Potential MS contributions to a forest information system for the EU

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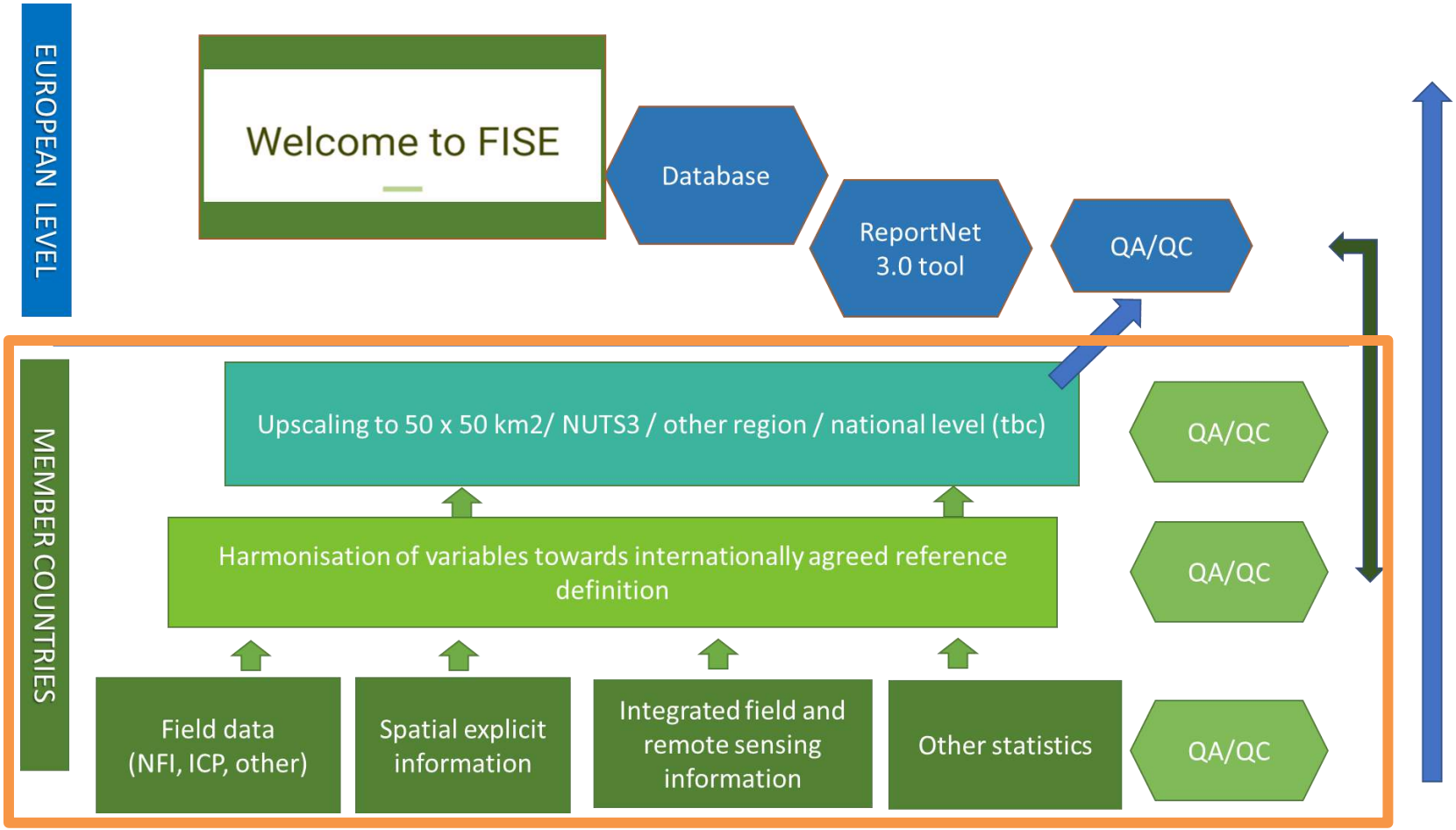
BFW - Department of Forest Inventory
Austria

Workshop towards harmonised forest monitoring and reporting for the EU

Uppsala 1–2 Feb 2023

Information System proposed by EEA



NFIs in Europe - ENFIN

European National Forest Inventory Network (ENFIN). The members supply forest data and information at national and sub-national levels for up to 100 years.

