

## better-d-comp-step<sup>11,40</sup>

$$\begin{aligned}
& \forall D:\text{Dsys}, \text{sched}:(\text{Id} \rightarrow (?(\mathbb{N} \rightarrow (\text{IdLnk} + \text{Id}))))), v:(i:\text{Id} \rightarrow \text{M}(i).(\text{timed})\text{state}), \\
& \text{dec}:(i,a:\text{Id} \rightarrow \mathbb{N} \rightarrow \text{M}(i).\text{state} \rightarrow (? \text{if } a \in \text{dom}(\text{M}(i).\text{prob}) \text{ then Outcome else Void fi })), \\
& \text{discrete}:(\text{Id} \rightarrow \text{Id} \rightarrow \mathbb{B}). \\
& \text{Feasible}(D) \\
& \Rightarrow (\forall i:\text{Id}, t:\mathbb{N}. \\
& \quad \exists s:\text{M}(i).(\text{timed})\text{state} \\
& \quad (s \\
& \quad = \\
& \quad \text{if } (t =_0 0) \\
& \quad \text{then } \lambda x.\text{M}(i).\text{init}(x)?v(i,x) \\
& \quad \text{else } (\text{CV}(\text{d-comp}(D; v; \text{sched}; \text{dec}; \text{discrete}))((t - 1), i)).1 \\
& \quad \text{fi} \\
& \quad \& ((\text{CV}(\text{d-comp}(D; v; \text{sched}; \text{dec}; \text{discrete}))(t, i) \\
& \quad = \\
& \quad \text{stutter-state}(s) \\
& \quad \in \text{d-world-state}(D; i)) \\
& \quad \vee (\exists k:\text{Knd} \\
& \quad \quad \exists val:\text{d-decl}(D; i)(k) \\
& \quad \quad (\text{CV}(\text{d-comp}(D; v; \text{sched}; \text{dec}; \text{discrete}))(t, i) \\
& \quad \quad = \\
& \quad \quad \text{next-world-state}(D; i; s; k; val) \\
& \quad \quad \in \text{d-world-state}(D; i) \\
& \quad \quad \& (((\uparrow \text{isrcv}(k)) \\
& \quad \quad \quad \text{c} \wedge (\text{destination}(\text{lnk}(k)) = i \\
& \quad \quad \quad \& ((\|\text{queue}(\text{lnk}(k); t)\| \geq 1) \\
& \quad \quad \quad \text{c} \wedge (\text{hd}(\text{queue}(\text{lnk}(k); t)) \\
& \quad \quad \quad = \\
& \quad \quad \quad \text{msg}(\text{lnk}(k); \text{tag}(k); val) \\
& \quad \quad \quad \in \text{Msg}(\lambda l, tg. \text{M}(\text{source}(l)).\text{dout}(l, tg)))))) \\
& \quad \quad \vee (\uparrow \text{islocal}(k)))))))))
\end{aligned}$$