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Agent Review Phase One Report

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Abstract

This report summarizes the findings for phase one of the agent review and discusses the review methods and results. The phase one review identified a short list of agent systems that would prove most useful in the service architecture of an information management, analysis, and retrieval system. Reviewers evaluated open-source and commercial multi-agent systems and scored them based upon viability, uniqueness, ease of development, ease of deployment, and ease of integration with other products. Based on these criteria, reviewers identified the ten most appropriate systems. The report also mentions several systems that reviewers deemed noteworthy for the ideas they implement, even if those systems are not the best choices for information management purposes.

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ACRONYMS OR ABBREVIATIONS

ABLE: Agent Building and Learning Environment
AJA: Adaptable Java Agents
API: Application Programming Interface
BSD: Berkeley Software Distribution
CoAX :Coalition Agents eXperiment
DARPA: Defense Advanced Research Projects Agency
FIPA: Foundation for Intelligent Physical Agents
GPL: GNU General Public License
JADE: Java Agent DEvelopment Framework
LGPL: GNU Lesser General Public License
OAA: Open Agent Architecture

INTRODUCTION

This report is the result of the first phase of a three-phase review of existing agent systems. The overall goal of the reviews is to identify an agent system that will provide a good foundation for the interactions of an information storage, analysis, and retrieval system. The first phase, which this paper discusses, surveys many agent-based systems and identifies ten top candidates for further review. The second phase will examine those ten systems in more detail and evaluate them more thoroughly. The second phase will also involve writing a simple “hello world” example agent for each system. The third phase will examine three agent systems in even greater detail and discuss how adapting each system’s specific model for agent development will help guide the development of a specific information system.

This paper includes three main sections. The first section focuses on the overall set of agent systems and discusses the methodology for picking the agent systems and the criteria for evaluating them. This section also discusses some overall trends and insights gained from the review. The second section focuses on the evaluation of the top ten agent systems. This section examines and summarizes some of the features that make each agent system attractive as a phase two candidate. The third section points out some other notable agent systems or aspects of agent systems not included in the list of phase two systems.

Review results were recorded in a SharePoint list along with web links and various comments. The authors can provide the raw review data upon request.

OVERALL PHASE 1 REVIEW

Methodology

Collection Methodology

The reviewers collected and documented as many multi-agent systems as possible, including active projects with large developer communities as well as dormant projects. The review included general-purpose, extensible architectures as well as specialized, focused systems that professors or graduate students use to investigate very specific kinds of agent-based phenomena. Thus, the first review casts a broad net; subsequent reviews will reduce the number of systems under consideration.

Most (but not all) of the agent systems have a homepage, and most have either downloadable source code or binary executables.

The review includes a number of agent systems that the reviewers had previously known about and used (Repast Symphony in particular). The reviewers also found agent systems through web searches. A number of web sites included their own listings of agent systems. Table 1 lists the most useful sites.

Table 1. Sources of Lists of Agent Systems.

Name/Description	URL
Wikipedia Entry of Agent System Lists	http://en.wikipedia.org/wiki/Comparison_of_agent-based_modeling_software
Iowa State University List of Agent Systems	http://www.econ.iastate.edu/tesfatsi/acecode.htm
JASSS Survey of Agent Systems	http://jasss.soc.surrey.ac.uk/12/2/2.html
List from SWARM.org	http://www.swarm.org/index.php/Tools_for_Agent-Based_Modelling
Older list of FIPA compliant agents	http://www.fipa.org/resources/byorganisation.html

Evaluation Methodology

For each agent system, reviewers collected the following metadata:

- Project name
- URL to homepage
- Brief description, typically copied from the description on the homepage
- Review comments
- The country in which the project was started
- Programming language used to implement the system
- Programming languages supported by the system
- Supported operating systems
- Open-source or proprietary code
- License
- Cost

- Available documentation
- Available technical support
- Foundation for Intelligent Physical Agents (FIPA) compliance
- Viability score and comment
- Uniqueness score and comment
- Ease of development score and comment
- Ease of deployment score and comment
- Ease of integration score and comment
- Phase one status, which could be one of the following:
 - Eliminated – Dead project
 - Eliminated – Not an agent system
 - Eliminated – Not a relevant agent system
 - Eliminated – Not a phase two candidate
 - Phase two candidate

Because viability, uniqueness, and ease of development, deployment, and integration were the most subjective of the criteria, the review defined how these things were evaluated. For each of these criteria, each system received a score of 0, 1, 2, or 3. Tables 2 through 6 explain the criteria and scoring. Note that some scores are set to 0 because not enough information about a project is available or perhaps because the project itself is irrelevant.

Viability

“Viability” refers to the activity surrounding the project, codebase, and user community. A product is viable if it is released relatively frequently, has an active discussion forum, and has existed for several years. Simply being released as open source does not make a project viable. For example, the review identified examples of codebases that were uploaded to publicly available, open-source sites such as SourceForge (<http://www.sf.net>) or Google Code (<http://code.google.com>) but were not subsequently updated or maintained. Such projects, though open, did not receive a high viability rating. In some instances, projects may have been active for years, but the activity was clearly limited to a small research group working alone. Such a project may also have received a lower viability rating.

Table 2. Explanation of Viability Scores.

