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iCull – A bioeconomic model for herd management and disease control

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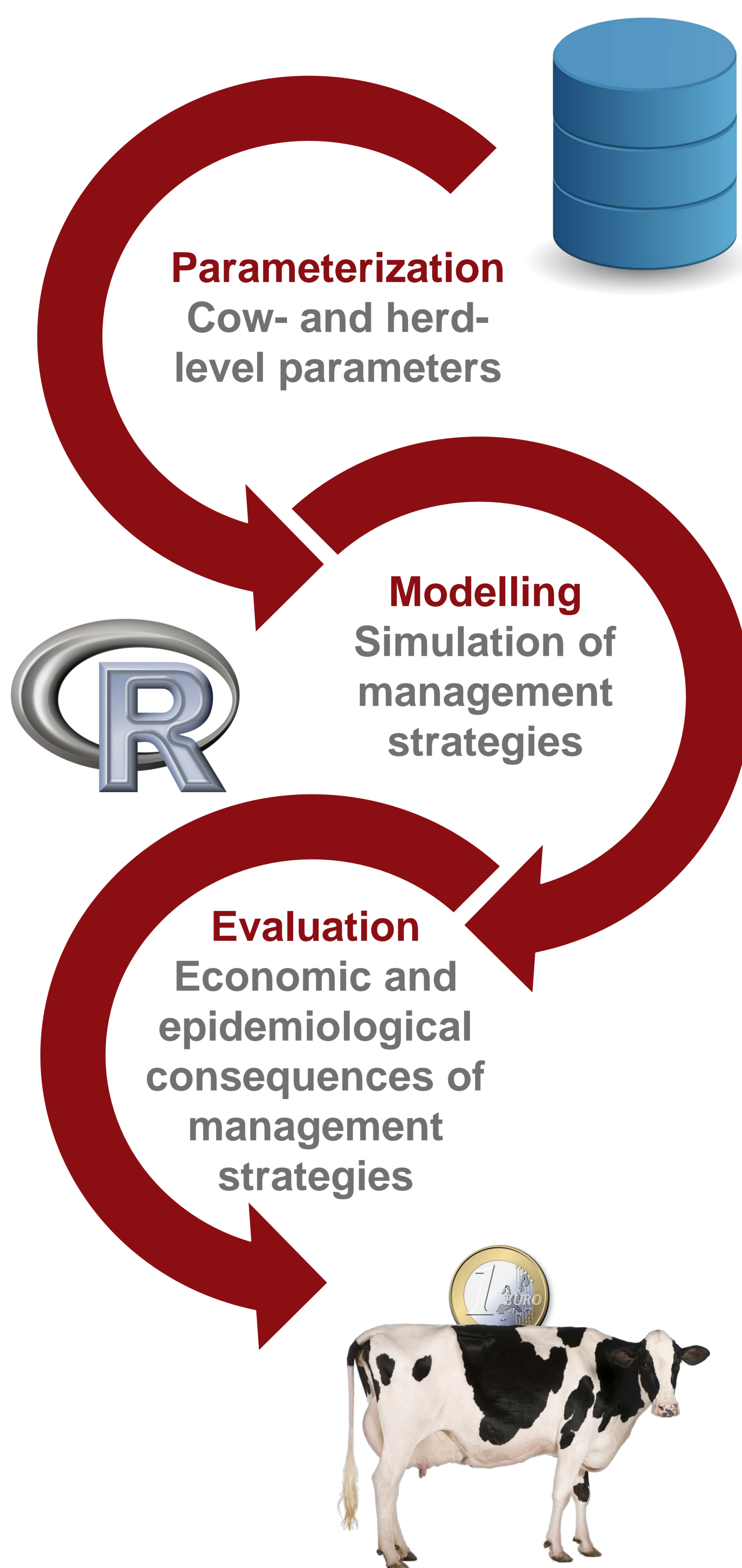
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Mycobacterium avium ssp. *paratuberculosis* (MAP) may cause **fatal diarrhoea** and **lower milk production** in cattle. Test sensitivity is correlated with progression of infection and consequently low due to chronicity of infection. **The iCull model** is a stochastic and mechanistic framework simulating a dairy herd, currently using 32 individual parameters per cow and 38 management parameters



The model was parameterized using **data from 700 farms** from 2000-2014, including milk yield, MAP-ELISA and SCC test values for individual cows.



The model can use **real-time data** from the Danish cattle database, allowing herd-specific improvement of the management. It can be used to **simulate different control strategies**, e.g. targeted culling of test positive cows.

The model is suited for finding the **economically optimal strategy** for individual herds.



Future versions of the model will be used to **evaluate economic consequences of management strategies for individual cows** and relate it to farm data, taking into consideration the **future value** of each cow. Thus it will be a herd- and cow-specific **online decision tool** for the farmer.

