

## sends-p<sup>11,40</sup>

$$\begin{aligned}
& \text{sends-p}(es; ds; k; T; l; dt; g) \\
\equiv_{\text{def}} & ((\forall x:\text{Id}. \text{subtype\_rel}(\text{es-variantype}(es; \text{source}(l); x); \text{fpf-cap}(ds; \text{id-deq}; x; \text{top}))) \\
& \wedge (\forall e:\text{es-E}(es). \\
& \quad (\uparrow \text{es-isrcv}(es; e)) \\
& \quad \Rightarrow (\text{es-lnk}(es; e) = l) \\
& \quad \Rightarrow \text{subtype\_rel}(\text{es-variantype}(es; e); \text{fpf-cap}(dt; \text{id-deq}; \text{es-tag}(es; e); \text{top})))) \\
& c \wedge \text{alle-at}(es; \\
& \quad \text{source}(l); \\
& \quad e.(\text{es-kind}(es; e) = k) \\
& \quad \Rightarrow (\text{subtype\_rel}(\text{es-variantype}(es; e); T) \\
& \quad \quad c \wedge (\exists L:\{e:\text{es-E}(es) | \\
& \quad \quad \quad (\uparrow \text{es-isrcv}(es; e)) \\
& \quad \quad \quad c \wedge ((\text{es-lnk}(es; e) = l) \\
& \quad \quad \quad \wedge (\uparrow \text{fpf-dom}(\text{id-deq}; \text{es-tag}(es; e); dt)))) \text{ List} \\
& \quad \quad (\text{es-rcv-from}(es; e; l; L) \\
& \quad \quad c \wedge (\text{map}((\lambda e.<\text{es-tag}(es; e), \text{es-val}(es; e)>); L) \\
& \quad \quad = \\
& \quad \quad \quad \text{concat}(\text{map}((\lambda \text{tgf}.\text{sends-msgs}(\text{es-state-when}(es; e); \\
& \quad \quad \quad \quad \text{es-val}(es; e); \\
& \quad \quad \quad \quad \text{tgf}))); \\
& \quad \quad \quad g)))))))))
\end{aligned}$$

*clarification:*

$$\begin{aligned}
& \text{sends-p}(es; ds; k; T; l; dt; g) \\
\equiv_{\text{def}} & ((\forall x:\text{Id}. \text{subtype\_rel}(\text{es-variantype}(es; \text{source}(l); x); \text{fpf-cap}(ds; \text{id-deq}; x; \text{top}))) \\
& \wedge (\forall e:\text{es-E}(es). \\
& \quad (\uparrow \text{es-isrcv}(es; e)) \\
& \quad \Rightarrow (\text{es-lnk}(es; e) = l \in \text{IdLnk}) \\
& \quad \Rightarrow \text{subtype\_rel}(\text{es-variantype}(es; e); \text{fpf-cap}(dt; \text{id-deq}; \text{es-tag}(es; e); \text{top})))) \\
& c \wedge \text{alle-at}(es; \\
& \quad \text{source}(l); \\
& \quad e.(\text{es-kind}(es; e) = k \in \text{Knd}) \\
& \quad \Rightarrow (\text{subtype\_rel}(\text{es-variantype}(es; e); T) \\
& \quad \quad c \wedge (\exists L:\{e:\text{es-E}(es) | \\
& \quad \quad \quad (\uparrow \text{es-isrcv}(es; e)) \\
& \quad \quad \quad c \wedge ((\text{es-lnk}(es; e) = l \in \text{IdLnk}) \\
& \quad \quad \quad \wedge (\uparrow \text{fpf-dom}(\text{id-deq}; \text{es-tag}(es; e); dt)))) \text{ List} \\
& \quad \quad (\text{es-rcv-from}(es; e; l; L) \\
& \quad \quad c \wedge (\text{map}((\lambda e.<\text{es-tag}(es; e), \text{es-val}(es; e)>); L) \\
& \quad \quad = \\
& \quad \quad \quad \text{concat}(\text{map}((\lambda \text{tgf}.\text{sends-msgs}(\text{es-state-when}(es; e);
\end{aligned}$$

es-val(*es*; *e*);  
*tg*));  
*g*)  
∈ ((*tg*:Id × fpf-cap(*dt*; id-deq; *tg*; void) List))))))