Score	Explanation
0	Not enough information about a project is available, or the project is irrelevant.
1	Either the project is dormant, or the owner has not built a community or kept the project up to date.
2	The project appears to be active (perhaps there are current publications), but there are no frequent releases or apparent developer discussions.
3	The project makes frequent releases, has an active discussion forum, and has an activity community from multiple organizations.

Uniqueness

“Uniqueness” is a measure of how a project differentiates itself from other projects based upon the ideas or underlying model that drives the system. Though this quality might at first seem

difficult to measure, in practice it was straightforward. A low-scoring project may be one in which a researcher explored an existing idea instead of a new one. A high-scoring project may demonstrate some new, specific perspective on how to build useful agent systems.

Table 3. Explanation of Uniqueness Scores.

Score	Explanation
0	Not enough information about a project is available, or the project is irrelevant.
1	The project implements but does not appear to extend standard ideas from other agent systems.
2	The project focuses on either a problem domain or a design and development methodology.
3	The project provides a novel approach to agent systems.

Ease of Development

“Ease of development” refers to the difficulty of using the software to build new agent systems. For example, a system that provides its own integrated development environment might facilitate development tasks; conversely, a system that requires developers to learn a new language may add to the development burden. Typically, agent systems that were simply sets of Java classes received a score of 2.

Table 4. Explanation of Ease of Development Scores.

Score	Explanation
0	Not enough information about a project is available, or the project is irrelevant.
1	Development within the framework is difficult and may require learning a custom language.
2	Development is moderately difficult and may involve a steep learning curve.
3	The system is designed for extensibility and easy development, and it may contain its own integrated development environment.

Ease of Deployment

“Ease of deployment” refers to the ease of deploying an agent system once it is built. Some agent systems include installers or other features that aid deployment.

Table 5. Explanation of Ease of Deployment Scores.

Score	Explanation
0	Not enough information about a project is available, or the project is irrelevant.
1	Deployment is difficult. The product does not include an installer or anything that facilitates deployment, and it may not be cross platform.
2	Deployment is moderately difficult. The software may be a stand-alone application or a set of Java classes that deploy as any other Java program.
3	Deployment is easy. The software includes built-in ways to provide installers or is inherently a distributed system.

Ease of Integration

Because the agent framework will serve as a foundation upon which other products will be added, including modules from third parties, the ability to integrate the framework with other products is critical. Systems that score highly for “ease of integration” generally support multiple languages or feature an object design that allows developers to add agent behaviors using their own source code. Generally, low-scoring systems may use their own language, may be domain specific, or may be stand-alone applications.

Table 6. Explanation of Ease of Integration Scores.

Score	Explanation
0	Not enough information about a project is available, or the project is irrelevant.
1	The system is difficult to integrate with other products. The system may be a stand-alone application, may require use of a custom language, or may be designed for a very specific domain.
2	The system is moderately difficult to integrate with other product, and may be simply a set of Java classes.
3	The system is easy to integrate with other products. System supports multiple languages or allows developers to program behaviors using their own models.

Overall Insights and Comments

The review team compiled a list of 159 projects to review. Of those, 16 are not actual agent systems but agent-related software. Of the remaining 143 agent systems, the reviewers determined that 36 are not relevant. Often, these are domain-specific products such as social or economic modeling systems that are not likely to be useful for building an information processing system. Of the remaining 107 systems, 59 are dormant or dead projects, most of which appear to have been abandoned around the year 2000. The reviewers did not include any dormant or dead projects in the ten projects recommended for phase two. However, some dormant projects explore some unique ideas or have interesting histories, and these are examined in the section “Other Systems and Ideas of Interest.” From the remaining 48 projects, the reviewers picked ten for phase two review. These projects generally have a high viability score, have an active developer community, and have the potential to be incorporated into an agent system. Table 7 lists the categories of reviewed systems. Attachment A lists the systems selected for phase two review, and Attachment B shows the review results for each system.

Table 7. Categories of Reviewed Systems.

Category	Number of Agent Systems
Phase two candidates	10
Not top 10 candidates	38
Dead projects	59
Not relevant agent systems	36
Not agent systems	16

As described above, reviewers scored each agent system from 0 to 3 in each of five categories: viability, uniqueness, ease of deployment, ease of development, and ease of integration. Each agent system could achieve maximum score of 15 points across the categories. The following figure shows how many agent systems received each possible score. Most systems scored somewhere in the middle, with the exception of a set of systems that scored 0. The latter systems were those for which reviewers found too little information or that reviewers deemed not relevant to the problem of information processing.

