C-VIBE: A Virtual Interactive Business Environment addressing Change Management Learning

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Abstract

C-VIBE is an advanced learning system taking advantage of simulation, multimedia, virtual reality, agents/avatars-based, and multi-user, distributed communication technologies to deliver a realistic learning experience addressing the dynamics of change and innovation processes in organizations. This paper illustrates and discusses the pedagogical effectiveness of the core layers of C-VIBE, the design of its VR and multi-user components, as well as its application in the domain of management learning.

1. Introduction

Managing efficiently and effectively change and innovation processes in organizational contexts has become a key challenge for managers in organizations world-wide. Accordingly, as discussed in [1], research has focused on how to help managers to develop skills such as being able to learn [2], able to innovate [3], able to design and drive organizational simplicity [4], able to manage ambiguity [5], and manage and thrive on change [5, 6, 7].

We describe here the key features of an advanced learning system aimed at helping managers to understand the challenges of organizational change and facing the natural resistance to innovation and change latent in organizations. The system, called ‘Change VIBE’ (C-VIBE), supports experiential learning through a multi-user multimedia simulation taking place in a Virtual Interactive Business Environment (VIBE) in which the users have to accomplish a change management mission within an organization. In this environment, users are able to initiate actions to achieve their goal which consists in convincing, over a given time period, the (simulated) top management team of a (simulated) company to adopt a major innovation. Throughout this experience, users can initiate different organizational actions (change management initiatives) and see dynamically the impact of these actions, thus learning (by doing) in a highly realistic way how to manage effectively change in an organizational context.

This document describes and discusses the three layers of C-VIBE (see Figure 1). The focus of section 2 is on the kernel of the learning experience, the so-called EIS Simulation [8, 9], which has been extensively tested in top schools and universities world-wide to train managers in the theory and the practice of managing change and organizational transformation. We also provide there details on the pedagogical effectiveness [1] of the first layer of C-VIBE and the underlying concept of Virtual Interactive Business Environments (VIBEs) [10].

Figure 1: The 3 C-VIBE Layers

In section 3 we describe the other two layers of C-VIBE, i.e. the virtual reality (VR/VRML) and avatar-based environment we are designing to provide a highly interactive learning approach and to increase the realism of the experience, and the distributed multi-user dimension aiming at increasing and extending the way in which individuals and teams can access C-VIBE. With these two additional layers extending the simulation kernel, C-VIBE aims at providing a learning experience taking full advantage of the combination of VR/VRML and Internet/distributed multimedia networks technology.

2. The kernel of C-VIBE: The EIS Simulation and the underlying VIBE concept

The kernel of C-VIBE consists of the inference engine of a simulation of organizational dynamics called EIS Simulation [8, 9], which adopts an experiential learning approach to force realism into the theoretical and conceptual change management debate and to improve the effectiveness of the development of change management and implementation skills and competencies.
The EIS Simulation provides typically the basis for half-day or full-day workshops in which managers and students are allowed, like in a flight simulator, to have a first-hand experience as a member of a change agent team intervening in a company, to test the effectiveness of their implementation strategies and initiatives, and then to debrief this experience in groups.

The challenge for the change agent teams playing this simulation is to gain the commitment of the top managers of a company for a major innovation: the implementation of a corporate computer-based information, communication and reporting system called EIS. The team operates hence within a virtual company in which they have to spend 6 simulated months interacting with virtual managers with very realistic profiles, behaviour and different ways of resisting the innovation. These virtual managers gradually develop a positive attitude towards the adoption of the targeted innovation as a function of the initiatives undertaken interactively by the users (see Figure 2 for screens displaying the organizational chart of the virtual company, information about initiatives/tactics the change agent teams may use in any way they choose (or not choose) at any time during the simulation, as well as a screen through which the users can take new decisions such as trying to arrange a face-to-face meeting with one of the virtual managers).