Strong Expertise

European National Forest Inventory Network
ENFIN

NFIs within EU

Covering 95% of the EU forest area
Covering 97% of the EU growing stock

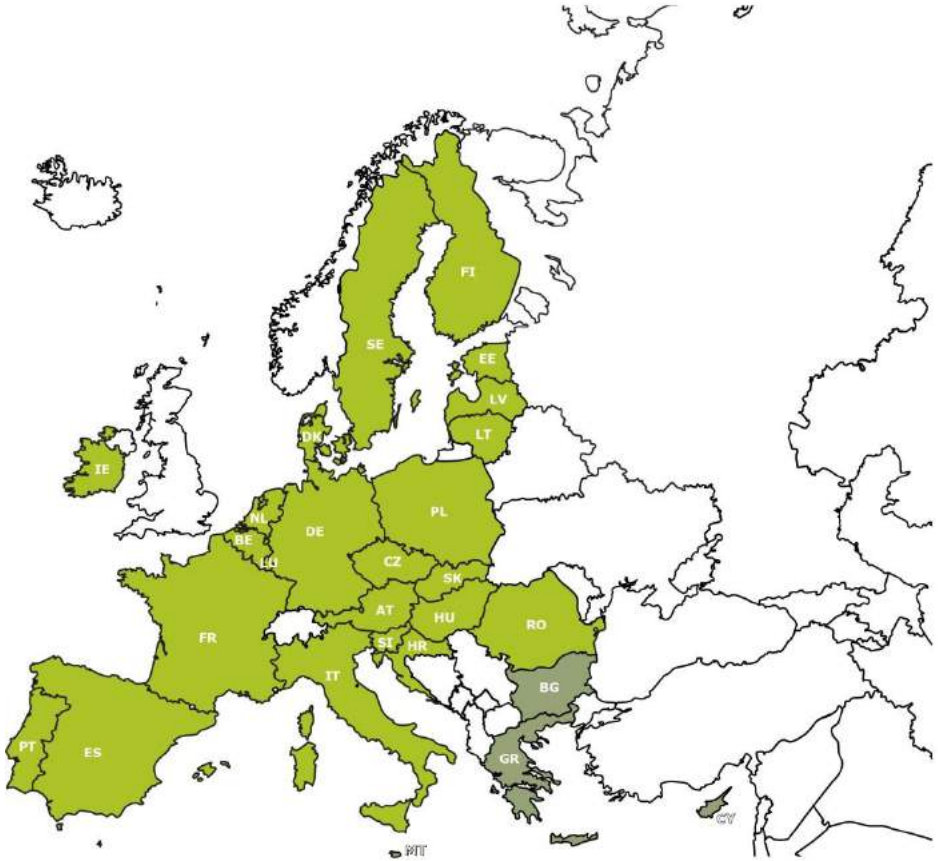
Established sample based NFIs

ENFIN

NFIs within EU

