

Forrester Research, Inc.

# Adaptive Agents Boost Supply Network Flexibility

March 11, 2002

by Navi Radjou

**Figure 1: Cooperating Adaptive Agents Will Boost Supply Networks' Adaptability**

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#### Concepts: the basics about agent technology

##### Online resources

Agentcities

<http://www.agentcities.org>

##### Description

Initiative funded by the European Union to help realize commercial and research potential of agent-based apps.

The Swarm Development Group

<http://www.swarm.org>

Nonprofit organization dedicated to advancing the state-of-the-art in multiagent-based simulation.

UMBC AgentWeb

<http://agents.umbc.edu>

Information portal on intelligent agents maintained by the University of Maryland.

##### Books

Jeffrey M. Bradshaw, ed., "Software Agents," MIT Press, 1997.

Jacques Ferber, "Multi-Agent Systems: An Introduction to Distributed Artificial Intelligence," Addison-Wesley, 1999.

Weiming Shen, Douglas H. Norrie, and Jean-Paul A. Barthes, "Multi-Agent Systems for Concurrent Intelligent Design And Manufacturing," Taylor & Francis, 2001.

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#### Standards: agent-related standards initiatives

##### Online resources

Agent Unified Modeling Language (AAML)

Web site

<http://www.auml.org>

##### Description

The agent UML team is developing vendor-neutral common semantics, metamodel, and abstract syntax for agent-based methodologies. It is working on creating agent-based extensions to UML.

FIPA

<http://www.fipa.org>

Nonprofit organization that leads efforts to produce agent-interoperability standards. It has 70 members, including British Telecom, Fujitsu, Hewlett-Packard, IBM, Intel, NASA, Siemens, Sun Microsystems, and The MITRE Corporation.

Java Agent Services

<http://www.java-agent.org>

The Java Agent Services project is an initiative to define an industry-standard specification and API for the development of network agent and service architectures.

OMG Agent Platform Special Interest Group

<http://www.objs.com/agent/index.html>

This group aims to extend the OMG Object Management Architecture (OMA) to support agent technology better.

WebOnt Working Group and DARPA Agent Markup Language Program

<http://w3.org/2001/sw/WebOnt>

<http://www.daml.org>

They aim to create agent-processable RDF definitions in data dictionaries.

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Case studies: selected case studies on agent implementations at Global 3,500 firms

#### Case studies

DaimlerChrysler's factory in  
Stuttgart-Untertürkheim  
(shop floor scheduling)  
[http://www.agentlink.org/agents-  
london/presentations/DaimlerCh.ppt](http://www.agentlink.org/agents-london/presentations/DaimlerCh.ppt)

#### Description

Multiagent system coordinates cylinder-head production  
via a 60-stage process. Like an auction system, work  
orders offer themselves to machines bidding the highest.

Deutsche Post's PORTIVAS  
(eProcurement)  
<http://www.portivas.de>

Private hub that will automate and optimize Deutsche  
Post's trucking services procurement. PORTIVAS is built  
on living systems' agent-technology platform.

General Motors' truck plant in  
Fort Wayne, Ind.  
(shop floor scheduling)  
[http://www.cbi.cgey.com/events/pubconf/1997-  
04-5/proceedings/casesinchaos.pdf](http://www.cbi.cgey.com/events/pubconf/1997-04-5/proceedings/casesinchaos.pdf)

Each paint booth, equipped with an agent using a simple  
set of programmed logic, bids on each truck to be  
painted based on a few priorities.

Procter & Gamble  
(order fulfillment)  
[http://www.biosgroup.com/solutions/solutions\\_  
popups/cs\\_pg.html](http://www.biosgroup.com/solutions/solutions_popups/cs_pg.html)

Agent-based simulation identified ways to reduce order  
fulfillment costs by 30%.

Southwest Airlines  
(transportation)  
[http://www.biosgroup.com/solutions/solutions\\_  
popups/cs\\_southwestcargo.html](http://www.biosgroup.com/solutions/solutions_popups/cs_southwestcargo.html)

Agents made cargo routing more efficient, saving  
Southwest \$10 million in labor costs.

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Development tools: publicly available development tools to prototype agent-based apps

Online tools	URL
Aglets (IBM)	<a href="http://www.tri.ibm.com/aglets">http://www.tri.ibm.com/aglets</a>
April Agent Platform	<a href="http://www.nar.fujitsulabs.com/aap">http://www.nar.fujitsulabs.com/aap</a>
	<a href="http://sourceforge.net/projects/networkagent">http://sourceforge.net/projects/networkagent</a>
Comtec Agent Platform	<a href="http://ias.comtec.co.jp/ap">http://ias.comtec.co.jp/ap</a>
FIPA-OS	<a href="http://fipa-os.sourceforge.net">http://fipa-os.sourceforge.net</a>
Grasshopper	<a href="http://www.grasshopper.de">http://www.grasshopper.de</a>
JACK Intelligent Agents	<a href="http://www.agent-software.com/shared/home/index.html">http://www.agent-software.com/shared/home/index.html</a>
JADE	<a href="http://sharon.csel.it/projects/jade">http://sharon.csel.it/projects/jade</a>
LEAP	<a href="http://leap.crm-paris.com">http://leap.crm-paris.com</a>
Zeus	<a href="http://www.labs.bt.com/projects/agents/zeus">http://www.labs.bt.com/projects/agents/zeus</a>

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