



We e-shape EuroGEO

7-9 Dec.2022 | Athens



EuroGEO
Showcases:
Applications
Powered
by Europe

“
**Blazing new trails
for EO markets**
”

EuroGEO
Workshop
2022

- www.e-shape.eu
- Horizon2020-e-shape
- @eshape_eu
- e-shape project

Harvester Seasons

Kosmale Miriam

Finnish Meteorological Institute

University of Helsinki: Prof. Jaana Bäck, Laura Matkala, Noora Tienaho
FMI: Jaakko Ikonen, Miriam Kosmale, Mikko Moisander, Tuomo Smolander,
Mikko Strahlendorff

Learn more here:



EuroGEO GEO GROUP ON EARTH OBSERVATIONS



The e-shape project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement 820852

ATHENS 7-9 DECEMBER 2022





Harvester Seasons

a web map application supporting the forestry sector
for climate smart operation planning

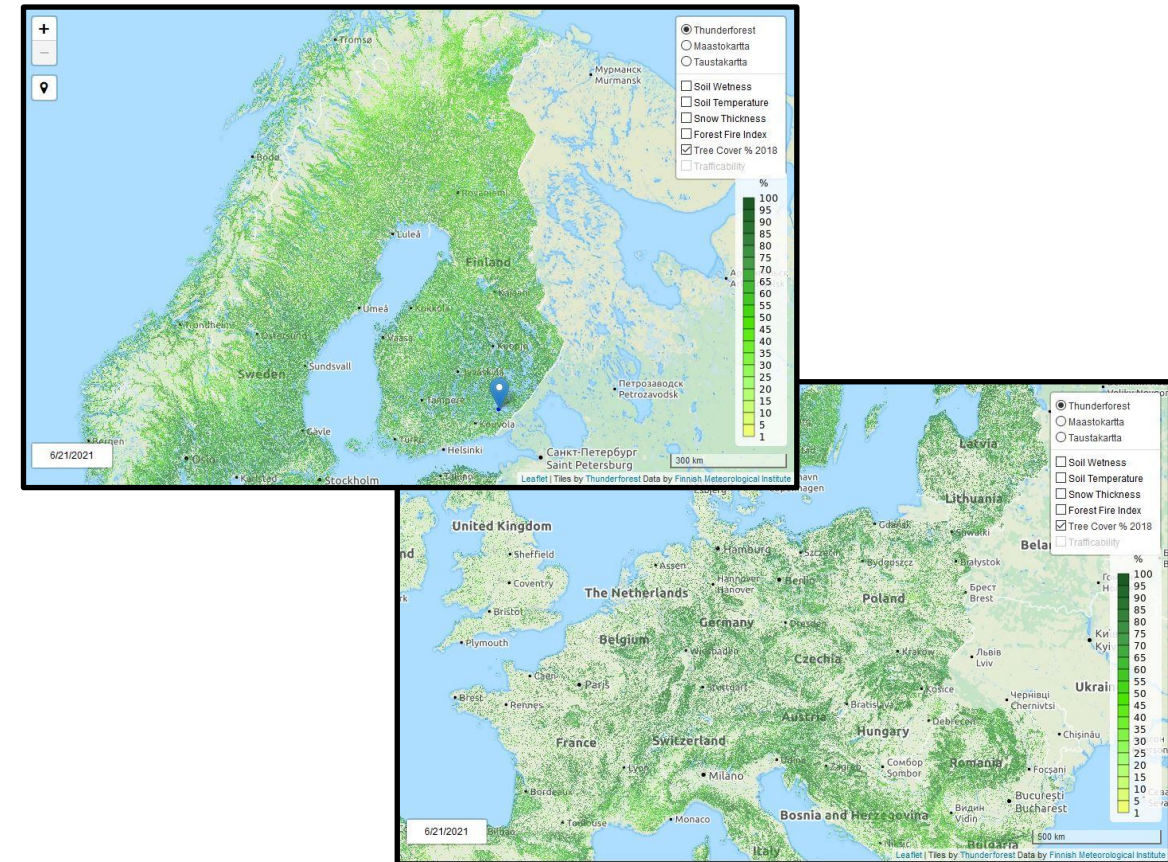
<https://www.harvesterseasons.com>



Harvester Seasons

Finnish forestry sector

- ❑ 75% forest coverage
- ❑ 78 million solid m3 roundwood consumption (2020)
- ❑ 2.7 bill € annual tax revenue
- ❑ 1/5 industrial production and Finnish exports based on forest industry
- ❑ paper, board + converted products, sawn material, pulp, wood-based panels