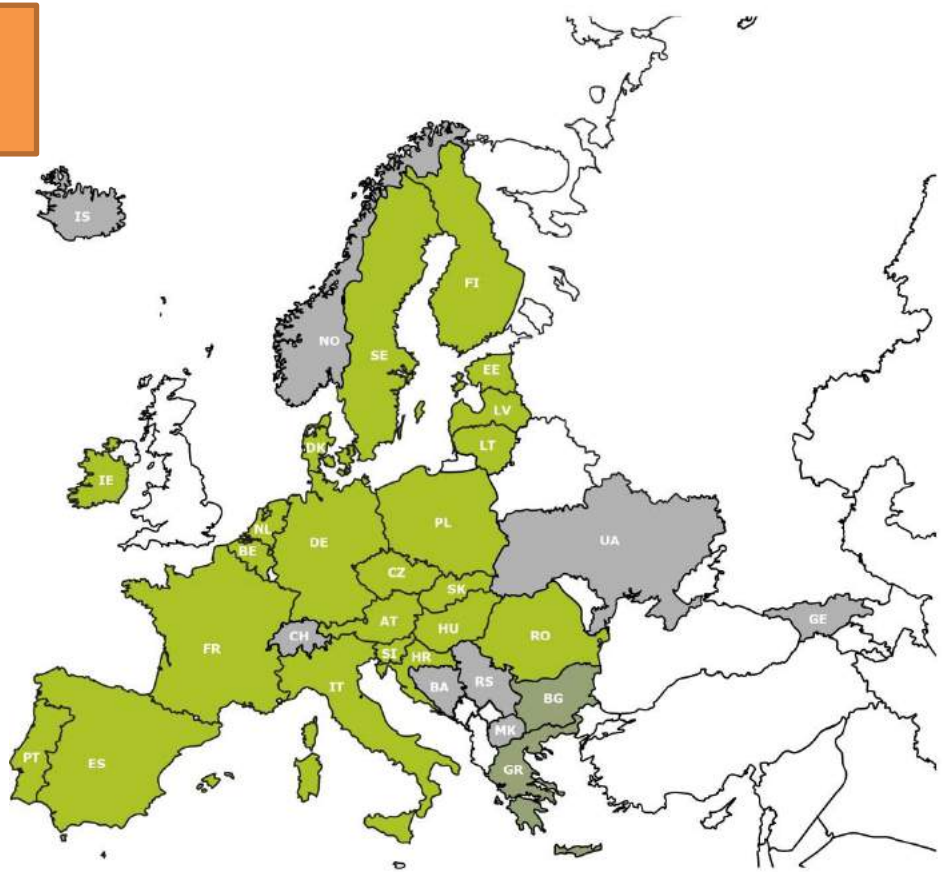
Established sample based NFIs

Other forest information



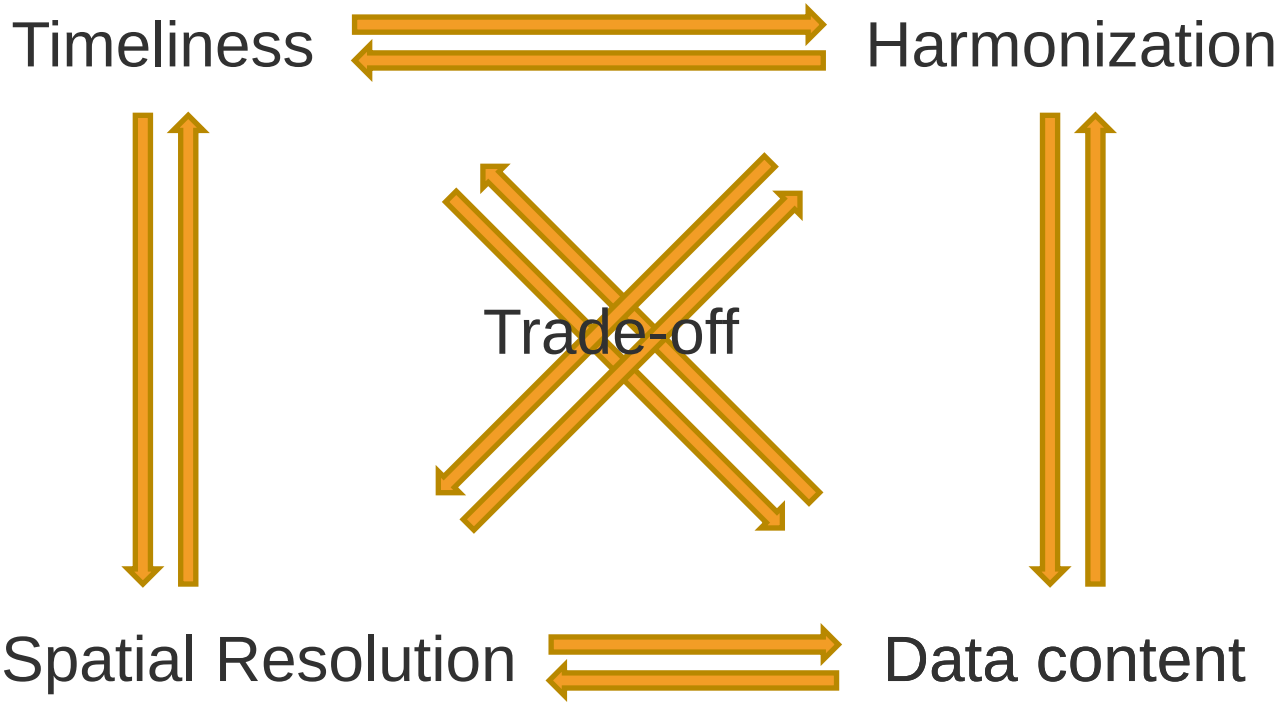
NFIs in Europe - ENFIN

Brings together 31 European countries



- Established sample based NFIs
- Other forest information
- Additional ENFIN Members

