs)
- Risk Management (measures to protect investments)
- License-to-Operate (green, clean & lean)
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and earn a living ...
3 main (relevant) trends for GNSS in Agriculture

- Full digital integration from Farm to Fork (Ag4.0)
  - Data driven decision making (big data analysis)
  - Location specific treatments

- Robots (incl. drones)
  - Guidance and control
  - Data fusion GNSS and other sensors (cameras, whiskers...)

- Handsfree Documentation
  - Location and time
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ROBOTS
Ask more, get smart!

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HANDSFREE DOCUMENTATION
IS MY POSITION CORRECT?

CAN I TRUST THIS?

Heh !?
CAN I TRUST THIS?
TRUSTED GEO-LOCATION:

1: Trusted signal
   • Independent constellations; Signal authentication;

2: Trusted devices
   • Correct processing, into correct positioning

3: Trusted operators
   • Correct handling, correct processing, dealing with errors and integrity messages etc.
PASS TO PASS ACCURACY (within 15 minutes)
Ask more, get smart!

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REPEATABILITY in ACCURACY
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VULNERABILITY for JAMMING/SPOOFING
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EGNSS4CAP:
Develop a tool with signal authentication for Geotagged photo and parcel boundaries.
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GNSS USE in AGRICULTURE

Increasing demand for high accuracy and for availability in "challenged environments" (greenhouses, barns, agroforestry …)

Importance for trusted location & time

Authentication, Processing, Handling

GOLD AWARD FOR BEST TOOL
GNSS in Agriculture

- Indispensable
- Enabler of innovation
- Enabler of sustainable production

- High dependency on trusted and secure infrastructure
- Outdoor and indoor

- Small receivers (light, (cheap), energy efficient, good antennas etc.) will help to get more GNSS on:
  - Drones
  - Animals
  - Plant sensors
  - Etc.
Thank you for your attention!

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