Land cover characteristics for the 2018 reference
CLMS, <https://land.copernicus.eu>



e-shape



Harvester Seasons

“Securing sufficient forest resources and biodiversity as well as climate change mitigation and adaptation are among the key elements of sustainable use and management of forests.

Sustainable forest management comprises the dimensions of economic, ecological, social and cultural sustainability.”

Statement by the Ministry of Agriculture and Forestry of Finland



Harvester Seasons

Timber harvesting and Forest operations

- ❑ Harvesting machine's weight up to 20 metric tons and up
- ❑ depending on soil bearing capacity leads to soil deformation and damage for ecosystem
- ❑ soil moisture lowers bearing capacity most in cohesive, fine-grained soils (clay, peatland, loam)
- ❑ accepted levels of rutting and soil damage are set by the Finnish forest legislation and forestry recommendations
- ❑ number of deep ruts (> 10 cm) must be kept minimal

⇒ a dynamic trafficability service
by Harvester Season





Harvester Seasons

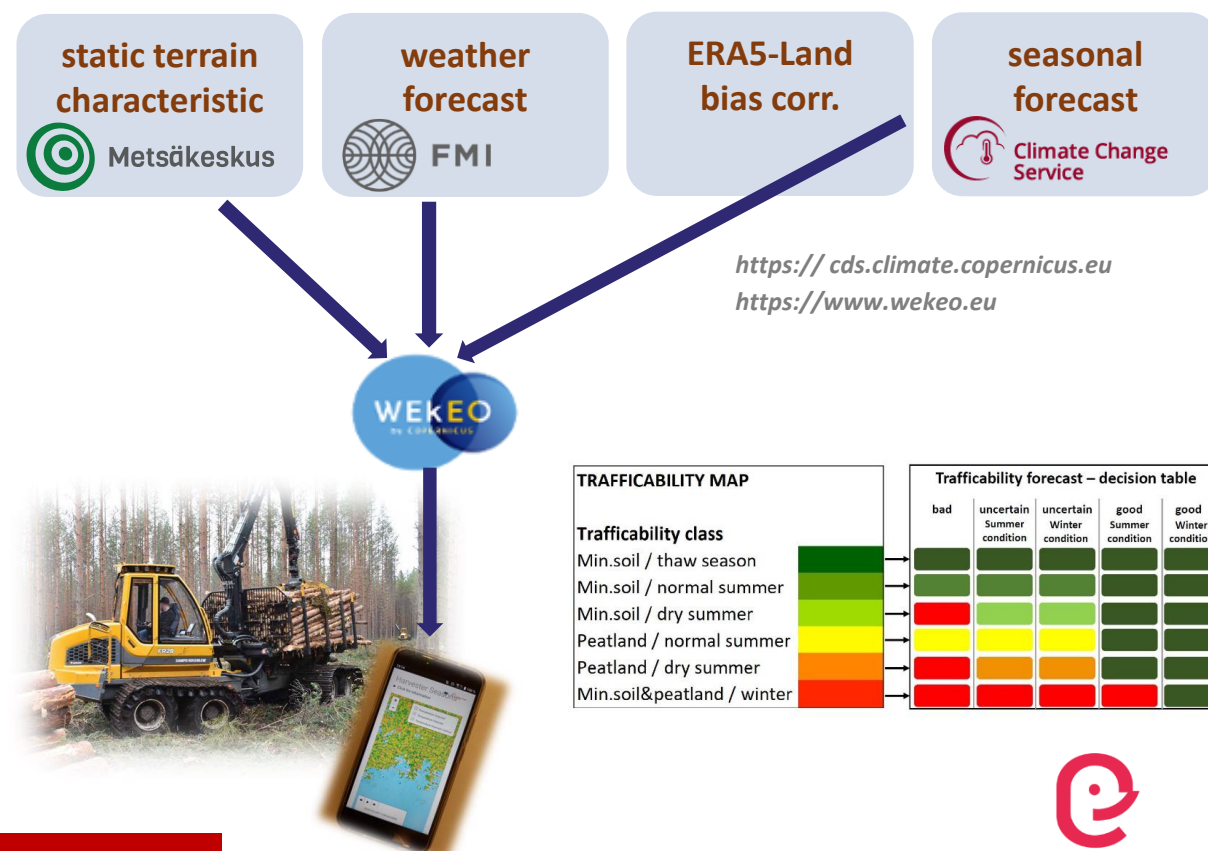