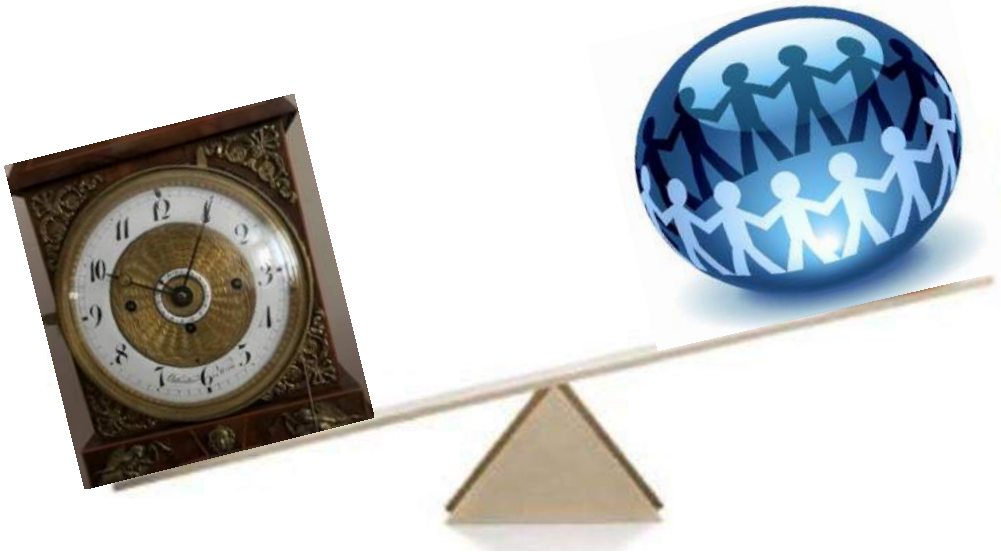
What is relevant for a European system?



Possible ways of working

Timeliness

Harmonization



Definitions
Tree level
Plot level
Cluster level
. . .
Result level
. . .
Information level

Trade-off

Possible ways of working

Timeliness

Harmonization

Right Balance

Harmonization status

Work done

- Forest Area with Forest Available for Wood Supply:
  SCs with JRC https://doi.org/10.1016/j.forpol.2019.102032
- Above Ground Biomass:
  SCs with JRC: reports, publication about mapping
  DOI:10.2760/311876
- Growing stock and Stem Volume:
  H2020-Diabolo: https://doi.org/10.1016/j.foreco.2021.119868, doi.org/10.1007/s13595-019-0800-8
- Increment:
  SCs with JRC: reports, publication just starting

