





Division IV Forest Assessment, Modelling and Management

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Division IV

- ❑ This Division (*Forest Assessment, Modelling and Management*) includes:
 - ✓ studies of growth and yield (including mensuration)
 - ✓ forest resource inventory (collection and analysis of resource data), including remote sensing
 - ✓ forest management planning and managerial economics
 - ✓ management sciences of forest enterprises
 - ✓ statistical methods, mathematics and computer technology

What's new in Div IV?

- ❑ The **global change environment** is the major challenge for today's and future research in Div IV:
 - ✓ Climate change
 - Impact on tree and stand growth
 - Increased occurrence of hazards (fires, storms, pests and diseases)
 - ✓ Changing , sometimes contradictory demands from society
 - Increasing need for wood and non-wood products
 - Increasing use of forests for recreation
 - Increasing requirement of other services and uses (tree biomass, ecosystem protection, C sequestration, etc)
 - ✓ Changes in the needs/markets for forest products

What's new in Div IV?

- ❑ The **traditional forest management plans**, periodically reviewed (for instance every 10 years) and focused on well defined objectives for forest management, cannot cope with the present changing context
- ❑ There is the need for a **flexible forest management** that can be easily adapted to:
 - ✓ the current environment
 - ✓ The current situation of the forest
 - ✓ the new society requirements

What's new in Div IV?

- ❑ The objective of forest management is no more just the maximization of wood production but must be centered around a series of **indicators of sustainable forest management**:
 - ✓ Social
 - ✓ Environmental
 - ✓ Economic
- ❑ For this reason forest management has to be planned at the **landscape level** (or even at a higher level)

What's new in Div IV?

- ❑ **Policy makers** require information at global scales
 - ✓ There is the need for information at global scales that is consistent with more local scale information (and vice-versa)
 - ✓ Methods to combine available information in a manner that is defensible and repeatable are needed
 - ✓ Consistency across time scales is also desirable
 - ✓ Decisions often involve a mixture of spatio-temporal scales

Research priorities for Div IV

□ Research priorities - Forest Assessment:

- ✓ **Continuous forest monitoring** that allows an up-to-date knowledge about the forest, namely the early detection and evaluation of hazards occurrence and impact is crucial
- ✓ New **multisource inventories** for forest monitoring that can be made at a **reasonable cost**
 - Optimization of field sampling
 - New technologies (LIDAR and other remote sensing techniques)
 - Combination of technologies

Research priorities for Div IV

□ Research priorities - Forest Modeling:

- ✓ Future forests may be more complex, in terms of spatial patterns, species mixtures, and genetic stock of trees and other plants
 - Models combining **process-based** and **statistical-based** sub-models maybe a solution
 - New methods for incorporation of **site characteristics**
 - Need to incorporate the impact of **genetic** material
 - The issue of **wood quality** prediction is a priority
 - **Non-wood products and services** need to be taken into account in forest management - new valuation and prediction methods for these products and services

Research priorities for Div IV

□ Research priorities - Forest Management:

- ✓ **Adaptive forest management** is the word of the day!
- ✓ Flexible **decision support systems** that can support forest managers to successively adapt forest management to climate and society changes
- ✓ The need to focus forest management and therefore decision support systems at the **landscape level**
- ✓ Methods that forecast future forest attributes while maintaining consistency across spatial scales are needed
- ✓ The **participation of stakeholders** in the development of these systems is crucial for their usefulness as a support to day to day management decisions.