Workshops or sessions based on the EIS Simulation start with a brief introduction taking place just before breaking into teams and starting the simulation. The introduction typically highlights:

- why being able to manage change is necessary in today’s business environment and the apparent levels of corporate effectiveness in doing so,
- how individuals usually adopt change or innovation at differing rates and are sensitive to different approaches,
- how each virtual manager in the simulation has been modelled with backgrounds, personalities and the ability to react to initiatives and tactics used by the change agent team as well as to other events - such as the influence of other managers in the virtual organization,
- what information and communication based initiatives and tactics are available to the participants,
- how they will receive immediate feedback about the effects of their actions,
- the necessity for developing a strategy for how their change team will approach the implementation before “getting stuck into it”, and
- a reminder that they could hear a build-up of frustration from some of the team members as they implement their strategy as they will encounter the same hostile behaviour and resistance patterns as in the “real-world”.

After the introduction, it is up to the teams to first develop a strategy to address the change management mission, and then to start operating within the virtual company to gain the virtual managers’ commitment over a period of 2 to 4 hours (simulating a 6 months intervention in the company).

At the end of the time period set for creating and implementing their change strategy (and of a typically very intensive intellectual and emotional experience), each team is requested to reflect on the key Do’s and Don’ts they have learned in relation to managing change, and then to present and discuss their experience. In order to take the learning experience from single-loop learning into the more effective, double-loop learning process for each participant, a debriefing session is used to link the learning generated from the simulation to the participants’ personal experience of change and resistance. Questioning techniques enable the participants to discuss and reflect on their own experiences as change strategists, change agents or change recipients including their own resistance to change techniques. They are also challenged to think about how they will now handle situations upon return to their own organizations.

As reported in more detail in a recent qualitative study of the effectiveness of the EIS Simulation [8], learning points about managing change raised during the debriefing sessions which relate to the direct use of the simulation nearly always encompass:

- Surprise at how realistically the simulation captures people and their reaction in a normal business situation
- Need to identify and communicate with key stakeholders and key influencers
- Necessity of information gathering
- Power of informal networks
- Awareness that receptiveness and resistance to change is different for each person
• Maintaining communication flows in all directions
• Persistence in maintaining momentum of change
• Need to understand the dynamics of teams
• Having a strategy and then being flexible and able to adapt strategy based on the feedback being received
• Time management
• Effectiveness of a combined top-down, bottom-up strategy

A closer view based on the framework introduced in [1] provides better insights into the pedagogical value of the simulation. In particular, the framework helps identifying which pedagogical objectives are best addressed. As a large number of users (and trainers) of EIS Simulation workshops report in the structured questionnaires administered over the last few years, the realism of the approach helps managers becoming more “streetwise” in the context of organizational change and innovation initiatives, i.e. it provides a risk-free environment to experiment with different ways of succeeding in complex organizational contexts. “Action”-oriented skills (typically acquired through extensive experience) are particularly emphasized, also given that the simulation is one of the first executive learning tools designed based on the Business Navigator Method [10]. This method provides guidelines for the design of learning systems enabling managers to be projected into virtual interactive business environments (VIBEs) which are “highly interactive and realistic… in which he/she will experience the difficulties of thinking, moving, understanding and acting in the diverse, socially complex, information and knowledge intensive, competitive and co-operative reality of today’s businesses” [10].

In order to design these effective management education tools, the Business Navigator Method is built upon the principles of:
• the processes that people go through to learn - the Experiential Learning Model and their preferred style for learning - the Learning Styles Inventory (LSI) and their approach to problem solving/opportunity identification;
• adaptation of learning theory for more effective adult learning - that is ensuring that reflection is a key part of the learning cycle and building in motivation, involvement, curiosity and interest and even fun, novelty and mystery;
• benefits of group dynamics and teamwork;
• providing the learners with more flexibility and control over their own learning experience;
• providing a risk-free learning environment;
• building on the Case Method (a non-experiential learning approach) in which learners are exposed, individually and through facilitation, to a business situation and theoretical frameworks and given an opportunity to exercise analytical skills;
• modelling the complexity of the current business environment and the effects and inter-relatedness of decision-making within organizations.

