UNIVERSITY OF TWENTE.

UAV TECHNOLOGY: OPPORTUNITIES AND LIMITATIONS TO SUPPORT LAND ADMINISTRATION

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Land Governance and (Im)Mobility

Session: Shifting and Demarcating Boundaries: the Role of Digital Data Technologies

ITC FACULTY OF GEO-INFORMATION SCIENCE AND EARTH OBSERVATION

CONTEXT: ITS4LAND

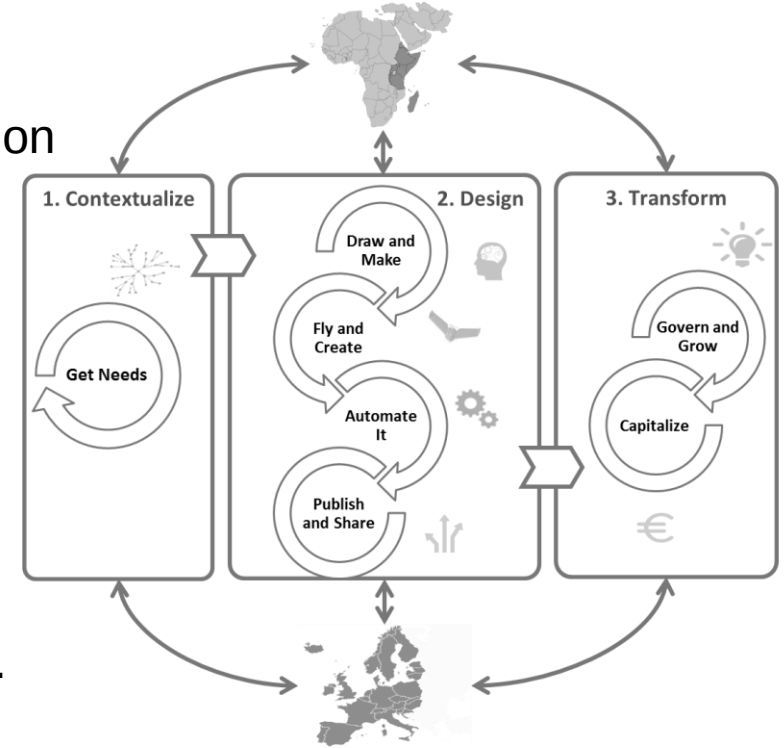
Program: EU granted H2020-ICT-2015
Research and Innovation Action

Start date: 2016-02-01

Duration: 48 months

Consortium: 8 partners across Europe and Africa

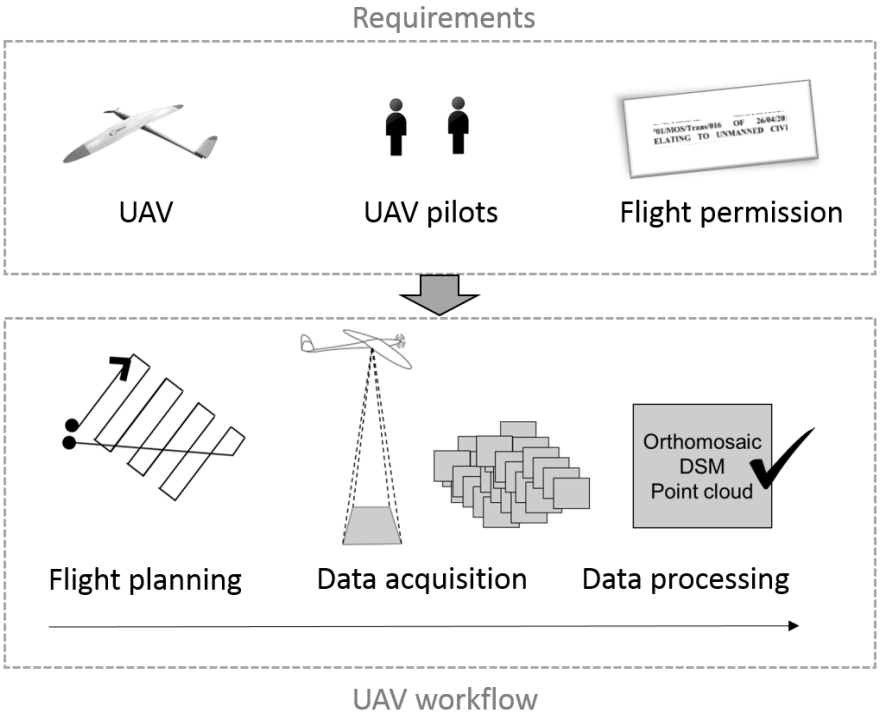
Objective: We're creating seven new tools to make land rights mapping faster, cheaper, easier, and more responsible.