Trafficability service combines

- ❑ static terrain characteristics for Finland based on Lidar measurements; high resolution 16m x 16m

with dynamic component from

- ❑ 10-day weather forecast information
- ❑ long-term ECMWF seasonal forecast from C3S Copernicus Climate Data Store
- ❑ bias-correction of seasonal forecast with ERA5-Land reanalysis

- ⇒ snow depth, soil wetness, soil temperature
- ⇒ index-based trafficability forecast



Exploiting synergies between environmental data platforms, data sharing and standards in Europe [EuroGEOSS]

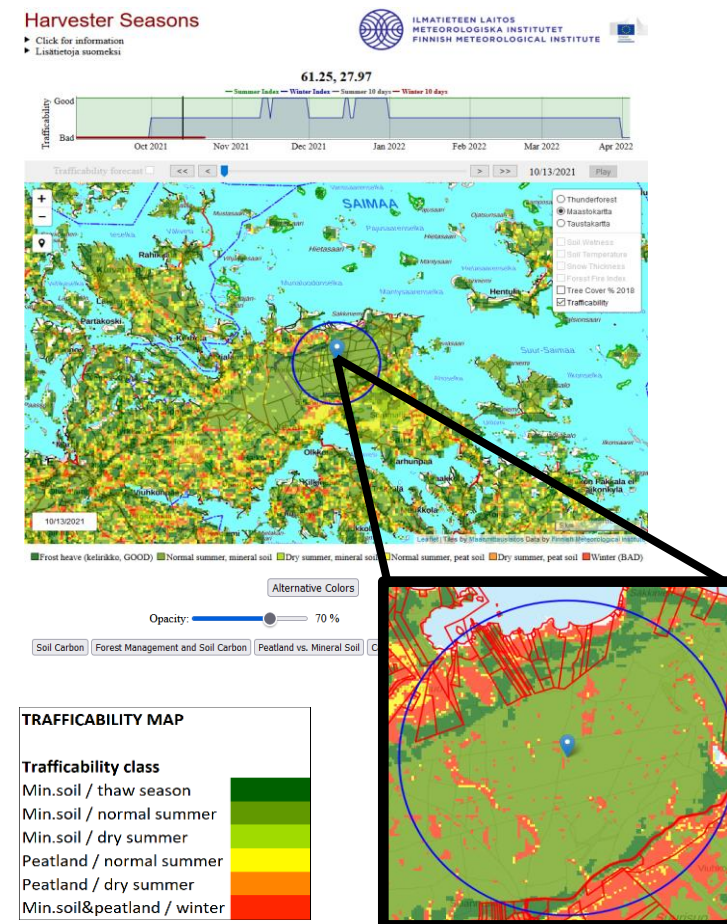


Harvester Seasons

Harvester Seasons helps in operation planning and selection of harvesting sites according to the most suitable operating conditions

- ✓ Harvester Seasons bridges the gap between science and societal and economic needs
- ✓ a tailored forecast service and easily accessible web map layer presentation
- ✓ open service co-designed according to user requests
- ✓ Harvester Seasons directly address requirements concerning the user interface and information available.