The Business Navigator Method also takes full advantage of current and emerging information, knowledge and communication technologies such as multimedia, virtual reality, avatar-based navigation, intelligent agents and bots, and artificial intelligence.

3. The two other layers of C-VIBE: VR and distributed, multi-user dimensions

In C-VIBE, the inference engine of the EIS Simulation is extended with a VRML interface consisting primarily of (1) a Virtual Board Room, and (2) a Change Agent Avatar.

Users (working individually or in co-located teams) start the learning experience by connecting to the Virtual Board Room, where an introduction similar to the one described in the previous section is delivered to them via a set of videos displayed in the Virtual Board Room in which the users are represented simultaneously by avatars of their choice. As an additional option, a trainer-controlled avatar provides the opportunity for a Q&A session taking place in the Virtual Board Room. During this introductory phase, users also meet the Change Agent Avatar (a bot) which will provide them assistance throughout the simulation.

The Virtual Board Room hence provides users with a 3D environment in which they can access (directly or indirectly, through the Change Agent Avatar) information of different kinds and initiate organizational actions. The functionality embedded in the Virtual Board Room corresponds to the one provided by the current 2D interface of the EIS Simulation and includes 3D visualization and control panels through which users can monitor dynamically the progress of their organizational intervention.
It is within the Virtual Board Room that users can proceed with the next steps of the learning experience, i.e. with the formulation of a strategy (resulting from a real-time discussion taking place in the chat space integrated in the Virtual Board Room) and with the actual intervention in the simulated company, which takes place over a time period of 2 to 4 hours as described in the previous section. During this intervention, users are able to make decisions on which actions to undertake and then ‘send’ their Change Agent Avatar to implement their decisions (e.g. a face-to-face meeting with one of the managers, a workshop, or a memo to selected managers) in the organization. After each action, the Change Agent Avatar returns to the Virtual Board Room and reports on the outcome of the initiative (impact on the organization) as well as on other events taking place dynamically in the organization. The information represented in the Virtual Board Room changes dynamically providing a continuously updated view on key organizational parameters.

After completing the simulation (which typically results in a ‘relative failure’ given the strong resistance to change the users encounter), the users proceed to the debriefing of their change management experience, as described in the previous section. This debriefing session also takes place in the Virtual Board Room, and concludes the overall learning experience. It is in this last phase that the distributed, multi-user dimension of C-VIBE plays a crucial role as it allows distributed teams of users and experts/trainers to connect simultaneously to the Virtual Board Room (instead of being co-located) and discuss together the learning experience.

The key assumption behind the two layers of C-VIBE illustrated in this section is that the VR and the distributed, multi-user dimensions will enhance significantly the realism of the experience, contributing to the value of the learning process and additionally extending the users’ competencies in the domains of:
- representing static and dynamic information,
- navigating efficiently,
- interacting with others (as well as with bots), and
- reaching consensus on decisions in distributed VR environments.

4. Conclusions and Next Steps

We have described the key features of C-VIBE, an advanced learning system based on three layers taking advantage of simulation, multimedia, virtual reality, agents/avatars-based and multi-user, distributed communication technologies to deliver a realistic learning experience addressing the dynamics of organizational change and innovation processes. Furthermore we have discussed the pedagogical effectiveness of its core layer (the simulation component) and motivated its extension with two further layers.

After the technical completion and fine-tuning of the VR and multi-user, distributed components of C-VIBE, we will proceed with extensive user testing using management teams to validate the value added by these two additional layers. Measurements will include the extent to which these components increase the efficiency and effectiveness of the learning process in the domain of managing organizational change (helping people to become better change agents) as well as in the domain of managing virtual teamwork (helping people to become more effective in co-operating with others interacting through virtual environments).

Further steps we are planning include the extension of C-VIBE with additional VR components allowing even richer interaction within the virtual company during the simulation. Such extensions will enable users to experience virtual dialogues with bots playing the role of virtual managers as well as the possibility to engage in avatar-based role plays to further extend the learning scope of C-VIBE and evaluate its effectiveness as a learning approach for other, broader domains of management development.

5. References