

## Chapter 3.1

# The User Agent Architecture and E-Learning in Healthcare and Social Care

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### ABSTRACT

E-learning is developing rapidly worldwide. The volume of the information that e-learning systems render grows, too. Nowadays, the critical issue is to acquire more knowledge using less time and effort. Contemporary e-learning systems, although they embody up-to-date technology, artificial-intelligence techniques, and pedagogical methods, address too flat a spectrum of users. The user agents deal with this weakness. E-learning has the potential to transform learning for healthcare and social care, supporting the aims of the National Health System Plan and raising standards of care for patients and service users across healthcare and social care. The solution proposed is based

upon the user-agent architecture and confronts the individual issues of the health and social sector.

### INTRODUCTION

Society is entering into an era where the future essentially will be determined by people's ability to use knowledge wisely. Knowledge is a precious global resource that is the embodiment of human intellectual capital and technology. As people begin to expand their understanding of knowledge as an essential asset, they are realizing that in many ways the future is limited only by imagination and the ability to leverage the human mind. As knowledge increasingly becomes a key strategic resource, the need to develop comprehensive understanding of knowledge processes for the

creation, transfer, and deployment of this unique asset is becoming critical.

The issue about the difference between knowledge and information is today the subject of much literature, discussion, planning, and some action. Moreover, the involvement of knowledge management in e-learning systems is a crucial matter: Contemporary e-learning systems increasingly take advantage of knowledge-management techniques to utilize the great volume of information that they render.

On the other hand, nowadays the academic community is addressing more and more the rise of the online community that will be instrumental in the realization of advanced learning societies. Internet online environments enable new and interesting designs for the support of traditional learning and for the development of new forms of learning. Ideally, users will be able to access all forms of knowledge in any combination, from any location at any time. This, of course, implies considerable complexity in the software design and a substantial level of intelligence across the systems: from the servers to the networks, to the user interfaces. Although e-learning environments can be used widely either for educational or for training purposes, the problem that still exists is the efficient management of content and effectiveness for users.

E-learning has the potential to transform learning for health and social care, supporting the aims of the NHS Plan and raising standards of care for patients and service users across health and social care. The solution proposed is based upon the user-agent architecture and confronts the individual issues of the health and social sector.

## **HEALTH AND SOCIAL SECTOR PARTIES**

As the health and social sector holds great significance in society, the spectrum of the parties involved is wide and manifold. A system willing

to provide knowledge to this spectrum must be flexible, accurate, effective, and direct, and at the same time it must be able to accept and elaborate information from this spectrum. Only by recording the involved parties and their specifications can an e-learning system have success.

The spectrum discussed above can be broken down into the following parties (user groups):

- Individuals
- Employers
- Managers
- Healthcare professionals
- Providers
- Organizations
- Patients and service users
- All staff

These groups have different properties that induce the specifications of an integrated e-learning environment. By developing a unified set of internal mechanisms and an interface, an e-learning environment cannot have equal success throughout the whole spectrum of users.

The answer to the problem is the appropriate formation of the learning-content structure, but also the creation of respective procedures regarding the interaction between the content and the user.

Before proceeding to the presentation of the solution proposed, it is useful to introduce the Gagne model of learning and recall (Figure 1). The model is based on the theory of information elaboration. It represents the procedure of knowledge generation within the human brain. The interaction between the environment and the human is performed through receptors and effectors (input and output); the data are saved in the temporary (short-term) memory, while repeating and performing save them in the long-term memory. Then, the response generator performs actions, using data from memory and controlling them by executive control and expectancies. The mechanisms of knowledge acquisition (or the

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