

## discrete-pre-p<sup>11,40</sup>

@i Precondition for  $a(\text{Outcome}(p))$

$P$  discrete state( $ds$ )

$$\begin{aligned} \equiv_{\text{def}} & (\forall x:\text{Id. subtype\_rel}(\text{es-vartype}(es; i; x); \text{fpf-cap}(ds; \text{id-deq}; x; \text{top}))) \\ & c \wedge (\text{alle-at}(es; \\ & \quad i; \\ & \quad e.((\text{es-kind}(es; e) = \text{locl}(a)) \\ & \quad \Rightarrow (\text{subtype\_rel}(\text{es-valtype}(es; e); \text{p-outcome}(p)) \\ & \quad \quad c \wedge (\uparrow(P(\text{es-state-when}(es; e))))))) \\ & \wedge (@i \text{ discrete } ds \\ & \quad \Rightarrow (\text{alle-at}(es; \\ & \quad \quad i; \\ & \quad \quad e.\text{existse-ge}(es; \\ & \quad \quad \quad e; \\ & \quad \quad \quad e'.((\text{es-kind}(es; e') = \text{locl}(a)) \\ & \quad \quad \quad \vee (\neg(\uparrow(P(\text{es-state-after}(es; e')))))))) \\ & \quad \wedge ((\uparrow(P(\text{es-init-state}(es; i))) \Rightarrow (\exists e:\text{es-E}(es). (\text{loc}(e) = i)))))) \end{aligned}$$

*clarification:*

discrete-pre-p( $es; i; ds; a; p; P$ )

$$\begin{aligned} \equiv_{\text{def}} & (\forall x:\text{Id. subtype\_rel}(\text{es-vartype}(es; i; x); \text{fpf-cap}(ds; \text{id-deq}; x; \text{top}))) \\ & c \wedge (\text{alle-at}(es; \\ & \quad i; \\ & \quad e.((\text{es-kind}(es; e) = \text{locl}(a) \in \text{Knd}) \\ & \quad \Rightarrow (\text{subtype\_rel}(\text{es-valtype}(es; e); \text{p-outcome}(p)) \\ & \quad \quad c \wedge (\uparrow(P(\text{es-state-when}(es; e))))))) \\ & \wedge (\text{es-dds}(es; i; ds) \\ & \quad \Rightarrow (\text{alle-at}(es; \\ & \quad \quad i; \\ & \quad \quad e.\text{existse-ge}(es; \\ & \quad \quad \quad e; \\ & \quad \quad \quad e'.((\text{es-kind}(es; e') = \text{locl}(a) \in \text{Knd}) \\ & \quad \quad \quad \vee (\neg(\uparrow(P(\text{es-state-after}(es; e')))))))) \\ & \quad \wedge ((\uparrow(P(\text{es-init-state}(es; i))) \\ & \quad \quad \Rightarrow (\exists e:\text{es-E}(es). (\text{es-loc}(es; e) = i \in \text{Id})))))) \end{aligned}$$