EO-li: Earth Observation [based] location identifier

4 Components System Global Service Platform

Symposium “Neue Perspektiven der Erdbeobachtung“
Kick Start Feasibility Study – Food Security
Consortium
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Charlotte Eberz (Data manager)
Stefan Cerfontaine (Design)
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Till Adams (Community&Sales)
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- Anika Bettge (Development)
- Dr. Markus Metz (BigData & Algorithms)
- Dr. Fabian Löw (EO-Optical)
Groasis

Study Context

- identify arid & degraded areas for restoration
- access investments
- monitor the tree growth
- workshops on the usage of the Growboxx
Land Restoration is a multi-sectoral and interconnected activity.
All starts with the **identification** of the area to restore (geographic & socio-economical criteria, LDN guidance, ROAM, ...)

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**Identification by criteria**

Open Big Data

Identify
Land Restoration is a multi-sectoral activity that needs coordination and collaboration.
Monitoring of progress is essential. Stakeholders require transparency and traceability.
Sharing and capacity strengthening is sustainable and flexible – it creates a community of learners.
Connecting, Transparency, Traceability, Flexibility

Open source

Identification by criteria → Market Place → Monitoring & Reporting → Capacity Strengthening

Identify → Select → Monitor → Learn

EO service platform User
EO-li web page
Open Big Data
Stakeholders
EO data Machine learning
Cloud computing platform
Stakeholders

Open source
**Users / paying customers**

**User Group 1:** Beneficiaries
- Small holder aggregations
- Indigenous groups
- NGOs
- Government
- Civil society
- Development and cooperation agencies

**User Group 2:** Service providers
- EO service
- Planting service
- Financial tech

**User Group 3:** Investors
- Community and local investors,
- Development banks, impact funds,
- Commercial banks, insurance companies,
- Private investors, funds from financial-incentives based conventions (e.g. REDD+)
User Engagement

- Letter of Interest signed
- Expressed interest
- In discussion
- Further contact establishment
User Engagement

**Morocco**
- Reinsurance company
- Ministry of Forestry
- Local -Global Green Growth Institute

**Guinea-Conakry**
- Ministry of Environment, Water and Forests

=> Letter of Interest signed

**Suriname**
- Ministry of Forestry

**GGGI**
- South Korea

**GIZ**
- Land Degradation Neutrality – Bonn
- Usage of cloud computing

=> Letter of Interest signed

**Telekom**
- Calculation power

**Global landscape Forum**
- Secretary – Bonn
- GLF Investment case Washington DC, Mai 30, 2018

=> expressed interest from El Salvador
=> expressed interest from the Conservation Finance Alliance (CFA)

**Fair trade certification**
- FLOCERT - Bonn

**Copernicus-DIAS**
- Calculation power
System Proposition

General EO-li system Architecture
Space Assets and their added value

Earth Observation  Open, Free & Commercial Data

- Modis temperature time series

- Sentinel-2, 10m spatial resolution, false color composite, 2016, Gabon|ESA Copernicus program

- Forest Concession Guyana 2017
  Sentinel-1A, 20m spatial resolution, polarization color composite (R) VV (G) VH (B) VV-VH

+ Other open layers (mostly at the global level)
Space Assets and their added value

- Earth Observation Data
- Metadata Management
- Machine Learning algorithms
- High Performance Computing in Cloud Computing Platform (flexibility depending on the user know-how)

- Above Ground Biomass (status and change)
- Land use land cover (status and change)
- Plantation type monitoring
- Sub-indicators for Land Degradation Neutrality (land productivity, land use land cover and soil biomass)
EO-li Mock up presentation
# Some Stakeholders Stories

## Persona 1: Government of Algeria

<table>
<thead>
<tr>
<th>As</th>
<th>Want to</th>
<th>So that</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group: Beneficiaries Government of Algeria</td>
<td>Identify restoration areas opportunities</td>
<td>The restoration implementation can be conducted with the help of other actors (also users of the platform) and achieve the commitment they are engaged in (LDN, REDD+, Bonn Challenge, SDG) and report on it</td>
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## Persona 2: Investment fund manager- LDN Fund