Strengthening European GEO data access [EuroGEOSS]



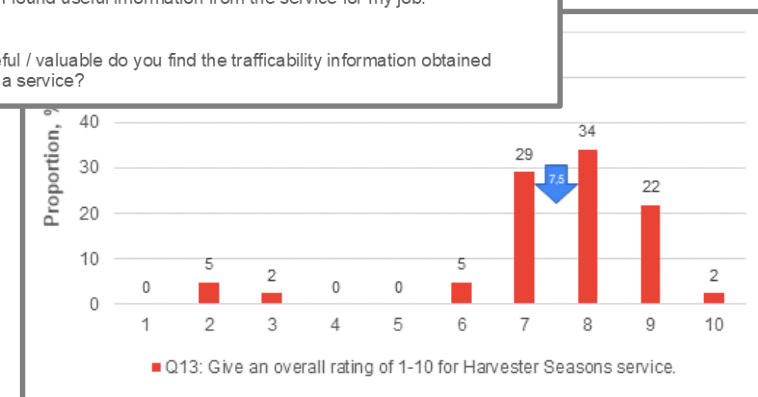
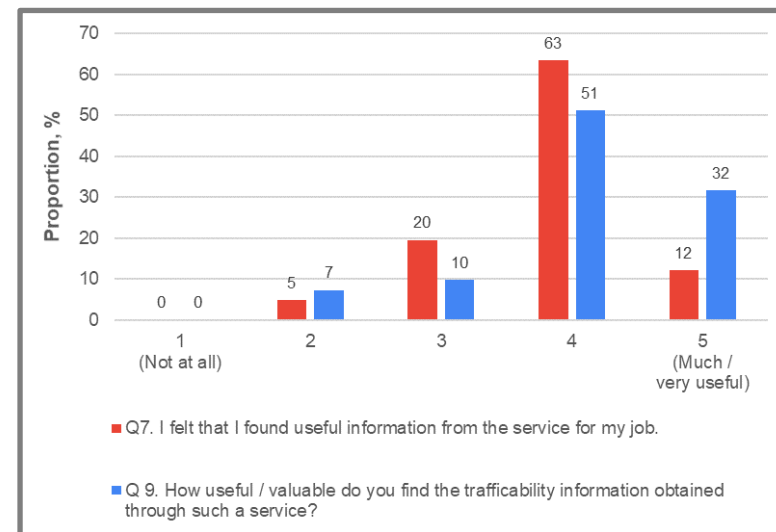


Harvester Seasons

Key-users from Finnish forestry sector (internationally operating)

forestry operation manager, operation planners, foremen,
harvester contractors and operators

- ✓ reach individual users via big forest industry groups and holdings
- ✓ build on well-established national market networks
open service co-designed according to user requests
- ✓ service is Co-designed in collaboration with  **Metsäteho**
LUOMASSA MAHDOLLISUUKSIA
- ✓ tailored solutions for exclusive test user
- ✓ webinar and surveys for collecting user feedback

