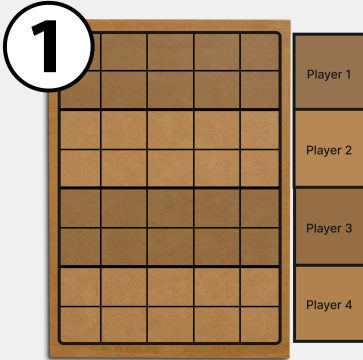


# Demonstrating SIMA-Play : Forest Management Decision-Making through Board Game and Digital Simulation

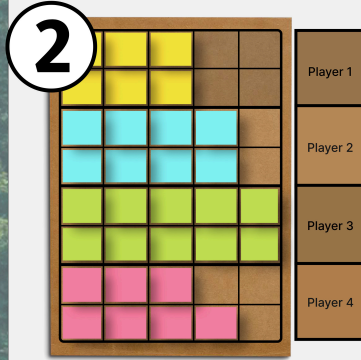
\* Arka Majhi  
arka.majhi@tuni.fi  
Gamification Group, Tampere University  
arka.majhi@uef.fi  
University of Eastern Finland  
Joensuu, Finland

Daniel Fernández Galeote  
Timo Nummenmaa  
Juho Hamari  
Gamification Group  
Research Centre of Gameful Realities  
Tampere University, Finland

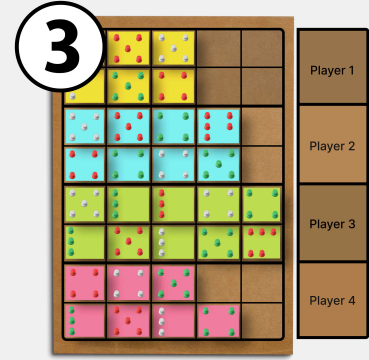
Aaron Petty  
Jari Vauhkonen  
Heli Peltola  
School of Forest Sciences  
Faculty of Science, Forestry and Technology  
University of Eastern Finland  
Joensuu, Finland



**1**  
The board has 40 parcels of land  
Each parcel of land is equal to 1 hectare  
In a 4 player game, each player gets 10-parcels of land to manage



**2**  
Each player receives sticky notes of their chosen color, which are placed on the parcels of land they choose to manage



**3**  
On the sticky notes, players place the colored pushpins representing the tree species they select. Players can only select one type of tree species for each parcel of land. Players can choose one of the densities to plant trees in each parcel of land

## Objectives

- Minimize planting and operational costs through strategic land and density choices
- Maximize timber revenue through efficient thinning and harvesting
- Reduce losses by using insurance, remedy cards, and currency tokens
- Optimize long-term outcomes such as carbon storage, timber volume, and ecosystem services
- Collaborate and negotiate with other players through land leasing and resource exchange



## Play Flow

- Each player receives 10 parcels and €8,000
- Players choose how many parcels to manage
- Players choose species and planting density
- Players plant trees using pushpins
- Players draw a risk card and apply effects
- Players perform first thinning (Year 30)
- Players draw a risk card
- Players perform second thinning (Year 45)
- Players draw a risk card
- Players perform the final harvest (Year 60)
- Player decisions are entered into the SIMA model
- Players review visualization-based outcomes

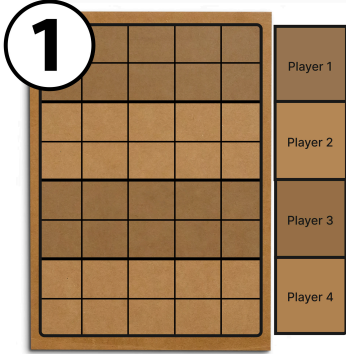
**In-Game Currency**

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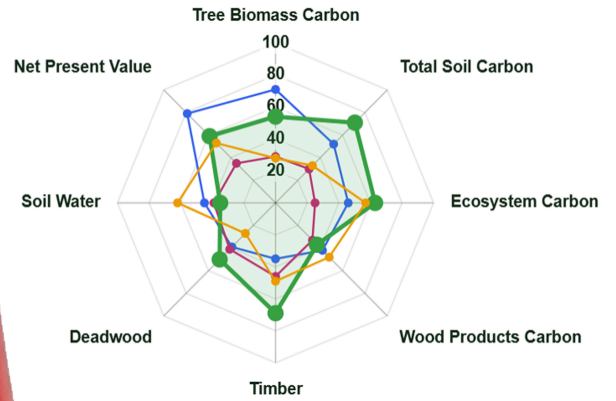
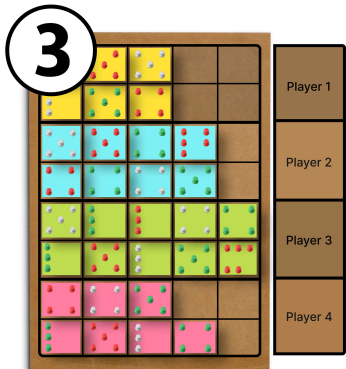
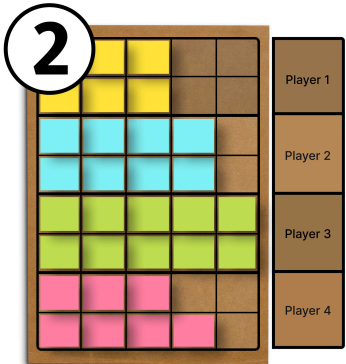
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 Gamification Group, Tampere University  
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In-Game Currency



Players record decisions and enter them into the SIMA forest growth model to simulate outcomes

Results are visualized using radar charts to compare player strategies and discuss trade-offs

**MAMMAL CRAZING**

The damage caused by storm affects all the three species of plants.

Remove two pins from any two species of plants that contain any of the three species.

The effect on the card can be reversed using berries, care or insurance.

**STORM DAMAGE**

Storm damage affects all three tree species.

Remove three pins from any two species of plants that contain any of the three species.

The effect of damage can be reversed using berries, care or insurance.

**ROOT DECAY**

The root rot in this card is caused by fungus called *Heterobasidium* species.

A pin is also associated with the insurance.

The effect on the card can be reversed using berries, care or insurance.

**BARK BEETLE**

This infestation affects only the Norway Spruce trees.

Remove two pins from any two species of plants that contain any of the three species.

The effect of damage can be reversed using berries, care or insurance.

**PRICE INCREASE**

When drawn, this card creates fluctuations in timber prices.

Increases market prices of timber affects the growth damage of plants.

**INSURANCE CARD**

The cost of the card depends on the times of purchase:  
 0-30 years = 500 €  
 31-60 years = 1000 €  
 61-90 years = 2000 €  
 Once purchased, the insurance is valid for one period of time until the final harvest.

**Function**

This card mitigates or prevents risks caused by risk cards.

**PRICE DECREASE**

When drawn, this card creates fluctuations in timber prices.

Decreasing market prices of timber affects the growth damage of plants.

The effect on the card can be reversed using berries, care or insurance.

**REMEDY CARD**

This card reduces any damage to any tree species caused by risk cards.

The price of the card is negotiated by players using gold transaction currency tokens.