Negotiation [1]

Remark. Originally, this protocol was presented to showcase nested protocols. Here, we inline the protocol to fallback on more standard MPST.
In addition, here, to allow projection on I, we add a message from A to I, after $Accept/Counter$.
Participants:

- C: the client;

- I: an instrument the client wants to use;

- A: an agent that negotiate with the client the conditions of use of the instrument.

$$C \to A \left\{ Request.A \to I \left\{ Connect.I \to A \left\{ Available.A \to C \left\{ Ack.A \to C \left\{ Ask(\texttt{Terms}).\mu\texttt{n}.C \to A \left\{ Proposition(\texttt{Contract}).A \to C \left\{ \begin{array}{l} Accept.A \to I \left\{ Start.\mu\texttt{t}.C \to I \left\{ \begin{array}{l} Abort.\texttt{end} \\ Command(\texttt{Code}).I \to C \left\{ Result(\texttt{Data}).\texttt{t} \right\} \end{array} \right\} \right\} \\ Counter(\texttt{Contract}).A \to I \left\{ Wait.\texttt{n} \right\} \end{array} \right\} \right\} \right\} \right\} \right\} \right\} \right\}$$

References

[1] Romain Demangeon and Kohei Honda. Nested Protocols in Session Types. In David Hutchison, Takeo Kanade, Josef Kittler, Jon M. Kleinberg, Friedemann Mattern, John C. Mitchell, Moni Naor, Oscar Nierstrasz, C. Pandu Rangan, Bernhard Steffen, Madhu Sudan, Demetri Terzopoulos, Doug Tygar, Moshe Y. Vardi, Gerhard Weikum, Maciej Koutny, and Irek Ulidowski, editors, *CONCUR 2012 – Concurrency Theory*, volume 7454, pages 272–286. Springer Berlin Heidelberg, Berlin, Heidelberg, 2012.