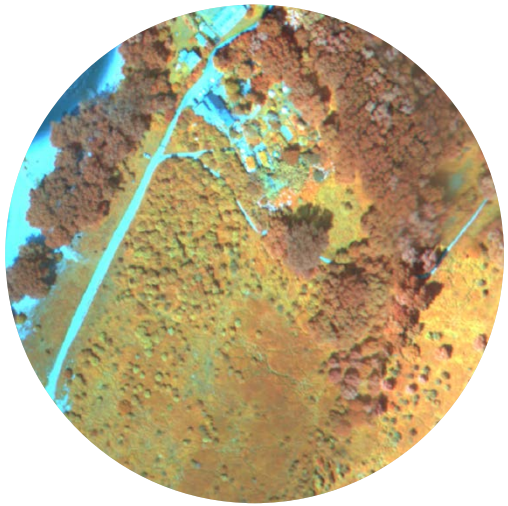
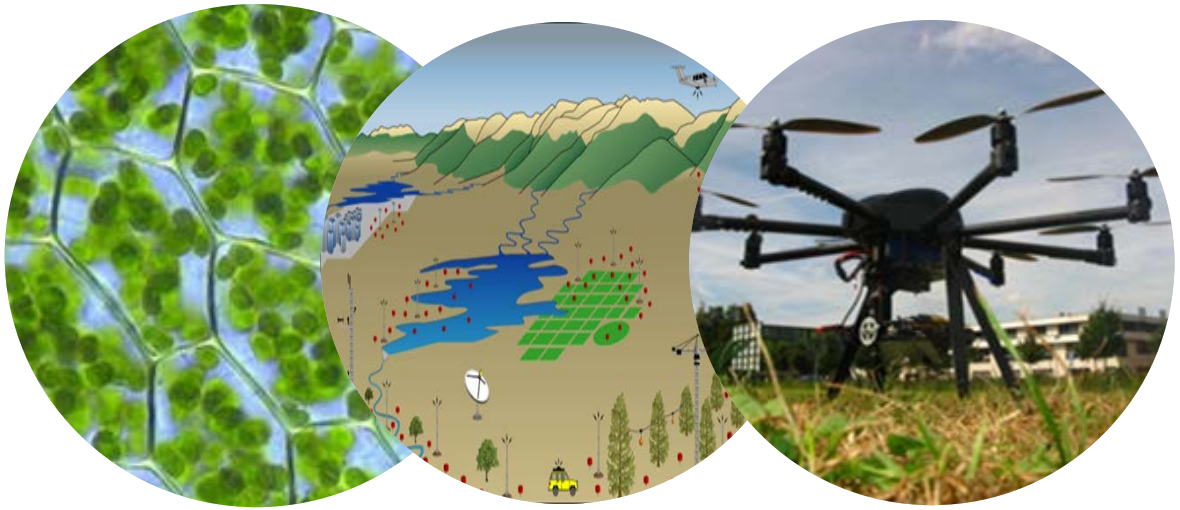
Towards an UAS Knowledge Network

Lammert Kooistra (WU) and Rolf Becker (HSRW)

Wageningen University, 25 October 2013





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Europäischer Fonds für Regionale Entwicklung der Europäischen Union

INTERREG - Grensregio's bouwen aan Europa
Europees Fonds voor Regionale Ontwikkeling van de Europese Unie

UAS in society

- High visibility in the news
- Business prospects are high: examples: surveying, infrastructure, agri, transport, ‘personal assistant’
- Technology push and *toys for ‘boys’*
- Doubts on privacy, safety and security

Precision Farming Market (Global Positioning System, Remote Sensing & Variable Rate Technology) worth $3,721.27 Million by 2018 – New Report by MarketsandMarkets

POSTED ON SEPTEMBER 20, 2013 AT 4:55 PM.

