

## pre-init1-p<sup>0,22</sup>

$$\begin{aligned} & \text{pre-init1-p}(es; i; x; X; x_0; a; T; P) \\ \equiv_{\text{def}} & ((\exists v:T. P(x_0, v)) \Rightarrow (\exists e:E. \text{loc}(e) = i)) \\ & \& \text{vartype}(i; x) \subseteq \rho X \\ & \& \forall e@i. \text{kind}(e) = \text{locl}(a) \Rightarrow \text{valtype}(e) \subseteq \rho T \& P((x \text{ when } e), \text{val}(e)) \\ & \& \forall e@i. \exists e \leq e'. \text{kind}(e') = \text{locl}(a) \vee (\forall v:T. \neg P((x \text{ after } e'), v)) \\ & \& @i x \text{ initially } x_0:X \end{aligned}$$

*clarification:*

$$\begin{aligned} & \text{pre-init1-p}(es; i; x; X; x_0; a; T; P) \\ \equiv_{\text{def}} & ((\exists v:T. P(x_0, v)) \Rightarrow (\exists e:\text{es-E}(es). \text{es-loc}(es; e) = i \in \text{Id})) \\ & \& \text{es-vartype}(es; i; x) \subseteq \rho X \\ & \& \text{alle-at}(es; i; e.\text{es-kind}(es; e) = \text{locl}(a) \in \text{Knd} \\ & \quad \Rightarrow \text{es-valtype}(es; e) \subseteq \rho T \& P(\text{es-when}(es; x; e), \text{es-val}(es; e))) \\ & \& \text{alle-at}(es; i; e.\text{existse-ge}(es; e; e'.\text{es-kind}(es; e') = \text{locl}(a) \in \text{Knd} \\ & \quad \vee (\forall v:T. \neg P(\text{es-after}(es; x; e'), v)))) \\ & \& \text{init-p}(es; i; X; x; x_0) \end{aligned}$$