m3 SYSTEMS
RESEARCH-CONSULTING-ENGINEERING
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MISTRALE

SPACE DAYS 2014
Transinne 13-14 October

MISTALE at a glance

- Partnership
  - M3 Systems Belgium
  - ENAC
  - Starlab Ltd
    - CNRS-GET
  - Aerovision
  - Avion Jaune
  -
- Duration: 36 month
- Budget: 3.3 M€

MISTRALE context

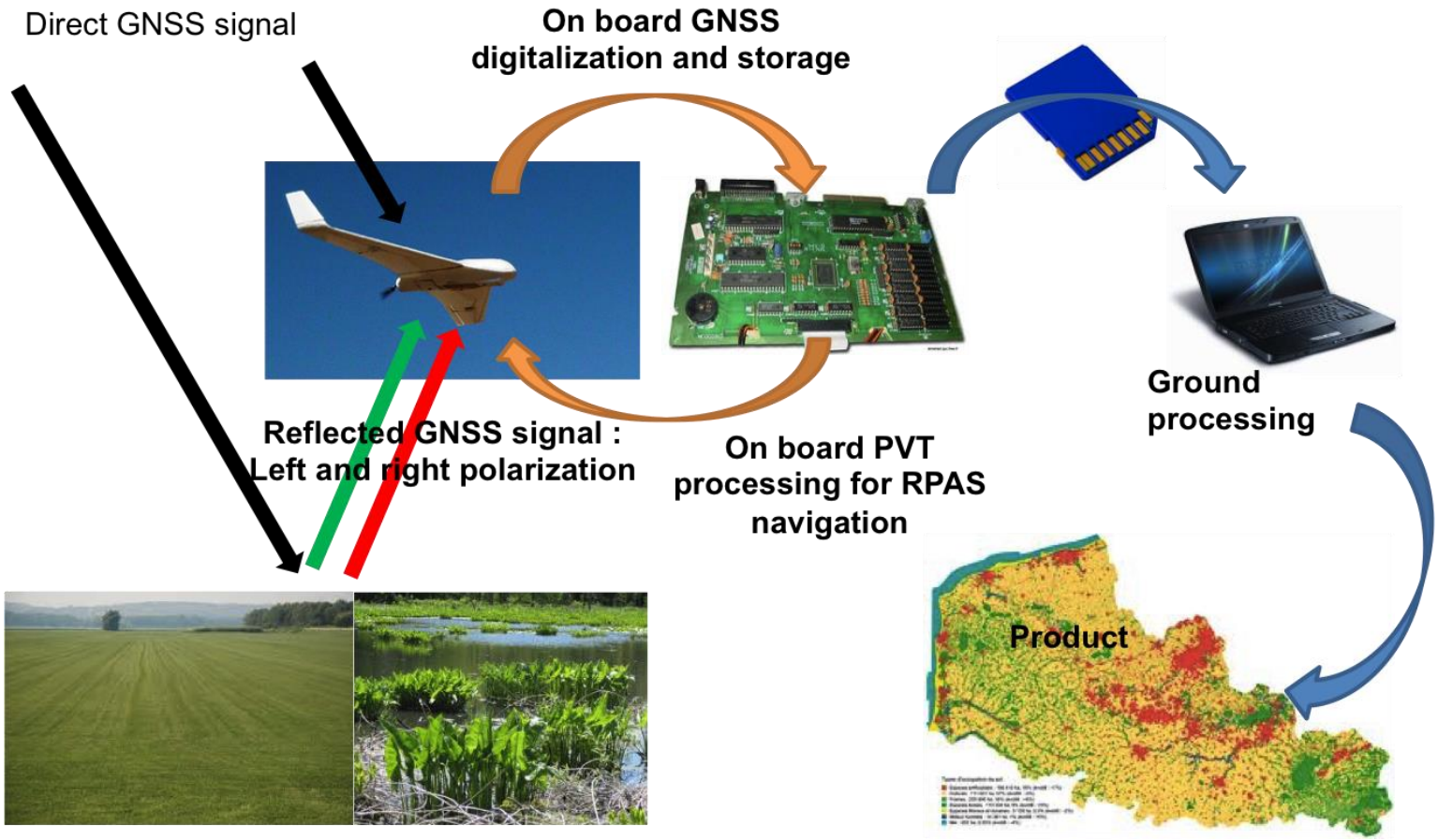
[1] Food and Agriculture Organization of the United Nations

Objective

- The **overarching aim of the GNSS-Air project** is to reach the commercialization of a service providing soil moisture maps and flood prone and wetlands areas monitoring.

- As a first step, GNSS-Air will develop and demonstrate a **prototype of GNSS Reflectometry** (GNSS-R) sensor embedded on a **dedicated Remotely Piloted Aircraft Systems** (RPAS) platform for measuring soil moisture using the GNSS reflected signature.

Concept


Direct GNSS signal
On board GNSS digitalization and storage
Reflected GNSS signal : Left and right polarization
On board PVT processing for RPAS navigation
Ground processing
Product

Added value of Galileo

- Improvement of the measurements resolution due to the increase of usable satellites;

- Increased accuracy of soil moisture measurements (due to the Galileo signals characteristics: broader bandwidth and different carriers);

SWOT Initial Analysis

Strength	Weakness
• Ability to rapidly detect the soil moisture content (and not just the vegetative response), enabling responsive water management. • Cost effective solution (compared to alternative technical solutions) • Global maps (compared to point measurements)	• Low value market (low margin available) • Does not provide continuous measurements

Opportunity	Threats
• Water management (and more globally sustainable agriculture) is a societal challenge • RPAS is a low cost solution for low altitude measurements • R-GNSS also enables additional measurements (such as plant growth)	• Legal framework is not clear yet (insertion of RPAS into the airspace)

Initial Business case

Market

- Agriculture is the main market
- Entry point: high value culture (e.g.. vineyard)
- Possible alternative market: golf course managers

Competitors

- Current alternative are multispectral, thermal and microwave sensors;
- Mostly indirect or with low spatial resolution

Business model

- On-demand or on subscription service

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Thank you

Questions?