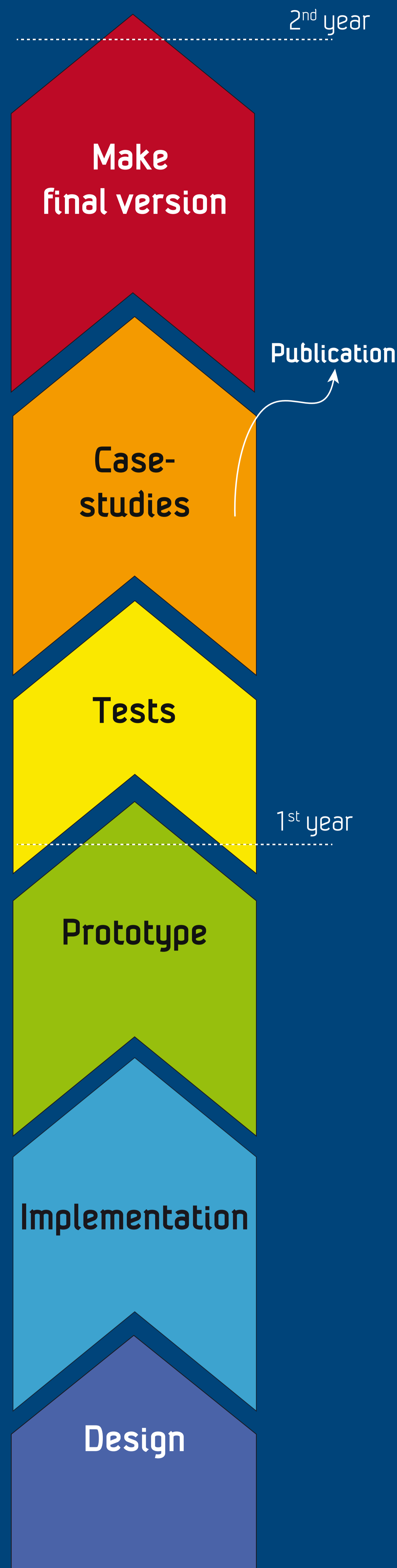


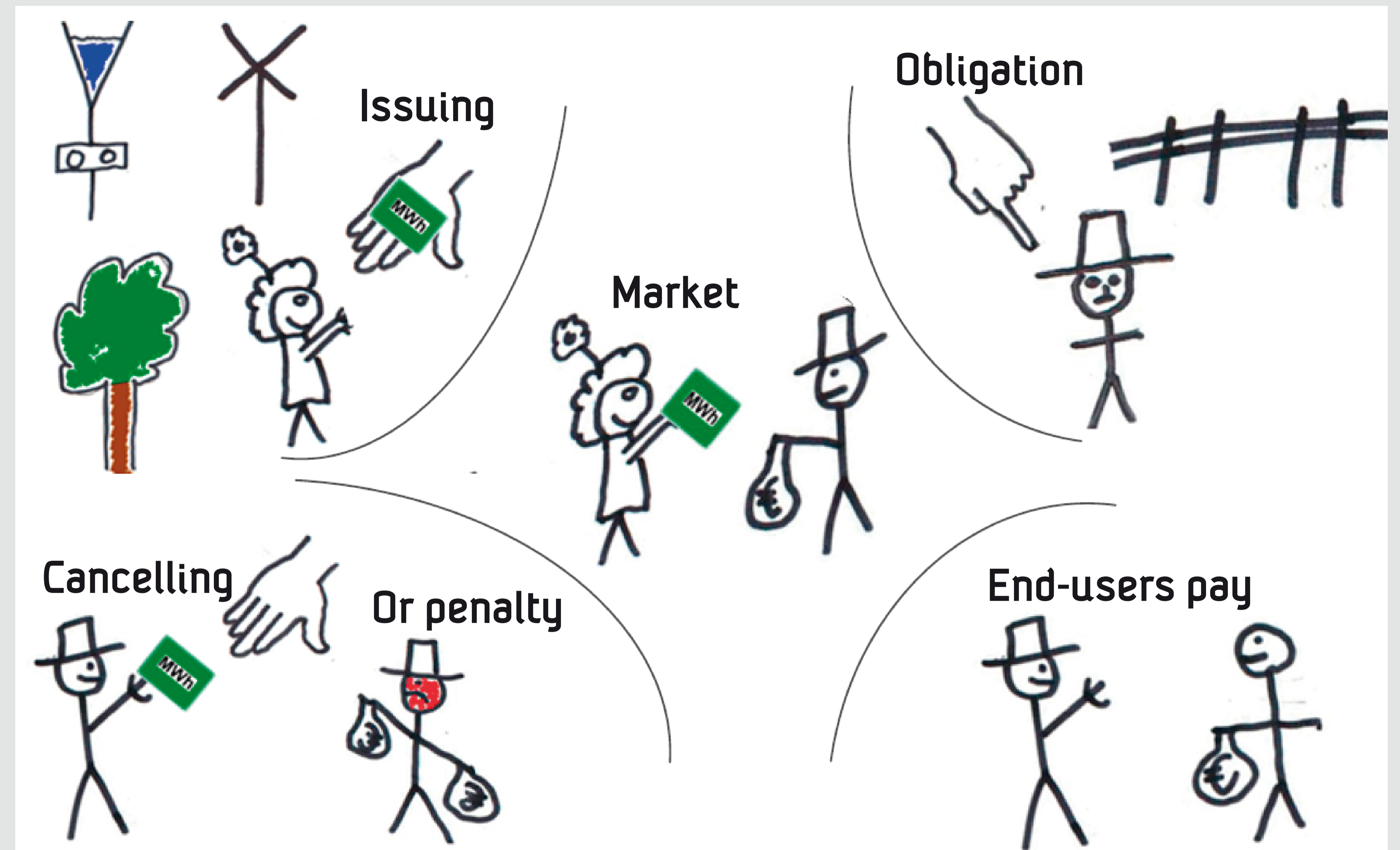
Forecasting el-certificate market

We will make a tool for forecasting of certificate-prices and balances, based on EMPS (Samkjøringsmodellen)

Tool for EMPS model users



The el-certificate market



Requirements for forecasting tool

- Build upon a power-market model - in use
- Management of el-certificate storage
- Representation of climate variables

- Project will deliver the first tool that meet these requirements

Main research idea and methods

- El-certificate storage is a new "reservoir" in model
- Standard water-value calculation is applied
- Inflow: Generation (MWh) from certified units
- Draw-down: Certificate obligation (% of consumption)
- Restriction: Certificate storage $>0,0$ at 1. April
- Penalty: 150 % of price last year, calculated iteratively
- Capacities: Input from user

Main challenges

- a Penalty for missing certificates (state variable)
- b End-value function for certificates
- c Water-value method for certificates

Possible solutions

- a Two-dimensional water-values for certificates
- b Horizon to 2035 / standard / user-input
- c We think it will work; unforeseen challenges?

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