

JADE (Java Agent Development Framework)

JADE (Java Agent Development Framework) is a software framework fully implemented in Java language. It simplifies the implementation of multi-agent systems through a middle-ware that complies with the FIPA specifications and through a set of tools that supports the debugging and deployment phases. The agent platform can be distributed across machines (which not even need to share the same OS) and the configuration can be controlled via a remote GUI. The configuration can be even changed at run-time by moving agents from one machine to another one, as and when required. JADE is completely implemented in Java language and the minimal system requirement is the version 1.4 of JAVA (the run time environment or the JDK). [jade1]

It is developed by Telecom Italia, the last version (at the date of writing this tutorial) is version 4.3.0, released in march 29th 2013.

Another platform, based on Jade, called WADE (Workflow and Agents Development Environment) is also developed by Telecom Italia, and is called by [wiki1] the successor of Jade. The WADE is a platform agent based which provides support for the execution of tasks based on the workflow metaphor. It has a Eclipse plugin and a graphical editor called WOLF

There are other platforms for developing multiagent systems, between which we note OAA (Open Agent Architecture), developed by SRI International Artificial Intelligence Center [oaa], last version released in 2007. Another one is JACK Intelligent Agents, a commercial platform for developing multiagent systems in Java based on the BDI (Beliefs Desires Intentions) paradigm [jack]. It can be downloaded for academic use and contains an graphical editor for agent development.

JADE allows also building agents based on the BDI paradigm.

We will resume, for now to the JADE platform, distributed by [Telecom Italia](#), the copyright holder, in open source software under the terms of the LGPL (Lesser General Public License Version 2). Since May 2003, a [JADE Board](#) has been created that supervisions the management of the JADE Project. Currently the JADE Board lists 5members: [Telecom Italia](#), [Motorola](#), [Whitestein Technologies AG](#), [Profactor GmbH](#), and [France Telecom R&D](#) [jade1].

As you can probably deduce from the board membership of the JADE Board, multiagent systems have applications in telecommunication systems, among other fields including not at last economy application like auction platforms, traffic coordination and others.

Multiagent system paradigm is a live and expanding branch of Computer Science.

For the lab we need to download and install JADE. You have a link on my webpage <http://web.info.uvt.ro/~hpopa/IS/Jade/>.

Also you can install the eJade Eclipse plugin.

For this lecture/lab we will start with the tutorial from [jade2], chapters 1-3

And the tutorial from [jade3]. Interesting from that tutorial is how to start two Jade platforms, an agent on each one, then use the “Dummy Agent” facility offered by the platform to communicate through ACL messages, without using any programming at all. It will convince you (maybe) that using the platform is not entirely so difficult. You can also see from this tutorial (or the other 3 from the site) how to install Jade, configure it, test the platform, use more than one platform, eventually on another computer, how to communicate between agents from different platforms while in fact testing the functionality of your two platforms.

Eventually we will try to install and configure WADE <http://jade.tilab.com/wade/doc/WADE-User-Guide.pdf> . The download of WADE suite is from <http://jade.tilab.com/wade/html/download.php>

References:

[jade1] Jade official website, <http://jade.tilab.com/>

[jade2] JADE Tutorial and Primer, <http://www.iro.umontreal.ca/~vaucher/Agents/Jade/JadePrimer.html>

[jade3] Another Jade tutorial <http://jade.tilab.com/doc/tutorials/JADEAdmin/startJade.html>

[wiki1] Wikipedia page about Jade: http://en.wikipedia.org/wiki/Java_Agent_Development_Framework

[oaa] <http://www.ai.sri.com/~oaa/>

[jack] <http://www.agent-software.com.au/products/jack>