Harmonization is often more timely than Standardization

European National Forest Inventory Network

Harmonization status

Next one could be

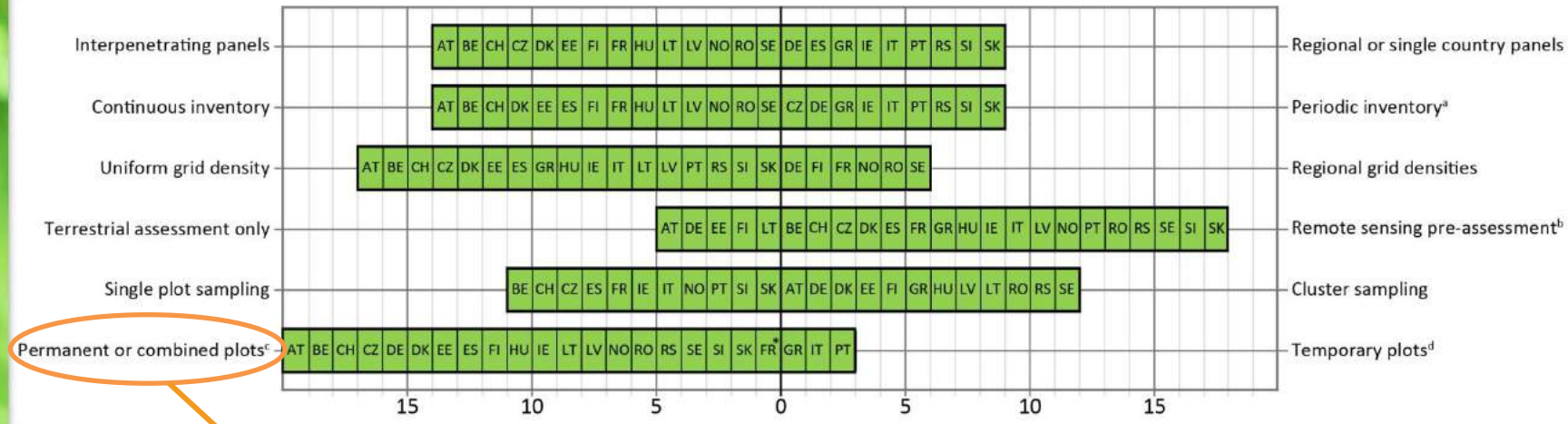
- Harvest

Harmonization status

Next one could be

- Harvest

Study on the Sampling Design



Needed for sound and sample based estimates of harvests

- 89% of the Forest Area
- 93% of Growing Stock

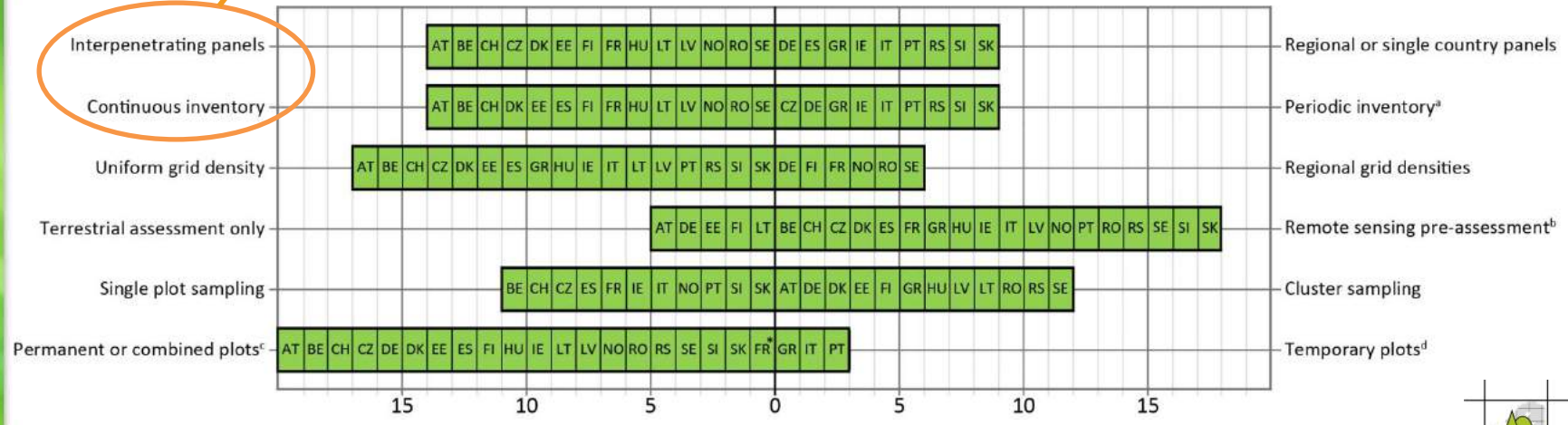
Gschwantner et al. 2022:
https://doi.org/10.1016/j.foreco.2021.119868

Possible ways of towards Timeliness

- Annual estimates for a set of indicators based on statistical design of the sample plots

Needed for annual estimates

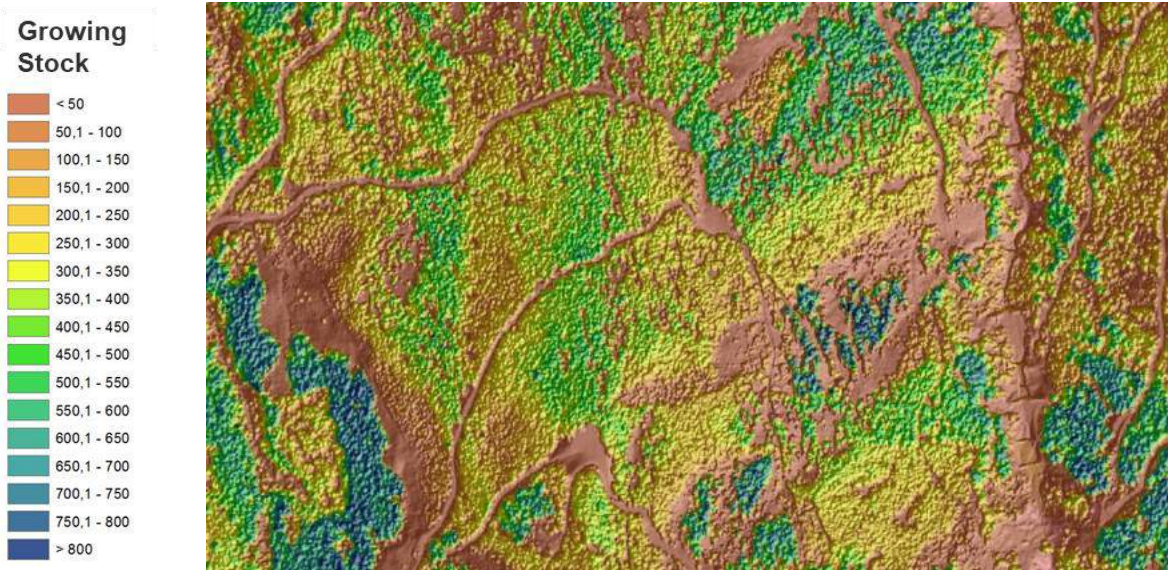
- 65% of the forest area
- 66%of the growing stock



Possible ways of towards Timeliness

- Improved timeliness for reporting a set of indicators based on updating field plots with remote sensing and/or growth models

