



## Reducing lynx-vehicle collisions

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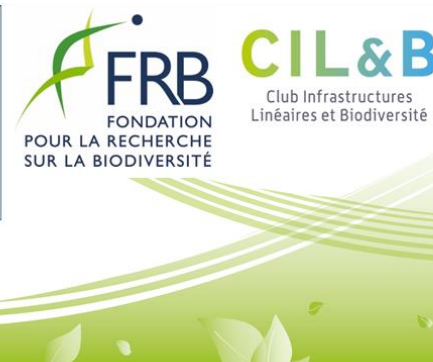
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# Reducing lynx-vehicle collisions

From statistics and individual-based modeling to management decisions in a user-friendly interface

Bauduin Sarah, Blanc Laetitia, Charbonnel Anaïs, Duchamp Christophe, Drouet-Hoguet Nolwenn, Germain Estelle, Heurich Marco, Kramer-Schadt Stephanie, Morand Alain, Zimmermann Fridolin, and Gimenez Olivier



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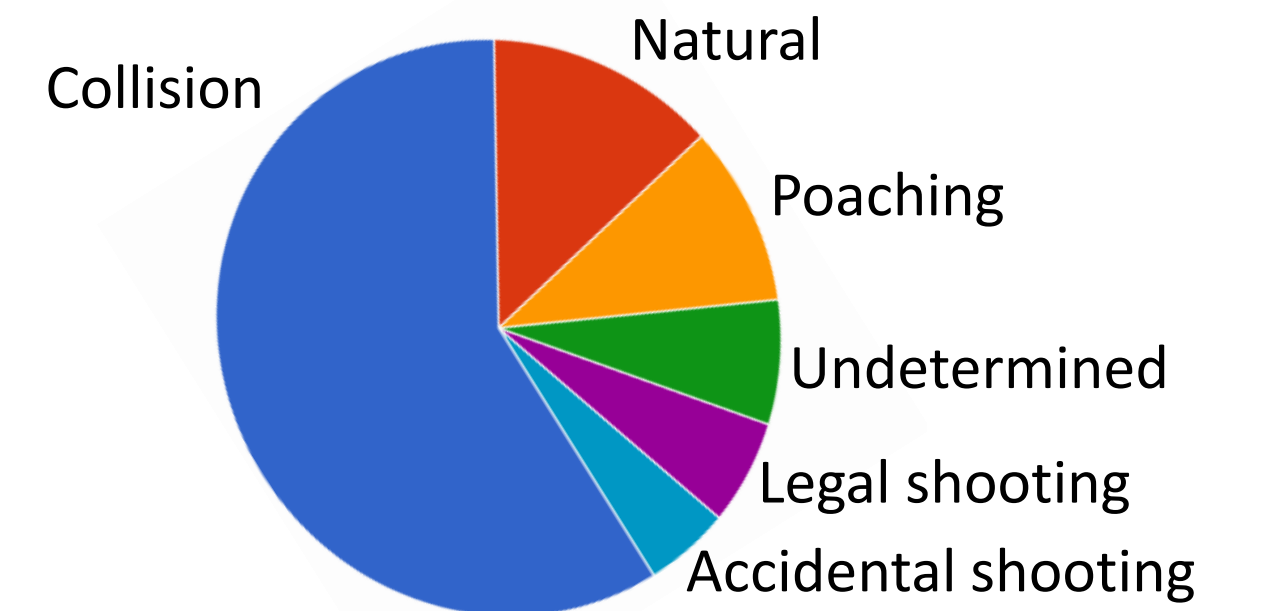
## CONTEXT:



