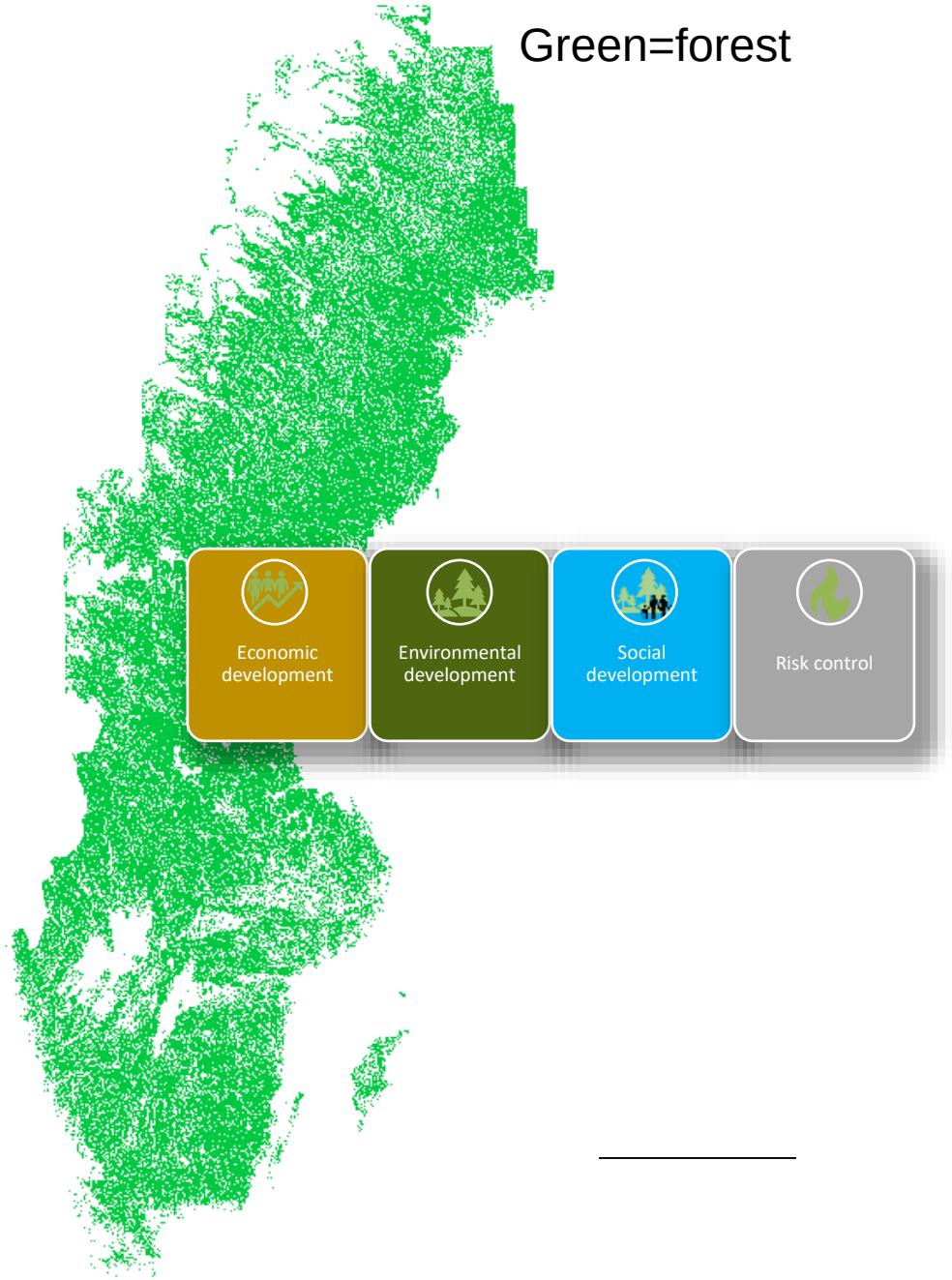
Sweden is the forest

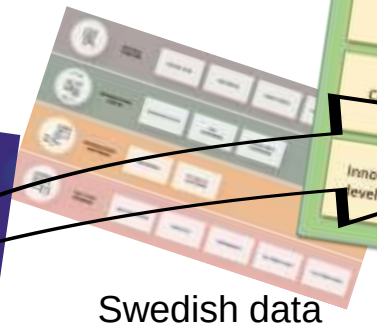
(Only 3% urban areas)