According to a new market research report “Precision Farming Market by Technology (GPS/GNSS, GIS, Remote Sensing & VRT), Components (Automation & Control, Sensors, FMS), Applications (Yield Monitoring, VRA, Mapping, Soil Monitoring, Scouting) – Global Forecast & Analysis (2013 – 2018)” published by MarketsandMarkets, the overall Global precision farming market will be worth $3,721.27 million by 2018, at an estimated CAGR of 13.36% (more…)

Farming market | Markets and Markets | research

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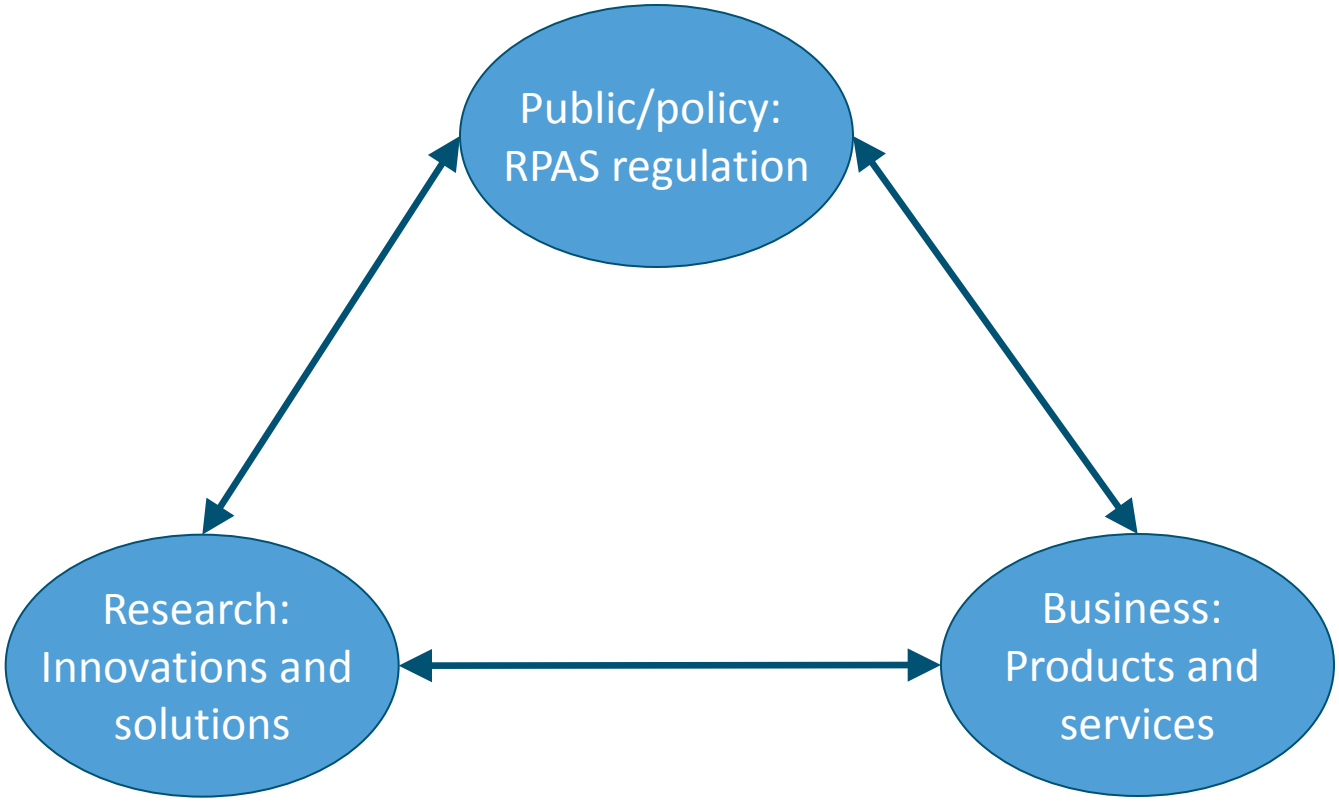
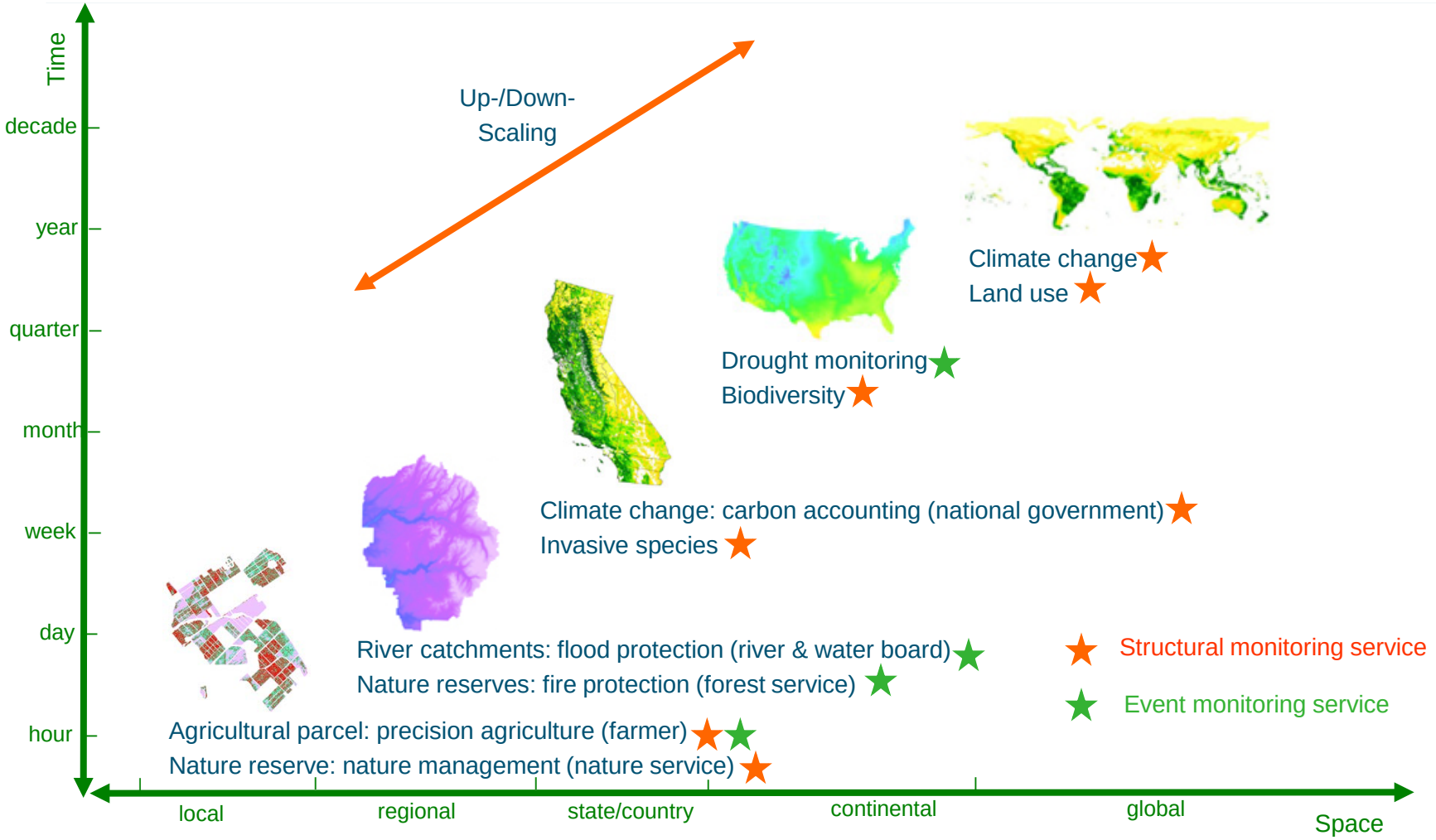
UAS in society