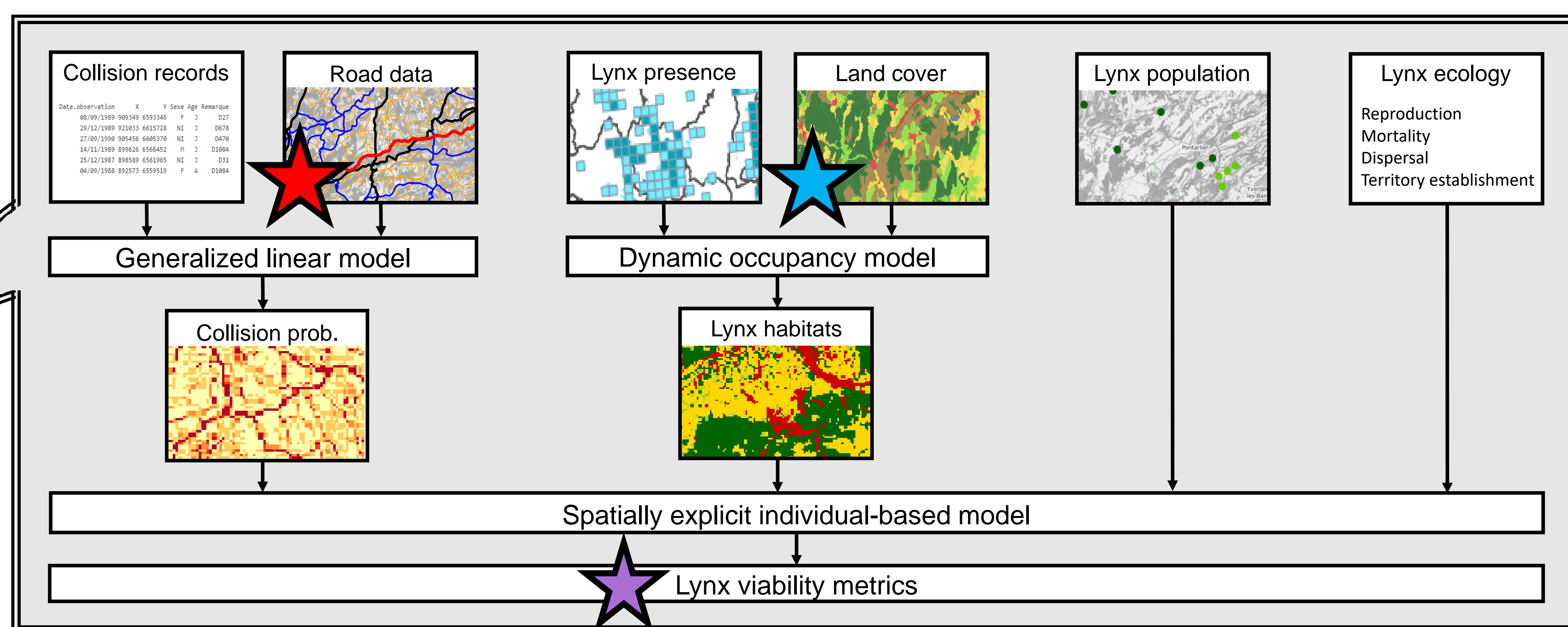
In France, vehicle collisions are one of the main mortality causes for the boreal lynx (*Lynx lynx*). In this context, we built a tool to help decision makers in reducing lynx-vehicle collisions in their landscape planning projects.

This tool combines, in a user-friendly interface, both statistical and individual-based models to estimate lynx viability metrics according to roads and landscape characteristics. This interface allows users to run management scenarios and estimate the impact of their projects on the lynx population.

