

effect-p^{11,40}

$$\begin{aligned} & \text{effect-p}(es; i; ds; k; T; x; f) \\ \equiv_{\text{def}} & ((\forall x:\text{Id}. \text{subtype_rel}(\text{es-vartype}(es; i; x); \text{fpf-cap}(ds; \text{id-deq}; x; \text{top}))) \\ & \wedge \text{subtype_rel}(\text{es-kindtype}(es; i; k); T) \\ & \wedge \text{es-dtype}(es; i; x; \text{fpf-cap}(ds; \text{id-deq}; x; \text{top}))) \\ & c \wedge \text{alle-at}(es; \\ & \quad i; \\ & \quad e.((\text{es-kind}(es; e) = k) \\ & \quad \Rightarrow (\text{subtype_rel}(\text{es-valtype}(es; e); T) \\ & \quad c \wedge (\text{es-after}(es; x; e) = f(\text{es-state-when}(es; e), \text{es-val}(es; e)))))) \end{aligned}$$

clarification:

$$\begin{aligned} & \text{effect-p}(es; i; ds; k; T; x; f) \\ \equiv_{\text{def}} & ((\forall x:\text{Id}. \text{subtype_rel}(\text{es-vartype}(es; i; x); \text{fpf-cap}(ds; \text{id-deq}; x; \text{top}))) \\ & \wedge \text{subtype_rel}(\text{es-kindtype}(es; i; k); T) \\ & \wedge \text{es-dtype}(es; i; x; \text{fpf-cap}(ds; \text{id-deq}; x; \text{top}))) \\ & c \wedge \text{alle-at}(es; \\ & \quad i; \\ & \quad e.((\text{es-kind}(es; e) = k \in \text{Knd}) \\ & \quad \Rightarrow (\text{subtype_rel}(\text{es-valtype}(es; e); T) \\ & \quad c \wedge (\text{es-after}(es; x; e) \\ & \quad = \\ & \quad f(\text{es-state-when}(es; e), \text{es-val}(es; e)) \\ & \quad \in \text{fpf-cap}(ds; \text{id-deq}; x; \text{top})))))) \end{aligned}$$