Why use UAS for environmental monitoring?



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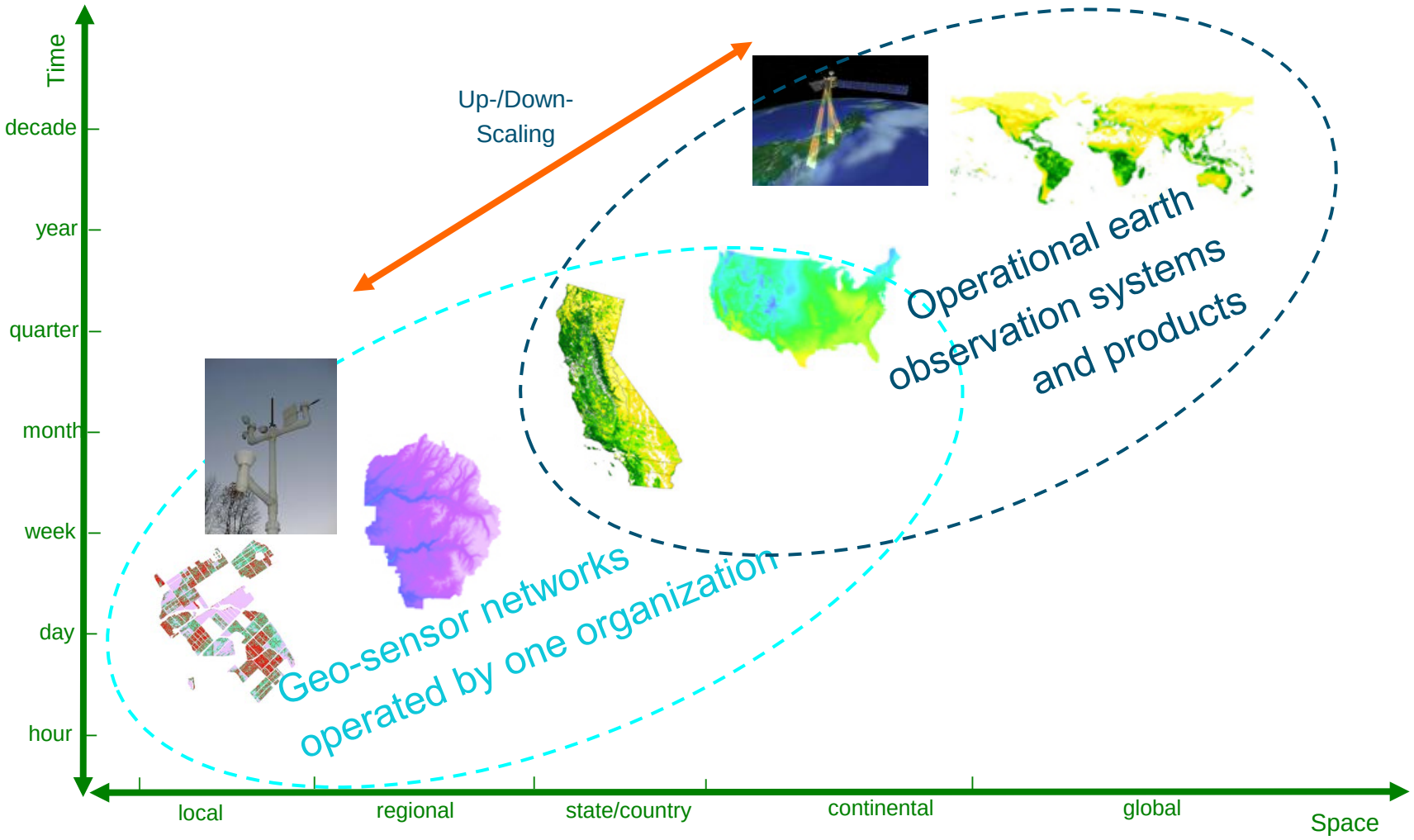
Long-term time-series from sensing systems