## Lynx mortality causes (France)

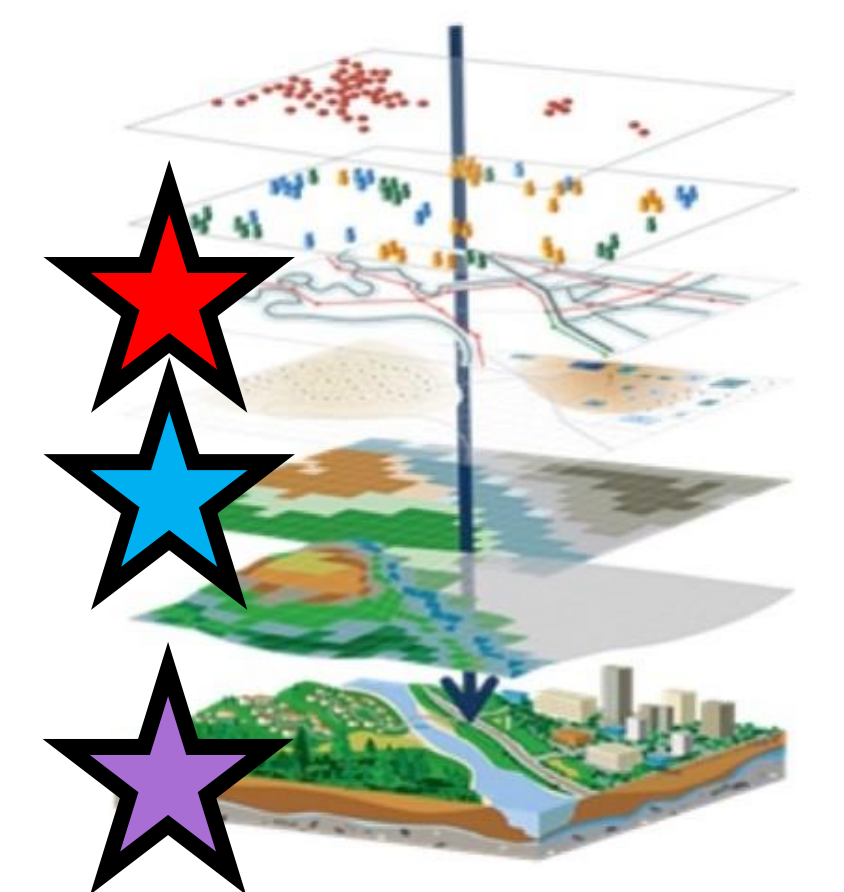


## STATISTICAL AND INDIVIDUAL-BASED MODELS:



## PREDICTIVE MODEL:

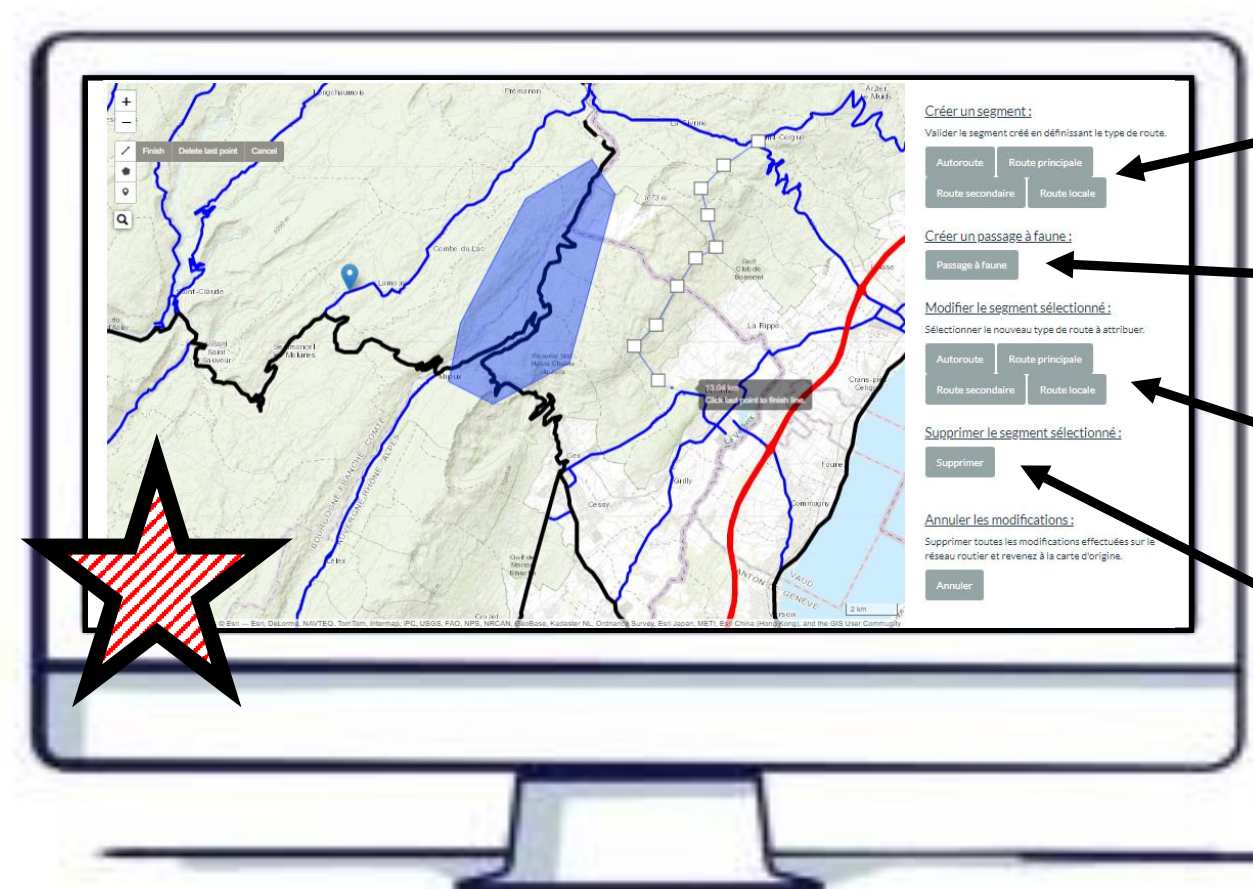
Combination of multiple data layers and statistical/IBM rules to predict lynx viability.