Time 1

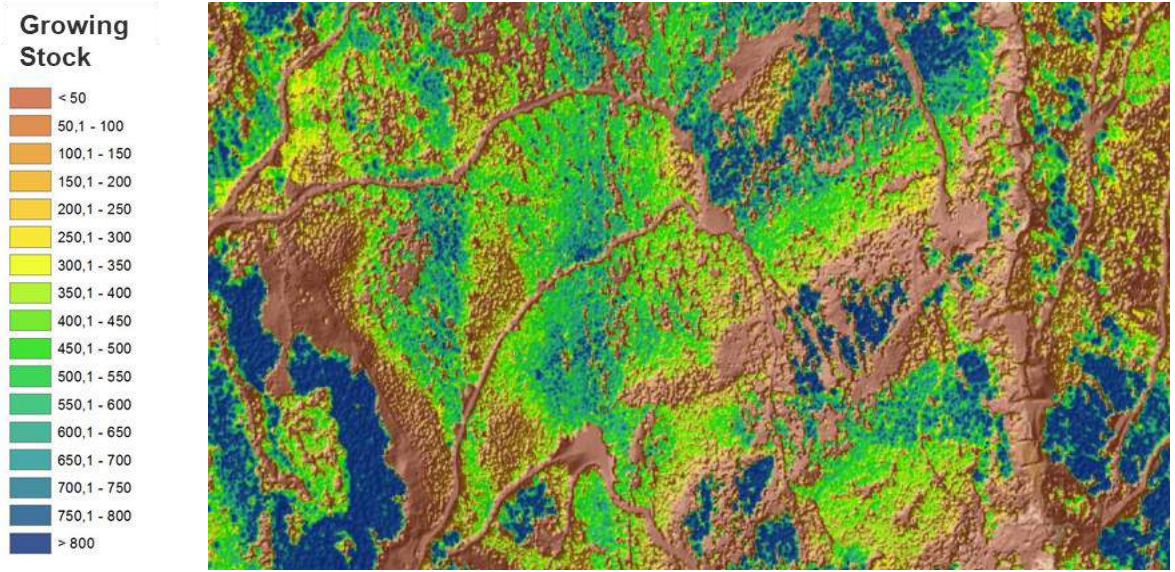


QA/QC

Possible ways of towards Timeliness

- Improved timeliness for reporting a set of indicators based on updating field plots with remote sensing and/or growth models