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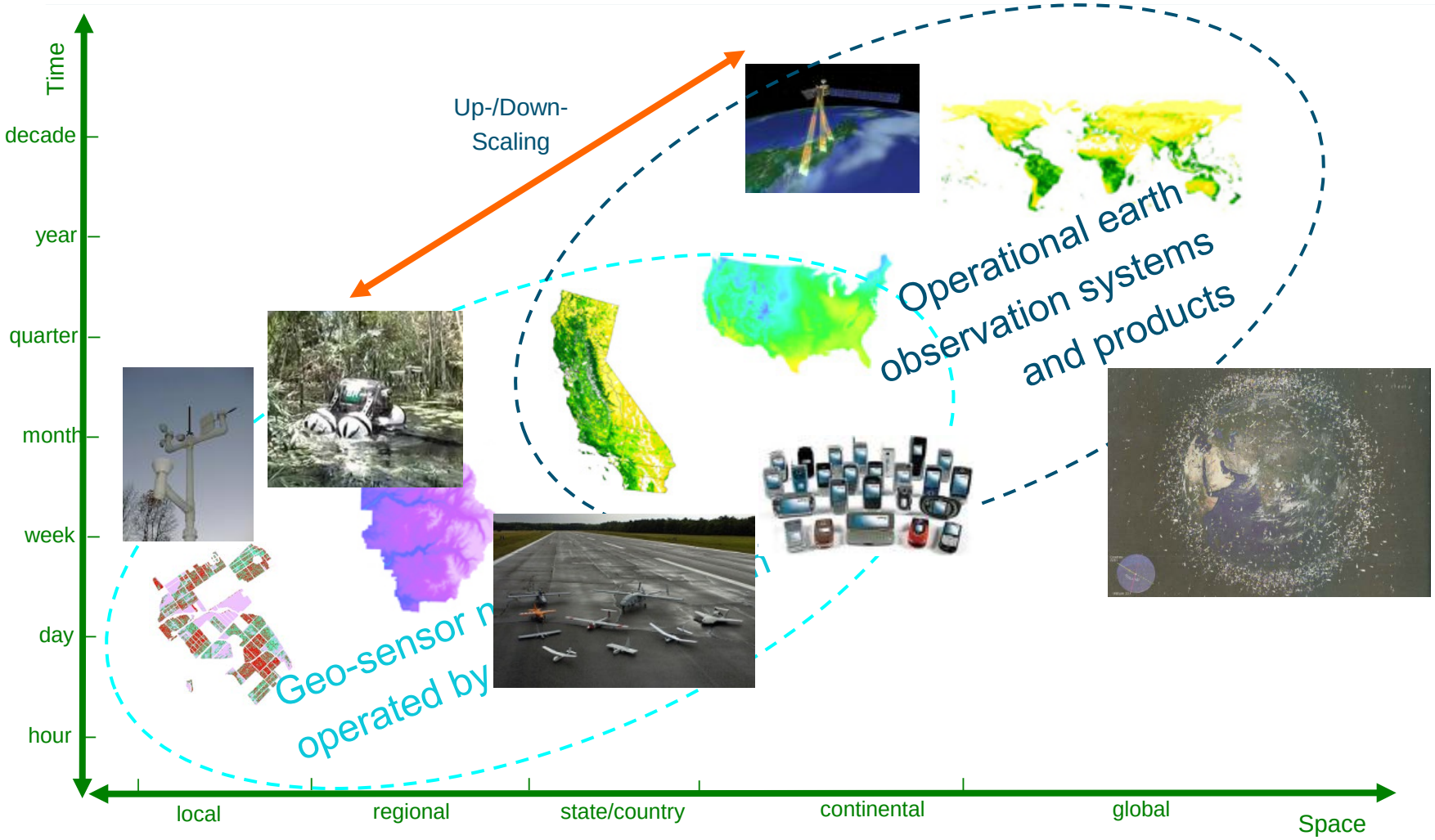
Need for flexible platforms



