input-forwarding-invariant[13,45]

$\forall es$:ES, Cmd:Type, $isupdate$:($Cmd \to \mathbb{B}$), In:AbsInterface(Cmd), Out:AbsInterface(Top),
  Sys:AbsInterface(Cmd List).
(E(In) $\subseteq$r E(Sys))
$\Rightarrow$ ($\forall f$:sys-antecedent(es;Sys).
   ($\forall u$:E(Sys). ($f(u) = u \in$ E) $\Longleftrightarrow$ ($\uparrow(u \in_b In)$))
   $\Rightarrow$ fifo-antecedent(es;Sys;f)
   $\Rightarrow$ input-forwarding{i:l}
                         (es; Cmd; Sys; $isupdate$; In; f)
   $\Rightarrow$ ($\forall chain$:(E(Sys)$\to$(Id List)).
      chain-consistent(f;$chain$)
      $\Rightarrow$ ($\forall e$:E(Sys).
         filter($isupdate$;es-interface-history(es; Sys; e))
         =
         In(updates(cr-explanation{i:l}
                                  (es; Sys; f; e)))
         $\in$ (Cmd List))))