

The problem is again rerun and, this time, agent A reports success in distributing the task across the society but later reports failure due to inadequate resources when it tried to actually perform its subpart of the job.

Using the reports tool, in a rerun, the user notes that following successful
 5 problem decomposition across the society, agents E, F, G and C successfully started and ran to completion their respective subparts of the job. However, agent D failed to achieve J12, which in turn caused the failure of agent B to achieve J1 and in turn that of agent A to achieve J.

The user reruns the scenario and uses the micro tool to monitor agent D.
 10 She notices that D successfully starts J12 but later stops it because J12 ran out of its allocated processor time (indicated by an execution monitor message). The control monitor is used to modify the definition of J12 to increase its estimated run-time.

The scenario is again rerun, and this time everything runs to completion.

15 Alternatively, task J12 may have had time to execute but produced the wrong outputs (ie the task body was wrongly specified). In this case, the micro tool will not detect that J12 ran out of time and the task body will have to be reviewed and corrected.

In a different fault scenario using the same arrangement of agents as
 20 shown in Figure 8, the statistics tool may instead show that agent C in fact sends out two requests (*Propose* messages) in respect of the J2 task, although three requests would be expected. It is now possible to form the hypothesis that the cause of failure is located in agent C, probably due to one or both of the following:

- 25 (i) an error in the specification of the J2 task. The task specification is expected to be $\{J21, J22, J23\} = \{J2\}$, that is, given J21, J22 and J23 then J2 can be produced. If there is an error in the specification, for example $\{J29, J22, J23\} = \{J2\}$ instead, then there would arise two *Propose* messages sent out for jobs J22 and J23, but no equivalent
 30 *Propose* message for J29. Agent C will not send out a *Propose* message for job J29 since it doesn't know of any other agent that can produce J29;
- (ii) an error in a specification in the acquaintance database of agent C. Assuming the task is properly specified, then the most likely reason why