Determination of the simulated estimated position p_i of each agent A_i:

$$p_i = p_{i,actual} + v_{i,offset} \tag{1}$$

$$v_{i,offset} = \begin{bmatrix} \varepsilon_p \cos \theta_p \\ \varepsilon_p \sin \theta_p \end{bmatrix} \tag{2}$$

$$\varepsilon_p = M_{mag}(p_{i,actual,x}, p_{i,actual,x})f_e + p_{i,noise} \tag{3}$$

$$p_{i,noise} = J_p() + n_{p,i} \tag{4}$$

$$\theta_p = M_{dir}(p_{i,actual,x}, p_{i,actual,x})f_e + \theta_{i,noise} \tag{5}$$

$$\theta_{i,noise} = J_\theta() + n_{\theta,i} \tag{6}$$

$$\theta_i = \theta_{i,actual} + M_\theta(p_{i,actual,x}, p_{i,actual,x})f_e + \theta_{i,noise} \tag{7}$$