What happens to the lynx if I build an overpass and restore some forested areas?

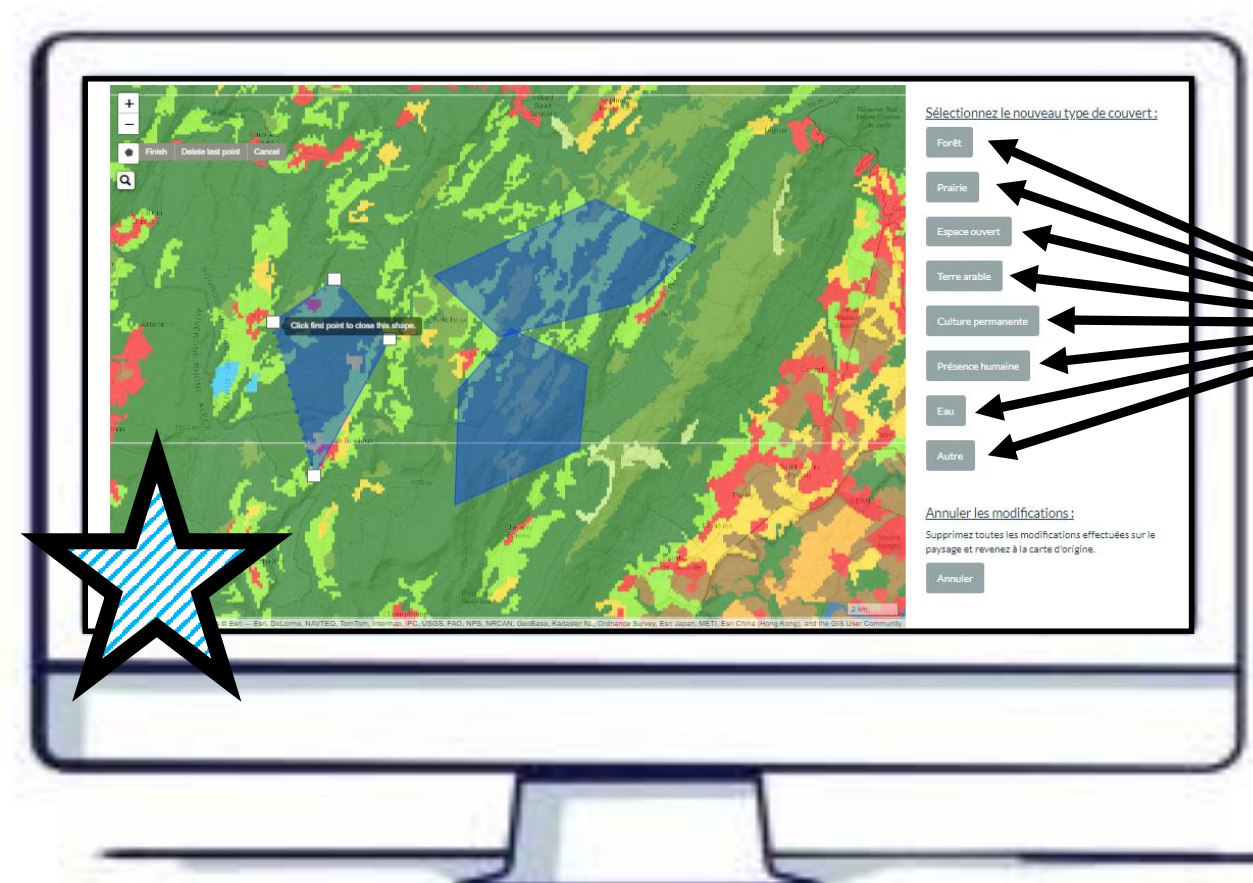
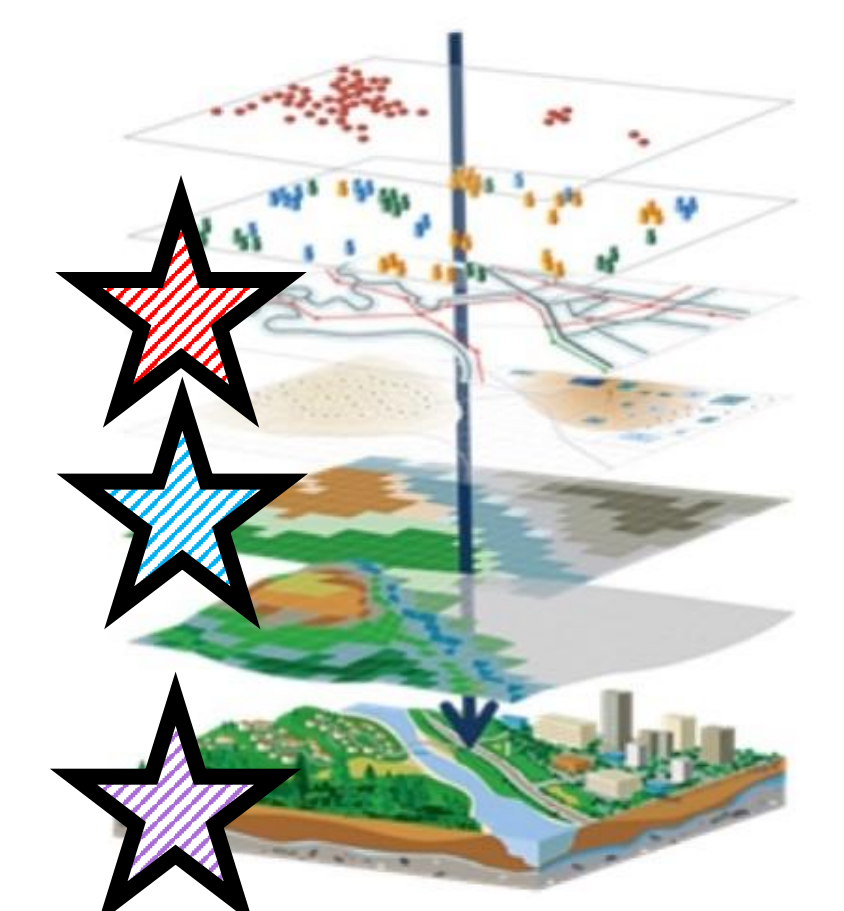
## ON THE INTERFACE:

Creation by the user of the management scenario to test. Modifications of the road characteristics and/or modifications of the land cover.



## PREDICTIVE MODEL:

New layers in the model give new predictions for the lynx viability.

