

ma-knows-knows^{11,40}

$$\begin{aligned} & \forall \text{poss}:(\text{ES}\{i\} \rightarrow \mathbb{P}\{i'\}), T:\text{Type}\{i\}, s:T, i:\text{Id}, P:(\text{possible-event}\{i:l\}(\text{poss}) \rightarrow \mathbb{P}\{i'\}), \\ & R:(\text{possible-event}\{i:l\}(\text{poss}) \rightarrow \text{possible-event}\{i:l\}(\text{poss}) \rightarrow \mathbb{P}\{i'\}), Rs:(T \rightarrow T \rightarrow \mathbb{P}\{i'\}). \\ & \text{Trans}(\text{possible-event}\{i:l\} \\ & \quad (\text{poss}); 1, 2. R(1, 2)) \\ \Rightarrow & \text{ma-knows}\{i:l\} \\ & \quad (\text{poss}; i; T; s; P; Rs; R) \\ \Rightarrow & \text{ma-knows}\{i:l\} \\ & \quad (\text{poss}; i; T; s; (\lambda e. \text{es-knows}\{i:l\}(\text{poss}; R; P; e)); Rs; R) \end{aligned}$$