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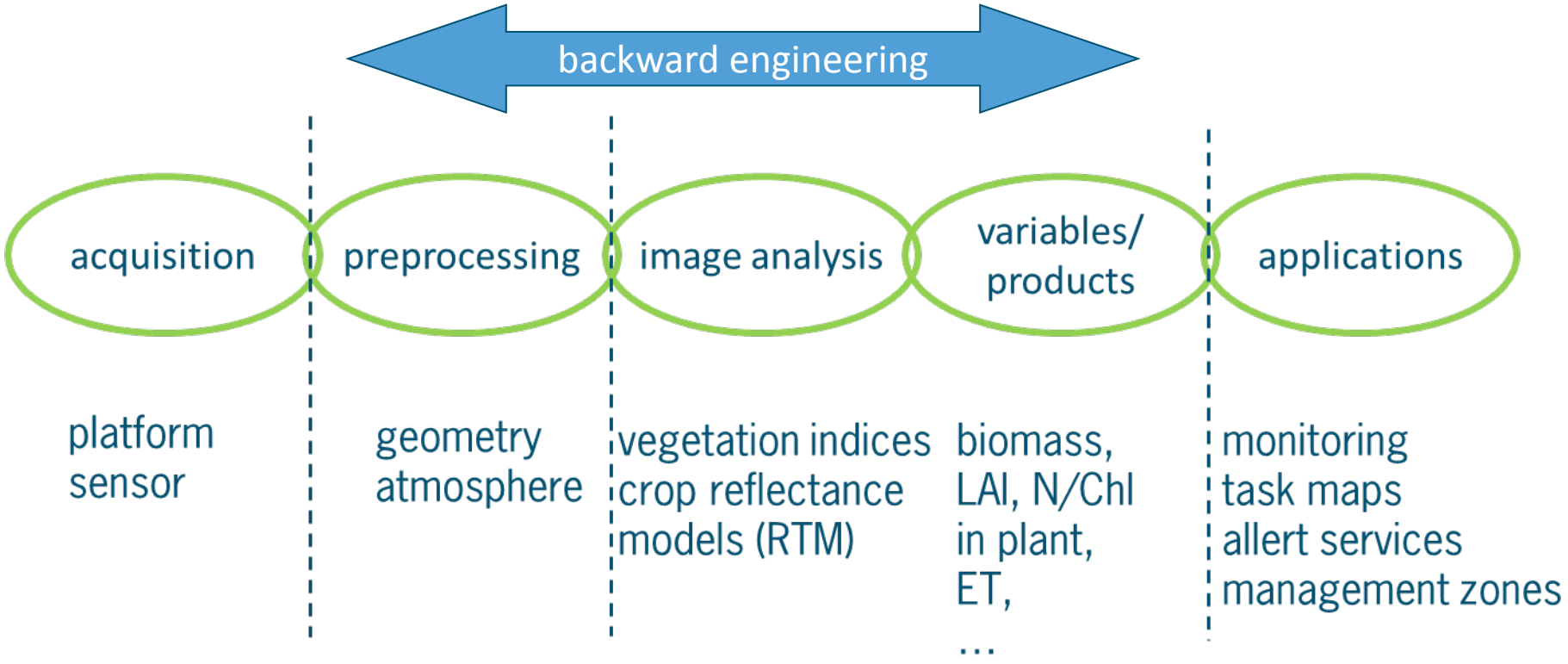
UAS in Research

- Objectives:
  - To develop innovation in the field of remote sensing science by providing a platform for dedicated and high-quality experiments;
  - To support high quality UAS services by providing calibration facilities and disseminating processing procedures to the UAS user community;
  - To promote and test the use of UAS in a broad range of application fields See objectives UARSF
- Current situation:
  - Increasing number of Uni's having UAS available
  - Inexperienced with RPAS flight regulations
  - Open communities: e.g., Conservation Drones