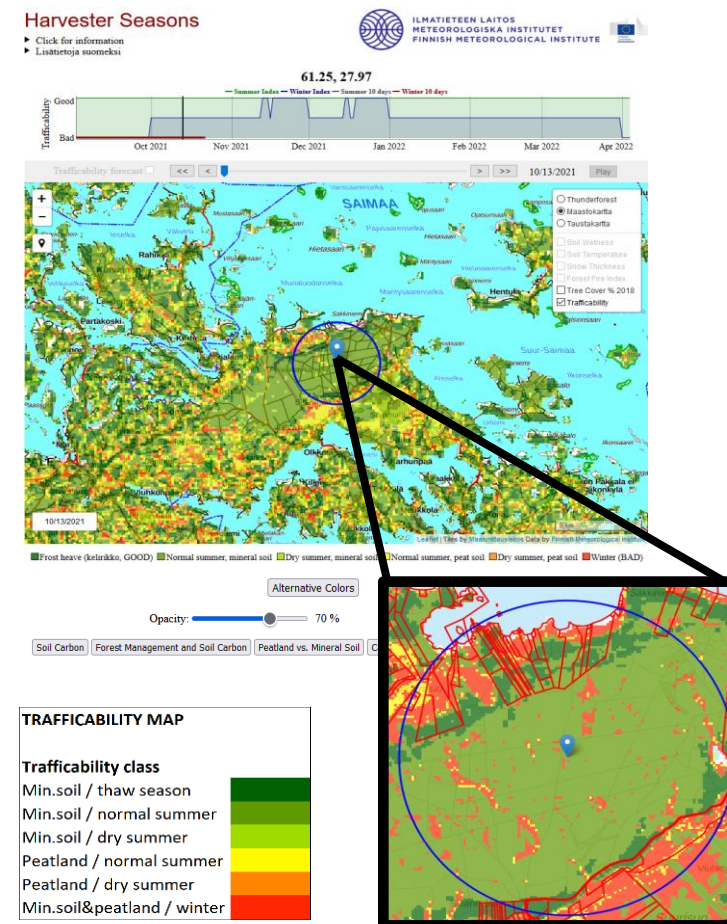




Harvester Seasons

Open service features (co-design, user requests)

- ✓ meteorological and seasonal forecast information
- ✓ dynamic trafficability index
- ✓ forest fire index *European Forest Fire Information System (EFFIS), <https://effis.jrc.ec.europa.eu>*
- ✓ tree cover map *Land cover characteristics for the 2018 reference CLMS, <https://land.copernicus.eu>*
- ✓ NDVI *Sentinel-3 Synergy NDVI, <https://sentinels.copernicus.eu>*
- ✓ alternate color coding for vision impaired users
- ✓ Guideline on operation management and influence of clear cutting on carbon emissions