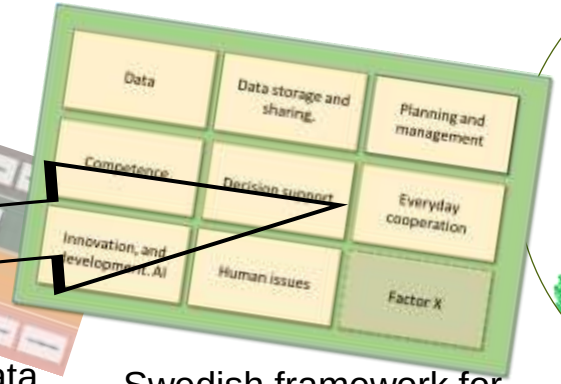
- It is essential to us to manage and develop the forest in best possible way.
- This requires a good data strategy



SKOGSSTYRELSEN
SWEDISH FOREST AGENCY

Strategy





Swedish data strategies

Swedish framework for digitization in forest

EU- Green deal
and data strategies

National datasets

- Wall-to-wall
- Standardized
- High (Known) quality, ”Digital twin”

Multi source

- Laser data (Lidar)
- Field data
- Aerial photos
- Satellite data
- Existing databases
- AI, Drone, harvester etc.

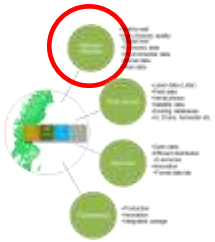
Multi use

- Open data
- Efficient distribution
  - E-services

Cooperation

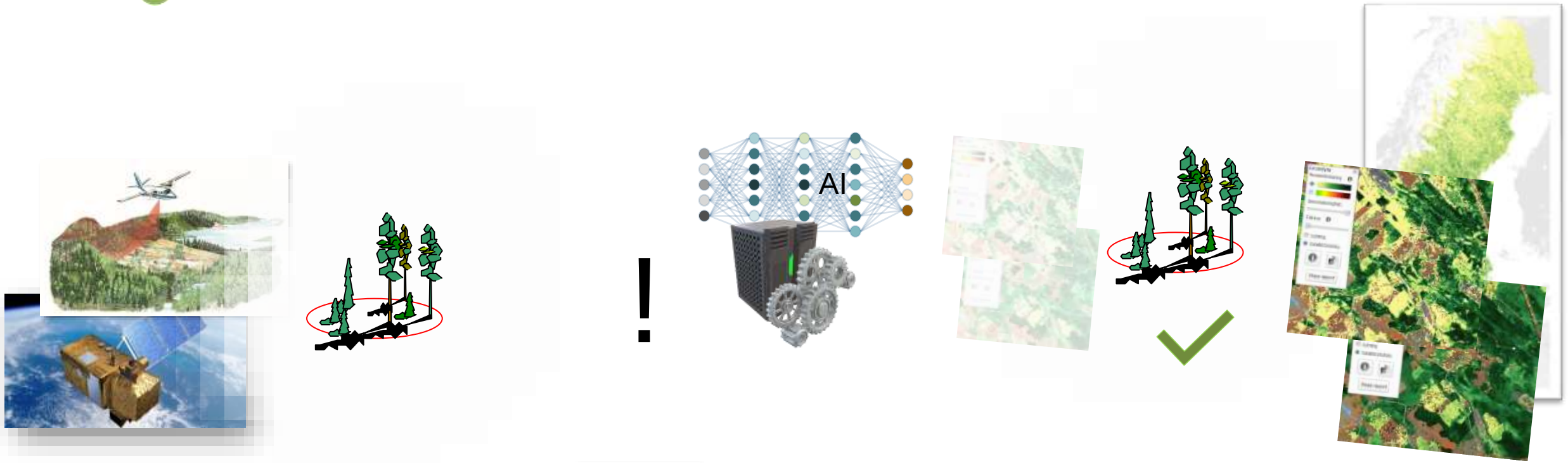
- Production
- Innovation
  - Forest data lab
- Integrated use

