





Supporting Sustainable Food Production from Space

Food Security TEP consortium, presented by Erwin Goor (VITO)

26 September 2017









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#### Bringing together Food Security and Big Data





### Access to nutritious food is crucial to end hunger and malnutrition

Efficient use of satellite data and spatial information can

- sustainably increase agricultural and aquacultural productivity
- help farmers adapt to global change
- improve early warning initiatives

SUSTAINABLE GOALS

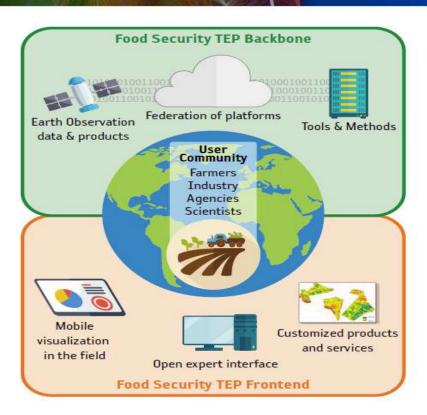




#### What is the Food Security TEP











# "Supporting Sustainable Food Production from Space"

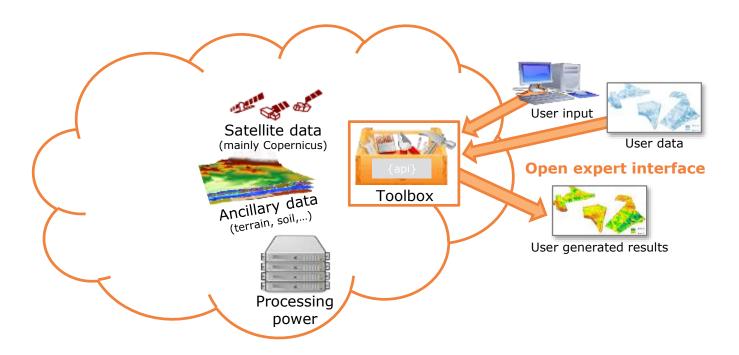
The innovative platform aims at simplifying the extraction of information from Earth Observation data for the advancement of data-intensive services in the food security sector mainly in Europe and Africa.

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#### FS-TEP Essential: Environment for the Expert User



































#### FS-TEP Essential: Available Data and Tools



- (1) Satellite data: focused on Sentinel-2 in Phase 1, some additional data, pre-processed atmospherically corrected Sentinel-2 data as well as biophysical parameters (LAI, chlorophyll, fAPAR, fCover) for some areas (DE, BE, NL, selected parts of Zambia)
- (2) Ancillary data: Terrain Maps, Soil Maps, some Meteo Data
- (3) Tool boxes: SNAP Toolbox, Sen2Agri Toolbox, GDAL
- (4) Basic functions: Area and Time of Interest, basic GIS tools

Expert users can use tools to compare and visualize data and their own knowledge and algorithms to process available data with the available tools.

For FS-TEP Essential, the data and tool provision is free, only used processing power and storage will be charged in some way (after end of ESA project).

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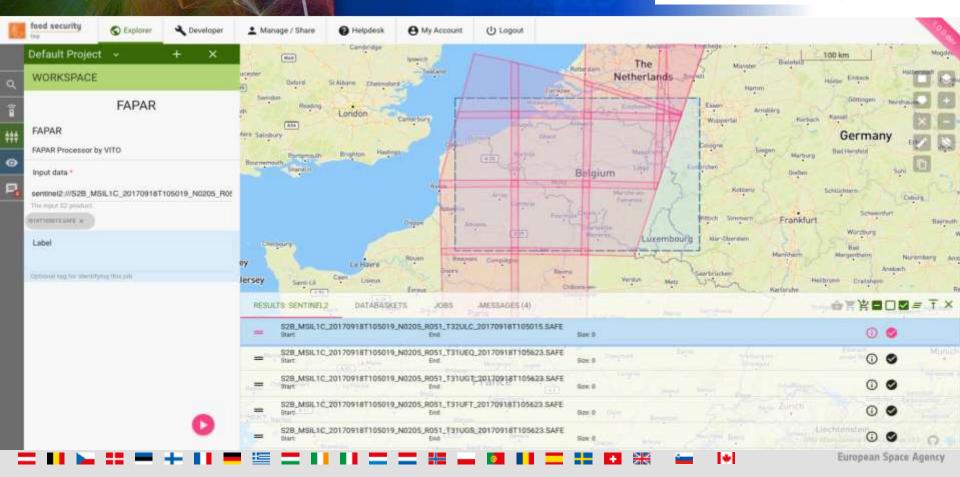