Remote Sensing Science: UAS in a chain

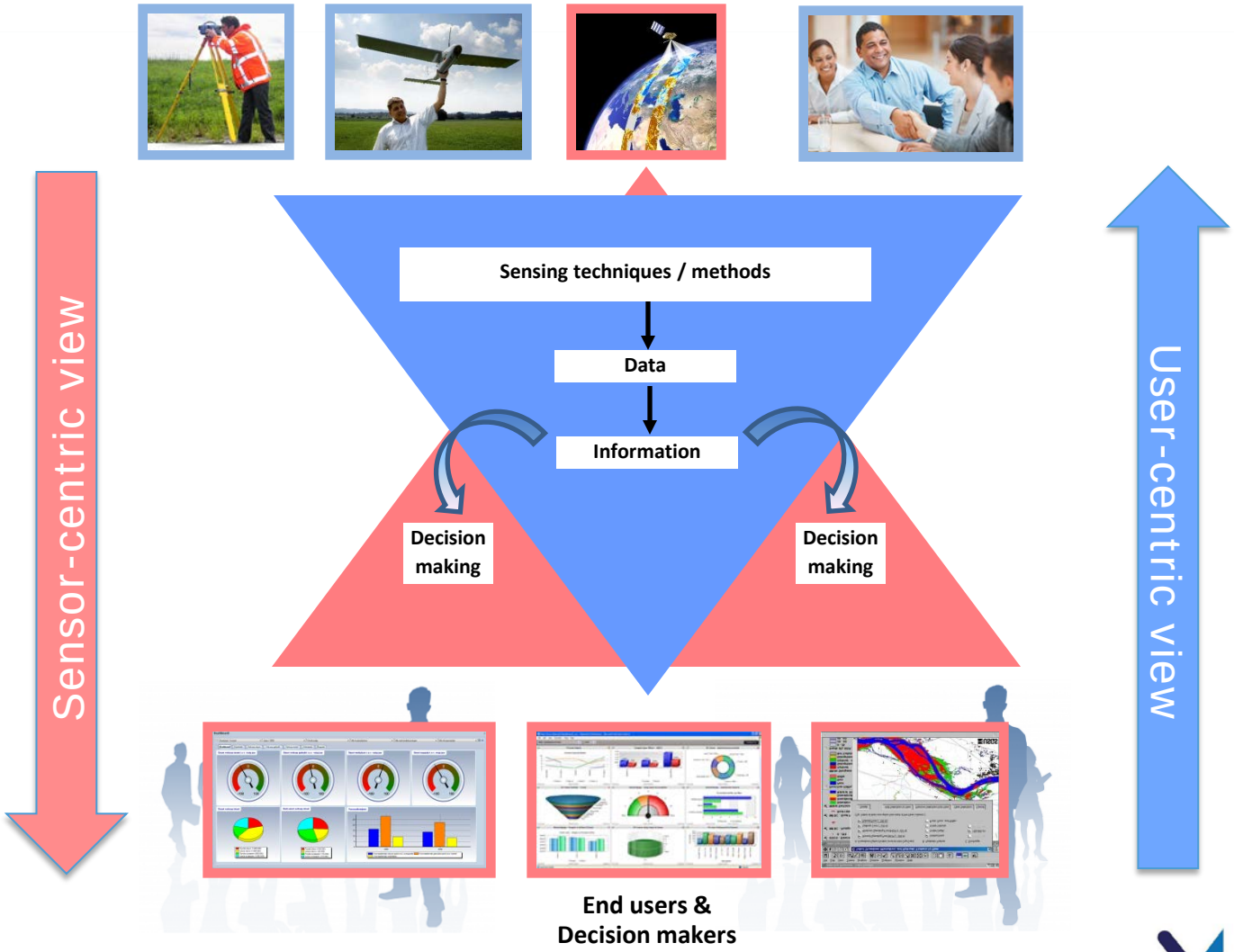


UAS in Business for Environmental Monitoring

- Business opportunities:
  - Flexible data acquisition
  - Independence from regular data acquisition providers
  - Existing companies vs. start up companies
  - Focus on RGB orthophoto products from commercial systems
  - Experience with RPAS flight regulations varies
- Current applications:
  - Overview movies: house presentation, events
  - 3D mapping topography, infrastructure, mining
  - Agriculture: mapping biomass

UAS for business: user-centric view

Image courtesy: Tamme van der Wal, Bioscope project



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Challenges for UAS in environmental monitoring

- From mapping to monitoring
  - Consistent signal in time (spatially and spectrally)
  - Integration with satellite and ground based sensors
- (near) Real-time products and services
  - Efficient processing chains
  - Flexible platform-sensor solutions
- Development of business cases
  - User-centric approach: e.g., forestry
  - Include cost-benefit analysis
  - Business-case specific regulations?

UAS in research and business: how to meet?

- Research <-> Commercial
  - Exchange/flow of knowledge
  - Sharing of protocols/best practices required
  - Sharing and exchange of facilities
  - Valid to have different regulatory frameworks (is this already the case?)
- Opportunities: international scope + network organization + examples
  - How to organize?