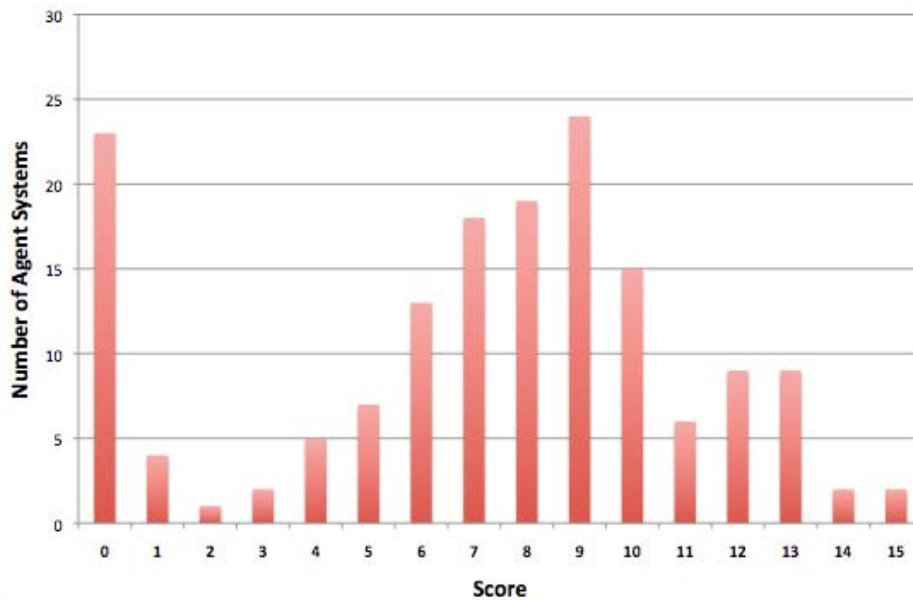


Figure 1. Number of Agent Systems with Various Score Totals.

PHASE 2 CANDIDATES

This section discusses the top candidates that reviewers picked for phase two review. All of these top candidates are Java-based.

The choice of an agent system is also a choice to introduce a particular agent-based model. As such, the reviewers tried to include variety of agent systems, each of which are relevant to information tasks, but each of which also somehow differentiates itself from the others. This ensures that the phase two review will not only evaluate various agent systems but will also evaluate various ways in which models can be used.

Repast Symphony

URL: <http://repast.sourceforge.net/>

License: BSD

Country of origin: USA

Repast is a well established, active, multi-agent system framework from Argonne National Laboratory. It is written as an Eclipse plug-in that allows programmers to develop within the agent framework and within Java simultaneously. Repast is geared toward modeling and simulation applications; the API allows programmers to write agents that do anything a Java agent can do. The key strengths of Repast are its maturity, its flexibility, and its extensibility in Java and Groovy.

AgentScape

URL: <http://www.agentscape.org/>

License: BSD

Country of origin: Netherlands

AgentScape is an active project that provides an agent middleware layer for distributed agent systems that emphasizes inter-agent communication and an “operating system” for agents. AgentScape’s open nature makes it particularly appealing; the system provides a communication infrastructure, but the applications running on that architecture are quite open. Even if AgentScape is not the system of choice, the API and underlying model may merit further investigation.

Cougaar

URL: <http://cougaar.org/>

License: BSD-style

Country of origin: United States

Cougaar is an open-source agent framework that has a sophisticated internal planning API and well designed security model. It was originally funded by DARPA. By taking advantage of the planning API, developers may save a great deal of time and effort; however, using Cougaar may also entail a high learning curve. Also, the project’s web site seems to have been quiet since 2007.

Java Agent DEvelopment Framework (JADE)

URL: <http://jade.tilab.com/>

License: GPL

Country of origin: Italy

JADE is a mature, FIPA-compliant, distributed, multi-agent system. FIPA-compliant communication can run across multiple hosts. The key advantages to JADE are standards compliance and the maturity of the project.

Ascape

URL: <http://ascape.sourceforge.net/index.html>

License: BSD

Country of origin: USA

Ascape is an Eclipse-based agent system. The project's proponents claim that non-programmers may use Ascape to build various kinds of models quickly and easily. The system appears to focus on modeling and simulation; however such an approach could facilitate user interaction with desktop-based assistants.

Jason

URL: <http://jason.sourceforge.net/JasonWebSite/Jason%20Home.php>

License: LGPL

Country of origin: Portugal

Jason is an interpreter for an extended version of AgentSpeak, a language that allows developers to build BDI-style agents. Including a system that uses a specialized language in phase two is valuable for exploring the idea of using an independent language for writing agent-based software. Jason appears to be a well established and maintained project.

CybelPro

URL: <http://products.i-a-i.com/>

License: LGPL

Country of origin: USA

The makers of CybelPro claim that their product is a popular, high-performance, distributed agent architecture. CybelPro is owned by a company that sells licenses for commercial versions of the product. This product is noteworthy as a widely used, generic agent architecture.

MadKit

URL: <http://www.madkit.org/>

License: GPL/LGPL

Country of origin: France

MadKit is a generic agent architecture that uses an agent/group/role model. MadKit claims to support a wide variety of languages and heterogeneity, and it also integrates Jess (a Sandia product).

Agent Building and Learning Environment (ABLE)

URL: <http://www.alphaworks.ibm.com/tech/able>

License: IBM's International License Agreement for Early Release of Programs

Country of origin: USA

ABLE is an interface and class library for building reasoning agents. ABLE is noteworthy for its focus on reasoning agents and its compliance with the JavaBeans specification.

Soar

URL: <http://sitemaker.umich.edu/soar/home>

License: BSD

Country of origin: USA

Soar is a well established generic cognitive architecture that has been in use for years. It is funded at least in part by DARPA. While the other agent systems in the candidate list support reasoning, Soar is the only one that specifically claims to be a cognitive architecture.