#### Search data & Invoke processing



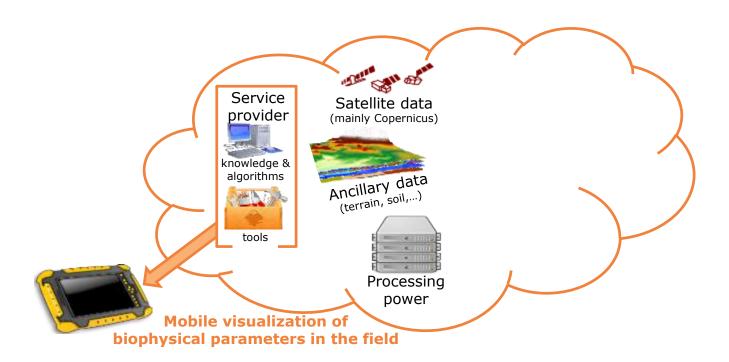




## FS-TEP Mobile: Visualisation for Everybody





































FS-TEP Mobile provides visualization for everybody.

It is possible to

- (1) Search and visualize pre-processed biophysical parameters (leaf area, leaf chlorophyll, fAPAR, fCOVER) in selected areas (in the beginning: DE, BE, NL, selected parts of Zambia).
- (2) Have **basic GIS functionalities** to discover the products in space and time FS-TEP Mobile can be taken out on the field on a mobile device to check areas that behave unexpectedly.

FS-TEP Mobile is **free of charge**, but data cannot be downloaded.

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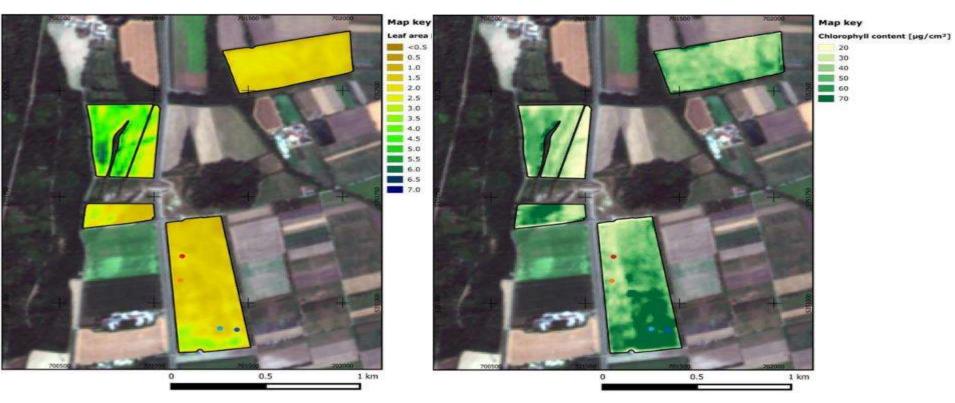