Long term goal is a multi dimensional ”Digital Twin”



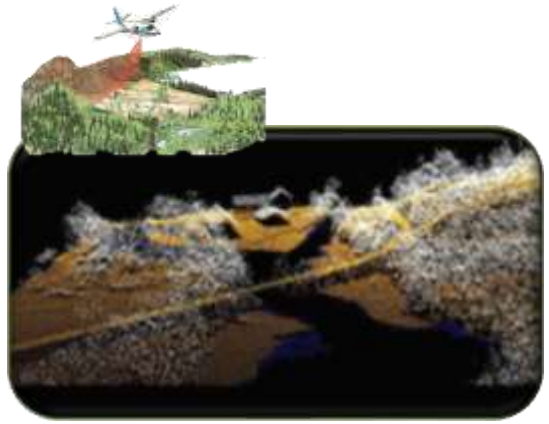
We need a lot of high quality data of increasing resolution

Typical production of national datasets



Primary data + Field data/ Training data + Localized domain Knowledge ▶ Processing ▶ Raw data, quality unknown ▶ Verify results ▶ Useful data known quality

Main source of primary data is Lidar – airborne laser scanning



High and increasing resolution.
Every 7th year

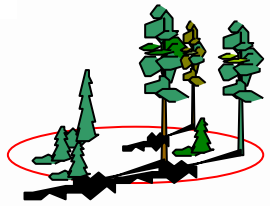
2009-2017
0,5 data point/sqrm

2018-2024
1,4 data point/sqrm

2025-
2+ data point/sqrm

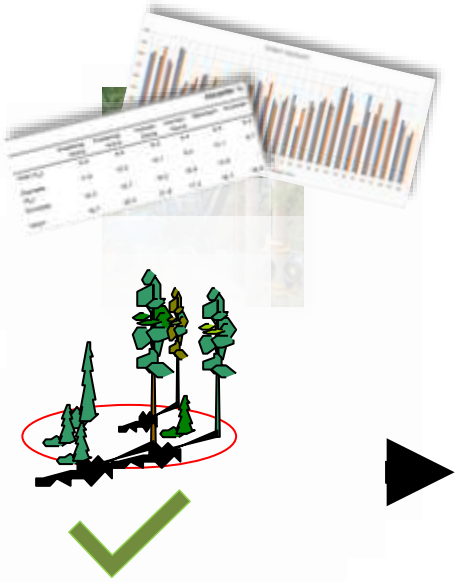
Broad cooperation. Academia, governmental and private sector.

