



1918

TALLINNA TEHNIKAÜLIKOOL  
TALLINN UNIVERSITY OF TECHNOLOGY



UNIVERSITY OF TARTU  
TARTU ÜLIKOOL

# Integration of Satellite Capabilities and Environmental In-situ Data into Super Precise Vegetation Mapping Platform

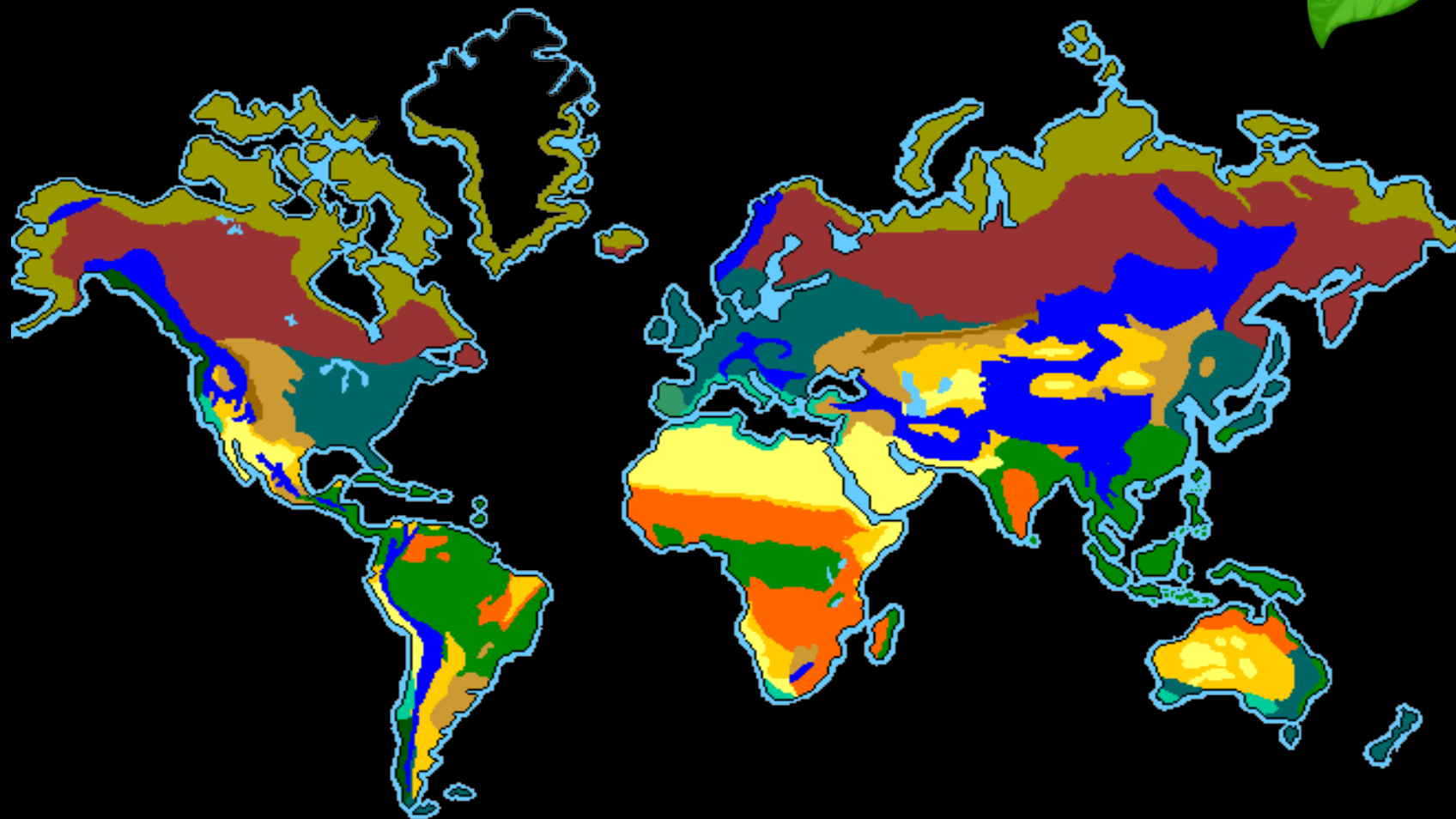
**Alar Kolk**

A project proposal for the 5<sup>th</sup> call  
Space in FP7

[www.nycosat.com](http://www.nycosat.com)

[info@nycosat.com](mailto:info@nycosat.com)