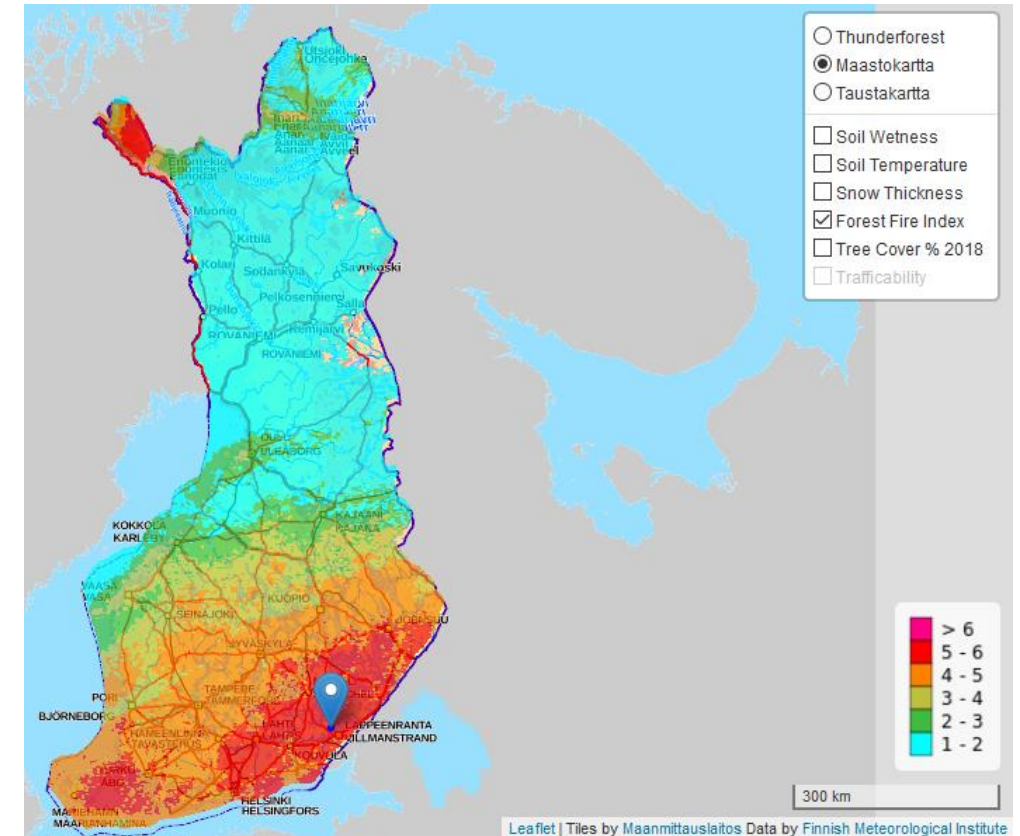




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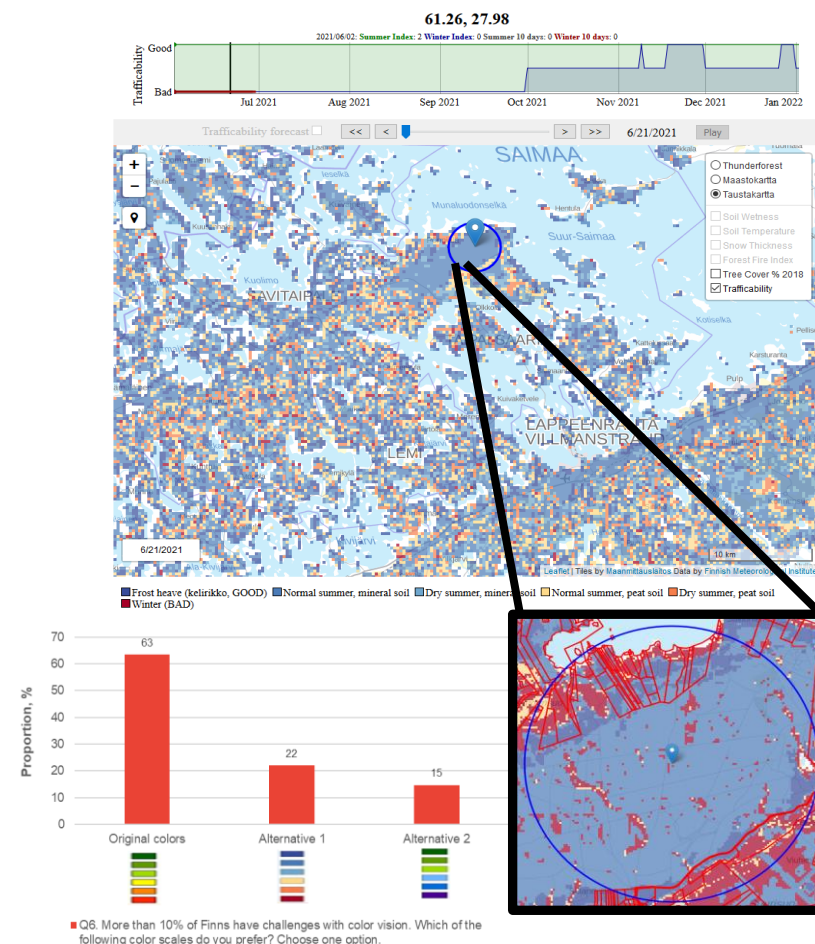
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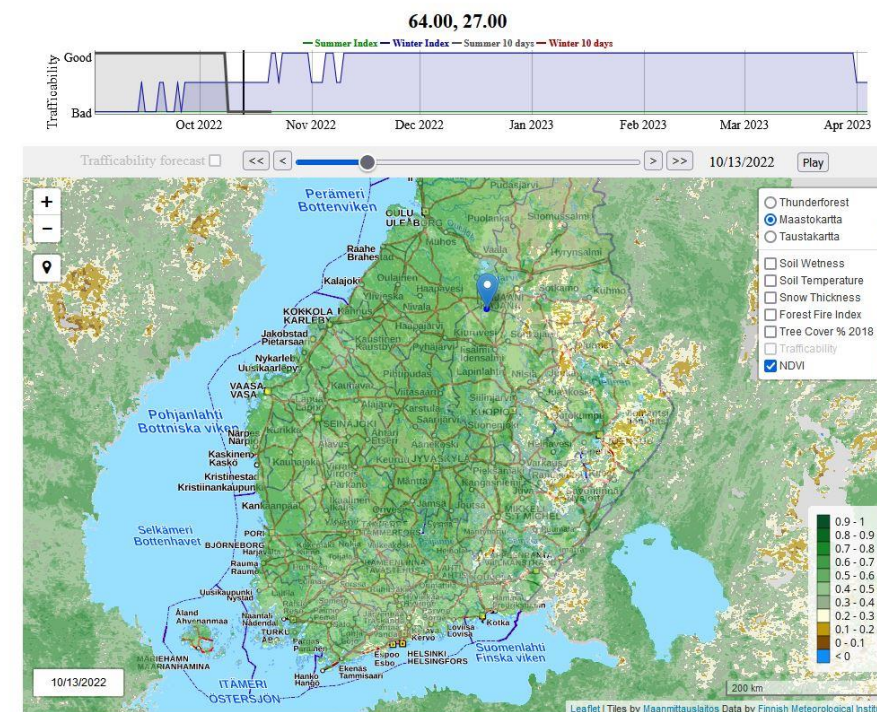
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Harvester Seasons