Laser data

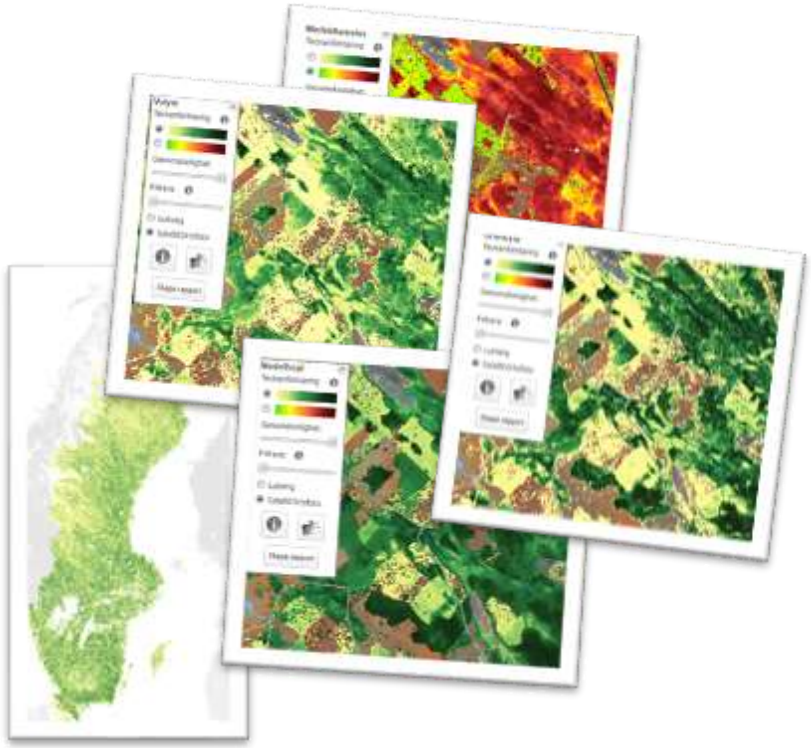


Field data from
NFI plots

Processing



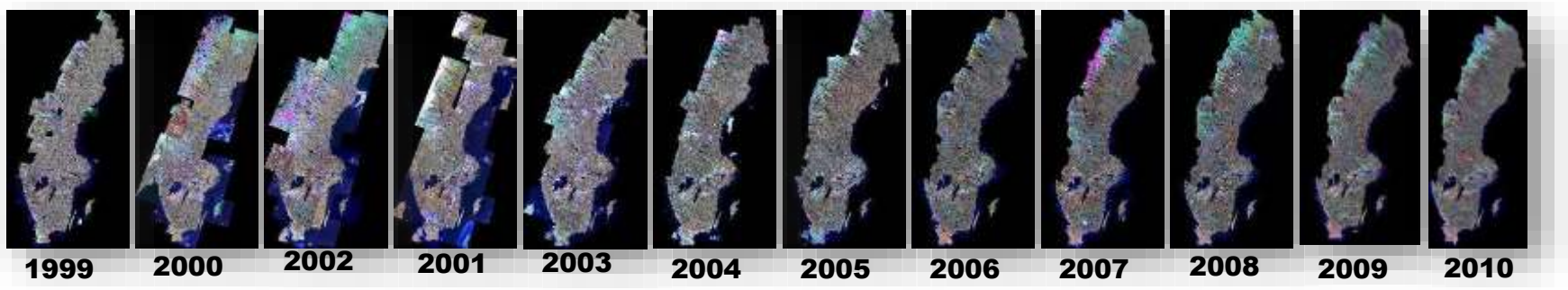
Control data from
NFI plots
Harvester data
Industry
Various inventories



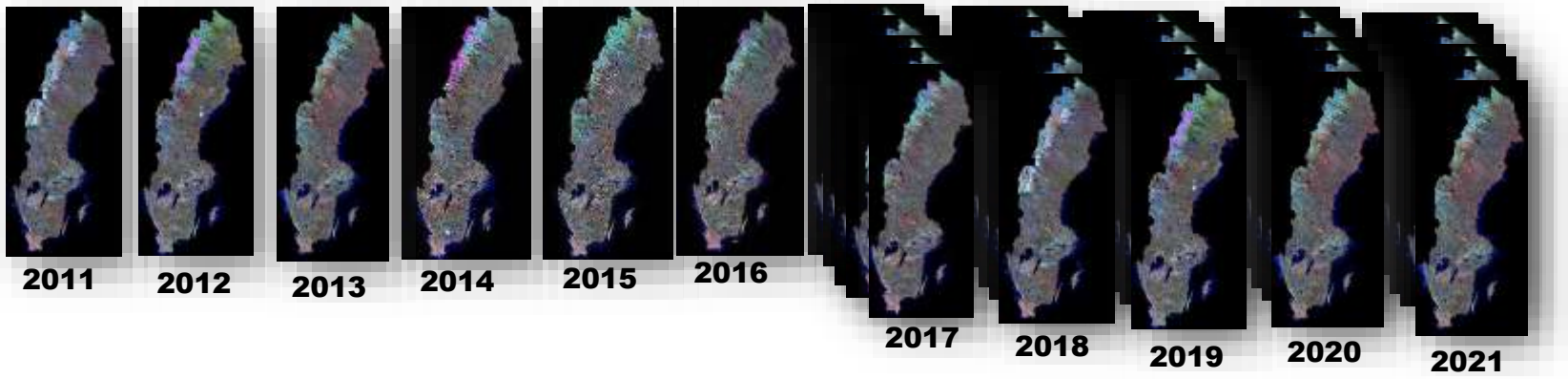
Multiple high quality datasets.
Full coverage of all forest land
Every 7:th year
Open data.