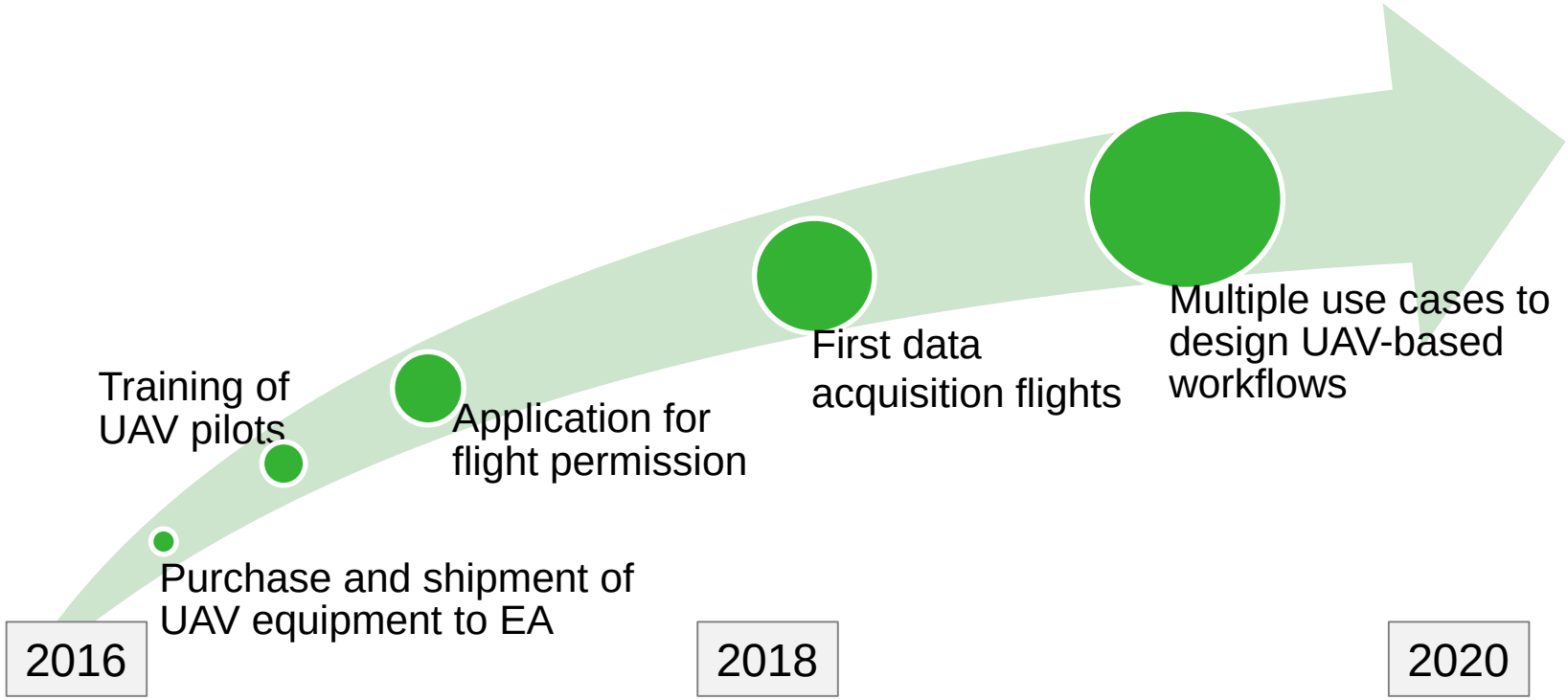
INTRODUCTION

- High resolution UAV-based orthomosaic as base data for cadastral mapping
  - visual interpretation of land information
  - manual digitization
  - (semi) automatic mapping or feature detection

SYSTEM COMPONENTS

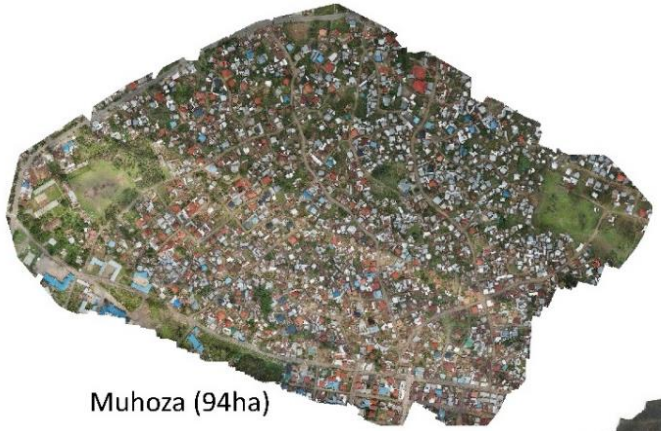


PROGRESS


Training of UAV pilots
Application for flight permission
First data acquisition flights
Multiple use cases to design UAV-based workflows
Purchase and shipment of UAV equipment to EA
2016
2018
2020

DATA ACQUISITION RWANDA

DATA ACQUISITION RWANDA



Muhoza (94ha)

Gahanga (14ha)

Busogo (50ha)

- 5 UAV flights at 3 locations
- 2.3 cm ground resolution
- Geometric accuracy < 15 cm