*Forest
inventory*

*Forest growth
models to predict
wood from
different forest
types*

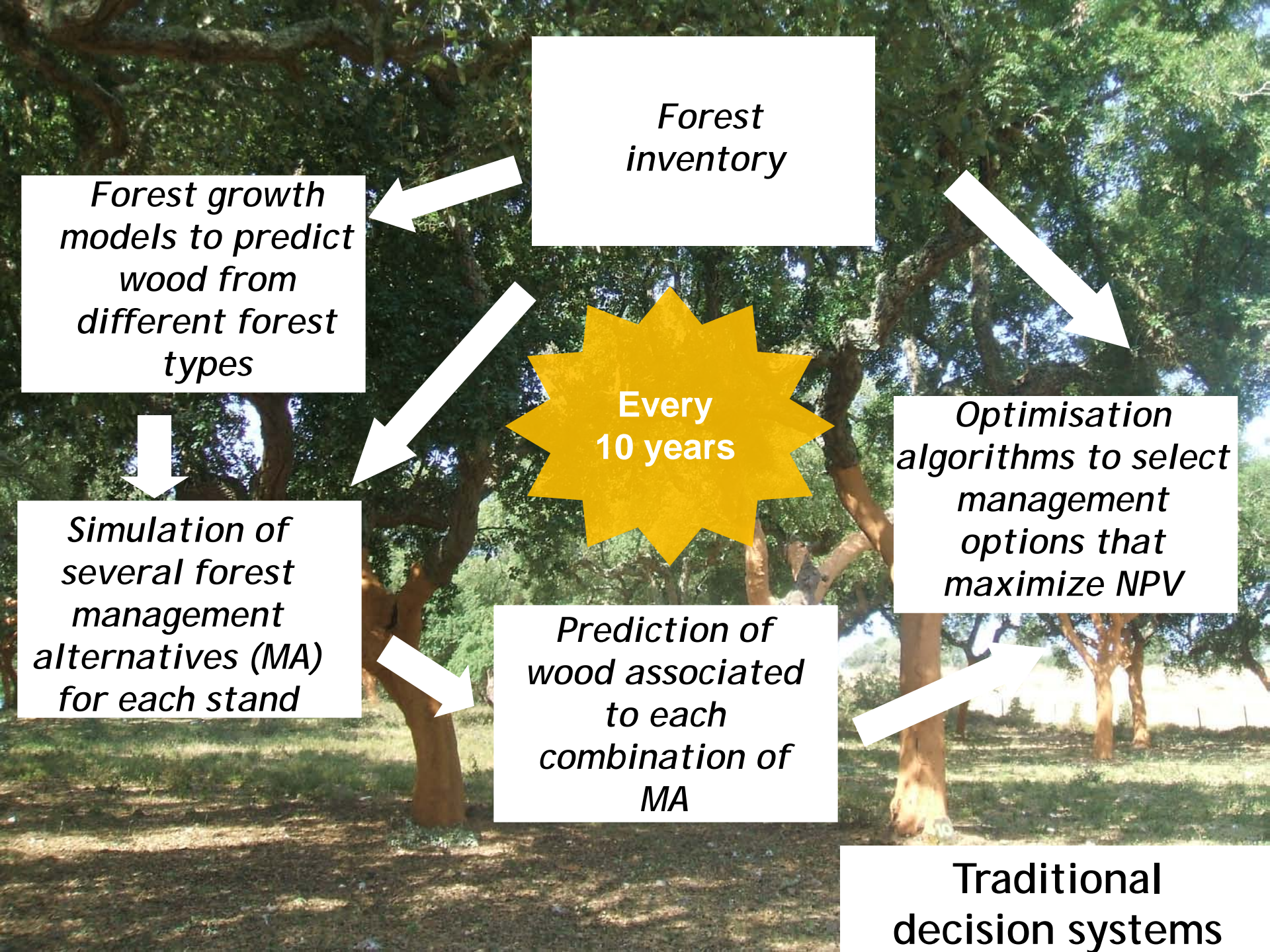
*Optimisation
algorithms to select
management
options that
maximize NPV*

**Every
10 years**

*Simulation of
several forest
management
alternatives (MA)
for each stand*

*Prediction of
wood associated
to each
combination of
MA*

**Traditional
decision systems**



Improved and case-adapted forest ecosystem characterization

Process based models to predict wood + non-wood from different forest types

Optimisation algorithms to select management options that maximize utility

Simulation of several traditional and new forest management alternatives

Continuously updated

Prediction of indicators associated to each combination of MA

New/future decision systems

Users



A photograph of a cork oak grove with a white rounded rectangle overlaid in the center containing the text "Thank you!".

Thank you!