

## ESAxioms\_wf<sup>11,40</sup>

$\forall E:\text{Type}\{i\}, T, V:(\text{Id}\rightarrow\text{Id}\rightarrow\text{Type}\{i\}), M:(\text{IdLnk}\rightarrow\text{Id}\rightarrow\text{Type}\{i\}), \text{loc}:(E\rightarrow\text{Id}), \text{kind}:(E\rightarrow\text{Knd}),$   
 $\text{val}:(e:E\rightarrow\text{eventtype}(\text{kind};\text{loc};V;M;e)), \text{when}, \text{after}:(x:\text{Id}\rightarrow e:E\rightarrow\mathbb{Q}\rightarrow T(\text{loc}(e),x)),$   
 $\text{time}:(E\rightarrow\mathbb{Q}), \text{sends}:(l:\text{IdLnk}\rightarrow E\rightarrow(\text{Msg\_sub}(l;M)\text{ List})),$   
 $\text{sender}:(\{e:E\mid \uparrow\text{isrcv}(\text{kind}(e))\}\rightarrow E),$   
 $\text{index}:(e:\{e:E\mid \uparrow\text{isrcv}(\text{kind}(e))\}\rightarrow\{0..\|\text{sends}(\text{lnk}(\text{kind}(e)),\text{sender}(e))\|^{-}\}), \text{first}:(E\rightarrow\mathbb{B}),$   
 $\text{pred}:(\{e':E\mid \neg(\uparrow(\text{first}(e')))\}\rightarrow E), \text{causl}:(E\rightarrow E\rightarrow\mathbb{P}\{i\}).$

ESAxioms{i:l}

(*E*;  
*T*;  
*M*;  
*loc*;  
*kind*;  
*val*;  
*when*;  
*after*;  
*time*;  
*sends*;  
*sender*;  
*index*;  
*first*;  
*pred*;  
*causl*)

$\in \mathbb{P}\{i\}$