

“post mortem” analysis. These messages are stored in a database from which relational queries can be made for more in-depth study of the interactions. This tool can be used to analyse either a single agent or a society of agents.

- A Statistics Tool: which captures various statistics on individual agents (e.g. the types and the numbers of messages being exchanged by agents). For example, it answers questions like ‘How many messages were sent from agent A to agent B during some particular time frame?’ or ‘Plot me the number of messages that Agent A has been receiving over time’, etc. The statistics tool provides pie and bar chart type visualisation of individual agent activities in addition to various graphs. With both the video and the statistics tools, you can select the agents of interest and study their recorded agents’ states more closely. This tool can be used to analyse either a single agent or a society of agents.
- A Micro Tool: which shows the internals of an agent to some degree of abstraction. Indeed, frequently just by watching the micro tool, the designer is able to ascertain if the agent is ‘dead’, ‘deadlocked’ or ‘alive’; alternatively, he or she may ascertain if parts of the agent’s internals are failing for some reason.
- A Reports Tool: this provides a GANTT chart type presentation of the overall task which an agent for example may be controlling. Typically, an agent enlists the help and services of many other agents, and this tool allows the designer to choose some particular agent and one task (of possible many tasks) that the agent is controlling. This shows up a GANTT chart of how it has decomposed the task (i.e. what sub-tasks there are), which tasks have been allocated to whom, where the execution of the task has reached, and what the statuses of the different sub-tasks are (e.g. running, failed, suspended or waiting).
- Control Monitor Tool: this is a very important administrative tool which is used for killing all agents, suspending some agents, suspending or failing some of the tasks they are performing in order to study the emerging exception behaviour, etc. This is also an important testing and debugging tool in the sense that certain agents may be suspending, killed from the society, etc. so that specific agents are studied more closely.

The visualiser 140 comprises a software agent having the same general framework as any other of the collaborative agents in a CABS system. It has the capability of pulling data off other agents in the system. It is passive in the sense