Satellite images scince 1999.

Low resolution, frequent images



Yearly (Landsat, SPOT)



Yearly (SPOT)

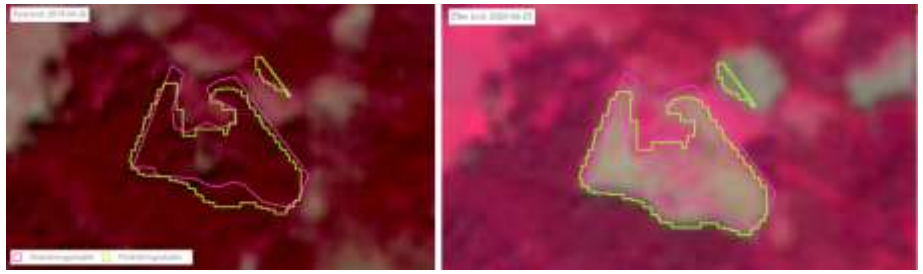
2* Weekly when cloud free
(Copernicus, Sentinel 2)

SKOGSSTYRELSEN
SWEDISH FOREST AGENCY

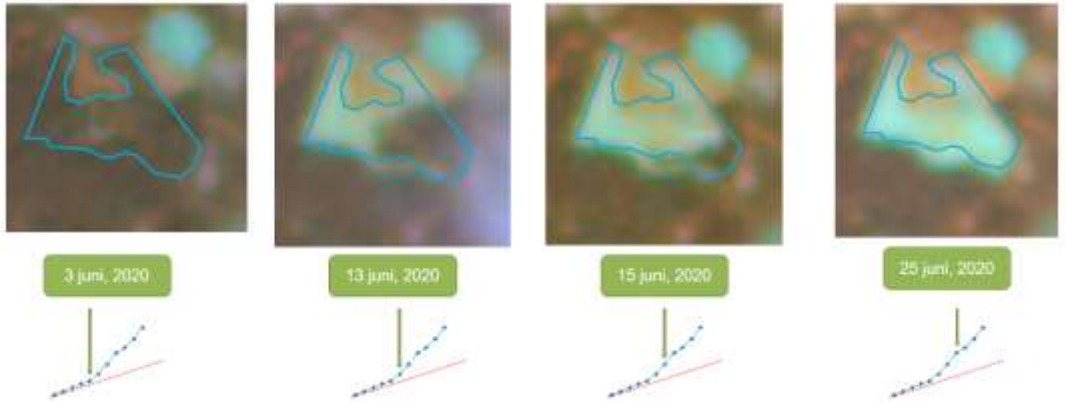
Sweden monitor all final felling scince 2003

All final felling scince 2003
is available as open data

2003-2021 half-manual yearly monitoring
change detection



2022- automated monitoring via time-series analysis



Multi source – multi use

Existing data from multiple agencies

Process & aggregate

Data from satellite, laser and aerial photografy

Data services for companies, and agencys . REST, WMS, FTP

Distribute as open data

Open maps for anyone.

My pages for all forest owners.

Multiple users ”as is” or in new applications in

- authorities,
- service providers
- forestry,
- forest owners
- Ngo
- etc

Fast and easy to use e-services

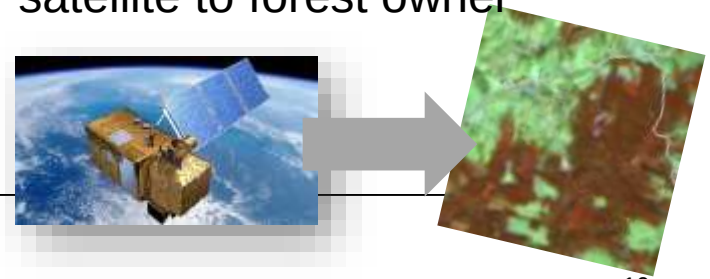
My pages.
Personalized
content for
all forest owners

