

## ecl-effect-compatible<sup>11,40</sup>

$$\begin{aligned}
& \forall i:\text{Id}, ds:\text{fpf}(\text{Id}; x.\text{Type}), da:\text{fpf}(\text{Knd}; k.\text{Type}), A:\text{ecl}(ds; da), snd:\text{msg-spec}(ds; da), \\
& \quad upd:\text{update-spec}(ds; da). \\
& \text{update-spec-decl}(upd; ds) \\
& \Rightarrow \text{msg-spec-loc-decl}(snd; i; da) \\
& \Rightarrow (\neg(\uparrow\text{fpf-dom}(\text{id-deq}; \text{mkid}\{\text{ecl:ut2}\}; ds))) \\
& \Rightarrow \text{R-Feasible}\{i:l\} \\
& \quad (\text{ecl-machine}\{\text{ecl:ut2}\}(i; ds; da; A; snd; upd)) \\
& \Rightarrow (\forall k:\text{Knd}, ds_2:\text{fpf}(\text{Id}; x.\text{Type}), T:\text{Type}, x:\text{Id}, \\
& \quad f:(\text{decl-state}(ds_2) \rightarrow T \rightarrow \text{decl-type}\{i:l\} \\
& \quad \quad \quad (ds_2; x)) + (\text{decl-state}(ds_2) \rightarrow T \rightarrow \text{rationals} \rightarrow \\
& \quad \quad \quad \text{decl-type}\{i:l\} \\
& \quad \quad \quad (ds_2; x))). \\
& (\neg(\uparrow\text{fpf-dom}(\text{id-deq}; \text{mkid}\{\text{ecl:ut2}\}; ds_2))) \\
& \Rightarrow (\neg(\uparrow\text{eq-id}(\text{mkid}\{\text{ecl:ut2}\}; x))) \\
& \Rightarrow \text{fpf-compatible}(\text{Id}; x.\text{Type}; \text{id-deq}; ds; ds_2) \\
& \Rightarrow \text{fpf-compatible}(\text{Knd}; k.\text{Type}; \text{Kind-deq}; da; \text{fpf-single}(k; T)) \\
& \Rightarrow ((k \in \text{ecl-kinds}(A)) \Rightarrow ((\text{ma-valtype}(da; k) = T) \wedge (\uparrow\text{fpf-dom}(\text{Kind-deq}; k; da)))) \\
& \Rightarrow (\neg(x \in \text{update-spec-vars}(upd))) \\
& \Rightarrow \text{R-compat}\{i:l\} \\
& \quad (\text{ecl-machine}\{\text{ecl:ut2}\}(i; ds; da; A; snd; upd); \text{Reffect}(i; ds_2; k; T; x; f))
\end{aligned}$$