OTHER SYSTEMS AND IDEAS OF INTEREST

The agent systems that reviewers recommended for phase two were not the only ones of interest. Though many products are not suitable for the underlying agent framework, some aspects of them deserve mention; for example, 45 projects not included in the phase two list received high scores for uniqueness. This section describes six noteworthy projects not included in the phase two list.

The Coalition Agents eXperiment (CoAX) Effort

URL: <http://www.aiai.ed.ac.uk/project/coax/>

The CoAX effort, which was partially funded by DARPA, integrates products from many participants and appears to have finished in 2005. The project includes diverse participants and may be a good source of lessons learned.

Adaptable Java Agents (AJA)

URL: http://home.arcor.de/michal.badonsky/AJA/about_aja.html

Thesis: <http://home.arcor.de/michal.badonsky/AJA/thesis.pdf>

AJA is interesting in terms of how the developer implemented the agent development environment. The product claims to use an augmented Java language with additional agent-specific constructs.

Open Agent Architecture (OAA)

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

OAA claims to support a wide variety of programming languages, an attribute that may prove useful in applications that require heterogeneity.

Machinetta

URL: <http://teamcore.usc.edu/software.htm>

Machinetta focuses on mixed initiative interaction between people and agents. The developers have published information in Pita et al. (2009) that contains some relevant and interesting information for agent-based systems.

SimAgent

URL: <http://www.cs.bham.ac.uk/research/projects/poplog/packages/simagent.html>

SimAgent includes affect and emotion as part of the agent model.

Virtual Secretary

URL: <http://www.cs.bham.ac.uk/research/projects/poplog/packages/simagent.html>

Virtual Secretary is an older project, but it is relevant because of its mixed-initiative and user modeling. For more information, see Bellika et al. (1998a) and Bellika et al. (1998b).

CONCLUSIONS

This paper presents and explains the results of phase one of the multi-agent system review. The review examined 159 systems, ranked and scored them according to various criteria, and identified ten systems for phase 2 review. The reviewers also identified other systems that incorporate relevant and useful ideas.

REFERENCES

Bellika, J.G., G. Hartvigsen, and R.A.Widding, 1998a, Using User Models in Software Agents: The Virtual Secretary, IEEE Press. *Proceeding of the 3rd International Conference on Multi Agent Systems (ICMAS'98)*. Held June 4-7 in Paris, France.

Bellika, J.G., G. Hartvigsen, and R.A.Widding, 1998b, The Virtual Library Secretary – A user model based software agent, *Personal Technologies*, Vol. 2, No. 3, September 1998.

Pita, James, Manish Jain, Fernando Ordóñez, Milind Tambe, Sarit Kraus, Reuma Magori-Cohen, 2009, Effective Solutions for Real-World Stackelberg Games: When Agents Must Deal with Human Uncertainties, *The Eighth International Conference on Autonomous Agents and Multiagent Systems*.

APPENDIX A – PHASE 2 CANDIDATES

Agent System	URL	Origin	License	Language
Repast Symphony	http://repast.sourceforge.net/	USA	BSD	Java, Groovy, and C++
AgentScape	http://www.agentscape.org/	Netherlands	BSD	Java
Cougaar	http://cougaar.org/	USA	BSD-style "Cougaar Open Source License" (COSL)	Java
JADE	http://jade.tilab.com/	Italy	LGPL	Java
Ascape	http://ascape.sourceforge.net/index.html#Introduction	United States	BSD, Eclipse Public License	Java
Jason	http://jason.sourceforge.net/JasonWebSite/Jason%20Home.php	Portugal	LGPL	Java
CybelPro	http://products.i-a-i.com/	USA	IAI Commercial License	Java
Madkit (Multi Agent Development Kit)	http://www.madkit.org/	France	GPL/LGPL	Java
ABLE (Agent Building and Learning Environment)	http://www.alphaworks.ibm.com/tech/able	USA	IBM's International License Agreement for Early Release of Programs	Java
Soar	http://sitemaker.umich.edu/soar/home	USA	BSD	Java

APPENDIX B - ALL SYSTEMS REVIEWED

The reviewed systems are ordered by score. Notes and details are available in the spreadsheet.

