Shutherland-Hodgman [1]

Remark. This protocol has one choice where the destination is not the same across all branches. This may or may not be allowed depending on the specific formal variant of MPST you choose.

$$P \to R \left\{ \mathit{Plane}(\langle \texttt{point}, \texttt{point}, \texttt{point}, \texttt{point} \rangle).\mu \texttt{t}.P \to R \left\{ \begin{array}{l} \mathit{IsAbove}(\texttt{point}).R \to P \left\{ \mathit{Res}(\texttt{bool}).P \to R \left\{ \mathit{IsAbove}(\texttt{point}).R \to P \left\{ \mathit{Res}(\texttt{bool}). \left\{ \begin{array}{l} P \to C \left\{ \mathit{BothIn}(\texttt{Point}).P \to R \left\{ \mathit{BothIn}.\texttt{t} \right\} \right\} \\ P \to C \left\{ \mathit{BothIn}(\texttt{Point}).P \to R \left\{ \mathit{BothIn}.\texttt{t} \right\} \right\} \\ P \to R \left\{ \mathit{Intersect}(\langle \texttt{Point}, \texttt{Point} \rangle).R \to P \left\{ \mathit{Res}(\texttt{point}).P \to C \left\{ \begin{array}{l} \mathit{SecOut}(\texttt{point}).\texttt{t} \\ \mathit{SecIn}(\langle \texttt{point}, \texttt{point} \rangle).\texttt{t} \end{array} \right\} \right\} \right\} \end{array} \right\} \right\} \right\} \right\} \\ \mathit{Close}.P \to C \left\{ \mathit{Close}.\texttt{end} \right\} \end{array} \right\} \right\}$$

References

[1] Rumyana Neykova, Raymond Hu, Nobuko Yoshida, and Fahd Abdeljallal. A session type provider: Compile-time API generation of distributed protocols with refinements in F#. In *Proceedings of the 27th International Conference on Compiler Construction*, pages 128–138, Vienna Austria, February 2018. ACM.