#### Data Example







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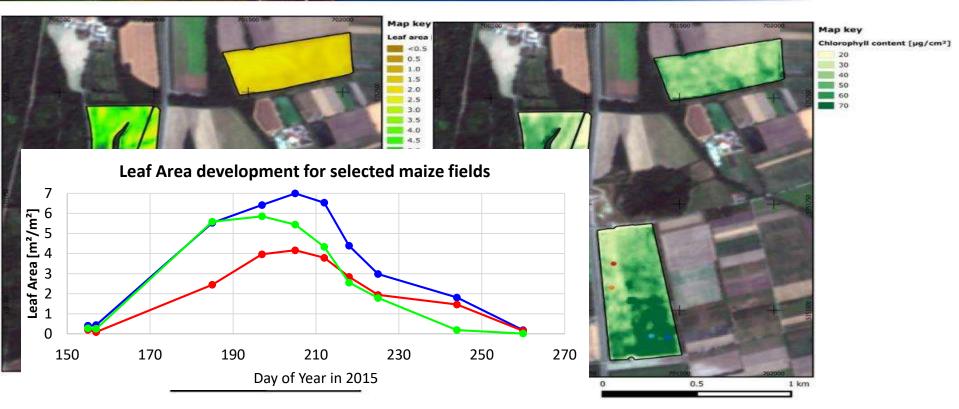




#### Data Example





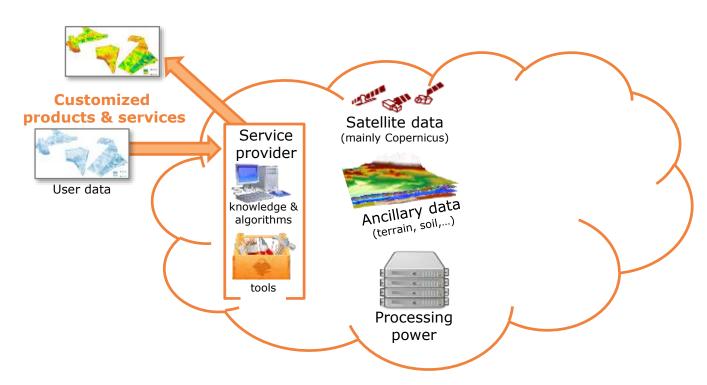


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#### **FS-TEP Customized Services**







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FS-TEP Customized allows the **purchase of EO-based services** without investing into dedicated personnel for EO data analysis.

Service Providers specialised in extracting information from satellite data use

- > their IPR protected tools
- > the FS-TEP infrastructure
- > available data on the FS-TEP
- additional data provided by users (e.g. field boundaries)

to derive **high quality information** about crop status and deliver the customized results to the user.

FS-TEP Customized is **demonstrated** in three **service pilots**.





Pilot 1 'Agriculture' (VISTA – VITO)

Central Africa

Europe & Eastern





Pilot 2 'Agriculture' (VITO – VISTA)

Africa





Pilot 3 'Aquaculture' (Hatfield)

Africa



Food and Agriculture Organization of the United Nations

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#### Monitoring potatoes from space!

Crop development

Field heterogeneity

Risk at production and quality losses

Yield forecasts

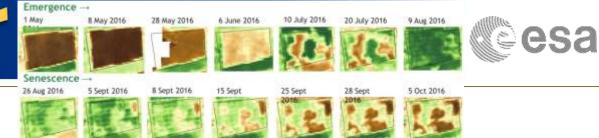
#### For all actors in the potato chain:

- Get access to satellite images, weather data, yield forecasts
- Store your own field data (e.g. treatments, yield samples,...)



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#### WatchITgrow® features



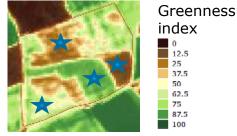
#### Sentinel-2 of 20 July 2016 (10m)



Field Anomalies

Compare Fields

#### Sentinel-2 of 20 Aug 2016



Field Heterogeneity

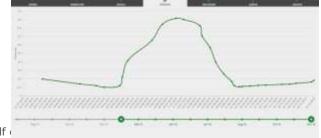
#### Monitor fields during season











#### Our Portal is online, please visit: foodsecurity-tep.eo.esa.int







User consultations

Start of pre-operations Service Pilot Europe agriculture Definition of Service Pilot Africa

User consultations

Agile platform development - -

Service Pilot Europe agriculture Service Pilot aquaculture **Further Service Pilots** 

Gradual transfer to long-term deployment

2018

2019

Start 2017

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Thank you!









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