Project Name	Homepage	Phase 1 Status	Country Of Origin	License
Repast Symphony	http://repast.sourceforge.net/	Phase 2 Candidate	USA	BSD
JESS	http://herzberg.ca.sandia.gov/jess/	Eliminated - Not An Agent System	USA	
AnyLogic	http://www.xjtek.com/	Eliminated - Not a Relevant Agent System	Russia	Commercial
AgentScape	http://www.agentscape.org/	Phase 2 Candidate	Netherlands	BSD
Cougaar	http://cougaar.org/	Phase 2 Candidate	USA	BSD-style "Cougaar Open Source License" (COSL)
JADE	http://jade.tilab.com/	Phase 2 Candidate	Italy	LGPL
INGENIAS	http://grasia.fdi.ucm.es/main/?q=en/node/127	Eliminated - Not a top 10 Candidate	Spain	GPL
Ascape	http://ascape.sourceforge.net/index.html#Introduction	Phase 2 Candidate	United States	BSD, Eclipse Public License
GROWlab	http://www.icr.ethz.ch/research/growlab	Eliminated - Not a Relevant Agent System	Switzerland	unspecified
MATLAB	http://www.mathworks.com/index.html?ref=logo&s_cid=docframe_homepage	Eliminated - Not An Agent System	USA	Commercial
Lost Wax Agent Framework	http://www.lostwax.com/solutions/products/agentframework/	Eliminated - Not a top 10 Candidate	United Kingdom	Unknown - likely commercial
Jason	http://jason.sourceforge.net/JasonWebSite/Jason%20Home.php	Phase 2 Candidate	Portugal	LGPL
MATSim	http://www.matsim.org/	Eliminated - Not a Relevant Agent System	Switzerland	GPL
breve	http://www.spiderland.org/breve/	Eliminated - Not a top 10 Candidate	USA	GPL
D-OMAR (Distributed Operator Model Architecture)	http://omar.bbn.com/	Eliminated - Not a top 10 Candidate	USA	BSD
Framsticks	http://www.framsticks.com/	Eliminated - Not a Relevant Agent System	USA	
SEAS (System Effectiveness Analysis Simulation)	http://www.teamseas.com/	Eliminated - Not a Relevant Agent System	USA	Government Use
ACT-R	http://act-r.psy.cmu.edu/	Eliminated - Not a top 10 Candidate	USA	
Comet Way Agent Kernel	http://www.agentkernel.com/content.agent?page_name=Home	Eliminated - Not a Relevant Agent System	USA	GPL
CybelPro	http://products.i-a-i.com/	Phase 2 Candidate	USA	IAI Commercial License
Jacomma	http://jacomma.sourceforge.net/	Eliminated - Dead Project	United Kingdom	LGPL
MASS (Multi-Agent Simulation Suite)	http://mass.aitia.ai/	Eliminated - Not a top 10 Candidate	Hungary	GPL
ECJ	http://cs.gmu.edu/~eclab/projects/ecj/	Eliminated - Not An Agent System	USA	Academic Free License version 3.0
Madkit (Multi Agent Development Kit)	http://www.madkit.org/	Phase 2 Candidate	France	GPL/LGPL
SeSAM (Shell for Simulated Agent Systems)	http://www.simsesam.de/	Eliminated - Dead Project	Germany	GPL
Swarm	http://www.swarm.org/	Eliminated - Not a top 10 Candidate	USA	GPL

Project Name	Homepage	Phase 1 Status	Country Of Origin	License
AJA (Adaptable Java Agents)	http://home.arcor.de/michal.badonsky/AJA/about_aja.html	Eliminated - Dead Project	Germany	GPL
OpenCog	http://www.opencog.org/wiki/The_Open_Cognition_Project	Eliminated - Not a top 10 Candidate	USA	GPL
ABLE (Agent Building and Learning Environment)	http://www.alphaworks.ibm.com/tech/able	Phase 2 Candidate	USA	IBM's International License Agreement for Early Release of Programs
Adaptive Modeler (Altrev)	http://www.altreva.com/	Eliminated - Not a Relevant Agent System	Netherlands	unspecified
AgentSheets	http://www.agentsheets.com/	Eliminated - Not a Relevant Agent System	USA	unspecified
Brahms	http://www.agentisolutions.com/index.htm	Eliminated - Not a top 10 Candidate	USA	BSD
LSD (Laboratory for Simulation Development)	http://www.business.aau.dk/~mv/newsite/LsdInfo/index.html	Eliminated - Not a top 10 Candidate	Italy	GPL
SimPack	http://www.cis.ufl.edu/~fishwick/simpack/simpack.html	Eliminated - Not a Relevant Agent System	USA	GPL
Soar	http://sitemaker.umich.edu/soar/home	Phase 2 Candidate	USA	BSD
cyb	http://translate.google.com/translate?u=http://www.agentscape.de/products/de/html/products_cyb.html&sl=de&tl=en&hl=en&ie=UTF-8	Eliminated - Not a top 10 Candidate	Germany	
Open Agent Architecture	http://www.ai.sri.com/~oaa/	Eliminated - Dead Project	USA	GPL
Living Systems	http://www.whitestein.com/	Eliminated - Not a Relevant Agent System	Switzerland	Commercial
Vensim	http://www.vensim.com/software.html	Eliminated - Not a Relevant Agent System	Brazil	Commercial
FishMarket	http://www2.iiaa.csic.es/Projects/fishmarket/newindex.html	Eliminated - Dead Project	Spain	Unclear – Source code is not included in the download
metaABM	http://www.metascapeabm.com/index.php?option=com_content&task=view&id=19&Itemid=36	Eliminated - Not An Agent System	USA	BSD
The Communicator	http://www.cs.cmu.edu/~softagents/communicator.html#download	Eliminated - Not An Agent System	USA	unspecified
ALADDIN	http://www.aladdinproject.org/	Eliminated - Not a top 10 Candidate	United Kingdom	BSD
Semantic Agent	http://code.google.com/p/semanticagent/	Eliminated - Not a top 10 Candidate	France	GPL
NetLogo	http://ccl.northwestern.edu/netlogo/	Eliminated - Not a Relevant Agent System	USA	
MAST	http://www.emse.fr/~vercouter/mast/index.html	Eliminated - Dead Project	France	Apache
ADK (Tryllian Agent Development Kit)	http://www.tryllian.org	Eliminated - Not a top 10 Candidate	Netherlands	LGPL and a proprietary license
AgentBuilder Pro	http://www.agentbuilder.com/Documentation/Pro/index.html	Eliminated - Not a top 10 Candidate	USA	
DeX	http://dextk.org/dex/index.html	Eliminated - Not a top 10 Candidate	USA	BSD
ECHO	http://www.santafe.edu/~pth/echo/	Eliminated - Not a top 10 Candidate	USA	BSD
JAS	http://jaslibrary.sourceforge.net/	Eliminated - Dead Project	Italy	LGPL
JASA (Java Auction Simulator API)	http://sourceforge.net/projects/jasa/	Eliminated - Not a Relevant Agent System	unknown	GNU
MAML (Multi-Agent Modeling Language)	http://www.maml.hu/	Eliminated - Dead Project	Italy	GNU
simjava	http://www.dcs.ed.ac.uk/home/hase/simjava/	Eliminated - Dead Project	United Kingdom	