Open map.
For everyone

Desktop
and smartphone

All available
enivronmental data
cultural heritage, etc
from multiple sources
for everyday
management

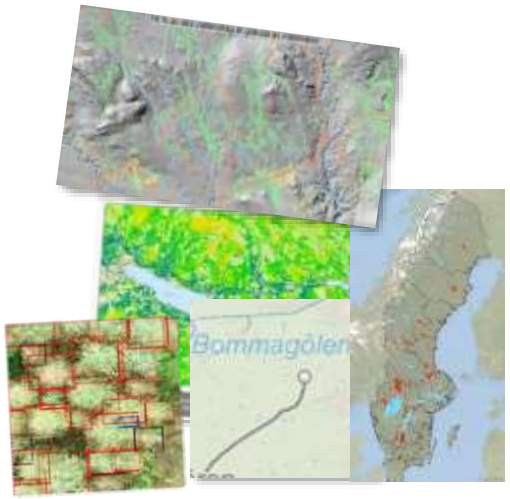
Fast. Less then 24 hours from
satellite to forest owner



Data sharing

Vast distribution of data for everyday use in many applications and new products throughout forestry and environmental secto

Open data
Data services
REST, WMS, FTP etc



Innovation

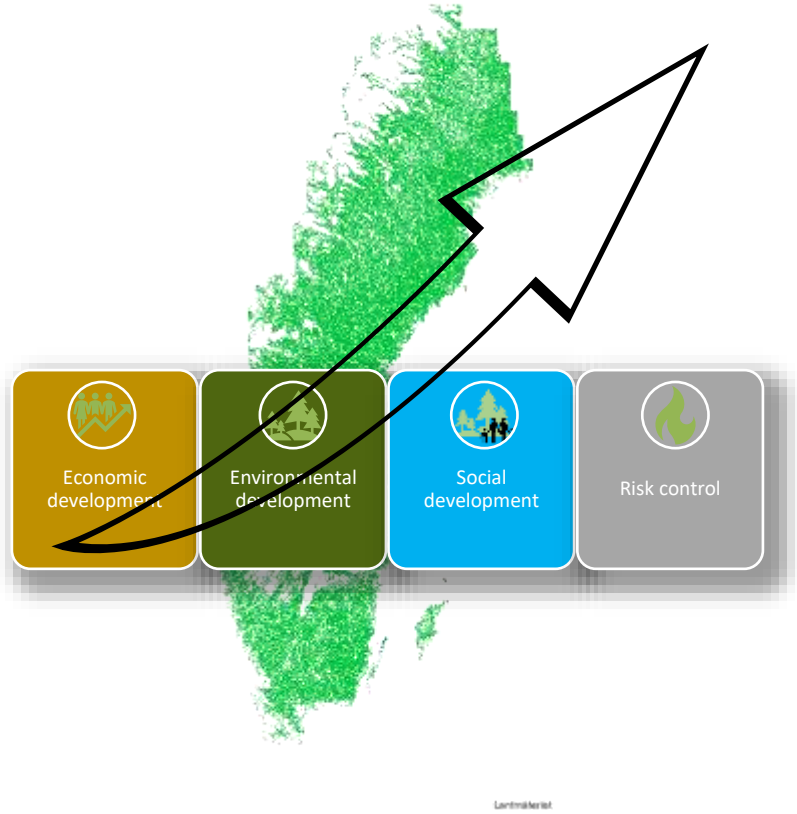
National forest data lab and cooperating labs.
Often applied AI

Accelerated development of datasets and applications

We are in a time of large investment in data and digital infrastructure.

