

In an "agent co-ordination" step 510, relevant to the coordination layer 410, user inputs determine the coordination and negotiation techniques for the agent.

The two other "layers" which will be present in each agent are shown in Figure 4. They are a communication layer 415, which handles technical aspects of inter-agent communication, and an application programming interface (API) layer 420 which provides an interface for external systems to add, modify or delete resources available to the agent. In the structure shown in Figure 2, the communication layer 415 will be provided by the mailbox 200 and the message handler 205. The API layer 420 will be provided by the interfaces between external systems 240 and the resource database 225 and the execution monitor 235. These are therefore both provided by the agent template 300 of Figure 3.

The user inputs required by the CABS methodology to the definition layer 400, the organisation layer 405 and the coordination layer 410 are structured according to the following six steps:

1. Domain study and agent *identification* 515,
2. Agent *definition* 500,
3. Agent(s) *organisation* 505,
4. Agent *coordination* strategy specification 510,
5. Tasks definition 520, and
6. Domain-specific problem solving code production 525.

Referring to Figures 3 and 5, the CABS platform provides visual programming editors via the user interface 305 to support and automate Steps 1-5. These steps should be performed iteratively until the developer is satisfied that the final suite of agents accurately depict the problem being modelled.

Use of the CABS platform to carry out Steps 1-6 is now described in more detail.

#### 4.1 Step 1: *Domain study and agent identification 515*

The CABS platform is for use by a developer who is the domain expert rather than a software agent expert. This first step will be carried out in a way