Project Name	Homepage	Phase 1 Status	Country Of Origin	License
StarLogo TNG	http://education.mit.edu/starlogo-tng/	Eliminated - Not a Relevant Agent System	USA	GNU
SCALLOPS	http://www-ags.dfki.uni-sb.de/~klusck/scallops/	Eliminated - Dead Project	Germany	unspecified
Ara Platform for Mobile Agents	http://www.wagss.informatik.uni-kl.de/Projekte/Ara/index_e.html	Eliminated - Dead Project	Germany	GNU-ish
SOMA: Secure and Open Mobile Agent	http://lia.deis.unibo.it/Research/SOMA/	Eliminated - Dead Project	Italy	Unclear - you have to contact them directly to get the software.
Sociodynamica	http://atta.labb.usb.ve/Klaus/Programas.htm	Eliminated - Not a top 10 Candidate	Venezuela	unspecified
3APL	http://www.cs.uu.nl/3apl/	Eliminated - Dead Project	Netherlands	Compiled jars available for download. Licence not clear
agentTool	http://agenttool.cis.ksu.edu/index.php?option=com_content&task=view&id=2&Itemid=2	Eliminated - Not a top 10 Candidate	USA	unspecified
JATLite Beans	http://waitaki.otago.ac.nz/JATLiteBean/	Eliminated - Dead Project	United Kingdom	GPL
Lyntin	http://lyntin.sourceforge.net/	Eliminated - Dead Project	unknown	GPL
TKQML Agent Development Package	http://www.csee.umbc.edu/tkqml/	Eliminated - Not An Agent System	USA	unspecified
Machinetta	http://teamcore.usc.edu/software.htm	Eliminated - Dead Project	United States	Unclear - source code is included in the download
NABLE		Eliminated - Not a Relevant Agent System	USA	
UNIX Mobile Agents	http://freshmeat.net/projects/uma	Eliminated - Dead Project	United States	BSD
AOR Simulation	http://oxygen.informatik.tu-cottbus.de/aor/?q=node/2	Eliminated - Not a top 10 Candidate	Germany	GPL
JCA-Sim	http://www.jweimar.de/jcasim/jcasim.html	Eliminated - Dead Project	Germany	GNU
MIMOSE (Micro- und Multilevel Modelling Software)	http://www.uni-koblenz.de/~moeh/projekte/mimose.html	Eliminated - Dead Project	Germany	
SimAgent (also sim_agent)	http://www.cs.bham.ac.uk/research/projects/poplog/packages/simagent.html	Eliminated - Dead Project	United Kingdom	GPL
CHREST	http://people.brunel.ac.uk/~hssrrls/chrest/index.php	Eliminated - Not a top 10 Candidate	United Kingdom	
VisualBots	http://www.visualbots.com/	Eliminated - Dead Project	Venezuela	
Network Agents	http://sourceforge.net/projects/networkagent/	Eliminated - Dead Project		GPL
JATLite (Java Agent Template, Lite)	http://www-cdr.stanford.edu/ProcessLink/papers/JATL.html#WhatIsJATLite	Eliminated - Dead Project	USA	GPL
Z-Tree	http://www.iew.uzh.ch/ztree/index.php	Eliminated - Not a Relevant Agent System	Switzerland	Freely available binary if you cite their paper
Ada for Agent-Based Simulation	https://libre2.adacore.com/	Eliminated - Not An Agent System	USA	GPL
Agent and Agent TCL	http://www.cpan.org/modules/by-category/23_Miscellaneous_Modules/Agent/	Eliminated - Not a top 10 Candidate	USA	GNU
DIET Agents	http://diet-agents.sourceforge.net/	Eliminated - Dead Project	United Kingdom	GPL
OSCAR	http://oscarhome.soc-sci.arizona.edu/ftp/OSCAR-web-page/oscar.html	Eliminated - Not a top 10 Candidate	USA	OSI-Approved Open Source
Pyro (Python Robotics)	http://pyrorobotics.org/	Eliminated - Not a Relevant Agent System	USA	GNU
Agent Foundation Classes (AFC)	http://www.cs.cmu.edu/~softagents/afc.html	Eliminated - Dead Project	USA	CMU Software