- Click for information
- Lisätietoja suomeksi



ILMATIETEEN LAITOS
METEOROLOGISKA INSTITUTET
FINNISH METEOROLOGICAL INSTITUTE





Harvester Seasons

example for additional service offers

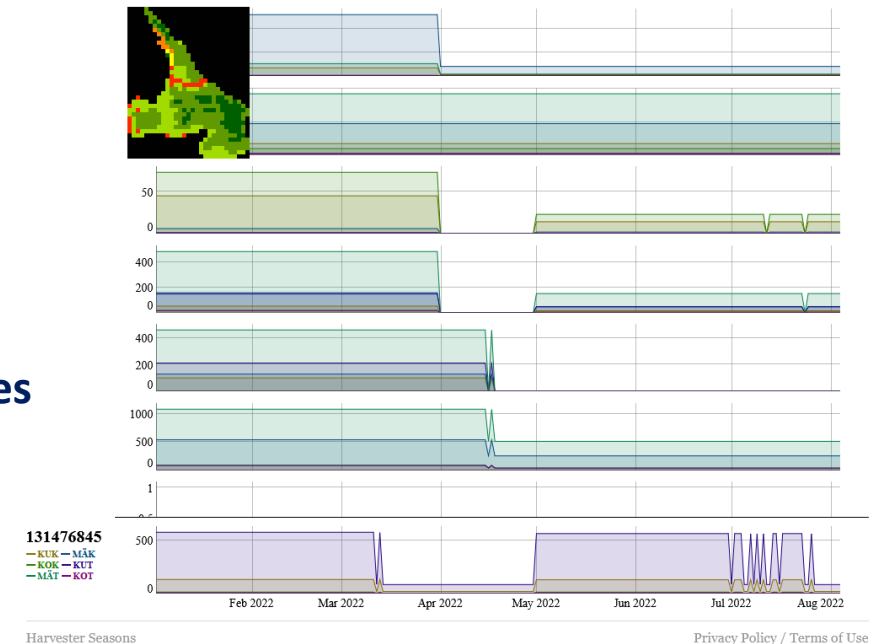
for stakeholders interested in paid service

- ✓ service co-designed according to user requests
- ✓ highly tailored solutions for exclusive stakeholder
e.g. detailed information service for big collection of forest inventories
- ✓ confidential user data protected within service
- ✓ direct API access for forest operation planning tools interfaces

Harvester Seasons



Trafficability



Securing optimum user uptake, engagement and sustainability [EuroGEOSS]