<table>
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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Group: Investors Investment Fund Manager-LDN Fund</td>
<td>Select a project/location</td>
<td>to invest in the project based on some criteria (flexible filter tools necessary) and follow the progress of the implemented one - transparency</td>
</tr>
</tbody>
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## Persona 3: Planting Service Provider- Groasis

<table>
<thead>
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<th>So that</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group: service provider Groasis</td>
<td>Monitor the plantation they implemented</td>
<td>They can measure the progress and assess the carbon storage captured by the plantation - Groasis would like to use the monitoring functionality as their Unique Selling Proposition</td>
</tr>
</tbody>
</table>
Web site of EO-li service platform
Earth Observation Location Identifier
Open source, 4 components service platform solution for land restoration

EO-li open source service platform
make multi sectoral land restoration more efficient
Earth Observation Location Identifier

Open source, 4 components service platform solution for land restoration

EO-li open source service platform
make multi sectoral land restoration more efficient
Grow-box project
Scene cloud cover %: < 1%

Type of LULC, Class_label: Desert

Annual mean temperature: > 25°C

Annual mean precipitation: < 10 mm
Footprints of satellite data corresponding to the filter of “arid areas” in the selection criteria.
Project: Growbox Groasis

This project was selected by:
- Ministry of environment Algeria
- LDN Fund

Group: Beneficiaries
- Ministry of environment Algeria
- NGO Commonland

Group: Service Providers
- GROASIS
- Drone seeds

Group: Investors
- LDN Fund
- Moringa investment fund
Project

Growbox Groasis

Success indicators

Assess your project success

Links to MOOCs

• MOOC for image processing
• MOOC ENABLE for Business opportunities in land restoration
• MOOC on usage of GROASIS “Growbox Cocoon”

Organize workshop
Value chain
Value chain

catalyze investment in landscape restoration

develop trust, foster collaboration and create business opportunities

create and empower communities
**Business Assessment- Market size**

**Overall market size**

*World degraded land* = ~ 2 billion hectares
(source: WRI, IUCN),

47 governments, private associations and companies have pledged over **160 million hectares** to the Challenge, for 2020.
(“**Bonn Challenge**”)
(e.g., El Salvador committed : ~1 million hectares by 2020)

The LDN Fund has an initial target volume of **300 million USD**

**Selected market**

~ 1.5% of total market = 30 million hectares

**Sectors:** Ministries of environment, green finance, private sector in planting and space technologies, international institutions, and NGOs

Services EO-li platform is offering

- **Identification** of the restoration area based on an enhanced geo-filter

- **Market place**
  - Match stakeholders together to implement an investible project
  - Market place for capacity strengthening

- **Monitoring** of vegetation growth and change

- **Technical Consultancy** on the system deployment, support, etc
Sustainable business proposition

• Revenue stream 1: the steps “identify” and “select” are free-of-charge. As soon as the contract for land restoration has been concluded x% of the investment sum is charged as a fee for covering the operational cost of the whole platform.

• Revenue stream 2: the pricing will be based on the usage of the cloud computing platform: EO-li tokens.

• Revenue stream 3: an individual contract is drawn up to help with the deployment of the Free and Open Source Software in parallel with technical capacity development.
Looking forward for the approval of: development phase

- DLR/ESA: 12/2017
- GLF: 05/2018
- DLR/ESA: 10/2018
- DLR/ESA: 05/2019
- DLR/ESA: 05/2020

Conceptual phase
Development phase
Operational phase
Pilot up & running

...And looking for financial support
Lessons learnt

- **Tech/Commercial**: The project stimulate new ideas. The potential of the platform to metamorphose from addressing food security and land restoration to other broad thematics.

- **Engagement with users**: Mundialis engaged with wide range of users, however the challenge remain related to a concrete demonstration case that can show the users the platform potential.

- **ESA process**: Collaboration with ESA-ESTEC went very well, (minor admin aspect: "ESA-P")

- **Company related aspects**: Because of the short time allocated to the conceptual phase, we introduced sprints work organization in agile management to deal with the urgent evolving aspects of the conception of EO-li platform.
Thank you for your attention