Message Execution (Retain the labels for $\Rightarrow^*$ )

$$\frac{\begin{array}{r} DS(x) = (v, m|T, \epsilon) \wedge \neg v(suspended) \wedge DS^{'}(x) = (v^{'}, q^{'}, \epsilon) \wedge \\ \forall i \in ID \backslash \{x\}(DS(i) = (v^{''}, q^{''}, \epsilon) \wedge DS^{'}(i) = (v^{''}, q^{*}, \epsilon)) \wedge \\ DS[x \longmapsto (v, T, body(m))] \Rightarrow^* DS^{'} \end{array}}{G \xrightarrow{\tau} G[DS \longmapsto DS']} \tag{1}$$

Continuous Behavior Expiration (How to executed actions?)

$$\frac{CS(x) = (m, \epsilon) \wedge m \neq none}{\begin{array}{r} G \overset{guard(m)}{\rightarrow} G[DS \longmapsto DS^{'}, CS \longmapsto \wedge \\ CS^{'} = CS[x \longmapsto (none, \epsilon)] \wedge \\ DS^{'} = ... \end{array}} \tag{2}$$

Network Director

$$\frac{\begin{array}{r} \forall i \in ID_c(DS(i) = (v', q', \sigma') \wedge (v'(suspended) \vee q' = v' = \epsilon) \\ (y, m) = first\_message(Q) \wedge DS(y) = (v, q, \sigma) \end{array}}{\begin{array}{r} G \xrightarrow{\tau} (DS \longmapsto DS', Q \longmapsto Q') \wedge \\ DS^{'} = DS[y \longmapsto (v, q \oplus m, \sigma)] \wedge \\ Q^{'} = Q \backslash (y, m) \end{array}} \tag{3}$$

Go To

$$\frac{DS(x) = (v, q, (p\ goto\ m^{'})|\sigma) \wedge CS(p) = (m, \epsilon)}{\begin{array}{r} G \overset{\tau}{\Rightarrow} G[DS \longmapsto DS^{'}, CS \longmapsto CS^{'}) \wedge \\ DS^{'} = DS[x \longmapsto (c, q, \sigma)] \wedge \\ CS^{'} = CS[p \longmapsto (m^{'}, \epsilon)] \end{array}} \tag{4}$$

Delay Statement

$$\frac{DS(x) = (v, q, (delay(d)|\sigma))}{...} \tag{5}$$

$$\frac{CS(x) = (m, (cvar = expr)|\sigma)}{(DS, CS) \overset{\tau, cvar = eval(expr)}{\Rightarrow} (DS, CS[x \longmapsto (m, \sigma)])} \tag{6}$$

$$\frac{DS(x) = (v, q, (dvar = expr|\sigma))}{(DS, CS) \overset{\tau}{\Rightarrow} (DS', CS) \wedge DS' = DS[x \longmapsto (v[dvar \longmapsto eval(expr)], q, \sigma)]} \tag{7}$$

$$\frac{DS(x) = (v, q, (if expr \sigma else \sigma^{'}|\sigma^{''})) \wedge eval(expr) = True}{(DS, CS) \overset{\tau}{\Rightarrow} (DS', CS) \wedge DS' = DS[x \longmapsto (v, q, \sigma \oplus \sigma^{''})]} \tag{8}$$

$$\frac{DS(x) = (v, q, (if expr \sigma else \sigma^{'}|\sigma^{''})) \wedge eval(expr) = False}{(DS, CS) \overset{\tau}{\Rightarrow} (DS', CS) \wedge DS' = DS[x \longmapsto (v, q, \sigma' \oplus \sigma^{''})]} \tag{9}$$