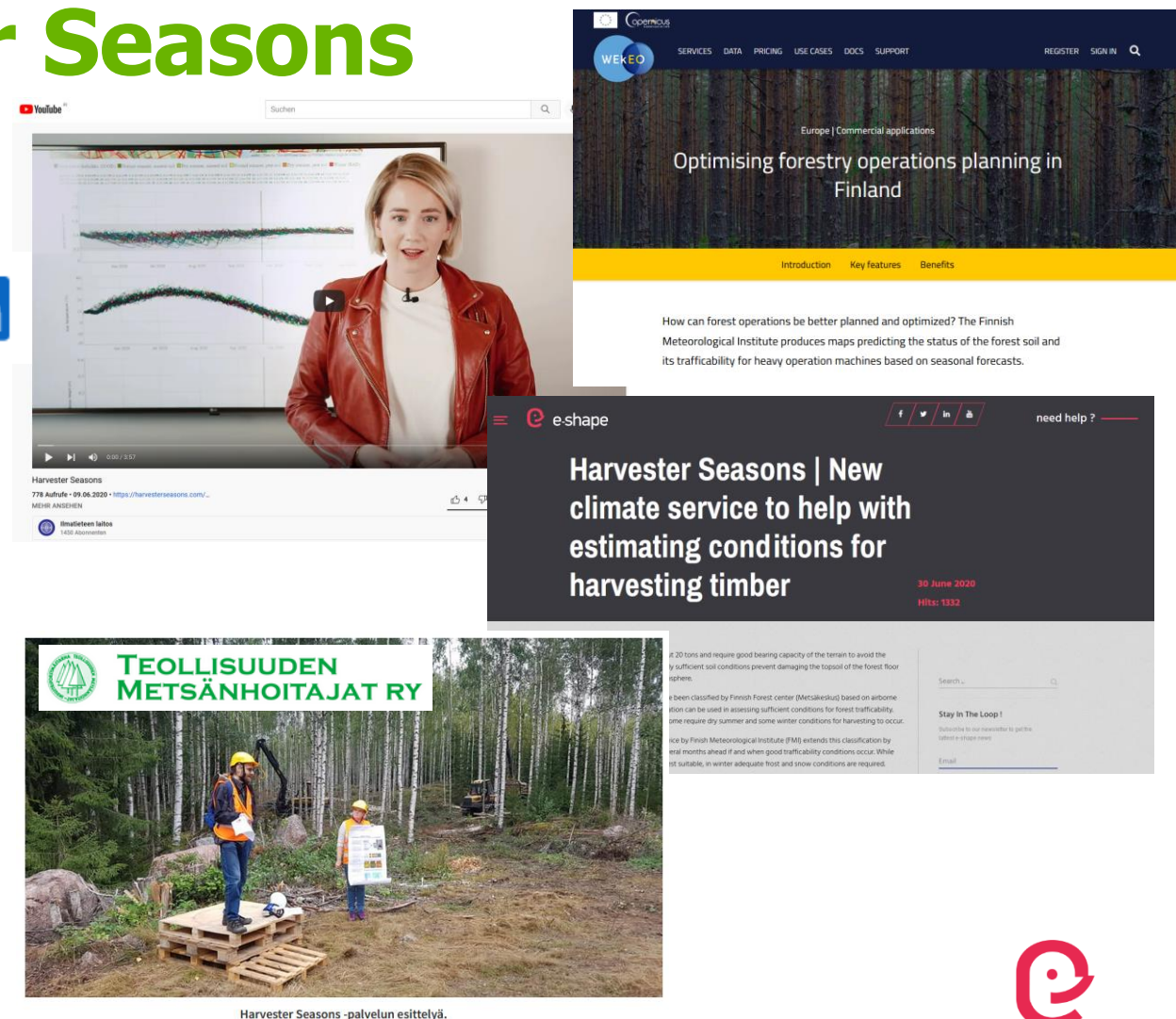


Harvester Seasons

<https://harvesterseasons.com>

- ✓ service updates on Harvester Seasons' 
- ✓ find us via Google
- ✓ service presentation on Youtube
- ✓ Harvester Seasons as WEkEO use case
- ✓ e-shape project: <https://e-shape.eu/>
- ✓ webinars and user events

Kosmale M., Ikonen J., Moisander M., Smolander T., Ovaskainen H., Poikela A., Strahlendorff M., Harvester Seasons – A forestry service supporting climate smart operations, FMI's Climate Bulletin: Research Letters, e-shape special issue 2022, <https://doi.org/10.35614/ISSN-2341-6408-IK-2022-05-RL>





Harvester Seasons

”Metsäteho and its shareholders see development of services like Harvester Seasons as crucial in optimizing resource efficiency while minimizing environmental impacts of harvesting operations.”



feedback via

service helpdesk: <https://harvesterseasons.com>

e-shape helpdesk: <https://helpdesk.e-shape.eu/>

or direct contact: Miriam.Kosmale@fmi.fi