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ScenEdit: a tool to design pedagogical scenarios

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Abstract. This demo concerns ScenEdit authoring environment, a graphical tool dedicated to design and edit pedagogical scenarios. The environment is based on ISiS conceptual goal-oriented framework elaborated to structure the design of scenarios by teachers-designers and to favour sharing and reuse practices. We present here the main functionalities of the environment through an example.

Keywords. technology enhanced learning, learning scenarios, authoring approach, goal oriented approach.

In collaboration with the French National Institute for Pedagogical Research (INRP), we develop an authoring environment (Botturi *& al.* 2006) dedicated to teachers who want to integrate digital technologies in the French secondary educational system. ScenEdit is based on ISiS, a goal-oriented model we have co-elaborated with experimented and inexperienced teachers. ISiS aims to capture the teachers' intentions and strategies in order to better understand scenarios written by others and to favour sharing and reuse practices. ISiS is not an alternative solution to Educational Modelling Languages (Koper and Tattersall 2005), but completes them by offering models, methods and tools for teachers-designers.

From this model, we have developed a graphical tool proposing three workspaces. The first *Context workspace* allows to define the two different types of context in which a learning unit is called to be executed. The *knowledge context* defines the targeted knowledge items (concepts, competencies, know-how, skills, conceptions or misconceptions, etc.) and the audience characteristics. The *situational context* is characterized by a set of variables such as resources that can be manipulated to support the activities (document, tools, services), locations where activities can take place, planning elements or number of learners, roles which can be distributed. The second *Components workspace* is dedicated to manage the three main components of ISiS model: (a) Intentions, (b) Strategies and (c) interactional Situations. For each type of component, the author may either create a new element or import and adapt an existing element from a library. The choice of a component depends on the characteristics defined in the *Context workspace*: an intention is considered as an operation to be realized by a certain type of actor occupying a role (previously defined in the *situational context*) on an item of knowledge (previously defined in the

knowledge context). The third *Scenario Editor workspace* allows to structure the scenario by assembling elements previously defined in the *Components workspace* (cf figure 1).

