

EState^{0,22}

EventsWithState

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≡def E:Type
  × EqDecider(E)
  × pred?:(E → (E + Unit))
  × info:(E → (Id × Id + (IdLnk × E) × Id))
  × EOrderAxioms(E; pred?; info)
  × T:(Id → Id → Type)
  × V:(Id → Id → Type)
  × M:(IdLnk → Id → Type)
  × init:(i,x:Id → T(i,x))
  × Trans:(i:Id → k:Knd → kindcase(k; a.V(i,a); l,t.M(l,t) ) → (x:Id → T(i,x)) → (x:Id → T
    (i
    ,x)))

  × val:(e:E → kindcase(kind(e); a.V(loc(e),a); l,t.M(l,t) ))
  × Send:(i:Id → k:Knd → kindcase(k; a.V(i,a); l,t.M(l,t) ) → (x:Id → T(i,x)) →
    (Msg(M) List))
  × Choose:(i,a:Id → (x:Id → T(i,x)) → (V(i,a) + Unit))
  × val-axiom(E;V;M;info;pred?;
    init;Trans;Choose;
    Send;val)
  × ((∀i, x:Id. AtomFree(Type;T(i,x)))
    & (∀i, a:Id. AtomFree(Type;V(i,a)))
    & (∀l:IdLnk, tg:Id. AtomFree(Type;M(l,tg))))
  × Top

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clarification:

EState{i:l}

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≡def E:Typei
  × EqDecider(E)
  × pred?:(E → (E + Unit))
  × info:(E → (Id × Id + (IdLnk × E) × Id))
  × EOrderAxioms{i}(E;
    pred?;
    info)
  × T:(Id → Id → Typei)
  × V:(Id → Id → Typei)
  × M:(IdLnk → Id → Typei)
  × init:(i:Id → x:Id → T(i,x))
  × Trans:(i:Id → k:Knd → kindcase(k; a.V(i,a); l,t.M(l,t) ) → (x:Id → T(i,x)) → (x:Id → T
    (i
    ,x)))

```

$\times \text{val}:(e:E \rightarrow \text{kindcase}(\text{kind}(\text{info};e); a.V(\text{loc}(\text{info};e),a); l,t.M(l,t)))$
 $\times \text{Send}:(i:\text{Id} \rightarrow k:\text{Knd} \rightarrow \text{kindcase}(k; a.V(i,a); l,t.M(l,t)) \rightarrow (x:\text{Id} \rightarrow T(i,x)) \rightarrow$
 $(\text{Msg}(M) \text{ List}))$
 $\times \text{Choose}:(i:\text{Id} \rightarrow a:\text{Id} \rightarrow (x:\text{Id} \rightarrow T(i,x)) \rightarrow (V(i,a) + \text{Unit}))$
 $\times \text{val-axiom}(E;V;M;\text{info};\text{pred?};$
 $\quad \text{init};\text{Trans};\text{Choose};$
 $\quad \text{Send};\text{val})$
 $\times ((\forall i:\text{Id}, x:\text{Id}. \text{AtomFree}(\text{Type}_i;T(i,x)))$
 $\quad \& (\forall i:\text{Id}, a:\text{Id}. \text{AtomFree}(\text{Type}_i;V(i,a)))$
 $\quad \& (\forall l:\text{IdLnk}, tg:\text{Id}. \text{AtomFree}(\text{Type}_i;M(l,tg))))$
 $\times \text{Top}$