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RETSINA	http://www.cs.cmu.edu/~softagents/retsina.html	Eliminated - Dead Project	USA	GNU
Metaglu	http://aire.csail.mit.edu/software.shtml	Eliminated - Dead Project	USA	unspecified
EcoLab	http://sourceforge.net/projects/ecolab/	Eliminated - Not a top 10 Candidate	Australia	Public Domain
KAOs	http://ksi.cpsc.ucalgary.ca/KAW/KAW96/bradshaw/KAW.html	Eliminated - Not a top 10 Candidate	USA	Unknown.
MASON	http://cs.gmu.edu/~eclab/projects/mason/	Eliminated - Dead Project	USA	GPL
Information Ecosystems	http://www.cisa.inf.ed.ac.uk/SLIE/index.html	Eliminated - Dead Project	United Kingdom	GPL
Cormas	http://cormas.cirad.fr/indexeng.htm	Eliminated - Not a Relevant Agent System	France	Ambiguous - they say it is "free" and in the "public domain," but the put some restrictions on redistribution.
FAMOJA (Framework for Agent-based MOdeling with JAVa)	http://www.usf.uos.de/projects/famoja/	Eliminated - Not a Relevant Agent System	Denmark	BSD
GPU Agents	http://www.me.mtu.edu/~rmdsouza/ABM_GPU.html	Eliminated - Not a Relevant Agent System	USA	
jES (Java Enterprise Simulator)	http://web.econ.unito.it/tema/jes/	Eliminated - Dead Project	Italy	unspecified
SDML (Strictly Declarative Modeling Language)	http://cfpm.org/sdml/	Eliminated - Dead Project	United Kingdom	GPL
StarLogo	http://education.mit.edu/starlogo/	Eliminated - Not a Relevant Agent System	USA	GNU
D'Agents	http://agent.cs.dartmouth.edu/	Eliminated - Dead Project	USA	GNU
Ajanta	http://ajanta.cs.umn.edu/	Eliminated - Dead Project	USA	
DECAF (Distributed, Environment-Centered Agent Framework)	http://www.eecis.udel.edu/~decaf/	Eliminated - Dead Project	USA	GNU
Traveling Agents	http://sourceforge.net/projects/tagents/	Eliminated - Dead Project	Spain	GNU
Kaariboga Mobile Agents	http://www.projectory.de/kaariboga/index.html	Eliminated - Dead Project	Germany	BSD
sa (Sensible Agents)	http://www-ips.ece.utexas.edu/agents.html	Eliminated - Not a top 10 Candidate	USA	Unknown.
Trade Network Game (TNG)	http://www.econ.iastate.edu/tesfatsi/tnghome.htm	Eliminated - Not a Relevant Agent System	Venezuela	Artistic License Agreement
Remembrance Agent (Remem)	http://www.remem.org/	Eliminated - Not a top 10 Candidate	USA	GNU
CoAX - Coalition Agents eXperiment	http://www.aiai.ed.ac.uk/project/coax/	Eliminated - Dead Project	United States	unspecified (see notes field)
Distributed Constraint Optimization Problem (DCOP)	http://teamcore.usc.edu/dcop/	Eliminated - Dead Project	USA	unspecified
Construct	http://www.casos.cs.cmu.edu/projects/coconstruct/index.php	Eliminated - Not a Relevant Agent System	USA	educational use only
MAGSY	http://www-ags.dfki.uni-sb.de/~kuf/magsy.html	Eliminated - Dead Project	Germany	unspecified
MOOSE (Multimodeling Object-Oriented Simulation Environment)	http://www.cise.ufl.edu/~fishwick/moose.html	Eliminated - Dead Project	USA	GPL

