Chapter V
Interaction of Agent in E-Business:
A Look at Different Sources

Jorge A. Romero
Towson University, USA

ABSTRACT

Despite the popularity of agents for the information technology infrastructure, questions remain because it is not clear what do e-business agents do for businesses and what could they do for consumers. Who benefits most from agents? Are they practical? Can we trust them? Are they as efficient as human agents? Are they already implemented in online businesses? In this chapter, we will discuss the role that agents play in e-business applications.

INTRODUCTION

Imagine this scenario: where the space on your hard drive is getting low so your computer deletes some old video files you have already watched. It is Sunday and you are low on milk, eggs, salt, and some other essentials, so your refrigerator orders more groceries; the toner in your printer is low, so it orders more toner; you receive an e-mail from your credit card company and the e-mail is replied automatically, all of this is done without any effort from you. You are probably thinking that these technologies are not yet available, but all of these

things are possible. These tasks and many more can all be performed by e-business agents. Beyond just moving an e-mail from your credit company to a folder, your agent can receive an e-mail from a new credit card company, make a folder for future emails from that company and will begin moving older e-mails to an archive folder without asking you. But your agent does not move all the e-mails from your credit card company to the archive. Your agent leaves your monthly statements from your credit card in your inbox because it knows that you would like to review your bill before you pay it. Instead of just ordering milk and eggs, your refrigerator

also orders meat and some bread, anticipating your needs. An agent does not just perform the tasks you ask it to complete; an agent may make assumptions and perform tasks based on past experiences. An agent can order meals that it believes you will enjoy, or it might order a generic toner in case it knows that you do not have preference for a specific brand. One of the most common agents consumers own is Tivo[1]. Tivo can record television shows that it is programmed to record, and it also makes inferences on the shows it thinks you may want to watch.

Business agents are supposed to guide people where they need to go, and help a company make informed decisions, make recommendations, and if given the authority, hire employees, make purchases, and overall, help the company to run smoothly and efficiently. Similarly, e-business agents, sometimes referred to as digital agents, virtual agents, software agents, or intelligent agents, do many different things for people and business and must therefore be evaluated in order to determine what services they can best provide.

According to Weiss (2001), agents are a new paradigm and concept for developing software applications, and these are most prominent in e-business for agent based technology. These agents are used in many different applications, not only on a small scale but also on a large scale. Weiss (2001) states that while there is no universally accepted concept of what an agent is in terms of e-business, he identifies four widely accepted properties which are used to characterize agents: autonomy (autonomous computational entities), social ability (ability to interactive with other agents), reactivity (ability to interact with they environment), and proactiveness (ability to achieve own goals). An agent technology can also be described as a computational system that runs independently, communicates asynchronously, and can run dynamically on several processes, several machines, and can support the anonymous interoperation of agents (Helal et al., 1999).

Agents are autonomous computational devices that can interact with their environment including other agents in order to achieve their goals. Agents will have the ability to adjust to their environment and have some intelligence. Agents can represent individuals thus acting as delegates or they can act on behalf of groups thus acting as mediators.

A key difference between objects and agents is their autonomy of action (Weiss, 2001). Agents operate under their own control, can work for a long period, take initiative, react to stimuli guided by their goals, and leverage their ability to achieve their goals. A society of agents can be viewed as one that results because of agent interaction or a group of agents that operate under common restriction. A catalog of agent interaction patterns can be used to construct the agent society. The pattern of interaction may also specify constraints or policies that must be fulfilled. Policies define the constraints on the agent society. Roles are the center of agent control, and protocols reflect the pattern of behavior. This role for agents helps users by delegating time-consuming peripheral tasks. Some problems that arise are, how much discretion should be assigned to the agent, and how will the agent interact with the world? (Weiss, 2001).

E-BUSINESS

The e-business domain needs more automation for its customers, which can be facilitated through the implementation of agent technologies. Mesenbourg (2000) highlights distinctions between electronic business and electronic commerce. Electronic business is a process that a business organization conducts over computer-mediated network channels whereas commerce is any transaction conducted over computer-mediated network channels that transfers ownership of, or rights to use, goods or services. The process involves electronic marketing, electronic searching, the procurement and payment and the authentication and the processing of the payment through a financial institution.

Many current successful Web sites started off in garages or college dormitories, and were created by Web developers just for fun. In some cases, we have seen that these small companies balloon into giant corporations. A contributing factor is that a Web site is essentially no different than a corner shop, and it can easily survive by providing a service or product to a small percentage of the global population. However, ballooning can occur when a small Web site is available to over a billion people. Once a Web site, which is intended to be small, can be

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