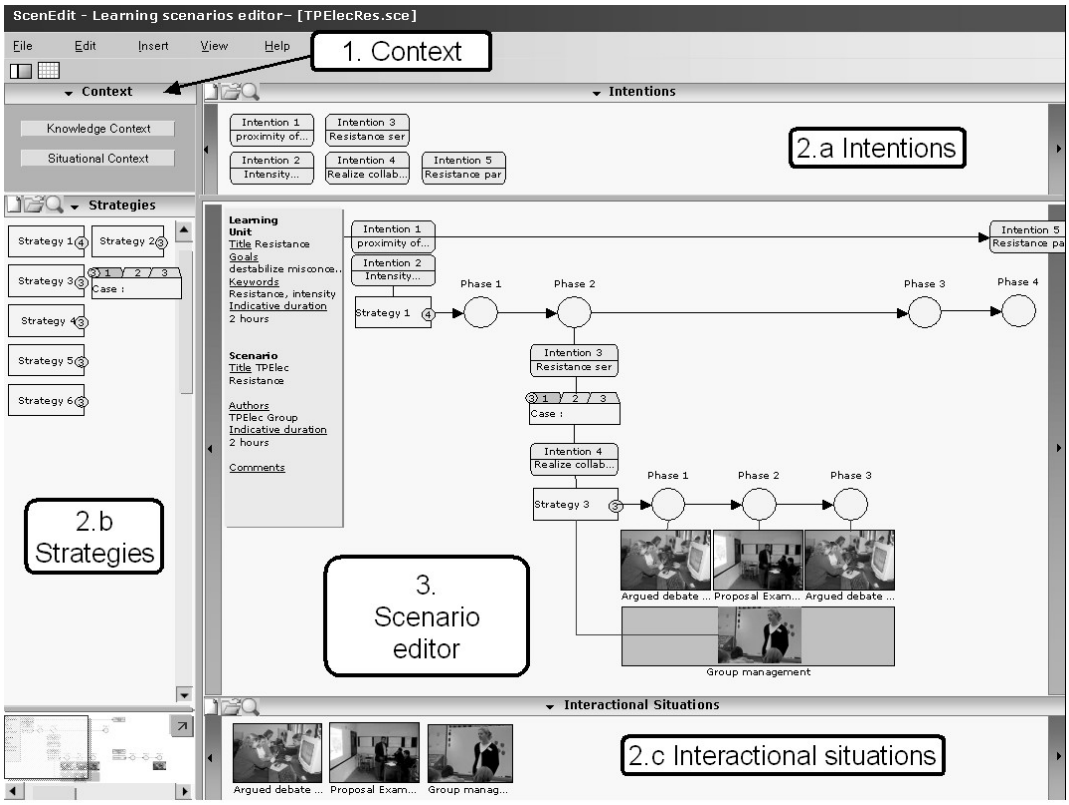

Fig. 1. ScenEdit main screen

Figure 1 shows the main screen of the prototype version. In peripheral areas (titled 1, 2a, 2b and 2c), the designer may create, edit or import the different components of its scenario (context, intentions, strategies, interactional situations). In central area (titled 3), components created in peripheral areas may be "dragged and dropped" and logically linked to compose a graphical representation of the scenario. This representation is a tree where horizontal dimension represents the time evolution and vertical dimension represents the hierarchy of ISiS concepts. Each type of component is shown with a different symbol: rounded rectangle for an intention, rectangle for a strategy, circle for a phase and picture for a situation.

We illustrate on figure 2 the use of the editor with an example based on a collaborative scenario (Lejeune *& al.* 2007) dedicated to the concept of power of a lamp in Physics in secondary school. This scenario has been designed by teachers with a main intention: to destabilize a frequently encountered misconception in electricity "the proximity of the generator has an influence on the intensity". This first intention may be modelled as a triple (*operation*: "destabilize a misconception", *knowledge item*: "the proximity of the generator has an influence on intensity", *subject*: student).

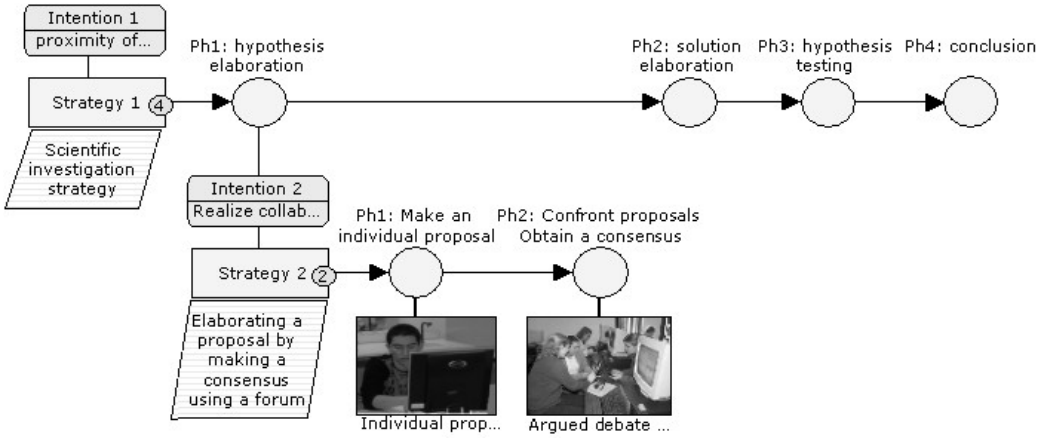

Fig. 2. ScenEdit : intentions and strategies

This intention (*Intention 1*) is implemented by a didactical strategy called "scientific investigation strategy" and composed of four phases: hypothesis elaboration, solution elaboration, hypothesis testing and conclusion. A second intention (*Intention2*) called "realize collaborative work" is added on the previously defined didactical phase "hypothesis elaboration". This intention is implemented by *Strategy 2* called "elaborating a proposal by making a consensus using a forum". The first phase of *Strategy 2* called "Make an individual proposal" is associated with the interactional situation called "Individual proposal on a wiki" which is composed of activities (detailed on another screen): reading the question and the guidelines, observing a document and writing the proposal on a wiki. The second phase called "Confront proposals. Obtain a consensus" is associated with the interactional situation called "Argued debate on a forum with consensus". For this example, ISiS model, seems to be efficient: teachers report that this representation of the scenario is easier to understand, adapt, reuse and share than a narrative scenario.

We currently experiment the first version of ScenEdit environment. This experimentation aims essentially to validate the visual representation of a scenario. ScenEdit will be enriched with databases filled with patterns of different levels (intentions, strategies, interactional situations) elaborated from best-practices found in literature or within communities of practice. Users will then be able to feed databases by exporting fragments of their own scenario, in order to share them with others or reuse them further in close or different contexts. In order to do so, we work with teachers to formalize and design patterns of learning scenarios, pedagogical approaches and recurrent interactional situations.

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