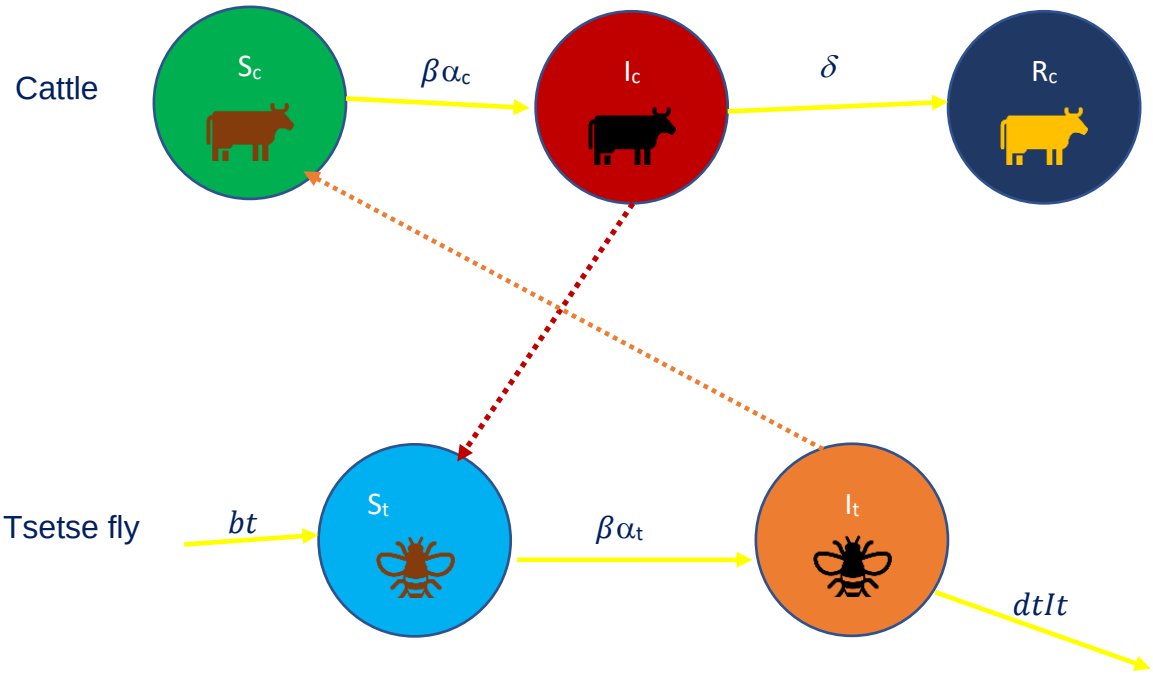

Descriptions of model variables

S_c: Number of susceptible cattle population
I_c: Number of infected cattle
R_c: Number of recovered/removed cattle
S_t: Number of susceptible tsetse flies
I_t: Number of infected tsetse flies
N_c: The total cattle population.
N_t: The total tsetse population
dt: tsetse flies' natural death

Descriptions of model parameters

β: biting rate of tsetse flies on cattle
$\alpha c, \alpha t$: probability per bite of Nagana transmission to cattle and tsetse fly
δ: Cattle death rate from Nagana

By considering the assumptions and the notations of variables and parameters, the ordinary differential equations describing the dynamics of African Animal Trypanosomiasis in the cattle and tsetse fly populations take the form as;

$$\frac{dSc}{dt} = -\alpha\beta\frac{ScIt}{Sc+Ic+Rc}$$

$$\frac{dIc}{dt} = \alpha c\beta\frac{ScIt}{Sc+Ic+Rc} - \delta cIc$$

$$\frac{dRc}{dt} = \delta cIc$$

$$\frac{dSt}{dt} = bt(St+It) - dtSt - \alpha t\beta\frac{StIc}{Sc+Ic+Rc}$$

$$\frac{dIt}{dt} = \alpha t\beta \frac{StIc}{Sc + Ic} - dtIt$$