

### R-state-var-compat3<sup>11,40</sup>

$\forall i:\text{Id}, ds_1, ds_2:\text{fpf}(\text{Id}; x.\text{Type}), da:\text{fpf}(\text{Knd}; k.\text{Type}), x, y:\text{Id}, T_1, T_2:\text{Type},$   
 $ks_1, ks_2:(\text{Knd List}), tr_1:(k:\{k:\text{Knd} \mid (k \in ks_1)\} \rightarrow \text{decl-state}(ds_1) \rightarrow \text{ma-valtype}(da; k) \rightarrow T_1 \rightarrow$   
 $T_1),$   
 $tr_2:(k:\{k:\text{Knd} \mid (k \in ks_2)\} \rightarrow \text{decl-state}(ds_2) \rightarrow \text{ma-valtype}(da; k) \rightarrow T_2 \rightarrow T_2).$   
 $(\neg(x = y))$   
 $\Rightarrow \text{fpf-compatible}(\text{Id}; a.\text{Type}; \text{id-deq}; ds_1; \text{fpf-single}(x; T_1))$   
 $\Rightarrow \text{fpf-compatible}(\text{Id}; a.\text{Type}; \text{id-deq}; ds_2; \text{fpf-single}(y; T_2))$   
 $\Rightarrow \text{fpf-compatible}(\text{Id}; x.\text{Type}; \text{id-deq}; ds_2; \text{fpf-join}(\text{id-deq}; ds_1; \text{fpf-single}(x; T_1)))$   
 $\Rightarrow \text{fpf-compatible}(\text{Id}; x.\text{Type}; \text{id-deq}; ds_1; \text{fpf-join}(\text{id-deq}; ds_2; \text{fpf-single}(y; T_2)))$   
 $\Rightarrow \text{R-compat}\{i:1\}$   
 $(\text{R-state-var}(i; ds_1; da; x; T_1; ks_1; tr_1);$   
 $\text{R-state-var}(i; ds_2; da; y; T_2; ks_2; tr_2))$