DATA ACQUISITION RWANDA

DATA ACQUISITION KENYA

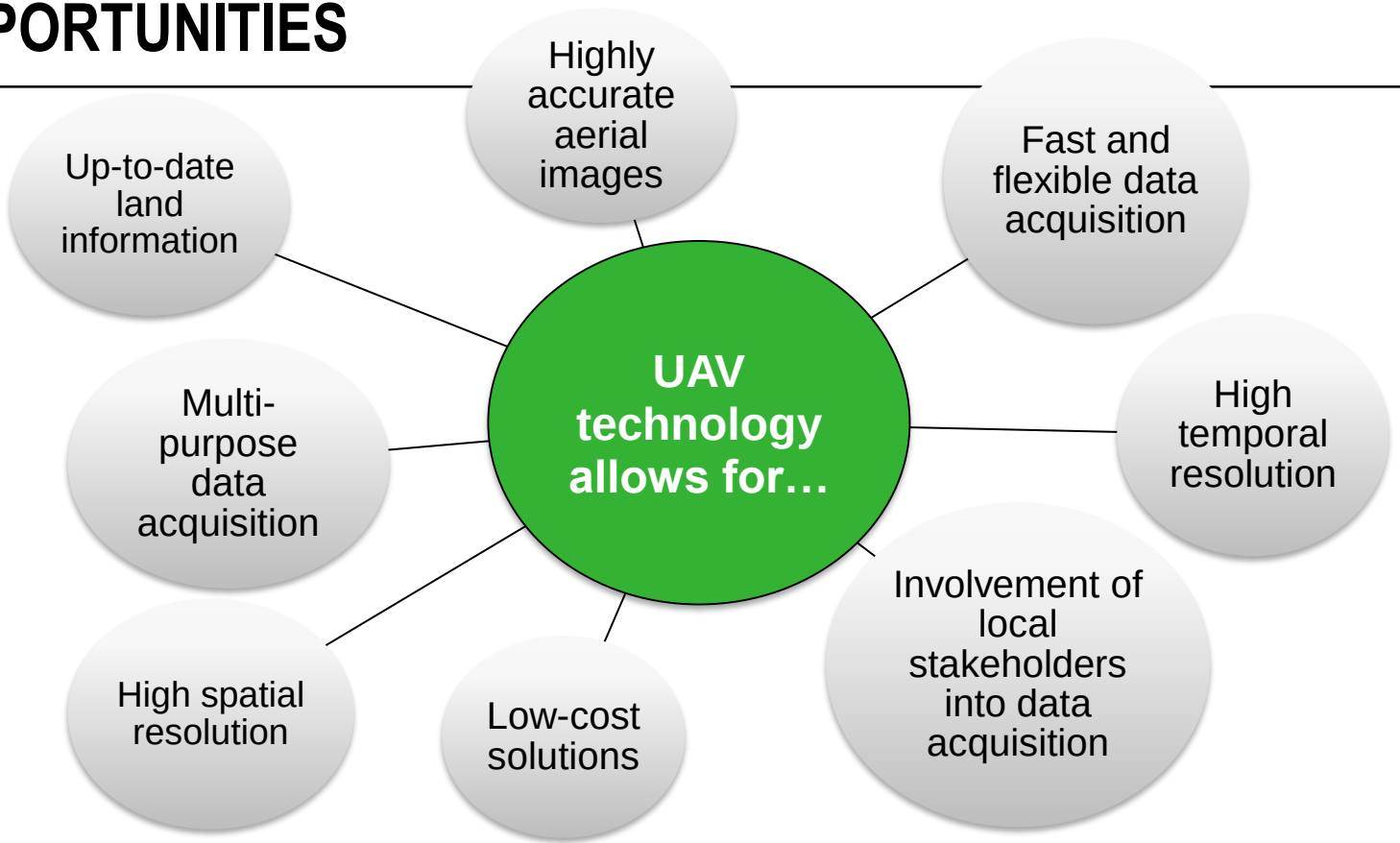





DATA ACQUISITION KENYA

- Group ranch in Mailua (Kajiado)
- 4 UAV flights to cover 3.3 km²
- Ground resolution of 5 cm

OPPORTUNITIES



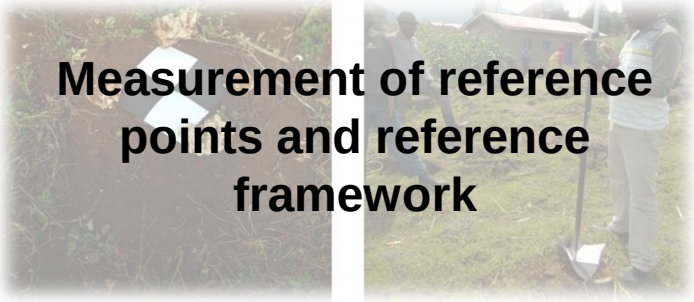
LIMITATIONS

Regulatory constraints	• Safety and privacy concerns • Height and spatial extent • Airworthiness of the UAV
Operational limitations	• Landing facilities and radio connection • Spatial coverage • Illumination conditions
Political willingness	• Social acceptance • Acceptance of disruptive technologies

CHALLENGES

Capacity building

Meteorological conditions



Measurement of reference points and reference framework

UAV regulations and administrative procedures

CONCLUSION

- Interviews and workshops with relevant stakeholder reveal the need of up-to-date data and interest in UAV-based aerial images
- First test flights show that it is possible to fly a UAV in Kenya and Rwanda

Opportunities | Limitations | Challenges

- Next up: definition of use cases to proof the concept of UAV workflows to support land administration

THANK YOU FOR YOUR ATTENTION

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www.its4land.com