Time 2



QA/QC

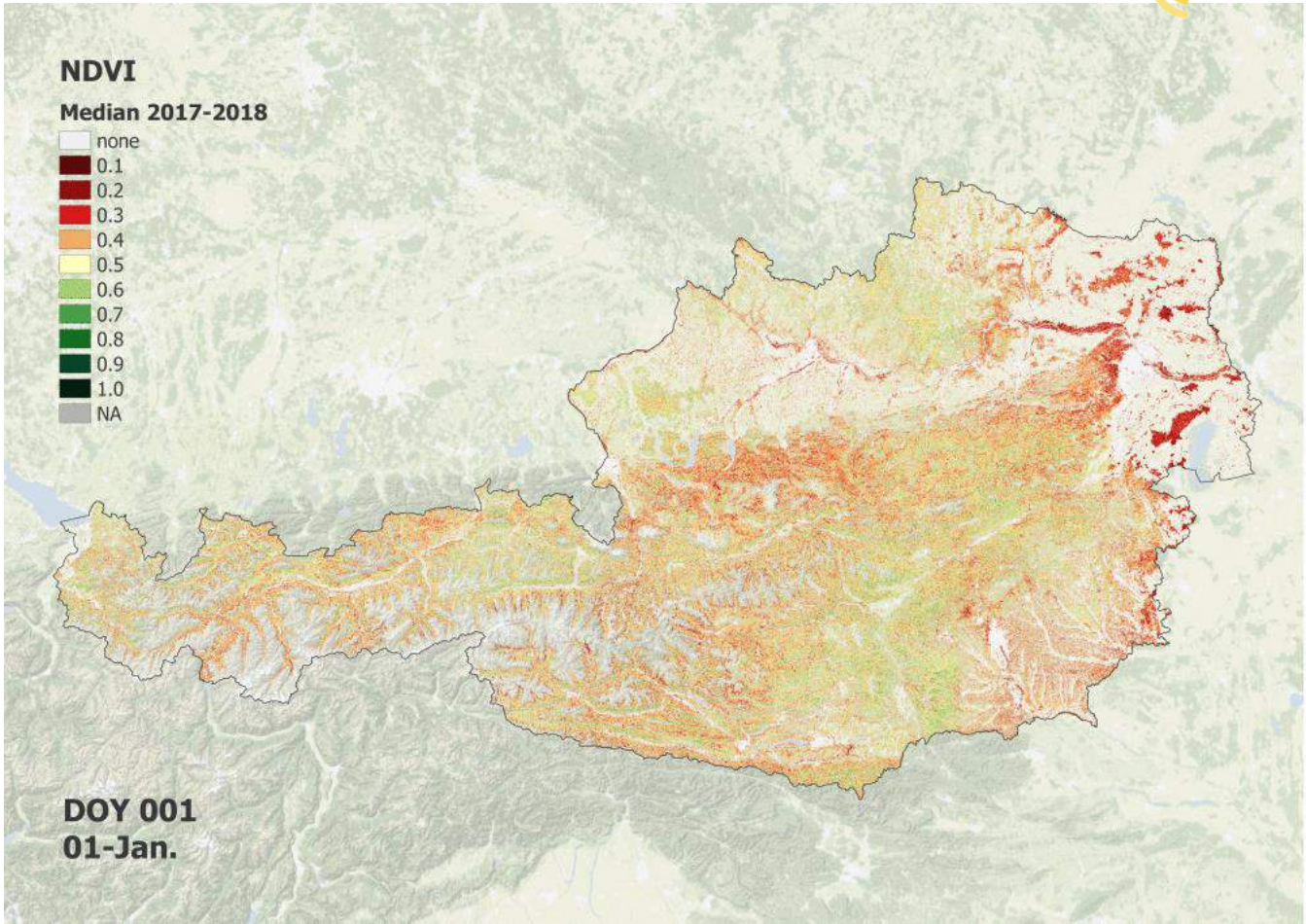
National Sentinel 2 application

Phenology Model

Used for:

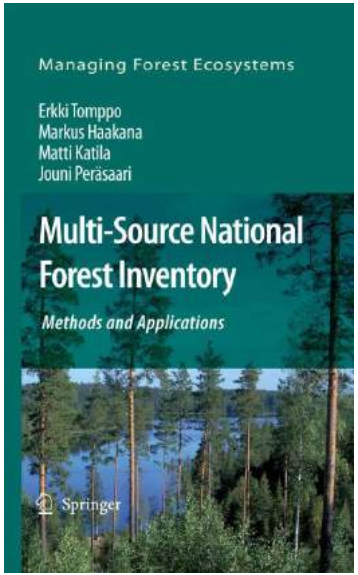
Harvest and Disturbance mapping

QA/QC



Towards integration

Tompo et al. (2008):

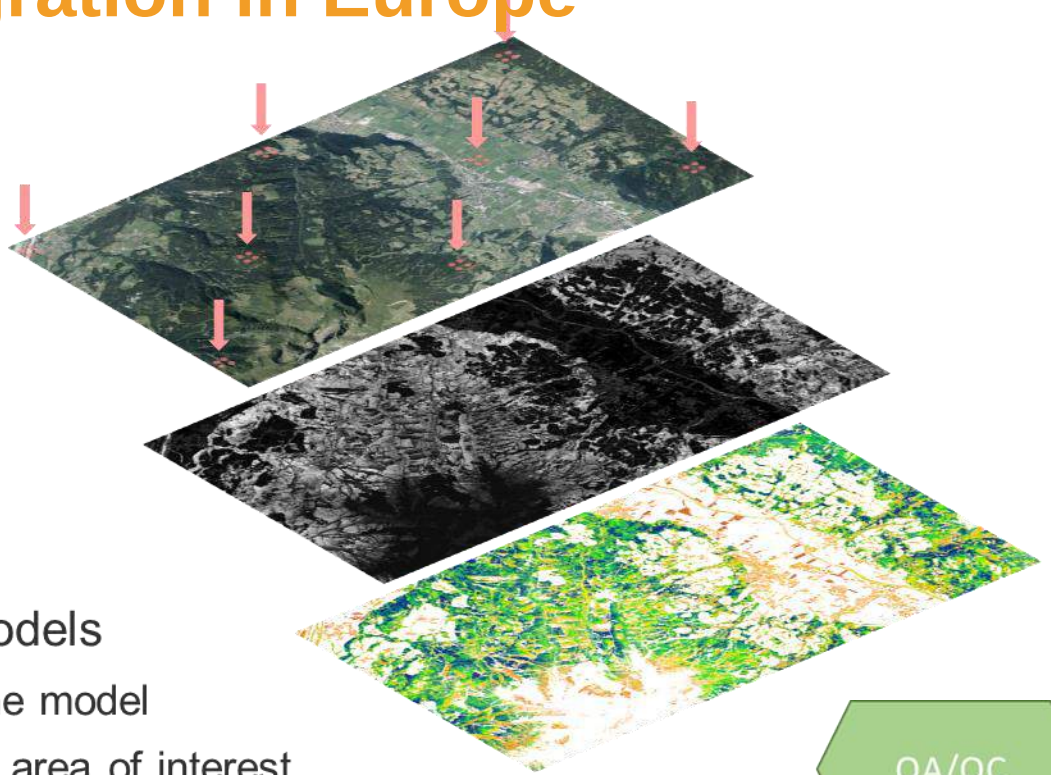


Countries are developing integrated systems

- Field data
- Modelling forest dynamics
- Very high resolution Air-borne RS
- High resolution Space-borne RS

