

task will take, logical descriptions for actually performing a task at the external system 125 and, in the case of complex tasks, the decomposition 560 mentioned above which is a list of sub-tasks within the complex task.

An output of the task is a callback 555, this being the instruction which is
5 output via the execution monitor 250 to the external system 125 to perform a relevant function. An example might be to run a facsimile activity. The logical description comprises a variable 550 which describes loading paper and dialling a facsimile network number. A decomposition 560 for the task would list sub-tasks such as detecting presence of the master sheet to be sent, or of a block of text
10 data in the correct buffer, detecting ring tone, detecting call pick up and commencing transmission, or detecting busy tone, storing the required number and retrying after a set time interval. (These are clearly sub-tasks which could not be done in parallel or divided amongst facsimile machines.) The callback 555 is the instruction to a facsimile machine in the real world to carry out the actual facsimile
15 activity.

Tasks and task definitions are discussed in more detail below (under the heading "4.5 Step 5: *Tasks Definition*").

2.8 Execution Monitor 250

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The execution monitor 250 has interfaces to the external system 125, to the planner and scheduler 220 and to the co-ordination engine and reasoning system 210.

The execution monitor 250 achieves an agent's goals by causing tasks to
25 be performed in the external system 125. For every task type in the CABS environment, a user-defined task call-back function is provided. When the execution monitor 250 decides to execute a particular task, it does so by calling the appropriate task call-back functions and outputting them to the external system 125.

30 To simplify the construction of CABS, the actual execution in these task call-back functions is simulated. On successful completion of a task, the execution monitor 250 will be signalled. Nonetheless, failure of task execution (e.g. there may have been a hardware problem in robot arms of the external system 125) can also be simulated. In these circumstances, the execution monitor