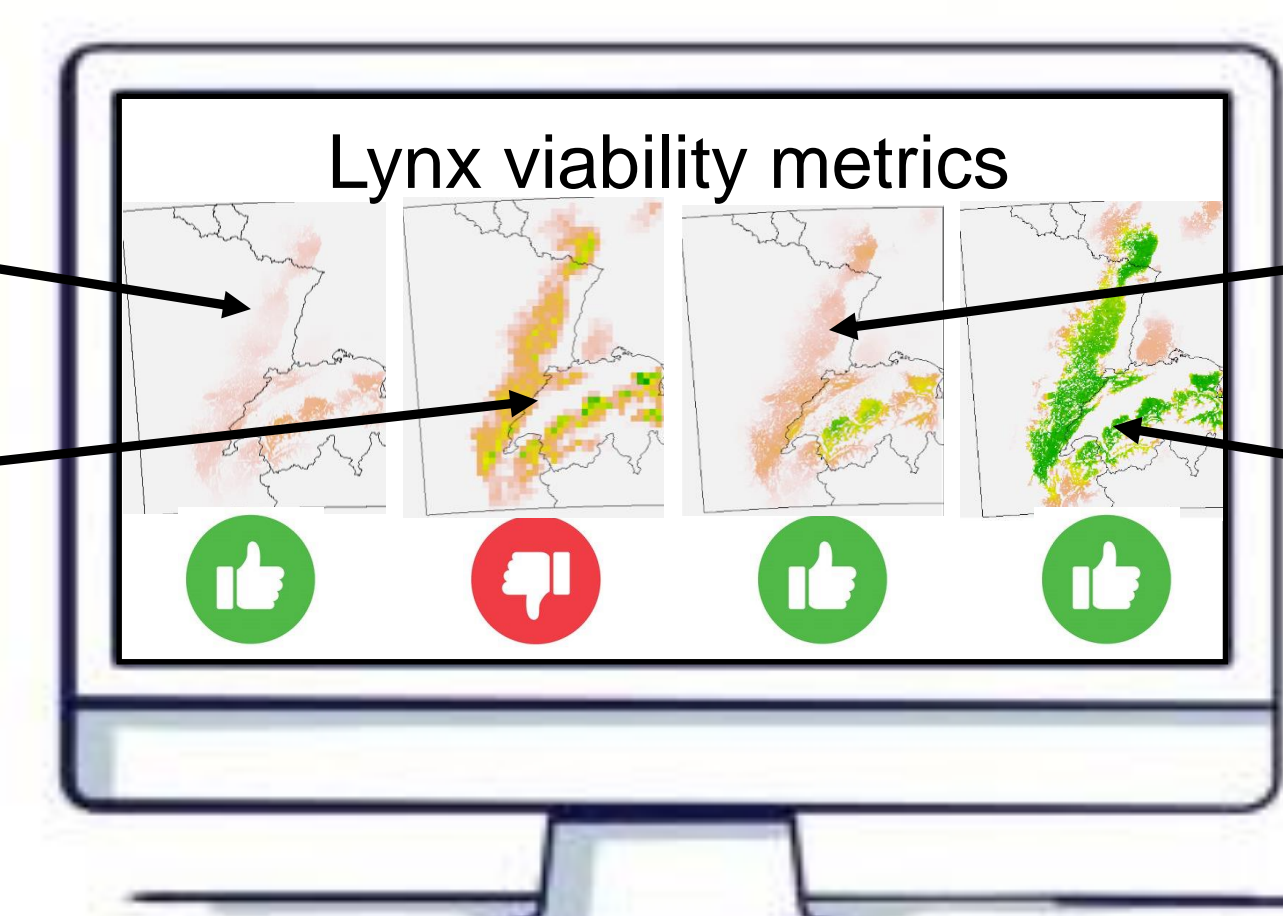


## LYNX VIABILITY:

- Simulations of lynx population over 50 years using the current environmental conditions.
- Simulations of lynx population over 50 years using the modified environmental conditions (i.e., landscape with the management actions included).
- Comparisons of the lynx viability metrics extracted from the two sets of simulations.
- Evaluation of the positive or negative impact of the scenario on each metric.

Number of collisions

Lynx density



Dispersal movement

Territory occupancy