NycoSat



Innovation in Global Vegetation Mapping



## System Design

Scientific Data Sources

- Data:
- analysis
  - monitoring
  - forecasts etc

Central Database

Platform

Global Data: Super Precise Location of Plants & Fungal Species

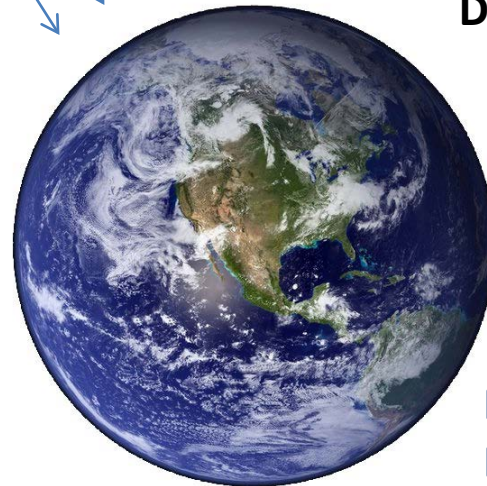
Remote Sensing Data

In-situ Observation Data  
Environmental Biodiversity GIS

Earth Observation Satellites



Sentinel 2 Preparation



Mobile Devices Services

LBS

Navigation Satellites Galileo





# Users' Segments

*Super Precise Predictive  
Vegetation Mapping  
(SPPVM)*

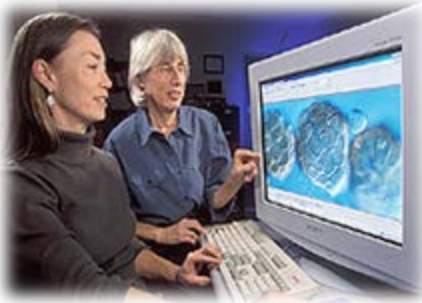


**Scientific  
Research of  
Biodiversity  
Dynamics**

**Natural Food  
Resources  
Management**

**Environment  
Monitoring**

**Military Combat  
Responsivness**





# Draft Call Topic that the Proposal Aims at...



## Space-based applications at the service of European Society (GMES):

*Pre-operational validation of GMES services and products:*

- Preparing take-up of GMES Sentinel data

*Support to the coordinated provision of observation data:*

- Research and development for In-situ component
- Consolidation of user requirements for GMES

## Cross-cutting activities:

*SME specific research*

- Bringing terrestrial SME research into the space domain



# Proposal Concept I (strenght)



## Integration of Satellite Capabilities and Environmental In-Situ Data into Super Precise Vegetation Mapping Platform:

- *Integrated application and preparation of future data exploitation:*
  - *Satellite earth observation (Sentinel 2) and satellite navigation (Galileo)*
- *Interdisciplinary research and data integration:*
  - *Biodiversity, environmental, geoinformation, botany in-situ data etc.*
- *Users' Segments in Africa, South-America, Asia*
- *Global Innovation Model*



# Proposal Concept I



## Short introduction into the state-of-the-art:

- *General System Design*
- *Service Feasibility Study*
- *Mapping of Satellite Integration Data Sources*
- *Analysis of Environmental, Biodiveristy In-situ Integration Databases*
- *Modelling Future Users' Segments*
- *Design of Global Innovation Model*
- *Data Architecture and Storage Systems*



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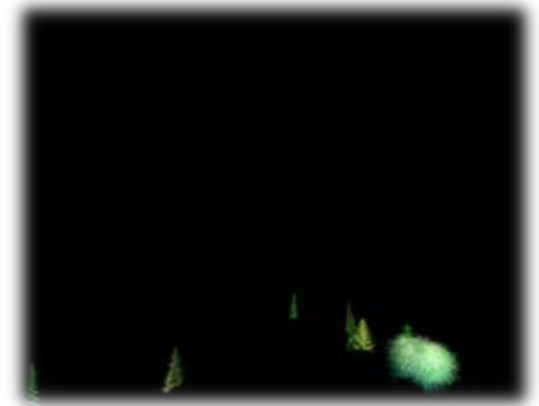


# Proposal Concept II



## Scientific and technological aims exceeding the state-of-the-art:

- *Virtual species environmental model based on satellite and in-situ data integration*
  - *What are lead plants and environmental model conditions?*
- *Super precise location prediction' models*
  - *How to calculate?*
- *Robotic system for data accumulation*
  - *How to add data and quality?*
- *Open and Global platform*
  - *How to manage data?*
- *Sentinel and Galileo data Readiness*



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# Consortium



- Coordinator (wanted) : competent and winner
- Wanted partners/competences:
  - Satellite (incl. Sentinel) data expert
  - Environmental, Biodata expert (soil, light, elevation, forrest etc)
- Users´ segements (reps wanted): Africa, Asia, S-America
- Existing core team and responsibilities:
  - Tallinn University of Technology: satellite data analysis
  - Tartu University: Biodiversity, pharmacognosy



# Contact, further information...



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