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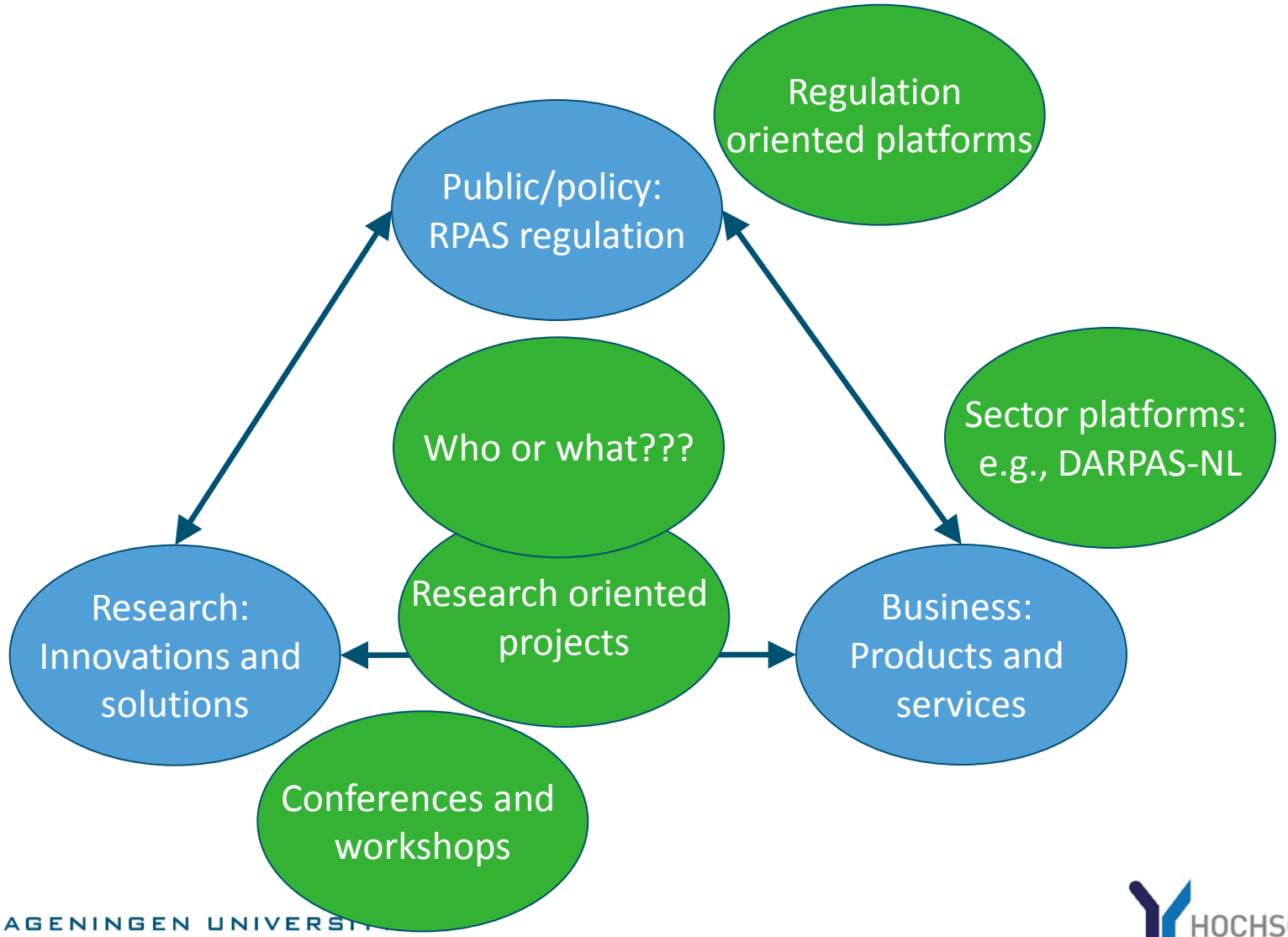
Current UAS networks

- Research oriented projects: Bioscope, Fieldcopter, Smart Inspectors and many more (limited duration)
- Regulation oriented platforms: national and EU
- Sector organized platforms: e.g., DARPAS in NL
- Scientific conferences and workshops:
  - Workshop on UAV-based Remote Sensing Methods for Monitoring Vegetation, Sept. 9th - 10th, 2013, Uni Cologne
  - UAS event Eindhoven and Odense in 2013
  - UAV-g conference 4- 6 Sept. 2013 at Rostock University

Position of UAS networks



Discussion points

- What are main research requirements from business point of view?
  - Platforms
  - Sensors
  - Products and services
- How to organize cooperation between research and business?
  - Exchange of best practices, protocols, …
  - Opportunities for financing
- How to get support to prepare your organisation as operational RPAS facility?
  - Exchange of experience, documents etc.

How to continue after this workshop?

- Outcome of this workshop:
  - Presentations on web (www.smartinspectors.net)
  - Synthesis of discussion
  - Send around list of participants

- Cooperation between research, business and regulation:
  - Sharing facilities, protocols, experience
  - Joint campaigns: e.g., cal/val

- Next Smart Inspectors events:
  - Agritechnica, 12-16 Nov, 2013, Hanover: booth
  - EGU, April 2014, Vienna: two sessions
  - Second SMI workshop Autumn 2014

Thank you for your attention

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