Project Name	Homepage	Phase 1 Status	Country Of Origin	License
PS-I (Political Science-Identity)	http://ps-i.sourceforge.net/	Eliminated - Not a Relevant Agent System	USA	GPL
SimBioSys	http://www.lucifer.com/~david/SimBioSys/	Eliminated - Not a Relevant Agent System	Canada	Artistic License Agreement
SME (Spatial Modeling Environment)	http://www.uvm.edu/qiee/SME3/	Eliminated - Not a Relevant Agent System	USA	GPL
CLARION	http://www.cogsci.rpi.edu/~rsun/clarion.html	Eliminated - Dead Project	USA	GNU
ZEUS	http://labs.bt.com/projects/agents/zeus/	Eliminated - Dead Project	USA	GNU
Aglets Software Development Kit (ASDK)	http://sourceforge.net/projects/aglets	Eliminated - Dead Project	USA	IBM Public License
Hive	http://hive.sourceforge.net/	Eliminated - Dead Project	USA	GPL
JAM and UMPRS	http://www.marcush.net/IRS/irs_downloads.html	Eliminated - Dead Project	USA	GPL
Java Agent Template	http://www-cdr.stanford.edu/ABE/JavaAgent.html	Eliminated - Dead Project	USA	GNU
Composable Heterogeneous Agents for Intelligent Notification (CHAIN™)	http://coabs.globalinfotek.com/	Eliminated - Not a top 10 Candidate	USA	commercial
Pade	http://code.google.com/p/pade/	Eliminated - Not a top 10 Candidate	unknown	GPL
ROSE	http://mas-rose.sourceforge.net/	Eliminated - Not a top 10 Candidate	Poland	Public Domain
Indy.Agents	http://www.indyproject.org/Agents/index_en.aspx	Eliminated - Dead Project	unknown	Dual License: BSD AND Indy MPL
Robotics 4.NET	http://r4n.codeplex.com/	Eliminated - Not a Relevant Agent System	unknown	Ms-PL
CUDA	http://www.nvidia.com/object/cuda_home.html#	Eliminated - Not An Agent System	USA	
Moduleco	http://www.cs.manchester.ac.uk/ai/public/moduleco/	Eliminated - Dead Project	France	GPL
Intelligent Service Layer (ISL)	http://coabs.globalinfotek.com/	Eliminated - Not An Agent System	USA	PHP License
DUAL	http://alexpetrov.com/proj/dual/	Eliminated - Dead Project	Bulgaria	unknown
MECCA		Eliminated - Dead Project	Germany	
pastiche (previously spyse)	http://code.google.com/p/pastiche/	Eliminated - Not a top 10 Candidate	Netherlands	GPL
TACOMA	http://www.tacoma.cs.uit.no/	Eliminated - Dead Project	Norway	Q Public License
Virtual Secretary	http://www.vise.cs.uit.no/vise/	Eliminated - Dead Project	Norway	Free for all research purposes
Narval	http://www.logilab.org/project/narval	Eliminated - Not a top 10 Candidate	France	LGPL
SOARS -Spot Oriented Agent Role Simulator	http://soars.jp/	Eliminated - Not a Relevant Agent System	Japan	Unclear, source not provided without providing personal information.
oRIS	http://www.enib.fr/~harrouet/	Eliminated - Not a Relevant Agent System	France	
iGen	http://www.chisystems.com/products/products_igen.htm	Eliminated - Dead Project	USA	
OBEUS (Object Based Environment for Urban Simulation)	http://www.enib.fr/~harrouet/oris.html	Eliminated - Dead Project	France	GPL
Omonia (previously Quicksilver)	http://www.xlog.ch/omonias/	Eliminated - Not a top 10 Candidate	Switzerland	LGPL

Project Name	Homepage	Phase 1 Status	Country Of Origin	License
VSEit	http://www.vseit.de/	Eliminated - Not a Relevant Agent System	Germany	GNU
ACLANalyser	http://ants.dif.um.es/staff/emilioserra/ACLANalyser/	Eliminated - Not An Agent System	Spain	Public Domain
TRAM - Transactional Agent Modeling	http://homepages.shu.ac.uk/~cmsrh1/tram/	Eliminated - Not An Agent System	United Kingdom	GNU and LGPL
jEcho	http://www.brianmcindoe.com/	Eliminated - Not a top 10 Candidate	United Kingdom	
MAS-SOC (Multi-Agent Simulations for the SOCIAL Sciences)	http://inf.ufrgs.br/massoc	Eliminated - Not a top 10 Candidate	Brazil	
Jade's sim++		Eliminated - Dead Project	Unknown	GPL
SimPlusPlus	http://www.simplusplus.com/	Eliminated - Not a Relevant Agent System	USA	GPL
ICARUS	http://ccl.stanford.edu/research/ongoing/icarus/	Eliminated - Not a top 10 Candidate	USA	unknown
MacStarLogo		Eliminated - Not a Relevant Agent System	USA	GNU
OpenStarLogo	http://education.mit.edu/openstarlogo/	Eliminated - Not a Relevant Agent System	USA	GNU
StarLogoT	http://ccl.northwestern.edu/cm/starlogoT/	Eliminated - Not a Relevant Agent System	USA	GNU
Sugarscape	http://sugarscape.sourceforge.net/	Eliminated - Not a Relevant Agent System	USA	GPL
Agentcities.RTD and Agentcities.NET		Eliminated - Dead Project		GPL
Concordia	http://www.merl.com/projects/concordia/WWW/	Eliminated - Dead Project	USA	unspecified
Gambit	http://gambit.sourceforge.net/	Eliminated - Not An Agent System	USA	GNU
BlueJ	http://www.bluej.org/	Eliminated - Not An Agent System	Australia and Denmark	GNU
Boids Algorithm: Coordinated Animal Motion (Multiple Third-Party Programs)	http://www.red3d.com/cwr/boids/	Eliminated - Not An Agent System	USA	GNU
ALICEBOT	http://alicebot.blogspot.com/	Eliminated - Not An Agent System	USA	GPL
Penguin!	http://www.cpan.org/modules/by-category/23_Miscellaneous_Modules/Penguin/FSG/	Eliminated - Not An Agent System	Unknown	unspecified
UMPRS (listed under JAM too)	http://www.marcush.net/IRS/	Eliminated - Dead Project	USA	GNU
WebMate	http://www.cs.cmu.edu/~softagents/webmate/	Eliminated - Dead Project	USA	unspecified
PlatBox	http://platbox.sfc.keio.ac.jp/	Eliminated - Not a top 10 Candidate	Japan	unspecified
Modelling4All	http://modelling4all.nsms.ox.ac.uk/index.html	Eliminated - Not a Relevant Agent System	United Kingdom	LGPL
Omega-AB	https://giskard.sandia.gov/trac/omega-ab	Eliminated - Not a top 10 Candidate	USA	

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