Chapter 11
Semantic Modelling for E-Learning Coordination

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ABSTRACT
This chapter reports a metadata model for e-learning coordination based on content semantics grounded on Semantic Web concepts. To start with, e-learning models are surveyed identifying process content, such as phases, activities, data schema, rules and relations, so on, as relevant for a coordination model. The study looks into the mechanism of e-learning environment and how e-learning processes can be classified for purposes of activity coordination. A metadata model for coordination of e-learning is being sought as expressed in Semantic Web concepts and transcribed using the related languages like OWL, RDF, SPARQL and others. A learner centric proposal is advanced which augments the IEEE Learning Technology Standards Committee’s industry leader Learning Technology System Architecture. Examples are worked out and future research directions are identified. This is a continuing research project on application of Semantic Web initiative in e-learning; i.e., design and development of markup and annotation tools, relevant ontologies and intelligent agents in meeting learner needs.

INTRODUCTION
Open, flexible and distributed learning activities are named variously, including:

- e-Learning,
- Web-Based Learning (WBL),
- Web-Based Instruction (WBI),

DOI: 10.4018/978-1-5225-0466-5.ch011
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- Web-Based Training (WBT),
- Internet-Based Training (IBT),
- Distributed Learning (DL),
- Advanced Distributed Learning (ADL),
- Distance Education (DE),
- Distance Learning (DL),
- dlearning,
- D-Learning,
- Online Learning (OL),
- Mobile Learning (or m-Learning) or Nomadic Learning,
- Remote Learning,
- Off-site Learning,
- a-Learning (anytime, anyplace, anywhere learning),
- Virtual learning.

Also, of late, terms such as:

- Instructional Technology,
- Learning Technologies,
- Learning Management System,
- Massive open online courses (MOOCs) precise definitions of such terms can be found in the literature (see, for example: ACM eLearn; CDLP; CMC, 2008; Imperial; LTSC, 1996; Moore, 1996; Tsai & Machado, 2002; and Wiki, 2014).

While we concede to that there is considerable difference among some of these in one or more of the issues involving pedagogy, learner purpose, computerized application, stake-holder parties involved, tools used, technology required, and timing and scheduling, we tend to regard e-learning as an all-encompassing generic term. This is quite in line with our predisposition in this chapter for we wish to consider e-learning in its generic form equally akin to any flavor of it. We will dig into e-learning deeper.

A decade ago, an e-learning system was considered as a learning content manager as asserted in the Multidimensional Dynamic Learning (MDL) Model (Lytras, Pouloudi & Poulymenakou, 2002; see Figure 3). Visions of e-learning have changed considerably. In outlining its 2020 initiative in digital agenda, European Commission (2014) strives for member states to mainstream e-learning in national policies for modernizing education and training. It is stated that “Today eLearning is not sufficiently present in Member States’ education and training policies. However, the benefits of eLearning are enormous: it enables people to acquire skills anywhere, anytime; it empowers teachers to adopt new practices, to tailor interventions on the basis of personal learning needs and to individualize assessment. It also caters for self-regulated and informal learning, accommodates different learning styles, innovative collaborative learning practices, and supports more efficient workforce training, at a global scale, improving delivery, reducing training costs and time-to-competencies.” This statement succinctly lists the virtues of e-learning, and in the process, provides hints to what it should cater for. Yet, “how” is missing? What would it take to achieve e-learning as expected? If not succeeding full virtues, why one is failing? Clearly, information and communication technologies (ICT) on the one hand is decisively influential at the delivery end of the e-learning spectrum, while instructional technology at the service heart.