- Framework for digitization of forest sector
- New model for forest planning
- Digitala naturvärden
- Swedish forest agency asked for 4 MEUR / Year för increased laser scanning

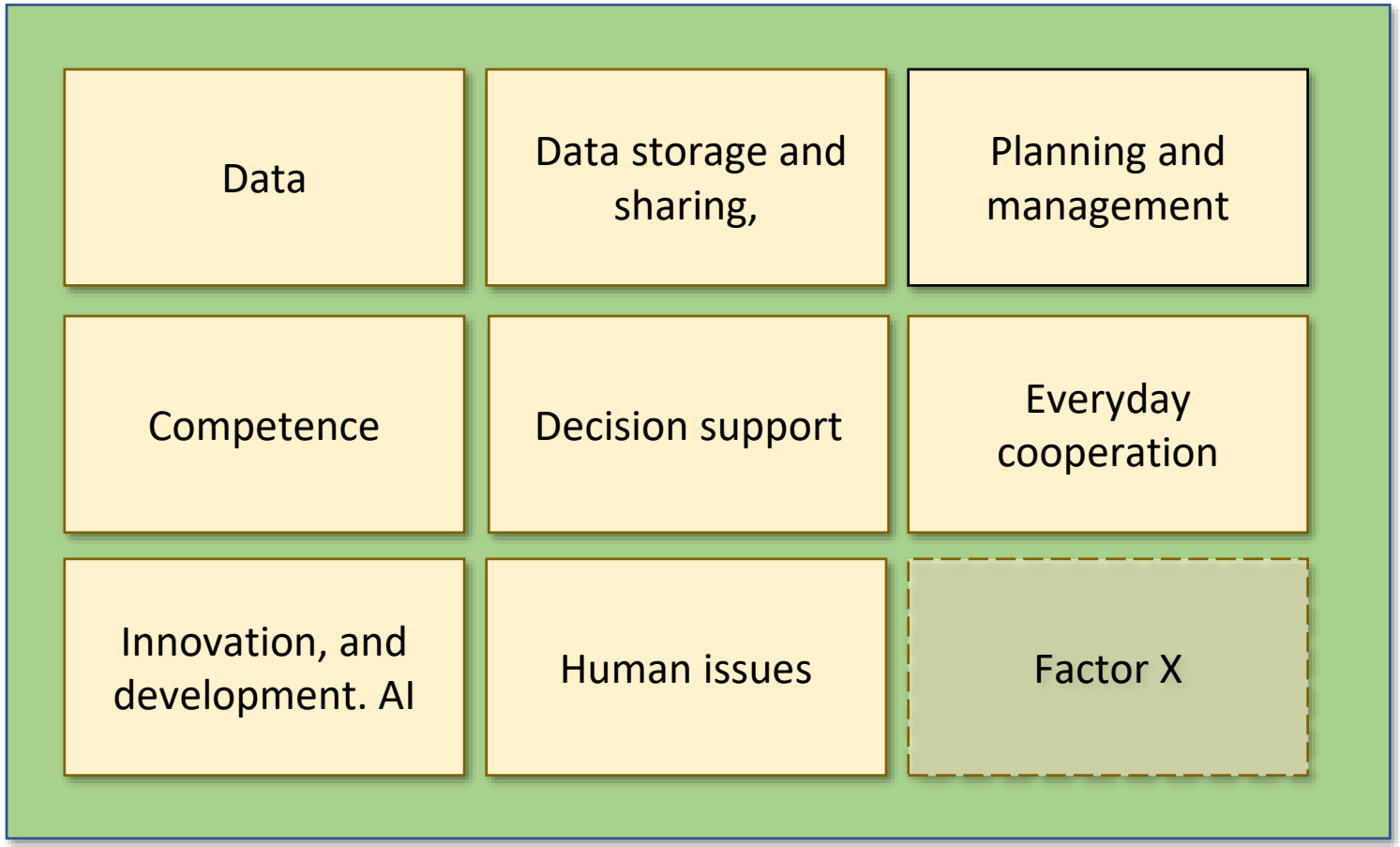
The benefit to society is unbelievably great compared to the cost



Data…

..makes digitization possible..

..as a driver for sustainable development


Data
Data storage and sharing,
Planning and management
Competence
Decision support
Everyday cooperation
Innovation, and development. AI
Human issues
Factor X