Towards integration in Europe

- Field plots
- Remote sensing
- Combining with models
  - Application of the model
  - Estimate for the area of interest
  - Mapping



QA/QC

Pathfinder | e-Forest | n-Fiesta

Recent development for NFI field sampling

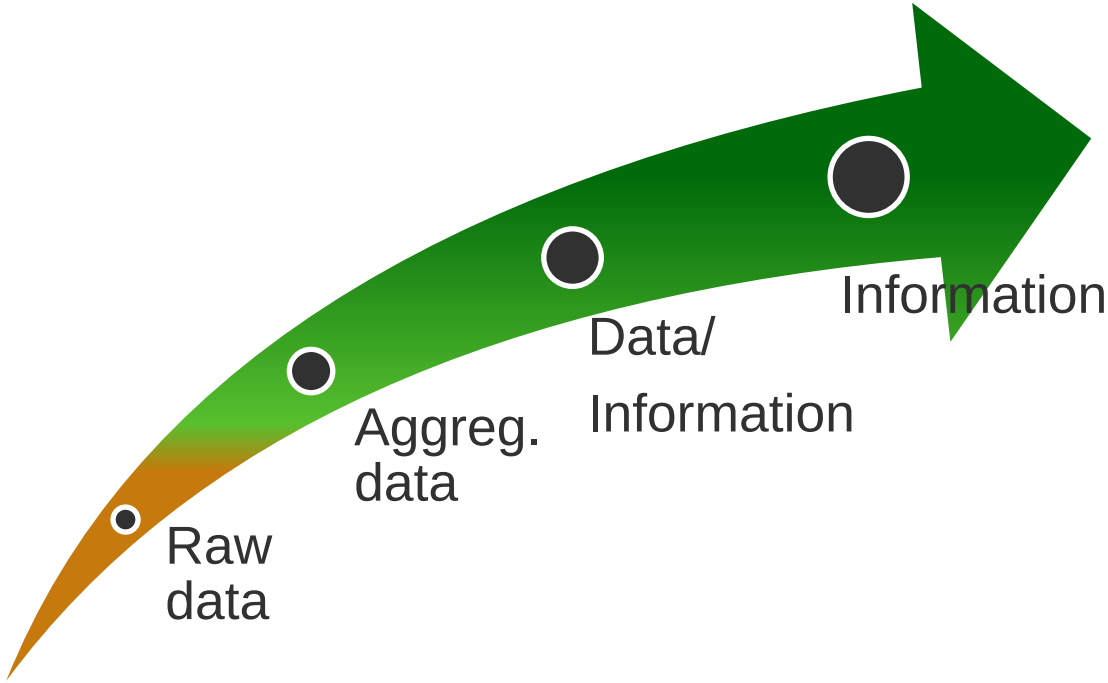
Terrestrial Laser

- deep-learning based single tree segmentation,
- measure their properties (DBH, tree species, height, crown/branch properties,…)

Pathfinder

Reorganising the Network

- ENFIN is working on formalizing and strengthening its structures including the establishment of a permanent ENFIN office in order to enhance the provision of forest monitoring information



Summarize

NFIs are no data delivering machines

- Backbone of the forest statistical information system
- Use the NFI expertise for:
  - Statistical estimation
  - Integration of field and remote sensed data
  - Harmonization
  - Capacity building to fill gaps on the European map

Summarize

Member States

European Commission

Finding the balance

Summarize

Member States

European Commission

Mutual Trust

European National Forest Inventory Network

Thank you very much!

Information on forests - sound and comprehensive

For more information please visit

ENFIN.info

National Forest Inventories (NFIs) represent comprehensive, reliable, large-scale monitoring systems. ENFIN serves as a European network to promote NFIs, harmonise forest information and support decision makers in a broad range of forest related policies.

The overall objectives of ENFIN are to

- provide a platform for the harmonisation of forest inventory information at European scale
- optimise synergies between NFIs and promote new knowledge and enhanced methods
- support forest policies with harmonised forest information and adapt data collection to new emerging policy needs.